

Technical Paper No. 386

Report on Proposed Changes to Nonsubsistence Areas

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Symbols and Abbreviations

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft ³ /s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols

alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	\$, ¢
months (tables and figures)	first three letters (Jan, ..., Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

<i>all standard mathematical signs, symbols and abbreviations</i>	
alternate hypothesis	H _A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2 , etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log ₂ , etc.
minute (angular)	'
not significant	NS
null hypothesis	H _O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

TECHNICAL PAPER NO. 386

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PREFACE

This report was produced for the October 2013 Alaska Joint Board meeting in Anchorage, Alaska, as *Technical Paper No. 386, RC 3, Report on Proposed Changes to Nonsubsistence Areas*. The report, as RC3, is available online through the “Alaska Joint Boards Meeting Information” website.¹ Due to reformatting to reduce the number of pages in the RC 3 report, erroneous caption labels were created. An errata sheet was issued and published on the same Alaska Joint Board website: *RC 7 Errata to RC 3 Report on Proposed Changes to Nonsubsistence Areas*.

This revised report, published in December 2013, corrects formatting and caption label errors in *Technical Paper No. 386, RC 3, Report on Proposed Changes to Nonsubsistence Areas*. Following is a list of corrections.

1) The table below identifies page numbers from RC 3 and notes incorrect published caption labels and identifies the corrected caption label. This report is updated so that all caption labels are corrected as identified in the table.

Page number	Published caption label	Correct caption label	Caption title
5	Figure 1.5-1	Figure 1.2-1	Map of 5 Alaska nonsubsistence areas and borough/census areas.
13	Table 2.5-1	Table 2.4-1	Annual unemployment rates (not seasonally adjusted) for Alaska census areas, 2003–2012.
14	Figure 2.5-1	Figure 2.4-1	Annual unemployment rates, Alaska census areas, 2012.
14	Figure 2.5-2	Figure 2.4-2	Annual unemployment rates, selected Alaska census areas, 2003–2012.
15	Figure 2.5-3	Figure 2.5-1	Geographic cost differentials in 2008.
15	Figure 2.5-4	Figure 2.5-2	Cost of food index for nonsubsistence areas and proposed nonsubsistence area places, referenced from Anchorage, 1981–2011.
60	Figure 3.3-1	Figure 3.3-2	Valdez population, 1960–2010.
61	Figure 3.3-2	Figure 3.3-1	Map of Valdez Nonsubsistence Area.
110	Figure 5.2-1	Figure 5.1-1	Map of Kodiak Island Borough.
111	Figure 5.2-2	Figure 5.1-2	Map of Kodiak road area.
138	Figure 6.2-1	Figure 6.1-1	Map of Bethel City.

1. Alaska Joint Boards Meeting Information, Meeting Documents:
<http://www.adfg.alaska.gov/index.cfm?adfg=process.jbmeetinginfo&date=10-12-2013&meeting=anchorage>

2) In RC 3, in the List of Figures on page iv, 2 figure captions were listed out of order and with the wrong caption number associated with the caption title.

The list indicated:

Figure	Page
3.4-2.–Map of Juneau Nonsubsistence Area	74
3.4-1.–Juneau population, 1960–2010.....	75

This list should read:

Figure	Page
3.4-1.–Map of Juneau Nonsubsistence Area	74
3.4-2.–Juneau population, 1960–2010.....	75

This report is updated so that the List of Figures shows corrected caption titles associated with the caption labels.

3) On page 73 of RC 3, the first sentence of “3.4.1 Background” should have read: The Juneau Nonsubsistence Area consists of the Juneau City and Borough and portions of Admiralty Island (Figure 3.4-1). This report is updated to include the reference to Figure 3.4-1 that was previously missing from the sentence.

4) In RC 3, page 118 contained an incorrect table reference.

The second paragraph started: Table 5.5-3 provides updated information on commercial fishing involvement for Kodiak residents for 2012.

That sentence should have read: Table 5.5-2 provides updated information on commercial fishing involvement for Kodiak residents for 2012.

This report is revised to include the correct table label.

5) In reviewing RC 3 to update the caption labels and titles and associated lists of tables and figures, a few additional necessary corrections were identified. Those corrections are summarized below.

- This report’s Figure 2.4-1.–Annual unemployment rates, Alaska census areas, 2012, had an incorrect legend. The legend now indicates that red columns identify census areas that are entirely within nonsubsistence areas.
- This report’s Figure 5.5-9.– Number of subsistence salmon permits returned, residents of Kodiak road system, 1999–2011, correctly depicts that an annual average of 1,449 Kodiak households returned subsistence salmon fishing permits from 1999–2011.
- This report’s Table 6.4-1.–Total hunters by species and GMU, Bethel residents, 2007–2011 and Figure 6.4-11.–Total hunters by GMU, Bethel residents, 2007–2011 contain corrected hunter data for bison.

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ABSTRACT

Alaska Statute (AS 16.05.258(c)) directs the Alaska Joint Board of Fisheries and Game to identify nonsubsistence areas in Alaska where “subsistence is not a principal characteristic of the economy, culture, and way of life” by considering 12 socioeconomic characteristics of the areas. In 1992 and 1993, the Joint Board identified 5 such areas: Anchorage-Matsu-Kenai, Fairbanks, Valdez, Juneau, and Ketchikan. In October 2013, the Joint Board will consider proposals to repeal the 5 present nonsubsistence areas, modify the boundary of the Fairbanks area based on the range of the Fortymile caribou herd, and create new Kodiak and Bethel nonsubsistence areas. The report provides background information organized around the 12 statutory characteristics to assist the Joint Board in evaluating the proposals.

Key words: Subsistence hunting, subsistence fishing, nonsubsistence areas, Anchorage, Matanuska-Susitna Borough, Kenai Peninsula Borough, Fairbanks North Star Borough, Valdez, Juneau, Ketchikan Gateway Borough, Kodiak, Bethel, Fortymile Caribou Herd, Joint Board of Fisheries and Game

EXECUTIVE SUMMARY

Alaska Statute 16.05.258(c) directs the Alaska Joint Board of Fisheries and Game (Joint Board) to identify nonsubsistence areas where “dependence upon subsistence [harvests and uses of fish and wildlife] is not a principal characteristic of the economy, culture, and way of life of the area or community” by considering the relative importance of subsistence in the context of the totality of 12 socioeconomic characteristics (or “factors”). The boards of Fisheries and Game may not permit subsistence hunts or fisheries in nonsubsistence areas, but residents of these areas may participate in any authorized subsistence fishery or hunt. In 1992 and 1993, the Joint Board defined 5 nonsubsistence areas: Anchorage-Matsu-Kenai, Fairbanks, Valdez, Juneau, and Ketchikan (5 AAC 99.015). In October 2013, the Joint Board will consider 4 proposals that would eliminate the current 5 nonsubsistence areas (Proposal 38), modify the boundaries of the Fairbanks Nonsubsistence Area based on the range of the Fortymile caribou herd (Proposal 39), create a Kodiak nonsubsistence area (Proposal 40), and create a Bethel nonsubsistence area (Proposal 41). The Alaska Department of Law has advised the Joint Board to focus on new information when considering changes to nonsubsistence areas. Therefore, this report updates information on the 12 characteristics modeled after the 1992 staff report, and features the findings from the 1992 and 1993 meetings, as background for the Joint Board’s 2013 deliberations.

Population changes often reflect economic trends in areas and communities. The population of the combined 5 nonsubsistence areas grew 36% from 1990 to 2010, compared to 29% for the state as a whole and just 5% for other Alaska areas. Nonsubsistence areas included 83% of Alaska’s population in 2010, compared to 79% in 1990.

In 1992 and 1993, the Joint Board found that a type of “industrial capitalism” characterized the social and economic structures of the 5 nonsubsistence areas, with relatively stable cash sectors, diverse employment, and cash incomes at or above state averages (factors 1–4, 7). Updated data for the 5 nonsubsistence areas show a continued diversity of employment opportunities in multiple sectors of the cash economy. The closure of a pulp mill in Ketchikan in 1997 resulted in loss of jobs and lowered incomes in that community. On average from 2007–2011, per capita incomes in all 5 nonsubsistence areas approximated or exceeded the state average of \$31,944, ranging from \$29,998 in Ketchikan to \$37,294 in Juneau. Annual unemployment rates were lower in these areas in 2012 compared to most other parts of the state, as was the percentage of the population living below the poverty threshold in 2007–2011.

According to a geographic cost differential study for 2008, costs of living (Factor 5) in the nonsubsistence areas are generally lower than other areas of the state. Based on quarterly market basket surveys, with the Anchorage cost of food index set at 100 in 2011, the indices for other nonsubsistence areas ranged from 97 for the Fairbanks North Star Borough to 135 for Valdez. Relative to Anchorage, costs of food had declined since 1991 in all nonsubsistence areas except Valdez and Ketchikan.

Regarding fish and wildlife harvests and uses by residents of the nonsubsistence areas (factors 6, 8–12), for the 5-year period 2007–2011, annual harvests ranged from 17 lb per person in Anchorage to 45 lb per person in Valdez, and averaged 22 lb for all nonsubsistence areas combined, compared to an average of 298 lb per person for other areas of the state. Estimated harvests per person in 2007–2011 did not differ significantly from those estimated for 1992, with the exception of Valdez, for which recent estimates are higher. Also, a survey of a random sample of Ketchikan households in 2005 produced a higher harvest estimate per capita (91 lb) than those derived from annual harvest monitoring programs (range between 23 lb and 54 lb from 2004–2011; recent 5-year average of 34 lb). The average harvests in 2007–2011 for the nonsubsistence areas combined represent about 10% of the annual consumption of meat, fish, and poultry per capita by Americans (compared to 131% for other Alaska areas), supply 13% of protein requirements (175% for other areas), and 2% of caloric requirements (28% for other areas).

Areas used by residents of nonsubsistence areas to hunt and harvest big game had not changed notably in 2007–2011 compared to those of 1986–1991 (Factor 11), which were used to define the current nonsubsistence areas.

Proposal 39 would exclude the range of the Fortymile caribou herd from the Fairbanks Nonsubsistence Area. The range of this herd reached its maximum in the 1920s and 1930s when it extended over most of the nonsubsistence area. The range subsequently contracted as the herd size dropped. Currently, the herd is growing and extending its range northwest across the Steese Highway. From 2006–2012, about 13% of the harvest of Fortymile caribou took place within the Fairbanks Nonsubsistence Area, with 60% of this harvested by residents of the nonsubsistence area, 26% by non-Alaska residents, 11% by residents of other nonsubsistence areas, and 3% by residents of other Alaska areas. The range of game populations or fish stocks with customary and traditional uses is not one of the 12 statutory factors used for defining the boundaries of nonsubsistence areas. Economic and other data are not available for the specific areas of the nonsubsistence area currently within the herd's range. Therefore, consideration should be given to applying the information for the 12 factors pertaining to the nonsubsistence area as a whole as also representing the portion of the nonsubsistence area within caribou herd's range.

Proposal 40 would create a Kodiak Nonsubsistence Area, but the proposal does not specify the boundaries of the proposed area. In 2010, the city of Kodiak had a population of 6,130 and the population of the entire area along the road system was 12,787. The Kodiak road area population increased by 5% from 1990 to 2010, compared to 29% for the state overall.

The cash sector of Kodiak's economy is focused on commercial fishing and processing; the community also plays a role as a service "hub" for other Kodiak Island Borough communities. Because it is specialized, Kodiak's economy is vulnerable to changes in the status of fisheries stocks, markets, and management policies. Of all jobs held by Kodiak City residents in 2011, 36% were in manufacturing (fisheries processing). Relatively large numbers of Kodiak residents hold commercial fishing permits and crew member licenses. During 2007–2011, at \$25,986 per person, cash incomes in Kodiak City were below the state average of \$31,944. During the same period, 15% of Kodiak City's households lived below the poverty threshold, compared to a state average of 10%. Costs of food in Kodiak in 2011 were about 52% higher than Anchorage (index of 152), and these costs relative to Anchorage had increased compared to 1991 (when the index was 132).

Residents of the Kodiak Island road system harvested an average of 143 lb per person of wild foods during the 3-year period of 1991–1993; this amount was similar to ranges of other Alaska communities that are dependent upon commercial fishing and processing such as Cordova, Petersburg, and Wrangell. This harvest represents about 66% of the average annual consumption of meat, fish, and poultry by Americans, 87% of annual protein requirements, and 14% of caloric requirements. On average, Kodiak households used about 12 different kinds of wild resources. Salmon for home use are harvested with nets in local subsistence fisheries (34% of total salmon harvest 1991–1993), by rod and reel under sport fishing regulations (49%), and by removing fish from commercial harvests (17%). In 2011, 35% of Kodiak's households returned subsistence salmon fishing permits. Halibut and deer are other key resources in Kodiak's annual harvests.

Proposal 41 would create a Bethel Nonsubsistence Area. Bethel, with an area of about 50 square miles, is the regional center of the lower Yukon–Kuskokwim area, with a population of 6,080 in 2010. Bethel's population increased by 30% from 1990 to 2010, compared to 29% for the state overall.

Typical of an Alaska regional center (other examples are Dillingham, Nome, Kotzebue, and Barrow), the cash sector of Bethel's economy is focused on providing services to the residents of the communities of Kuskokwim and lower Yukon areas. Commercial fishing also plays a role in Bethel's cash economy. For the period 2007–2011, Bethel's per capita income averaged \$29,261, compared to \$31,944 for the state overall. However, households with Alaska Natives, who made up 71% of Bethel's population in 2010, had average per capita incomes of \$19,862 during the same 5-year period. Costs of goods and services in

Bethel are high compared to those of communities along the road system. In 2011, the cost of food in Bethel was about double that of Anchorage (index of 198). A cost of living study for 2008 assigned Bethel an index of 1.53 for total costs, 1.72 for food, and 1.56 for fuel, compared to Anchorage with an index of 1.00.

The first comprehensive household harvest survey in Bethel was conducted in early 2013 with results pertaining to 2012. The estimated harvest of wild foods of 168 lb per person represents 73% of the annual consumption of meat, fish, and poultry by Americans, 97% of protein requirements, and 16% of caloric requirements. Bethel households used, on average, 15 kinds of wild resources, harvested 8 kinds, and received 7 kinds. Of all households in the community, 97% used wild resources, 86% attempted harvests, 92% received wild resources, and 70% shared resources with others. Most big game harvests by Bethel residents from 2007–2011 took place locally in Game Management Unit 18. Most subsistence fishing occurred in the Kuskokwim River drainage.

ACKNOWLEDGEMENTS

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1 INTRODUCTION

1.1 STATUTES AND JOINT BOARD REGULATIONS

At its meeting in October 2013, the Alaska Joint Board of Fisheries and Game (Joint Board) will discuss 4 proposals that address nonsubsistence areas (NSAs). Proposal 38 would repeal the 5 existing nonsubsistence areas; Proposal 39 would modify the boundaries of the existing Fairbanks Nonsubsistence Area; Proposal 40 would create a Kodiak nonsubsistence area; and Proposal 41 would create a Bethel nonsubsistence area.

Under Alaska Statute (AS) 16.05.258(c)¹:

... The boards, acting jointly, shall identify by regulation the boundaries of nonsubsistence areas. A nonsubsistence area is an area or community where dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life of the area or community. In determining whether dependence upon subsistence is a principal characteristic of the economy, culture, and way of life of an area or community under this subsection, the boards shall jointly consider the relative importance of subsistence in the context of the totality of the following socio-economic characteristics of the area or community:

1. the social and economic structure;
2. the stability of the economy;
3. the extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment;
4. the amount and distribution of cash income among those domiciled in the area or community;
5. the cost and availability of goods and services to those domiciled in the area or community;
6. the variety of fish and game species used by those domiciled in the area or community;
7. the seasonal cycle of economic activity;
8. the percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game;
9. the harvest levels of fish and game by those domiciled in the area or community;
10. The cultural, social, and economic values associated with the taking and use of fish and game;
11. the geographic locations where those domiciled in the area or community hunt and fish;
12. the extent of sharing and exchange of fish and game by those domiciled in the area or community;
13. additional similar factors the boards establish by regulation to be relevant to their determinations under this subsection.

1. Alaska Legal Resource Center: <http://www.touchngo.com/1glcntr/akstats/statutes/title16/chapter05/section258.htm>.

The Joint Board has not established by regulation any additional factors to examine. Therefore, there are 12 characteristics (also called “factors”) upon which the Joint Board bases its nonsubsistence area findings.

The Alaska Board of Fisheries and the Alaska Board of Game (boards) may not permit subsistence fishing or hunting in nonsubsistence areas (AS 16.05.258(c)). Also, the boards do not identify fish stocks or game populations with C&T uses in nonsubsistence areas (AS 16.05.258(a)).

The Joint Board has adopted the following regulation, which clarifies the kinds of harvest opportunities that each board may provide to Alaska residents within nonsubsistence areas:

5 AAC 99.016. ACTIVITIES PERMITTED IN A NONSUSPENSURE AREA.²

(a) A nonsubsistence area is an area or community where dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life of the area or community. In a nonsubsistence area, the following activities will be permitted if so provided by the appropriate board of regulation:

- a) general hunting, including drawing and registration permit hunts;
- b) personal use, sport, guided sport, commercial fishing, and other fishing authorized by permit.

(b) Subsistence hunting and fishing regulations will not be adopted for these areas and the subsistence priority does not apply.

While defining where subsistence hunting and fishing may and may not occur, the identification of nonsubsistence areas does not limit the eligibility of Alaska residents to participate in any authorized subsistence fisheries or subsistence hunts. In other words, residents of nonsubsistence areas may participate in any authorized subsistence activity outside of the nonsubsistence areas, unless participation in a particular hunt or fishery must be restricted under the provisions of AS 16.05.258(b). In those cases, place of residence may not be used to limit who may obtain a permit under Tier II procedures.

In *State of Alaska et al. v. Kenaitze Indian Tribe et al.* (Supreme Court No. S-6162), on May 9, 1995, the Alaska Supreme Court ruled that AS 16.05.258(c), which requires the Joint Board to identify nonsubsistence areas, does not violate sections 3, 15, and 17 of Article VIII of the Alaska Constitution.

1.2 CURRENT NONSUSPENSURE AREAS

Figure 1.2-1 shows locations of the 5 existing nonsubsistence areas as well as Alaska census areas for which demographic and economic data are available from federal and state sources. For an overview of the primary data sources used for this report, see Appendix A.

In November 1992 and March 1993, the Joint Board defined the following 5 nonsubsistence areas: Anchorage–Matsu–Kenai, Fairbanks, Juneau, Ketchikan, and Valdez (5 AAC 99.015; see Appendix B). The establishment of each nonsubsistence area was supported by a written finding drawing upon a report prepared by the Alaska Department of Fish and Game (ADF&G 1992).³ (Maps depicting these current nonsubsistence areas appear below in the sections on each area.) The Joint Board findings pertaining to the nonsubsistence areas from the meetings in November 1992 and March 1993 appear in full in appendices C–G.

In 1986 and 1987, following the passage of the amended 1986 state subsistence statute, the Joint Board identified “nonrural” areas using a set of 12 regulatory characteristics (or factors) that were subsequently adopted in statute in 1992 to identify nonsubsistence areas (AS 16.05.258(c)). During its November 1992

2. Alaska Legal Resource Center: <http://www.touchngo.com/1glcntr/akstats/aac/title05/chapter099/section016.htm>.

3. This report is now Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 335.

and March 1993 meetings, the Joint Board applied the 12 characteristics to each of the previously identified nonrural areas as a first step toward defining nonsubsistence areas. In most cases, small adjustments to the boundaries of the earlier nonrural areas were made, as explained in the findings in appendices C–G. One previous nonrural area, Whittier, was not retained as a nonsubsistence area.

In 2007, the Joint Board considered changes to the boundaries of 2 nonsubsistence areas. Proposal 37 from that meeting would have removed the Funter Bay area (Admiralty Island) from the Juneau Nonsubsistence Area, and Proposal 38 would have added most of the Copper River Basin (Game Management Unit [GMU] 13) to the existing Anchorage-Matsu-Kenai Nonsubsistence Area. Neither proposal was adopted and no changes to nonsubsistence areas resulted from that meeting. Background information on both areas was summarized by the Alaska Department of Fish and Game (department) in a report to the Joint Board, which was later incorporated without changes into the Technical Paper Series (ADF&G 2011).

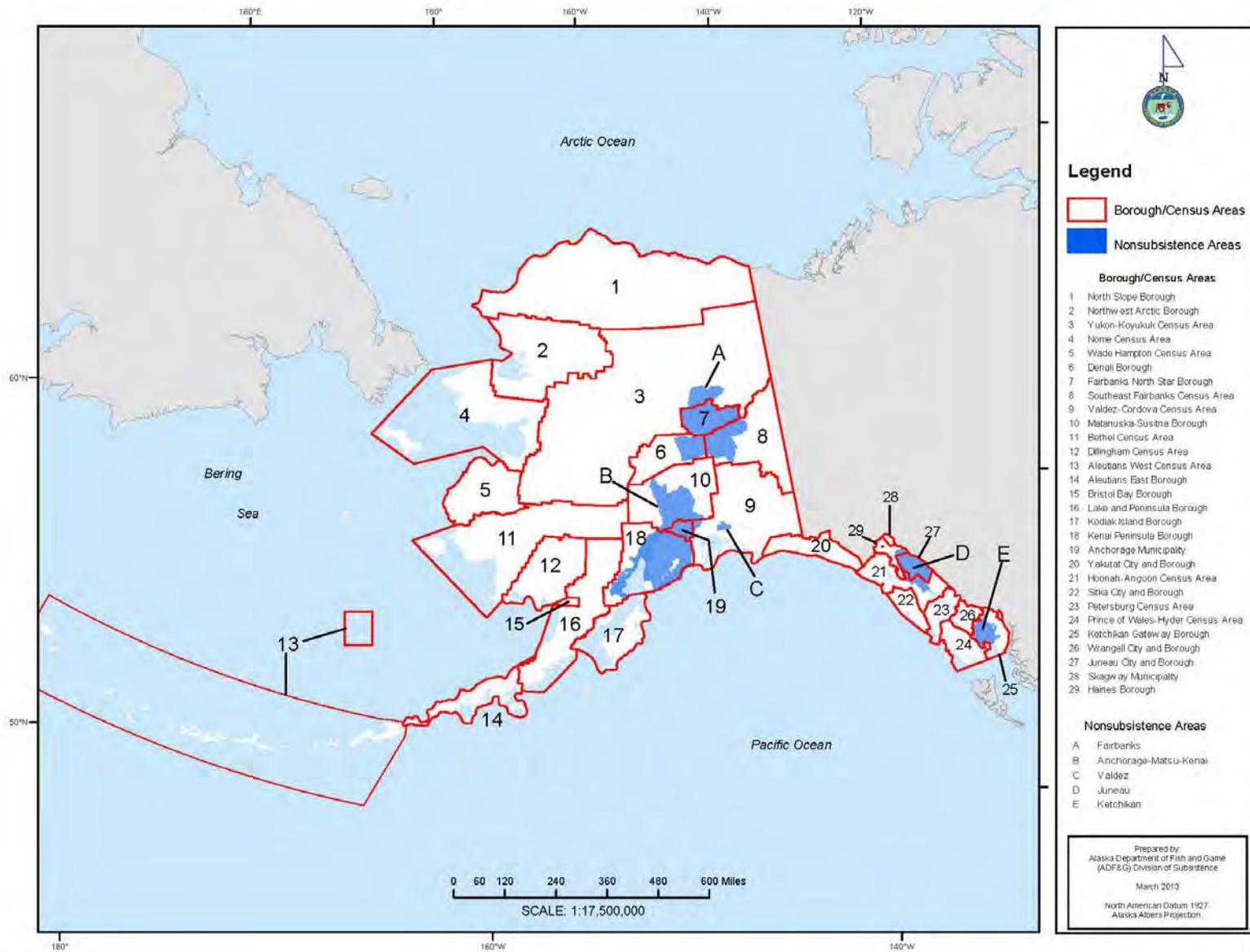


Figure 1.2-1.—Map of 5 Alaska nonsubsistence areas and borough/census areas.

1.3 THE CURRENT REPORT

The department's Division of Subsistence prepared this report to summarize available information for the 12 factors, and modeled this report after the reports the department prepared for the 1992 and 2007 Joint Board meetings. When the Joint Board last considered changes to nonsubsistence areas at its October 2007 meeting, the Department of Law advised that the Joint Board review reports and public testimony to identify new information to determine if significant changes relevant to the 12 socioeconomic characteristics had taken place (Nelson 2007; see also Alaska Department of Law 2003).

Therefore, this report focuses on updating data provided to the Joint Board in 1992 and 1993 to facilitate discussions about changes to the socioeconomic characteristics of the areas. For each existing nonsubsistence area, the formal finding has been provided regarding each of the 12 factors from 1992/1993, followed by updated information about the data cited in the finding. This report does not repeat or update all the information that was presented in previous reports, but rather tries to focus on the kinds of data the Joint Board found useful when making past determinations. There is more background information on Kodiak and Bethel because these areas have not been reviewed subsequent to the passage of the 1992 state subsistence law.

Furthermore, as part of the demographic background for each area under discussion, data are included on the percentage of the population that reported being of Alaska Native descent in federal decennial censuses. This information is not directly related to the Joint Board's identification of nonsubsistence areas. Nevertheless, the importance of subsistence fishing, hunting, and gathering in the culture and way of life of an area or community is central to the Joint Board's nonsubsistence area findings. When the Alaska Legislature adopted the current subsistence statute in 1992, it found that "customary and traditional uses of Alaska's fish and game originated with Alaska Natives, and have been adopted and supplemented by many non-Native Alaskans as well."⁴ Because traditional uses were established by Alaska Natives, when identifying the contemporary role of subsistence in an area or community, it is appropriate to consider the presence and relative size of Alaska Native populations in that area or community as part of a thorough discussion of the 12 factors. For example, trends in population size and ethnic composition can signal important changes to the economic structure of an area or community (Factor 1, Factor 2). Knowledge of the presence of an Alaska Native population in an area assists with identifying cultural values associated with subsistence use (Factor 10). Wolfe and Walker (1987) found that the percentage of a community's population that is Alaska Native is a strong predictor of fish and wildlife harvest levels. Harvest levels, levels of participation, diversity of uses, and sharing of subsistence resources are key factors for identifying nonsubsistence areas (Factor 6, Factor 8, Factor 9, Factor 12).

Finally, the 1992 department report to the Joint Board provided demographic and other information on Alaska Native communities and enclaves within proposed nonsubsistence areas. This information was an important consideration, along with other socioeconomic and resource use data, used by the Board in establishing the current nonsubsistence area boundaries.

1.4 THE FEDERAL RURAL/NONRURAL PROCESS

Consistent with the provisions of Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA), the Federal Subsistence Board (FSB) identifies rural and nonrural areas in Alaska. Only qualified residents of rural areas may participate in subsistence fisheries and subsistence hunts authorized by the FSB. The FSB applies a set of factors that is different from those that guide Joint Board nonsubsistence area determinations, and the federal process is guided more directly by the population size of areas. Nevertheless, there is overlap between the kinds of data used by the FSB and the Joint Board,

4. See 17th (1991–1992) Legislature Bills and Resolutions, House Bill 552, Section 1. Findings, Purpose, and Intent (a)(3).

and evaluating the role of subsistence hunting and fishing in particular areas and communities is a goal of both processes. Of potential interest for the Joint Board's consideration of Proposal 40 is the FSB review of the rural status of the Kodiak road area in 2007. The FSB's justification for Kodiak remaining a rural area is included below in the section on Proposal 40.

Appendix H includes the federal regulation regarding identification of rural and nonrural areas.

1.5 DATA SOURCES

The following are the primary data sources used for this report (for more background on these sources, see Appendix A):

- For demographic data, and employment and income data: federal decennial census, *American Community Survey*, and Alaska Department of Labor;
- For costs of living data: cost differential study completed for the State of Alaska by McDowell Group, Inc.; and University of Alaska Cooperative Extension Service; and
- For harvest data, sources include annual harvest monitoring programs by the department and community household survey data collected primarily by the Division of Subsistence. The report prepared by the department for the 1992 Joint Board discussion of nonsubsistence areas (ADF&G 1992) also included estimates of fish and wildlife harvests for proposed nonsubsistence areas based on annual harvest programs, including big game harvest records for 1986–1991, sport fish surveys for 1989–1991, and noncommercial (subsistence and personal use) salmon records for 1990–1991. These were the basis of an average annual harvest estimate for each area. In this current report, these estimates are called “1992 estimates.”

2 A GENERAL OVERVIEW OF SELECTED DATA

The goal of this section is to provide a comparative overview of key data for the existing and proposed nonsubsistence areas, other areas of the state, and the state overall. This section reviews population trends, costs of living and other economic data, and fish and wildlife harvest levels. The Joint Board, during previous meetings, has found this information particularly informative when deliberating on nonsubsistence area proposals. To provide context for the information, this section begins with a short review of findings of a recent study by the University of Alaska's Institute of Social and Economic Research that describes economic characteristics that are associated with significant subsistence harvests and uses of fish and wildlife in Alaska communities and areas.

2.1 FEATURES OF THE "REMOTE RURAL ECONOMY OF ALASKA"

Goldsmith (2007) describes features of the "remote rural economy of Alaska" that are instructive for the Joint Board's process of identifying nonsubsistence areas, which focuses on the significance of subsistence fishing and hunting within a broader socioeconomic context. Goldsmith (2007:3-4) defines "remote rural Alaska" as "the part of the state generally off the road and marine highway system in Northern and Western Alaska," including 8 census divisions: the Wade Hampton, Bethel, Nome, Dillingham and Yukon-Koyukuk census areas, and the North Slope, Northwest Arctic, and Lake and Peninsula boroughs. In 2000, these areas had a combined population of 60,119, including 19,105 in "regional centers" (Barrow, Kotzebue, Nome, Bethel, and Dillingham) and 41,014 in "smaller places." Alaska Natives composed 82.1% of the entire population (Goldsmith 2007:4). All of these areas are outside the nonsubsistence areas identified by the Joint Board.

This study (Goldsmith 2007:37-38) found that a key feature of Alaska's rural economy is "the central place of subsistence in the culture, economy, and way of life" of its residents, as reflected in high levels of participation in subsistence hunting, fishing, and gathering; high harvests producing a large portion of the local food supply; sharing of subsistence products through kinship and other networks; and large investments of time and money in subsistence activities, equipment, and supplies. Goldsmith (2007:45) also notes that "the existing economic indicators are inappropriate for remote rural Alaska" because "the subsistence and informal sectors [of the economy] are nowhere captured by the indicators which are designed only to measure activity in the cash sector." An example is that employment data ignore the time spent in subsistence activities. Thus, Goldsmith (2007) concluded that the significance of subsistence activities to rural Alaska and the well-being of its residents is "undervalued" by standard economic measures.

Goldsmith's analysis found that the following economic characteristics are associated with the central role of subsistence harvests in the economy of "remote rural Alaska."

- The cash economy varies significantly with the seasons (page 14).
- The federal government is the largest source of cash that flows into remote rural Alaska (page 16).
- State government spending, especially for education, is a significant source of jobs and income (page 19).
- Government transfers are a significant portion of cash income, as is the Alaska Permanent Fund dividend program (page 24).
- Most cash income can be traced to government spending and more than half of wage employment is in government and services (pages 25 and 27).
- A smaller share of the adult population is in the labor force than in urban Alaska (page 32).

- Seasonal and part-time work are important elements in the labor market, in contrast to urban Alaska where the majority of resident workers are employed year-round (page 32).
- There are higher official unemployment rates than in urban Alaska, and these rates underestimate the true employment situation (page 33).
- Most remote rural households have income from earnings (page 35). The economy is mixed in rural places and has cash and subsistence sectors.
- Cash incomes are about three-quarters of those of urban Alaska households, although regional centers have higher mean incomes (page 36).
- The official poverty measure is higher in remote rural areas (page 37).
- Household consumption patterns—how money is used—are different in rural places from urban places. A larger percentage of income is invested in subsistence gear and supplies (page 40).
- The cost of goods and services are higher than in urban Alaska (page 41).
- Infrastructure in rural Alaska (such as schools, health care facilities, electric, water, sewer and solid waste facilities, transportation, and telecommunications) has improved but is still inferior to urban areas (page 42).

2.2 DEMOGRAPHIC PATTERNS

In 1990, the 5 current nonsubsistence areas had a total population of 432,656. This was 79% of the state's total population. In 2010, the population of these 5 areas had increased by 36% to 586,887, representing 83% of the state's total. The population of Alaska increased by 29% during this 20-year period (figures 2.2-1, 2.2-2, and 2.2-3).

The population of areas outside the nonsubsistence areas increased by 5% from 1990 (117,314) to 2010 (121,170) and for those areas the percentage of the state's total population decreased from 21% to 17%.

There were some differences in population trends among the 5 nonsubsistence areas. From 1990 to 2010, the population of the Anchorage-Matsu-Kenai Nonsubsistence Area (NSA) grew by 42% and the Fairbanks NSA by 25%. The Juneau NSA grew at a slower rate, with a 17% increase. The other 2 nonsubsistence areas had slight declines in population: -3% for Ketchikan and -2% for Valdez.

Regarding population trends for the 2 proposed new nonsubsistence areas, from 1990 to 2010 Bethel grew by 30%, which is about the same rate as the statewide population, while the Kodiak road system area increased just 4%.

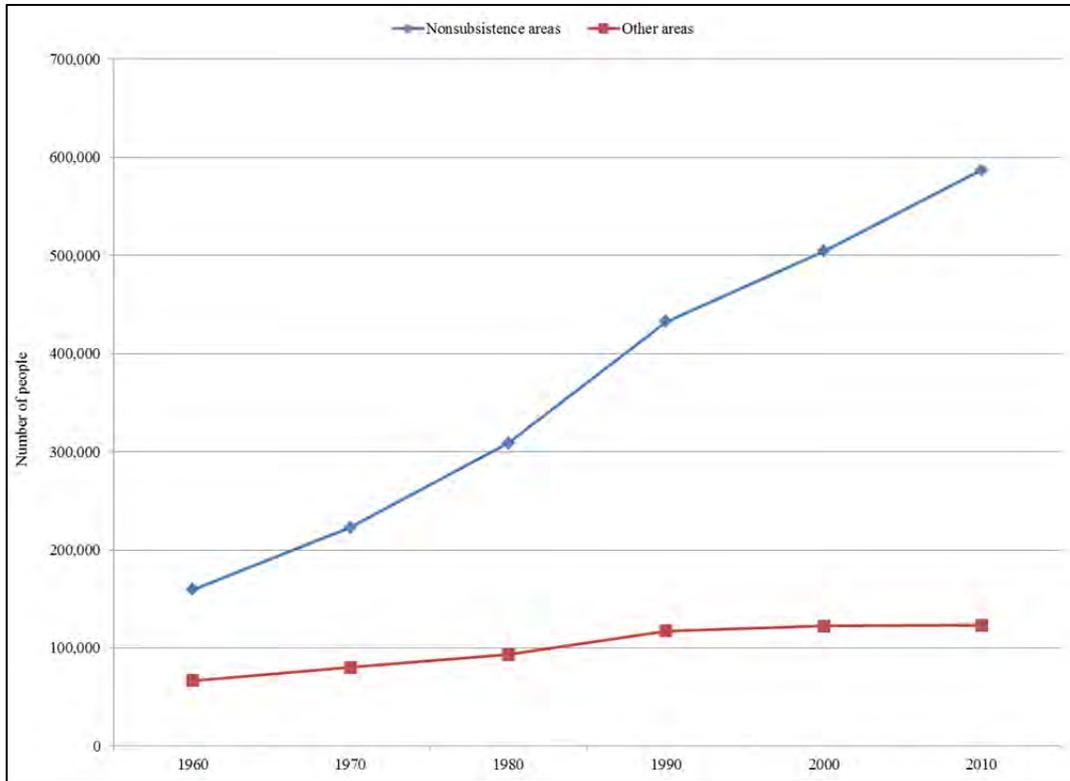


Figure 2.2-1.—Population of nonsubsistence areas and other Alaska areas, 1960–2010.

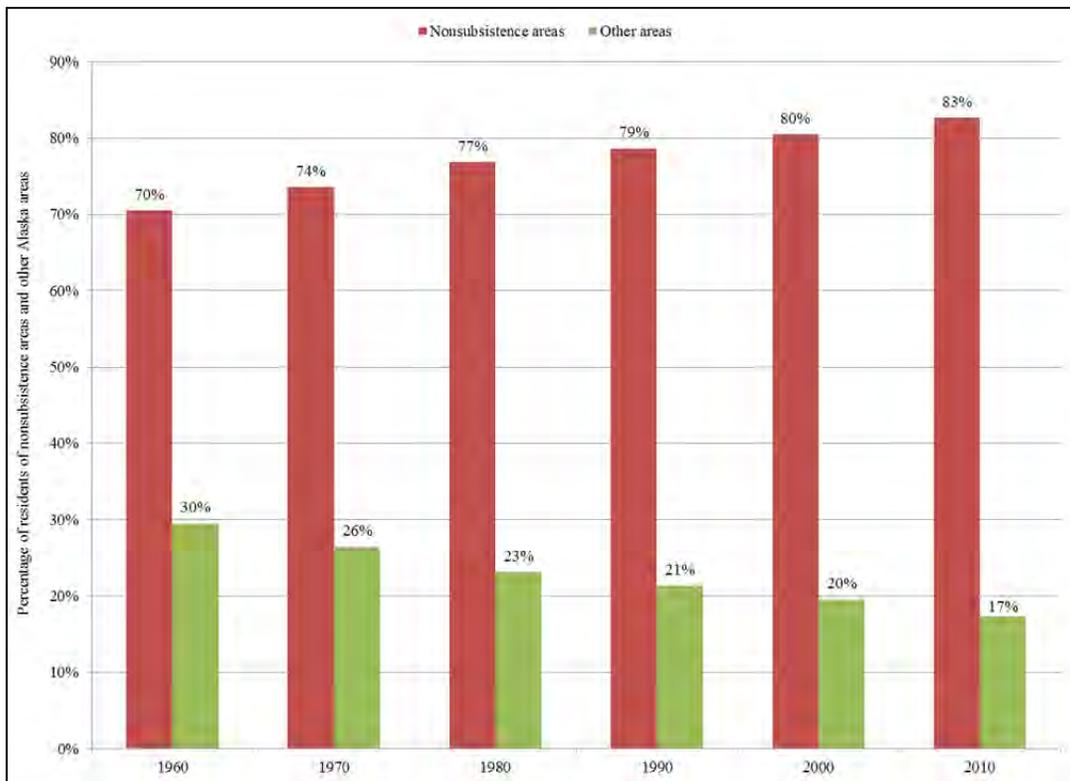


Figure 2.2-2.—Percentage of Alaska population living in nonsubsistence areas and other Alaska areas, 1960–2010.

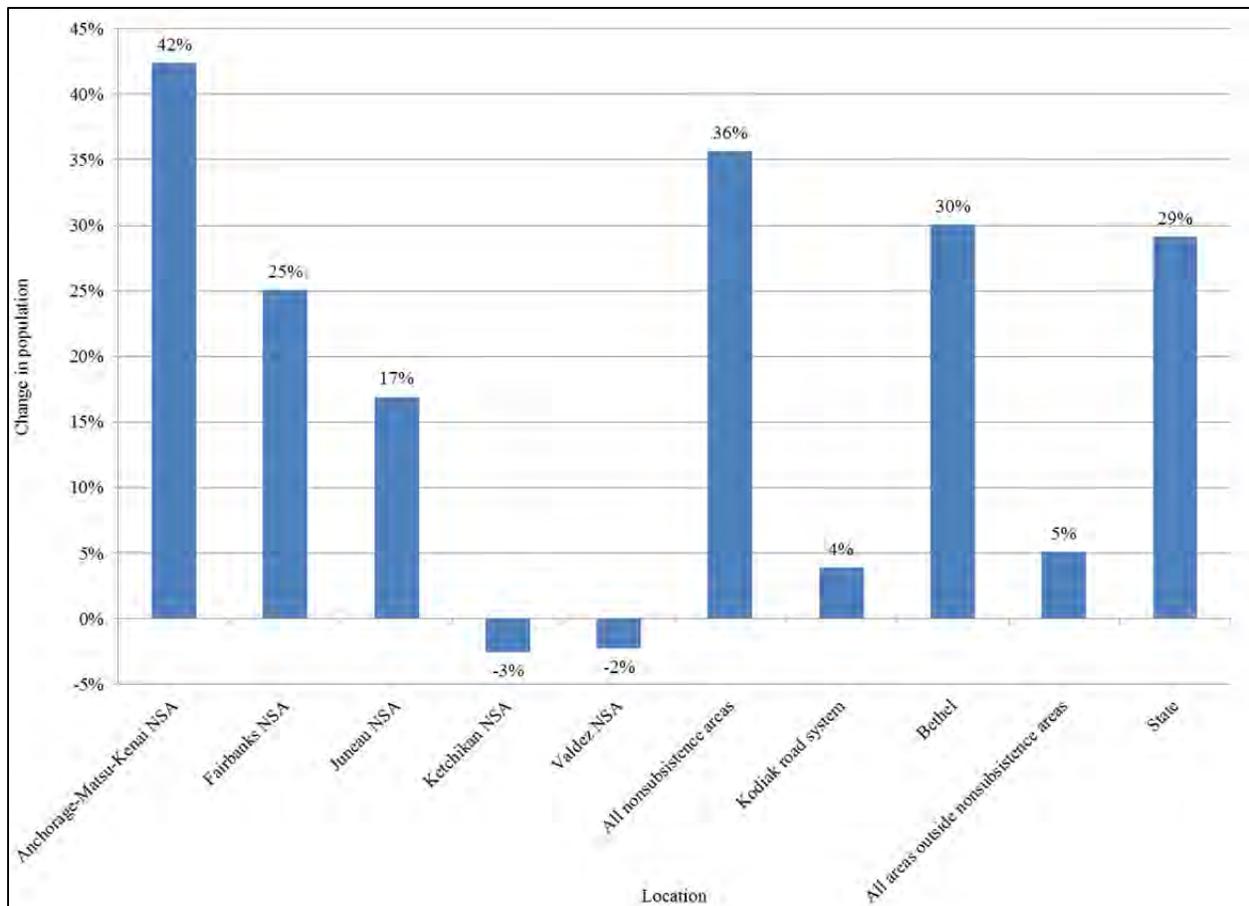


Figure 2.2-3.—Change in population, 2010 compared to 1990.

2.3 CASH INCOMES

According to data from the *American Community Survey* (ADLWD 2013c; see also Fried 2012), the annual average per capita income in Alaska during the 5-year period 2007–2011 was \$31,944 (Figure 2.3-1). Incomes in most nonsubsistence areas exceeded or were nearly equivalent to this statewide average. Incomes in the Matanuska-Susitna (Mat-Su) Borough and the Southeast Fairbanks Census Area, only portions of which are within nonsubsistence areas, were about 10% below the statewide average. For the entire Anchorage-Mat-su-Kenai NSA, the per capita income was \$32,610 (Figure 2.3-2).

Poverty rates are the percentage of the population in a given place living in households with cash incomes below an income threshold based on the size and composition of the household. These thresholds are modified annually based on changes in the costs of goods and services. In 2011, the poverty threshold for a family of 4 with 2 children under 18 years of age was \$22,811 (U.S. Census Bureau 2012).

Figure 2.3-3 compares poverty rates for 1989 (used in the 1992 report to the Joint Board, except in that report, rates were adjusted to 125% to account for Alaska’s higher costs of living; that adjustment has been eliminated here for this comparison) with the most recent data from the *American Community Survey* (a 5-year average for 2007–2011). Poverty rates dropped for the state overall from 10.0% in 1989 to 9.5% on average for 2007–2011. Poverty rates also dropped for the Municipality of Anchorage, Fairbanks North Star Borough, and the Mat-Su Borough. Poverty rates increased slightly for the Juneau Borough and Kenai Peninsula Borough, but remained below the statewide average. Poverty rates increased more notably, from 5.3% to 9.6% for Ketchikan Gateway Borough, although the recent rate did

not differ significantly from the statewide average. Poverty rates for Valdez for 1989 are not available from the 1992 report, but at 5.1% for 2007–2011 Valdez’s rates were well below the rate of Alaska overall. For the 2 proposed new nonsubsistence areas, Bethel’s rate of 8.1% for 2007–2011 was below the statewide average while Kodiak City’s poverty rate, at 14.6%, was notably higher than the state’s average.

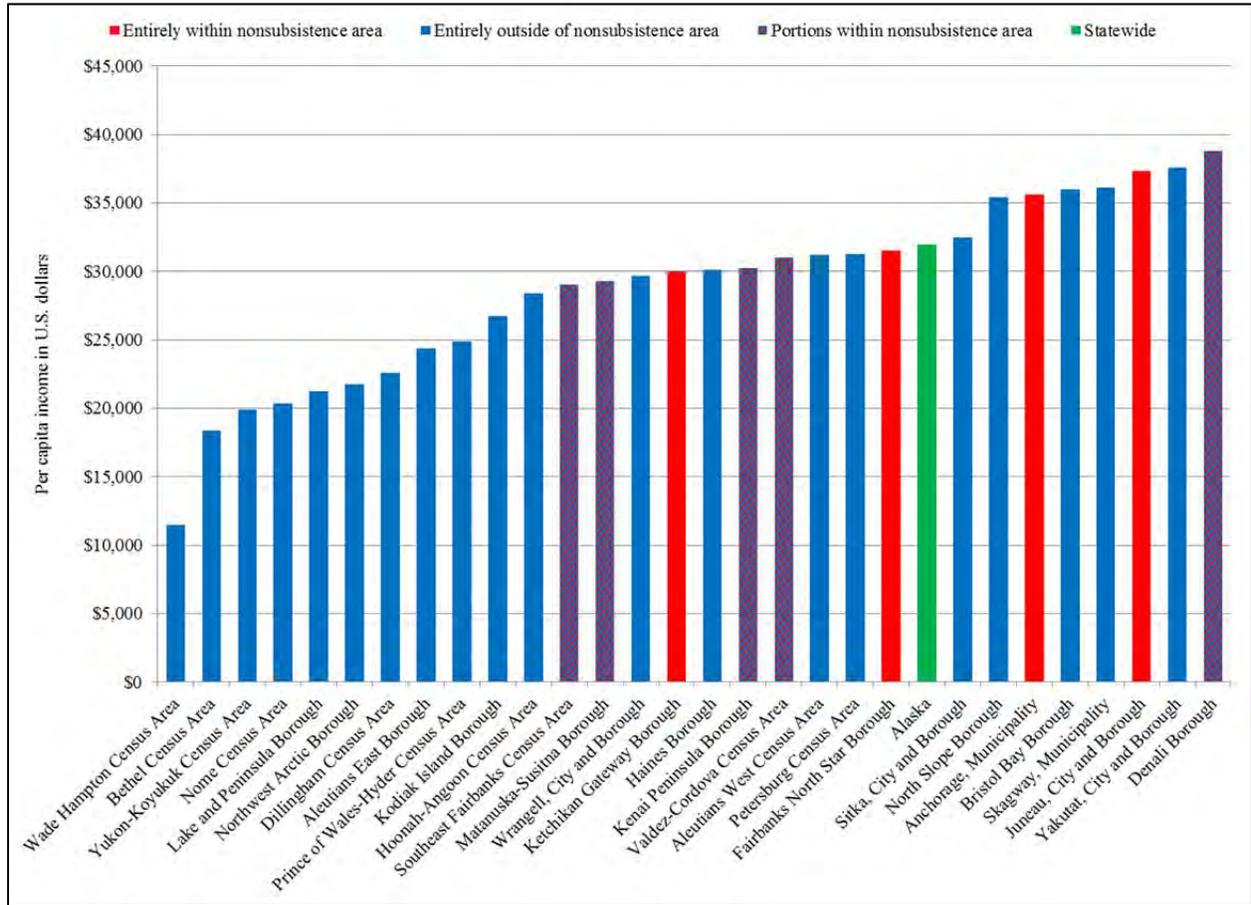


Figure 2.3-1.—Per capita income by census area, 2007–2011 annual average

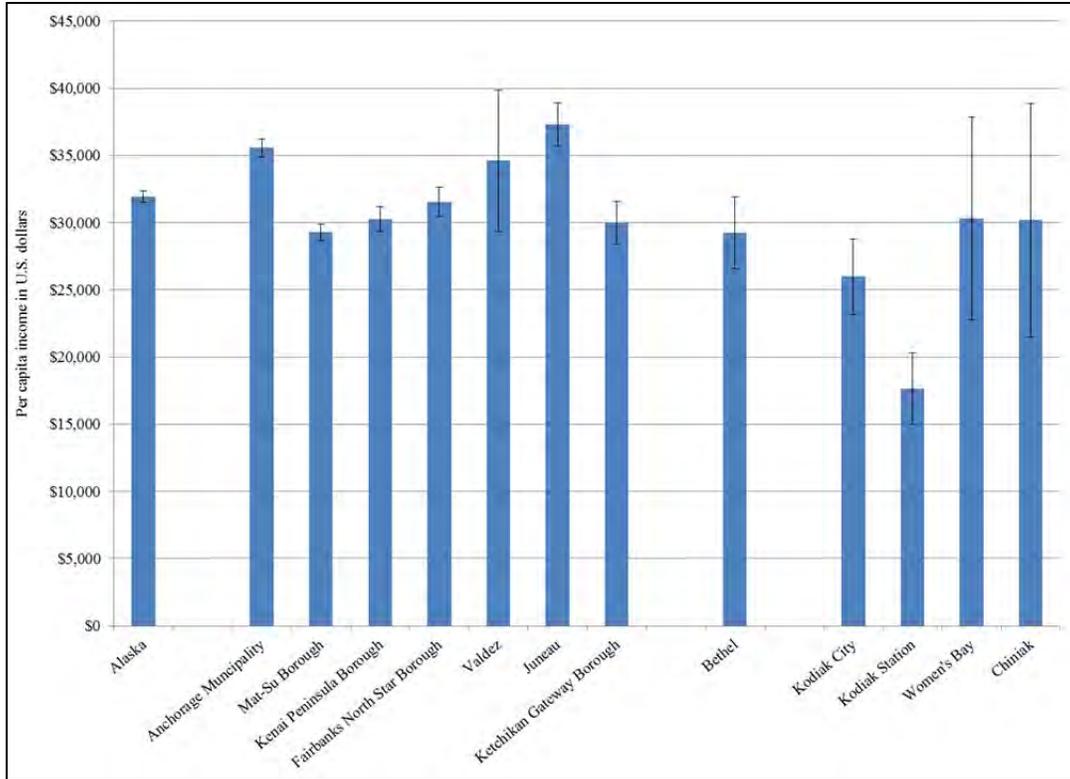


Figure 2.3-2.—Per capita income, 2011 inflation-adjusted dollars, 2007–2011 by Alaska census area.

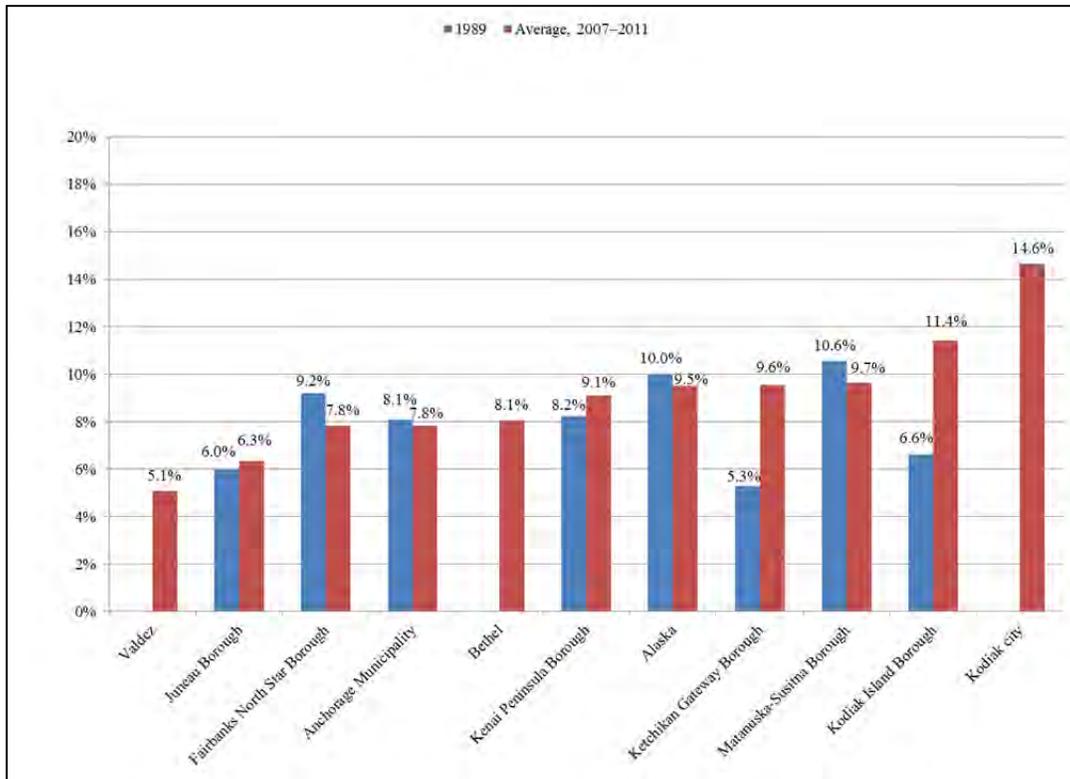


Figure 2.3-3.—Percentage of population living below poverty threshold, 1989 and annual average 2007–2011.

2.4 UNEMPLOYMENT RATES

Table 2.4-1 shows annual unemployment rates (not seasonally adjusted) for Alaska census areas for 2003–2012 as reported by the Alaska Department of Labor (2013d). The Alaska Department of Labor (2013e) notes:

The official definition of unemployment excludes anyone who has not made an active attempt to find work in the four-week period up to and including the week that includes the 12th of the reference month. Many in rural Alaska do not meet the definition because they have not conducted an active job search due to the scarcity of employment opportunities.

Figure 2.4-1 illustrates unemployment rates for each census area for 2012. The 2012 annual unemployment rate for Alaska was 7%. Rates for the 4 census areas that are entirely within nonsubsistence areas were below the state average, while rates for census areas that are partially within the nonsubsistence areas ranged from 8% (Mat-Su Borough) to 11% (Southeast Fairbanks Census Area). Figure 2.4-2 illustrates the recent 10-year (2003–2012) pattern of unemployment rates for census areas entirely or partially within nonsubsistence areas.

Table 2.4-1.—Annual unemployment rates (not seasonally adjusted) for Alaska census areas, 2003–2012.

Area	Annual unemployment rate									
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Aleutians East Borough	9.6	8.6	9.6	8.4	7.7	8.3	9.8	10.4	11.3	12.6
Aleutians West Census Area	6.3	6.4	5.7	5.6	5.2	5.6	7.0	6.9	7.8	9.1
Anchorage, Municipality	6.2	5.9	5.5	5.2	4.9	5.2	6.5	6.8	6.1	5.4
Bethel Census Area	12.0	12.6	12.8	13.0	12.3	13.3	14.1	14.9	15.0	15.2
Bristol Bay Borough	6.1	6.3	5.9	5.3	4.5	4.7	4.8	4.8	4.1	4.4
Denali Borough	8.6	7.9	6.6	5.7	6.0	5.9	8.2	8.9	10.1	10.2
Dillingham Census Area	11.0	10.8	10.7	9.4	8.8	9.0	10.2	10.1	10.4	9.6
Fairbanks North Star Borough	6.9	6.4	5.8	5.6	5.3	5.8	7.1	6.9	6.7	6.2
Haines Borough	11.5	9.9	9.0	7.9	7.1	8.5	9.1	9.1	8.3	8.1
Hoonah-Angoon Census Area ^a								15.8	16.5	15.3
Juneau, City and Borough	5.7	5.8	5.3	4.8	4.3	4.6	5.9	5.8	5.4	4.9
Kenai Peninsula Borough	10.0	9.5	8.7	8.1	7.6	7.8	9.8	10.0	9.4	8.4
Ketchikan Gateway Borough	8.0	7.4	6.7	6.0	5.4	5.7	7.1	7.7	7.3	6.8
Kodiak Island Borough	9.6	8.7	8.3	7.3	6.0	6.6	7.1	7.2	7.1	6.2
Lake and Peninsula Borough	8.0	9.8	7.3	5.9	5.3	6.6	8.1	8.0	8.0	7.5
Matanuska-Susitna Borough	8.6	8.3	7.6	7.4	6.9	7.3	8.9	9.1	8.8	8.0
Nome Census Area	10.7	11.5	12.4	11.9	10.7	10.0	11.6	12.7	12.4	11.6
North Slope Borough	10.1	10.2	9.0	6.7	5.2	4.1	4.7	5.9	5.4	5.3
Northwest Arctic Borough	13.0	13.2	11.9	11.2	10.4	11.1	11.9	13.1	15.0	15.1
Petersburg Census Area ^a									10.9	10.5
Prince of Wales-Hyder Census Area ^a									15.3	14.1
Sitka, City and Borough	6.1	6.3	5.5	5.3	4.9	5.6	6.2	6.4	6.2	5.6
Skagway, Municipality ^a								13.5	14.4	11.9
Southeast Fairbanks Census Area	12.7	11.9	10.5	10.6	8.4	8.5	9.6	10.8	11.1	11.2
Valdez-Cordova Census Area	9.9	9.9	9.5	8.4	8.1	8.1	8.5	8.9	9.2	8.9
Wade Hampton Census Area	17.7	20.1	20.9	20.5	19.7	19.8	20.8	20.3	20.7	21.5
Wrangell, City and Borough ^a									8.7	8.8
Yakutat, City and Borough	11.1	10.7	10.6	9.6	6.5	7.2	11.5	10.7	10.3	9.3
Yukon-Koyukuk Census Area	13.3	11.9	11.7	12.9	13.3	13.6	14.0	14.9	15.7	14.7
Alaska total	7.7	7.4	6.9	6.5	6.1	6.4	7.7	8.0	7.6	7.0

Source Alaska Department of Labor and Workforce Development, Research and Analysis Section.

- a. A change in the way the labor force statistics are calculated for boroughs and census areas makes data prior to 2000 not comparable with later data.

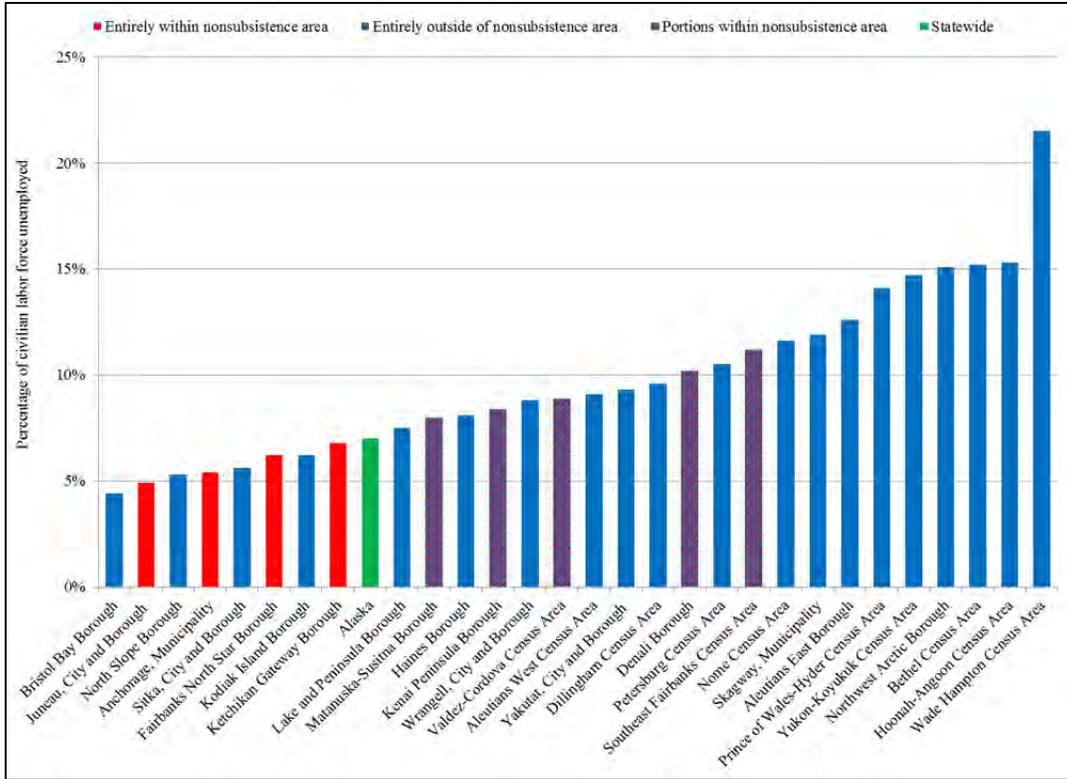


Figure 2.4-1.—Annual unemployment rates, Alaska census areas, 2012.

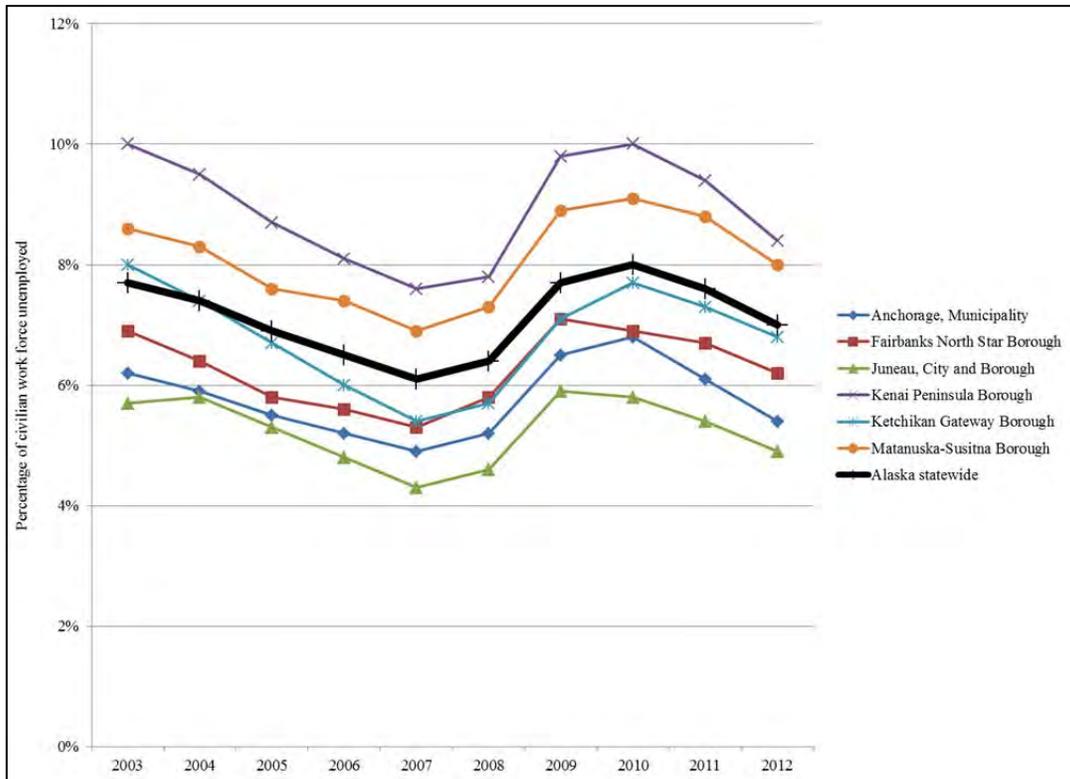


Figure 2.4-2.—Annual unemployment rates, selected Alaska census areas, 2003–2012.

2.5 COSTS OF LIVING AND COSTS OF FOOD

The 2008 *Alaska Geographic Differential Study* (McDowell Group 2009) provides comparisons of costs of living in selected Alaska areas and communities with estimates for 1985 (McDowell Group and Alaska Attitudes 1985), which is when the previous comprehensive study using similar methods and sample areas (election districts) was completed. The study (McDowell Group 2009:3) noted:

... communities outside Alaska's Railbelt and off the Alaska Road system have seen greater increases in living costs relative to Anchorage. The most remote districts have experienced the largest relative increases. The most populated areas outside of Anchorage, including Mat-Su, the Kenai/Soldotna area, and the Fairbanks have differentials very similar to those identified in the 1985 study.

Figure 2.5-1 shows cost of living differentials for total expenses, food, and fuel for nonsubsistence areas or portions of these areas that were included in the 2008 study, as well as values for the 2 proposed nonsubsistence areas of Kodiak City and Bethel. For comparison, the study findings for the sample block called "Southwest small communities" are also shown. The communities in this sample block were Aniak, Anvik, Chignik, Emmonak, Goodnews Bay, Iliamna, King Salmon, Port Moller, St. Mary's, and Unalakleet (McDowell Group 2009:34).

The University of Alaska's Cooperative Extension Service conducts quarterly surveys of the cost of food in selected Alaska communities.⁵ Relative to Anchorage, costs of food in 2011 compared to 2001 had declined in the larger population centers of Kenai-Soldotna, Homer, Juneau, Fairbanks, and Palmer-Wasilla (Figure 2.5-2). Relative costs increased in Valdez and Ketchikan. Since 1991, costs of food in Bethel and Kodiak have been substantially higher than those in Anchorage and most communities within the current nonsubsistence areas.

5. University of Alaska Cooperative Extension Service Alaska food cost survey data by year are available online: <http://www.uaf.edu/ces/hhfd/fcs/>.

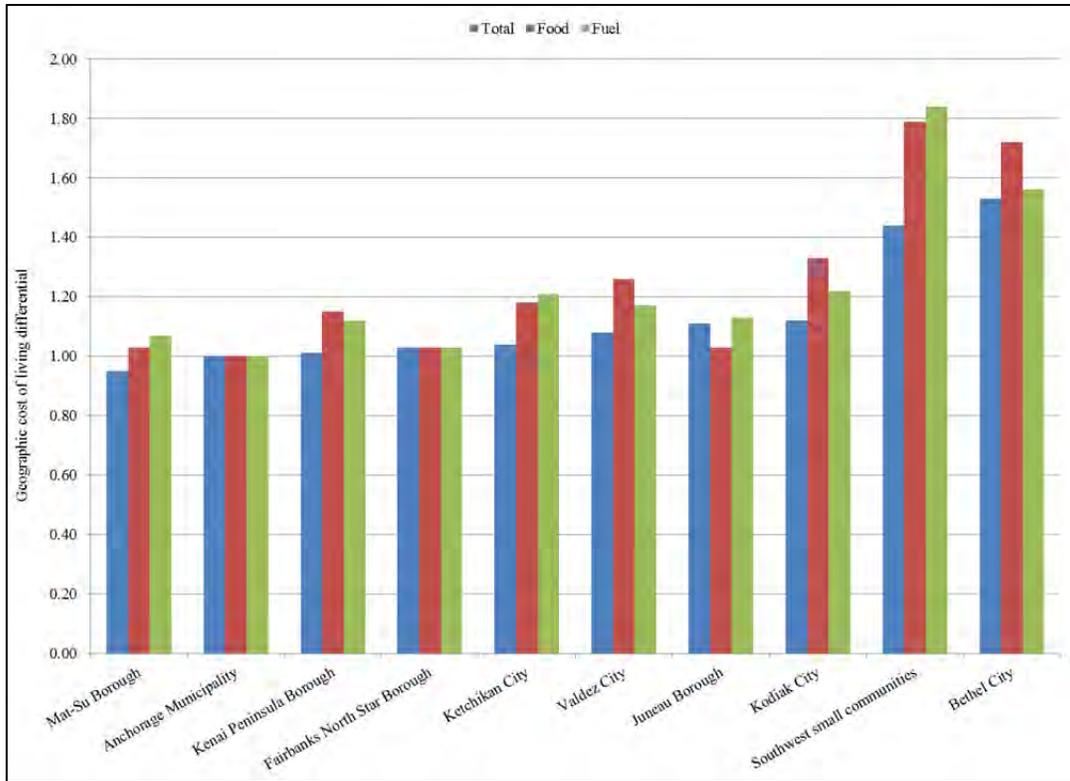


Figure 2.5-1.–Geographic cost differentials in 2008.

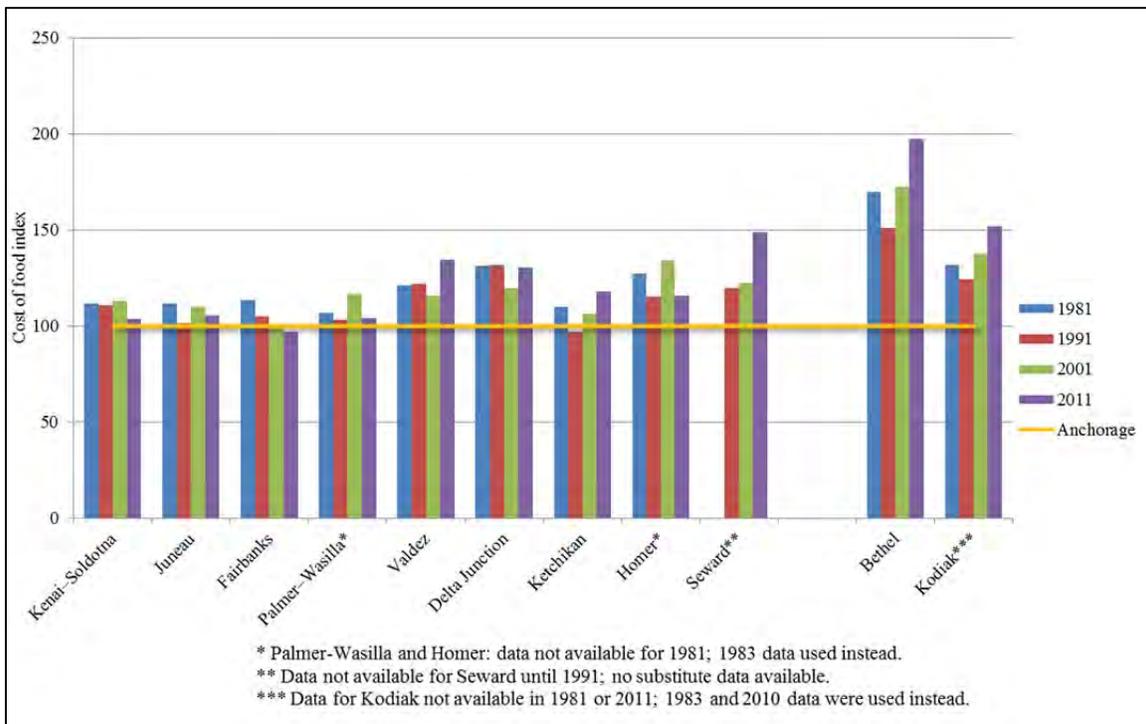


Figure 2.5-2.–Cost of food index for nonsubsistence areas and proposed nonsubsistence area places, referenced from Anchorage, 1981–2011.

2.6 STATEWIDE HARVEST PATTERNS, 2007–2011.

For the 5-year period 2007–2011, estimated annual fish and wildlife harvests for the nonsubsistence areas ranged from 17 lb per person in Anchorage to 45 lb per person in Valdez (Figure 2.6-1). For all nonsubsistence areas combined, the harvest was about 22 lb per person per year. Estimated harvests in areas outside the nonsubsistence areas averaged about 298 lb per person per year in 2011; harvests ranged from 159 lb per person in the Kodiak Island Borough to 435 lb per person in Arctic Alaska (the Norton Sound area, the Northwest Arctic Borough, and the North Slope Borough).

According to the U.S. Department of Agriculture (USDA), in 2009 (the latest year available), on average, Americans consumed about 218 lb per person of meat, fish, and poultry. Figure 2.6-2 shows the percentage of this level of consumption produced by estimated fish and wildlife harvests in nonsubsistence areas, other Alaska areas, and the proposed nonsubsistence areas of Bethel and Kodiak.

The U.S. Department of Agriculture recommends that adults consume 51 grams of protein per day. Figure 2.6-3 shows the percentage of this recommended protein requirement produced by fish and wildlife harvests in nonsubsistence areas, other Alaska areas, and the proposed nonsubsistence areas of Bethel and Kodiak.

The USDA recommends that adults consume 2,250 kilocalories of food per day. Figure 2.6-4 shows the percentage of this recommended caloric requirement produced by fish and wildlife harvests in nonsubsistence areas, other Alaska areas, and the proposed nonsubsistence areas of Bethel and Kodiak.

For all nonsubsistence areas combined, the composition of the annual fish and wildlife harvest from 2007–2011 was 10 lb per person of salmon (46% of total harvests), 5 lb per person of other fish (23%), 7 lb per person of land mammals (big game only) (30%), and less than 1 lb per person of other resources (shellfish and marine mammals) (1%). Comprehensive harvest estimates of small game, birds and eggs, and wild plants are not available for most communities in the nonsubsistence areas, but these likely represent only a very small portion of the total wild food harvest by residents of these areas. For other areas of Alaska combined, the composition was 98 lb per person of salmon (33%), 68 lb per person of land mammals (including small game) (23%), 59 lb per person of other fish (20%), 43 lb per person of marine mammals (14%), 11 lb per person of wild plants (4%), 10 lb per person of shellfish (3%), and 9 lb per person of birds and eggs (3%) (Figure 2.6-5). Salmon make up the largest portion of most Alaska communities' and regions' harvests of fish and wildlife. (An exception is Arctic Alaska, where marine mammals rank first.) Figure 2.6-6 shows the composition of fish and wildlife harvests by category for each nonsubsistence area. More detail will appear in individual sections on each area.

Noncommercial harvests of salmon fall into 3 categories based on regulations: sport, personal use, and subsistence. From 2007 to 2011, sport fisheries provided 47% of the salmon harvested by residents of nonsubsistence areas (as estimated in usable pounds), followed by personal use fisheries (45%) and subsistence fisheries (7%). In Valdez, Juneau, and Ketchikan, sport fisheries provided 60% or more of the salmon. Personal use fisheries provided about 45–50% of the salmon in the other areas (Figure 2.6-7).

Table 2.6-1 shows the number of subsistence and personal use salmon permits held by residents of Alaska nonsubsistence areas in 2011, along with estimated total salmon harvests in these fisheries and the average harvest per permit.

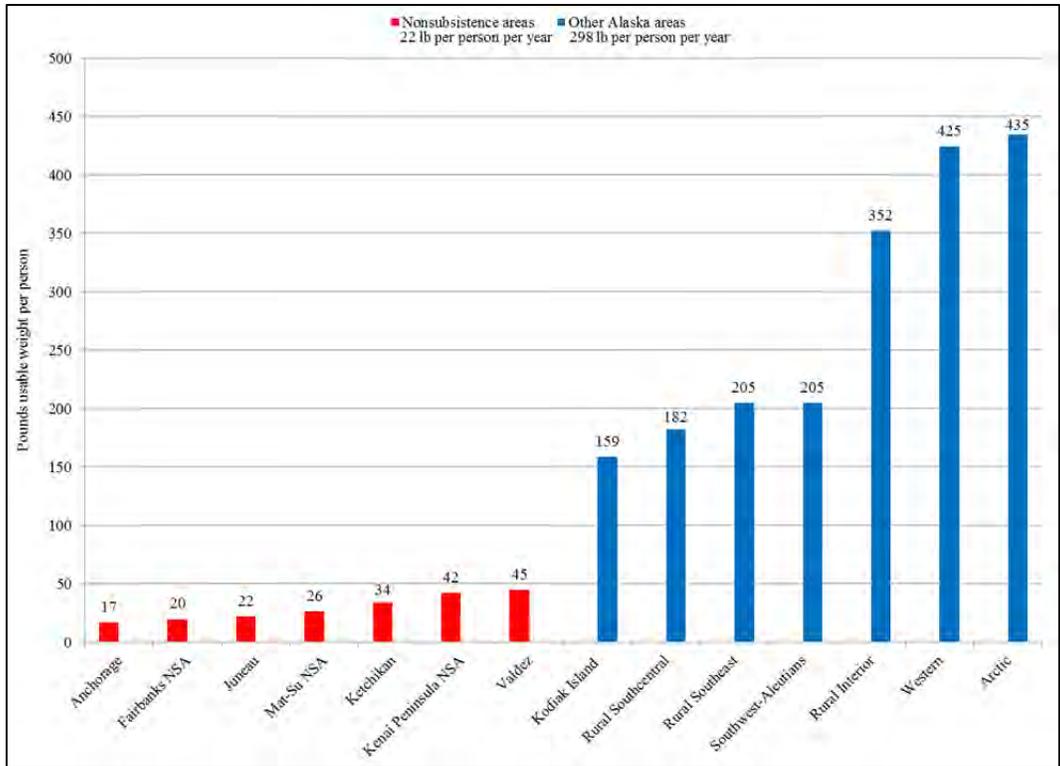


Figure 2.6-1.—Wild food harvests in Alaska by area, pounds usable weight per person per year, 2007–2011.

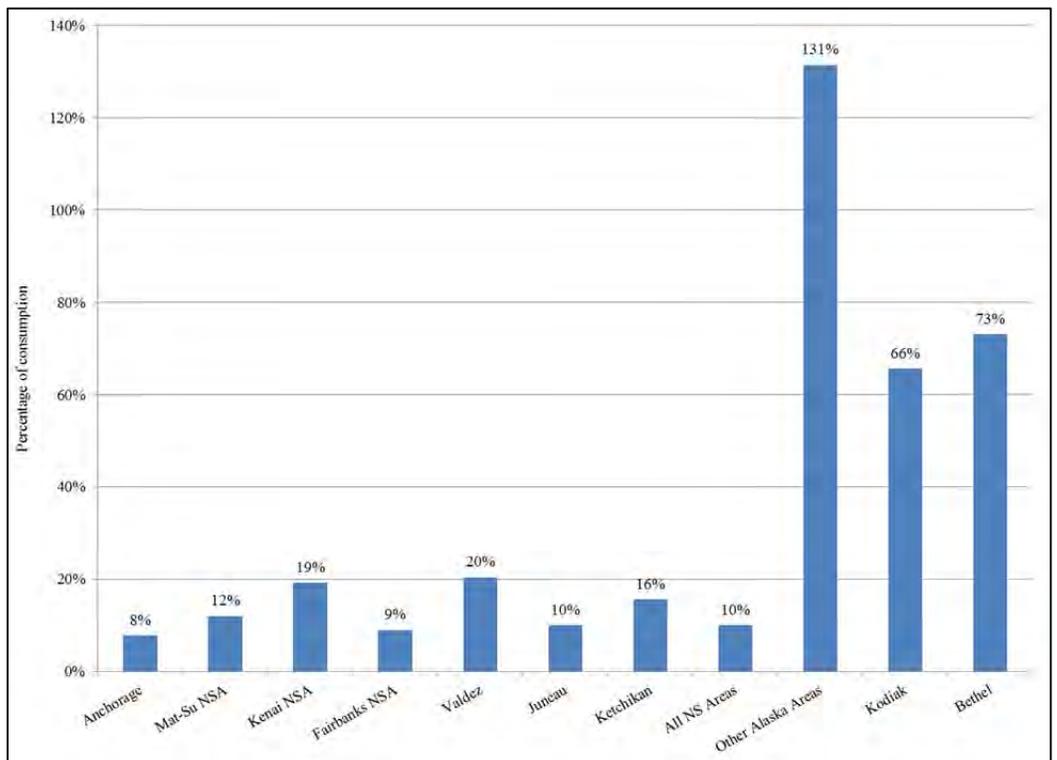


Figure 2.6-2.—Percentage of average American consumption of meat, fish, and poultry produced by fish and wildlife harvests.

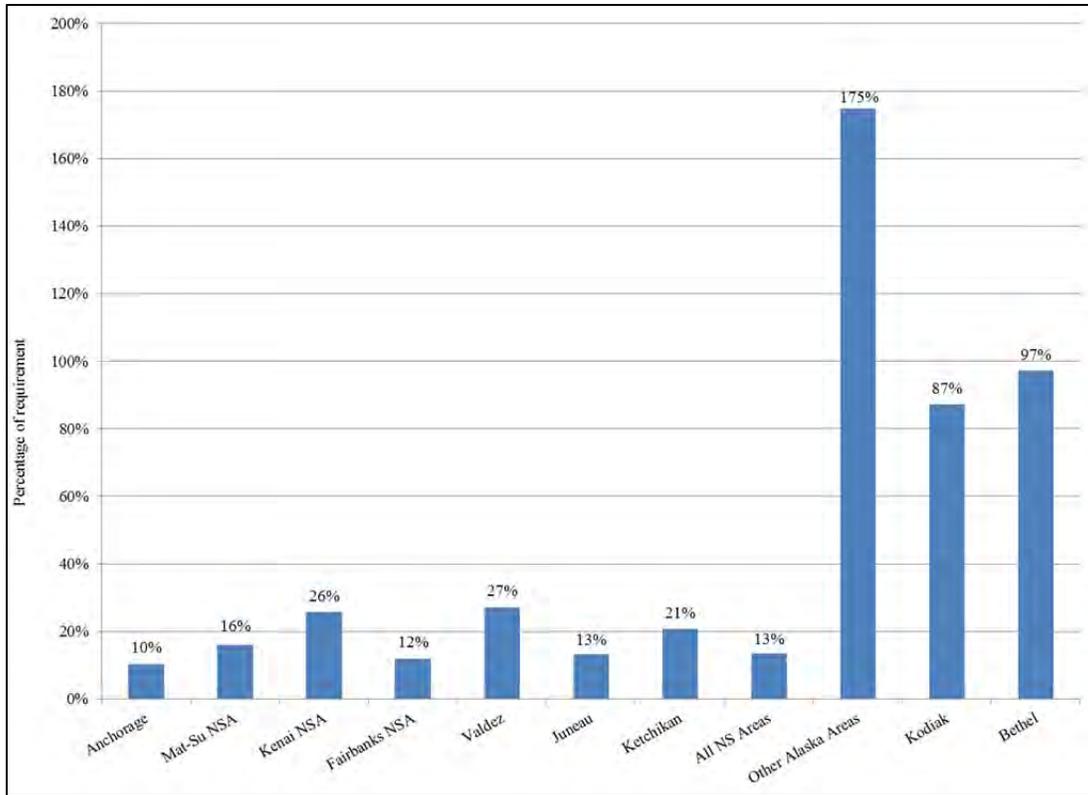


Figure 2.6-3.—Percentage of protein requirements produced by fish and wildlife harvests.

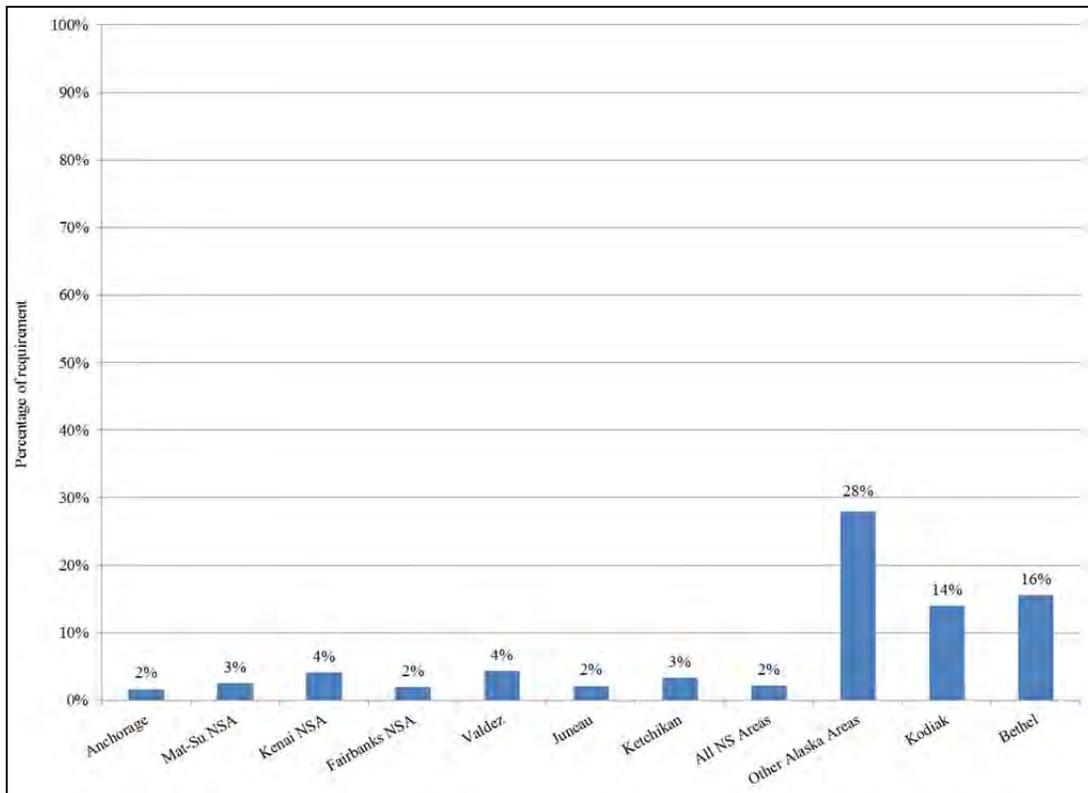


Figure 2.6-4.—Percentage of caloric requirements produced by fish and wildlife resources.

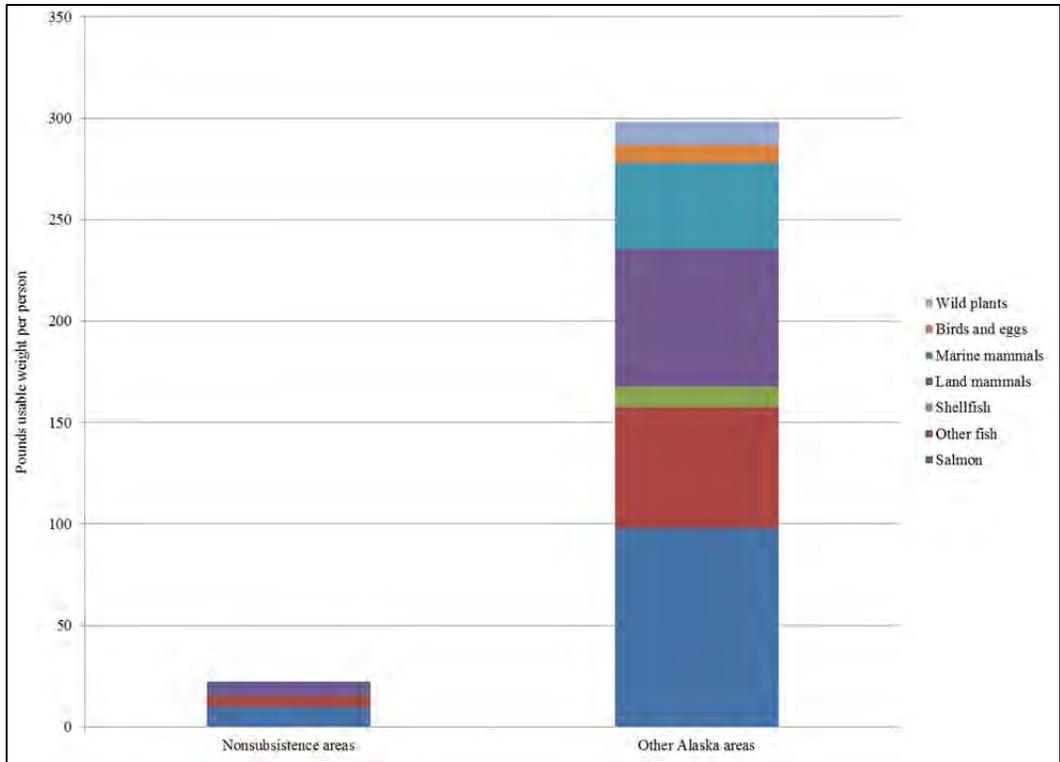


Figure 2.6-5.—Wild resource harvests, nonsubsistence areas and other Alaska areas, pounds usable weight per person by resource category, 2007–2011.

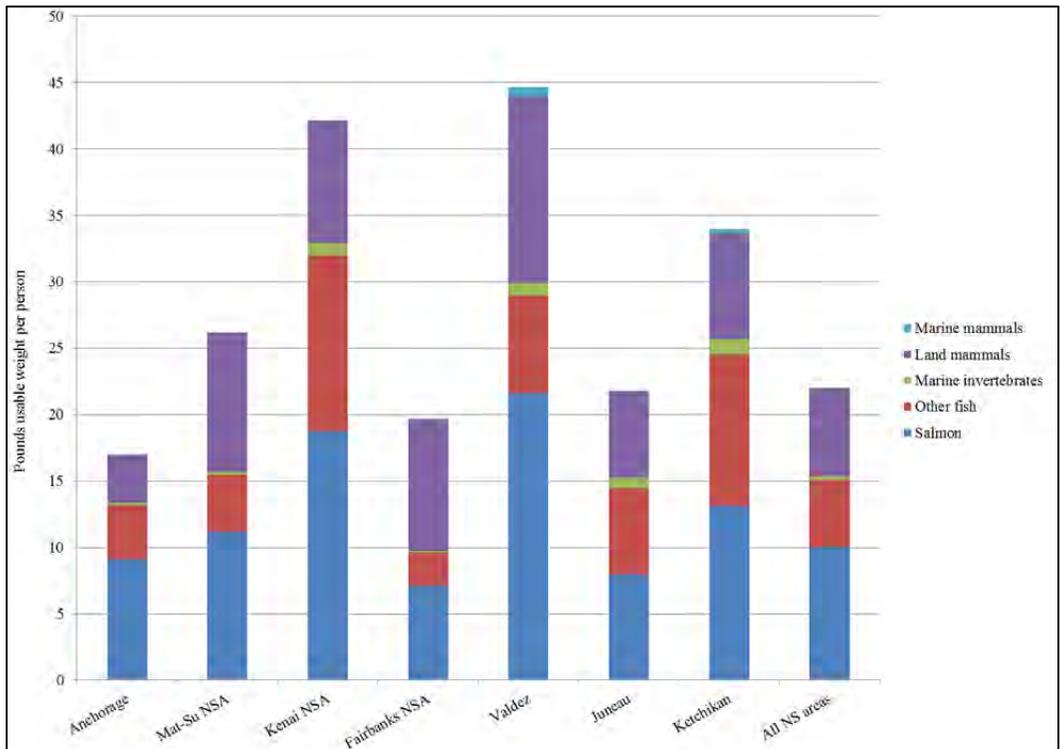


Figure 2.6-6.—Harvests for home use by residents of Alaska nonsubsistence areas by category, pounds usable weight per person, annual average for 2007–2011.

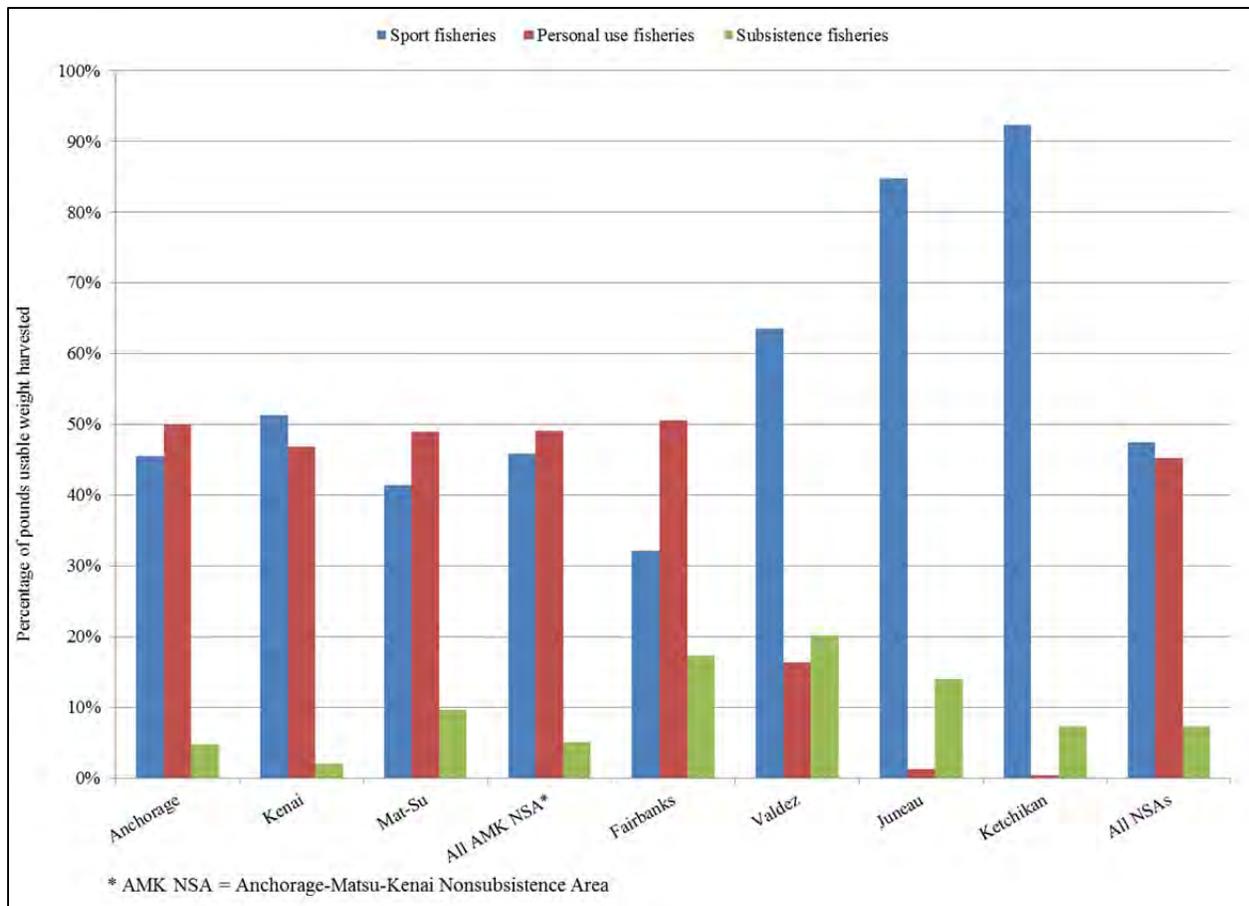


Figure 2.6-7.—Salmon harvest for home use by type of fishery, residents of nonsubsistence areas, pounds usable weight, 5-year average for 2007–2011.

Table 2.6-1.—Number of permits issued and returned and estimated harvests, subsistence and personal use salmon fisheries, Alaska nonsubsistence area residents, 2011.

	Number of permits		Estimated number of salmon	
	Issued	Returned	Total harvested	Harvest per permit
Anchorage Municipality	22,482	17,885	414,130	18.4
Matanuska-Susitna Borough	8,121	6,602	161,483	19.9
Kenai Peninsula Borough	7,359	6,112	131,601	17.9
Fairbanks Nonsubsistence Area	6,117	5,119	127,504	20.8
Valdez Nonsubsistence Area	310	257	6,520	21.0
Juneau Nonsubsistence Area	755	640	7,246	9.6
Ketchikan Nonsubsistence Area	317	284	3,416	10.8

Source ADF&G Alaska Subsistence Fisheries Database.

3 PROPOSAL 38. REPEAL EXISTING NONSUBSISTENCE AREAS.

3.1 ANCHORAGE-MATSU-KENAI NONSUBSISTENCE AREA

3.1.1 Background

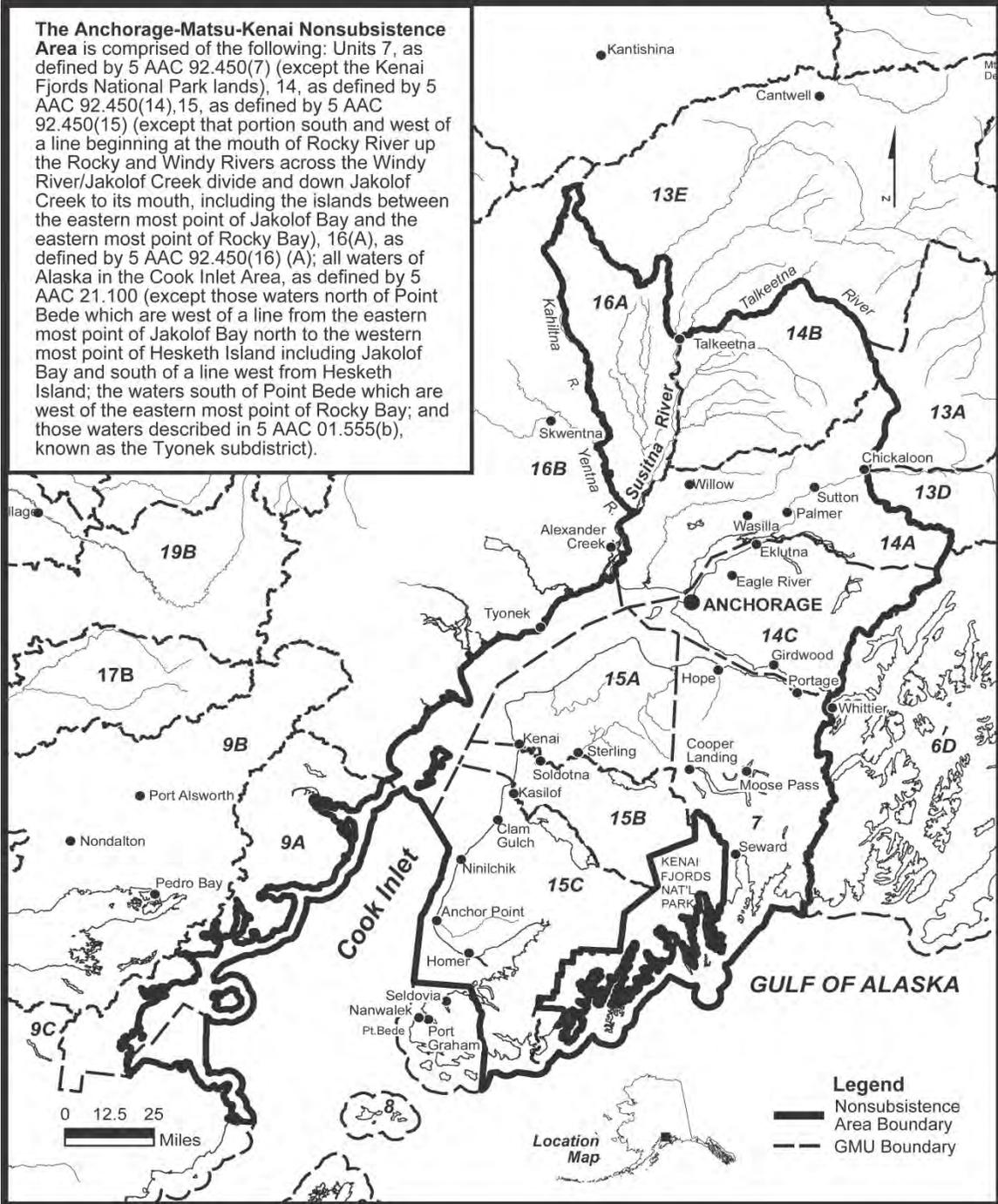
The Anchorage-Matsu-Kenai Nonsubsistence Area includes the entire Anchorage Municipality; most of the Mat-Su Borough except those portions in GMU 13 and 16B; and most of the Kenai Peninsula Borough except areas around the communities of Seldovia, Port Graham, and Nanwalek on the lower Kenai Peninsula, the Kenai Fjords National Park, and the west side of Cook Inlet (Figure 3.1-1). The regulatory definition is as follows:

5 AAC 99.015 (a)(3) The Anchorage-Matsu-Kenai Nonsubsistence Area is comprised of the following: Units 7, as defined by 5 AAC 92.450(7) (except the Kenai Fjords National Park lands), 14, as defined by 5 AAC 92.450(14), 15, as defined by 5 AAC 92.450(15) (except that portion south and west of a line beginning at the mouth of Rocky River up the Rocky and Windy Rivers across the Windy River/ Jakolof Creek divide and down Jakolof Creek to its mouth, including the islands between the eastern most point of Jakolof Bay and the eastern most point of Rocky Bay), 16(A), as defined by 5 AAC 92.450(16)(A); all waters of Alaska in the Cook Inlet Area as defined by 5 AAC 21.100 (except those waters north of Point Bede which are west of a line from the eastern most point of Jakolof Bay north to the western most point of Hesketh Island including Jakolof Bay and south of a line west of Hesketh Island; the waters south of Point Bede which are west of the eastern most point of Rocky Bay; and those waters described in 5 AAC 01.555(b), known as the Tyonek subdistrict).

In a further ruling in *State of Alaska et al. v. Kenaitze Indian Tribe et al* (Supreme Court No. S-10358), on January 16, 2004, the Supreme Court rejected a challenge to the boundaries of the Anchorage-Matsu-Kenai Nonsubsistence Area as established by the Joint Board in 1992. In its ruling, the Supreme Court found that the Joint Board acted reasonably and not arbitrarily, and acted consistently with the authorizing statutory provision for nonsubsistence areas—AS 16.05.258(c)—when it included the entire Anchorage Municipality, most of the Kenai Peninsula Borough, and much of the Mat-Su Borough in the nonsubsistence area. The court (page 23) stated that “based on our review of the record, we conclude that the joint boards gave a hard look at the evidence” when it acted to establish the nonsubsistence area.

Anchorage Nonsubsistence Area

The Anchorage-Matsu-Kenai Nonsubsistence Area is comprised of the following: Units 7, as defined by 5 AAC 92.450(7) (except the Kenai Fjords National Park lands), 14, as defined by 5 AAC 92.450(14), 15, as defined by 5 AAC 92.450(15) (except that portion south and west of a line beginning at the mouth of Rocky River up the Rocky and Windy Rivers across the Windy River/Jakolof Creek divide and down Jakolof Creek to its mouth, including the islands between the eastern most point of Jakolof Bay and the eastern most point of Rocky Bay), 16(A), as defined by 5 AAC 92.450(16) (A); all waters of Alaska in the Cook Inlet Area, as defined by 5 AAC 21.100 (except those waters north of Point Bede which are west of a line from the eastern most point of Jakolof Bay north to the western most point of Hesketh Island including Jakolof Bay and south of a line west from Hesketh Island; the waters south of Point Bede which are west of the eastern most point of Rocky Bay; and those waters described in 5 AAC 01.555(b), known as the Tyonek subdistrict).



Alaska Department of Fish and Game
Division of Subsistence and Boards

September 2007

Figure 3.1-1.—Map of Anchorage-Matsu-Kenai Nonsubsistence Area.

3.1.2 Demography

In 1990, the Anchorage-Matsu-Kenai nonsubsistence area had a population of 305,354, which increased by 42% to 434,781 in 2010; this represents a much higher rate of growth than the state overall (29%) (Table 3.1-1; Figure 3.1-2).

Table 3.1-1.–Population of the Anchorage-Matsu-Kenai Nonsubsistence Area, 1960–2012.

	Anchorage Municipality	Kenai Peninsula Borough ^a	Mat-Su Borough ^a	Entire nonsubsistence area	Change over decade	Alaska Native population	Percentage of population
1960	82,833	8,189	5,188	96,210			
1970	126,385	15,762	6,509	148,656	55%		
1980	174,431	24,247	17,345	216,023	45%	10,799	5%
1990	226,338	39,833	39,183	305,354	41%	18,948	6%
2000	260,283	48,688	58,796	367,767	20%	36,489	10%
2010	291,826	54,358	88,597	434,781	18%	50,765	12%
2012	298,842	55,713	93,406	447,961			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

- a. The nonsubsistence area includes a portion of the Kenai Peninsula Borough and the Matanuska-Susitna Borough.

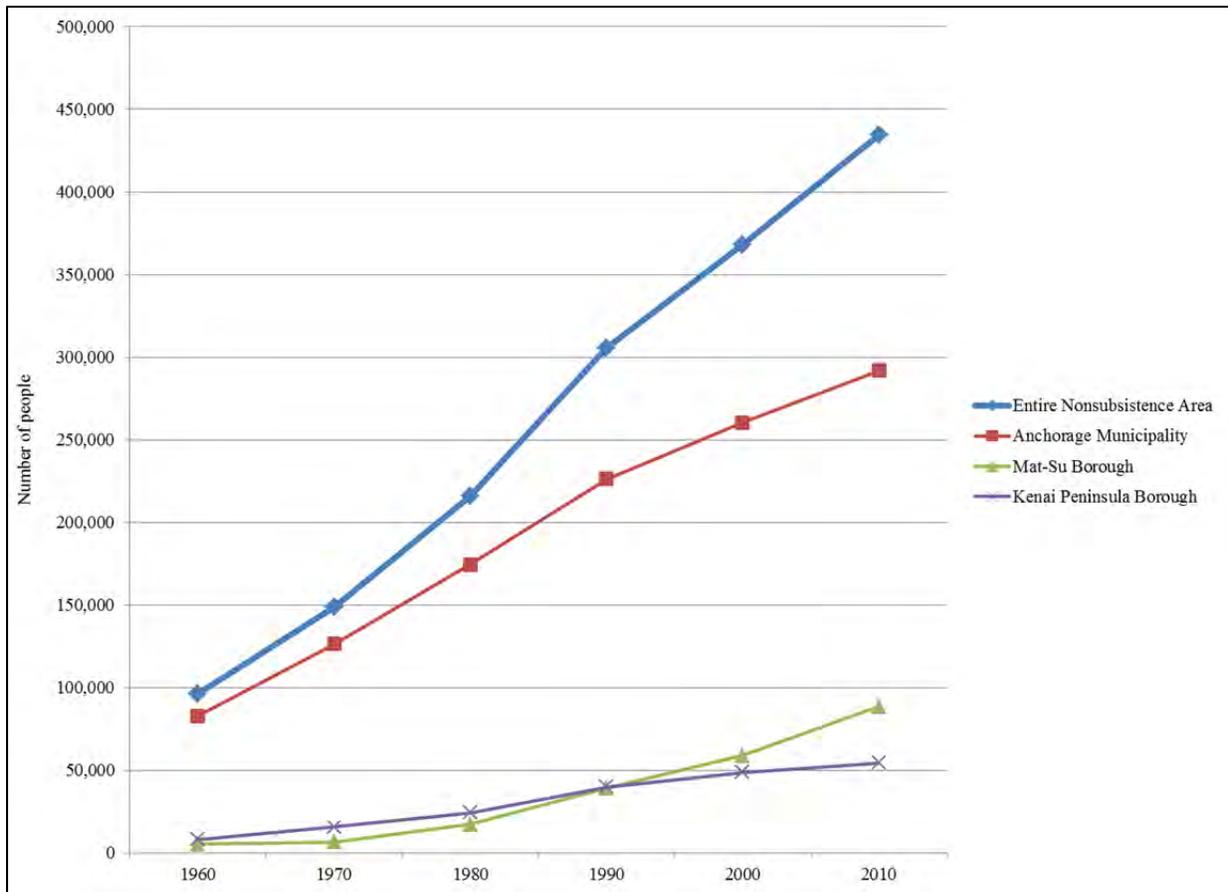


Figure 3.1-2.–Population of the Anchorage-Matsu-Kenai Nonsubsistence Area, 1960–2010.

3.1.3 The 12 Socioeconomic Factors

1. The social and economic structure.

In November 1992, the Joint Board concluded the following regarding Factor 1 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

The Joint Board finds that the socio-economic structure of this area is consistent with the information provided by the ADF&G staff at No. 1 of the Kenai Peninsula and Anchorage-MatSu Nonsubsistence Area reports. The area is highly urbanized and acquires goods and services through the commercial sector. The population of Anchorage is 260,000, half of those domiciled in the state. The Board examined characteristics of communities within the Nonsubsistence Use Area boundary, focusing specifically on those brought to their attention by public oral and written comments. Several Board members spoke to the growth of Ninilchik, a community where 11 years ago, the Subsistence Division documented higher per capita consumption and more sharing than in the overall area. The growth is attributed to housing for oil field workers and the growing sportfish industry. Opportunities to obtain and dispose of large parcels of private land as well as growth of the marine saltwater fishery have contributed to the growth of this community. Lifelong residents have experienced the steady change from an area where most persons domiciled partook in subsistence use of fish and game to an economy in which subsistence uses are no longer a principle [*sic*] characteristic of economy, culture and way of life.

Characteristics of Eklutna, Knik and Kenaitze and Chickaloon groups were examined within the scope of experience of the Board, as informed by their own knowledge of the areas and people and as informed by testimony and written comment. Subsistence Division had no current data on these groups. Without further information, the Board could only conclude that the socio-economic characteristics of Ninilchik, Knik, Eklutna and the Kenaitze and Chickaloon groups were indistinguishable from those of the region as a whole.

The 1992 department report noted the following regarding the general economic structure of Anchorage and the Mat-Su Borough.

The social and economic structure of the Anchorage-Matsu Area has been characterized as a type of “industrial-capitalism,” a socioeconomic system common in the lower 48 which has developed in Alaska. This social and economic structure is distinct from another type of socioeconomic system in Alaska, called a “mixed, subsistence-cash economy,” where the domestic household sector is a major producer and distributor of food. Industrial capital systems generally have large wage sectors, which provide the major means of livelihood to residents. In an industrial-capital system, households are not major producers or distributors of an area’s food supply. Food production by households provides a very small portion of the community’s food, but may be of economic significance to those households actively involved in hunting and fishing. Most of the area’s food and other goods and services are provided by businesses organized and financed separately from the household unit. Production and distribution of goods and services are organized by market forces or by government. Fishing and hunting by

residents are primarily conducted as part of recreational or commercial industries.

A similar summary was presented for the Kenai Peninsula Borough, but added:

While this is the predominant economic pattern, the Kenai Peninsula is a large area, and certain segments of the area's population use more fish and game than other segments. Several communities have unique characters, and there are local variations in patterns of resource use.

The Joint Board excluded areas around Nanwalek, Port Graham, and Seldovia on southern Kachemak Bay and areas around Tyonek on western Cook Inlet from the nonsubsistence areas because of their distinctive socioeconomic and cultural patterns.

Information discussed below for factors 2, 3, and 4 is also relevant to Factor 1. For Anchorage, the number of available jobs increased steadily in the 2000s (Factor 2), jobs were available in diverse industries and the unemployment rate was below the state average (Factor 3), cash incomes were above state averages (Factor 4), and poverty rates were below the state average (Factor 4). Recent summaries by Alaska Department of Labor economists concluded that the cash economies of the Kenai Peninsula (Shanks and Rasmussen 2010) and the Matanuska-Susitna Borough (Fried 2013) continued to be diverse and to grow in the 2000s. The population of the Anchorage-Matsu-Kenai Nonsubsistence Area increased by 42% from 1990 to 2010, at a faster rate than the state overall (29%), which is a sign of economic health. Employment rates and cash incomes are on average above state averages, while poverty rates and costs of living are lower or near state averages. While many residents are involved in fishing and hunting, harvests are relatively low and do not provide a large percentage of the area's food. (See further discussion below.)

In 1999, the Division of Subsistence conducted systematic household surveys in 5 Kenai Peninsula Borough communities—Ninilchik, North Fork Road, Nikolaevsk, Fritz Creek East, and Voznesenka—to update baseline fish and wildlife harvest and use data collected in the 1980s in communities along the borough's road system. The study year was 1998 (Fall et al. 2000). The study concluded:

Wild resource uses in the study areas occur within a local economy similar to that of the most populous parts of the state, with a diverse and expanding local employment picture. These uses take place in a demographic context of very rapid growth due to in-migration. The large majority of household heads in all the study areas moved to the Kenai Peninsula from other parts of Alaska, other states, or other countries, most likely for reasons related to employment opportunities and lifestyle. Most families have relatively short histories of use of Kenai Peninsula resources. That most households use and harvest wild foods demonstrates that harvest activities are highly valued as a source of recreation, of nutritious foods, and as an expression of a valued lifestyle. (Fall et al. 2000:255–256)

2. The stability of the economy.

In November 1992, the Joint Board concluded the following regarding Factor 2 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

The Board found that the information presented at No. 2 of the ADF&G report supports the finding that the economy is stable and expanding. The mean annual population growth rate was 7.6% for the Anchorage-MatSu Nonsubsistence Area and 7.5% for the Kenai Peninsula Nonsubsistence Area during the 1980s. Both areas are urbanized. During the decade of the 1980s the number of wage-paying jobs increased from 80,050 to 113,100 in the Anchorage-MatSu portion of

the Nonsubsistence Area and from 5,637 to 9,270 in the Kenai Peninsula portion of the Nonsubsistence Area.

The report prepared for the 1992 Joint Board meeting noted that the economy of the area had shown growth since 1990, continuing trends since statehood, as evidenced in part by continued population increases (ADF&G 1992:2). Since 1992, the population of the area has continued to grow.

In 1991, the number of wage paying jobs in Anchorage was 113,100, an increase from 80,050 in 1980 (ADF&G 1992:2). Figure 3.1-3 shows the annual average employment in nonfarm wage and salary jobs for 2001–2012 for Anchorage, which grew from about 138,000 in 2001 to 157,000 in 2012.

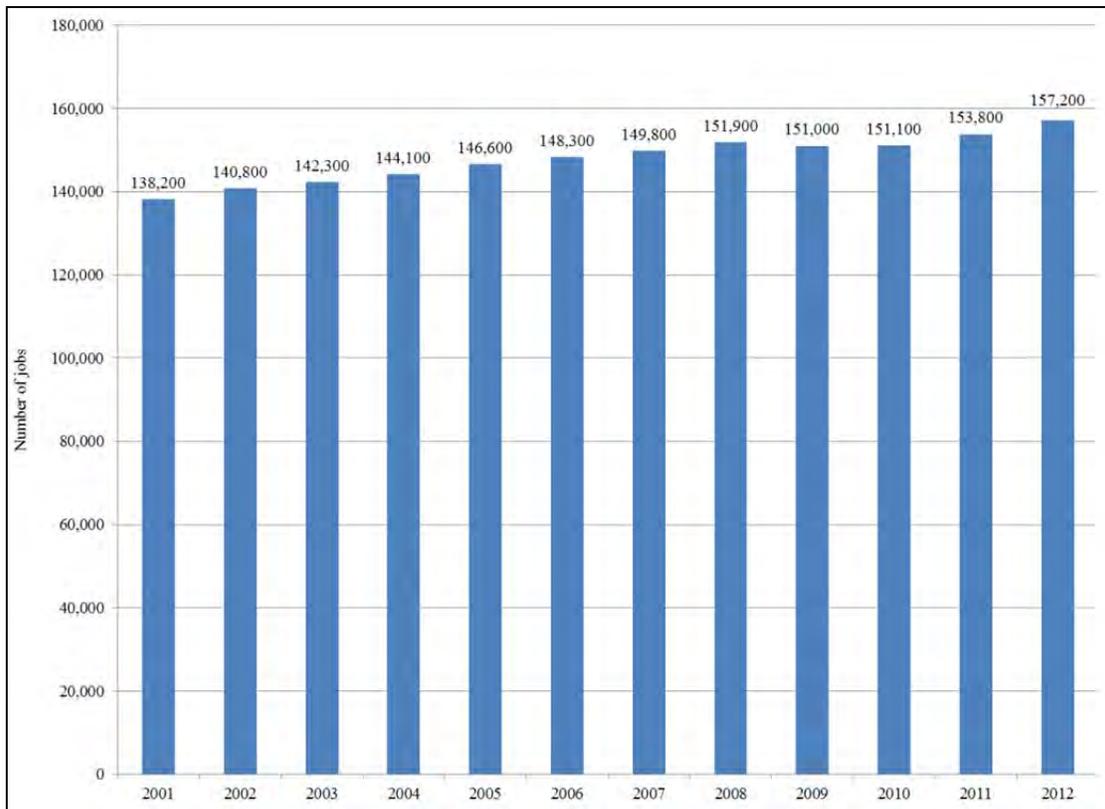


Figure 3.1-3.—Anchorage Municipality: average annual employment, nonfarm wage and salary jobs, 2001–2012.

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

In November 1992, the Joint Board concluded the following regarding Factor 3 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

In the Anchorage-MatSu portion of the Nonsubsistence Area, employment for 1991 includes government jobs (22-35%), service industries (20-23%), trade (21-26%), and transportation (10%). The military bases of Elmendorf Air Force Base and Fort Richardson also contribute to employment in the area. Seasonal employment includes jobs in tourism, commercial fishing, and mining.

In the Kenai Peninsula portion of the Nonsubsistence Area, employment for 1991 includes government jobs (21-33%), service industries (13-

22%), trade (17-23%), and manufacturing (primarily fish processing) (14-18%). Commercial fishing and fish processing are major industries on the Kenai Peninsula as are recreational fishing and tourism.

Wage employment dominates the proposed combined area. Services, manufacturing, tourism, recreational hunting and fishing and commercial fishing make up the majority of employment. In 1991 there were 2,857 limited entry commercial fishing permits in the combined area and ex-vessel value of the commercial fishing harvest totaled \$89.2 million.

The combined factors outlined above and the information presented in the staff reports indicate the area is characteristic of a capital-industrial economy in which reliance on the harvest of fish and game for subsistence uses is not a principle characteristic of the economy.

As shown in figures 3.1-4, 3.1-5, and 3.1-6, a similar diversity of jobs existed in these 3 areas in 2011. In Anchorage, the category “trade, transportation, and utilities” ranked first (22% of jobs), followed by educational and health services (15%). These were also the top 2 categories in the Mat-Su Borough, with 21% and 15%, respectively, and in the Kenai Peninsula Borough, with 20% and 15%, respectively.

In 1991, residents of the Anchorage Municipality and the Mat-Su Borough held 1,090 commercial fishing permits. These permits authorize participation in specific commercial fisheries in Alaska, and are not necessarily fished in the waters of the nonsubsistence area. In 2012, 786 Anchorage Municipality residents held 985 commercial fishing permits (584 of which were fished), including 680 limited entry salmon permits (448 fished). In 2012, 307 Mat-Su Borough residents held 393 commercial fishing permits (281 of which were fished), including 264 limited entry salmon permits (196 fished).

In 1991, residents of the Kenai Peninsula Borough fished 1,767 commercial fishing permits. In 2012, 1,434 Kenai Peninsula Borough residents held 2,296 commercial fishing permits, of which 1,507 were fished. The 2012 total included 1,290 limited entry salmon permits, 937 of which were fished (CFEC 2013).

In 2012, the annual unemployment rate for the Anchorage Municipality was 5%, compared to a state average of 7% (Table 2.4-1; Figure 2.4-1); in 1992, the Anchorage unemployment rate was 7%, compared to a state rate of 9%. In 2012, the annual unemployment rate for the Mat-Su Borough was 8%; the annual unemployment rate was 15% in 1992. During the most recent 10-year period (2003–2012), unemployment rates for Anchorage have been about 1 to 2 percentage points lower than the state average; over the same period, the rate for the Mat-Su Borough has been about one percentage point above the state average (Figure 2.4-2).

The economy of the Mat-Su Borough is linked closely to Anchorage (Fried 2013): in the period 2007–2011, an annual average of 37% of Mat-Su Borough residents with jobs in the state worked outside the Mat-Su Borough (Figure 3.1-7). This compares to 7% of state workers overall who work outside the census area in which they reside, 3% for Anchorage, and 8% for Kenai Peninsula Borough. Some of this Mat-Su resident employment is likely on the North Slope, but most of it likely involves commuting to Anchorage. Fried (2013:7) estimated that in 2010, 31% of employed Mat-Su residents worked in Anchorage. Of all Alaska workers who work in the state but outside their borough or census area of residence, 60% live in the Mat-Su Borough (ADLWD 2013b).

Writing of the late 1990s, Windisch-Cole and Fried (1999:3) concluded that “the Kenai Peninsula Borough’s economy is one of amazing diversity.” Their analysis showed that the “foundation” of the borough’s economy includes fishing, tourism, oil and gas production and refining, and government, and that “in addition to a diversified basic section, the Peninsula’s economy has gained tremendous amount of breath with the expansion of its support sector.” This diversity is important in that if one sector, such as commercial fishing, encounters problems, other sectors can sustain the economy and even support more growth. Windisch-Cole and Fried (1999:15) concluded that “the economic diversity the Peninsula enjoys

remains the envy of much of the rest of the state.” An updated economic overview for 2010 reached a similar conclusion (Shanks and Rasmussen 2010).

In 2012, the annual unemployment rate for the Kenai Peninsula Borough was 8%, compared to a state average of 7% (Table 2.4-1; Figure 2.4-1); in 1992, the Kenai Peninsula Borough unemployment rate was 15% compared to a state rate of 9%. During the most recent 10-year period (2003–2012), unemployment rates for the Kenai Peninsula Borough have been about one to two percentage points above the state average (Figure 2.4-2).

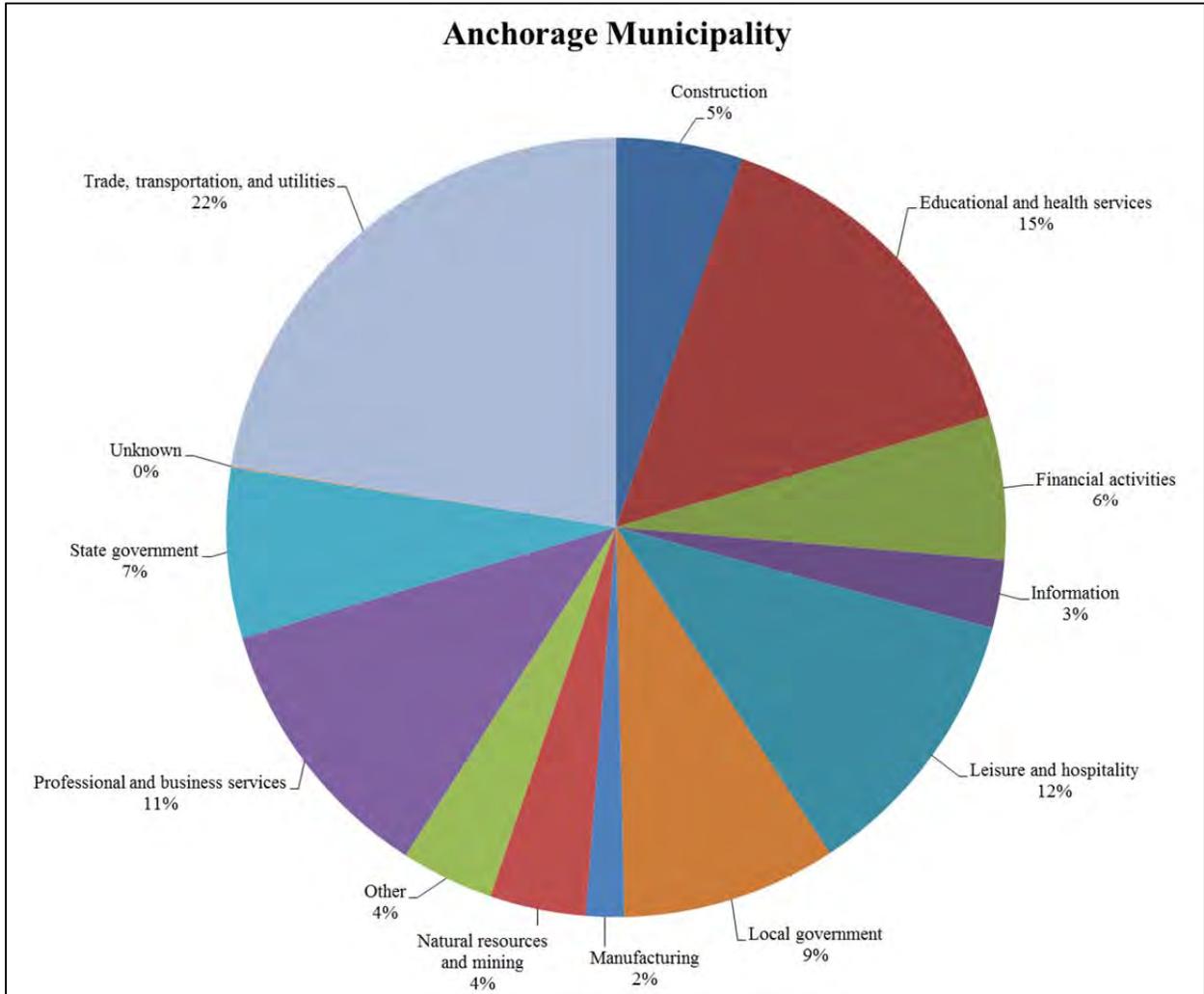


Figure 3.1-4.—Percentage of jobs by industry, Anchorage Municipality, 2011.

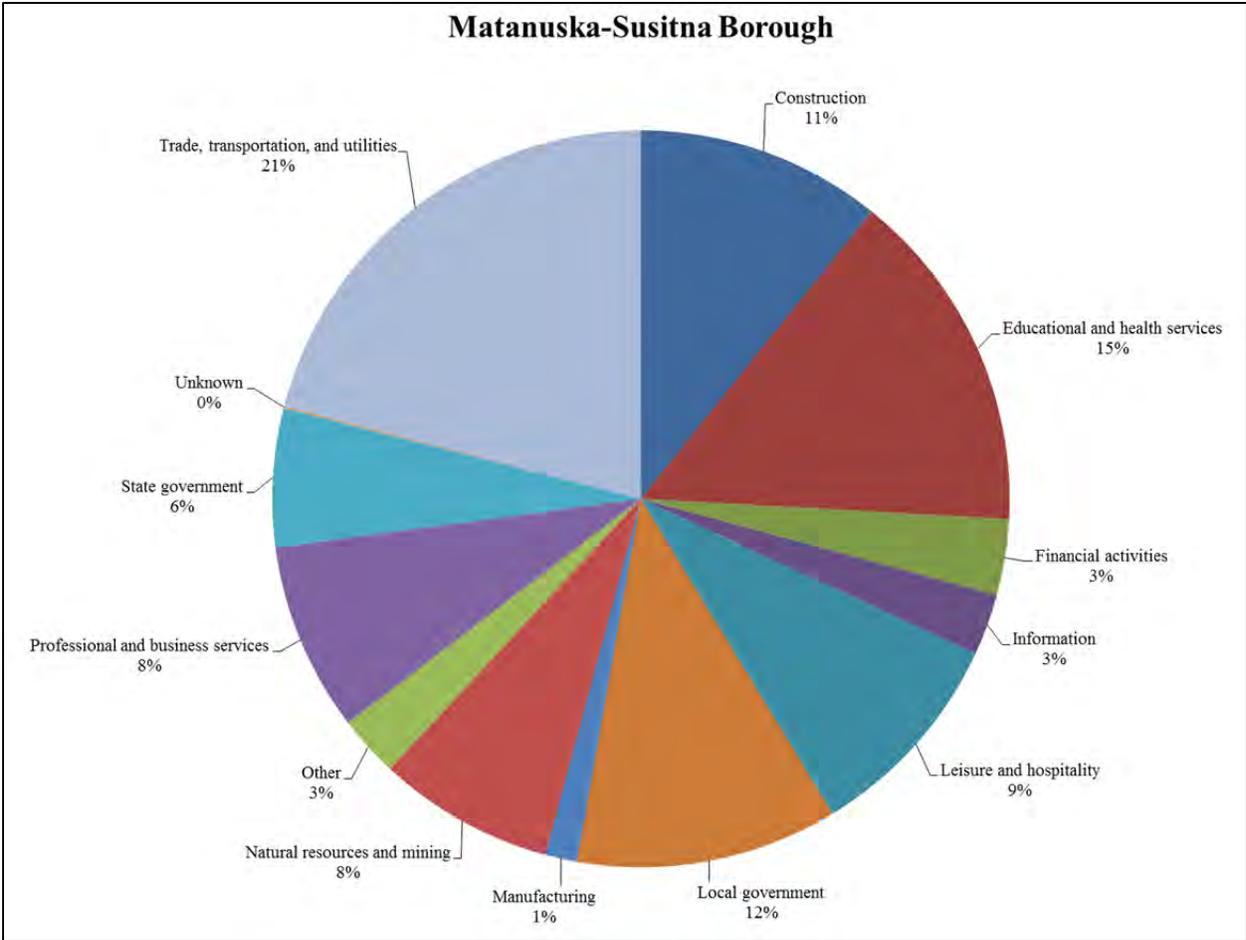


Figure 3.1-5.—Percentage of jobs by industry, Matanuska-Susitna Borough, 2011.

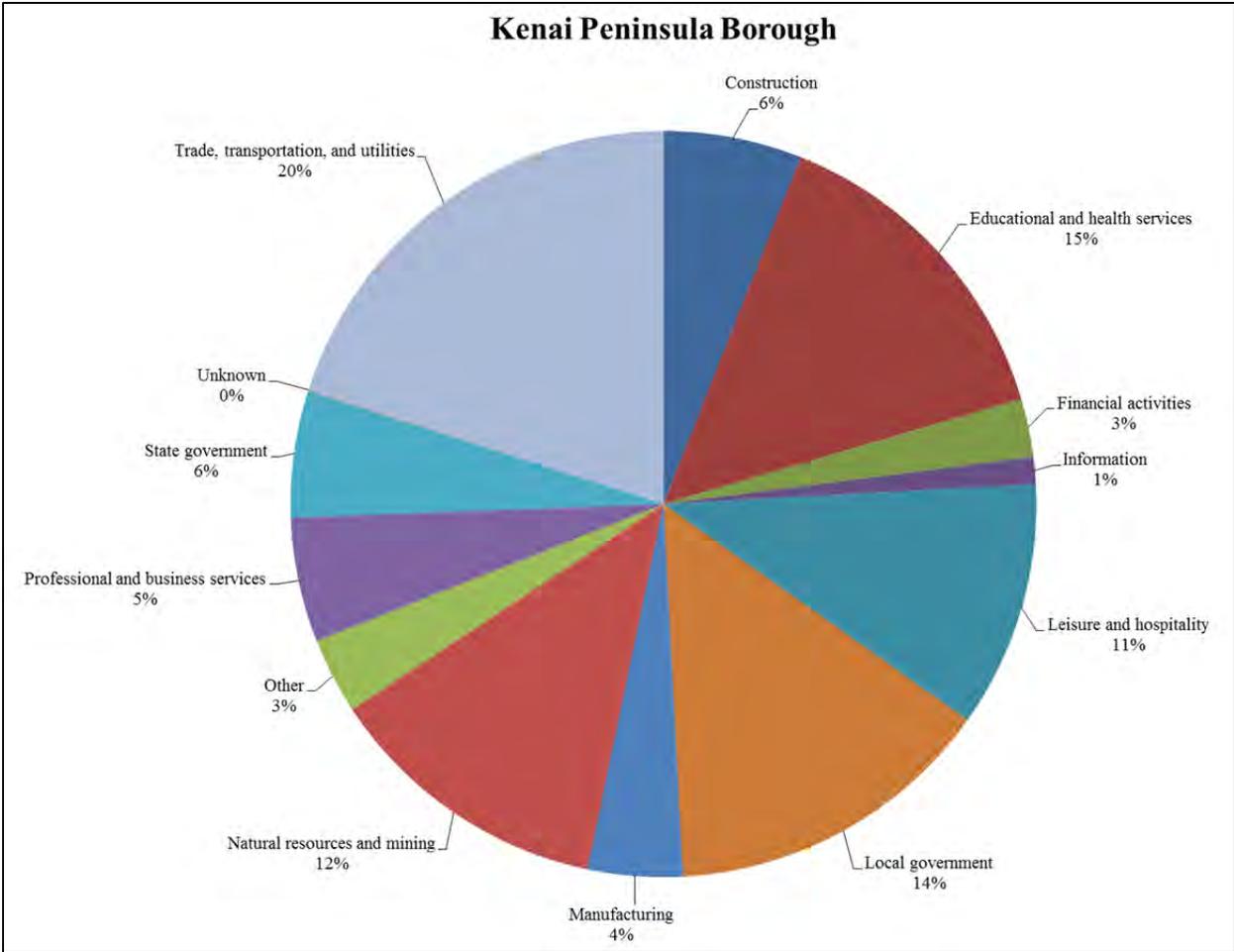


Figure 3.1-6.—Percentage of jobs by industry, Kenai Peninsula Borough, 2011.

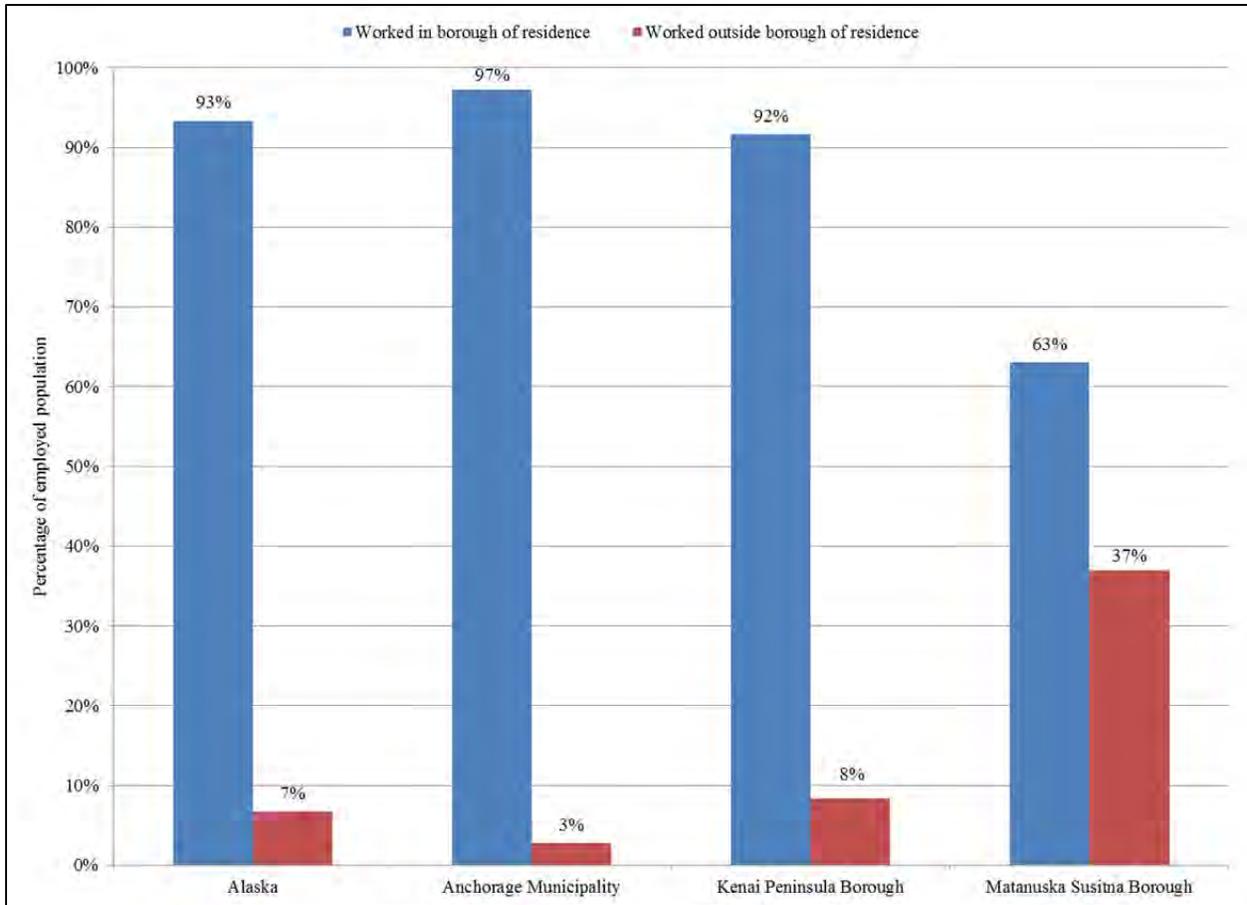


Figure 3.1-7.–Place of work, 2007–2011 (5-year average).

4. The amount and distribution of cash income among those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 4 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

Per capita income in the area approximates the state average with a wide range from \$16,000 to \$93,000. Although income distribution is not even among the residents, it is typical of an urban, cash-based economy as opposed to a subsistence economy.

For the period 2007–2011, the average annual per capita income for Anchorage was \$35,580, compared to \$31,944 for the state overall. For the same period, per capita incomes in the Mat-Su Borough and Kenai Peninsula Borough were \$29,292 and \$30,256, respectively.

For the period 2007–2011, 7.8% of Anchorage’s population lived below the poverty line, compared to 9.5% for the state population. The poverty rate for the Mat-Su Borough was 9.7% and the value for the Kenai Peninsula Borough was 9.1%. Poverty rates for Anchorage and the Mat-Su Borough had declined since 1989 while the rate for the Kenai Peninsula Borough increased but remained below the state average.

The Kenai Peninsula Borough has the highest percentage of income from retirement and disability insurance benefits (5% in 2007) of any Alaska borough or census area (Shanks and Rasmussen 2010:15).

5. The cost and availability of goods and services to those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 5 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

The area has a well developed system of commerce offering a variety of goods and services. Costs in the Kenai Peninsula and MatSu portions of the Nonsubsistence Area are slightly higher than in Anchorage. Households use recreational, commercial and personal use fishing regulations and general hunting regulations for their harvesting activities.

Generally, this area has the lowest costs of living in the state. The *Alaska Geographic Differential Study* assigned an overall value of 0.95 for the Mat-Su Borough, 1.00 for Anchorage, and 1.01 for the Kenai Peninsula Borough for 2008. Market basket surveys of costs of food conducted by the University of Alaska, which assign a value of 100 to Anchorage, assigned a value of 104 for Kenai-Soldotna for 2011 and 104 for Palmer-Wasilla.

6. The variety of fish and game species used by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 6 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

Species used by residents of the Nonsubsistence Use Area include moose, caribou, bear, mountain goat, sheep, all species of Pacific salmon, grayling, pike, burbot, whitefish, dolly varden, trout, halibut, lingcod, rockfish, clams, cockles, and crab.

Annual harvest monitoring programs conducted by the department document a similar variety of fish and wildlife resources used in total by the large population of this area.

Based on comprehensive household surveys in selected communities in the Kenai Peninsula Borough and Mat-Su Borough, the average number of resources used by households in those communities annually ranges from about 6 kinds to about 9 kinds (Table 3.1-2).

Table 3.1-2.—Participation in fishing and hunting for Kenai, Seward, Talkeetna, and Trapper Creek.

	Kenai			Seward	Talkeetna		Trapper Creek	
	1991	1992	1993	2000	1985	2012	1985	2012
Percentage of population hunting ^a	20%	17%	22%	13%	NA	24%	NA	36%
Percentage of population fishing	66%	66%	67%	56%	NA	49%	NA	46%
Percentage of households								
Using any resource	98%	95%	98%	97%	94.1%	96%	100%	99%
Attempting harvest	87%	89%	89%	88%	91.2%	90%	100%	96%
Harvesting any resource	81%	84%	86%	88%	85.3%	90%	100%	96%
Receiving any resource	84%	78%	81%	87%	69.1%	90%	90%	84%
Giving away any resource	66%	73%	62%	65%	50.0%	65%	63%	53%
Average number of resources per household								
Used	6.2	6.8	7.1	7.5	7.1	8.5	7.2	9.0
Attempted to harvest	5.2	5.7	5.4	5.1	6.7	6.2	7.0	7.2
Harvested	4.2	4.7	4.5	4.4	5.0	5.5	5.2	6.1
Received	2.7	2.7	3.2	4.2	2.5	3.8	2.7	3.2
Given away	1.8	2.5	2.3	2.0	1.7	2.2	1.2	1.6

Sources Tomrde et al. (1995); Davis et al. (2003).

Note A more detailed list of birds and plants was used in the 2012 survey in Talkeetna and Trapper Creek compared to 1985. This may account for the slightly higher values for average number of kinds of resources used, harvested, and shared per households in 2012.

- a. Hunting includes large game and birds for Kenai; hunting includes large and small game and birds, but not trapping for furbearers for Seward, Talkeetna, and Trapper Creek. Individual participation data not collected for Talkeetna and Trapper Creek for 1985.

7. The seasonal cycle of economic activity.

In November 1992, the Joint Board concluded the following regarding Factor 7 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

The area shows seasonal fluctuations in the tourism, recreation and commercial fishing industries. The primary types of employment in the area (government, trade, services, and transportation) are not normally affected by seasonal cycles.

We have no new information to add to that cited in the 1992 Joint Board finding regarding Factor 7.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

In November 1992, Joint Board concluded the following regarding Factor 8 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

In the area during 1989 to 1991, 40-71% of the residents fished with rod and reel, and during 1991 approximately 7,000 area residents obtained permits for non-commercial net fishing. About 40,700 residents of the area obtained hunting licenses during 1991. The Board found that households within the area do not predominantly harvest wild fish or game as a community wide method of food production.

The 1992 department report noted that in 1991, 32,418 “hunting/hunting combination” licenses were sold to Anchorage/Mat-Su residents, representing 12% of that region’s population. Also, in 1991, a total of

8,282 hunting/hunting combination licenses were sold to Kenai Peninsula Borough residents, representing 20% of that region's population.

In 2012, 67,680 Anchorage residents held sport fishing licenses (22% of the population) and 25,159 held hunting licenses (8% of the population). In addition, 1,955 Anchorage residents obtained senior licenses in 2012 (Figure 3.1-8).⁶

In 2012, 25,950 Mat-Su Borough residents held sport fishing licenses (28% of the population) and 15,696 held hunting licenses (17% of the population). In addition, 872 Mat-Su Borough residents obtained senior licenses in 2012 (Figure 3.1-9)

In 2012, 19,690 Kenai Peninsula Borough residents held sport fishing licenses (35% of the population) and 9,576 held hunting licenses (17% of the population). In addition, 589 Kenai Peninsula Borough residents obtained senior licenses in 2012 (3.1-10).

In 2011, residents of the Anchorage Municipality held 22,482 subsistence and personal use salmon fishing permits; Mat-Su Borough residents held 8,121 permits and Kenai Peninsula Borough residents had 7,359 permits; in total 37,962 subsistence and personal use permits were held by residents of the nonsubsistence area (Table 2.6-1). Most of the permits were for the Kasilof and Kenai rivers personal use dip net fisheries and the personal use dip net fishery in the Copper River. The number of permits issued for the Upper Cook Inlet personal use salmon fisheries increased from 14,576 in 1996 to 34,515 in 2011. A large majority of these permits are issued to residents of the Anchorage-Matsu-Kenai Nonsubsistence Area (32,397 of 34,515 permits; 94%) (Fall et al. 2013b).

Household harvest survey data are available for selected Kenai Peninsula Borough and Mat-Su Borough communities that provide additional information on patterns of wild resource uses in these areas. In the early 1990s, between 17% and 22% of Kenai's population hunted, and between 66% and 68% fished. In 2012, 19% of Talkeetna's population and 27% of the population of Trapper Creek hunted, while 49% of Talkeetna's population fished, as did 46% of the population of Trapper Creek.

6. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

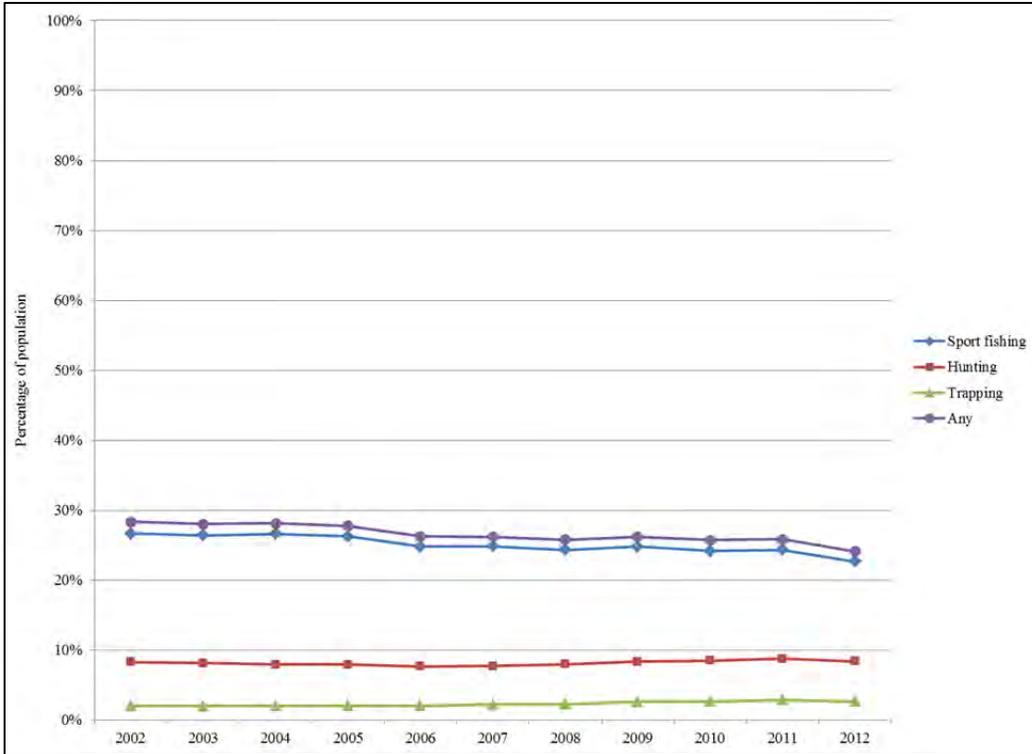


Figure 3.1-8.–Percentage of Anchorage Municipality residents holding hunting, sport fishing, and trapping licenses.

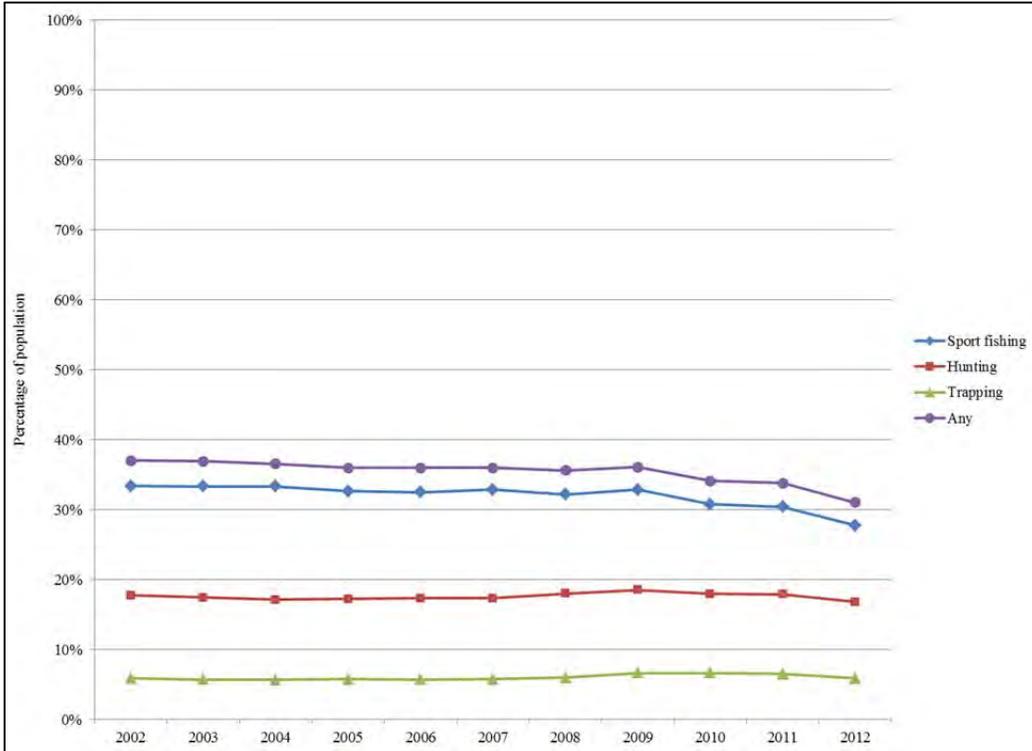


Figure 3.1-9.–Percentage of Matanuska-Susitna Borough Nonsubsistence Area residents holding hunting, sport fishing, and trapping licenses.

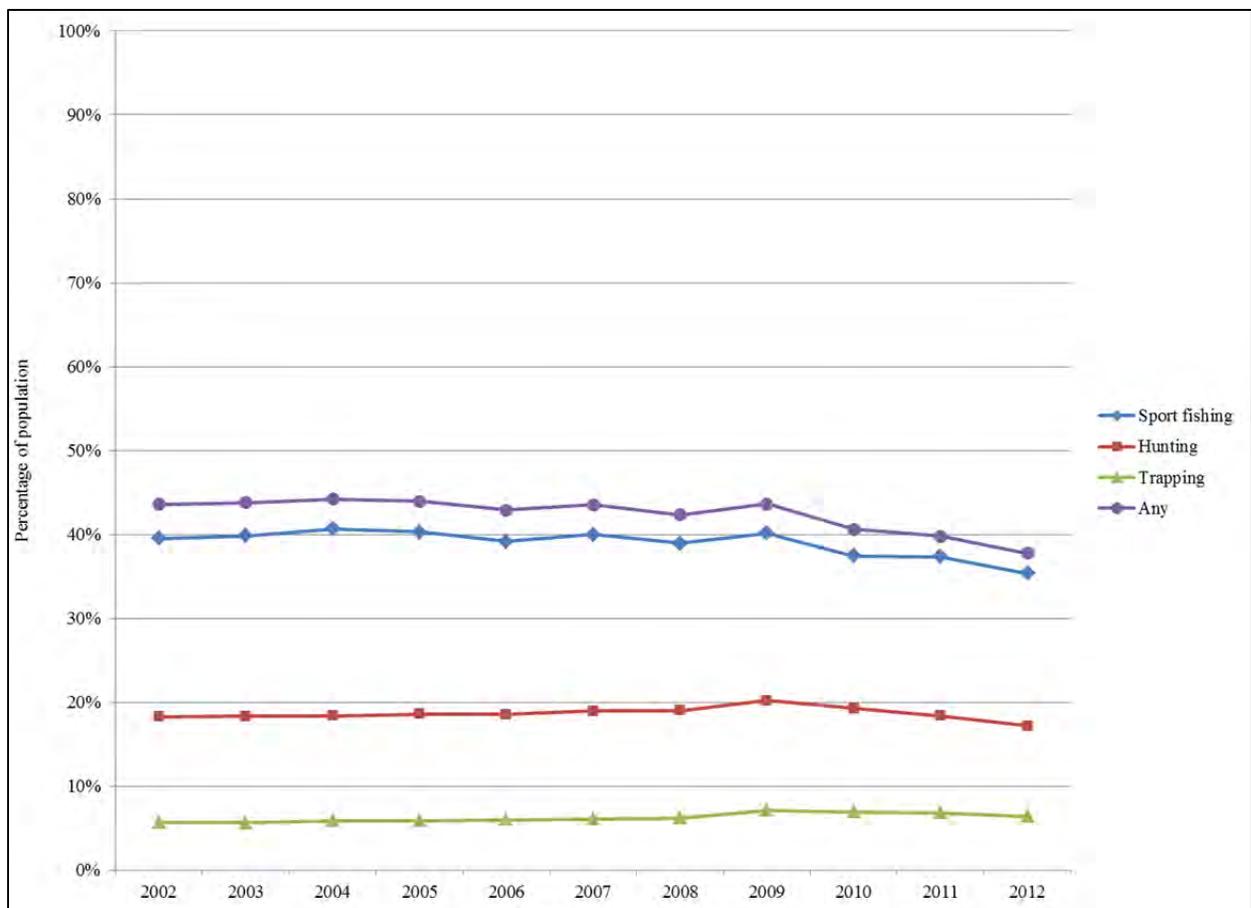


Figure 3.1-10.—Percentage of Kenai Peninsula Nonsubsistence Area residents holding hunting, sport fishing, and trapping licenses.

9. The harvest levels of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 9 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

In the area, wild food harvests are low; 19 pounds per person for the Anchorage-MatSu area and 40 pounds per person for the Kenai Peninsula portion of the area. Low food production rates by households are characteristics of an industrial-capital system, where most foods are produced and distributed through commercial businesses and are purchased by households with wage earnings.

Based on annual harvest monitoring programs conducted by the department, harvests of fish and wildlife by Anchorage residents ranged from about 14 lb per person in 2006 to about 18 lb per person in 2004 and 2007, with a recent (2007–2011) 5-year average of 17 lb per person (Figure 3.1-11). These harvest levels represent 8% of the average American consumption of meat, fish, and poultry; 10% of protein requirements; and 2% of caloric requirements.

As estimated in pounds usable weight, about 50% of the salmon harvested by Anchorage residents annually from 2007–2011 came from personal use fisheries, 45% from sport fisheries, and 5% from subsistence fisheries.

Based on annual harvest monitoring programs conducted by the department, harvests of fish and wildlife by Mat-Su Borough residents ranged from about 26 lb per person in 2006, 2008, 2009, and 2010, to about 28 lb per person in 2005, with a recent (2007–2011) 5-year average of 26 lb per person (Figure 3.1-12). These harvest levels represent 12% of the average American consumption of meat, fish, and poultry; 16% of protein requirements; and 3% of caloric requirements.

As estimated in pounds usable weight, about 49% of the salmon harvested by Mat-Su Borough residents annually from 2007–2011 came from personal use fisheries, 41% from sport fisheries, and 10% from subsistence fisheries.

Based on annual harvest monitoring programs conducted by the department, harvests of fish and wildlife by Kenai Peninsula Borough residents ranged from about 35 lb per person in 2006 to about 47 lb per person in 2007, with a recent (2007–2011) 5-year average of 42 lb per person (Figure 3.1-13). These harvest levels represent 19% of the average American consumption of meat, fish, and poultry; 26% of protein requirements; and 4% of caloric requirements.

As estimated in pounds usable weight, about 51% of the salmon harvested by Kenai Peninsula Borough residents annually from 2007–2011 came from sport fisheries, 47% from personal use fisheries, and 2% from subsistence fisheries.

The Division of Subsistence has conducted systematic household harvest surveys in 14 communities of the Kenai Peninsula Borough and Mat-Su Borough that are within the present nonsubsistence area; because some communities have been surveyed more than once, there are 20 year/community harvest estimates. Most estimates of harvests in pounds usable weight per person ranged between 50 and 100 lb (Figure 3.1-14).

Fall et al. (2000:222) offered several demographic, economic, regulatory, and sociocultural factors to explain the notably higher estimated harvest of wild foods by Ninilchik residents in 1998 compared to 1982. The long-term resident population of Ninilchik had declined. Newcomers brought a new set of values, including more openness to rod and reel fishing and dipnetting; removal of fish from commercial harvests had formerly been a primary source of fish for home use. The report further explains:

Newcomers arrive to find more personal use and general hunting regulations favorable to harvesting fish and game for home use, and more charter and recreational services to support harvesting. Many newcomers arrive with interests in harvesting wild foods to supplement their diets. Many also arrive with the money and time to invest in recreational and personal use hunting and fishing. These points especially apply to many retired households. (Fall et al. 2000:222)

The study also found that a small segment of Ninilchik's population produced most of the harvest and that, despite larger harvests, the diversity of resources used had not changed. The report concluded that "the role of wild resources in the community's economy and way of life does not appear to have changed between 1982 and 1998" (Fall et al. 2000:222).

From 1992–2008, estimates of subsistence harvests of harbor seals by residents of these nonsubsistence areas were developed through interviews with Alaska Native hunters, primarily in Anchorage, Kenai, and Homer. The findings are presented in Figure 3.1-15.

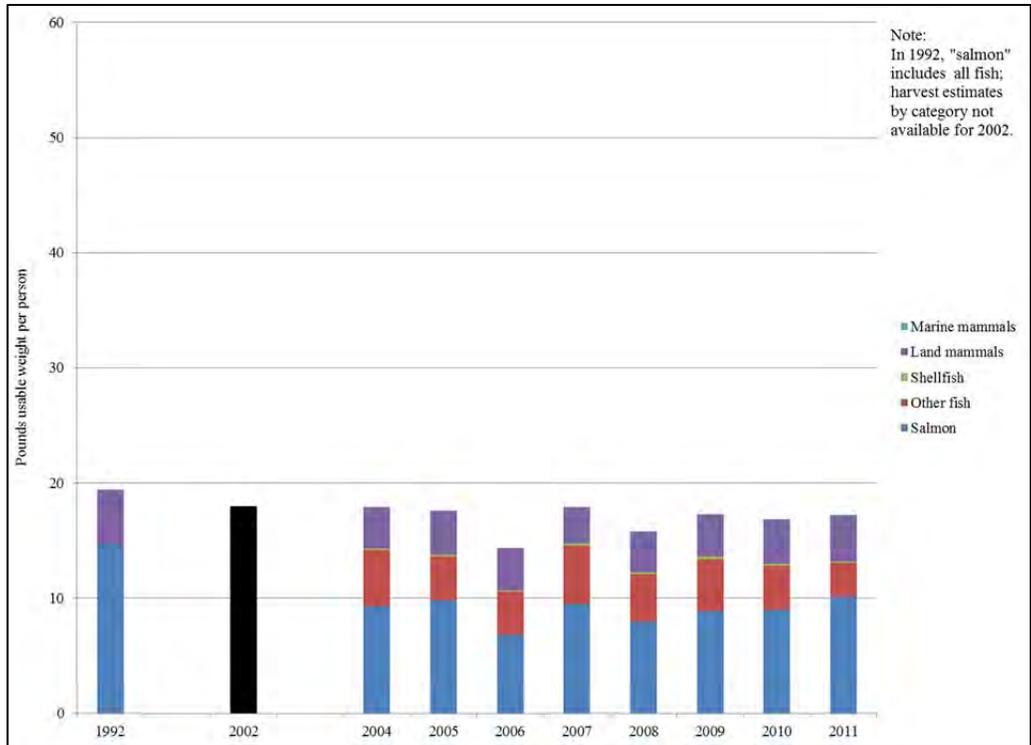


Figure 3.1-11.—Anchorage Municipality: estimated harvests of fish and wildlife for home use.

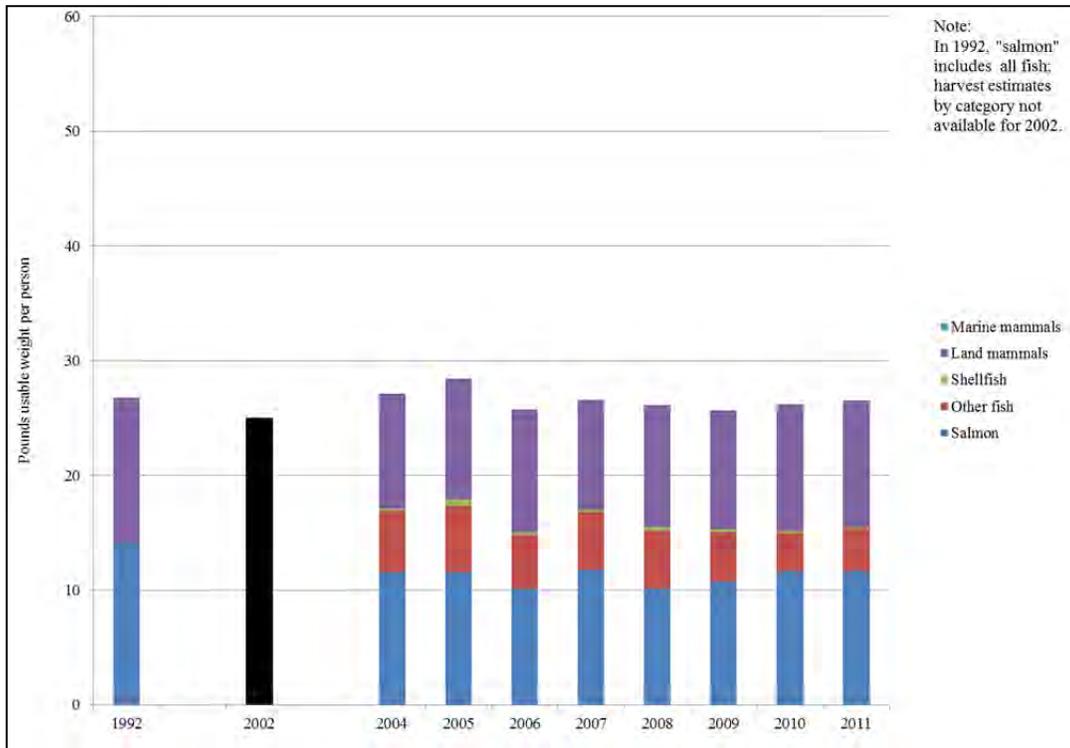


Figure 3.1-12.—Matanuska-Susitna Borough Nonsubsistence Area: estimated harvests of fish and wildlife for home use.

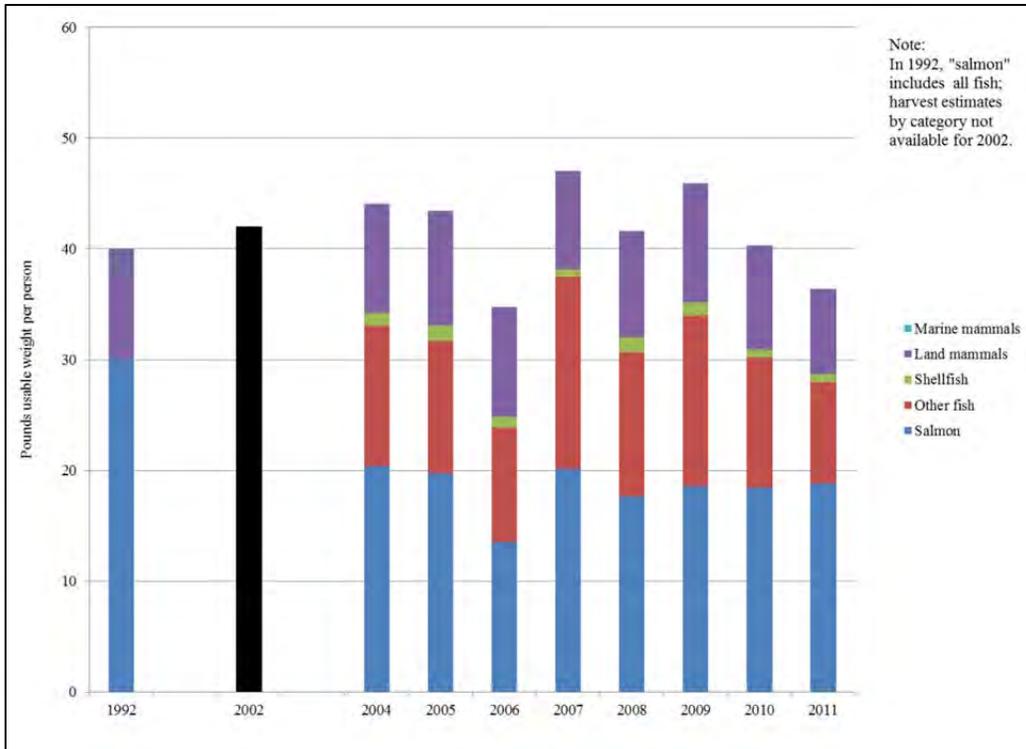


Figure 3.1-13.—Kenai Peninsula Borough Nonsubsistence Area: estimated harvests of fish and wildlife for home use.

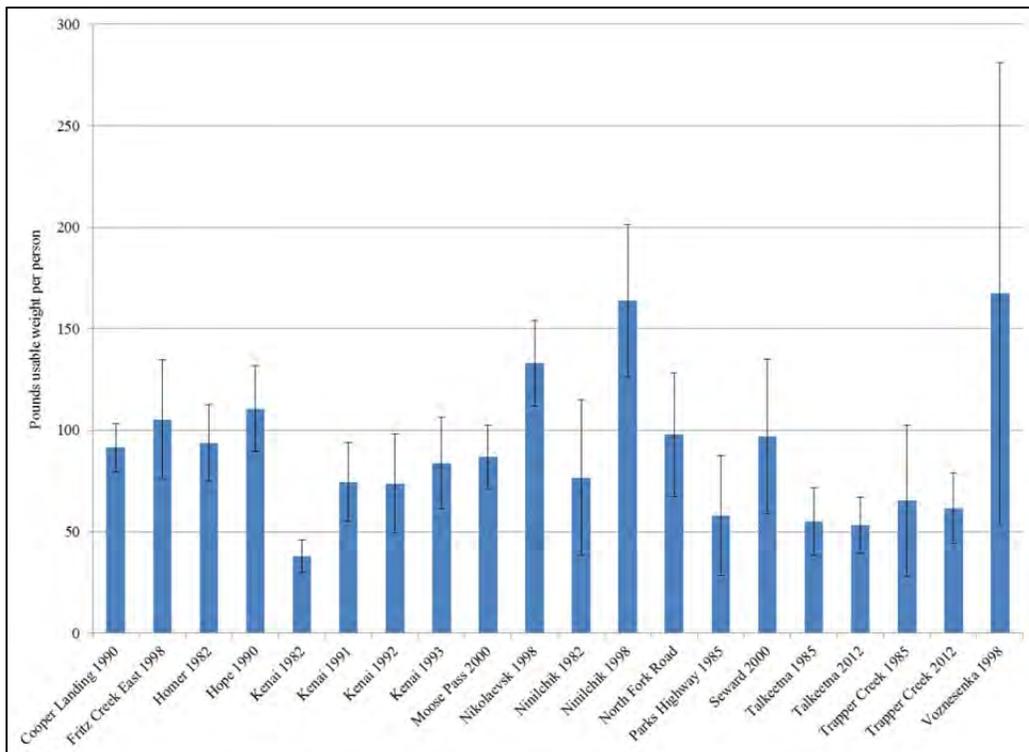


Figure 3.1-14.—Estimated harvests of wild resources, pounds usable weight per person, Kenai Peninsula Borough and Matanuska-Susitna Borough communities within the nonsubsistence area.

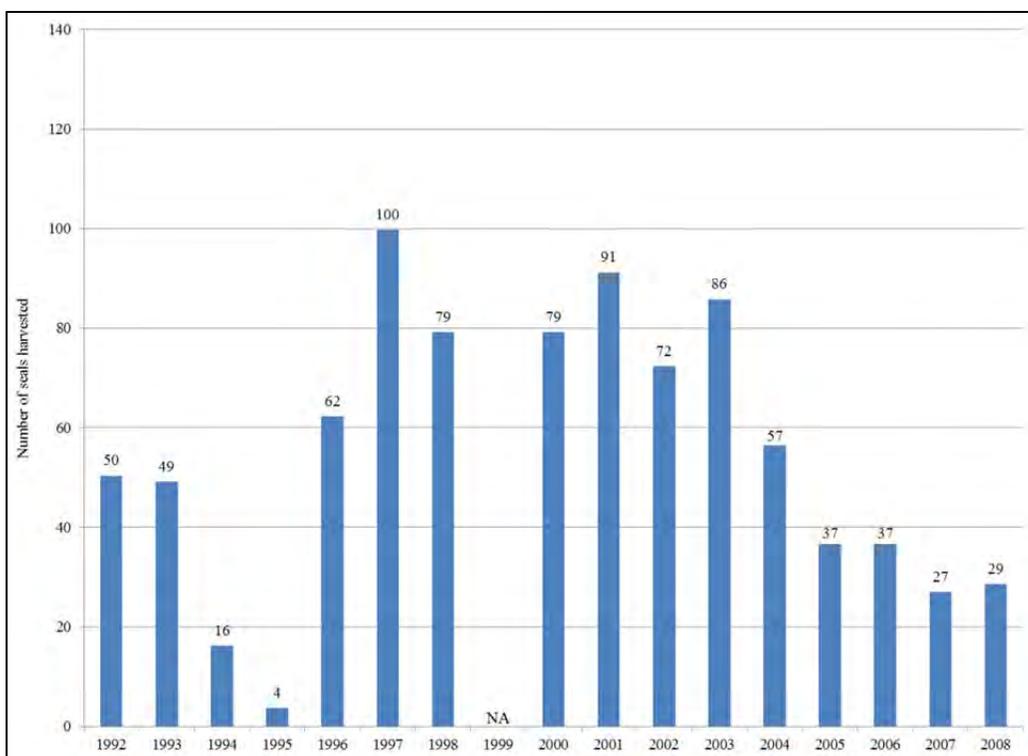


Figure 3.1-15.—Estimated number of harbor seals harvested for Anchorage, Kenai, and Homer, 1992–2008.

10. The cultural, social, and economic values associated with taking and use of fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 10 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

Diverse cultural values are represented in the Nonsubsistence Area. There are instances of hunting and fishing values that derive from Alaska Native cultural traditions. However, the Board found the predominant values associated with the taking and use of fish and game to be recreational. Fishing and hunting are periodic outdoor activities that are valued as breaks from the economic work routine and as high quality outdoor experiences which supplement the household’s diet.

In 1992, the department report provided further details on the range of cultural values associated with taking fish and game among Kenai Peninsula borough residents. For some, the predominant values were recreational: fishing and hunting were periodic outdoor activities valued as breaks from work that promoted fair chase ethics and provided a source of wild foods valued for their taste and healthful qualities. For some, hunting and fishing were a source of cash income (commercial fishing, guiding, outfitting). For others, such as the indigenous Kenaitze Tribe, hunting and fishing were associated with Alaska Native cultural traditions. For others, fishing and hunting were valued as a way to produce food as part of perceived “country living” or a “homestead tradition” (Wolfe and Ellanna 1983:159,165).

As noted above under Factor 8, the number of residents of this nonsubsistence area who participate in Cook Inlet personal use salmon fisheries has increased steadily since 1996, reaching 34,515 household permits issued for the Upper Cook Inlet fisheries in 2011. This level of participation is evidence of the value many residents of the Kenai Peninsula Borough, the Anchorage Municipality, and the Mat-Su

Borough place on personal use fishing to obtain nutritious food for their families. Since the 1990s also, several Alaska Native tribes within this nonsubsistence area (Ninilchik, Kenaitze, Knik, Eklutna) have obtained annual educational fishery permits to harvest salmon with gillnets for home food use, sharing, to teach fishing skills, and to teach and express traditional and cultural values.

11. The geographic locations where those domiciled in the area or community hunt and fish.

In November 1992, the Joint Board concluded the following regarding Factor 11 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

The Board found that residents of both areas hunt and fish throughout the proposed areas as well as adjacent areas such as GMU's 13 and 16, including the additional portion of the Kenai Peninsula not contained in the area originally proposed. Within the Nonsubsistence Use Area, GMU 14 accounts for 37% of successful Anchorage moose hunters and 56% of successful MatSu moose hunters. GMU 15 accounts for 73% of Kenai moose harvests. As much as 75% of the moose hunting by residents is done within the proposed areas and more than 1 million angler days are dedicated annually to sport fishing within these areas, and in marine waters beyond the scope of the management proposal as well as in outlying freshwater systems such as the Western Susitna. The Board also reviewed the use patterns of Eklutna, Knik, and Ninilchik which are highway connected communities located within the proposed area, as well as uses by the Kenaitze and Chickaloon members. The Board determined that these persons and their characteristics of use, as well as the characteristics of the road located communities have been integrated into the surrounding areas and are no longer distinguishable from the uses of the populations of the nonsubsistence area as a whole.

The 1992 department report further noted that residents of the Anchorage and Mat-Su areas hunted throughout the state, but primarily in GMUs 13, 14, and 16, which are connected by the road network. Many also used GMUs 7 and 15 (Kenai Peninsula), 20 (Fairbanks Area), and 8 (Kodiak Island—for deer, elk, and brown bear). The 1992 report noted that residents of the Kenai Peninsula Borough hunted throughout the state, but primarily in GMUs 7 and 15.

There is a similar pattern for 2007–2011, the most recent 5-year period for which data for big game species are available. Again, Anchorage hunters hunted throughout the state, but mostly in GMUs 13, 14, 20, 8, 6, and 16. Compared to the late 1980s and early 1990s, there was less hunting in GMU 16 and more in GMU 20 (Table 3.1-3; Figure 3.1-16).

For hunters from the Mat-Su Borough, GMU 14 ranked first as a hunting location during 2007–2011 (as it had in the late 1980s and early 1990s), followed by GMUs 13, 20, and 16 (Table 3.1-4; Figure 3.1-17). Although Kenai Borough residents hunted throughout the state, by far most hunting took place in GMU 15 (Table 3.1-5; Figure 3.1-18).

For personal use and subsistence fisheries, most harvests by Anchorage and Mat-Su Borough residents are obtained from Kenai Peninsula and Copper River personal use dip net fisheries. Kenai Peninsula Borough residents participate in the personal use salmon dip net and setnet fisheries of the Kenai Peninsula.

During the period 2007–2011, 95.9% of the moose hunters within the Anchorage-Matsu-Kenai Nonsubsistence Area were residents of this area, as were 94.2% of the successful moose hunters (Table 3.1-6). Just 0.9% of the moose hunters lived outside nonsubsistence areas, and 3.2% were non-Alaska

residents. Similar patterns occurred in the 2 Kenai Peninsula GMUs (7 and 15), and the Anchorage and Mat-Su Borough GMUs (14 and 16A).

Table 3.1-3.—Total hunters by species and GMU, Anchorage Municipality residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total	
Black bear	45	61	36		11	1,536	1,243		12		68	86	746	1,461	443	885	9	3	49	253	11	2	9	10	17	4	519	126	7,645	
Brown bear	25		1	56	34	120	8	478	217	22	7	15	149	72	10	119	40	17	25	30	9	30	68	4	21	143	2	42	1,764	
Bison											26		3						20	196									245	
Caribou	1						246	25	72	685	3	116	4,526	88	26	78	247	70	128	1,926	17	80	560	43	409	1,925	45		11,316	
Deer	58	180	21	223	8	2,352		3,214																				36	6,091	
Elk			15					226																				1	242	
Moose	15	1	2	30	82	478		164		105	424	7,577	8,380	1,148	2,766	428	130	350	5,734	920	214	307	226	385	62	142		30,070		
Mt. goat	37			21	1	115	282	409		42			28	241	75													12	2	1,265
Muskox																		75				115	5						195	
Dall sheep						122		7	180	462	803	544	36	65				165	333				17	50	138	432	10		3,364	
Total	181	242	75	300	84	4,205	2,379	4,352	472	707	431	1,103	13,832	10,786	1,738	3,913	724	295	737	8,472	957	441	966	333	970	2,566	731	206	62,197	

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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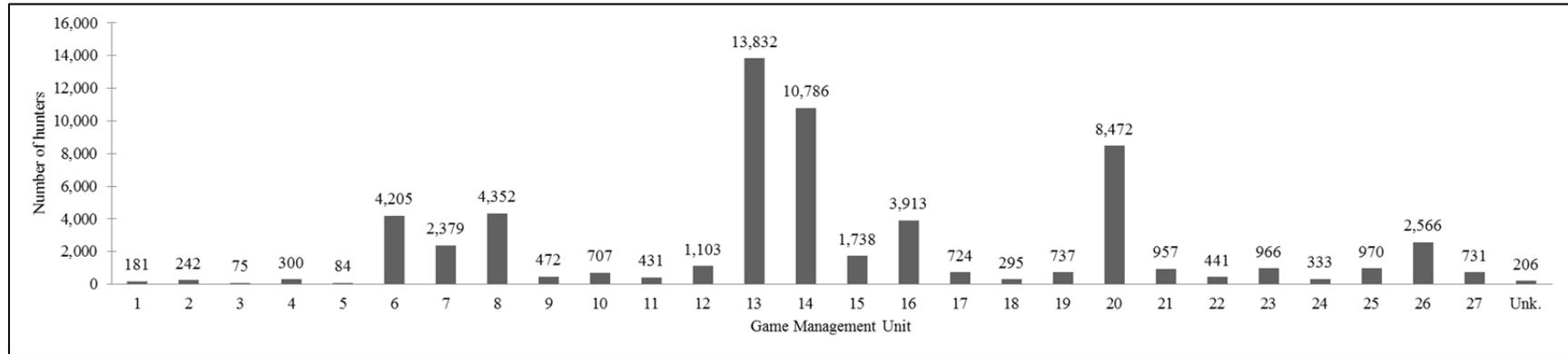


Figure 3.1-16.—Total hunters by GMU, Anchorage Municipality residents, 2007–2011.

Table 3.1-4.—Total hunters by species and GMU, Matanuska-Susitna Borough residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear	17	48	27		2	738	186				13	24	762	1,949	171	1,065	4		31	174	13	1	4	6	23	6	598	54	5,916
Brown bear	6		1	32	7	71		212	106	11	6	7	177	74	2	138	14	9	9	29	2	14	26	10	8	80		12	1,063
Bison											11		1							10	110								132
Caribou							45	10	36	101		60	4,333	98	3	63	74	28	102	1,429	7	31	158	43	336	1,075	32		8,064
Deer	24	140	22	98	1	1,118		1,156																				15	2,574
Elk			6					78																					84
Moose	4				10	40	40		59	1	48	184	6,558	13,169	188	2,682	116	37	188	4,163	529	64	76	140	274	23	122		28,715
Mt. goat	21			3		80	83	214			14		16	166	12												9		618
Muskox																		34		1		45	5						85
Dall sheep							22		1		82	163	784	450	9	36				82	202	0	7	39	97	181	5		2,160
Total	72	188	56	133	20	2,047	376	1,670	202	113	174	438	12,631	15,906	385	3,984	208	108	422	6,108	551	155	276	238	738	1,365	766	81	49,411

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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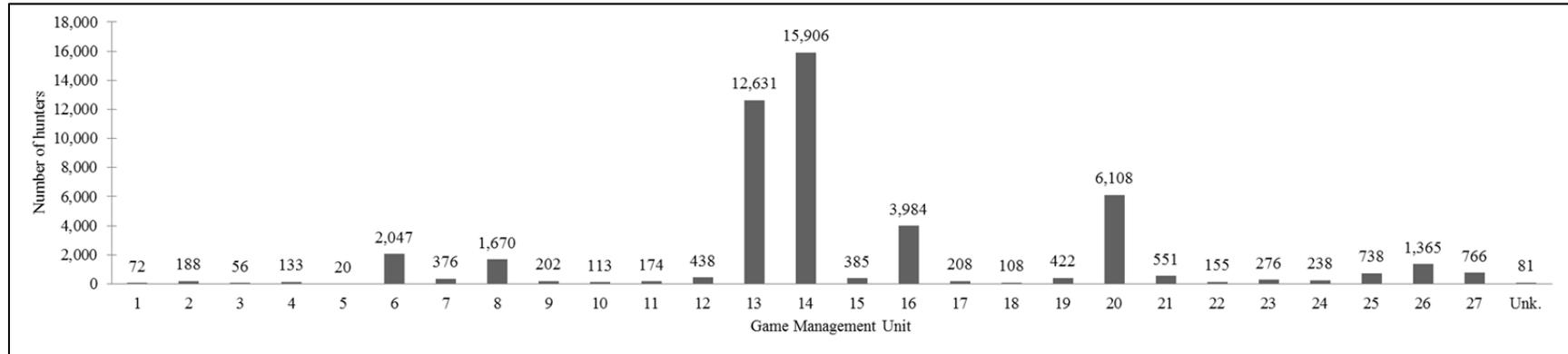


Figure 3.1-17.—Total hunters by GMU, Matanuska-Susitna Borough residents, 2007–2011.

Table 3.1-5.—Total hunters by species and GMU, Kenai Peninsula Borough residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total	
Black bear	5	10	2		5	349	721		16		11	14	37	21	2,132	147	7		13	70	6		5		4	471	36	4,082		
Brown bear	5		1	15	9	64	11	127	67	8		7	16	4	50	48	41	1	17	21	1	9	23	1	5	17		39	607	
Bison											10		1						3	77									91	
Caribou		1					180	17	36	62		17	612	13	39	23	127	7	39	577	10	28	161	7	173	369	16		2,514	
Deer	22	91	7	65		998		1,930																				17	3,130	
Elk			9					113																					122	
Moose	5	1	1		8	29	821		160		13	47	928	381	10,207	714	148	30	366	1,857	327	34	122	127	134	8	237		16,705	
Mt. goat	2			1		30	127	146			3		3	8	176													4	2	502
Muskox																		22				31	1						54	
Dall sheep						163			1	43	74	78	56	182	12			46	87			5	12	43	69	13			884	
Total	39	103	20	81	22	1,470	2,023	2,333	280	70	80	159	1,675	483	12,786	944	323	60	484	2,689	344	102	317	147	359	463	741	94	28,691	

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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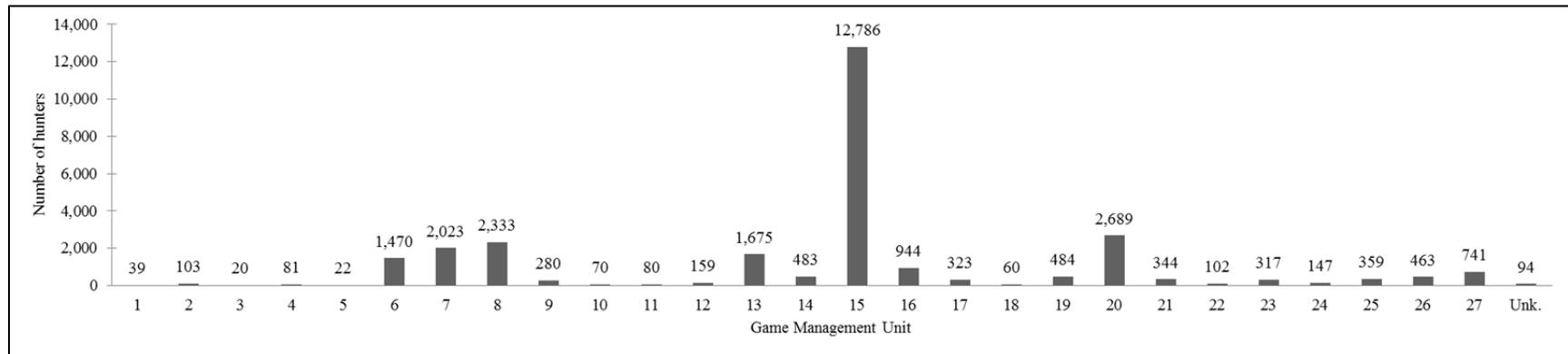


Figure 3.1-18.—Total hunters by GMU, Kenai Peninsula Borough residents, 2007–2011.

Table 3.1-6.—Place of residence of moose hunters and harvesters, 2007–2011, within the Anchorage-Matsu-Kenai Nonsubsistence Area.

	GMUs 7 and 15		GMUs 14 and 16A		All nonsubsistence area	
	Hunters	Harvests	Hunters	Harvests	Hunters	Harvests
Anchorage Municipality	12.0%	10.6%	37.0%	33.4%	28.6%	27.0%
Kenai Peninsula Borough	81.7%	81.4%	1.9%	2.8%	28.6%	24.9%
Matanuska-Susitna Borough	1.7%	1.7%	56.3%	57.2%	38.0%	41.6%
Total Anchorage-Matsu-Kenai NSA	95.4%	93.7%	95.3%	93.4%	95.3%	93.5%
Fairbanks NSA	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%
Valdez	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Juneau	0.1%	0.1%	0.2%	0.4%	0.2%	0.3%
Ketchikan	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
All nonsubsistence area residents	95.8%	94.1%	96.0%	94.2%	95.9%	94.2%
Other Alaska residents	1.1%	1.3%	0.8%	1.2%	0.9%	1.2%
All Alaska residents	96.9%	95.4%	96.7%	95.5%	96.8%	95.4%
Nonresidents	3.1%	4.6%	3.3%	4.5%	3.2%	4.6%
All	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

In November 1992, Joint Board concluded the following regarding Factor 12 and the Anchorage-Matsu-Kenai Nonsubsistence Area:

Although there was testimony reflecting sharing among the area population, there have been no recent studies which determine the extent of such sharing. The Board found that distribution of fish and game through non-commercial networks is not a significant mechanism for supplying food in the area.

The 1992 department report further noted that the absolute amount of wild foods shared on a per capita basis is likely relatively small in the Anchorage-Matsu Area because of the relatively small amounts harvested. Because of this, distribution of fish and game through noncommercial networks is not a significant mechanism for supplying food in the area.

Household harvest surveys conducted in selected communities in the Kenai Peninsula Borough and Mat-Su Borough did not quantify the amount of wild resources that were shared, but documented the number of kinds of resources received and given away. For a selection of communities shown in Table 3.1-2, households received on average between about 2.5 kinds (Talkeetna in 1985) and 4.2 kinds (Seward in 2000) of wild resources, and gave away between about 1.2 kinds (Trapper Creek in 1985) and 2.5 kinds (Kenai in 1992) of wild resources.

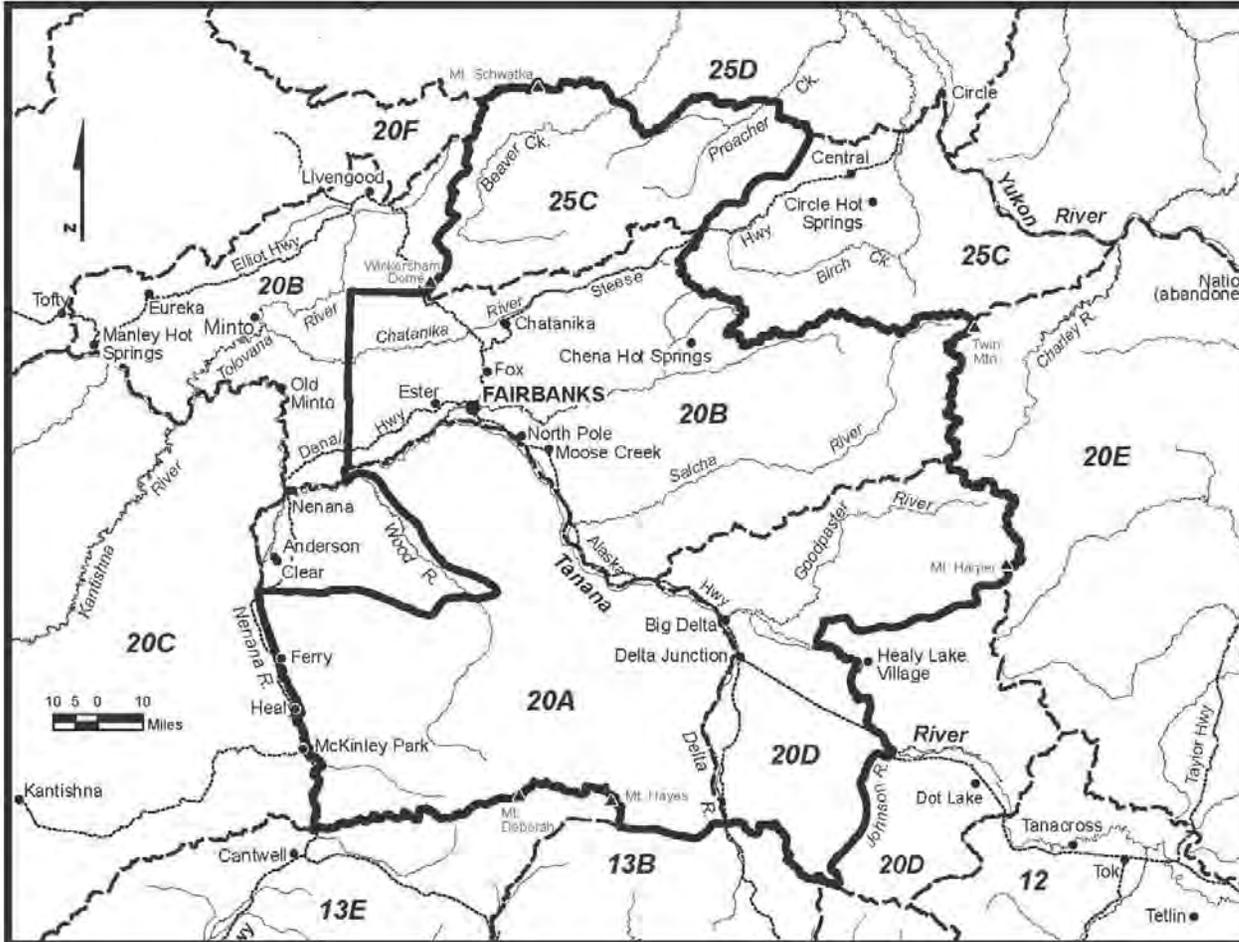
3.2 FAIRBANKS NONSUBSISTENCE AREA

3.2.1 Background

The Fairbanks Nonsubsistence Area (FN SA) includes the entire Fairbanks North Star Borough and portions of the Denali Borough (including Healy, Ferry, and McKinley Park) and portions of the Southeast Fairbanks Census Area (including Delta Junction and the census designated places of Big Delta, Deltana, Whitestone, and Fort Greely) (Figure 3.2-1). The regulatory definition of this nonsubsistence area is as follows:

5 AAC 99.015 (a) (4) The Fairbanks Nonsubsistence Area is comprised of the following: within Unit 20(A), as defined by 5 AAC 92.450(20)(A), east of the Wood River drainage and south of the Rex Trail but including the upper Wood River drainage south of its confluence with Chicken Creek; within Unit 20(B), as defined by 5 AAC 92.450(20)(B), the North Star Borough and that portion of the Washington Creek drainage east of the Elliot Highway, within Unit 20(D) as defined by 5 AAC 92.450(20)(D), west of the Tanana River between its confluences with the Johnson and Delta Rivers, west of the west bank of the Johnson River, and north and west of the Volkmar drainage, including the Goodpaster River drainage; and within Unit 25(C), as defined by 5 AAC 92.450(25)(C), the Preacher and Beaver Creek drainages.

Fairbanks Nonsubsistence Area



The Fairbanks Nonsubsistence Area is comprised of the following: within Unit 20(A), as defined by 5 AAC 92.450(20) (A), east of the Wood River drainage and south of the Rex Trail but including the upper Wood River drainage south of its confluence with Chicken Creek; within Unit 20(B), as defined by 5 AAC 92.450(20) (B), the North Star Borough and that portion of the Washington Creek drainage east of the Elliot Highway; within Unit 20(D) as defined by 5 AAC 92.450(20) (D), west of the Tanana River between its confluence with the Johnson and Delta Rivers, west of the east bank of the Johnson River, and north and west of the Volkmar drainage, including the Goodpastor River drainage; and within Unit 25(C), as defined by 5 AAC 92.450(25) (C), the Proacher and Beaver Creek drainages.



Legend

- Nonsubsistence Area Boundary
- GMU Boundary
- Roads



Figure 3.2-1.—Map of Fairbanks Nonsubsistence Area.

3.2.2 Demography

The population of the FNSA, most of which lives within the Fairbanks North Star Borough, has grown steadily since statehood. In 1990, 82,655 people lived in this area; the population was 103,378 in 2010, which is an increase of 25% over the 20 years (compared to 29% for the state overall) (Table 3.2-1; Figure 3.2-2).

Table 3.2-1.—Population of Fairbanks Nonsubsistence Area, 1960–2012.

	Fairbanks North Star Borough	Southeast Fairbanks Census Area ^a	Denali Borough ^b	Entire nonsubsistence area	Change over decade	Alaska Native population	Percentage of population
1960	42,863			42,863			
1970	45,864	3,679		49,543	15.6%		
1980	53,983	4,377	394	58,754	18.6%	3,164	5.4%
1990	77,720	3,911	1,024	82,655	40.7%	5,460	6.6%
2000	82,840	3,665	1,304	87,809	6.2%	8,384	9.5%
2010	97,581	4,436	1,361	103,378	17.7%	10,916	10.6%
2012	100,343	4,626	1,424	106,393			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

- Within the Southeast Fairbanks Census Area, the nonsubsistence area includes the incorporated city of Delta Junction and the census designated places of Whitestone, Big Delta, Deltana, and Fort Greely.
- Within the Denali Borough, the nonsubsistence area includes the census designated places of Healy, Ferry, and McKinley Park.

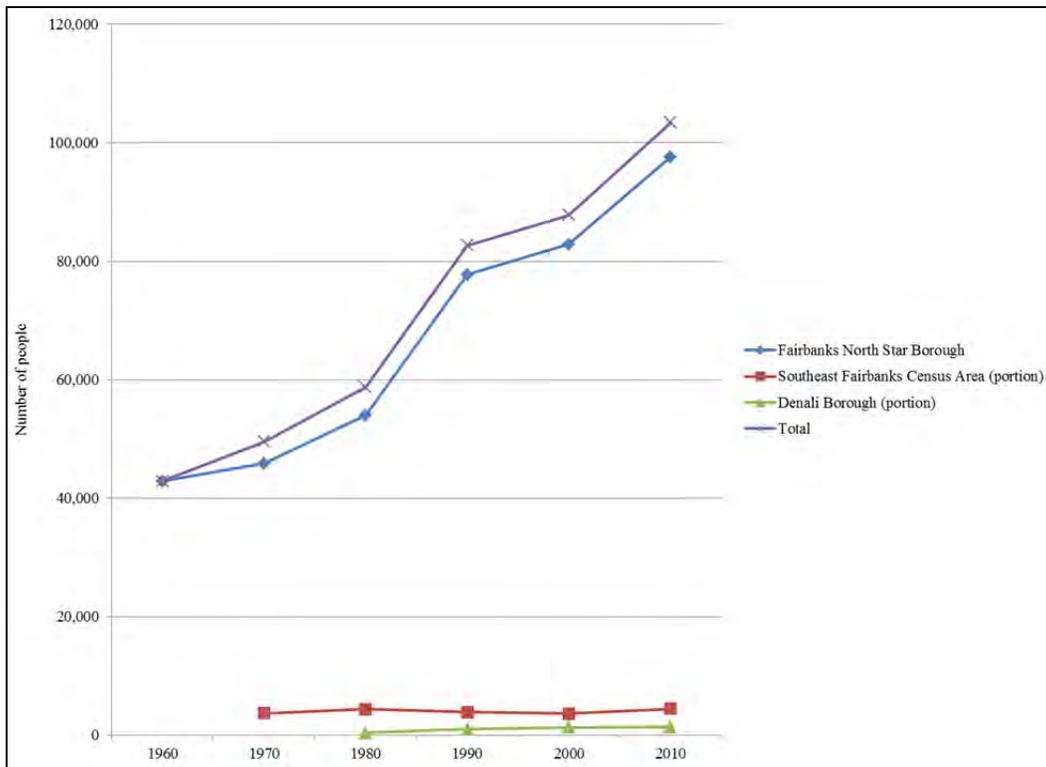


Figure 3.2-2.—Fairbanks Nonsubsistence Area population, 1960–2010.

3.2.3 The 12 Socioeconomic Factors

1. The social and economic structure.

In November 1992, the Joint Board concluded the following regarding Factor 1 and the Fairbanks Nonsubsistence Area:

The socio-economic structure of this area is consistent with the information provided by the ADF&G in no. 1 of the nonsubsistence area report for proposal no. 1. The Board recognizes that most segments of the population within the area support an industrial-capitalism economy. However, there is a mixture of lifestyles and a high percent of the residents obtain food by hunting and fishing. Evidence supplied by Board members from the area support the department's information indicating that Fairbanks typifies the type of cash economy envisioned by the legislature as a nonsubsistence area. Based on the information presented and the Board's discussion, the Board found that subsistence was not a principal characteristic of the socio-economic structure.

The department report for 1992 noted the following:

The social and economic structure of the Fairbanks area has been characterized as a type of "industrial-capitalism," a socioeconomic system common in the lower 48 which has developed in Alaska. This social and economic structure is distinct from another type of socioeconomic system in Alaska, called a "mixed, subsistence-cash economy," where the domestic household sector is a major producer and distributor of food. Industrial capital systems generally have large wage sectors, which provide the major means of livelihood to residents. In an industrial-capital system, households are not major producers or distributors of an area's food supply. Food production by households provides a very small portion of the community's food, but may be of economic significance to those households actively involved in hunting and fishing. Most of the area's food and other goods and services are provided by businesses organized and financed separately from the household unit. Production and distribution of goods and services are organized by market forces or by government. Fishing and hunting by residents are primarily conducted as part of recreational or commercial industries.

The following information pertaining to the remaining characteristics may be applied to assess if important changes for Factor 1 have taken place since 1992. Key information includes a steady increase in the number of available jobs in the borough (Factor 2), jobs in a variety of industries and a relatively low unemployment rate (Factor 3), cash incomes at the state average (Factor 4), and poverty rates below the state average (Factor 4).

2. The stability of the economy.

In November 1992, the Joint Board concluded the following regarding Factor 2 and the Fairbanks Nonsubsistence Area:

The Board found that the information presented in Section 2 of the ADF&G staff report indicates that the Fairbanks area's economy is heavily dependent on government, military, and services jobs. Unemployment is low, 10.7 percent, compared to remote isolated Alaskan communities where unemployment is above 30 percent and the

state average of 9.7%. Overall wages are higher than most areas of the state, unemployment is low, and the numbers of jobs are expanding. The board concludes the area has a relatively stable industrial-capitalism economy and subsistence is not a principal characteristic of the economy.

Reflecting a relatively stable economy, the number of nonfarm wage and salary jobs in the Fairbanks North Star Borough grew steadily from 2001 (34,700 jobs) through 2012 (39,600 jobs) (Figure 3.2-3).

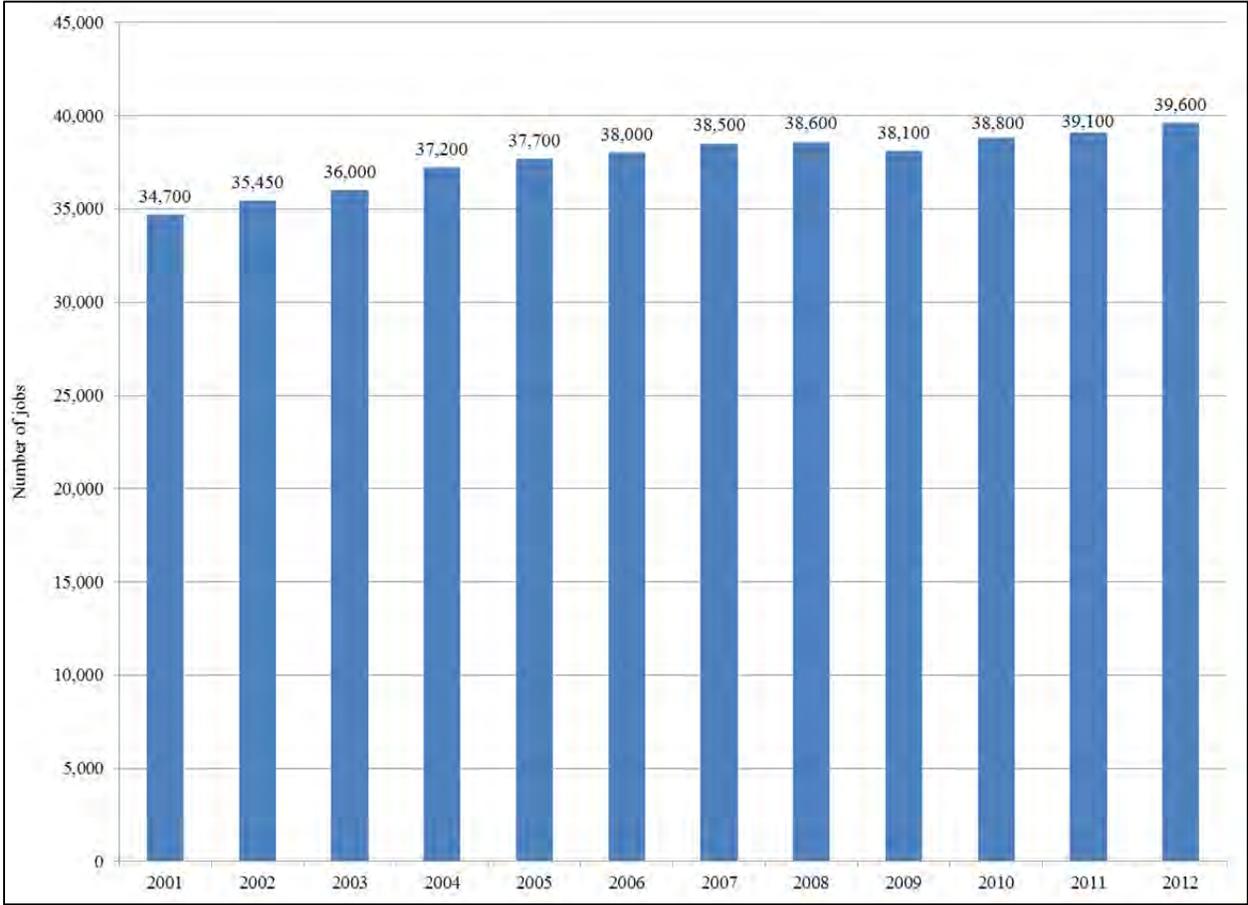


Figure 3.2-3.–Fairbanks North Star Borough: average annual employment, nonfarm wage and salary jobs, 2001–2012.

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

In November 1992, the Joint Board concluded the following regarding Factor 3 and the Fairbanks Nonsubsistence Area:

Department of Labor statistics for 1991 have 27,800 jobs in Fairbanks of which 7,650 are in military, 9,950 in government, 6,250 in services, 6,400 in trade, and 600 in manufacturing. This indicates the heavy dependence in Fairbanks on government and military employment. The Board also explored the Department of Labor statistics for Healy and McKinley Village communities within the proposed area. Based on percent of households having employed members (1987), Healy has 53

percent employed in mining, 20 percent in transportation / utilities / communications, 19 percent in services, and 29 percent in government (local, state, & federal). McKinley Village's percent of households having employed members for 1987 were 10 percent in mining, 18 percent for transportation/utilities/communications, 13 percent services, and 74 percent in government (local, state, & federal). Reviewing Fairbanks and McKinley Village labor statistics reveals a capital-industrial economy. Reliance on subsistence is not a principal characteristic of the area.

In 2011, the largest number of jobs in the Fairbanks North Star Borough were in trade, transportation, and utilities (22%), followed by state government (14%), education and health services (13%), and leisure and hospitality (11%). During the period 2007–2011, an annual average of only 3% of Fairbanks workers working in state worked outside of the Fairbanks North Star Borough (1,393 of 48,712 jobs) (Figure 3.2-4).

In 2012, the annual unemployment rate for the Fairbanks North Star Borough was 6%, compared to a state average of 7% (Table 2.4-1; Figure 2.4-1). In 1992, the employment rate was 11% compared to 9% for the state. The Fairbanks North Star Borough unemployment rate was consistently below the state average for the period 2003–2012 (Figure 2.4-2).

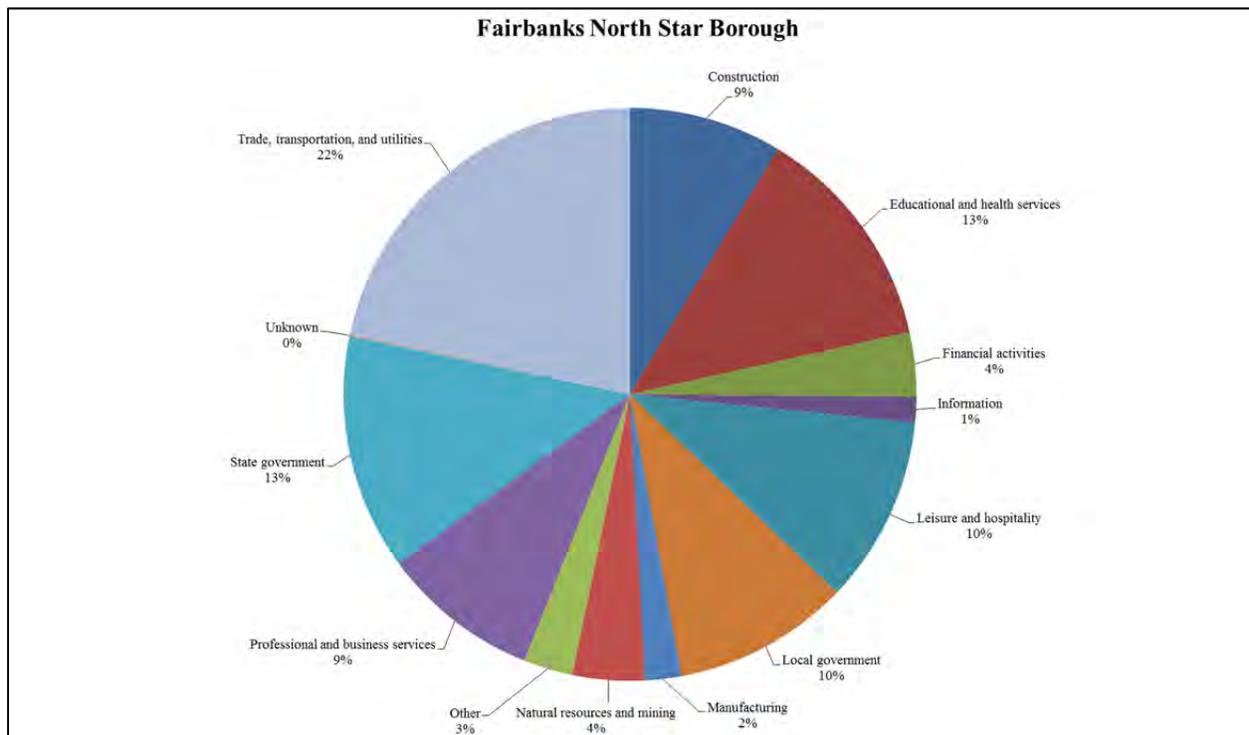


Figure 3.2-4.–Percentage of jobs by industry, Fairbanks North Star Borough, 2011.

4. The amount and distribution of cash income among those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 4 and the Fairbanks Nonsubsistence Area:

In 1989 the average per capita income for the Fairbanks North Star Borough was \$15,914, slightly below Alaska's average of \$17,610. The

average income in 1989 for McKinley Park Village was \$20,917, in Healy \$18,160. Board members summarized the economic data for Delta Junction and Fort Greely based on personal knowledge and information provided the Board by ADF&G. The average household incomes discussed in Delta Junction and Fort Greely were \$35 - 40,000 for Delta Junction and \$20 - 30,000 for Fort Greely. 11.5 percent of the households earning less than the federal poverty standards (1989) were in Fairbanks. The Board recognized that distribution of cash income varies among the residents within the proposed nonsubsistence area but is consistent with an urban environment in Alaska.

For the period 2007–2011, the annual per capita income for Fairbanks North Star Borough residents was \$31,532 (\pm \$1,084), which is about the same as the state's average of \$31,944 (\pm \$423) per person. In 2007–2011, 7.8% of residents of the Fairbanks North Star Borough lived below the poverty line, compared to 9.5% for the state population overall.

5. The cost and availability of goods and services to those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 5 and the Fairbanks Nonsubsistence Area:

The Fairbanks area has a large range of goods and services available. Fairbanks' cost of food index at 7 percent higher than Anchorage is relatively low for Alaskan communities. The cost of food index for Delta Junction is 33 percent higher than Anchorage and for the Parks Highway area is 56 - 89 percent higher. The communities located along the Parks Highway do most of their shopping in Fairbanks due to road access.

The *Alaska Geographic Differential Study* for 2008 found that overall costs of living, the cost of food, and the cost of fuel in the Fairbanks North Star Borough were about 3% above those of Anchorage. The cost of food index, as developed by the University of Alaska's Cooperative Extension Service, for Fairbanks for 2011 was 97 (Anchorage is 100), down from 105 in 1991.

6. The variety of fish and game species used by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 6 and the Fairbanks Nonsubsistence Area:

Residents of the proposed area used a wide variety of fish and game resources locally available as well as resources distant from their residence. Primary big game species used in order of importance are moose, caribou, sheep, black and brown bears. Major fish species include salmon, grayling, pike, burbot and white fish. Halibut are also taken in other areas of the state. The Board of Game previously found a positive customary and traditional finding for moose in Game Management Units (GMU) 20A, 20B, 20C & 20D. There were no positive C&Ts for caribou in the area. The Board of Fisheries previously determined positive C&Ts for salmon and other finfish (sheefish, white fish, lamprey, burbot, sucker, grayling, pike, char, and blackfish). Subsistence fishing permits for residents of the nonsubsistence area were used mainly in areas along the Tanana River, outside the proposed area.

There are no updated household survey data for communities of this nonsubsistence area. Recent annual harvest monitoring programs conducted by the department generally show an overall range of resources harvested similar to that summarized in the 1992 Joint Board finding.

7. The seasonal cycle of economic activity.

In November 1992, the Joint Board concluded the following regarding Factor 7 and the Fairbanks Nonsubsistence Area:

The Fairbanks area has seasonal fluctuations in economic activity related to tourism. The primary types of jobs in the Fairbanks area (government, military, services and trade) are not normally affected by seasonal changes. Residents along the Parks Highway have seasonal cycles of employment associated with Denali National Park tourism. Healy and Anderson residents are not affected as much by seasonal changes because of coal mine and electrical production employment. The Board finds overall economic activity of the proposed area to be representative of an economy where reliance on wage employment is a principal characteristic of the economy.

We have no new information to add to that cited in the 1992 Joint Board finding for Factor 7.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 8 and the Fairbanks Nonsubsistence Area:

Based on a household survey in the Fairbanks North Star Borough, 50 - 59 percent hunted and 74 - 82 percent fished. In McKinley Park Village households, 70 percent fished and 45 percent hunted. The Board notes some individual households within the proposed area may be hunting and fishing for larger amounts for food production, but overall residents of the proposed area hunted and fished for nonsubsistence use.

In 2012, 23,184 residents of the FNSA held sport fishing/sport fishing combination licenses, representing about 22% of the total population of the area. Also, 13,686 residents held hunting/hunting combination licenses (13% of the population) (Figure 3.2-5). In addition, in 2012, 880 residents obtained senior hunting/trapping/fishing licenses.⁷

In 2011, residents of the FNSA held 6,117 subsistence and personal use salmon fishing permits (Table 2.6-1). Most of these were for the personal use dip net fishery in the Copper River.

7. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

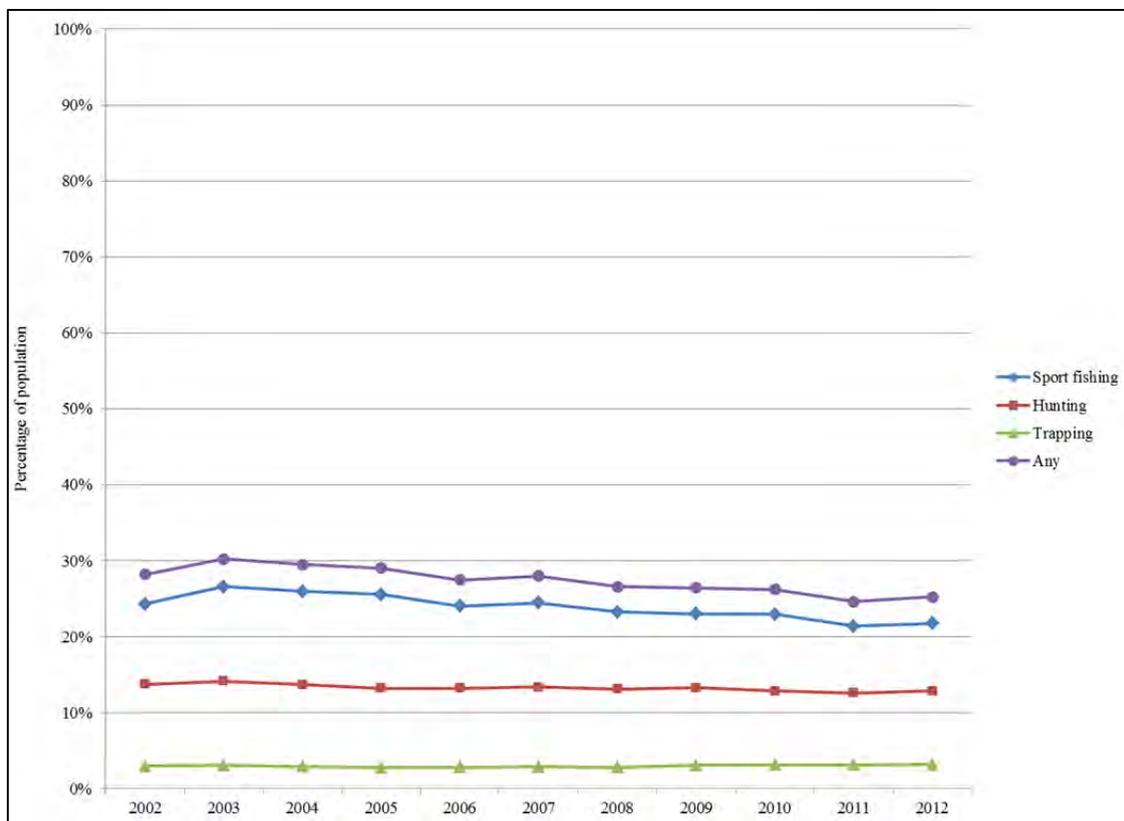


Figure 3.2-5.—Percentage of Fairbanks Nonsubsistence Area residents holding hunting, sport fishing, and trapping licenses, 2012.

9. The harvest levels of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 9 and the Fairbanks Nonsubsistence Area:

The Board considered harvest levels of fish and game species in communities within the proposed area by using department reports and verbal and written comments by the public and Board members. The Board noted the range of pounds per person, per year for communities in the proposed area with Fairbanks at 16 pounds, Healy at 132 pounds and McKinley Village at 242 pounds. The Board finds the overall proposed area the harvest levels are representative of a nonsubsistence area.

Based on annual harvest monitoring programs administered by the department, estimated harvests of fish and wildlife by residents of the FNSA from 2004–2011 ranged from 18 lb per person (in 2008) to 23 lb per person (in 2007) (Figure 3.2-6). The recent (2007–2011) 5-year average was 20 lb per person. This represents about 9% of the average annual consumption of meat, fish, and poultry by Americans, 12% of protein requirements, and 2% of caloric requirements.

There are no updated household harvest survey data available for communities in this nonsubsistence area.

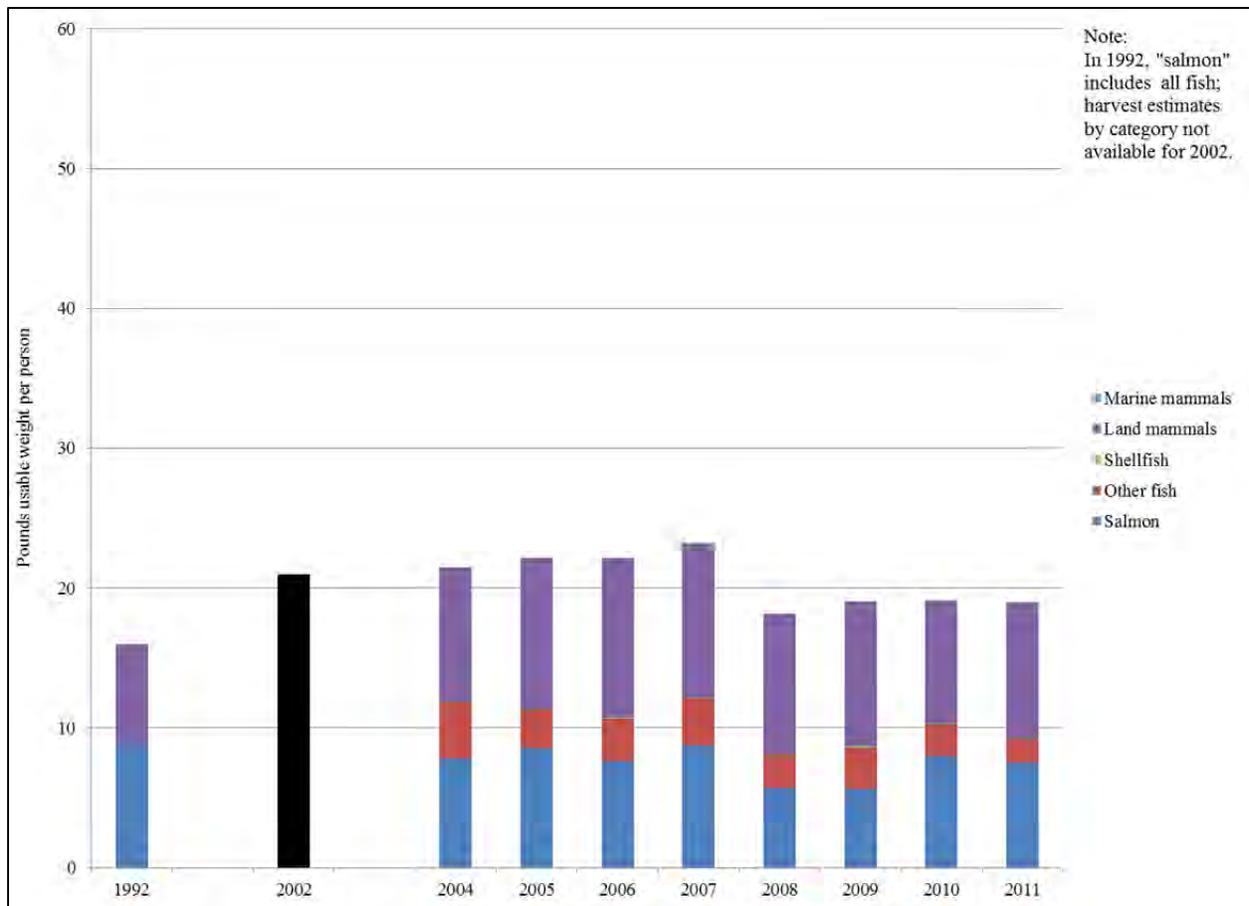


Figure 3.2-6.–Fairbanks Nonsubsistence Area: estimated harvests of fish and wildlife for home use.

10. The cultural, social, and economic values associated with taking and use of fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 10 and the Fairbanks Nonsubsistence Area:

The Board notes there are subsistence uses outside the proposed area and protected Minto and Nenana subsistence uses when it deleted the proposed addition of the Minto Flats area. The Board determined the area’s cultural, social, and economic values represent a nonsubsistence value system.

We have no new information for this factor.

11. The geographic locations where those domiciled in the area or community hunt and fish.

In November 1992, the Joint Board concluded the following regarding Factor 11 and the Fairbanks Nonsubsistence Area:

The Joint Board examined (under factor 11) patterns of hunting and fishing by residents of the proposed nonsubsistence area. The Board finds that area residents hunt and fish throughout the proposed area as well as GMU 13 and other areas of the state. The Board considered

including the Minto Flats State Game Refuge and later added the Minto Flats Management Area and Uniform Coding Unit 0100 south of the Tanana River. The additional area was used by residents of the proposed nonsubsistence area for fishing and hunting for moose, waterfowl, and other wildlife uses. The Minto Refuge and Management Area was removed from consideration as a nonsubsistence area based on information submitted by the department from a 1983-84 household survey of Minto residents and wildlife use and consumptive patterns. Specifically there is not a well developed cash economy. Only 25 percent of the population is employed, primarily in seasonal jobs. 75 percent of the residents were below the poverty level with only a third having motor vehicles. There is a small store but costs are 1.8 times those of Fairbanks. There is a high use of fish and game resources by Minto residents which is consistent with a subsistence lifestyle dependent on the natural resources.

In discussing the area of 20(C) west of the Nenana River, the Board concluded that the land area in the proposed nonsubsistence area was predominantly Denali National Park over which the State has no authority. Hunting is by subsistence permit only and restricted to rural residents as defined by Federal regulations. This area was removed from the proposed nonsubsistence area. Additionally, the board reviewed fish and game harvest and use patterns of the residents along the Parks Highway in GMU 20(A) between Nenana and Wood Rivers to see if that area should be removed from the nonsubsistence area. In applying the 12 factors, the Board found a mixed social and economic lifestyle that was characterized by average incomes higher than Fairbanks and wildlife use patterns that fluctuated from high to low use. The proximity to Fairbanks, employment at the Usibelli Mine, Clear Air Force Base, Golden Valley Power Plant and Denali National Park and the accompanying service sectors brought many jobs, some seasonal in nature. The use patterns of highway residents showed use of the area, i.e., an average annual moose harvest by Healy residents of 8.3, Denali Park 2.3, Anderson 6.5 and Fairbanks of 155.8; an average annual sheep harvest by Healy residents of 5.7, Denali Park 1.3, Anderson 3, and Fairbanks 45. Based on the totality of the factors, the Board left the area in the proposed nonsubsistence area as it determined it was an area used by a high percentage of the residents of the nonsubsistence area.

From 1986–1991, most big game hunting by Fairbanks residents took place in GMU 20. There was a similar pattern for 2007–2011, the most recent 5-year period for which data for big game species are available. Again in 2007–2011, Fairbanks hunters hunted throughout the state, but mostly in GMU 20, followed by GMUs 25 and 13 (Table 3.2-2; Figure 3.2-7).

During the period 2007–2011, 62.8% of the moose hunters within the GMUs 20ABD, which make up most of the FNSA, were residents of this area, as were 56.1% of the successful moose hunters (Table 3.2-3). In addition, 23.8% of the moose hunters were from the Anchorage-Matsu-Kenai Nonsubsistence area. Just 4.3% of the moose hunters lived outside nonsubsistence areas, and about 7.2% were non-Alaska residents.

Table 3.2-2.—Total hunters by species and GMU, Fairbanks Nonsubsistence Area residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear	10	26	6		7	226	28				21	65	102	21	22	25		1	4	2,917	24	3	4	36	177	12	421	22	
Brown bear	24			61	32	26		194	41	4	1	4	72	4		3	9	7		133	3	4	13	29	62	122		4	
Bison												8								1	159								168
Caribou							6	3	5	34		44	2,290	4		1	4	5	8	3,862	7	15	109	119	4,578	2,219	86		13,399
Deer	11	42	18	71		285		451																				3	881
Elk			9					68																					77
Moose	4	2	6		2	6	5		6		21	170	1,564	57	17	26	22	15	29	26,154	741	34	75	378	1,276	33	170		30,813
Mt. goat	25			9		32	31	102			14		19	8	18													1	259
Muskox																		26				38	2						66
Dall sheep					1						51	286	200	30	2	2			16	762			3	119	450	336	22		2,280
Total	74	70	39	141	41	576	70	818	52	38	116	569	4,247	124	59	57	35	54	58	33,987	775	94	206	681	6,543	2,722	700	29	52,975

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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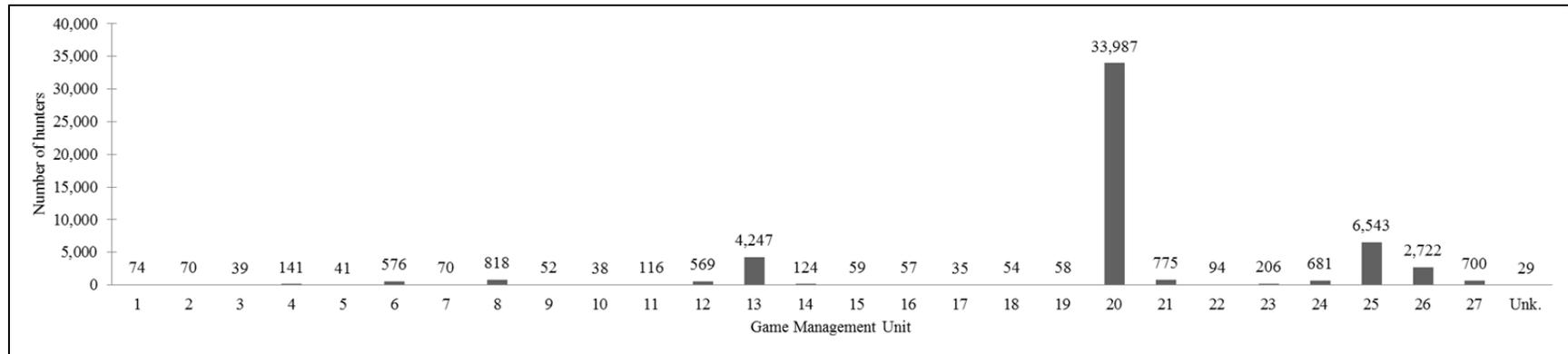


Figure 3.2-7.—Total hunters by GMU, Fairbanks Nonsubsistence Area residents, 2007–2011.

Table 3.2-3.–Place of residence of moose hunters and harvesters, 2007–2011, within the Fairbanks Nonsubsistence Area.

	GMUs 20ABD ^a	
	Hunters	Harvests
Anchorage Municipality	11.6%	12.3%
Kenai Peninsula Borough	3.7%	4.8%
Matanuska-Susitna Borough	8.5%	10.3%
Total Anchorage-Matsu-Kenai NSA	23.8%	27.4%
Fairbanks NSA	62.8%	56.1%
Valdez	0.9%	1.2%
Juneau	1.0%	1.0%
Ketchikan	0.1%	0.1%
All nonsubsistence area residents	88.5%	85.9%
Other Alaska residents	4.3%	4.8%
All Alaska residents	92.8%	90.7%
Nonresidents	7.2%	9.3%
All	100%	100%

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

- a. Portions of GMUs 20A, 20B, and 20D are outside the Fairbanks Nonsubsistence area, and a portion of GMU 25C is within the nonsubsistence area.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 12 and the Fairbanks Nonsubsistence Area:

Sharing and exchange of wild fish and game occurs within and between families in and adjacent to the proposed area. The extent of sharing for the proposed area has not been quantified in all communities.

We have no new information regarding this factor.

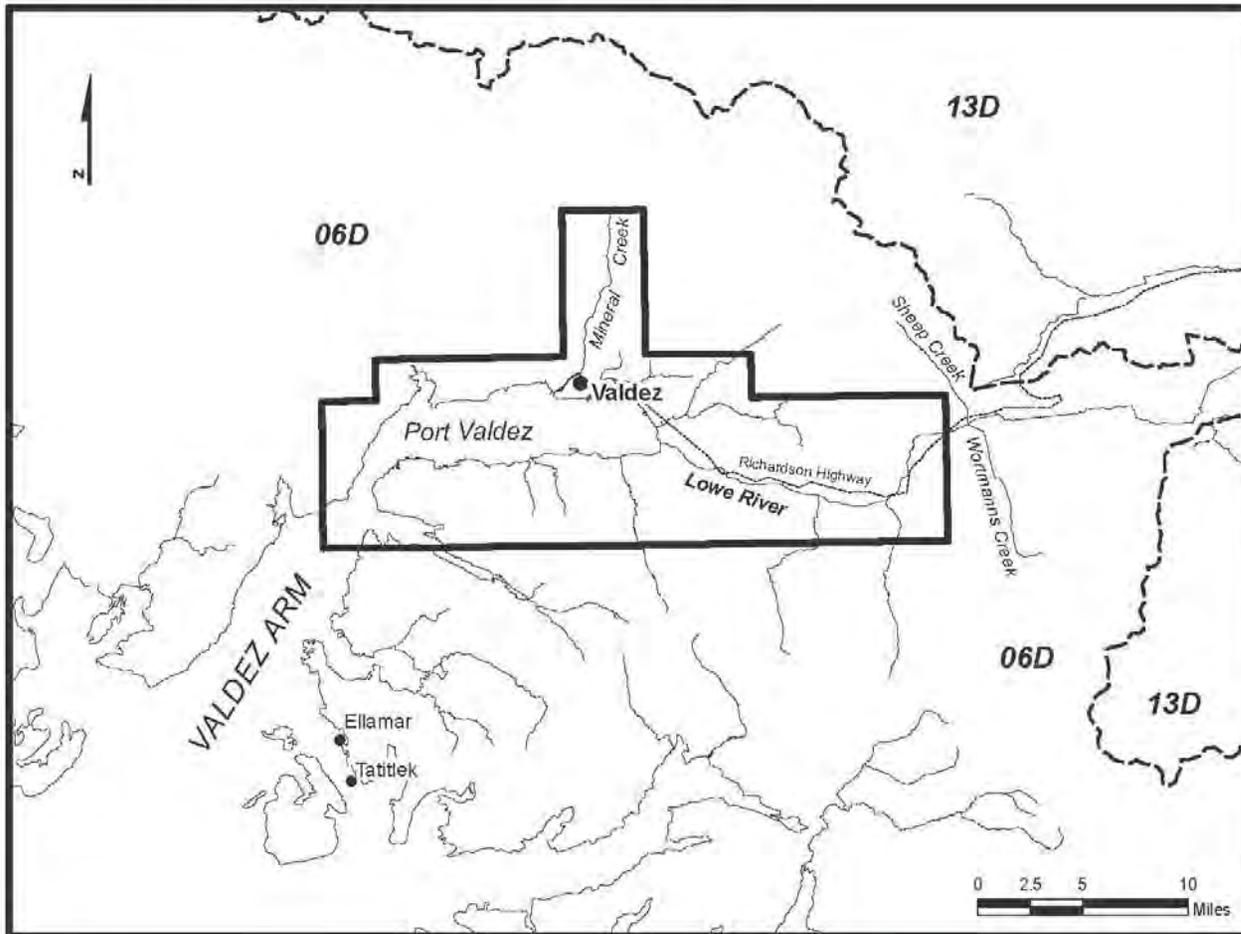
3.3 VALDEZ NONSUBSISTENCE AREA

3.3.1 Background

The Valdez Nonsubsistence Area corresponds with the boundaries of the incorporated city of Valdez (Figure 3.3-1). The regulatory definition is as follows:

5 AAC 99.015(a)(5) The Valdez Nonsubsistence Area is comprised of the following: within Unit 6(D), as defined by 5 AAC 92.450(6)(D), and all waters of Alaska in the Prince William Sound Area as defined by 5 AAC 24.100, within the March 1993 Valdez City limits

Valdez Nonsubsistence Area



The Valdez Nonsubsistence Area is comprised of the following: within Unit 6(D), as defined by 5 AAC 92.450(6) (D), and all waters of Alaska in the Prince William Sound Area as defined by 5 AAC 24.100, within the March 1993 Valdez City limits.



Legend

-  Nonsubsistence Area Boundary
-  GMU Boundary
-  Roads



Figure 3.3-1.—Map of Valdez Nonsubsistence Area.

3.3.2 Demography

The population of Valdez grew very rapidly from 1970 to 1990 during the construction and early operation of the Trans-Alaska Pipeline. Since 1990, the population of Valdez has been virtually stable: the population was 4,068 in 1990 and 3,976 in 2010 (Figure 3.3-2). In 1990, about 6% of Valdez's population was Alaska Native; this portion rose to about 13% in 2010 (Table 3.3-1).

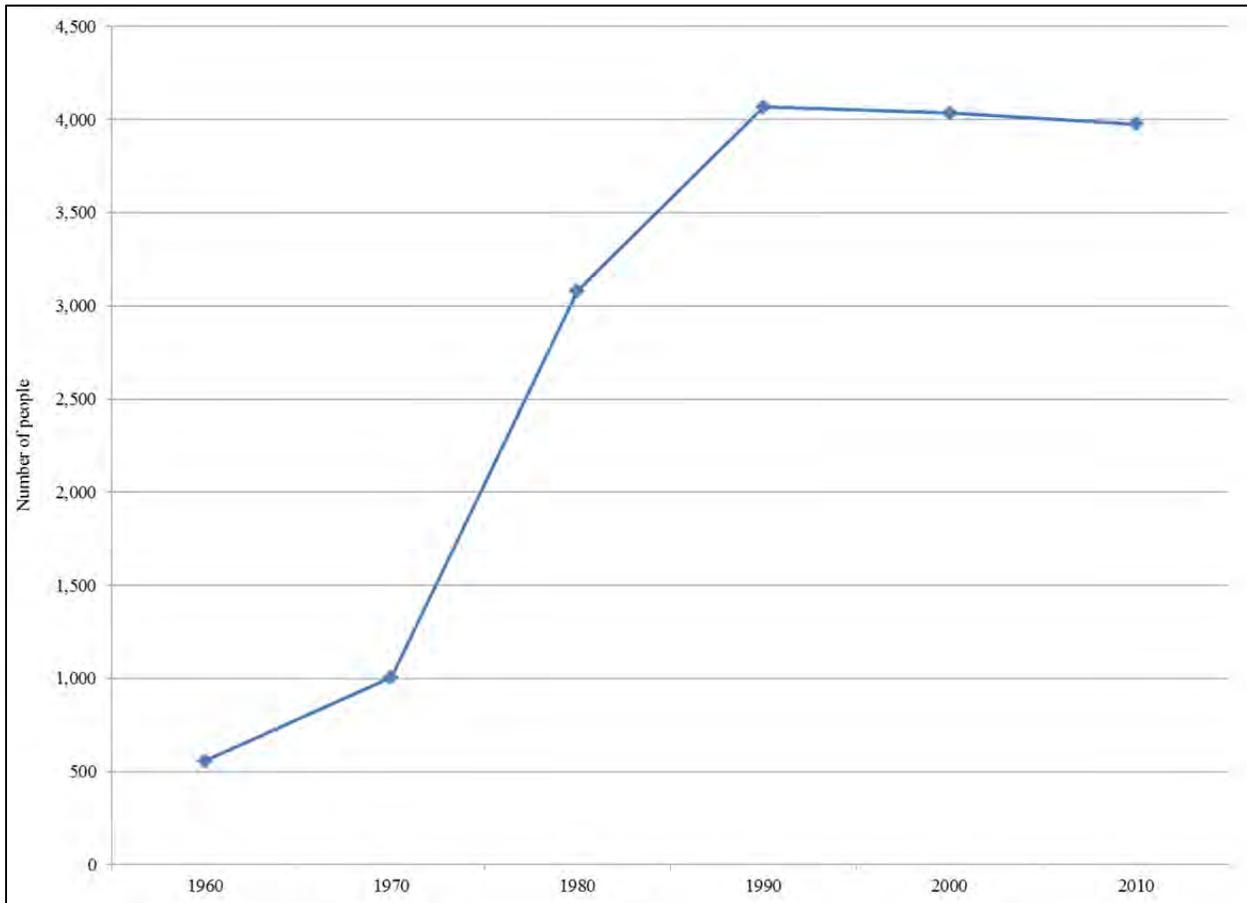


Figure 3.3-2.—Valdez population, 1960–2010.

Table 3.3-1.—Valdez Nonsubsistence Area population, 1960–2012.

	Population	Change over decade	Alaska Native population	Percentage of population
1960	555			
1970	1,005	81%		
1980	3,079	206%		
1990	4,068	32%	239	6%
2000	4,036	-1%	410	10%
2010	3,976	-1%	513	13%
2012	4,144			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

3.3.3 The 12 Socioeconomic Factors

1. The social and economic structure.

In March 1993, the Joint Board concluded the following regarding Factor 1 and Valdez:

The socio-economic structure of this area is consistent with the information provided by the ADF&G in no. 1 of the nonsubsistence area report. The Board recognizes that most segments of the population within the area participated in an industrial-capitalism economy; example: oil industry, commercial fishing & commercial guiding. However, there is a mixture of lifestyles and a percent of the residents obtain food by sport hunting and fishing. Based on the information presented and the Board's discussion, the Board found that subsistence was not a principal characteristic of the socio-economic structure .

The 1992 department report noted:

The social and economic structure of Valdez has been characterized as a type of "industrial-capitalism," a socioeconomic system common in the lower 48 which has developed in Alaska. This social and economic structure is distinct from another type of socioeconomic system in Alaska, called a "mixed, subsistence-cash economy," where the domestic household sector is a major producer and distributor of food. Industrial capital systems generally have large wage sectors, which provide the major means of livelihood to residents. In an industrial-capital system, households are not major producers or distributors of an area's food supply. Food production by households provides a very small portion of the community's food, but may be of economic significance to those households actively involved in hunting and fishing. Most of the area's food and other goods and services are provided by businesses organized and financed separately from the household unit. Production and distribution of goods and services are organized by market forces or by government. Fishing and hunting by residents are primarily conducted as part of recreational or commercial industries.

The economy of Valdez continues to be focused on the transportation of oil and other operations of the Trans-Alaska Pipeline System (TAPS). In 2009, Robinson (2009:15) noted that, "almost four decades later [after the completion of the pipeline], Valdez's heavy reliance on the pipeline terminal is still very obvious in its job counts." See also information reported for factors 2, 3, and 4, below, which is also relevant to Factor 1, such as high rates of employment (Factor 2), relatively high cash incomes (Factor 4), and relatively low poverty rates (Factor 4).

2. The stability of the economy.

In March 1993, the Joint Board concluded the following regarding Factor 2 and Valdez:

The socio-economic structure of this area is consistent with the information provided in Section 2 of the nonsubsistence area report. The Valdez area economy is dependent on wage employment in the following job categories: transportation (31 percent), government (27 percent), services (14 percent), and manufacturing (13 percent). Unemployment is low for the Valdez area compared to remote isolated Alaskan communities where unemployment is above 30 percent and the state average of 9.7 percent. Overall wages are higher than most areas of the state and the numbers of jobs are stable. The Board concludes that the

harvest of fish and game for subsistence uses does not contribute significantly to the stability of the economy.

According to the results of the *American Community Survey*, for the period 2007–2011, about 69% of the population of Valdez age 16 and over was employed, compared to 62% for the state overall and 61% for Anchorage (ADLWD 2013a). See the next section for information on jobs by industry for Valdez.

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

In March 1993, the Joint Board concluded the following regarding Factor 3 and Valdez:

In the proposed area most wage-paying jobs were in transportation (31 percent) and government (27 percent). This reflects the importance of shipping oil in the local economy. In 1991, there were 48 limited entry commercial fishing permits issued to Valdez residents. The Board after reviewing the data on the extent and kinds of employment found that Valdez's unemployment rate typifies a stable urban environment. The Board found that subsistence is not a principal characteristic of the area.

In 2011, 26% of jobs held by Valdez residents were in trade, transportation, and utilities followed by 17% in local government; 13% in educational and health services; and 12% in leisure and hospitality (Figure 3.3-3). In addition to the transportation and warehousing jobs connected to the pipeline terminal, seafood processing is an important source of employment in Valdez (Robinson 2009:15).

In 2012, 42 Valdez residents held 70 commercial fishing permits; this total includes 23 individuals who held 26 limited entry salmon permits (CFEC 2013).

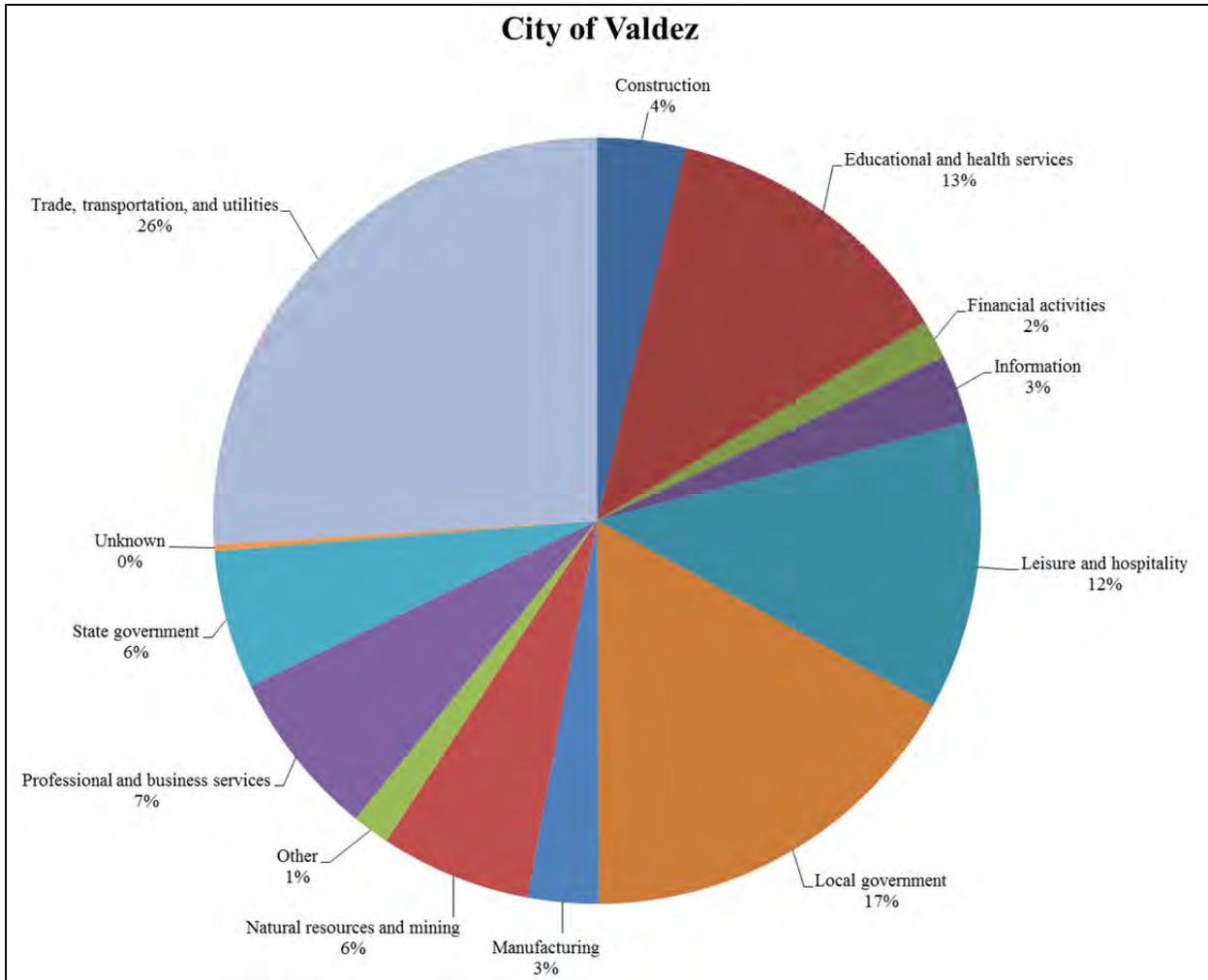


Figure 3.3-3.—Percentage of jobs by industry, Valdez City, 2011.

4. The amount and distribution of cash income among those domiciled in the area or community.

In March 1993, the Joint Board concluded the following regarding Factor 4 and Valdez:

In 1989, per capita income of \$26,968 in Valdez was above the state’s average of \$17,610. The Board recognized that distribution of cash income varies among residents within the proposed area but is consistent with an urban environment in Alaska and is typical of a nonsubsistence area.

The per capita income in Valdez during 2007–2011 averaged \$34,614 annually, which was higher than the state average \$31,944. Robinson (2009:15) noted, “Oil-related transportation jobs are particularly high-paying, like most jobs with the oil industry.”

The annual average percentage of Valdez’ population living below the poverty level during the period 2007–2011 was 5.1% compared to 9.5% for the state population.

5. The cost and availability of goods and services to those domiciled in the area or community.

In March 1993, the Joint Board concluded the following regarding Factor 5 and Valdez:

Valdez has a well developed system of commerce providing needed goods and services. Valdez's cost of food index is 23 percent higher than Anchorage but is below the cost of food index for Dillingham (45 percent higher than Valdez). The availability of goods and services and the relative low harvest of wild foods supports a finding that Valdez residents are typical of residents of a nonsubsistence area.

Recent data show that while costs of living in Valdez generally are higher than in Anchorage, they are much lower than communities off the road system. The *Alaska Geographic Differential Study* for 2008 (McDowell Group 2009) assigned Valdez an index for all measured costs of 1.08, with food at 1.26 and fuel at 1.17 (Anchorage is 1.00). The University of Alaska cost of food index for 2011 for Valdez was 135 (an increase from 1991).

6. The variety of fish and game species used by those domiciled in the area or community.

In March 1993, the Joint Board concluded the following regarding Factor 6 and Valdez:

The residents of Valdez make use of the wide variety of fish and wildlife in their area. Game species used include black bear, brown bear, caribou, goat, moose, sheep, and deer. Fish species used include salmon (all five species), halibut, varieties of trout, other freshwater fish, and shellfish. The Board found that Valdez residents harvest a variety of resources within the proposed area and a high percent harvested outside the proposed area. The Board found that the proposed nonsubsistence area supported only a limited amount of hunting effort, but did support a large majority of the recreational sport fishing effort.

Surveys of samples of households for Valdez for 1991, 1992, and 1993 found that salmon (between 28% and 43%) and other fish (between 25% and 31%) provided the largest portion of harvests of wild resources for home use, followed by land mammals (18% to 16%) (Figure 3.3-4). Of the total salmon harvest most was taken with rod and reel under sport fishing regulations: 73% in 1991, 79% in 1992, and 59% in 1993. Subsistence and personal use fisheries (primarily nets and fish wheels) provided between 4% (in 1992) and 23% (in 1993) of the salmon harvest (Figure 3.3-5).

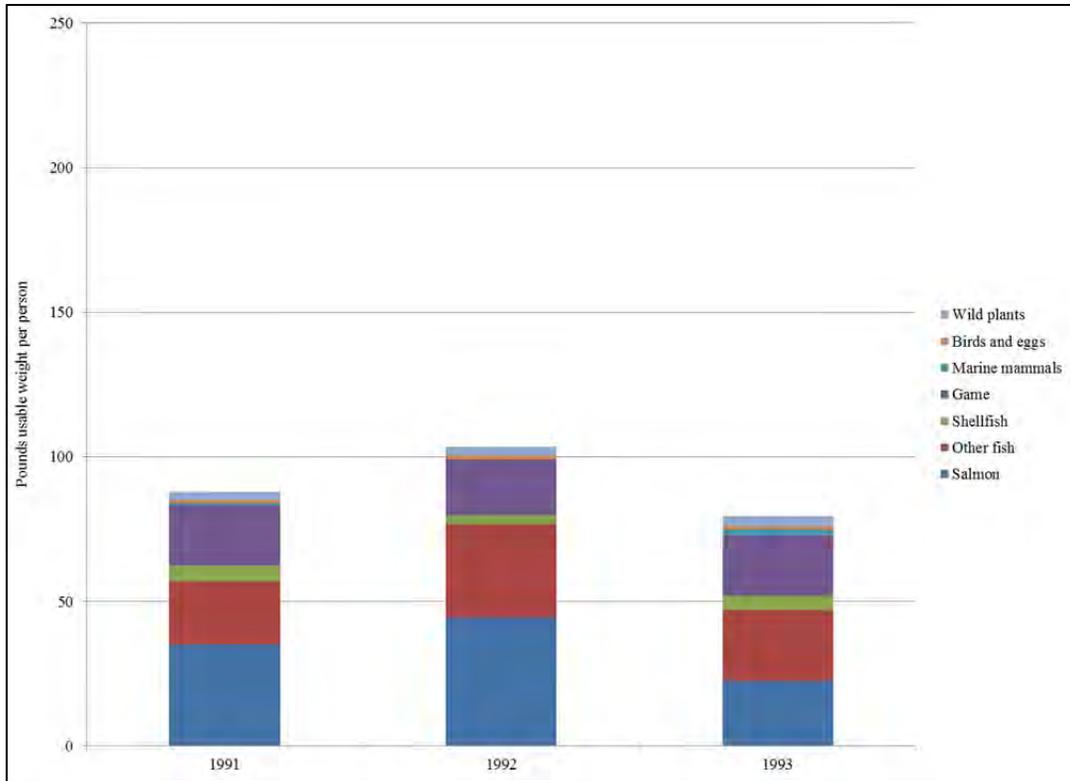


Figure 3.3-4.—Valdez harvest estimates by resource category, 1991, 1992, and 1993.

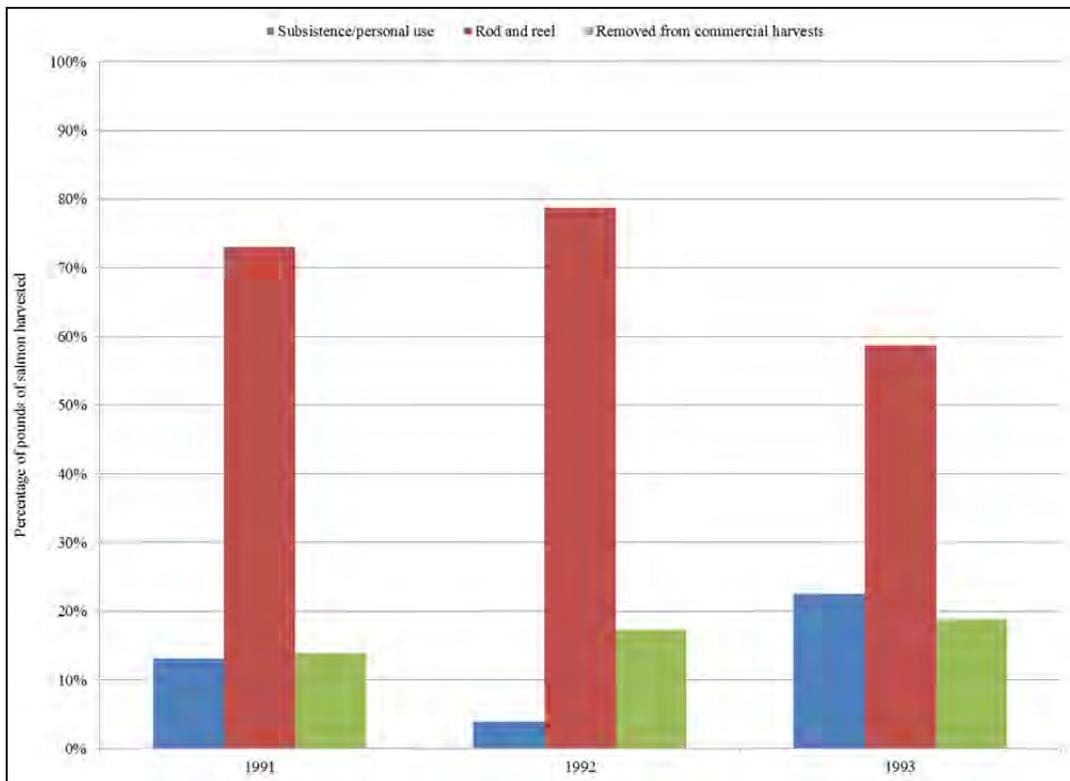


Figure 3.3-5.—Sources of salmon for home use, Valdez, 1991, 1992, and 1993.

7. The seasonal cycle of economic activity.

In March 1993, the Joint Board concluded the following regarding Factor 7 and Valdez:

The majority of Valdez's employment is year-round with summer seasonal increase due to tourism and commercial fishing. The Board finds the overall economic activity of the proposed area to be representative of an economy where reliance on wage employment is a principal characteristic of the economy.

Surveys conducted in Valdez found that most employed adults worked year-round in 1991 (60%), 1992 (67%), and 1993 (75%); the average number of months employed was 10 in 1991 and 1992 and 11 in 1993 (Miraglia and Tomrdle 1995:III-24).

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

In March 1993, the Joint Board concluded the following regarding Factor 8 and Valdez:

In Valdez, 44-68 percent of the population fished with rod and reel during 1989-91, based on angler surveys. Valdez's percentages for rod and reel compare closely with Anchorage percentages, representative of a nonsubsistence area. In 1991, 788 hunting/fishing combination licenses were sold to Valdez residents. Based on the data provided, the Board found that hunting and fishing is recreational in nature rather than for food production. The Boards finds overall residents of the proposed area hunted and fished for recreational purposes.

In 2012, 1,559 Valdez residents held some combination of hunting, sport fishing, and trapping licenses; this represents about 38% of the population (Figure 3.3-6). In addition, in 2012, 33 Valdez residents obtained senior hunting/trapping/fishing licenses.⁸

In 2011, 310 Valdez residents held subsistence and personal use salmon fishing permits (Table 2.6-1).

Surveys for 1991-1993 found that between 21% and 26% of Valdez' population hunted and between 52% and 72% fished. Most households used wild resources (96% to 97%) and between 83% and 90% harvested wild resources (Table 3.3-2).

8. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

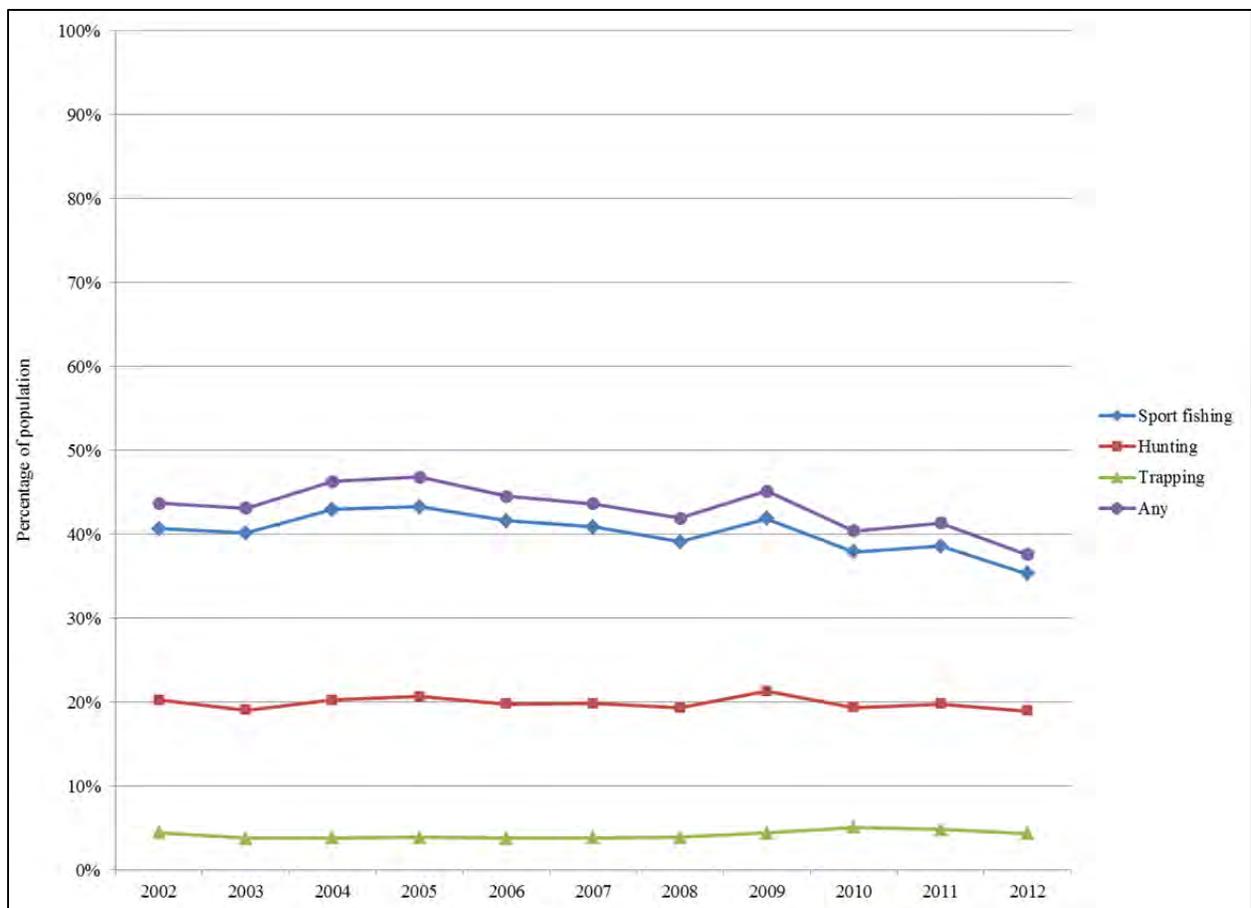


Figure 3.3-6.—Percentage of Valdez Nonsubsistence Area residents holding hunting, sport fishing, and trapping licenses.

Table 3.3-2.—Participation in fishing and hunting for Valdez, 1991, 1992, and 1993.

	1991	1992	1993
Percentage of population hunting	21%	25%	26%
Percentage of population fishing	72%	64%	52%
Percentage of households			
Using any resource	96%	97%	97%
Attempting harvest	91%	89%	89%
Harvesting any resource	90%	83%	83%
Receiving any resource	89%	86%	89%
Giving away any resource	65%	68%	66%
Average number of resources per household			
Used	8	8	6
Attempted to harvest	6	7	6
Harvested	5	5	5
Received	4	4	3
Given away	2	3	2

Source Miraglia and Tomrdle (1995).

9. The harvest levels of fish and game by those domiciled in the area or community.

In March 1993, the Joint Board concluded the following regarding Factor 9 and Valdez:

The wild resource harvests pounds per person for 1991 was 85 pounds (excluding wild plants). The 1991 harvest levels are closely aligned with the Anchorage/Matsu/Kenai Nonsubsistence area which has 80 pounds per person for wild resource harvests, and much less than subsistence use areas (example: Chenega Bay at 188 pounds). The Board found that this level of harvest typifies a nonsubsistence area.

Updated harvest estimates for Valdez for 1992 and 1993 were in the same range as the estimate for 1991 provided at the 1993 Joint Board meeting (Figure 3.3-7). Relatively small samples and a wide range of harvest levels resulted in large 95% confidence limits for these estimates.

More recent data from annual harvest monitoring programs for 2004–2011 provide estimated harvests for Valdez being between about 32 lb per person (in 2010) and 58 lb per person (2007) (Figure 3.3-8). The recent 5-year average (2007–2011) is 45 lb per person.

Based on data from annual harvest monitoring programs, fish and wildlife harvests provide a relatively small proportion of Valdez’s food supply: about 20% of the annual purchase of meat, fish, and poultry by Americans; about 27% of protein needs, and about 4% of caloric requirements.

Subsistence harvests of harbor seals by Valdez’ Alaska Native population were estimated for 1992–2008 (Figure 3.3-9).

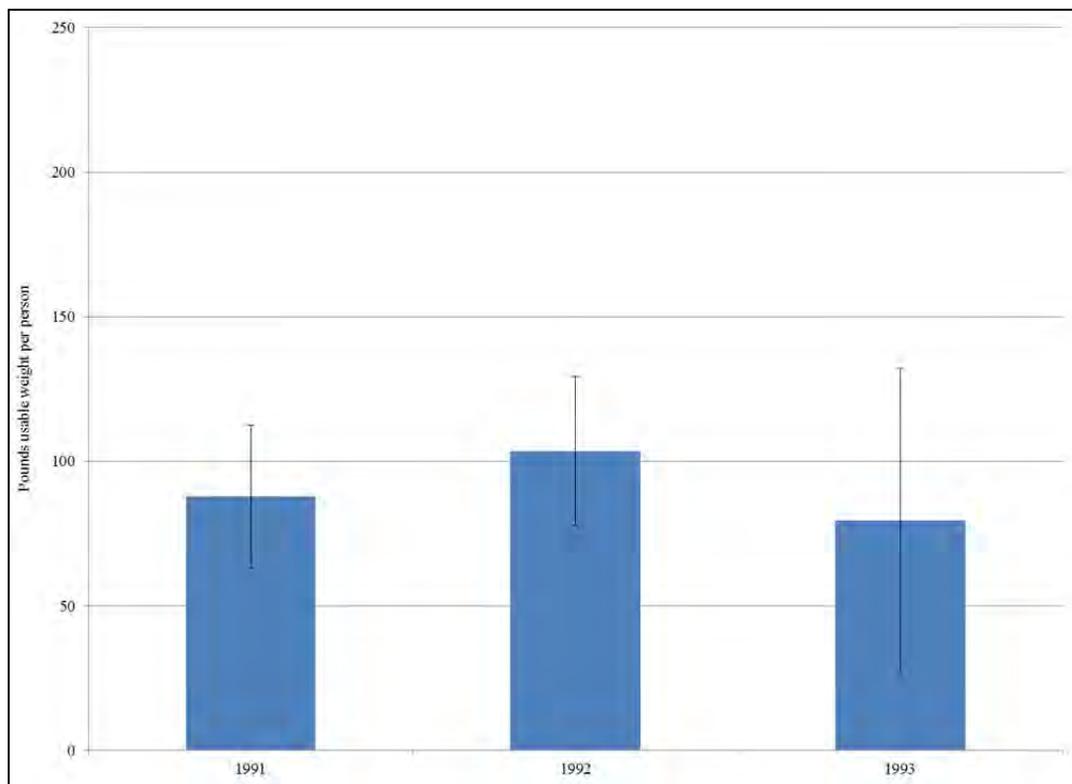


Figure 3.3-7.—Estimated harvests of wild resources, pounds usable weight per person, Valdez, 1991, 1992, and 1993.

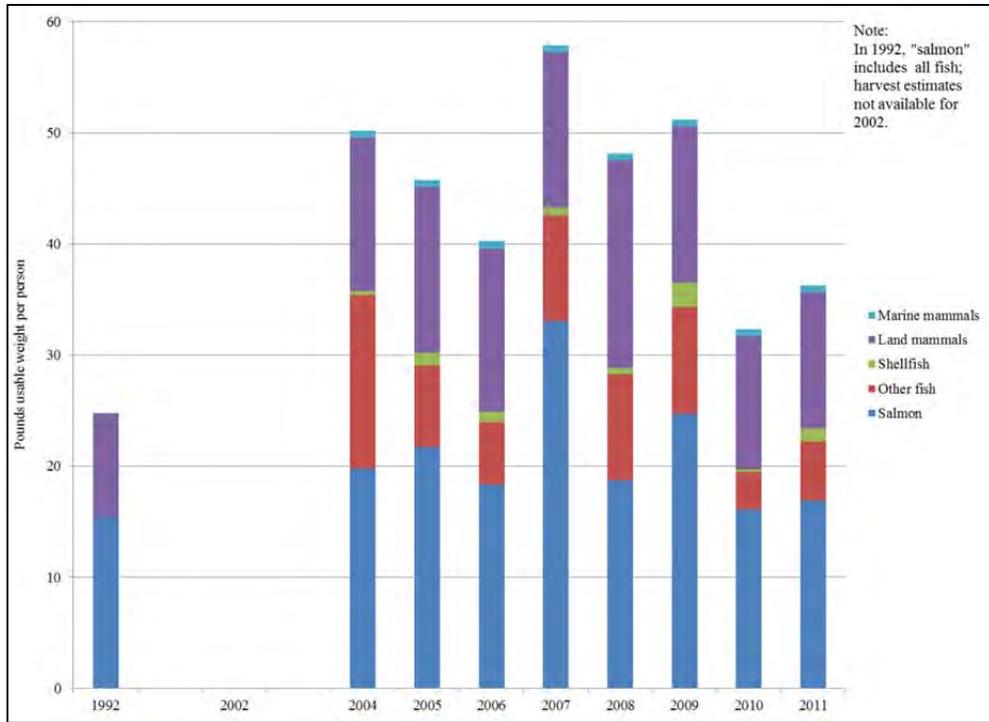


Figure 3.3-8.—Valdez Nonsubsistence Area: estimated harvests of fish and wildlife for home use.

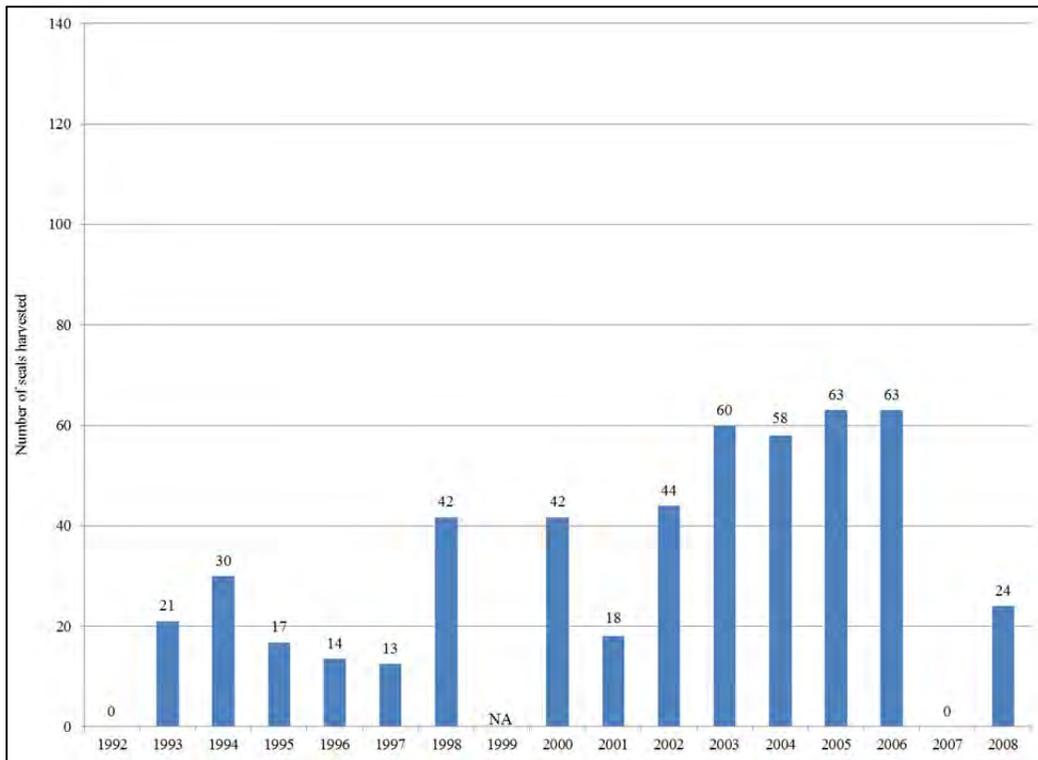


Figure 3.3-9.—Estimated number of harbor seals harvested, Valdez, 1992–2008.

10. The cultural, social, and economic values associated with taking and use of fish and game.

In March 1993, the Joint Board concluded the following regarding Factor 10 and Valdez:

The predominant values associated with fish and wildlife harvests are recreational. Fishing and hunting are periodic outdoor activities, valued as breaks from the wage-employment. For residents directly employed in commercial fishing and outdoor recreational industries values are commercial in nature with a percent harvested for recreational values. Environmental awareness and nonconsumptive uses (wildlife viewing) are other values Valdez residents associate with fish and game resources. The Board determined the area's cultural, social, and economic values represent a nonsubsistence value system.

We have no new information to supplement the Joint Board's 1993 finding.

11. The geographic locations where those domiciled in the area or community hunt and fish.

In March 1993, the Joint Board concluded the following regarding Factor 11 and Valdez:

During 1986-91 Valdez hunted primarily in GMUs 13, 6, 20, 11, and 12. The Board found that 75 percent of the sport fishing effort by residents domiciled in Valdez takes place within the proposed nonsubsistence area. The Board had difficulty with the proposed boundaries based on straight line surveys and not topographical features. The Board was unable to describe the proposed nonsubsistence area using other boundaries based on information provided. The game harvests by residents of Valdez as well as residents of Anchorage, Tatitlek, and Chenege Bay overlap within Prince William Sound which made separation of use areas into an expanded nonsubsistence area difficult. No reasonable solution was evident in attempts to adjust the boundaries to better reflect area uses.

From 1986–1991, most big game hunting by Valdez residents took place in GMU 13, to which Valdez is connected by road; this GMU has the most readily accessible populations of moose and caribou. Valdez residents also hunted in GMU 6— primarily for bears, goats, and deer. There was a similar pattern for 2007–2011, the most recent 5-year period for which data big game species are available. Again in 2007–2011, Valdez hunters hunted mostly in GMU 13 (for caribou and moose) followed by GMU 6 and GMU 20 (Table 3.3-3; Figure 3.3-10).

Many Valdez residents travel to Chitina and other Copper Basin locations to participate in the personal use and subsistence dip net and fish wheel salmon fisheries.

Table 3.3-3.—Total hunters by species and GMU, Valdez residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear	5					275					4	7	104	3	1	3				4							24	3	433
Brown bear	2				1	5		6	2		2		12	1		1											3		35
Bison											4		1							14									19
Caribou												3	216	4				1		98		1	6	2	19	16	3		369
Deer		5		4		369		40																					418
Elk								1																					1
Moose					1	161					9	19	785	29	9	11	4			395	14	1	9	4	3		6		1,460
Mt. goat						63		7					7		3														80
Muskox																			1			4							5
Dall sheep											7	9	34	7		2				1	18					1	5		84
Total	7	5		4	2	873		54			26	38	1,159	44	13	17	5	1	1	529	14	6	15	6	23	24	33	3	2,902

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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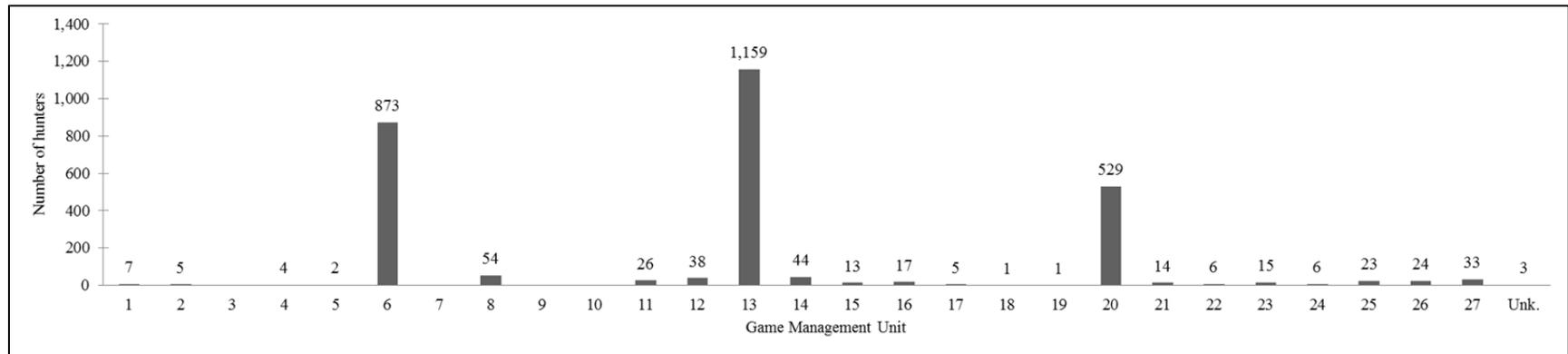


Figure 3.3-10.—Total hunters by GMU, Valdez residents, 2007–2011.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

In March 1993, the Joint Board concluded the following regarding Factor 12 and Valdez:

The 1991 average number of fish and game resources shared per household was four which closely matches the Anchorage/Matsu/Kenai Nonsubsistence Area. The Board felt the amount of wild foods shared on a per capita basis by Valdez residents is indicative of a nonsubsistence area.

Updated survey data for 1992 also found an average of 4 resources received per household, and an average of about 3 in 1993. On average, from 1991–1993, Valdez households gave away between about 2 to 3 kinds of wild resources.

3.4 JUNEAU NONSUBSISTENCE AREA

3.4.1 Background

The Juneau Nonsubsistence Area consists of the Juneau City and Borough and portions of Admiralty Island (Figure 3.4-1). The regulatory definition is as follows:

5 AAC 99.0159(a)(2) The Juneau Nonsubsistence Area is comprised of the following: within Unit 1(C) as defined by 5 AAC 92.450(1)(C), all drainages on the mainland east of Lynn Canal and Stephens Passage from the latitude of Eldred Rock to Point Coke, and on Lincoln, Shelter, and Douglas islands; within Unit 4 as defined by 5 AAC 92.450(4), that portion of Admiralty Island that includes the Glass Peninsula, all drainages into Seymour Canal north of and including Pleasant Bay, all drainages into Stephens Passage west of Point Arden, the Mansfield Peninsula, all drainages into Chatham Strait north of Point Marsden; all marine waters of Sections 11-A and 11-B as defined in 5 AAC 33.200(k)(1) and (k)(2), Section 12-B as defined in 5 AAC 33.200 (l)(2), and that portion of Section 12-A as defined in 5 AAC 33.200 (1)(1) north of the latitude of Point Marsden and that portion of District 15, as defined in 5 AAC 33.200(o), south of the latitude of the northern entrance of Berners Bay, and including Berners Bay.

3.4.2 Demography

The population of the Juneau Nonsubsistence Area (defined here as the population of the Juneau Municipality in 2010) was 31,275, which was an increase of 17% since 1990. While Juneau’s population has increased over the last 2 decades, growth has been slower than for the state overall (29%) and nonsubsistence areas overall (36%) (Figure 3.4-2). In 2010, 19% of Juneau’s population was Alaska Native, compared to 13% in 1990 (Table 3.4-1).

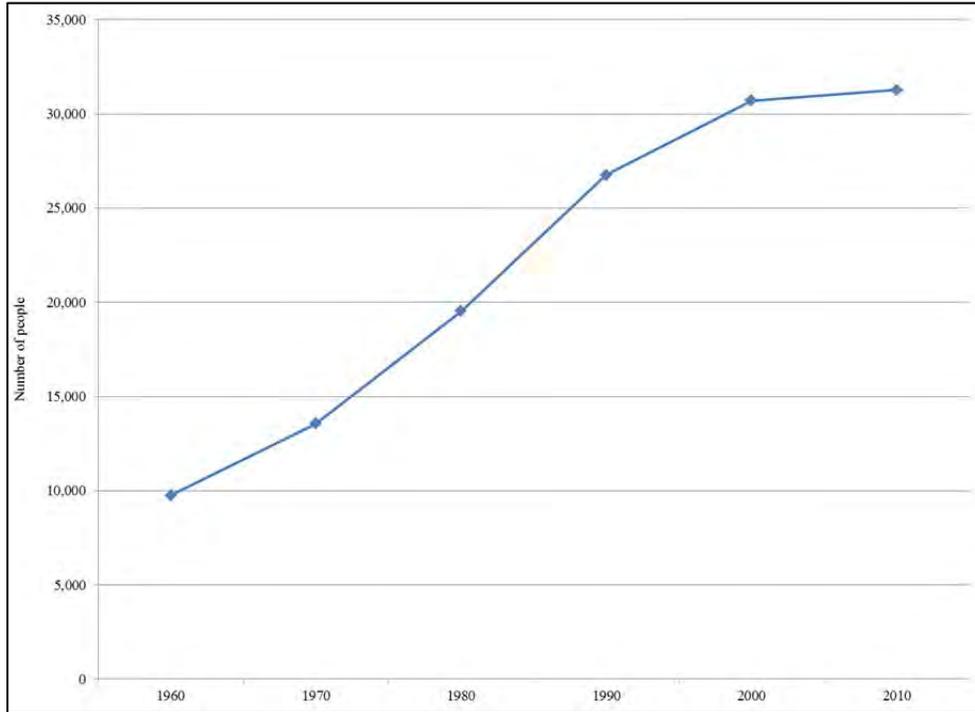


Figure 3.4-2.—Juneau population, 1960–2010.

Table 3.4-1.—Population of Juneau Nonsubsistence Area, 1960–2012.

	Population	Change over decade	Alaska Native population	Percentage of total
1960	9,745			
1970	13,556	39%		
1980	19,528	44%	2,190	11%
1990	26,751	37%	3,462	13%
2000	30,711	15%	5,084	17%
2010	31,275	2%	6,005	19%
2012	32,832			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

3.4.3 The 12 Socioeconomic Factors

1. The social and economic structure.

In November 1992, the Joint Board concluded the following regarding Factor 1 and Juneau:

The socio-economic structure of this area is consistent with the information provided by the ADF&G at no. 1 of the nonsubsistence area report. The information presented at no. 1 does include the expanded boundaries. The importance of fishing for recreation and as an industry was recognized as were other industries such as commercial fishing, tourism and government. Additionally Juneau is a transportation hub for northern Southeast and is the state's capital. Evidence supplied by board members from the area support the department's information indicating that Juneau typifies the type of economy envisioned by the legislature as a nonsubsistence area. Based on the information presented and the Board's discussion the Board found that subsistence was not a principal characteristic of the socio-economic structure.

The 1992 department report noted:

The social and economic structure of Juneau has been characterized as a type of "industrial-capitalism," a socioeconomic system common in the lower 48 which has developed in Alaska. This social and economic structure is distinct from another type of socioeconomic system in Alaska, called a "mixed, subsistence-cash economy," where the domestic household sector is a major producer and distributor of food. Industrial capital systems generally have large wage sectors, which provide the major means of livelihood to residents. In an industrial-capital system, households are not major producers or distributors of an area's food supply. Food production by households provides a very small portion of the community's food, but may be of economic significance to those households actively involved in hunting and fishing. Most of the area's food and other goods and services are provided by businesses organized and financed separately from the household unit. Production and distribution of goods and services are organized by market forces or by government. Fishing and hunting by residents are primarily conducted as part of recreational or commercial industries.

The economy of Juneau continues to be focused on its role as the state's capital city as well as on tourism and services. A recent study (Abrahamson 2011:9) concluded:

The economy of Juneau is a diverse arrangement of industries largely contingent on two factors: year-round demand for goods and services, and the stability of a large government sector that sustains year-round employment at good wages.

Information provided below for factors 2, 3, and 4 is also relevant to Factor 1, such as unemployment rates lower than state averages (Factor 2), higher than average cash income (Factor 4), and relatively low poverty levels (Factor 4).

2. The stability of the economy.

In November 1992, the Joint Board concluded the following regarding Factor 2 and Juneau:

The Board found that the information presented at Section No. 2 of the ADF&G staff report supports the finding that this economy is stable and expanding. The Juneau area economy is heavily dependent on

government and the service sector needed to support it. Approximately 11,000 of the 14,000 jobs in Juneau can be traced to government, trade and the service sector. Unemployment is low compared to statewide averages. For example, unemployment in Juneau is 7.5% while unemployment in Koyukuk is 30.9% and in Fairbanks 10.7%. The board concludes that the harvest of fish and game for subsistence uses does not contribute significantly to the stability of the economy.

In 2012, the annual unemployment rate for Juneau was 5%, compared to a state average of 7% (Table 2.4-1; Figure 2.4-1). In 1992, the unemployment rate was 6% compared to 9% for the state.⁹ The Juneau unemployment rate was consistently about 2 percentage points below the state average for the period 2003–2012 (Figure 2.4-2).

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

In November 1992, the Joint Board concluded the following regarding Factor 3 and Juneau:

Department of Labor statistics indicate that of the 14,000 jobs in Juneau, 2416 are in trade, 2279 in services and over 7000 in the government sector accounting for 11,000 of the 14,000 jobs. This indicates the heavy dependence in the Juneau area on the government and tourism sectors of the economy. The number of jobs compared to the population and the fact that incomes in Juneau are higher than statewide averages are indicative of a strong employment for wages. The combined factors outlined above and the information presented are characteristic of a capital-industrial economy in which reliance on the harvest of fish and game for subsistence uses is not a principal characteristic of the economy.

Data for 2011 show a pattern similar to 1992: 26% of jobs were in state government and 19% in trade, transportation, and utilities. Local government provided 15% of the jobs (Figure 3.4-3).

9. The Joint Board's 1992 finding stated in error, "For example, unemployment in Juneau is 7.5%" The unemployment rate in Juneau in 1992 was 6%, as noted in this report.

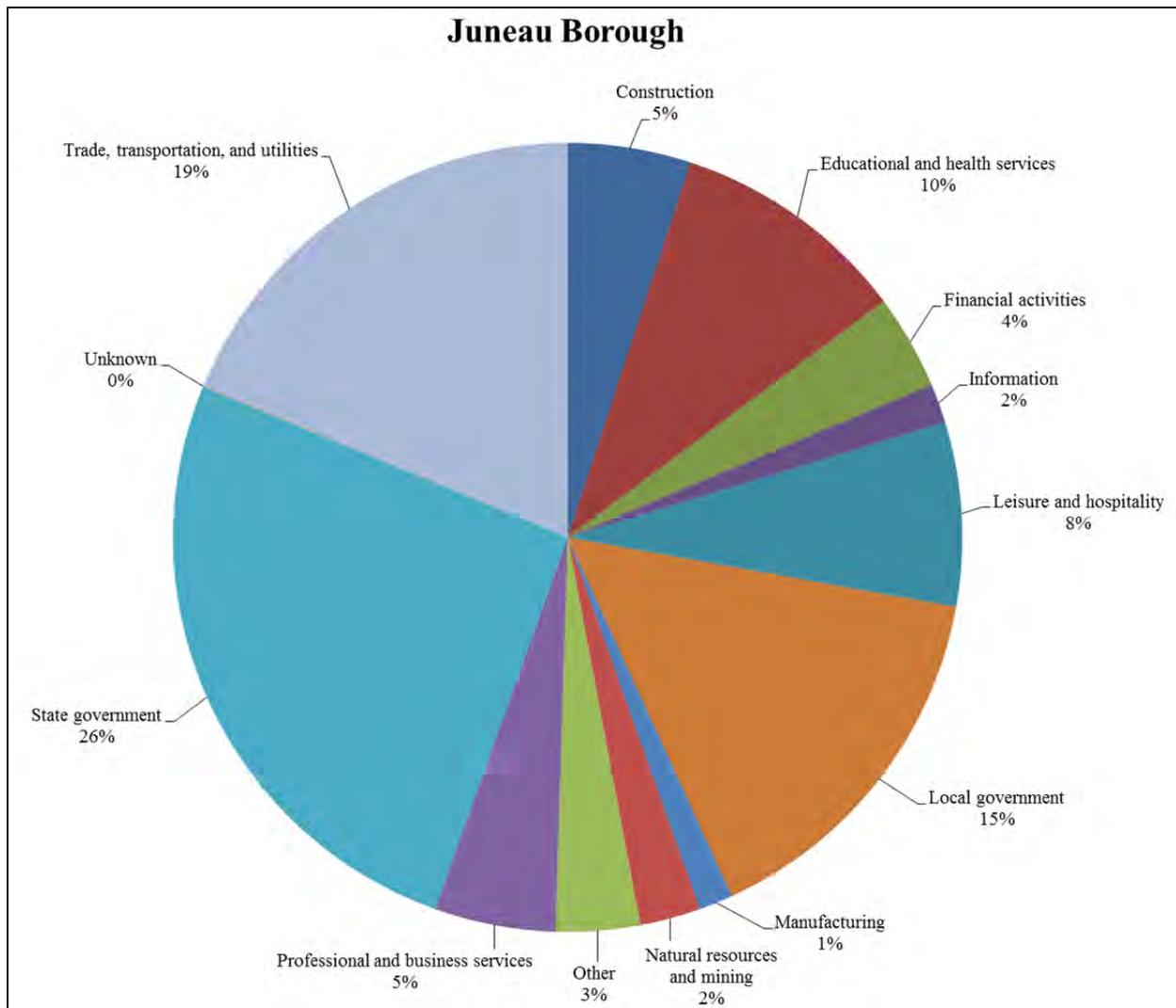


Figure 3.4-3.—Percentage of jobs by industry, Juneau City and Borough, 2011.

4. The amount and distribution of cash income among those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 4 and Juneau:

The Joint Board relies on the information presented at no. 4 of the ADF&G staff report and finds that while income is not distributed evenly over the various racial and ethnic groups in Juneau, that unemployment is low and that Juneau is a wage economy as opposed to a subsistence economy.

For the period 2007–2011, the annual per capita income for Juneau was \$37,294 (\pm \$1,611), which was significantly above the state’s average of \$31,944 (\pm \$423). On average, during 2007–2011, 6.3% of Juneau’s population lived below the poverty level, compared to 9.5% for the state population. The poverty rate had increased slightly from 6.0% in 1989.

5. The cost and availability of goods and services to those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 5 and Juneau:

Chart #11 indicates that Juneau enjoys a wide availability of goods and services with some of the lowest costs in the state. The information presented and board discussion, as well as chart #18 (showing a relatively low harvest of wild foods) supports a finding that Juneau area residents rely on commercial markets rather than relying on harvest of fish and game for subsistence uses.

Recent data show that while costs of living in Juneau generally are slightly higher than in Anchorage, they are much lower than communities off the road system. The *Alaska Geographic Differential Study* for 2008 (McDowell Group 2009) assigned Juneau an index for all measured costs of 1.11, with food at 1.03 and fuel at 1.13 (Anchorage is 1.00). The University of Alaska cost of food index for 2011 for Juneau was 106, compared to 102 in 1991 (Anchorage is 100).

6. The variety of fish and game species used by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 6 and Juneau:

Information was provided that Juneau area residents use a variety of the resources available locally and that they travel some distances in the state to harvest other resources. Important resources include salmon, halibut, shellfish, deer, bear (brown and black), goat and moose.

No comprehensive household harvest surveys have been conducted in Juneau. Annual harvest monitoring programs document a similar pattern for Juneau in recent years compared to the 1992 Joint Board finding.

7. The seasonal cycle of economic activity.

In November 1992, the Joint Board concluded the following regarding Factor 7 and Juneau:

Information at no. 7 of the ADF&G staff report and Board discussion confirm that the area's seasonal employment is principally tied to tourism and the legislative session rather than to gathering natural resources. This is indicative of a community that does not rely on wildlife resources, but rather on wage employment associated with other factors.

We have no information to add to that summarized in the Joint Board's 1992 finding regarding Factor 7.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 8 and Juneau:

The popularity of sport fishing was noted, with 44-50% of the population having sport fishing licenses. Only 12% have hunting licenses. This supports the concept that hunting and fishing is more recreational in nature rather than a community-wide method of food production.

In 2012, about 25% of Juneau's population held a sport fishing/combination license; since 2002, this percentage has ranged from 25% (in 2012) to 29% (in 2004). In 2012, about 11% of Juneau's population

held hunting/combination licenses; this percentage has varied from about 11% to 13% since 2002 (Figure 3.4-4).¹⁰

In 2011, 755 Juneau residents held subsistence and personal use salmon fishing permits (Table 2.6-1).

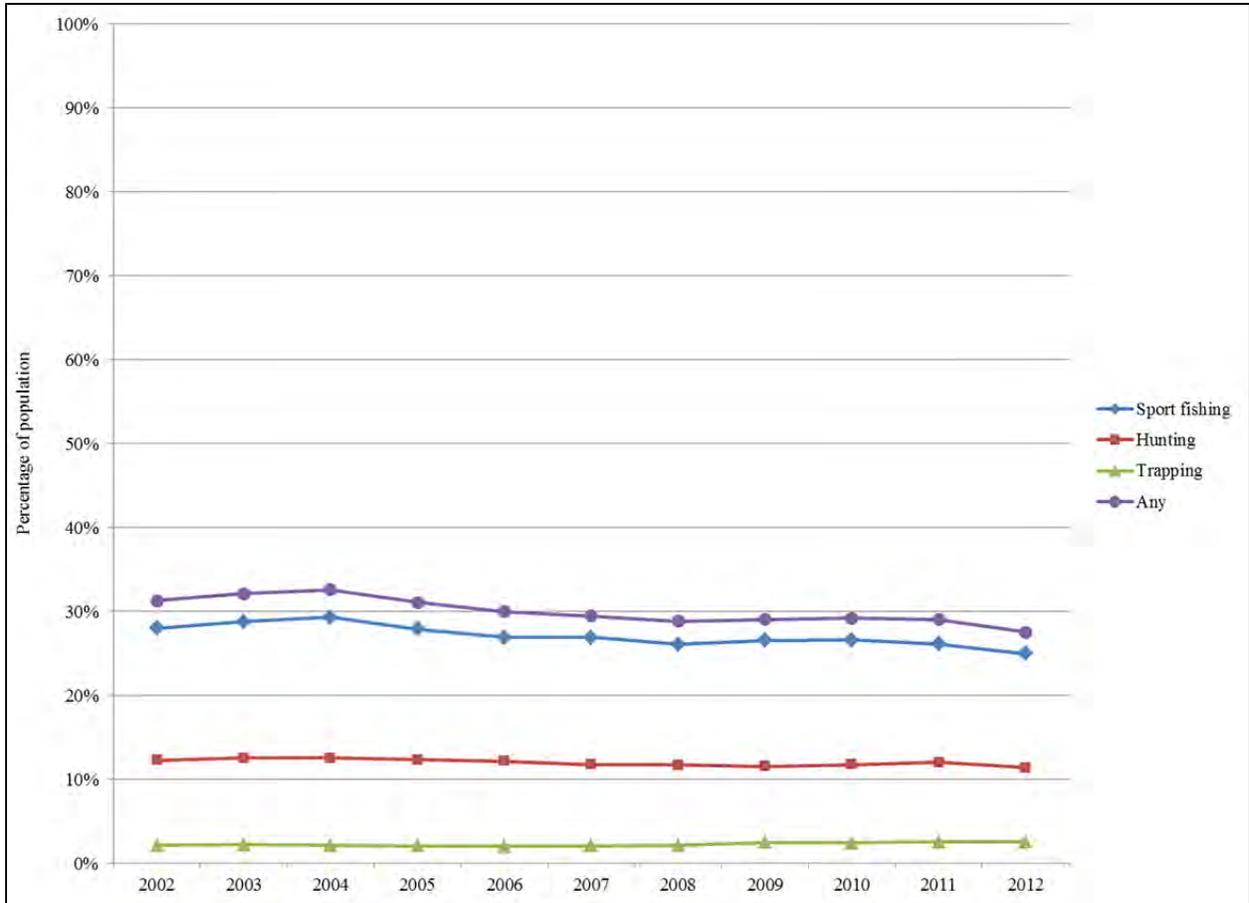


Figure 3.4-4.—Percentage of Juneau Nonsubsistence Area residents holding hunting, sport fishing, and trapping licenses.

9. The harvest levels of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 1 and Juneau:

According to chart #18, and other information provided by ADF&G, per capita use of fish and wildlife resources by the area residents was one of the lowest in the state.

The estimated wild resource harvest by Juneau residents for 1992 was 35 lb per capita, with the harvest composition being 23 lb of fish and 12 lb of game (Figure 3.4-5). Estimated harvests from 2004 to 2011

10. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

ranged from about 18 lb per person in 2011 to about 28 lb per person in 2004 and 2005, with the recent 5-year average (2007–2011) being 22 lb per person.

Data on harbor seal harvests by Juneau’s Alaska Native residents are available for 1992–2008 (Figure 3.4-6).

Residents of Juneau who are members of Alaska Native tribes are eligible to participate in the federally-managed subsistence Pacific halibut fishery. In 2011, 363 eligible Juneau residents held Subsistence Halibut Registration Certificates (SHARCs), 87 participated in the subsistence Pacific halibut fishery, and the harvest was 14,258 lb usable weight (Fall and Koster 2013:158).

Fish and wildlife harvests provide a relatively small proportion of Juneau’s food supply: about 10% of the annual purchase of meat, fish, and poultry by Americans; about 13% of protein needs; and about 2% of caloric requirements.

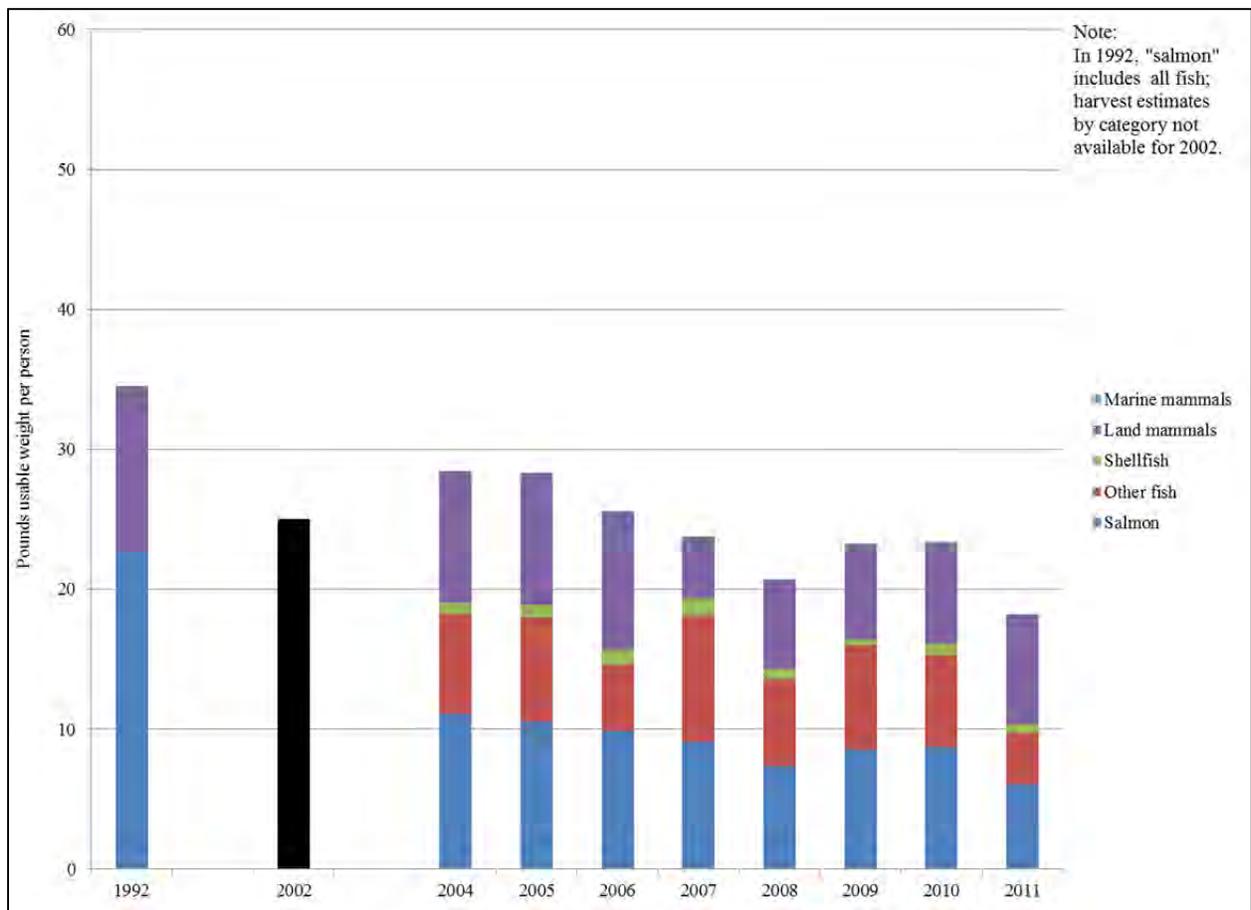


Figure 3.4-5.—Juneau Nonsubsistence Area: estimated harvests of fish and wildlife for home use.

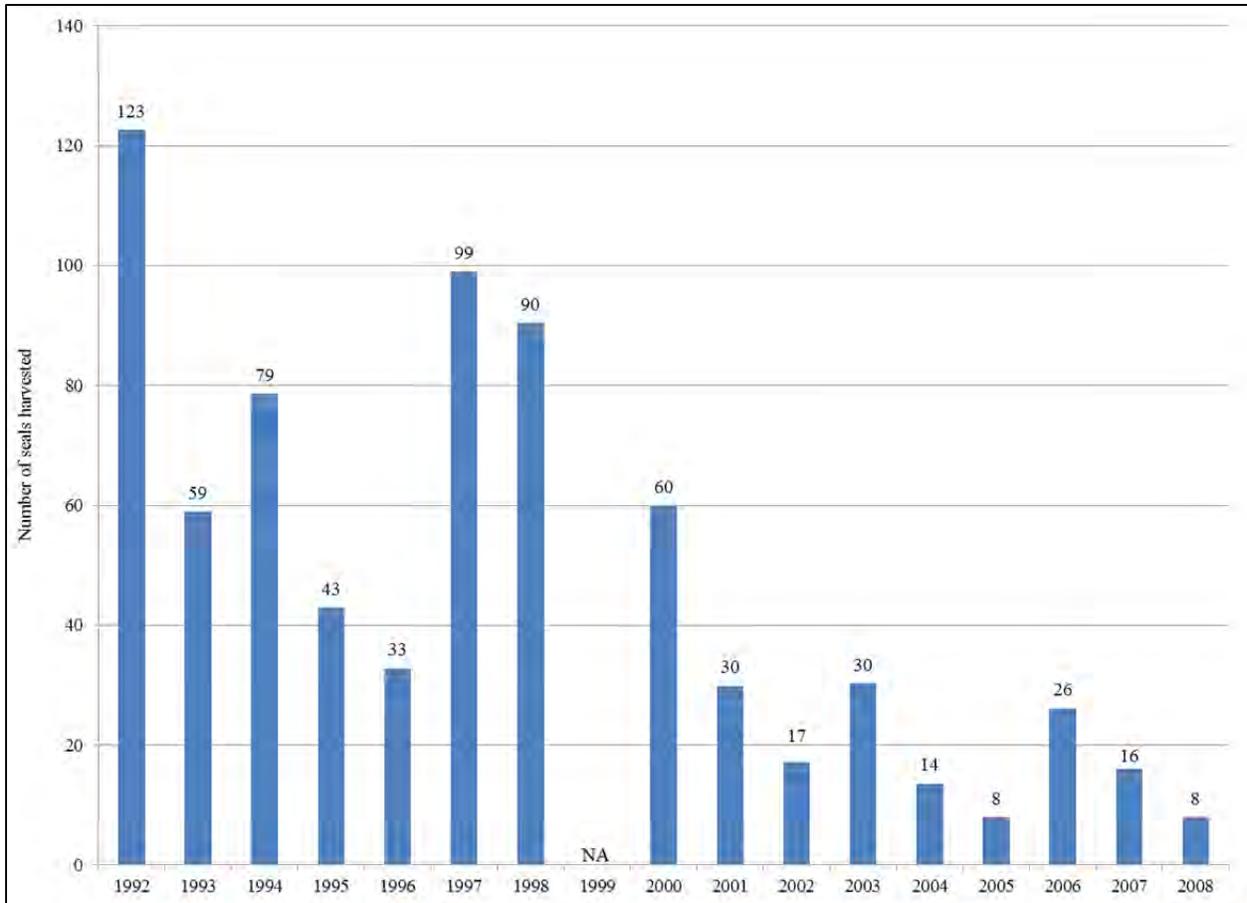


Figure 3.4-6.—Estimated number of harbor seals harvested, Juneau, 1992–2008.

10. The cultural, social, and economic values associated with taking and use of fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 10 and Juneau:

Although predominantly Euro-American, Juneau is a socially and culturally diverse community with an active and strong Alaska Native culture and a South Pacific culture both of which are widely reflected by cultural activities and native art. It is not possible to distinguish separate use patterns among any certain groups in the community. The information indicated an integrated community with a pattern of uses in which recreational hunting and fishing predominate, although some subsistence uses take place.

The 1992 department report noted that “for a segment of the community, the predominant values associated with fish and wildlife harvests are recreational.” Also noted in the report was that for many Juneau residents, fishing and hunting are associated with Alaska Native cultural traditions, food production, sharing with elders, and provision of food for ceremonial gatherings.

We have no new information regarding this factor for Juneau.

11. The geographic locations where those domiciled in the area or community hunt and fish.

In November 1992, the Joint Board concluded the following regarding Factor 11 and Juneau:

The Joint Board first examined (under criteria 11) patterns of hunting and fishing by residents of the proposed nonsubsistence area. The Board finds that residents of the area hunt and fish throughout the proposed area. Additionally, hunting takes place on the Mansfield Peninsula, Young Bay, Oliver Inlet, the drainages of Seymour Canal and the Glass Peninsula as well as various other areas in Southeast Alaska. Fishing occurs primarily in Lynn Canal south of Eldred Rock, Berners Bay, northern Chatham Strait, Stephens Passage north of Tracy Arm, contiguous bays within this boundary, and other waters of Southeast Alaska. The Board reviewed statistics reflecting where the residents of nearby communities of Tenakee, Kake, Haines, Klukwan, Angoon and Hoonah hunted and fished. These communities hunt and fish predominantly on lands and in waters adjacent to their own communities, but do exhibit a pattern of dispersed effort which is typical of the region as a whole. Some of their hunting and fishing does take place in the nonsubsistence area, but it is not a significant portion of their harvest. The board determined it was appropriate to expand the proposed nonsubsistence area to include those areas used often and almost exclusively by Juneau area residents. The final nonsubsistence area incorporates approximately 90-95% of the recreational fishing area and 47% of the deer harvest for those domiciled in the area.

From 1986–1991, most big game hunting by Juneau residents took place in GMUs 1 and 4, primarily for deer and, in GMU 1, moose. The period 2007–2011 is the most recent 5-year period for which data for big game species by GMU hunted are available. Juneau hunters hunted for deer mostly in GMU 1 and GMU 4, and hunted moose mostly in GMU 1, followed by GMUs 20, 5, and 13 (Table 3.4-2; Figure 3.4-7).

Table 3.4-2.—Total hunters by species and GMU, Juneau residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear	533	14	35	4	2	3	3				1	8	3	2		1	1	1		12		1		3			39	4	670
Brown bear	303			375	31			7			1	1	1			1	1			3		1	5		1	2		10	743
Bison											2									8									10
Caribou							2			137		6	20	1		1	7	10	4	96	2	1	83	1	27	71	4		473
Deer	4,256	386	54	5,791	5	8		11																					10,511
Elk			11					7																					18
Moose	1,124		86		125	6	2		3		7	75	110	52	10	19	15	1	18	688	17	2	33	27	24	2	15		2,461
Mt. goat	246			11	1	3	1	4						3													2		271
Muskox																		9				6							15
Dall sheep							1				9	70	11	3		2				2	27			7	12	27	1		172
Total	6,462	400	186	6,181	164	20	9	29	3	137	20	160	145	61	10	24	24	21	24	834	19	11	121	38	64	102	61	14	15,344

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

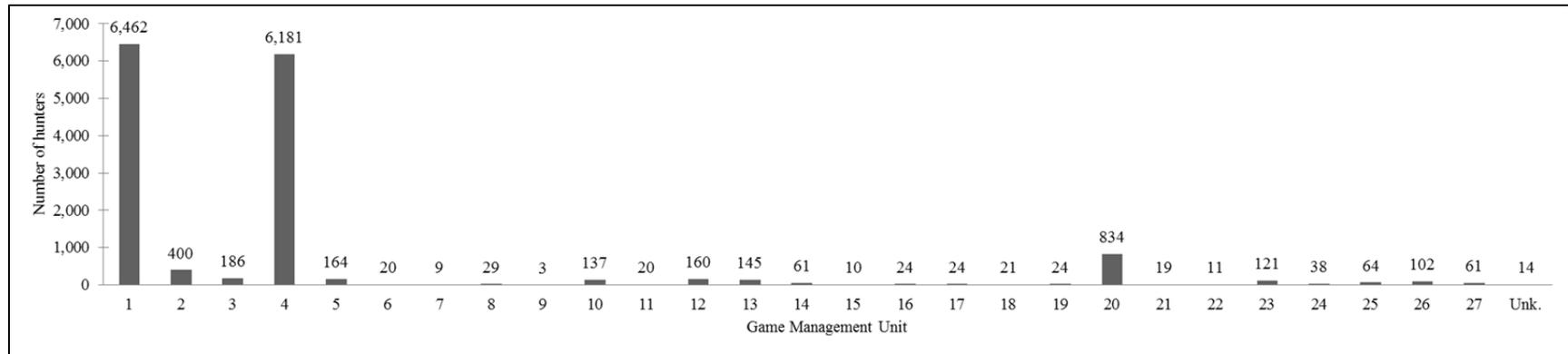


Figure 3.4-7.—Total hunters by GMU, Juneau residents, 2007–2011.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 12 and Juneau:

Although there was testimony reflecting sharing among the local population, there have been no specific studies to determine the extent of such sharing.

The 1992 department report noted:

The absolute amount of wild foods shared on a per capita basis is probably relatively small in the Juneau Area because of the relatively small amounts harvested. Regional Tlingit gatherings which regularly take place in Juneau commonly involve feasts where wild foods are served as parts of the menu. Certain wild food products which regularly come into Juneau include herring roe on hemlock branches, hooligan oil, and dried salmon.

No study of sharing in Juneau has been done since 1992 and no updated information is available.

3.5 KETCHIKAN NONSUBSISTENCE AREA

3.5.1 Background

When established in 1992, the Ketchikan Nonsubsistence Area included the entire Ketchikan Gateway Borough and a portion of the Cleveland Peninsula. Saxman, an incorporated city within the Ketchikan Gateway Borough, was not part of the Ketchikan nonrural area established by the Joint Board in 1986 but was included in the Ketchikan Nonsubsistence Area in 1992 (Figure 3.5-1). The regulatory definition of the Ketchikan Nonsubsistence Area is as follows:

5 AAC 99.015 (a)(1) The Ketchikan Nonsubsistence Area is comprised of the following: within Unit 1(A), as defined in 5 AAC 92.450(1)(A), all drainages of the Cleveland Peninsula between Niblack Point and Bluff Point; Revillagigedo, Gravina, Pennock, Smeaton, Bold, Betton, and Hassler islands; all marine waters of Sections 1-C, as defined by 5 AAC 33.200 (a)(3), 1-D, as defined by 5 AAC 33.200(a)(4), 1-E, as defined by 5 AAC 33.200(a)(5), and that portion of Section 1-F, as defined by 5 AAC 33.200(a)(6), north of the latitude of the southernmost tip of Mary Island and within one mile of the mainland and the Gravina and Revillagigedo Island shoreline and east of the longitude of Niblack Point.

The boundary of Ketchikan Gateway Borough changed substantially in January 2008 when the borough annexed approximately 4,510 square miles of the former Outer Ketchikan Census Subarea, except for Hyder (in Prince of Wales-Hyder Census Area) and Meyers Chuck (now part of Wrangell Borough) (Figure 3.5-2). The population of the “remainder” of Outer Ketchikan Census Subarea (which excluded Hyder and Meyers Chuck) in 2000 was 11 (Williams 2004).

After the Joint Board created this nonsubsistence area in 1992, a comprehensive household harvest survey pertaining to 2005 was conducted in Ketchikan by the Ketchikan Indian Community (KIC) with the assistance of the Bureau of Indian Affairs (BIA) and the Marine Advisory Program of the University of Alaska (UA) (Garza et al. 2006). In total, 251 households were surveyed or about 5% of the total in the community. This remains the only harvest survey study for Ketchikan. The Division of Subsistence has conducted household harvest surveys in Saxman for 1987 and 1999.

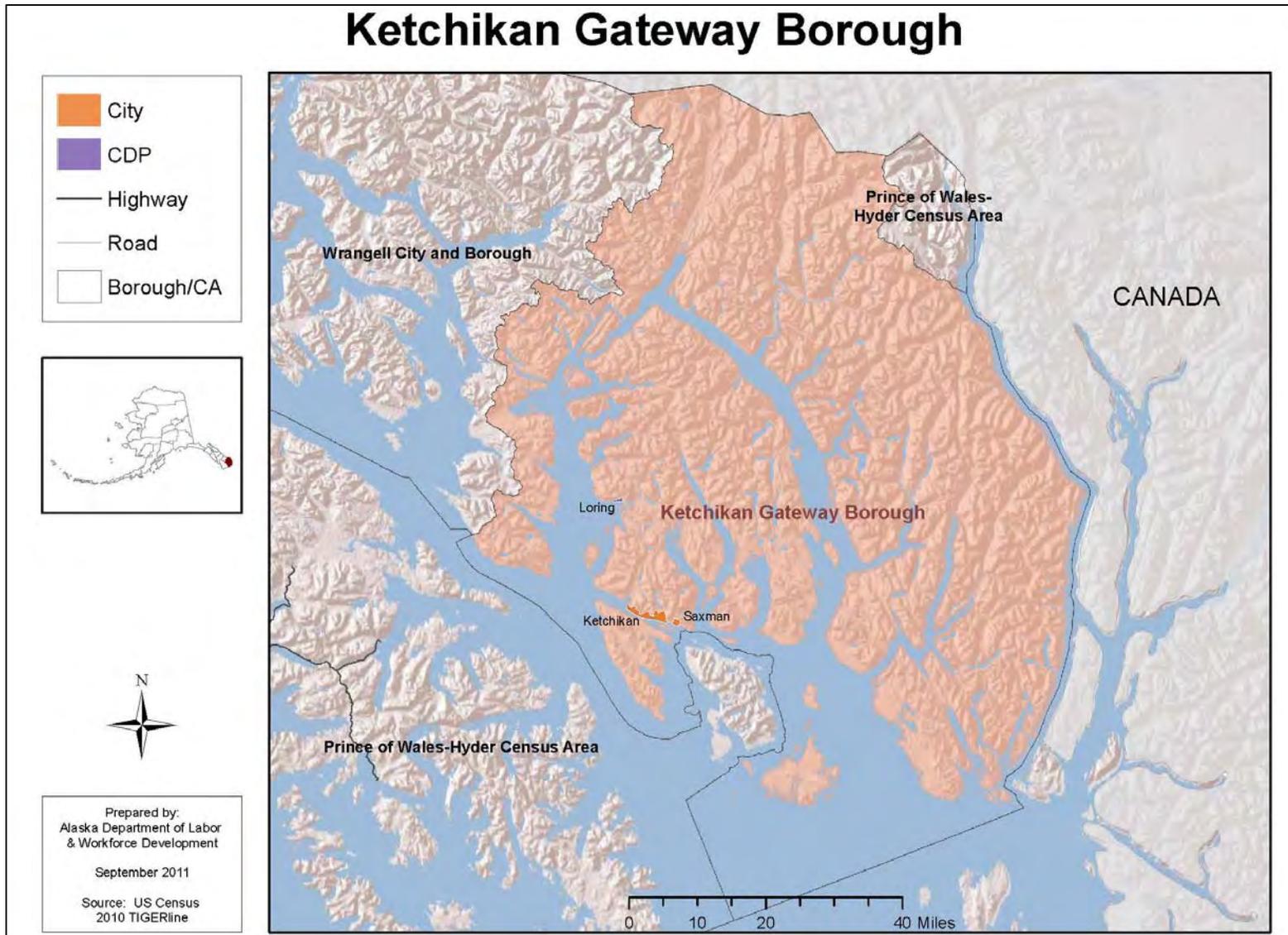
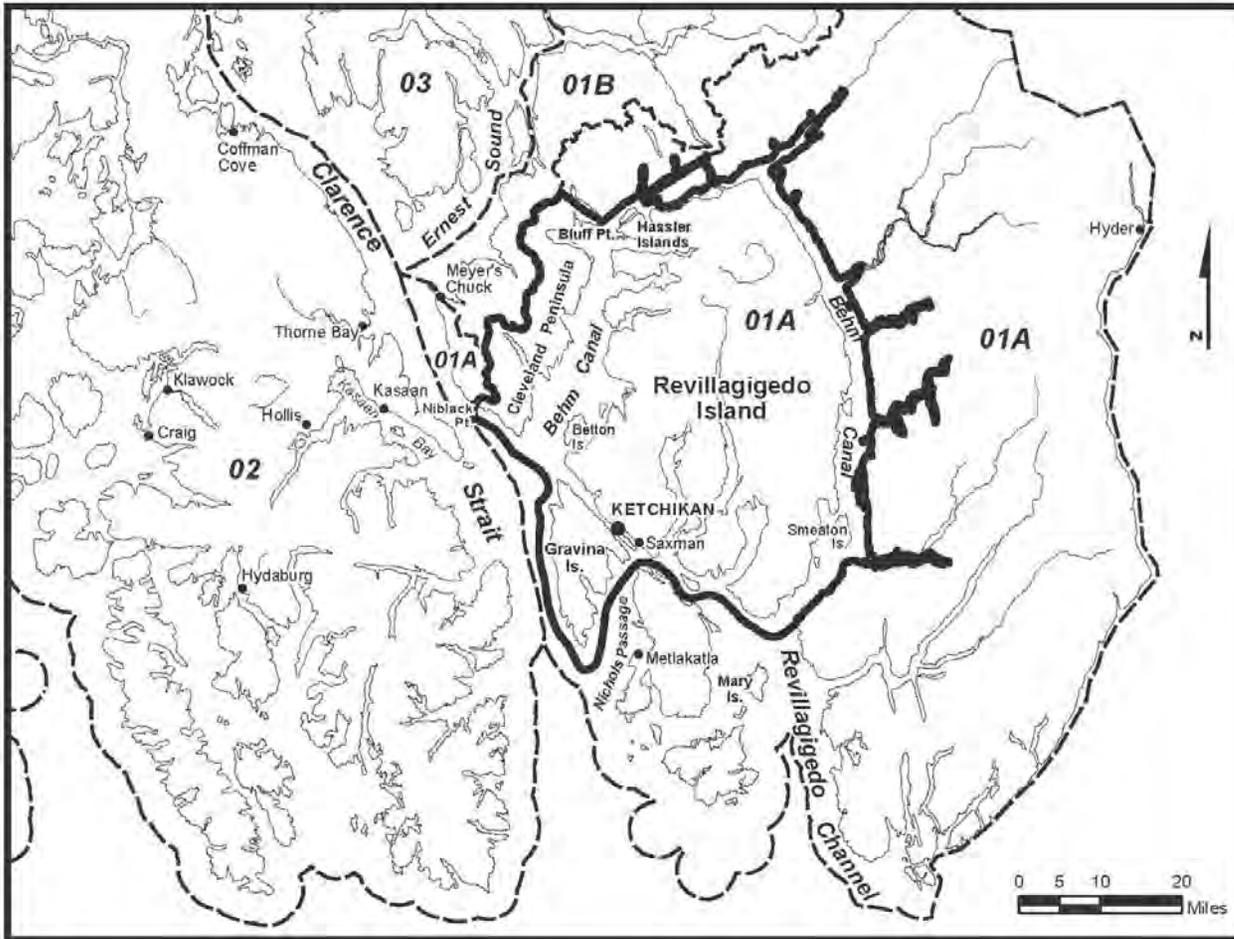


Figure 3.5-1.—Map of Ketchikan Gateway Borough.

Ketchikan Nonsubsistence Area



The Ketchikan Nonsubsistence Area is comprised of the following: within Unit 1(A), as defined in 5 AAC 92.450(1) (A), all drainages of the Cleveland Peninsula between Niblack Point and Bluff Point, Revillagigedo, Gravina, Pennock, Smeaton, Bold, Betton, and Hassler Islands; all marine waters of Sections 1-C, as defined by 5 AAC 33.200(a) (3), 1-D, as defined by 5 AAC 33.200(a) (4), 1-E, as defined by 5 AAC 33.200(a) (5), that portion of Section 1-F, as defined by 5 AAC 33.200(a) (6), north of the latitude of the southernmost tip of Mary Island and within one mile of the mainland and the Gravina and Revillagigedo Island shorelines; and that portion of District 2, as defined by 5 AAC 33.200(b), within one mile of the Cleveland Peninsula shoreline and east of the longitude of Niblack Point.



Legend
 — Nonsubsistence Area Boundary
 - - GMU Boundary



Figure 3.5-2.—Map of Ketchikan Nonsubsistence Area.

3.5.2 Demography

The population of the Ketchikan Gateway Borough in 2010 was 13,477, of which 8,050 lived in the incorporated city of Ketchikan, 411 in the incorporated city of Saxman, 4 in the census designated place of Loring, and 5,012 in the balance of the borough (almost entirely along the Revillagiedo Island road system) (Table 3.5-1).

The population of the borough grew from 1960 to 2000, but declined by 4% between 2000 and 2010. Between 1990 and 2010, the population declined by about 3%, compared to an increase for the statewide population of 29% (Figure 3.5-3).

Table 3.5-1.—Population of Ketchikan Nonsubsistence Area, 1960–2012.

	Population	Change over decade	Alaska Native population	Percentage of population
1960	10,070			
1970	10,041	-0.3%		
1980	11,316	12.7%	1,406	12.4%
1990	13,828	22.2%	1,898	13.7%
2000	14,059	1.7%	2,689	19.1%
2010	13,477	-4.1%	2,901	21.5%
2012	13,938			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

Note The population is that of the Ketchikan Gateway Borough.

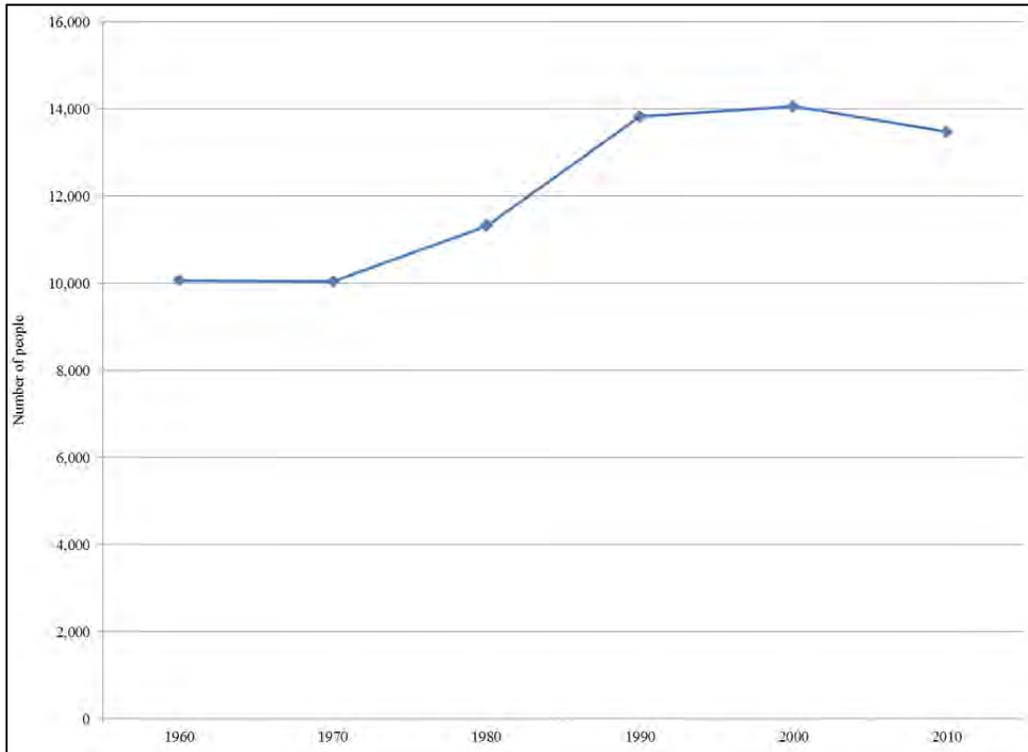


Figure 3.5-3.—Ketchikan Nonsubsistence Area (Ketchikan Gateway Borough) population, 1960–2010.

3.5.3 The 12 Socioeconomic Factors

1. The social and economic structure.

In November 1992, the Joint Board concluded the following regarding Factor 1 and the Ketchikan Nonsubsistence Area:

The Joint Board finds that the socio-economic structure of this area is consistent with the information provided by the ADF&G at no. 1 of the nonsubsistence area report. The information presented at no. 1 is pertinent to the expanded area. The growth pattern of Ketchikan from 1950 to 1990 was 110% (from 6446 to 13,828 residents). Ketchikan is a large community spread out along the water with a pulp mill, large commercial fishing fleet, port for a state ferry, retail stores, and a hospital. The complexion is that of an urban area with a dense population. Saxman is an enclave within the Ketchikan community that demonstrates some reliance upon fish and game harvested for subsistence uses. The examination of information and criteria is particularly complicated when dealing with Saxman, a community within a community. The residents have a history of subsistence over a long period and there is concern whether the intent of the 1992 subsistence law is to include such communities in a nonsubsistence area. After examining all evidence available, the Joint Board determined that the industrial-capitalism culture dominates the area's social and economic structure even though there are other uses present in the community. For these reasons, the Board concluded that subsistence uses of fish and game is not a principal component of the overall social and economic structure of Ketchikan.

The 1992 department report noted:

The social and economic structure of Ketchikan has been characterized as a type of "industrial-capitalism," a socioeconomic system common in the lower 48 which has developed in Alaska. This social and economic structure is distinct from another type of socioeconomic system in Alaska, called a "mixed, subsistence-cash economy," where the domestic household sector is a major producer and distributor of food. Industrial capital systems generally have large wage sectors, which provide the major means of livelihood to residents. In an industrial-capital system, households are not major producers or distributors of an area's food supply. Food production by households provides a very small portion of the community's food, but may be of economic significance to those households actively involved in hunting and fishing. Most of the area's food and other goods and services are provided by businesses organized and financed separately from the household unit. Production and distribution of goods and services are organized by market forces or by government. Fishing and hunting by residents are primarily conducted as part of recreational or commercial industries.

As discussed below, some changes have occurred to the economy of Ketchikan since 1992; changes are primarily related to the closure of the pulp mill in 1997 and changes in the commercial fishing industry. Garza et al. (2006:9) concluded that "Ketchikan is slowly transitioning from a resource extraction economy to a service-based economy." Information provided below regarding factors 2, 3, and 4 is also relevant to Factor 1. Recent unemployment rates (Factor 2) and poverty rates (Factor 4) for Ketchikan were at about the state average. Cash incomes were slightly lower than, but not significantly different from, the state average (Factor 4).

2. The stability of the economy.

In November 1992, the Joint Board concluded the following regarding Factor 2 and the Ketchikan Nonsubsistence Area:

The Board found that the information presented at No. 2 of the ADF&G staff report supports the finding that the economy is stable, while showing growth over four decades. The Board found no evidence that subsistence uses contributed significantly to the stability of the economy.

The following updated information is provided by Garza et al. (2006:8):

Throughout the 20th century, Ketchikan was a “working man’s” town. A spruce mill was set up in 1903 and operated for 70 years. The pulp mill, built in 1954, employed several hundred men on 24-hour-a-day shift work. These high paying timber-related jobs provided men with security, health and vacation benefits. Many of the homes built during this era are simply referred to as “pulp mill” homes. The sawmill and pulp mill both provided employment for many loggers.

The pulp mill closed in 1997, throwing the town into economic turmoil. High paying, permanent jobs were lost, and men who had taken care of their families for decades were left with non-transferable skills and little hope for a comparable job in Ketchikan. Additionally, logging declined due to softening international wood markets.

Garza et al. (2006:9) also noted that the important commercial fishing and processing component of Ketchikan’s economy struggled in the 1990s and early 2000s due to depressed salmon prices. (For further discussion of the effects of the mill closure, see Baker 2001.)

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

In November 1992, the Joint Board concluded the following regarding Factor 3 and the Ketchikan Nonsubsistence Area:

Department of Labor statistics indicate a wide diversity of employment including 188 jobs in the military, 1234 service jobs, 1367 trade jobs, 1657 manufacturing jobs, government jobs at 1802, and an additional 1200+ jobs in other sectors. Unemployment is among the state’s lowest at 9.7%. The Joint Board concluded that the factors outlined above and those in the report, specifically Figures 4, 7 and 8, are characteristic of a capital-industrial economy in which reliance on subsistence harvest of fish and game is not a principal characteristic of the economy.

Garza et al. (2006:8), citing Miller (2005), note the decline in timber employment with the closure of the pulp mill, resulting in a loss of 37% of manufacturing jobs from 1995 to 1998, and additional losses in the early 2000s.

In 2011, manufacturing accounted for 5% of the jobs held by residents of the Ketchikan Gateway Borough (Figure 3.5-4). Trade, transportation, and utilities provided 25% of the jobs, followed by local government with 19%.

Garza et al. (2006:9) note that “tourism is important, but does not provide year-round permanent jobs, or levels of income and security comparable to the pulp mill jobs.”

In 2012, the annual unemployment rate for the Ketchikan Gateway Borough was nearly 7%, compared to a state average of 7% (Table 2.4-1; Figure 2.4-1). In 1992, the unemployment rate was 10% compared to 9% for the state. The Ketchikan unemployment rate was about the same as or slightly below the state average for the period 2003–2012 (Figure 2.4-2).

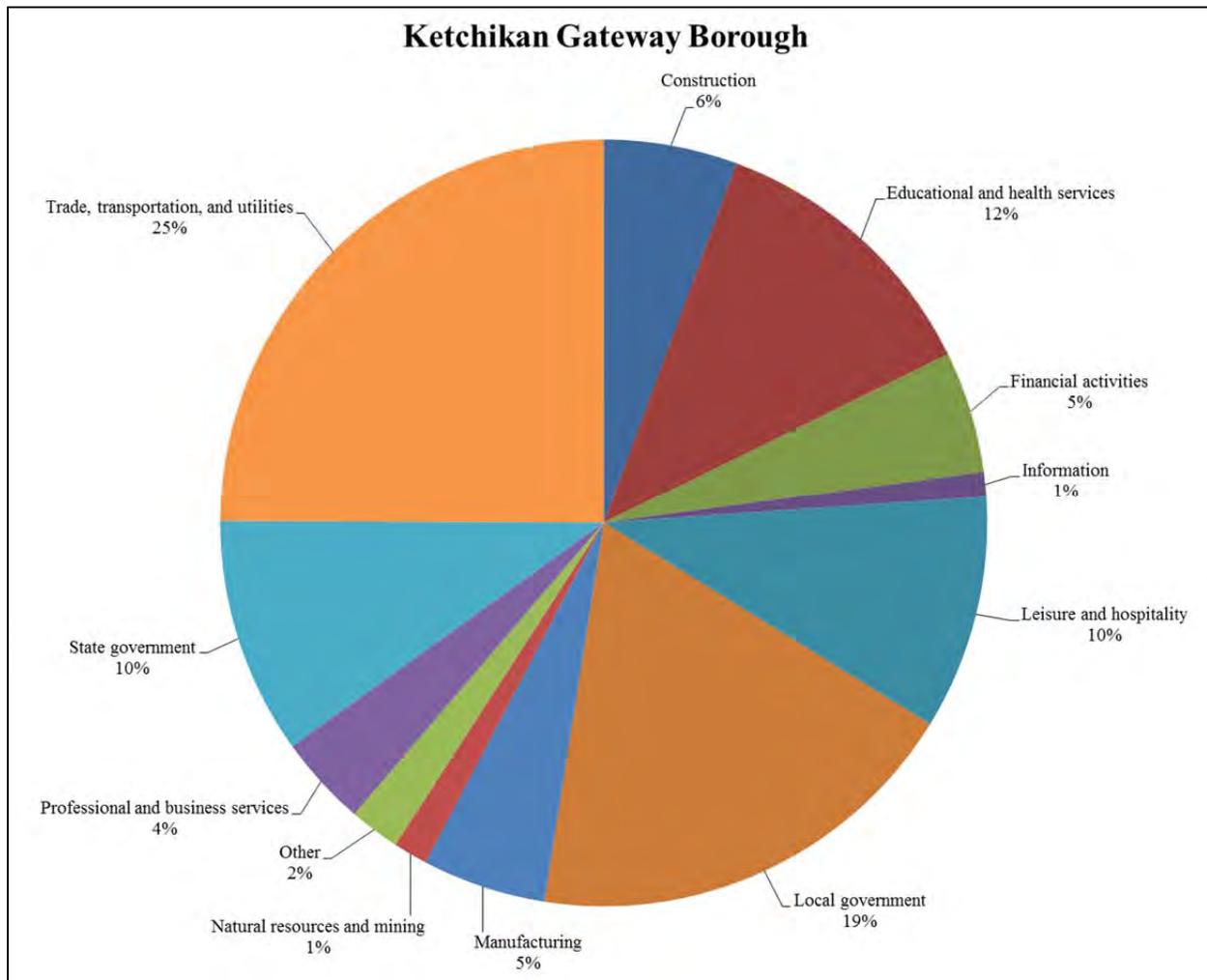


Figure 3.5-4.—Percentage of jobs by industry, Ketchikan Gateway Borough, 2011.

4. The amount and distribution of cash income among those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 4 and the Ketchikan Nonsubsistence Area:

Per capita income in Ketchikan Borough is \$18,789 which is above the state average, and only 6.6% of the population is below the federal poverty scale. Income distribution is not even among the residents, but is typical of an urban, cash-based economy in the state.

Garza et al. (2006:9) reported that due to the pulp mill closure and reduced commercial fishing income, “average income [in Ketchikan] is on a slow decline.”

Recent data for 2007–2011 show that Ketchikan’s per capita income is about at the state average: \$29,998 ±\$1,595 for Ketchikan compared to \$31,944 (±\$423) for the state. For the same period, about 9.6% of Ketchikan’s population lived below the poverty level, which is about the same as the state average of almost 9.5%. The poverty rate for Ketchikan increased notably from 5.3% in 1989.

5. The cost and availability of goods and services to those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 5 and the Ketchikan Nonsubsistence Area:

With Ketchikan's close proximity to the lower 48 and its corresponding lower transportation costs, goods are readily available at lower costs than other areas of the state. Ketchikan is also a transportation hub which increases the availability of goods and services. The availability of goods and services and the relative low harvest of wild foods, supports a finding that Ketchikan residents are not reliant on subsistence.

The *Alaska Geographic Differential Study* for 2008 (McDowell Group 2009) assigned an overall value of 1.04 for Ketchikan (compared to 1.00 for Anchorage), with notably higher values for food (1.18) and fuel (1.21). The University of Alaska Cooperative Extension Service cost of food index for Ketchikan for 2011 was 118 (with Anchorage at 100), up from 106 in 2000 and 97 in 1991.

6. The variety of fish and game species used by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 6 and the Ketchikan Nonsubsistence Area:

Ketchikan residents use a wide variety of fish and game species including deer, goat, bear, salmon, halibut, rockfish and shellfish.

Figure 3.5-5 shows the composition of the wild resource harvests in Ketchikan in 2005 based on the KIC/BIA/UA survey. As estimated in pounds usable weight, salmon made up 42% of the harvest, followed by other fish (25%), land mammals (15%), and shellfish (10%). Resources used by the most households in 2005 were Pacific halibut (50% of households), king (Chinook) salmon (49%), coho salmon (45%), Dungeness crab (44%), and blueberries (42%) (Garza et al. 2006:13).

7. The seasonal cycle of economic activity.

In November 1992, the Joint Board concluded the following regarding Factor 7 and the Ketchikan Nonsubsistence Area:

There is a high incidence of seasonal employment in Ketchikan, attributable to a large commercial fishing community, tourism and a pulp mill. There is considerable seasonal employment including commercial fishing and manufacturing. The Board determined that Ketchikan was an industrial-capital economy as opposed to a subsistence economy.

Garza et al. (2006:9) noted that Ketchikan's economy had a strong seasonal component in the mid-2000s.

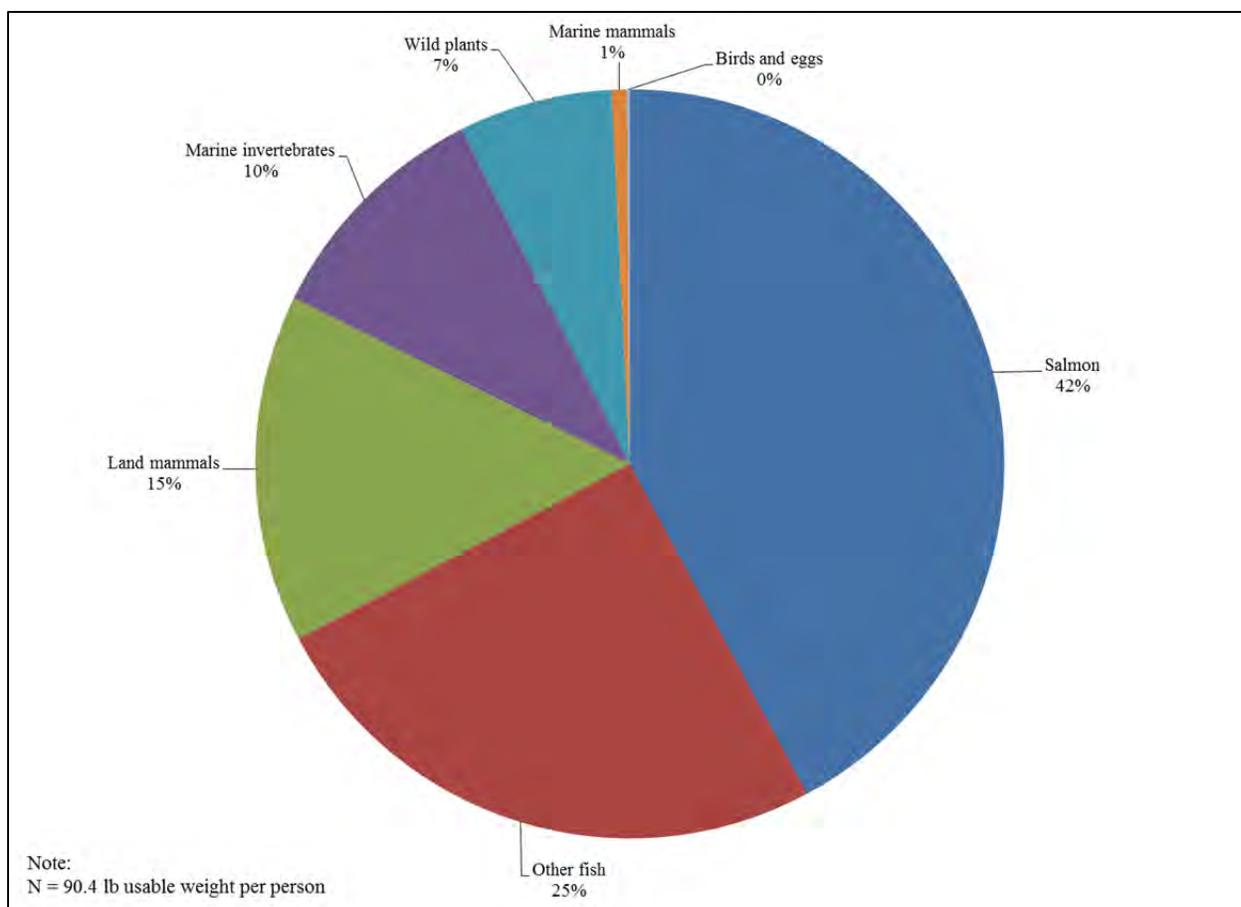


Figure 3.5-5.—Composition of wild resource harvests, Ketchikan, 2005.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 8 and the Ketchikan Nonsubsistence Area:

The Board found that residents participate in recreational hunting and fishing and commercial fishing. Those domiciled in Saxman showed a higher percentage of households harvesting fish and game than the Ketchikan Borough as a whole.

According to the results of the KIC/BIA/UA survey, 80% of Ketchikan’s households used wild resources in 2005; 71% used fish and 38% used land mammals. Of all interviewed households, 53% engaged in fishing and 22% hunted land mammals (Garza et al. 2006:12).

The survey found that 38% of the surveyed households obtained salmon through rod and reel fishing under sport fishing regulations; 4% used subsistence driftnets, 1% used subsistence setnets, and 0.4% used subsistence seines (Figure 3.5-6). Also, 1% removed salmon from their commercial harvests for home use. Although not stated in the report, it is likely that the “subsistence” category included gear used under personal use regulations as well.

In 2012, 4,151 residents of the Ketchikan Gateway Borough obtained sport fishing/combination licenses (30% of the borough’s population) while 2,114 obtained hunting/combination licenses (15% of the population) (Figure 3.5-7).¹¹

In 2011, 317 residents of Ketchikan held subsistence and personal use salmon fishing permits (Table 2.6-1).

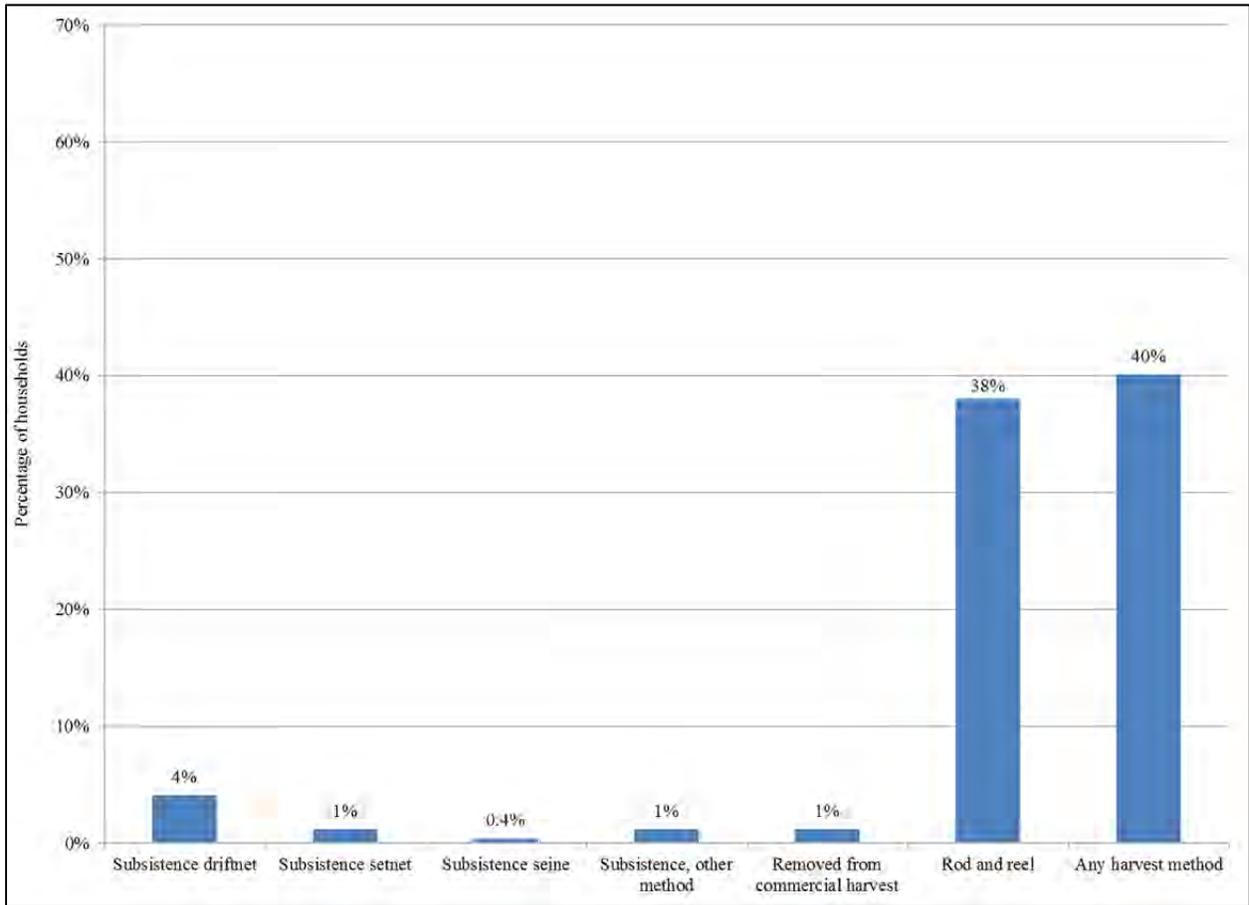


Figure 3.5-6.—Ketchikan 2005: percentage of households harvesting salmon for home use by gear type.

11. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

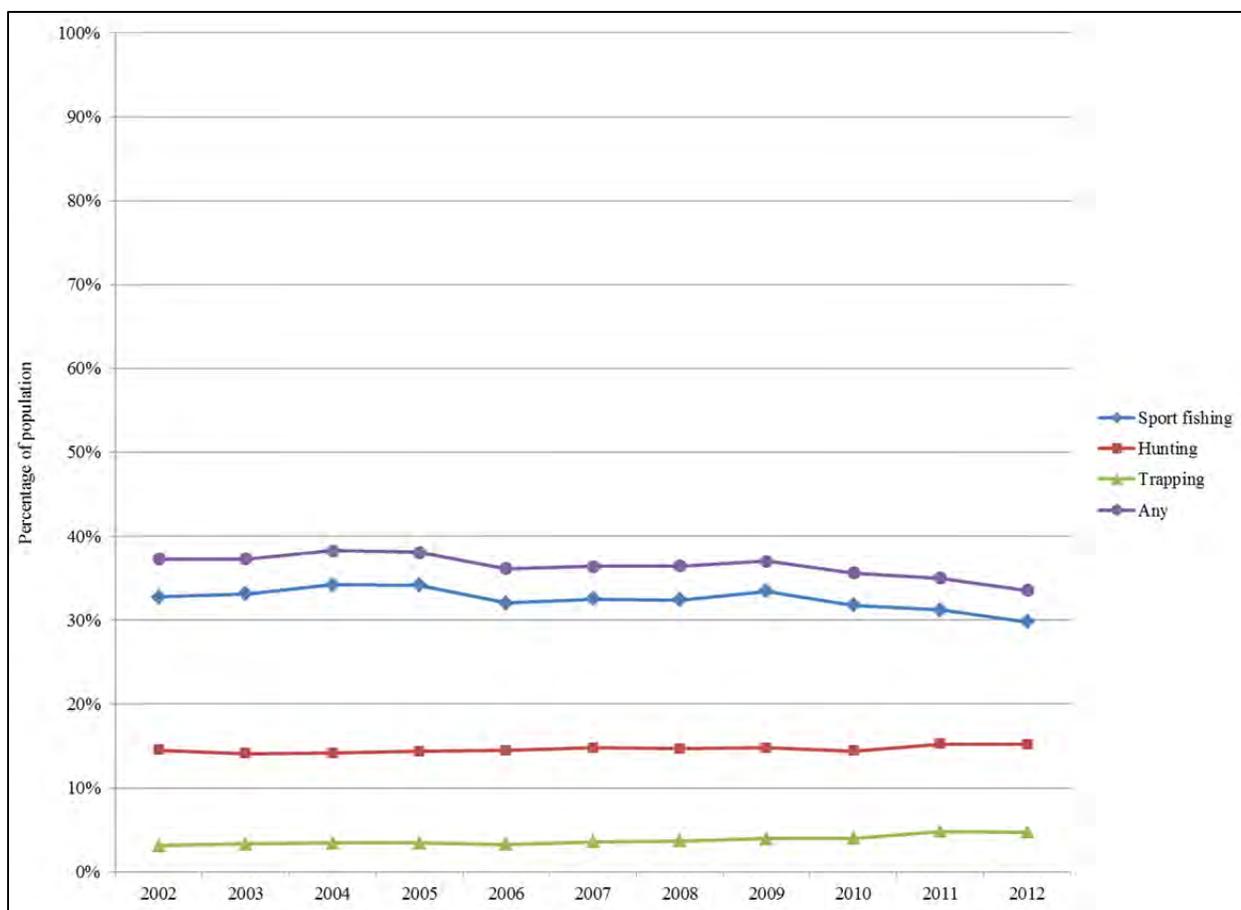


Figure 3.5-7.—Percentage of Ketchikan Nonsubsistence Area residents holding hunting, sport fishing, and trapping licenses.

9. The harvest levels of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 9 and the Ketchikan Nonsubsistence Area:

Testimony from staff and board members and information from figure #19 show a per capita harvest of wild resources of 33 pounds for the Ketchikan area which was among the lowest in the state. Figure #20 shows Ketchikan to be similar to Juneau in terms of protein requirements satisfied by wild foods. The harvest level in Saxman is 89.3 pounds per capita.

Figure 3.5-8 shows estimates of fish and wildlife harvests for Ketchikan based on data from annual harvest monitoring programs, which are comparable to the estimate for 1992 and were the only data source available at the time of the original Joint Board nonsubsistence area determination. Since 2002, estimated harvests ranged from 23 lb per person in 2011 to 54 lb per person in 2009. The recent 5-year average annual harvest (2007–2011) for Ketchikan is 34 lb person. This represents 16% of the annual consumption of meat, fish, and poultry by Americans, 21% of protein requirements, and 3% of caloric requirements.

As noted by Garza et al. (2006:21), the household survey estimate of 91 lb per person for 2005 was substantially higher than the estimate of 33 lb per person reported to the Joint Board based on annual

monitoring programs in 1992. (Garza et al. [2006] do not report a 95% confidence limit for this estimate.) They attribute the difference, in part, to more complete coverage in the survey of all resources used. However, the per capita harvest of salmon for the survey of 38 lb is notably higher than estimates based on sport, subsistence, and personal use data for 2004 to 2011, which range between about 10 lb per person (in 2011) and 25 lb per person (in 2009), and averaged 13 lb per person annually between 2007 and 2011. Of the salmon harvest estimated from the household survey, 71% (about 27 lb per person) was harvested with rod and reel, 28% (about 11 lb) with nets or seines in subsistence/personal use fisheries, and 1% was removed from commercial harvests (Figure 3.5-9). The recent 5-year averages from annual monitoring programs for Ketchikan were about 12 lb per person in sport fisheries and 1 lb per person in subsistence/personal use fisheries.

Annual harvest estimates for harbor seals by Ketchikan’s Alaska Native population are available for 1992–2008 (Figure 3.5-10).

Based upon systematic household harvest surveys, total wild resource harvests in Saxman in 1987 totaled about 94 lb ($\pm 33\%$) usable weight per person, with salmon (36%), land mammals (22%), other fish (20%), and shellfish (15%) making up most of the harvest. A second round of household surveys for 1999 resulted in a significantly higher harvest estimate for Saxman at 217 lb per person ($\pm 27\%$). In 1999, as in 1987, salmon was the largest component of the harvest at 38%, followed by other fish (35%), land mammals (29%), and shellfish (22%) (Figure 3.5-11).

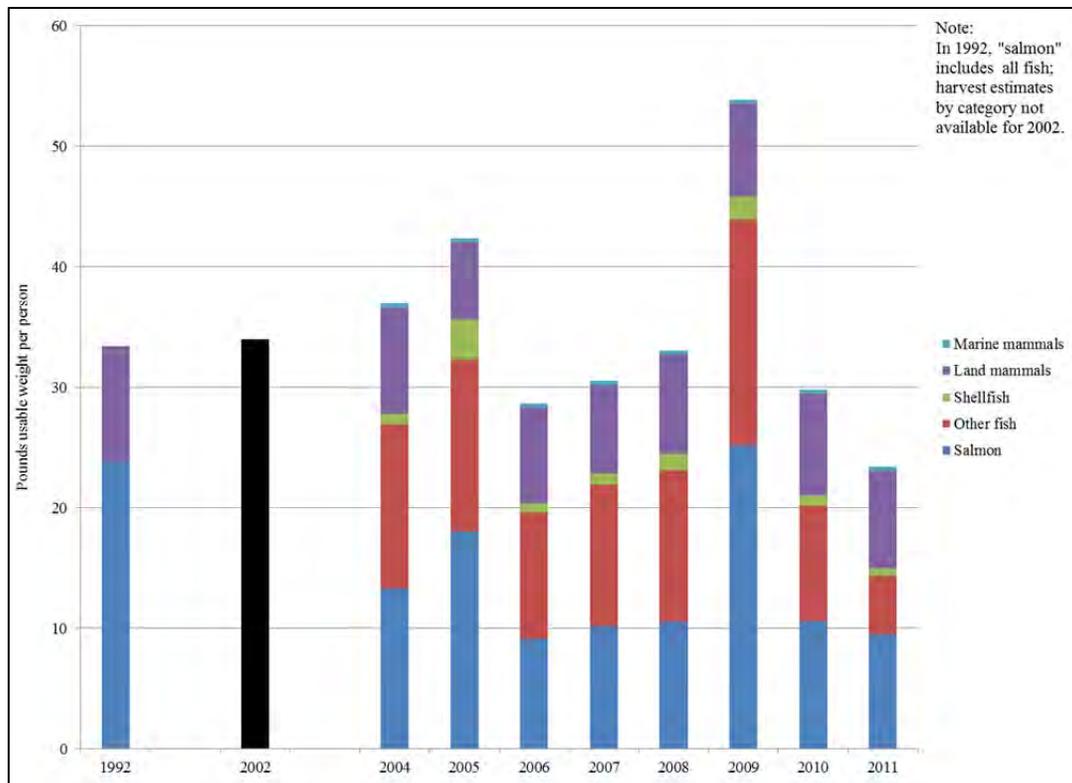


Figure 3.5-8.–Ketchikan Nonsubsistence Area: estimated harvests of fish and wildlife for home use.

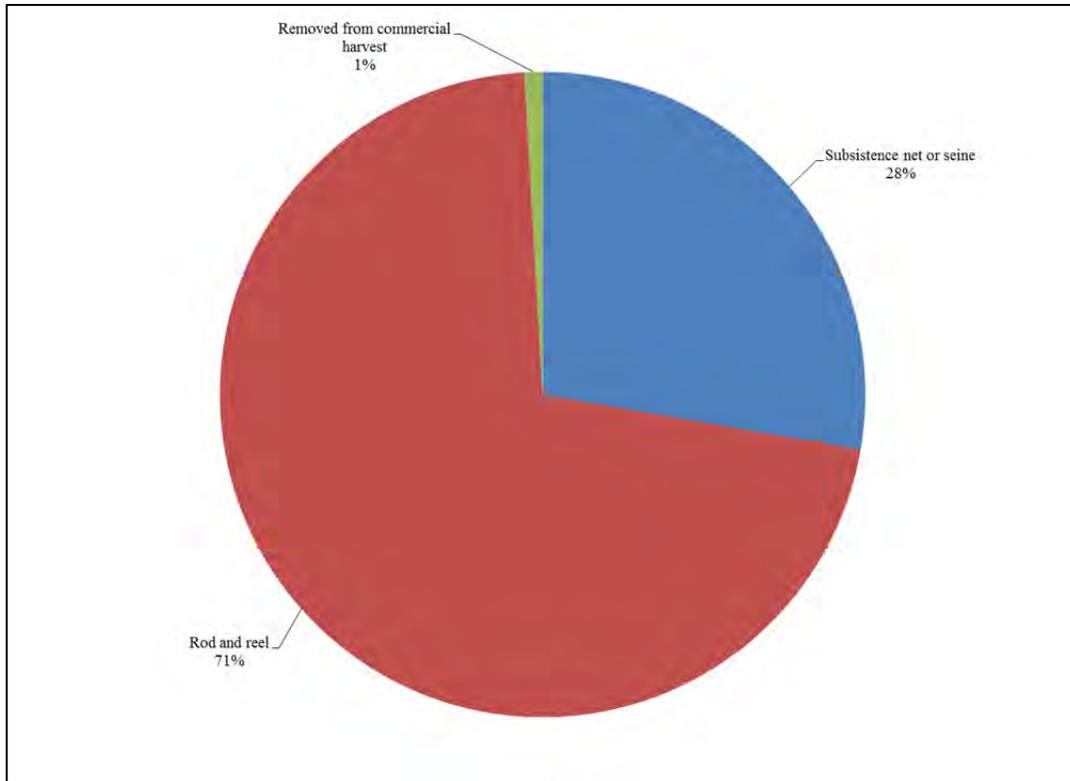


Figure 3.5-9.—Percentage of salmon harvest for home use by gear type, Ketchikan, 2005.

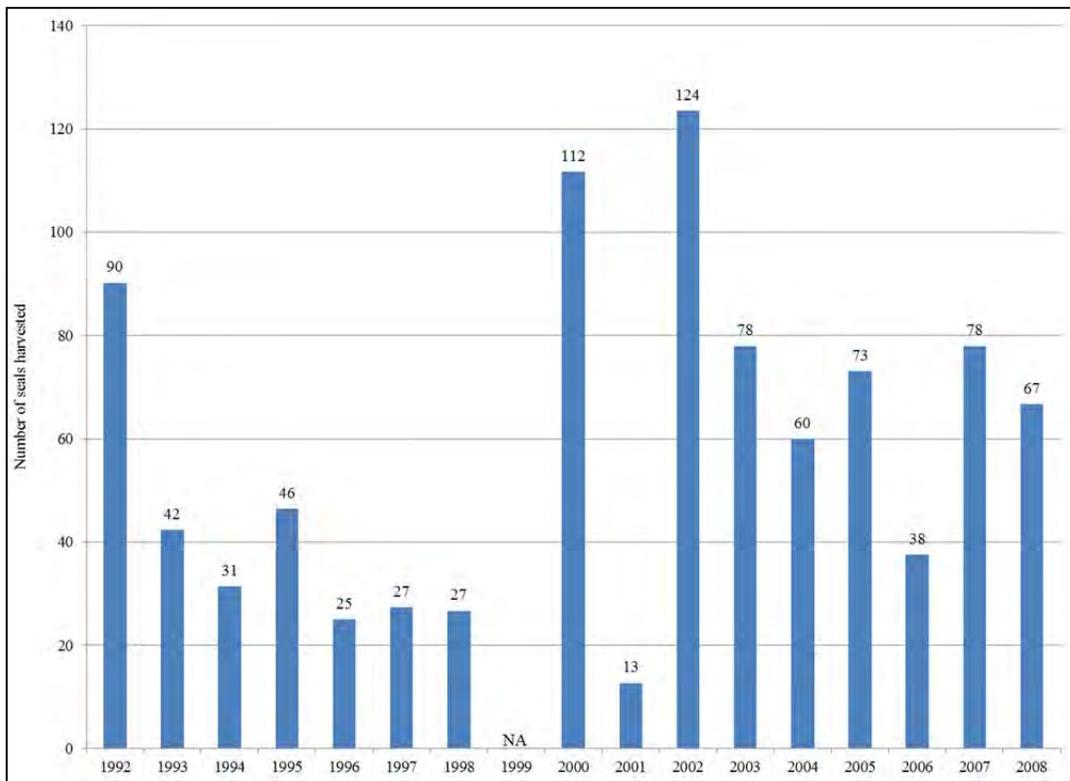


Figure 3.5-10.—Estimated number of harbor seals harvested, Ketchikan, 1992–2008.

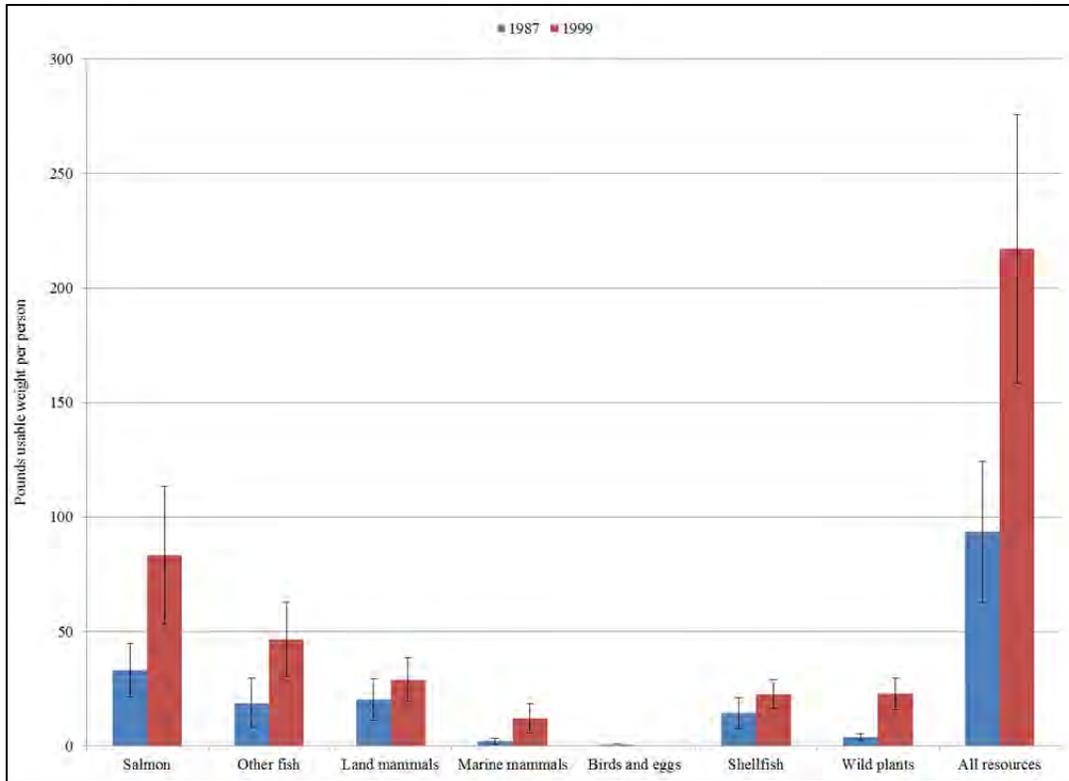


Figure 3.5-11.—Estimated harvests of wild resources by category, pounds usable weight per person, Saxman, 1987 and 1999.

10. The cultural, social, and economic values associated with taking and use of fish and game.

In November 1992, the Joint Board concluded the following regarding Factor 10 and the Ketchikan Nonsubsistence Area:

Diverse cultural values are represented in the Ketchikan area. The information presented and testimony from staff and board members shows a community that places a high value on recreational hunting and fishing and includes some subsistence uses.

We have no new information to add to that summarized in the 1992 Joint Board finding for Factor 10.

11. The geographic locations where those domiciled in the area or community hunt and fish.

In November 1992, the Joint Board concluded the following regarding Factor 11 and the Ketchikan Nonsubsistence Area:

The Board found that residents of the area hunt and fish throughout the proposed area as well as on the Cleveland Peninsula, Yes Bay and Northern Prince of Wales Island and other areas of Southeast Alaska. The Boards considered inclusion of Game statistical area UCU 614 which includes Meyer's Chuck and is an area where Meyer's Chuck residents hunt. This area was excluded from the proposed nonsubsistence area. The Board applied the criteria and found that Meyer's Chuck was a small, separate rural community whose residents may participate in

subsistence activities, and was not typical of the socio-economic structure found in Ketchikan. There is a personal use fishery in Yes Bay used by Ketchikan residents. The Board determined it was appropriate to expand the original area to include a portion of the Cleveland Peninsula, including Yes Bay, due to its nearly exclusive use by Ketchikan residents. The final nonsubsistence area incorporates approximately 90-95% of the recreational fishing area used by Ketchikan area fishermen and 43% of the Ketchikan area deer hunters.

From 1986–1991, most big game hunting by Ketchikan residents took place in GMUs 1 and 2, primarily for deer and, secondarily, for moose, goat, and bears. The period 2007–2011 is the most recent 5-year period for which data for big game species by GMU hunted are available. Ketchikan hunters hunted deer mostly in GMU 2 and GMU 1; moose and goats in GMU 1; and elk in GMU 3 (Table 3.5-2; Figure 3.5-12).

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

In November 1992, the Joint Board concluded the following regarding Factor 12 and the Ketchikan Nonsubsistence Area:

Although there was testimony from area residents reflecting sharing among the local population, there have been no specific studies to determine the extent of such sharing.

According to the 2005 survey results, 61% of Ketchikan’s households received gifts of wild resources in 2005 and 35% gave away portions of their harvests. About 34% of households received gifts of salmon, 30% received other fish, 29% received land mammals, 36% received shellfish, 12% received wild plants, and 2% received marine mammals (Garza et al. 2006:12).

Table 3.5-2.—Total hunters by species and GMU, Ketchikan Gateway Borough residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear	323	87				2	3						2		1	3				1							34	7	463
Brown bear	146		2	30				5	4				1			1							5		1				195
Bison											1																		1
Caribou										3			1		1	1	10				11		1	18		7	7		60
Deer	1,950	3,683	109	57	7																								5,806
Elk			75					4																					79
Moose	82		55		6	2	3					5	13	7	8	11	21	1		46	1	3	12	3	9		8		296
Mt. goat	140			1		1		1																			11	10	164
Muskox																			2			1	1						4
Dall sheep											1	11	7								1	4				7	4		35
Total	2,641	3,770	241	88	13	5	6	10	4	3	2	16	24	7	10	16	31	3	1	62	1	5	36	3	24	11	53	17	7,103

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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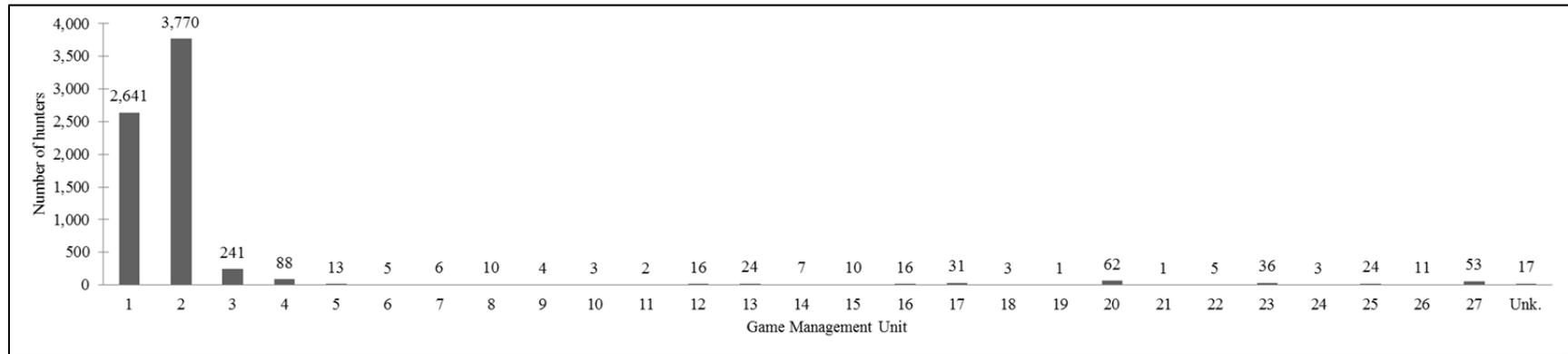


Figure 3.5-12.—Total hunters by GMU, Ketchikan Borough residents, 2007–2011.

4 PROPOSAL 39. REDUCE THE SIZE OF THE FAIRBANKS NONSUBSISTENCE AREA

4.1 BACKGROUND

Proposal 39 would exclude the range of the Fortymile caribou herd from the Fairbanks Nonsubsistence Area (FNSA). Caribou herd ranges are dynamic and based on herd size and range conditions, among other factors. During the last 100 years, the Fortymile herd has varied in size; the highest estimate is about 250,000–300,000 caribou in the 1920s. By the 1970s, the herd had declined to about 5,000 animals (Harvest Management Coalition 2012:3). The current management goal is to achieve a population of 50,000–100,000; in 2010, the herd's minimum size was estimated at 51,675 animals and was continuing to grow (Harvest Management Coalition 2012:5).

Figure 4.1-1 (based on Figure 29 in Boertje et al. 2012:57) depicts the herd's range at 5 time periods from the 1930s to the 2000s. At its height in the 1920s and 1930s, the herd's range was about 100,000 square miles and encompassed most of the current FNSA. In the 1980s and 1990s, the range was much smaller and was primarily east of the FNSA. Currently, the herd is expanding its range to the northwest across the Steese Highway. It could perhaps expand into its historic range in the White Mountains north of the Steese Highway and absorb the White Mountain Caribou herd (Harvest Management Coalition 2012:11). The goal of the management plan is for the herd to reoccupy its historic range in both Alaska and the Yukon Territory without compromising herd health (Harvest Management Coalition 2012:9).

The herd's range also varies by season and intensity of use. Figure 4.1-2 (based on Figure 11 in Boertje et al. 2012) shows that during the period from 1991–2008, the Fortymile herd was present in more than 50% of the seasons in the extreme eastern portion of the Fairbanks NSA within the upper drainages of the Salcha and Goodpaster rivers. Virtually all the calving for the Fortymile herd occurs west of the Fairbanks NSA (Boertje et al. 2012:41 [Figure 13]).

Figure 4.1-3 shows the average number of caribou harvested annually from 2006–2012 in the uniform coding units (UCUs) within the FNSA. The largest annual averages are within the upper Salcha River drainage in eastern GMU 20B and in the upper Chena River drainage in northern GMU 20B. Maps in Appendix I depict the number of caribou harvested in each UCU from 2006–2012. Harvests in UCUs along the Steese Highway in the northwestern-most portion of the current range have increased in the last several years.

From 2006–2012, about 13% of the harvest of Fortymile caribou has taken place within the FNSA; this is an average of about 133 animals a year, ranging from 9% in 2006 (76 animals) to 21% in 2012 (265 animals) (Figure 4.1-4). Of all caribou harvested in this area since 2006, 60% were taken by residents of the Fairbanks NSA, ranging from 50% in 2007 to 71% in 2006 (Figure 4.1-5). In addition, non-Alaska residents harvested 26% of the caribou in this area from 2006–2012 and residents of other nonsubsistence areas harvested 11%. Very few residents of communities located outside nonsubsistence areas harvested Fortymile caribou within the Fairbanks Nonsubsistence Area; these harvesters accounted for only about 3% of the total harvest within this 7-year period.

All hunting of the Fortymile caribou herd is governed by the collaboratively developed *Fortymile Caribou Herd Harvest Plan* (Harvest Management Coalition 2012). There is a single registration permit system in place for all general and subsistence hunting under state regulations and subsistence hunting under federal regulations. The Board of Game has adopted a positive C&T use determination for this herd, with an amount reasonably necessary for subsistence (ANS) at 350–400 caribou.

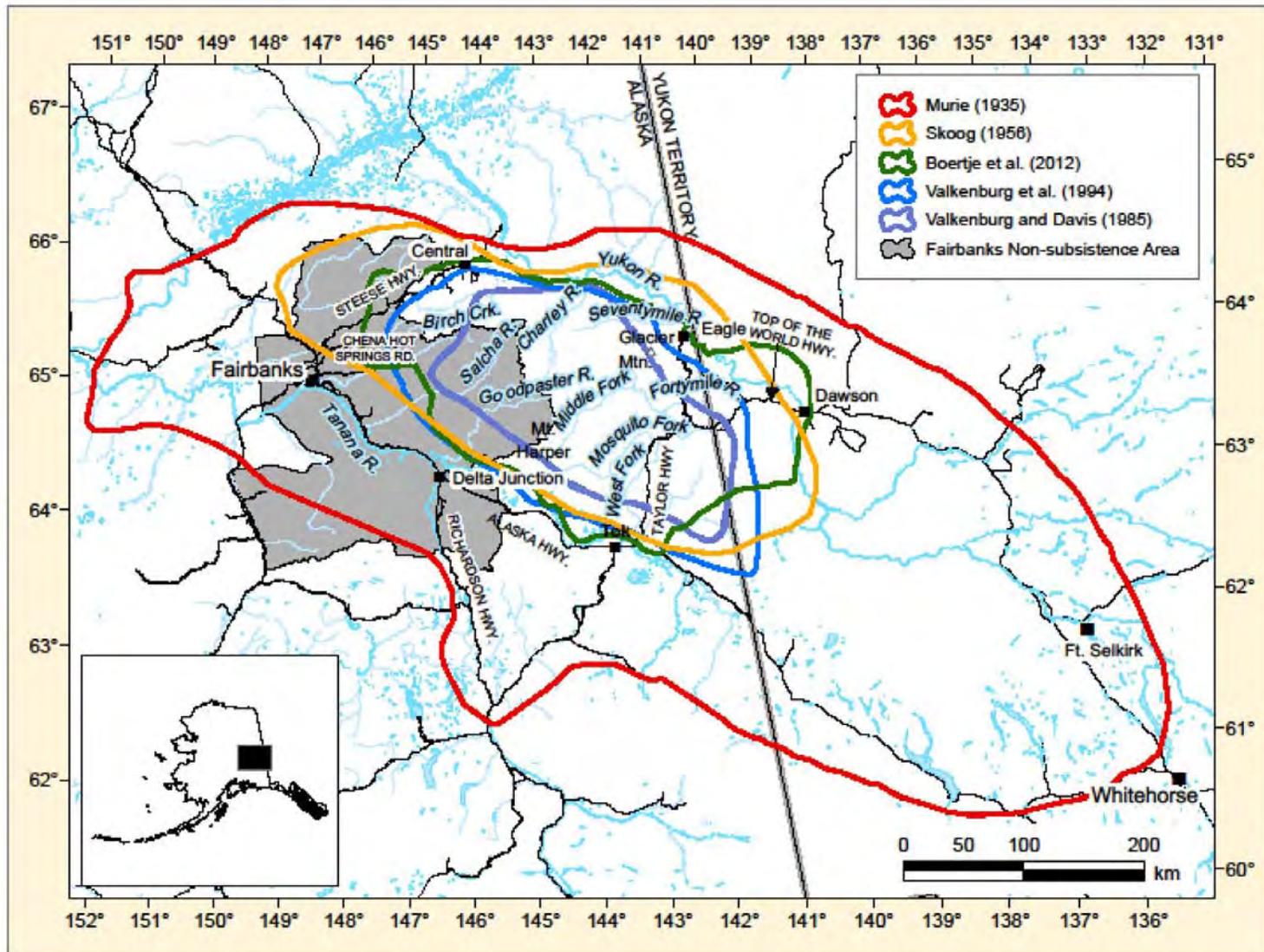


Figure 4.1-1.—Cumulative multi-year Fortymile caribou herd distribution delineated during 5 study periods from largest to smallest range size, 1918–1924, 1952–1955, 1992–2008, 1986–1990, and 1980–1985, Interior Alaska and adjacent Yukon.

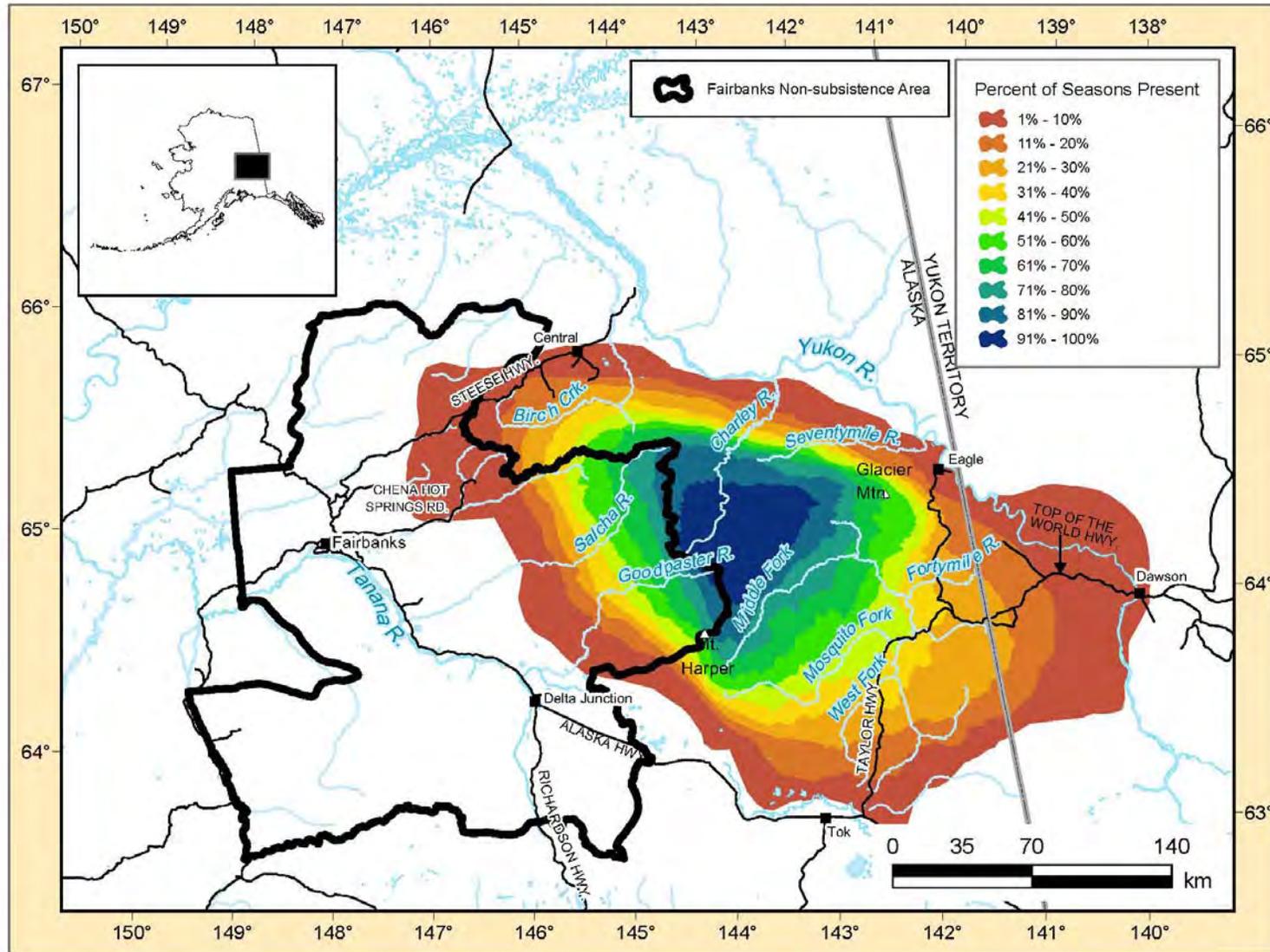


Figure 4.1-2.—Fortymile caribou herd distribution based on percentages of 99 independent seasonal boundaries, 1991–2008, Interior Alaska and adjacent Yukon. The maximum number of seasons that overlapped was 94. The blue areas, representing 71–100% of the seasons, largely encompass core upland tundra (7,000 km²).

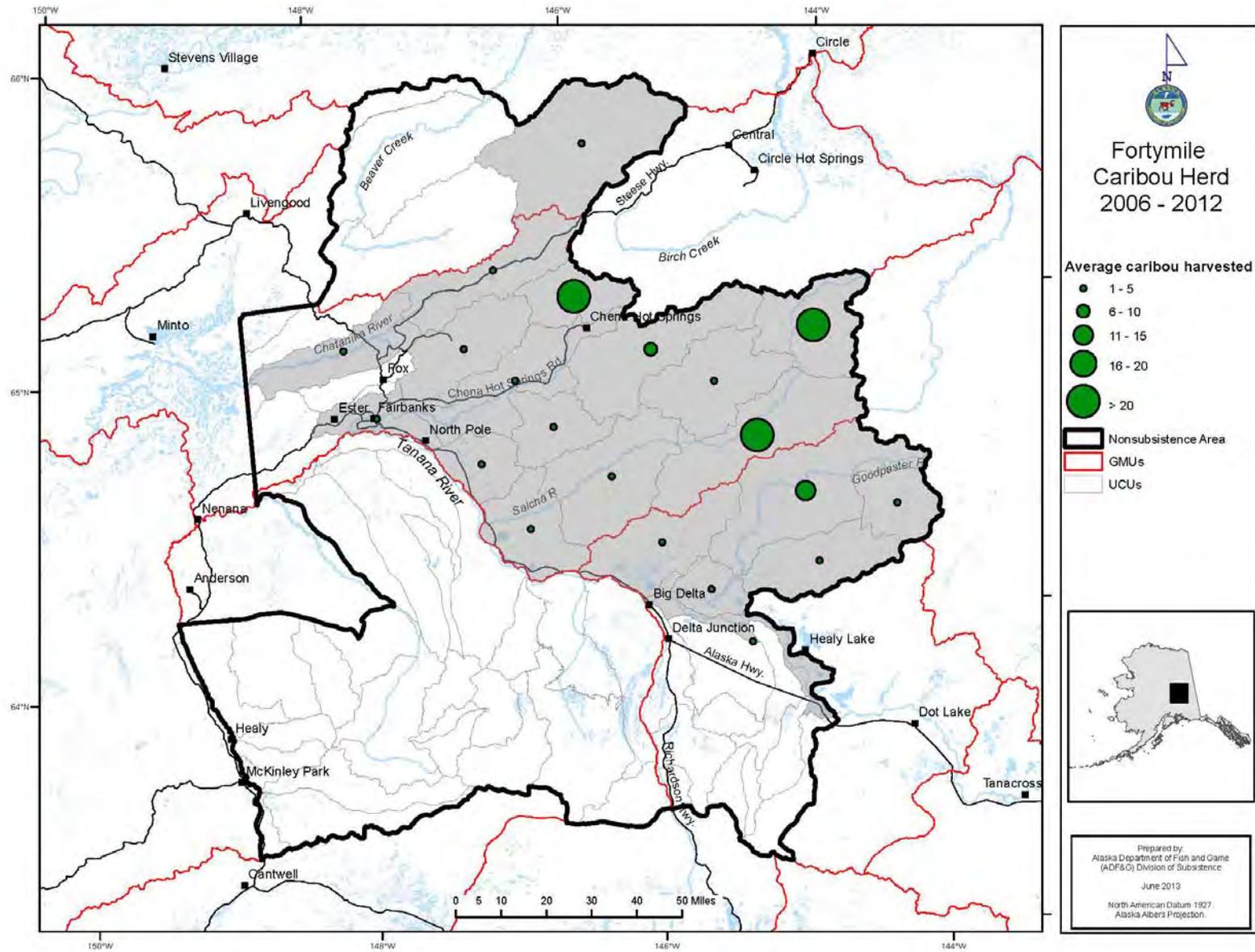


Figure 4.1-3.—Average number of caribou harvested annually from 2006–2012 in the UCUs within the Fairbanks Nonsubsistence Area.

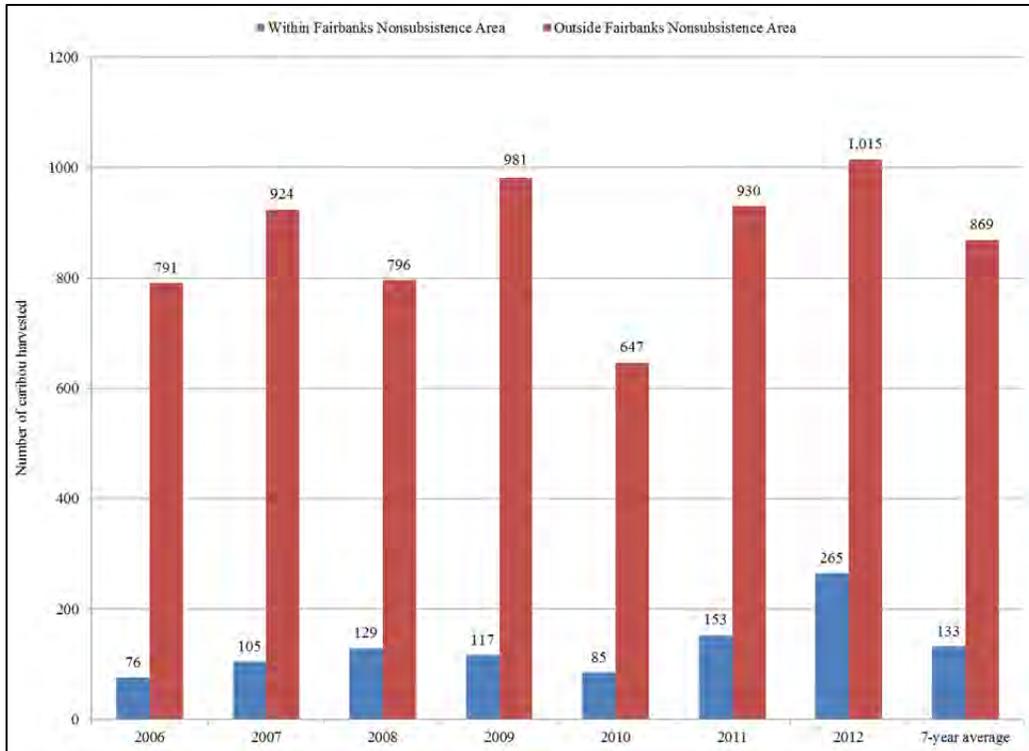


Figure 4.1-4.—Number of Fortymile herd caribou harvested within and outside of the Fairbanks Nonsubsistence Area, 2006–2012.

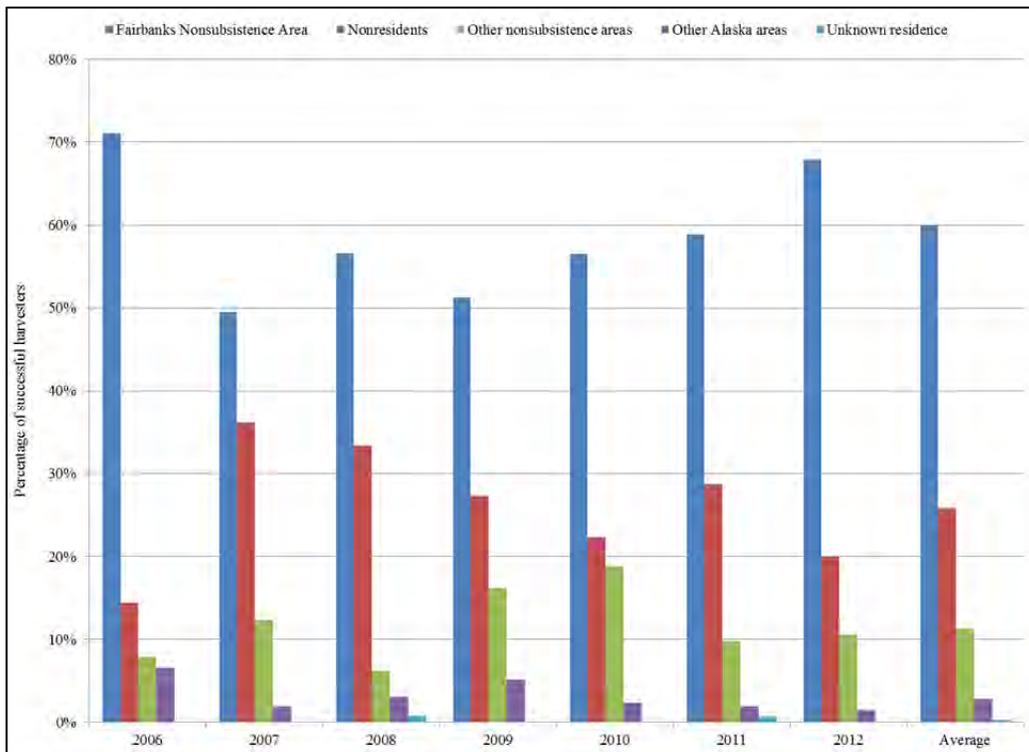


Figure 4.1-5.—Area of residence of harvesters of Fortymile herd caribou within the Fairbanks Nonsubsistence Area, 2006–2012.

4.2 CONSIDERATIONS FOR EVALUATING THE BOUNDARIES OF THE FAIRBANKS NONSUBSISTENCE AREA

For Joint Board consideration of Proposal 39, there are several options for defining the range of the Fortymile caribou herd.

1. The maximum range as estimated over the last 100 years (1935 in Figure 4.1-1). This maximum range includes most of the current Fairbanks Nonsubsistence Area.
2. The “current” range, as defined in Boertje et al. (2012) (Figure 4.1-1) and updated by recent 2006–2012 harvest data (Figure 4.1-3).
3. A range based on the density of seasonal presence as depicted in Figure 4.1-2.

After the total range of the herd is defined, the Joint Board could identify what portion of the range is within the FNSA and discuss harvest patterns within that area, including which communities hunt and harvest caribou within the nonsubsistence area. However, the Joint Board may wish to consider the appropriateness of defining a static range, given historical range variation and possible changes in the future as the size of the herd fluctuates.

As noted above, most harvests of Fortymile caribou within the Fairbanks Nonsubsistence Area since 2006 have been by residents of the FNSA, and almost all the remaining harvests have been by non-Alaska residents and residents of other nonsubsistence areas. It appears that in recent years, at least, very few residents of communities outside the nonsubsistence areas have hunted caribou in the nonsubsistence area. For example, household surveys and mapping interviews conducted in Healy Lake pertaining to activities in 2011 documented caribou hunting east of the nonsubsistence area. The same study found that residents of Dot Lake and Dry Creek hunted caribou to the south of the nonsubsistence area and along the Taylor Highway to the east (Holen et al. 2012).

The range of game populations or fish stocks with C&T uses is not one of the 12 statutory factors used for defining the boundaries of nonsubsistence areas. The Joint Board has the option to apply the 12 factors to the portion of the FNSA within the Fortymile caribou herd range if this portion can be meaningfully severed for analysis from the existing nonsubsistence area. Based on the pattern of successful harvests from 2006–2012, the current range of the Fortymile herd only includes portions of the Fairbanks North Star Borough and the Southeast Fairbanks Census Area that are outside of incorporated places and census designated places. Except for a total population estimate for these areas (called “the balance” of the census areas), demographic, economic, and fish and wildlife harvest and use data are not available for this “balance” of the census areas. Because most of the caribou harvests within these areas is by residents of the FNSA, and because use of this area by other Alaska communities is quite low, consideration should be given to applying the information about the 12 factors for the nonsubsistence area as a whole as also representing the portion of the nonsubsistence area within caribou herd range. This approach may also be most consistent with the dynamic nature of the herd’s range.

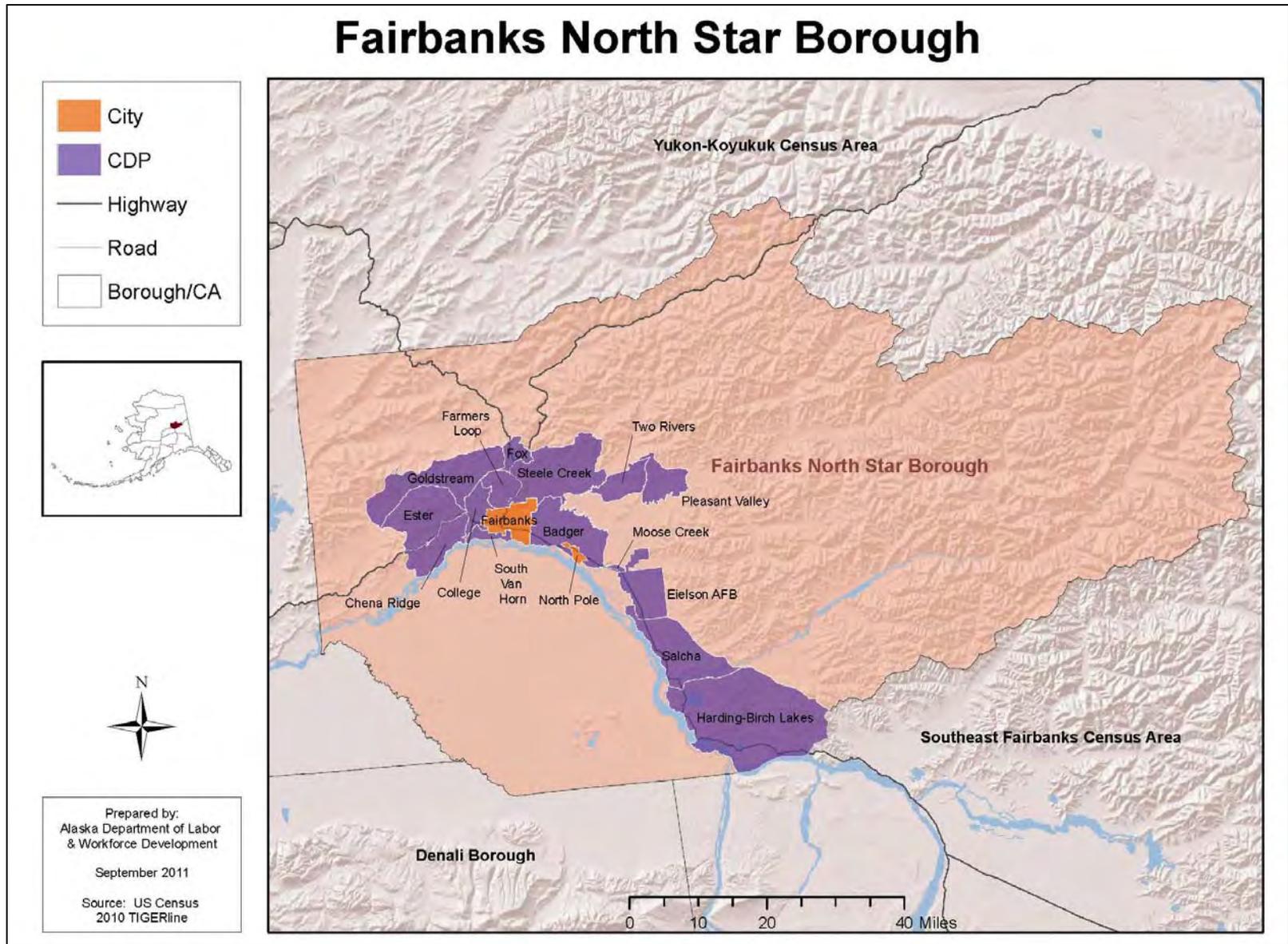


Figure 4.2-1.—Map of Fairbanks North Star Borough.

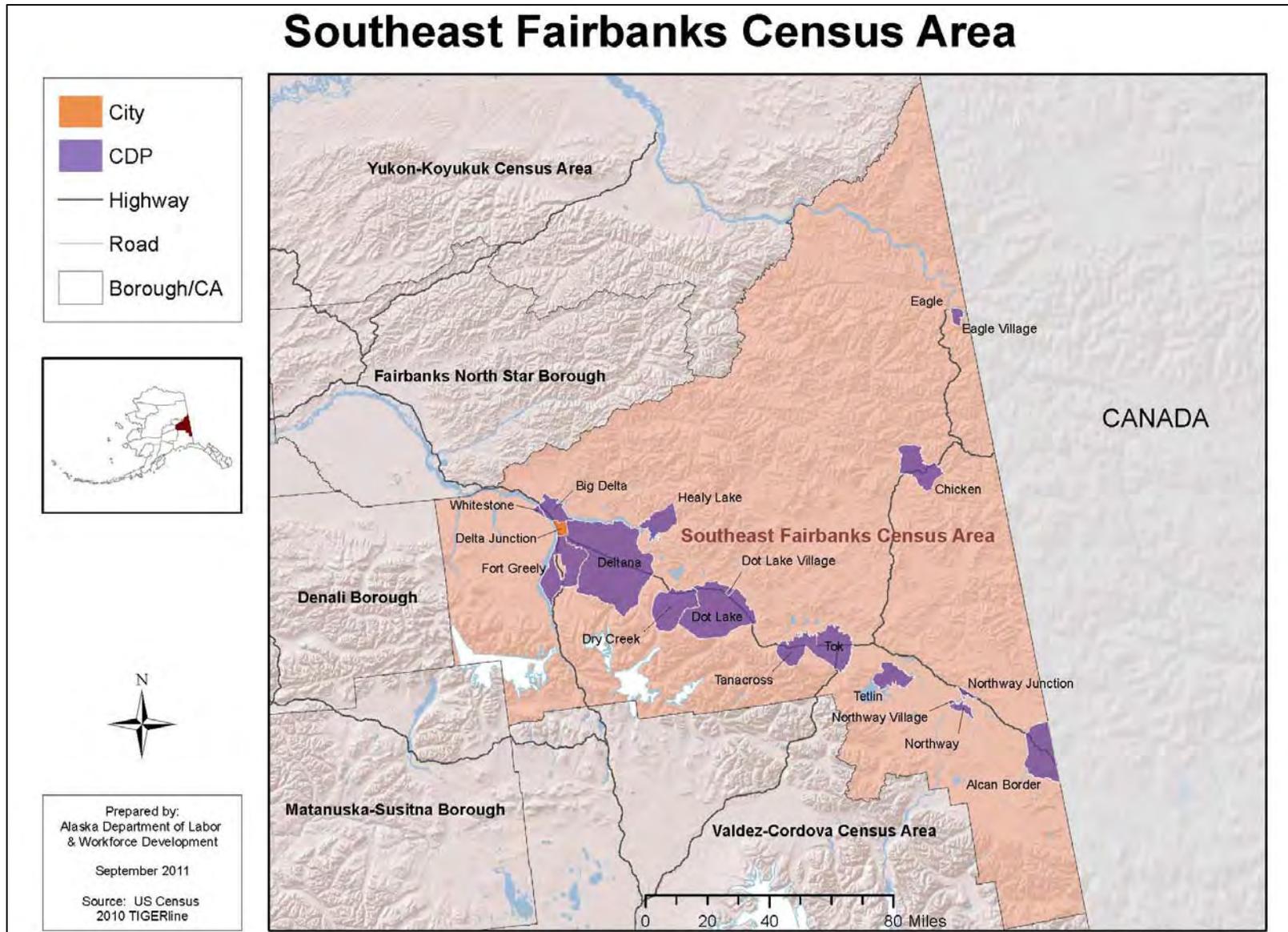


Figure 4.2-2.-Map of Southeast Fairbanks Census Area.

5 PROPOSAL 40. CREATE A KODIAK NONSUBSISTENCE AREA

5.1 ABOUT THE PROPOSAL

Proposal 40 would create a Kodiak nonsubsistence area but does not specify what boundaries are intended for the area. The Kodiak Island Borough, which consists of Kodiak Island and adjacent islands and an unpopulated portion of the Alaska Peninsula, includes 11 incorporated places and census designated places (CDPs), and a “balance” that lives mostly along Kodiak Island’s road system and is connected to the incorporated city of Kodiak, the U.S. Coast Guard base, and the airport (Figure 5.1-1). It is likely that the proposal intends for the nonsubsistence area to include just the city of Kodiak or the road-connected portions of Kodiak Island, rather than the entire borough and remote villages (Figure 5.1-2). In this report, the information presented is limited to the city of Kodiak and other areas connected to it by road. Kodiak City consists of 3.5 square miles of land and 1.4 square miles of water, for a total of 4.9 square miles. Unless otherwise noted, “Kodiak” in this report refers to the city of Kodiak and other areas connected to it by the Kodiak Island road system, including Womens Bay CDP, Kodiak Station CDP, Chiniak CDP, and the balance of the Kodiak Island Borough population.

An important source on the economy of Kodiak is the *Kodiak Island Borough Comprehensive Plan Update*, which was last updated in January 2008 (Kodiak Island Borough Community Development Department 2008).

Regarding harvest data sources for Kodiak City and the road area, the Division of Subsistence has conducted 4 rounds of household surveys in this area. For 1982, a survey of a random sample of 155 households included Kodiak City, Womens Bay, Bells Flats, and Monashka Bay, but did not include Chiniak or the Coast Guard base (Kodiak Area Native Association and Alaska Department of Fish and Game Division of Subsistence 1983:26). For 1991, a random sample of 100 households included the entire road area (including the Coast Guard base). For 1992, the survey of 100 households took place only in Kodiak City; this was also the case for 1993, when 105 Kodiak City households were surveyed (Mishler et al. 1995:27).

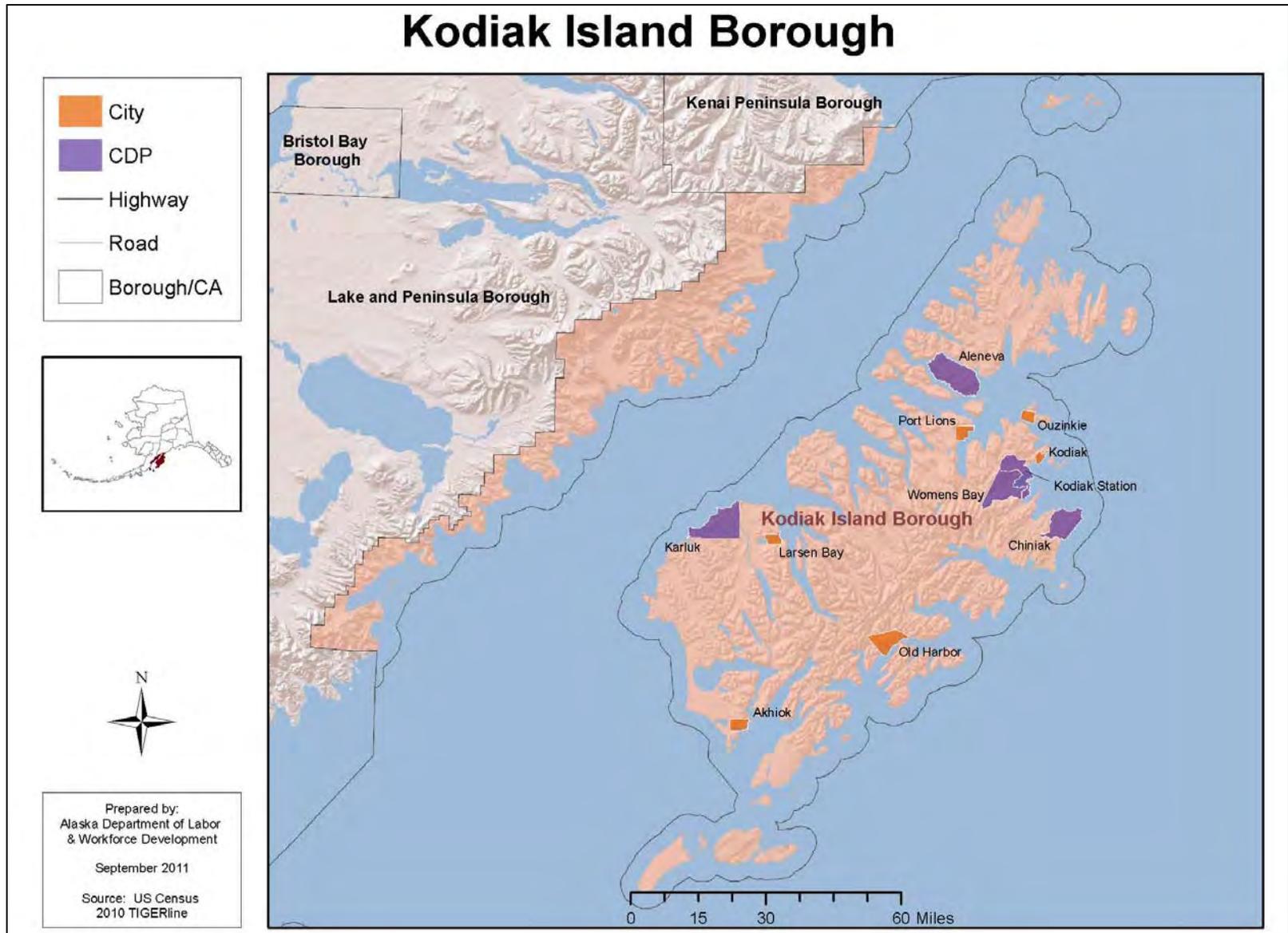


Figure 5.1-1.–Map of Kodiak Island Borough.

Kodiak vicinity

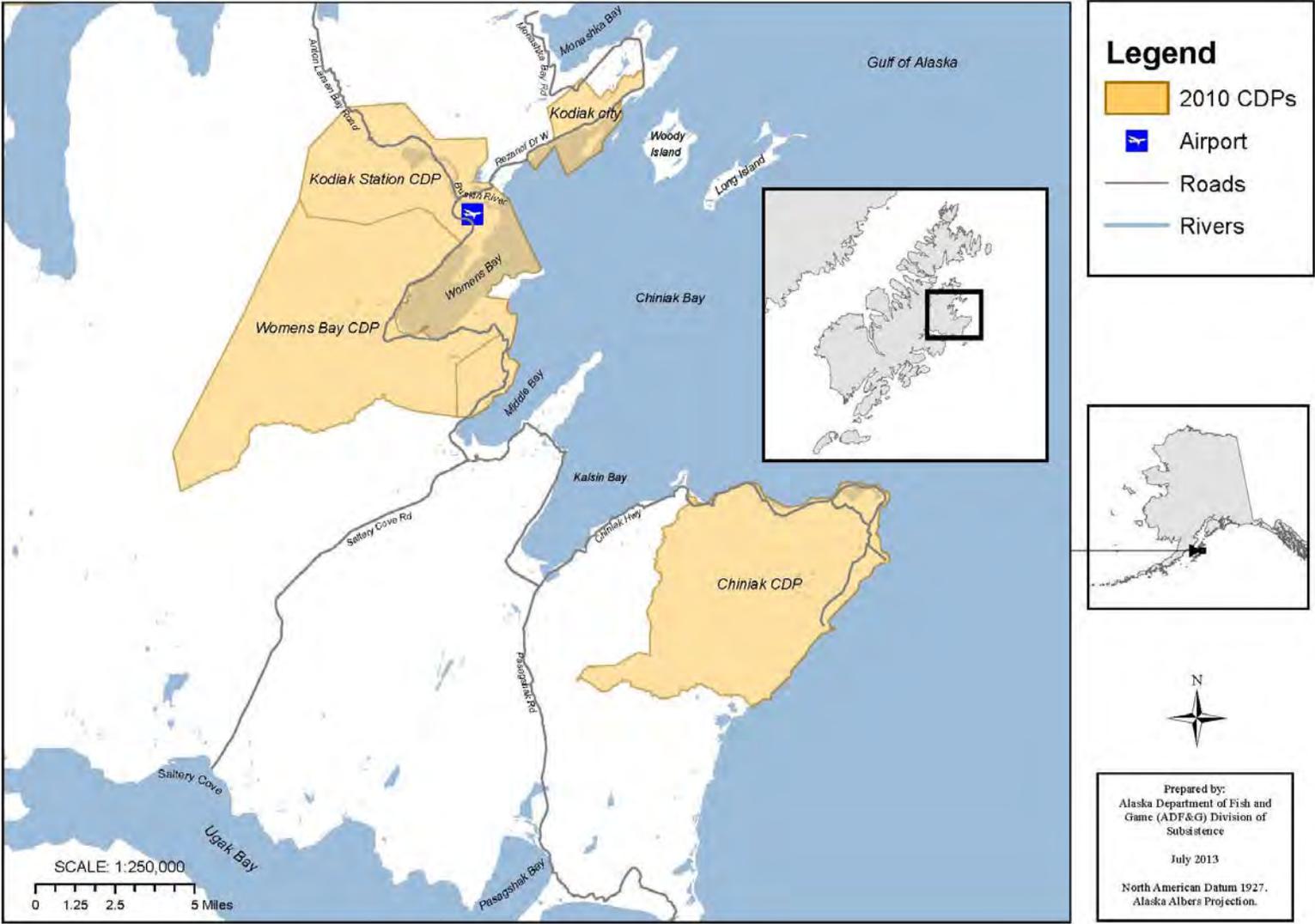


Figure 5.1-2.—Map of Kodiak road area.

5.2 HISTORY AND BACKGROUND

The city of Kodiak is situated in Chiniak Bay on the northeast corner of Kodiak Island in the Gulf of Alaska. Kodiak City's climate is often cool, mild, and rainy. The average temperature is about 40.3 degrees Fahrenheit. During the winter months, Kodiak is about 10–15 degrees warmer than the mainland and Kodiak's harbor does not freeze.

Alutiiq-speaking people, also known as Pacific Eskimos, Koniag, or "Aleuts," were the original inhabitants of Kodiak Island. Upon arrival of the Russians in the mid-1700s there began extensive intermarriage between Alutiiq peoples and Russian colonists.

An early Russian-American outpost first established at Three Saints Bay near the present-day village of Old Harbor in 1784 was moved to its new site at St. Paul's harbor, at present-day Kodiak, during the spring of 1792 primarily to allow access to timber for shipbuilding. The fur baron Alexander Baranof is thus credited with founding Kodiak in that year, making it one of North America's oldest cities. Throughout most of the 19th century, sea otter hunting remained central to Kodiak's economy. Kodiak became part of the United States when Alaska was purchased from Russia in 1867. Kodiak's population remained relatively small throughout the 19th century, with a total population of 341 in 1900 (Rollins 1978).

In 1898 the U.S. Department of Agriculture began an experimental cattle-breeding ranch in Kalsin Bay. The industry suffered greatly from brown bear predation and never flourished; however, there are still several cattle ranches operating on the Kodiak road system today. In 1904 the Alaska Commercial Company began running a small saltery in Kodiak, specializing in sockeye and coho salmon bellies. In 1911 Kodiak [*sic*] Fisheries began operating the first salmon cannery in Kodiak, but growth was slow because on June 6, 1912, Kodiak was rocked by a series of severe earthquakes signaling the eruption of Mt. Katmai, and within hours the community was covered by an 18-inch thick layer of volcanic ash (Roppel 1986:33, 233–242).

By the 1930s Kodiak still maintained a fairly small population of 400–800 persons without any public utilities or health facilities (Chaffin et al. 1983:53). By this time, however, commercial fishing, which had been focused at Karluk on the west side of the island since the 1880s, became the town's major industry with pink salmon and herring leading the way to development (Will 1981:82).

America's entry into World War II caused Kodiak's population to grow. In 1939 a U.S. naval base was built that had 10,000 military personnel by 1941 and was later converted to a U.S. Coast Guard base in 1972. Gun emplacements were built at Cape Chiniak, Spruce Cape, and Miller Point, which prompted the construction of new roads. In 1940 Kodiak was incorporated as a first class city and elected its first mayor and city council. When the military pulled most of its troops out after the war, Kodiak's population dropped sharply, but then quickly grew again in response to a developing commercial fishing industry. In the 1940s, 1950s, and 1960s king crab and shrimp were the foremost targeted species.

On March 27, 1964, Kodiak City was devastated by the Great Alaska Earthquake; the subsequent tsunami inundated the downtown business district and waterfront canneries and destroyed the boat harbor. Many boats were swept out to sea and the harbor went nearly dry as residents evacuated for high ground. Losses to fishing boats alone were estimated at \$7 million.

Almost immediately after the tsunami, the city began rebuilding, assisted by low interest loans from the Federal Bureau of Commercial Fisheries and the Small Business Administration. The waterfront and boat harbor were rebuilt by the U.S. Army Corps of Engineers, and water and sewer lines were replaced. According to Will (1981:106), "By 1966 the city had already made a healthy recovery." In 1978 the Kodiak Island Borough was organized with Kodiak selected as the administrative center.

Today Kodiak's boat harbor has expanded across the channel to Dog Bay on Near Island, nearly doubling in space and hosting a range of vessels from large deep-water trawlers to smaller recreational boats.

Kodiak is now served by a modern airport, the Alaska Marine Highway ferry system, and a network of approximately 75 miles of roads that connect Kodiak City to Monashka Bay and Anton Larsen Bay to the north, and Womens Bay, Kalsin Bay, Chiniak, and Pasagshak Bay to the south. These roads provide important access to subsistence resources such as salmon, clams, mussels, crab, deer, and berries. Commercial fisheries continue to dominate the employment opportunities in Kodiak.

5.3 SUMMARY OF FEDERAL SUBSISTENCE BOARD ACTION, 2007

The Federal Subsistence Board (FSB) identifies rural and nonrural areas of Alaska for purposes of implementing Title VIII of ANILCA. The criteria used by the FSB for rural/nonrural determinations appear in Appendix H. The FSB reviews these classifications every 10 years following the release of results of the decennial federal census. In 2005–2007, the FSB reviewed information about Kodiak to determine if it should be classified as a nonrural place. This review included examination of many of the factors that the Joint Board uses to identify nonsubsistence areas, such as demographic and economic trends, employment trends, cash income, and harvest levels. The following is the summary of the FSB action on this issue:

The Board defined the Kodiak Area consisting of the road system, the City of Kodiak, the Mill Bay area, Womens Bay, Bell's Flats, the Coast Guard Station, Chiniak, Pasagshak, and Anton Larsen and made no change to its rural status. Although the population of the Kodiak Area was estimated at approximately 12,000 in 2005, the area exhibits strong characteristics of a rural area. The population has increased only slightly since 1990. Kodiak's per capita income is less than many nonrural areas and also many rural areas. The unemployment rate has increased with the decline of the fishing industry. The community is very isolated with no road access. Inclement weather can strand residents for days. The per capita harvest of subsistence resources is higher in the Kodiak area than in some other rural areas. Based on the marginal population growth since 1988 (1.3 percent), the high cost of food, remoteness, and the high use of subsistence resources, no change will be made to Kodiak's rural determination. (U.S. Fish and Wildlife Service 2007)

5.4 POPULATION.

The population of Kodiak City in 2010 was 6,130; the entire road area had a population of 12,787. This was a decline of about 1% from 2000, and an increase of about 4% since 1990 (when the state's population increased by 29%) (Figure 5.4-1). In 2010, about 15% of the Kodiak road area's population was Alaska Native; 75% of the Kodiak Island Borough's Alaska Native population lives in the road area and it is not unusual for people and family to move between this area and the more remote communities (Table 5.4-1).

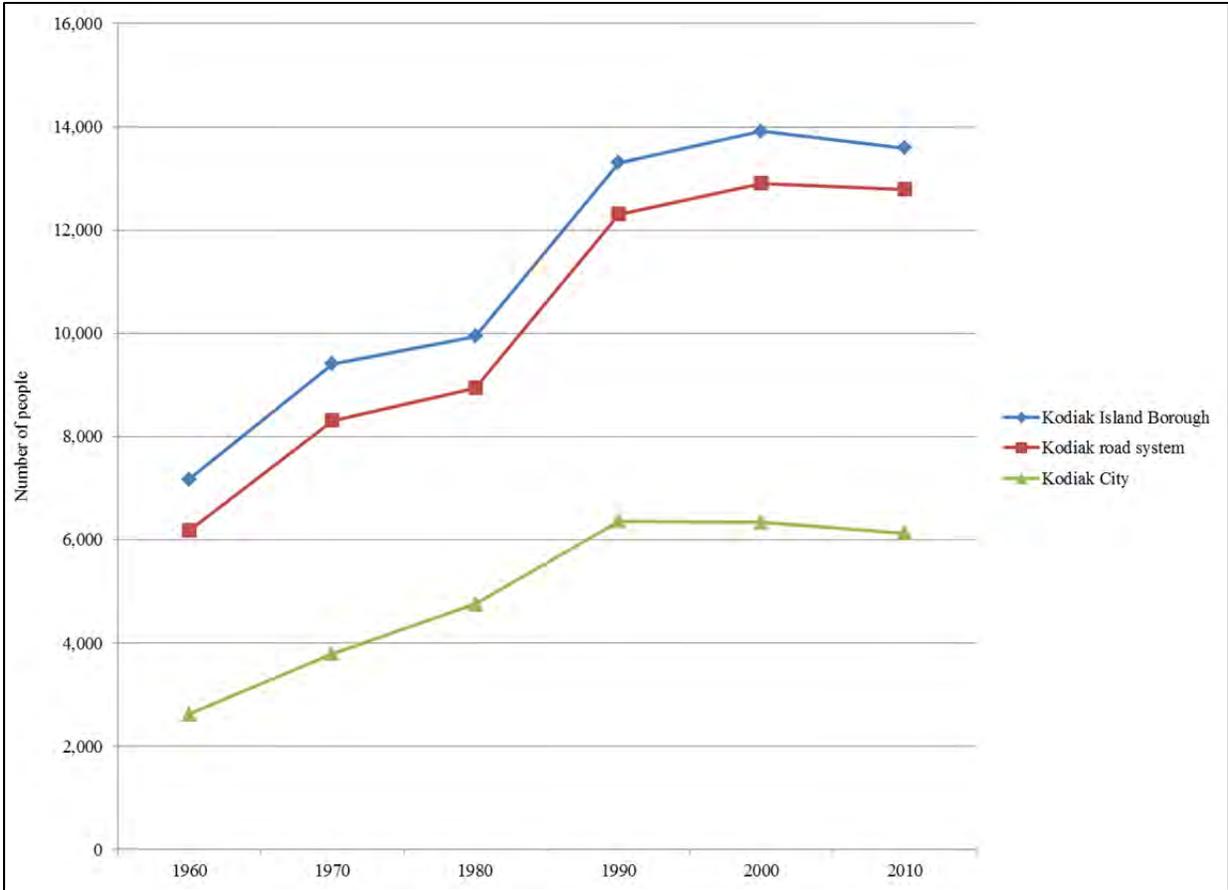


Figure 5.4-1–Population of Kodiak City, Kodiak road-connected area, and Kodiak Island Borough, 1960–2010.

Table 5.4-1.—Kodiak Island Borough population, 1960–2012.

	Kodiak Island road system									Borough totals				
	Kodiak City	Kodiak Station	Womens Bay	Chiniak	Remainder	Road system subtotal	Change over decade	Alaska Native population	Percentage	Other Kodiak Borough	Borough total	Change over decade	Alaska Native population	Percentage
1960	2,628				3,550	6,178				996	7,174			
1970	3,798	3,052			1,460	8,310	35%			1,099	9,409	31%		
1980	4,756	1,370		105	2,716	8,947	8%	928	10%	992	9,939	6%	1,884	19%
1990	6,365	2,025	620	77	3,220	12,307	38%	1,285	10%	1,002	13,309	34%	2,126	16%
2000	6,334	1,840	690	50	3,991	12,905	5%	1,696	13%	1,008	13,913	5%	2,452	18%
2010	6,130	1,301	719	47	4,590	12,787	-1%	1,872	15%	805	13,592	-2%	2,488	18%
2012	6,431	1,295	763	44	4,665	13,198				843	14,041			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

Note Blank cells mean data are not available because census areas are not established.

5.5 THE 12 SOCIOECONOMIC FACTORS

1. The social and economic structure.

The *Kodiak Island Borough Comprehensive Plan Update* (Kodiak Island Borough Community Development Department 2008) provides the following overview of Kodiak's economy:

Commercial fishing and seafood processing are the primary drivers of the Borough's economy, including support services. The United States Coast Guard station also spurs important economic activity. Other industries include retail services and government. One-quarter of the Borough's workers are employed in government, with more than 60% of those employed in local government. Tourism is a growing component of the economy, comprised of recreational fishing, hiking and kayaking. The hospital also ranks among the top employers.

Referring to the early 2000s, Sepez et al. (2005:201) also noted that, "Kodiak's economy is based on fishing, seafood processing, retail, and government employment." In many ways, Kodiak also serves as a "hub" or "regional center" for the more remote communities of the borough (similar to Dillingham for Bristol Bay, Bethel for the lower Kuskokwim and Yukon River areas, and Nome for Norton Sound).

A recent overview of the cash economy of the Kodiak Island Borough (Shanks and Rasmussen 2010:12) noted:

Over the years, government, tourism, retail, and health care jobs have added diversity and stability to the economy of the Kodiak Island Borough. But despite that increased diversity, the commercial fishing industry continues to be a cornerstone of the borough's economy.

Writing of the early 1990s, Mishler et al. (1995) described a significant subsistence sector to Kodiak's local economy based on relatively high harvest levels and high levels of participation in fishing, hunting, and gathering activities.

In the 2000s, Kodiak was among the state's largest fishing ports (Sepez et al. 2005:202) as the site of commercial fishing and processing activities for crab, Pacific halibut, herring, groundfish, shellfish other than crab, sablefish, and salmon. In 2011, Kodiak ranked fifth in the nation and third in Alaska in terms of commercial fishery landings (Lowther 2012:9).

Other Alaska communities that have social and economic structures focused on commercial fishing and processing similar to Kodiak that are outside the state's nonsubsistence areas include Unalaska/Dutch Harbor, King Cove, Sand Point, Cordova, Haines, Sitka, Petersburg, and Wrangell.

The section of the borough's comprehensive plan on the economy (page 17) notes that "Community members noted the importance of ensuring that elected representatives understand the importance of sport and subsistence fishing, in addition to commercial fishing."

2. The stability of the economy.

Because the cash economy of Kodiak lacks diversification and depends very heavily on commercial fishing and processing, it is vulnerable to changes in stock statuses, markets, and management policies. For example, privatization of resource rights and market allocation in commercial fisheries, generally referred to as "rationalization," has potential economic effects on individuals and communities involved in harvesting and processing fisheries resources. Presently, the North Pacific Fishery Management Council (NPFMC) is developing alternatives for the Gulf of Alaska (GOA) trawl catch share program. As part of this process, NPFMC is considering alternatives for a data collection program that could be used "to assess the impacts of a catch share program on affected harvesters, processors, and communities in the

GOA” (NPFMC 2013:1). Also, the Alaska Fisheries Science Center (NOAA) is planning a complementary, voluntary data collection program to “provide a baseline description of the industry as well as allow for analysis of changes the rationalization program [that is, the Council’s proposed Trawl Bycatch Management Program] may create for individuals and communities” (NPFMC 2013:17).

Table 5.5-1 summarizes data from the Commercial Fisheries Entry Commission regarding participation in commercial fisheries from 1980 through 2012 by residents of “Kodiak,” which includes residents of the city of Kodiak and other portions of the Kodiak Island Borough connected to it by road (except Chiniak). Fisheries include crab, halibut, herring, “other groundfish,” “other shellfish,” sablefish, and salmon. Also reported are total pounds landed and the estimated gross earnings. Participation in these fisheries by Kodiak residents, as shown by the number of permit holders, the number of permits issued, number of fishermen who fished, and number of permits fished, has declined since the 1980s. For example, the annual average number of permit holders was 1,008 in the 1980s and 567 for the 10-year period 2003–2012 (a decline of 44%). Similarly, the annual average of number of permits issued was 2,127 in the 1980s and 1,269 for 2003–2012 (a decline of 40%). On the other hand, total pounds landed in these fisheries averaged almost 266 million pounds from 2003–2012, more than twice the annual average of about 125 million pounds in the 1980s.

Table 5.5-1.–Participation in commercial fisheries, pounds landed, and estimated gross earnings, Kodiak, 1980–2012.

Year	Permit activity		Fishing activity			
	Number of permit holders	Number of permits issued	Number of fishermen who fished	Number of permits fished	Total pounds landed	Estimated gross earnings
1980	967	2,057	738	1,262	142,396,318	81,799,387
1981	989	2,299	800	1,428	116,128,330	88,591,099
1982	1,006	2,307	791	1,398	88,668,037	81,480,198
1983	1,130	2,281	873	1,418	82,706,365	54,378,524
1984	1,128	2,124	831	1,390	97,573,198	55,999,697
1985	1,041	1,940	704	1,231	117,342,134	57,514,913
1986	942	1,979	683	1,329	147,653,058	85,487,796
1987	1,014	2,185	743	1,472	150,719,808	97,015,511
1988	941	2,095	743	1,452	169,838,687	131,079,152
1989	918	1,998	623	1,072	138,291,995	93,663,495
1990	933	2,121	791	1,566	233,297,856	128,079,828
1991	893	2,116	728	1,502	236,919,166	108,026,852
1992	800	1,950	686	1,453	290,678,264	116,115,449
1993	724	1,753	612	1,234	299,445,323	100,894,073
1994	709	1,713	585	1,177	276,231,990	106,109,507
1995	642	1,402	524	950	307,448,423	111,193,327
1996	613	1,409	494	956	232,939,180	92,612,807
1997	640	1,576	507	995	233,517,205	95,045,222
1998	640	1,526	484	905	274,161,933	77,739,247
1999	649	1,523	517	923	252,070,198	109,811,199
2000	654	1,561	514	943	209,213,756	85,444,732
2001	632	1,546	478	891	216,768,616	67,166,033
2002	614	1,453	442	858	217,333,413	72,080,143
2003	594	1,383	446	819	228,821,285	88,735,412
2004	589	1,347	432	794	280,098,847	91,835,093
2005	598	1,375	431	786	271,197,793	95,005,556
2006	576	1,276	411	714	281,803,370	126,816,867
2007	574	1,248	413	676	275,832,924	153,104,983
2008	556	1,264	412	691	255,622,582	174,784,800
2009	532	1,176	387	636	223,882,397	96,970,556
2010	518	1,185	412	727	260,588,550	131,051,502
2011	564	1,212	450	777	286,381,783	160,481,841
2012	567	1,224	452	770	292,775,650	141,982,212
Average, 1980s	1,008	2,127	753	1,345	125,131,793	82,700,977
Average, 1990s	724	1,709	593	1,166	263,670,954	104,562,751
Average, 2000–2012	583	1,336	436	776	250,628,776	111,956,460
Average, 2003–2012	567	1,269	425	739	265,700,518	126,076,882

Source CFEC fishery statistics–participation and earnings.

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

Figure 5.5-1 shows the percentage of Kodiak City residents’ jobs by sector in 2011. The manufacturing sector, namely fish processing, with 36% of the jobs, is particularly notable. The category “trade, transportation, and utilities” was also prominent (16%), as was local government (10%) and educational and health services (10%). There was a similar pattern for the Kodiak Island Borough overall: manufacturing accounted for 23% of jobs, followed by trade, transportation, and utilities (16%), local government (16%), and educational and health services (12%) (Figure 5.5-2).

In 2011, there were 17 canneries and land-based seafood processors based in Kodiak permitted by the Alaska Department of Environmental Conservation.¹²

Regarding involvement of Kodiak residents in North Pacific fisheries, Sepez et al. (2005:202–204) reported the following number of permits for 2000: 119 crab permits, 285 Pacific halibut permits, 152 herring permits, 540 groundfish permits, 67 other shellfish permits, 58 sablefish permits, and 348 salmon limited entry permits. In 2000, 1,263 licensed commercial fishing crew members were living in Kodiak.

Table 5.5-2 provides updated information on commercial fishing involvement for Kodiak residents for 2012. In total, 567 individuals held 1,224 permits (770 were fished), including 169 for crab, 179 for Pacific halibut, 111 for herring, 348 for other groundfish, 38 for other shellfish, 37 for sablefish, and 342 for salmon.

As shown in Figure 5.5-3, the number of licensed crew members living in Kodiak from 2002 to 2010 ranged between 703 and 772 and averaged 732.

Sepez et al. (2005:203) note the importance in Kodiak of providing services to visiting sport fishers:

Kodiak is famous for sport fishing. The community had a large amount of sport fishing businesses listed in 2002 with a wide variety of services including saltwater guide businesses, freshwater guide businesses, aircraft fly-in services, drop-off services, and full service guide businesses.

Providing guiding and outfitting services to visiting sport hunters (brown bear, deer, elk) as well as other recreational activities, such as bear viewing, also plays a role in Kodiak’s cash economy (Kodiak Island Borough Community Development Department 2008:Chapter 5, page 8).

The 22,000-acre U.S. Coast Guard Support Center at Kodiak Station is the largest coast guard base in the United States with operations in maritime law, mariner assistance, and search and rescue. In 2006, Kodiak Station employed 1,130 active duty USCG personnel and 320 civilian employees (Kodiak Island Borough Community Development Department 2008:Chapter 5, pages 11–12).

The *Kodiak Island Borough Comprehensive Plan Update* (Kodiak Island Borough Community Development Department 2008:3) notes that the average unemployment rate for the borough “is generally higher than statewide unemployment,” and adds “unemployment spikes in November and December are directly related to the closure of nearly all commercial fisheries in the final six weeks of each year.”

12. Source is map “Kodiak Region Canneries and Land-Based Seafood Processors” produced by the Alaska Department of Labor and Workforce Development: <http://laborstats.alaska.gov/seafood/kodiak/KDProcLocMap.pdf>.

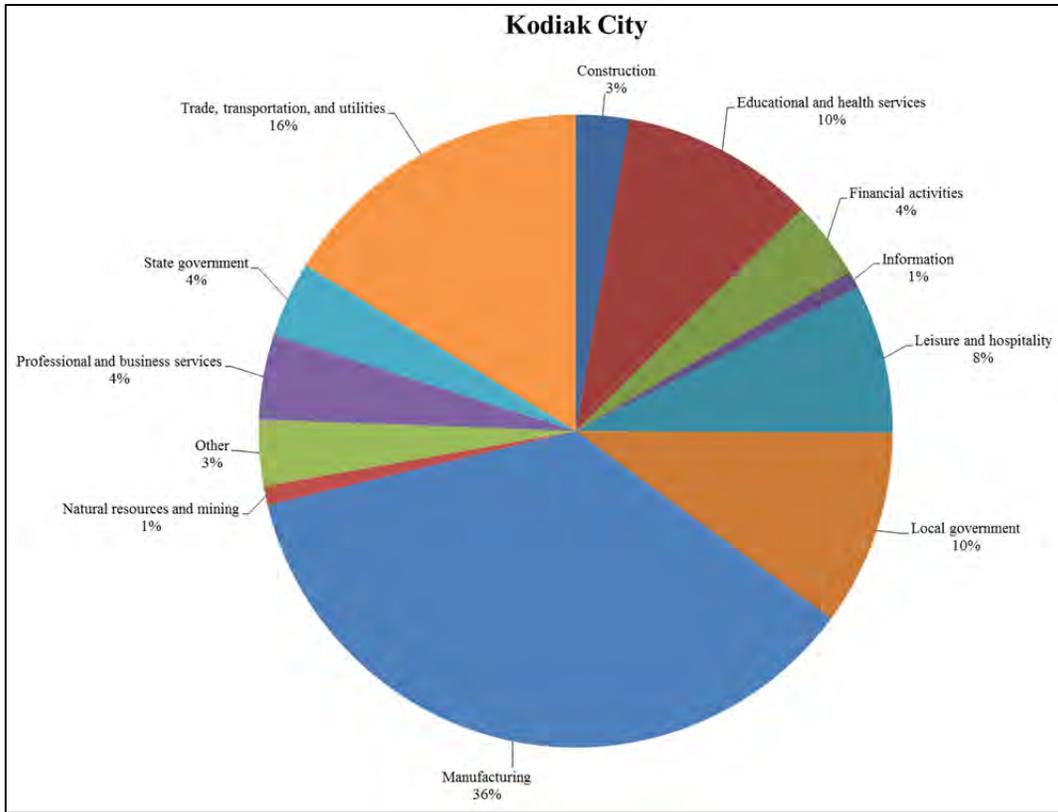


Figure 5.5-1.—Percentage of jobs by industry, Kodiak City, 2011.

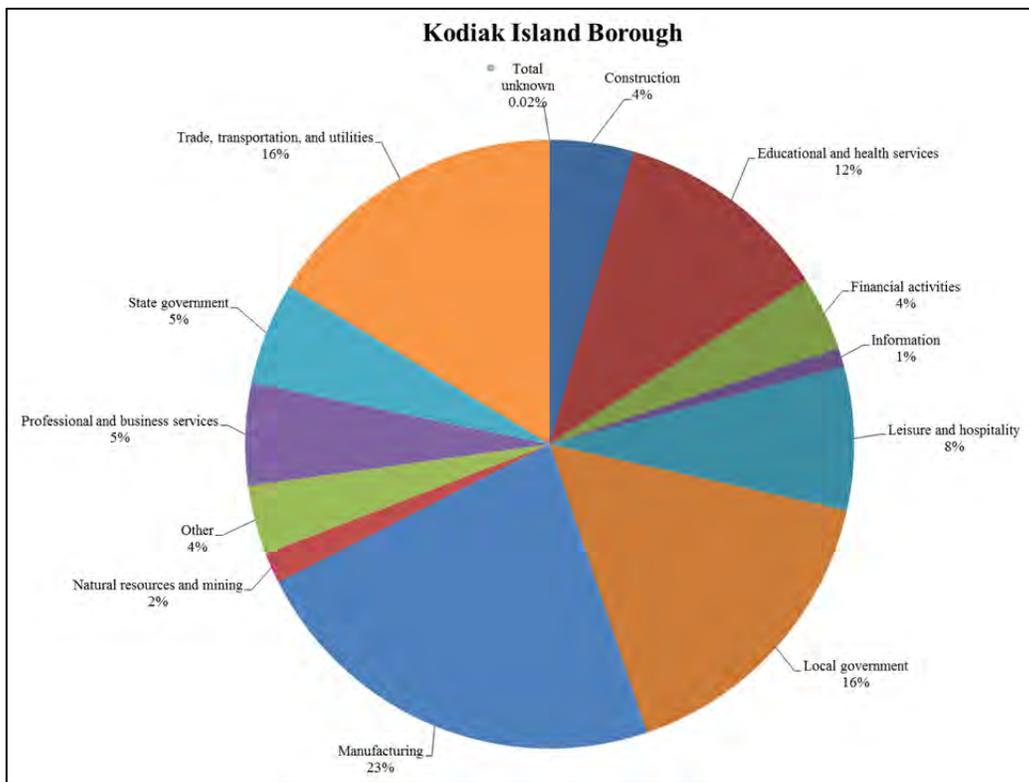


Figure 5.5-2.—Percentage of jobs by industry, Kodiak Island Borough, 2011.

Table 5.5-2.–Commercial fishing, Kodiak, 2012.

	Permit activity		Fishing activity			
	Number of permit holders	Number of permits issued	Number of fishermen who fished	Number of permits fished	Total pounds landed	Estimated gross earnings
Crab	137	169	68	82	13,697,858	33,402,442
Pacific halibut	171	179	153	155	X	X
Herring	78	111	15	21	9,643,609	1,761,553
Other groundfish	290	348	207	236	218,186,597	49,868,947
Other shellfish	32	38	13	15	253,165	1,397,742
Sablefish	37	37	32	32	2,222,122	7,961,246
Salmon	315	342	229	229	43,538,581	26,483,643
All fisheries combined	567	1,224	452	770	292,775,650	141,982,212

Source CFEC fishery statistics–participation and earnings.

Note X = confidentiality issues.

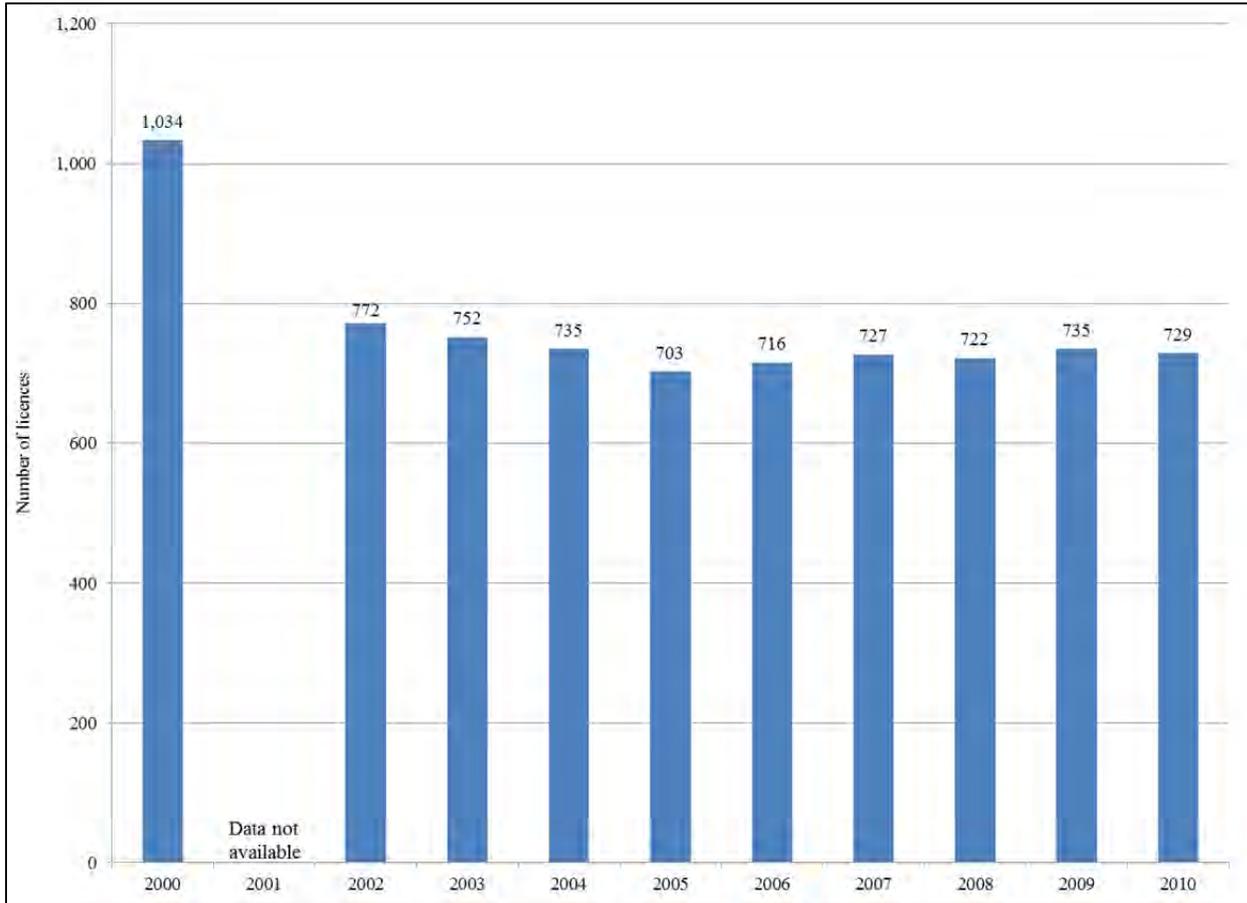


Figure 5.5-3.–Number of commercial crewmember licenses, Kodiak, 2000–2010.

4. The amount and distribution of cash income among those domiciled in the area or community.

For the period 2007–2011, average annual per capita incomes for places along the Kodiak road system were as follows: Kodiak City, \$25,986; Kodiak Station, \$17,651; Womens Bay, \$30,317; and Chiniak, \$30,185. Kodiak City was notably below the state average of \$31,944 per capita.

On average, 14.6% of Kodiak City’s population lived below the poverty line annually for 2007–2011; the value for the entire borough was 11.4%. These are substantially higher rates than the state overall (9.5%) and most road system communities. The poverty rate for the borough increased notably from 6.6% in 1989.

5. The cost and availability of goods and services to those domiciled in the area or community.

The costs of goods and services in Kodiak are high compared to those of Alaska communities along the road system. The *Alaska Geographic Differential Study* for 2008 (McDowell Group 2009) assigned a value of 1.12 for Kodiak (with Anchorage at 1.00) for overall costs of living. The value for food was 1.33 and the value for fuel was 1.22.

Based on market basket surveys conducted by the University of Alaska’s Cooperative Extension Service, the costs of food in Kodiak relative to Anchorage have increased over the last 30 years (Figure 5.5-4). The cost of food index for Kodiak in 1981 was 132, with Anchorage at 100 (meaning that food cost about 32% more in Kodiak than Anchorage). This index had increased to 152 in 2011.

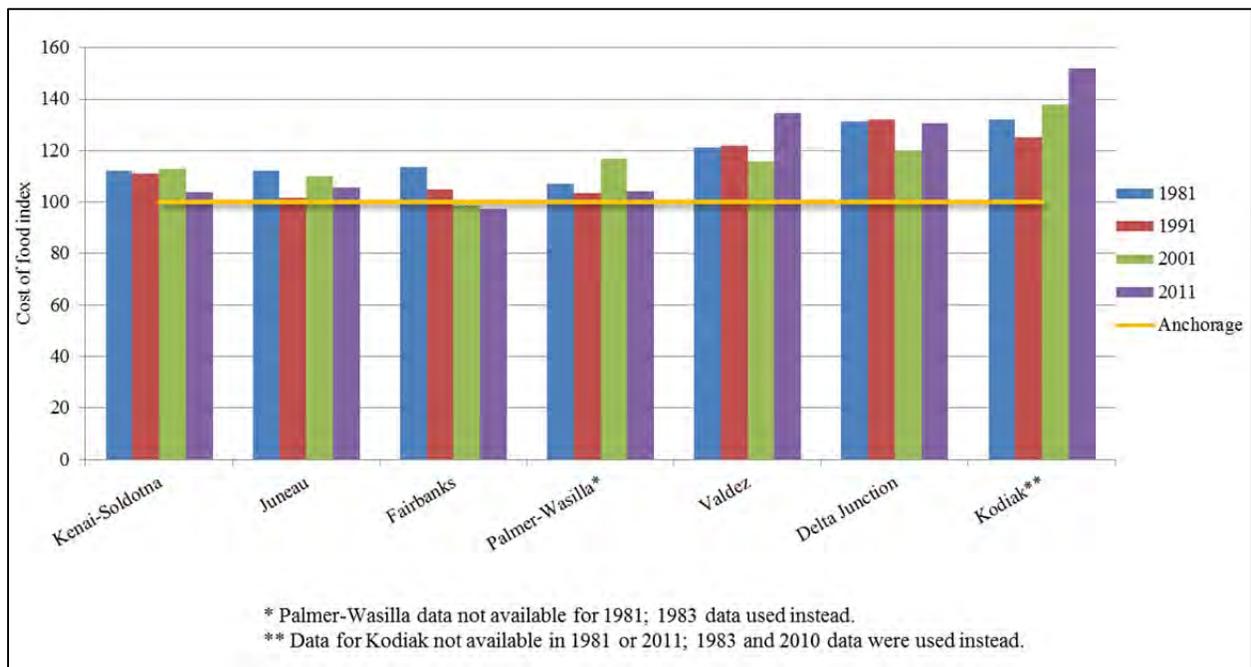


Figure 5.5-4.–Cost of food index for selected communities, referenced from Anchorage, 1981–2011.

6. The variety of fish and game species used by those domiciled in the area or community.

On average, from 1991–1993, Kodiak road area households used about 12 kinds of wild resources and attempted to harvest about 8 kinds (Figure 5.5-5). Of all resources harvested, as estimated in pounds usable weight, between 1991 and 1993, salmon made up between 32% and 46% of the total harvest, followed by other fish (32% to 40%), land mammals (10% to 18%), marine invertebrates (6% to 9%), wild

plants (4% to 7%), birds and eggs (about 0.5%), and marine mammals (about 0.1%) (Figure 5.5-6). Resources used by the most households included Pacific halibut, coho salmon, sockeye salmon, deer, berries, Dungeness crab, king crab, and Tanner Crab (all by more than 50% of households in 1991). Other commonly used resources (more than 30% of households in 1991) included pink salmon, king salmon, Pacific cod, rockfish, Dolly Varden, and various species of clams (Mishler et al. 1995:53–56).

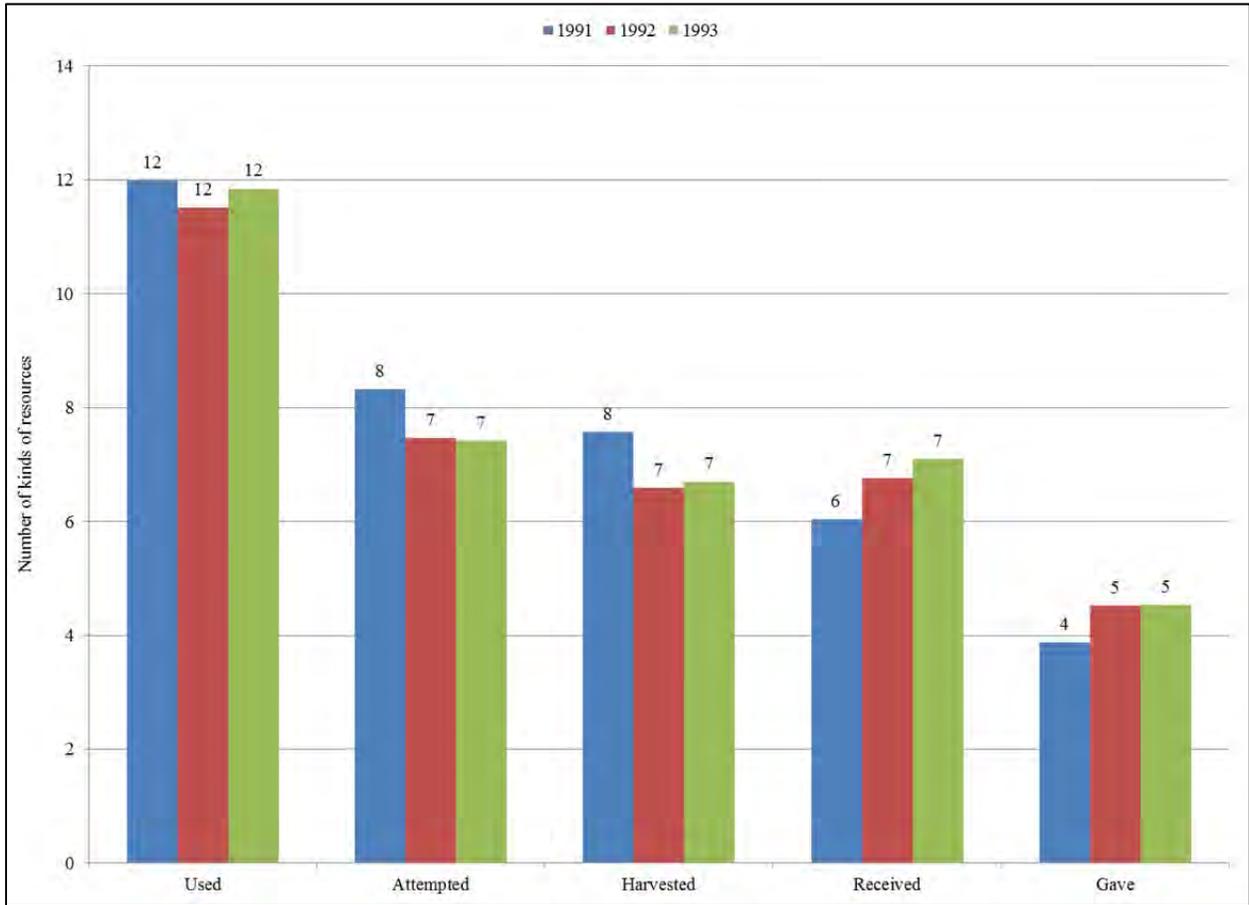


Figure 5.5-5.—Average number of kinds of resources used, attempted to harvest, harvested, received, and gave away per household, Kodiak, 1991, 1992, and 1993.

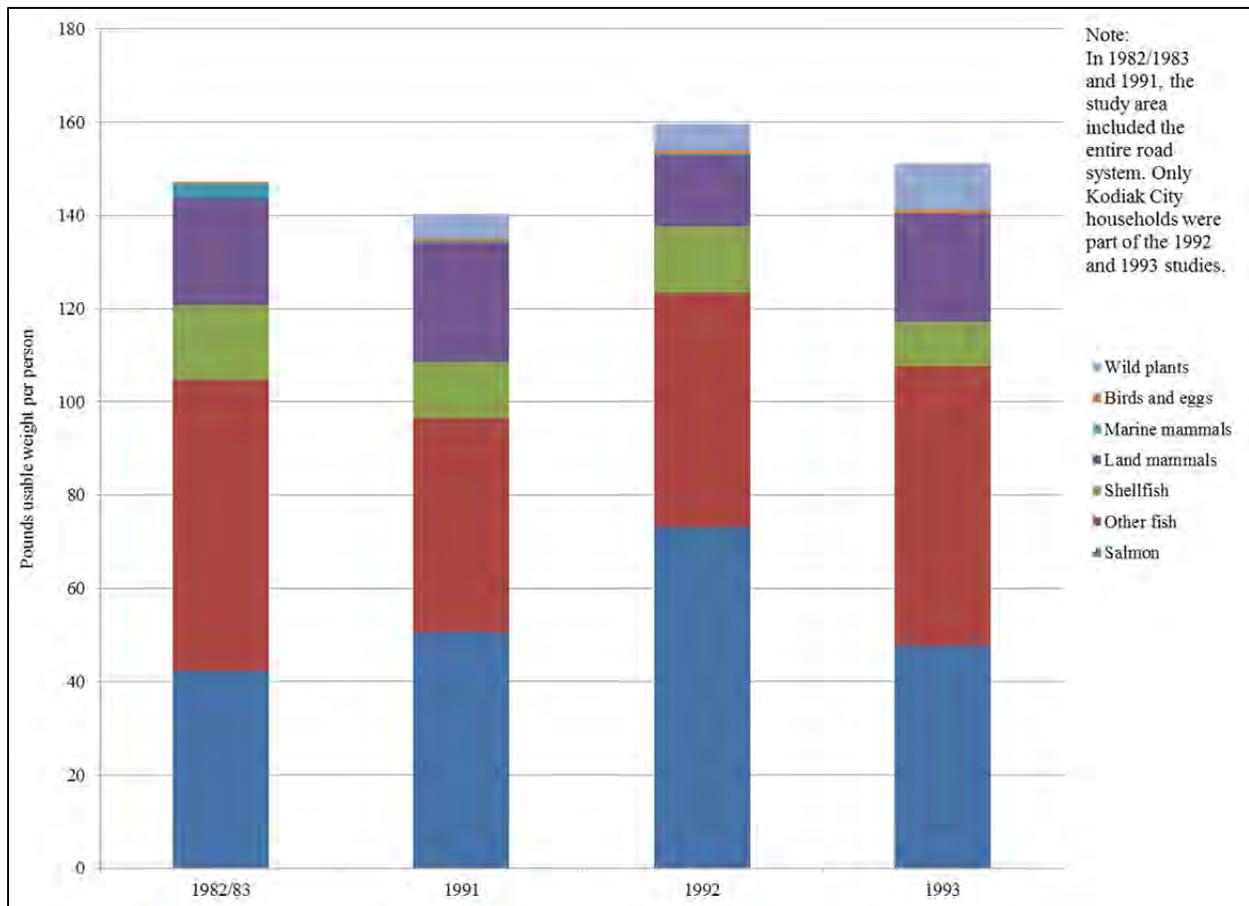


Figure 5.5-6.—Estimated harvests of wild resources, pounds usable weight per person, by resource category, Kodiak, 1982/1983, 1991, 1992, and 1993.

7. The seasonal cycle of economic activity.

There is a marked seasonality to the cash sector of Kodiak’s economy based on the availability of fish and wildlife resources for commercial, sport, guided sport, and subsistence harvests. The comprehensive plan for the Kodiak Island Borough (Kodiak Island Borough Community Development Department 2008:3) notes:

The unemployment rate for the Kodiak Island Borough fluctuates significantly throughout the course of a given year. This seasonality is largely due to commercial fishing and fish processing activities and other seasonal employment such as construction and tourism jobs.

According to household survey results, about half the employed adults in Kodiak (51% in 1991 and 1993, 56% in 1992) worked year-round. The average number of months employed was about 10 (Table 5.5-3).

Table 5.5-3.—Kodiak employment patterns.

	1991	1992	1993
Percentage of adults with employment	83%	89%	85%
Average number of months employed for employed adults	9.9	10.3	9.8
Percentage of employed adults who were employed year-round	51%	56%	51%

Source Mishler et al. (1995: X-33).

Note Kodiak road system for 1991; Kodiak City only for 1992 and 1993.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

According to household survey results, most Kodiak households use and harvest wild resources. In 1991, for example, 95% of households used salmon and 81% fished for salmon; 91% used other fish and 72% fished for them; 76% used land mammals and 56% hunted; 80% used shellfish and 47% attempted harvests of shellfish (Figure 5.5-7).

According to survey results, 26% of Kodiak’s population hunted in 1991, as did 25% in 1992 and 23% in 1993. In 1991, 66% of the population fished, as did 68% in 1992 and 63% in 1993 (Table 5.5-4).

In 2012, 2,171 residents of Kodiak held hunting/hunting combination licenses, which was about 16% of the population. Also, 3,662 Kodiak residents held sport fishing/combination licenses in 2012, or 28% of the population (Figure 5.5-8).¹³

From 1999–2011, an average of 1,449 Kodiak households returned subsistence salmon fishing permits (the department does not track how many permits are issued, just how many are returned). In 2011, about 35% of all Kodiak road area households returned a subsistence salmon permit (1,508 permits, 4,339 households) (Figure 5.5-9).

Under federal regulations, Kodiak is the largest rural community with C&T uses of Pacific halibut. Residents of Kodiak, as well as members of eligible Kodiak-based tribes, may obtain a subsistence Pacific halibut registration certificate (SHARC) from the National Marine Fisheries Service and participate in the subsistence Pacific halibut fishery. Legal gear in the fishery includes set lines (skates), hand lines, and rod and reel. SHARCs are issued to individuals. From 2003 (the first year for which SHARCs were issued) through 2011, an annual average of 1,681 Kodiak residents held SHARCs. In 2010, the 1,702 valid SHARCs represented 13% of the population. Kodiak residents may also fish for Pacific halibut for home use under sport fishing regulations (Figure 5.5-10).

13. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

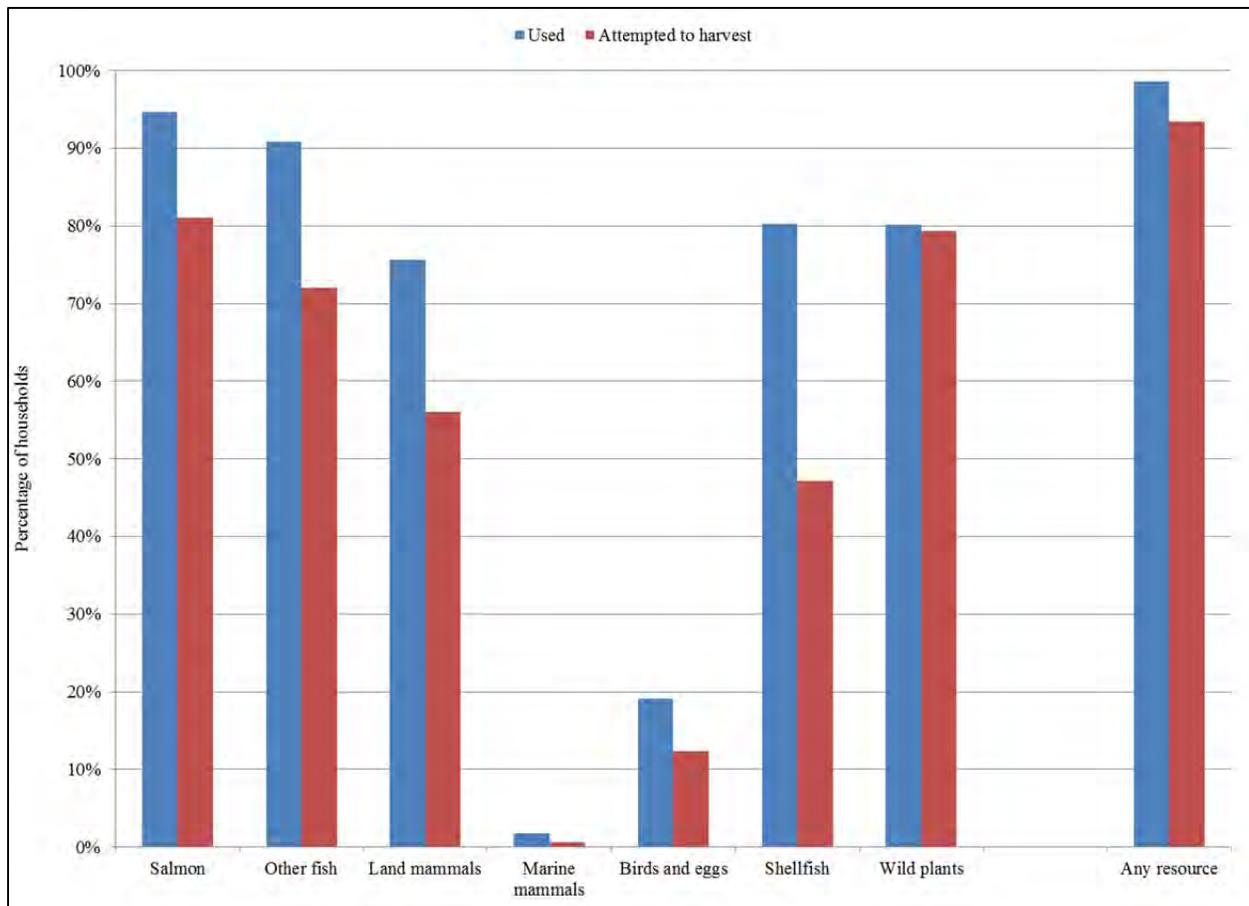


Figure 5.5-7.—Percentage of households using and attempting to harvest of wild resources, Kodiak road system area, 1991.

Table 5.5-4.—Participation in fishing and hunting, Kodiak, 1991, 1992, and 1993.

	1991	1992	1993
Percentage of population hunting	26%	25%	23%
Percentage of population fishing	66%	68%	63%
Percentage of households			
Using any resource	99%	99%	99%
Attempting harvest	93%	91%	91%
Harvesting any resource	93%	90%	88%
Receiving any resource	93%	94%	97%
Giving away any resource	81%	80%	84%
Average number of resources per household			
Used	12	12	12
Attempted to harvest	8	7	7
Harvested	8	7	7
Received	6	7	7
Given away	4	5	5

Source Mishler et al. (1995).

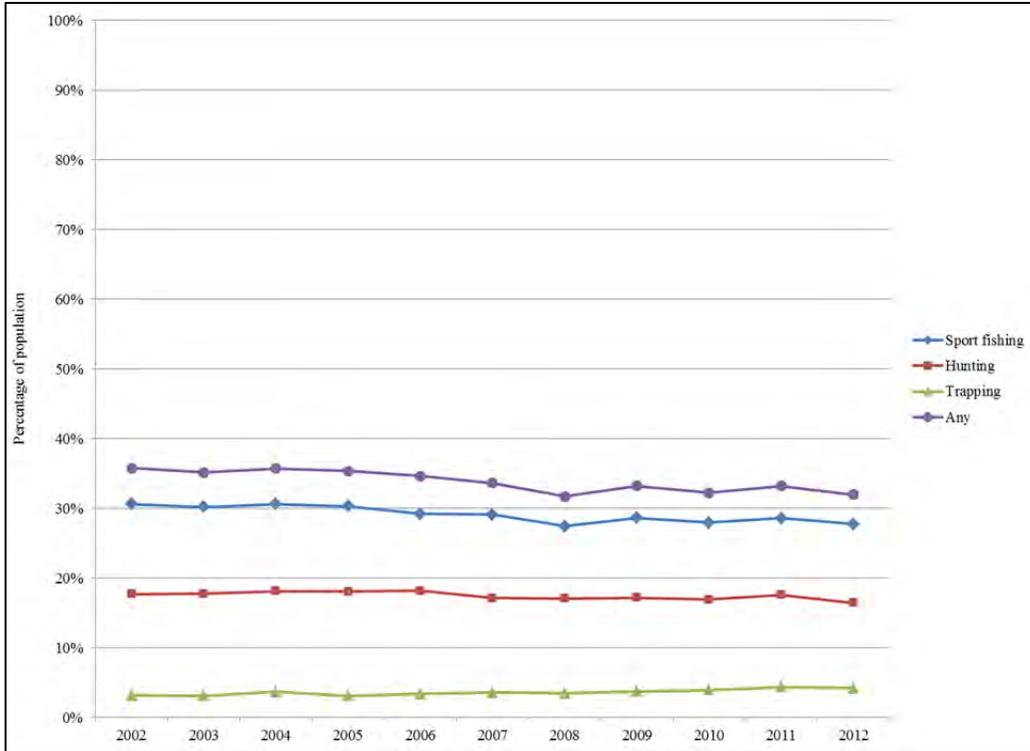


Figure 5.5-8.—Percentage of Kodiak road area residents holding hunting, sport fishing, and trapping licenses.

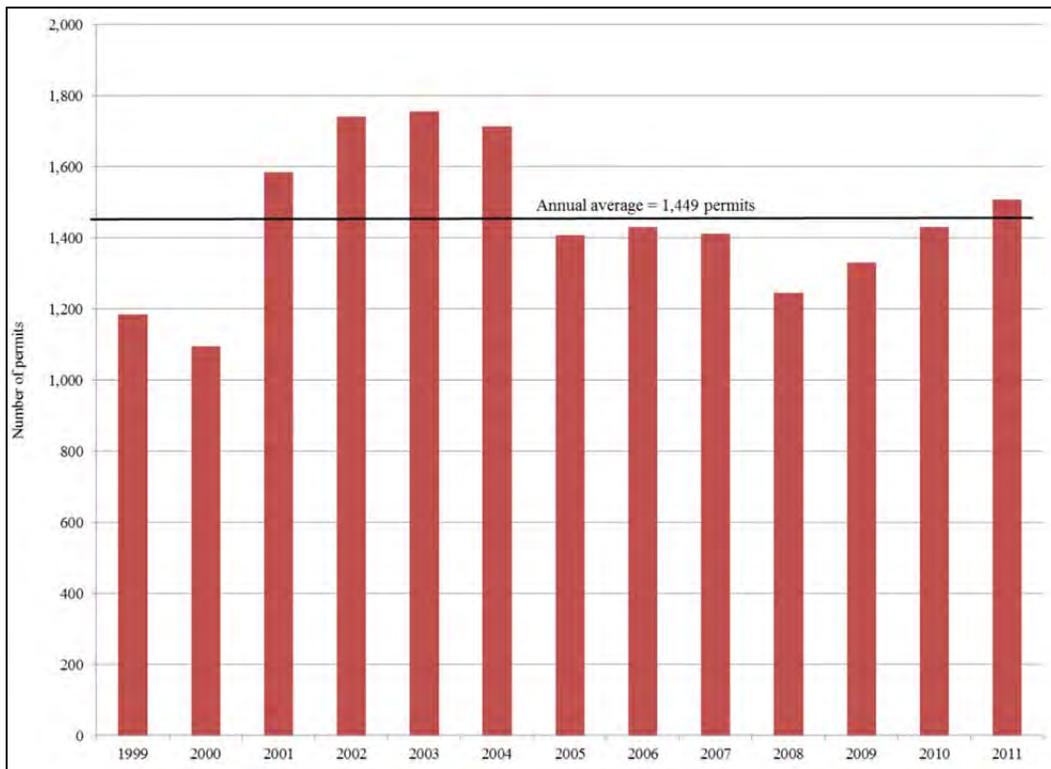


Figure 5.5-9.—Number of subsistence salmon permits returned, residents of Kodiak road system, 1999–2011.

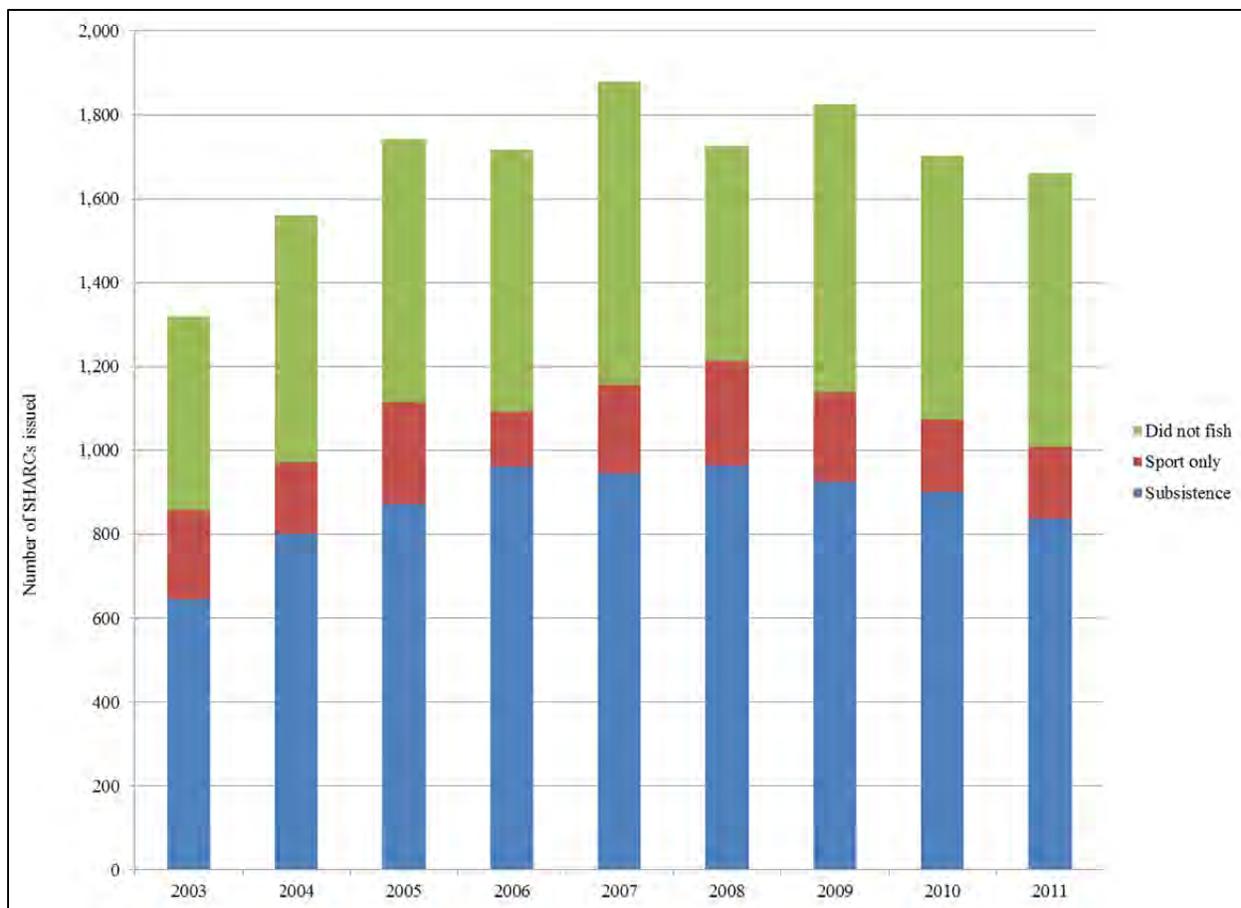


Figure 5.5-10.—Participation in Pacific halibut subsistence and sport fisheries by Kodiak SHARC holders.

9. The harvest levels of fish and game by those domiciled in the area or community.

According to household survey findings, Kodiak residents harvested 147 lb ($\pm 24\%$) of wild resources per person in 1982, 140 lb per person ($\pm 22\%$) in 1991, 160 lb per person in 1992, and 151 lb per person ($\pm 26\%$) in 1993. For 1991–1993, harvests of fish and wildlife per person (excluding plants) were 135 lb, 154 lb, and 141 lb, respectively, for an annual average over the 3-year period of 143 lb (Figure 5.5-11). This represents 66% of the annual consumption of meat, fish, and poultry in the United States, 87% of protein requirements, and 14% of caloric requirements.

For the period 1991–1993, based on household surveys, rod and reel fishing provided between 42% and 54% (annual average of 49%) of the salmon harvest for home use by Kodiak residents; subsistence nets and seines provided between 31% and 39% (annual average of 34%); and fish removed from commercial harvests for home use provided between 7% and 25% (annual average of 17%) (Figure 5.5-12).

From 1999–2011, Kodiak residents reported salmon harvests on returned subsistence permits; these ranged from 30,218 salmon (in 2011) to 19,593 salmon (in 2008), with an annual average of 25,535 salmon (Figure 5.5-13). The department does not expand reported subsistence harvests of salmon to develop an estimate to account for unreturned permits; therefore, these reported totals are the minimum number of salmon harvested in this fishery.

Subsistence Pacific halibut harvests by Kodiak SHARC holders ranged between about 138,000 usable pounds (in 2011) and about 211,000 usable pounds (in 2005), with an annual average of about 179,000 pounds. SHARC holders also reported an annual average harvest of about 65,000 lb of Pacific halibut in the sport fishery. In total, Pacific halibut harvests by SHARC holders provided between 14 lb per person (in 2011) and 23 lb per person (in 2005) of Pacific halibut for the community, with an annual average of about 19 lb. This total does not include Pacific halibut harvests in the sport fishery by Kodiak residents who do not have SHARCs, and does not include Pacific halibut retained from commercial harvests for home use. Household harvest surveys for 1991–1993 estimated Pacific halibut harvests from “noncommercial” fisheries (there was no legal subsistence longline or hook and line fishery in these years) of 18 lb per person in 1991 ($\pm 30\%$), 32 lb per person in 1992 ($\pm 33\%$), and 36 lb per person in 1993 ($\pm 33\%$) (Figure 5.5-14).

Alaska regulations require a permit for subsistence fishing for crab in the Kodiak Management Area (5 AAC 02.405). On average, for the period 1995–2011, 1,718 permits were returned annually. From 2007–2011, an annual average of 1,863 subsistence crab permits were returned, including an average of 1,400 (75%) from Kodiak road system residents (including Chiniak). From 2007–2011, the average annual reported harvest of 9,110 crab for the Kodiak Management Area included an average of 6,675 crab (73%) harvested by residents of the Kodiak road system.

Estimates of subsistence harvests of harbor seals by Kodiak residents are available for 1992–2008 and 2011 (Figure 5.5-15). Also, an estimated total of 18 sea lions were harvested for subsistence uses over that period, with all but 2 harvested before 2003 (Wolfe et al. 2012:46).

Figure 5.5-16 illustrates estimated harvests of wild resources for home use in Kodiak and 5 other communities with populations greater than 1,000 in 2010 that have significant commercial fishing components in their local economies. Total harvest estimates for these communities range around 150 to 200 lb usable weight per person, and are not significantly different.

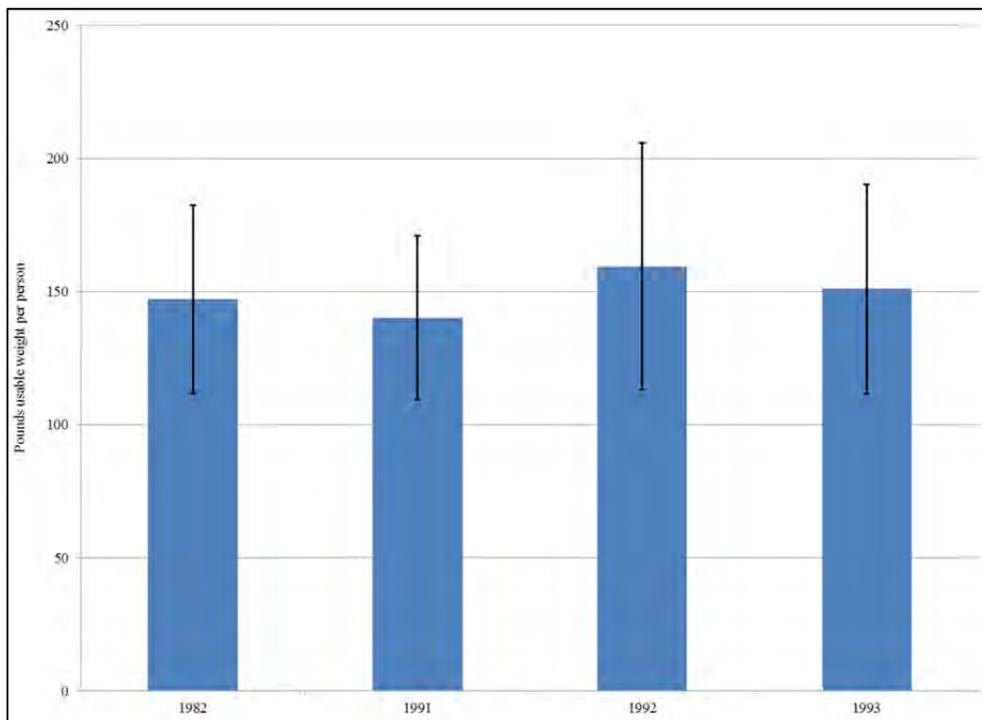


Figure 5.5-11.—Estimated harvests of wild resources, pounds usable weight per person, Kodiak, 1982, 1991, 1992, and 1993.

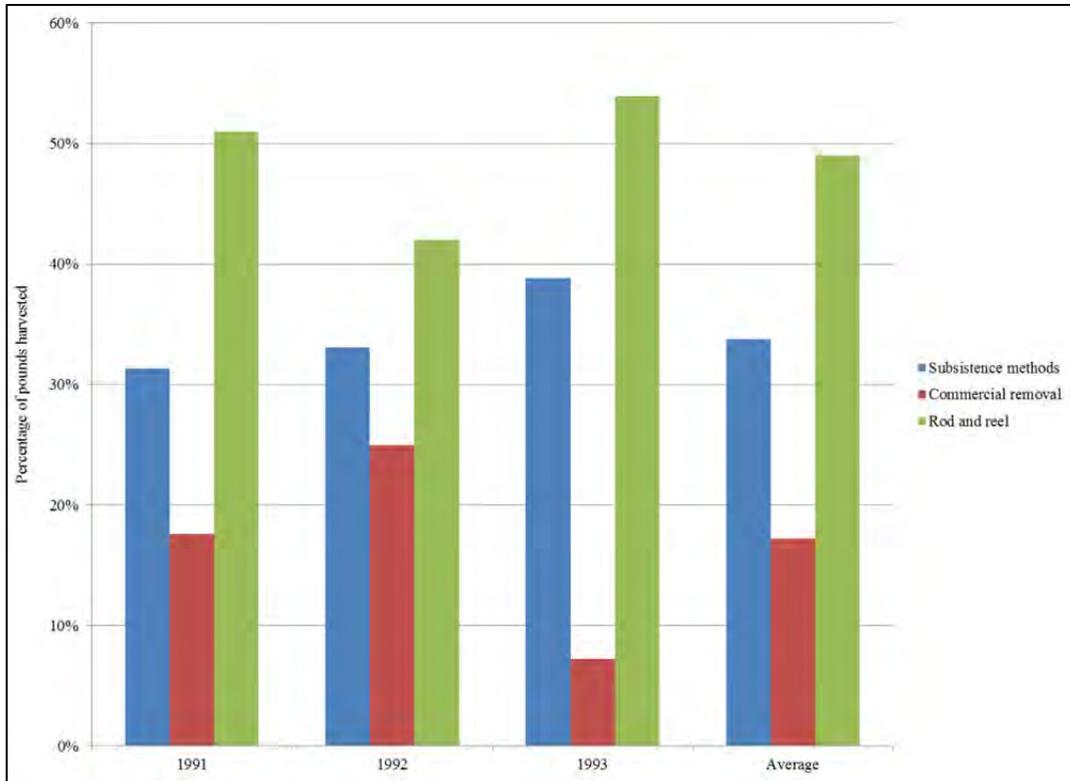


Figure 5.5-12.—Percentage of salmon harvest (in pounds) for home use by gear type, Kodiak.

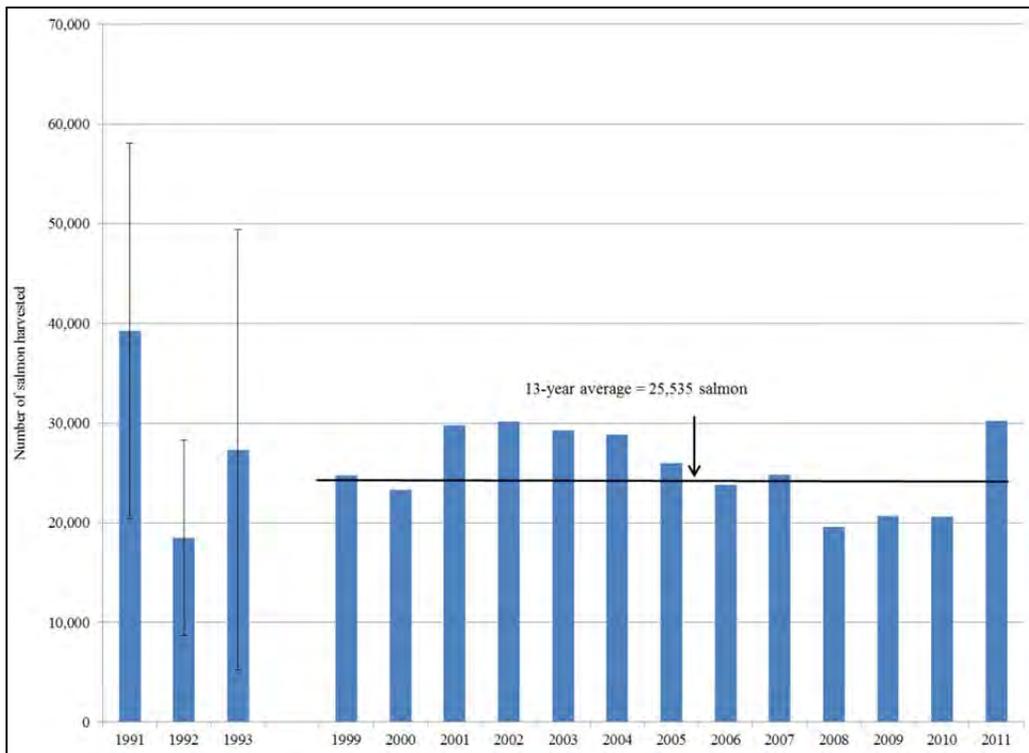


Figure 5.5-13.—Salmon harvests with subsistence nets, Kodiak, 1991–1993, 1999–2011.

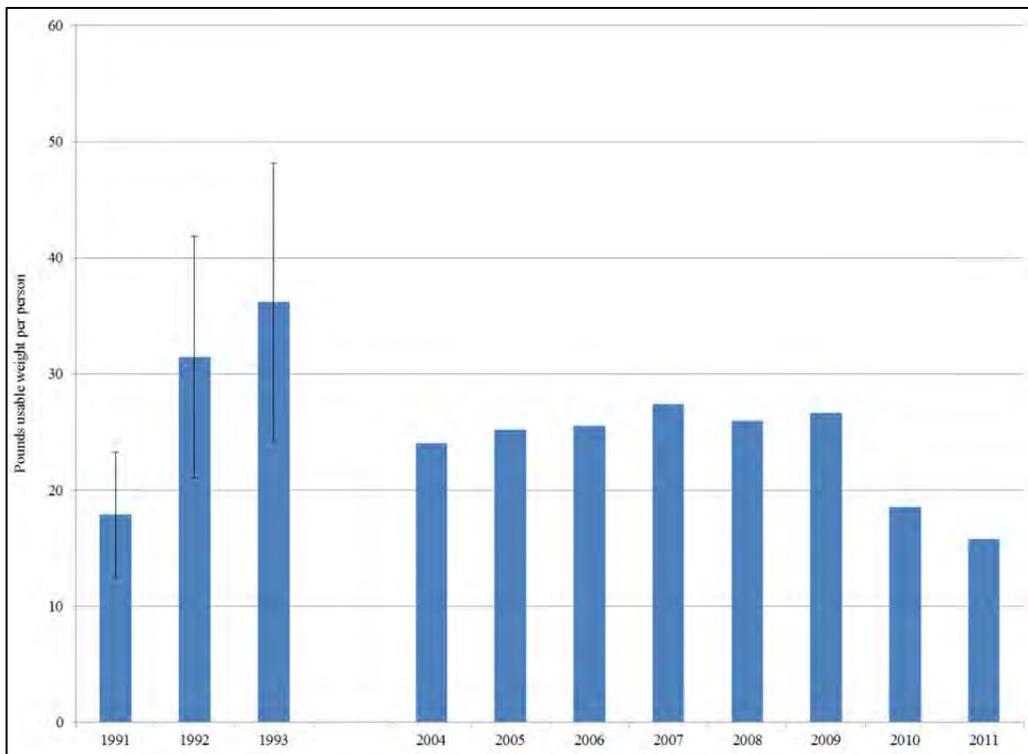


Figure 5.5-14.—Estimated harvests of Pacific halibut for home use, pounds usable weight per person, Kodiak.

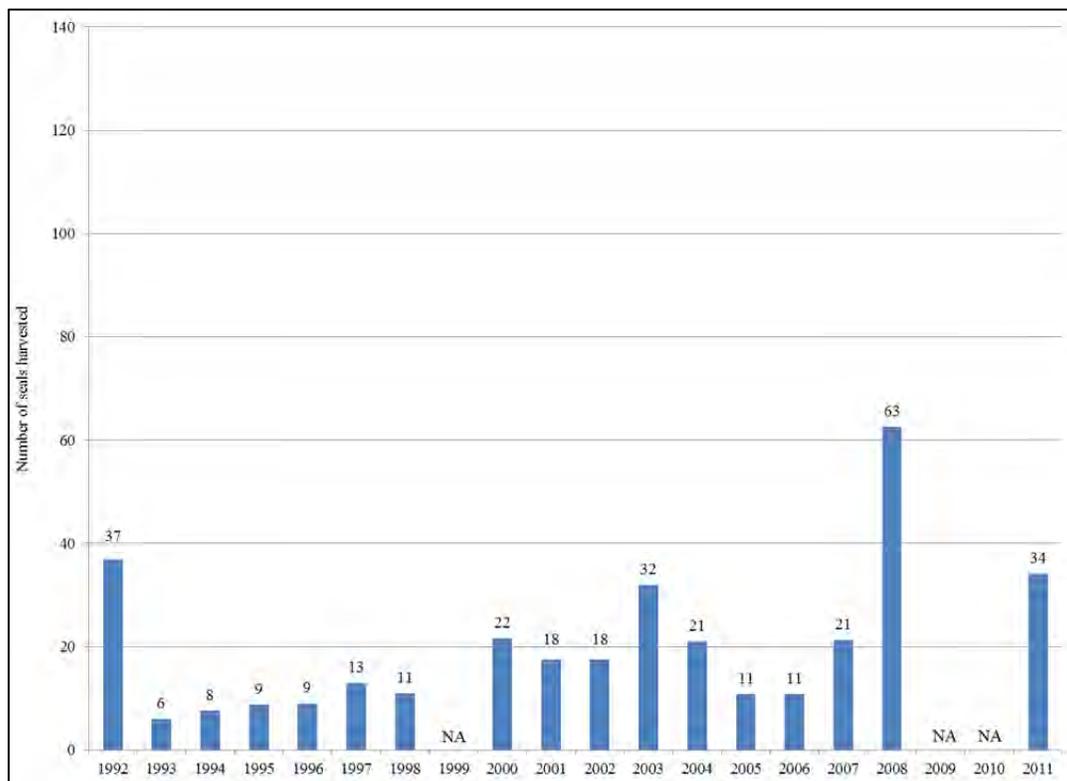


Figure 5.5-15.—Estimated number of harbor seals harvested, Kodiak, 1992–2008.

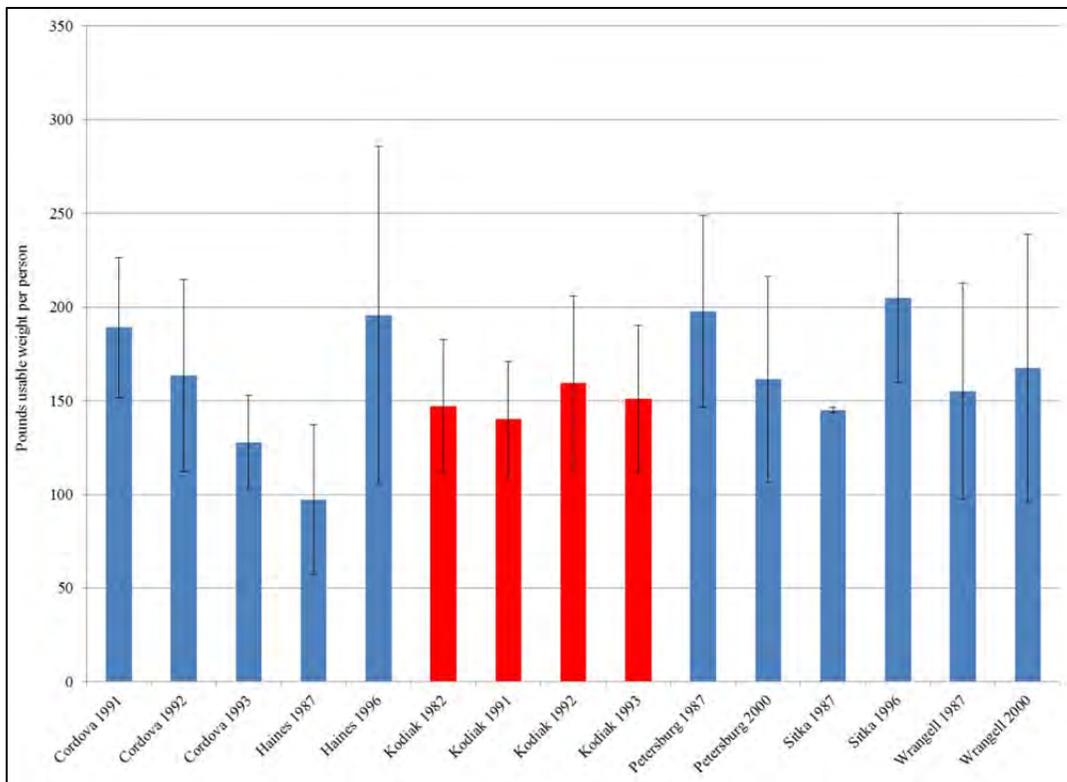


Figure 5.5-16.—Estimated harvests of wild resources, pounds usable weight per person, selected Alaska communities.

10. The cultural, social, and economic values associated with taking and use of fish and game.

Kodiak’s population is diverse, and there are a number of cultural values associated with the harvest and use of fish and game. For many, fishing and hunting are valued as high-quality outdoor experiences that provide nutritious food. For residents directly employed in commercial fishing and outdoor recreational businesses (such as guiding and outfitting), values are in part commercial in nature. For Kodiak’s large Alaska Native population, most of whom are of Alutiiq heritage, values of fishing and hunting are associated with Alaska Native cultural traditions, including food production for local consumption, sharing with elders, and teaching skills to youth.

Many Alaska Native residents of the city of Kodiak and areas connected to it by road are members of the Sun’aq Tribe. The tribe’s website includes the following statement in the section called “Who We Are”:

Our Subsistence Lifestyle

We are one of 10 Alutiiq tribes that lived in large coastal villages along the shores of the Alaska Peninsula, the Kenai Peninsula, and the Kodiak Archipelago 7,500 to 8,000 years ago. Our tribe settled permanently where the city of Kodiak is now located about 2,500 years ago and interacted regularly with other tribes throughout the archipelago.

Our ancestors followed an elaborate maritime subsistence lifestyle of hunting, fishing, and gathering throughout the year. Subsistence has special meaning for Alaska Natives and refers to a way of living that emphasizes the importance of respecting the land and its resources, as well as acknowledging a connection to the natural world.

Our people today blend the traditional lifeways of our ancestors with the customs and practices of the many nations who have come to our island and stayed to become a part of our community. These include Russians, Scandinavians, Chinese, and Americans.

Some Sun'aq practice subsistence for spiritual and cultural reasons; other tribal members rely on our island's resources for material well-being. Many tribal members fish independently or work for the local canneries, while still practicing a subsistence lifestyle.

The borough's comprehensive plan (Kodiak Island Borough Community Development Department 2008:33), in its section on environmental quality, includes the following goal and policy related to subsistence opportunities.

Subsistence

Goal: Support KIB [Kodiak Island Borough] residents' use of local fish, game, and plant resources to meet nutritional, traditional, cultural, and spiritual needs.

Policy: Encourage the management of fish and wildlife harvests to preserve the opportunity for subsistence and resident use.

Implementation action: Work with the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service to identify areas and resources important to residents and their appropriate management.

11. The geographic locations where those domiciled in the area or community hunt and fish.

In 1983, a survey of 155 households living in Kodiak City and the remainder of the road system (excluding the Coast Guard base and Chiniak) asked about the location of selected fishing and hunting activities based on 5 zones (Figure 5.5-17). Most households focused their harvest activities in Zone 1, which included the road system as well as Ugak Bay and Spruce Island. However, fishing and hunting activities were reported throughout the Kodiak Archipelago. About 12% of respondents hunted in the Afognak/Raspberry islands area.

Data on hunting activities are available for the most recent 5-year period (2007–2011) for big game. As shown in Table 5.5-5 and Figure 5.5-18, most hunting by Kodiak road area residents took place in GMU 8 (Kodiak Island Archipelago) for deer, brown bears, elk, and mountain goats.

As shown in Table 5.5-6, from 2007–2011, the Buskin River on the Kodiak road system was the location of subsistence salmon fishing for about 31% of the permits held by Kodiak road system area residents. Another location on the road system, Pasagshak, was fished by about 28% of the permits. During this 5-year period, the Buskin River and Pasagshak accounted for about 53% of the subsistence salmon harvest for residents of the Kodiak road area. The percentage of permits fished in locations off the road system increased during the period 2007–2011, as did the percentage of subsistence salmon harvest that came from these locations.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

In 1991, 93% of Kodiak households received gifts of wild resources; 65% received salmon, 64% received other fish, 56% received game, and 72% received marine invertebrates (Figure 5.5-19). Also in 1991, 81% of households gave away resources to others; 62% gave gifts of salmon, 53% gave away other fish, 36% shared shellfish, 29% shared game, and 31% shared wild plants. As reported in Table 5.5-4, an

average Kodiak household received 6 kinds of wild resources in 1991, 7 kinds in 1992, and 7 kinds in 1993. On average, they gave away 4 kinds in 1991, 5 kinds in 1992, and 5 kinds in 1993.

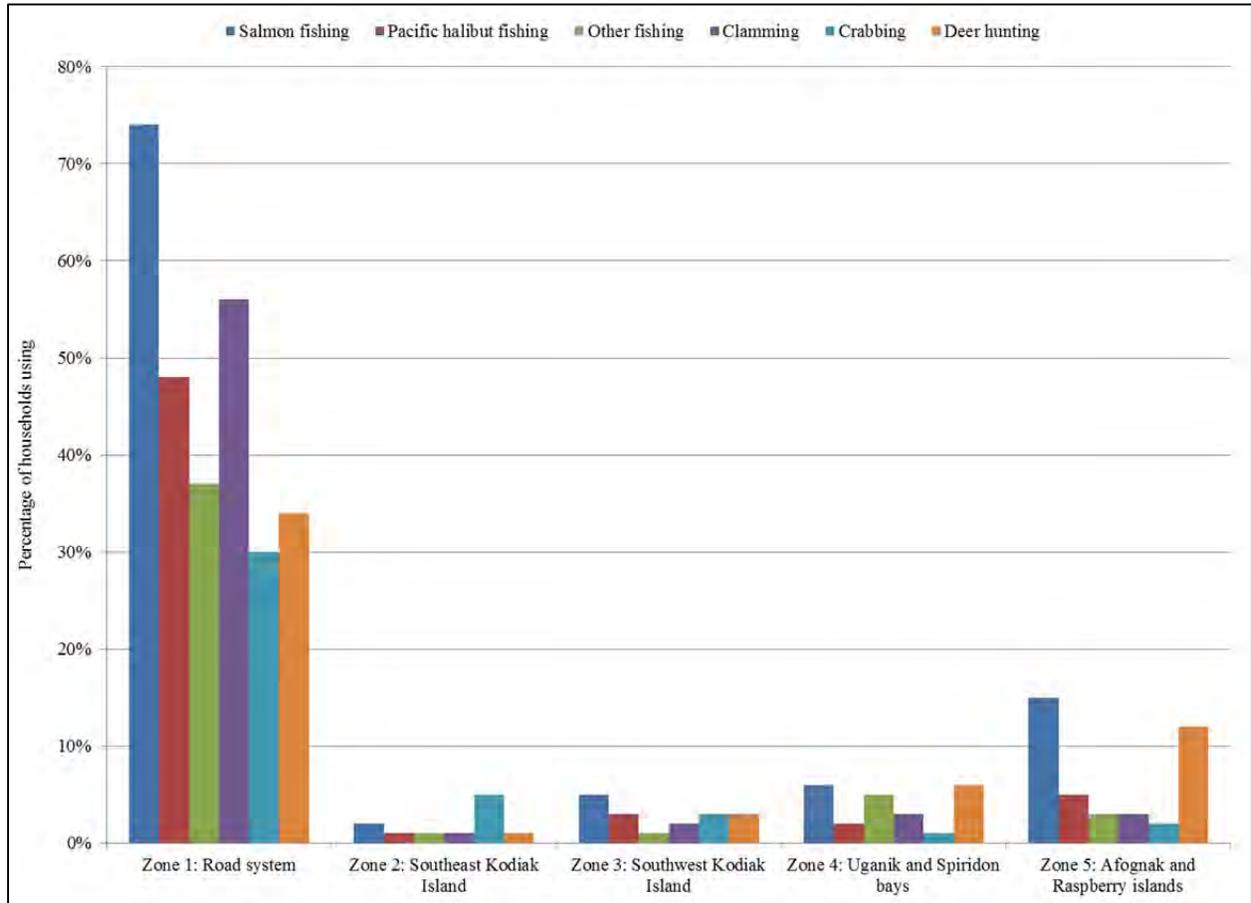


Figure 5.5-17.—Areas used for resource harvest activities, residents of Kodiak Island road system area, 1982–1983.

Table 5.5-5.—Total hunters by species and GMU, Kodiak road system area residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear	9	7	3		2	60	6		1		3	1	9	6	21	3	1			5				1			8	1	147
Brown bear	1			1	2	2		665	11								3	1					1	2		1		29	719
Bison																				1	6								7
Caribou								62	3	43		2	14	3			4	1	2	13			18		4	12	5		186
Deer		8	4	2		19		5,823																				35	5,891
Elk								584																					584
Moose	6		5		3	13	2		23		2	11	30	61	34	8	27	2	1	89	17		13	2	3		5		357
Mt. goat	1					5		548																					554
Muskox																		10				7	1						18
Dall sheep										7	13	8	8							4	13			3	7	2	19		84
Total	17	15	12	3	7	99	8	7,682	38	43	12	27	61	78	55	11	35	14	8	126	17	7	36	12	9	32	18	65	8,547

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

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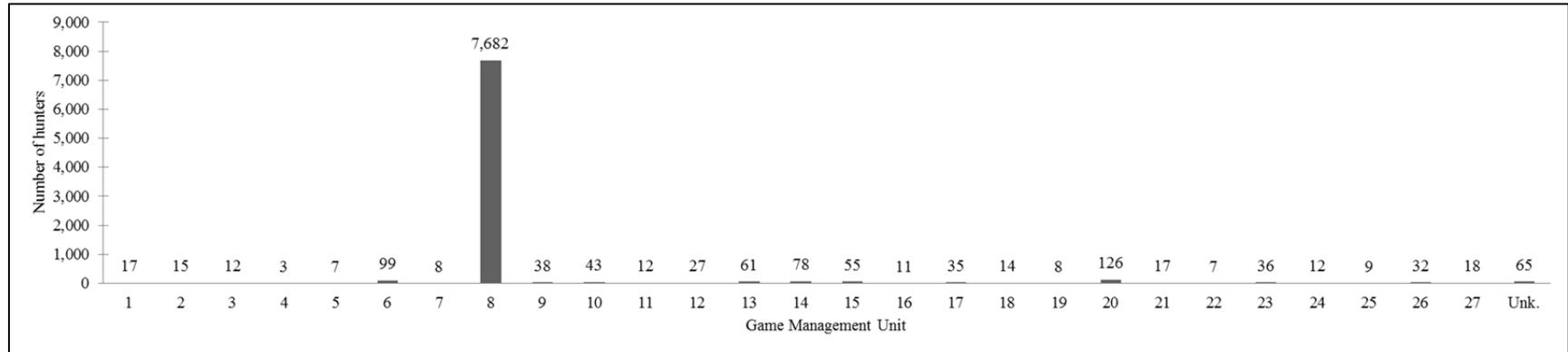


Figure 5.5-18.—Total hunters by GMU, Kodiak road system area residents, 2007–2011.

Table 5.5-6.–Location of subsistence salmon fishing and harvests, Kodiak City residents, 2007–2011.

	Percentage of permits						Percentage of harvest					
	2007	2008	2009	2010	2011	Average	2007	2008	2009	2010	2011	Average
Buskin River	49.4%	29.2%	28.7%	18.7%	26.9%	30.9%	47.9%	18.5%	18.0%	11.0%	16.6%	23.0%
Pasagshak	25.7%	34.8%	35.3%	26.1%	21.5%	28.4%	29.3%	42.7%	43.4%	23.2%	19.4%	30.4%
Chiniak	1.5%	1.6%	1.6%	2.6%	2.3%	1.9%	0.5%	0.7%	0.8%	1.1%	0.6%	0.7%
Kalsin Bay	2.2%	1.7%	1.6%	1.1%	1.7%	1.7%	0.9%	1.1%	1.0%	0.3%	0.5%	0.7%
Saltery Cove	1.0%	3.3%	3.3%	3.0%	1.7%	2.4%	1.3%	4.6%	4.8%	3.2%	1.3%	2.8%
Other road system	3.8%	3.9%	3.6%	4.3%	2.3%	3.6%	2.7%	2.5%	2.3%	1.9%	1.3%	2.1%
Other Kodiak area	16.5%	25.7%	25.8%	44.1%	43.5%	31.2%	17.4%	29.8%	29.6%	59.3%	60.2%	40.1%

Source Alaska Subsistence Fisheries Database.

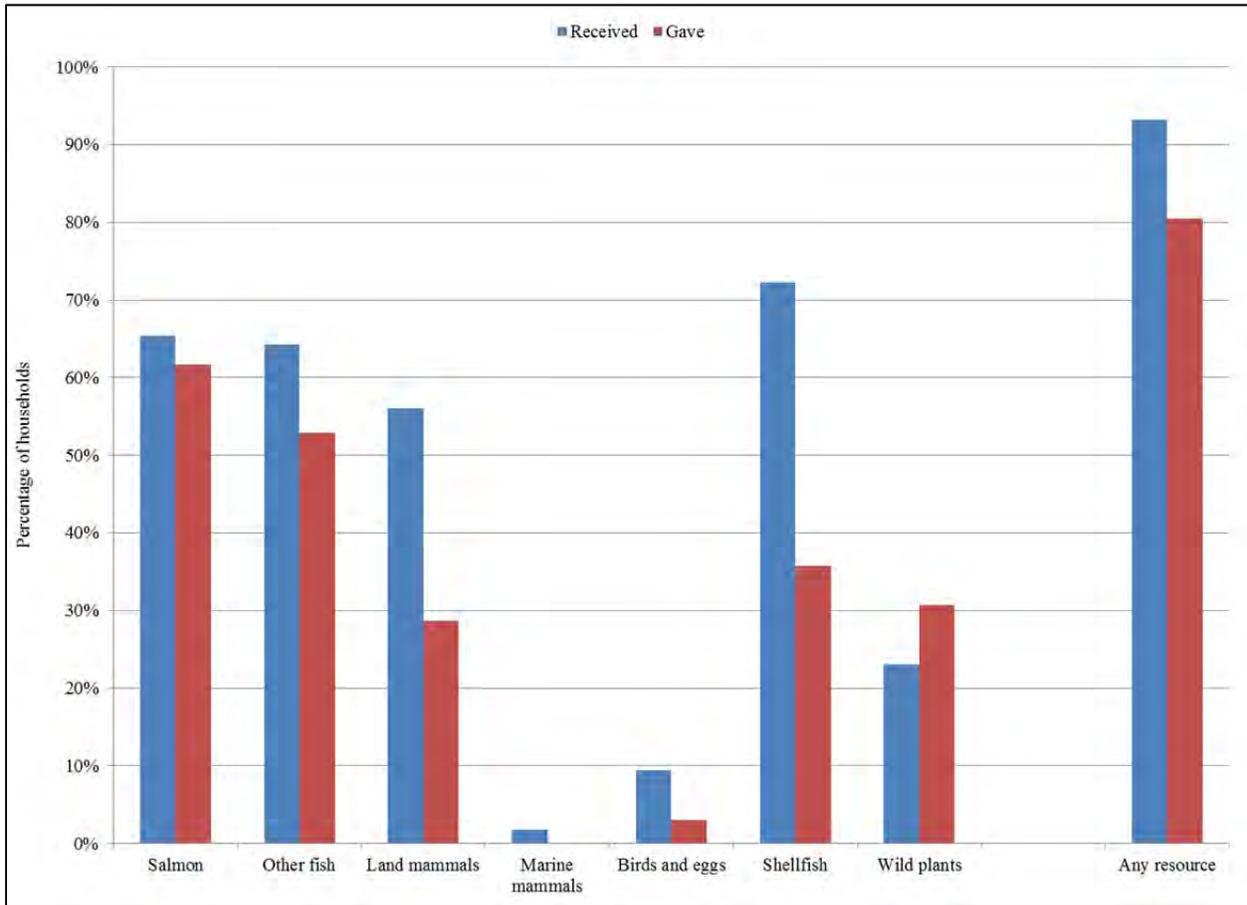


Figure 5.5-19.–Percentage of households receiving and giving wild resources, Kodiak road system area, 1991.

6 PROPOSAL 41. CREATE A BETHEL NONSUBSISTENCE AREA.

6.1 ABOUT THE PROPOSAL

The proposal would establish a Bethel nonsubsistence area but does not specify what the boundaries of the proposed nonsubsistence area would be. In this report, it is assumed that the area within the city of Bethel is what is intended (Figure 6.1-1). The Bethel city limits include 43.8 square miles of land and 5.1 square miles water for a total of approximately 48.9 square miles.¹⁴

The Division of Subsistence conducted a household harvest survey in Bethel in early 2013 to collect data for the 2012 study year. In total, 466 households were interviewed, or 28% of the estimated total eligible households in Bethel. This was the first comprehensive household survey conducted in the community. Results presented in this report are preliminary.

14. Alaska Department of Commerce, Community, and Economic Development, Community and Regional Affairs, Community Database Online:
<http://www.commerce.state.ak.us/cra/DCRAExternal/community/Details/2c6b7ef0-abb6-4b5a-b041-606be4389f11>, accessed May 7, 2013.

6.2 HISTORY AND BACKGROUND

Bethel lies within the boundaries of the Yukon Delta National Wildlife Refuge on the northwest bank of the Kuskokwim River, 400 miles west of Anchorage, and approximately 55 air miles from the Kuskokwim Bay. In 2012, Bethel, was home to 6,113 Alaskans (ADLWD 2013a), and was a hub for more than 20,000 other Yukon–Kuskokwim Delta residents.

Yup'ik people, who have inhabited the region for more than 2,000 years, originally settled a small village on the island in front of modern-day Bethel. This location, called "*Mamterillermiut*," meaning "village of many fish caches" in Central Yup'ik, was chosen because it was a good fishing spot. Russian fur traders began travelling the Kuskokwim River in the 1840s, and by the 1870s there was an Alaska Commercial Company trading post in Mamterillermiut.

Moravian Church missionaries first settled on the site that is now the city of Bethel in 1885. These missionaries quickly built a church, a school, and an orphanage, and began an intentional effort to replace the language, religion, and culture of the Alaska Native inhabitants of the region. The missionaries chose this site in part because there were 3 nearby villages that would likely send their children to Bethel for schooling.

Gold strikes in the early 1900s, as close as at the Kwethluk River headwaters 45 miles from Bethel, led to thousands of prospectors travelling up the Kuskokwim. With these miners came stern-wheel steam boats and supplies that were never before available in Bethel. The population of Bethel grew as many prospectors and shopkeepers ultimately settled there. Gradually the old site of Mamterillermiut was abandoned as people moved across the river to Bethel. The Yukon–Kuskokwim Delta was among the regions most affected by the flu and measles epidemics of the early 20th century (Wolfe 1982). The Alaska Native population of Bethel was devastated by these epidemics, starting with influenza in 1900.

In 1910 the U.S. Army Corps of Engineers mapped the deepest channel of the Kuskokwim River thus enabling deep-draft freight barges to travel as far as Bethel. This sealed Bethel's fate as being the hub of Southwest Alaska rather than the upriver village of Aniak, which at that time was a central location of many federal services in the region. The federal government built a BIA school for Alaska Natives in Bethel in 1913 and a territorial school for non-Alaska Natives and students of mixed descent in 1923.

The 1940s and World War II brought more people and more permanent changes to Bethel. The Alaska Native Service opened a hospital in Bethel in 1940, and in 1942 the U.S. Army built an airfield and a base that housed more than 700 people across the river from Bethel. Bethel was incorporated as a second class city in 1957.

Bethel's population doubled from 1970 to 1980. With the construction of a regional high school in 1973 many families with school-age children relocated to Bethel from nearby villages. In the early 1980s, proceeds from state oil sales were used to build several facilities in Bethel, including a day care center, teen center, pre-maternal home, regional jail, sea wall, and an expanded port.

Over the decades Bethel's local economy has been supplemented by exporting a variety of natural resources to other parts of the state and other parts of the world. Reindeer herding was introduced to Northwest Alaska in 1892 by the missionaries who wanted to provide a more stable food source throughout the year (Simon 1998). In 1901, reindeer were first introduced in the Bethel area. Eventually reindeer numbered more than 600,000 in Western Alaska and the Seward Peninsula, and reindeer meat and byproducts became an important source of income for herders. Reindeer herding grew less lucrative as time went on (see Simon 1998) with fewer miners in the region to sell to, and as Bethel grew there were easier ways to make a living. While wild fur was always an important resource in the region, particularly mink, fur farming grew in popularity in the early 20th century. In the 1920s and 1930s, Bethel was the home of several fox and mink farms. However, this too became less lucrative by the 1940s when fur prices began to decline. Commercial fishing on the Kuskokwim River only became popular in the 1950s after salmon populations dwindled in other more accessible parts of the state. At its peak in 1982,

commercial fishing brought \$4.2 million to the local economy. In addition to the sale of salmon, commercial fishing stimulated the local economy with fish processing jobs as well as sales of salmon roe to overseas buyers.

As the largest city in Southwestern Alaska, Bethel functions as a transportation, communications, and supply center for the region, which includes 56 villages. As a result Bethel is home to the third busiest state-owned airport in Alaska. Bethel is home to the Yukon Kuskokwim Health Corporation, which consists of a 50-bed hospital in Bethel that provides medical, optical, dental, and behavioral health services, as well as 52 subregional and village clinics serving the Yukon–Kuskokwim Delta. The Lower Kuskokwim School District, which operates 28 schools in the region, is located in Bethel as well as the Southwestern Alaska region tribal organization known as the Association of Village Council Presidents. Bethel also has most of the services and facilities that one could expect to find in any Alaska community of comparable size, including a senior center, library, cultural center and art guild, and University of Alaska satellite campus. Access to the Alaska road system is provided by Alaska Airlines and Era Aviation—with a round-trip cost of approximately \$500 to Anchorage. River travel is the primary means of local transportation in the summer, and the Kuskokwim River becomes a maintained ice road to surrounding villages in the winter. Barges from Seattle and Anchorage offload in Bethel and a barge service that is based in Bethel distributes goods to upstream Kuskokwim villages.

6.3 POPULATION

In 2010, the population of Bethel was 6,080, up 11% from the estimate of 5,471 for 2000. In 2010, 71% of Bethel’s population was Alaska Native, compared to 68% in 2000 (Table 6.3-1). Bethel’s total population and Alaska Native population have shown steady growth since statehood, reflecting Bethel’s role as the regional service center of the lower Kuskokwim and Yukon area (Figure 6.3-1).

Table 6.3-1.—Population of Bethel, 1960–2012.

	Total population	Change over decade	Alaska Native population	Percentage of population
1960	1,258			
1970	2,416	92%		
1980	3,576	48%	2,417	68%
1990	4,674	31%	2,986	64%
2000	5,471	17%	3,719	68%
2010	6,080	11%	4,334	71%
2012	6,113			

Source U.S. Census Bureau (1960–2010); Alaska Department of Labor and Workforce Development (2012a).

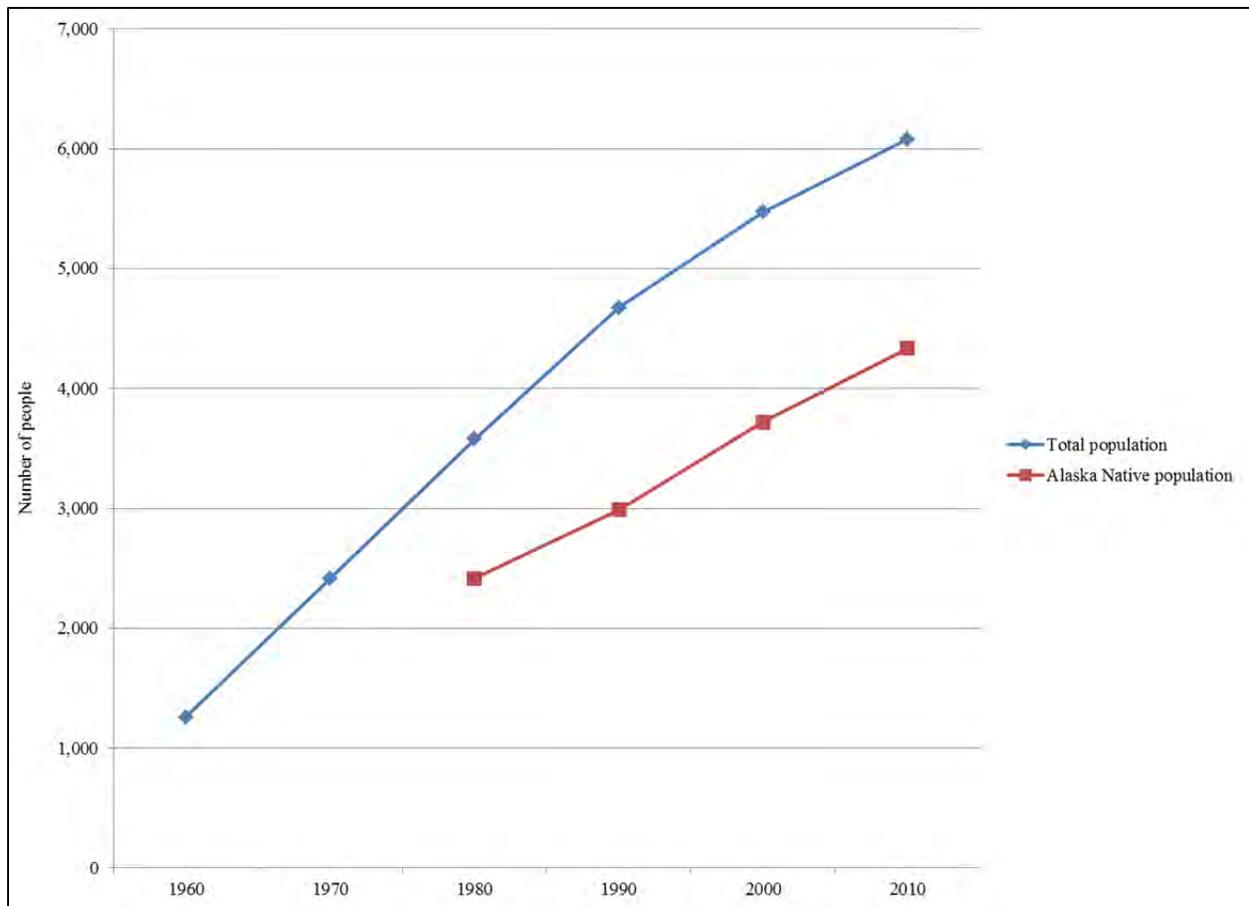


Figure 6.3-1.—Total population and Alaska Native population, Bethel, 1960–2010.

6.4 THE 12 SOCIOECONOMIC FACTORS

1. The social and economic structure.

Bethel is the regional center or “hub community” of the lower Yukon-Kuskokwim area (Stinson 1990; Shanks 2009). Bethel was one of 5 communities—along with Barrow, Dillingham, Kotzebue, and Nome—that were cited in the legislative history of ANILCA as “rural communities,” whose residents were intended to be qualified to participate in subsistence hunting and fishing on federal public lands under the provisions of the act. In the 1970s and 1980s, these 5 places had at least 4 general characteristics in common (Wolfe et al. 1986:40):

1. All had, by Alaska standards, moderately-sized populations, ranging from 1,563 in Dillingham to 3,576 in Bethel in 1980.
2. All were centers of services, government, commerce, and transportation for the communities of their regions, commonly called “regional centers” or “hub communities.” Most types of wage employment in such communities are in government, services, and trade. Average incomes tended to be moderate to high compared to Anchorage and other urban centers on the road system, but costs of living were also higher than in Anchorage, especially for food products.
3. All 5 communities had “mixed economies” in which households typically combined monetary employment with traditional fishing and hunting activities. Fishing and hunting made substantial contributions to the food supplies of many households and to the community as a whole. Over a

typical year, many families harvested a variety of wild resources using small-scale equipment and efficient harvest methods, and wild resources were commonly shared between families.

4. All 5 communities had diverse populations in terms of origins, cultural heritage, education, and work experience. The communities contained subgroups which participated in cash employment and resource harvest activities in different combinations. A household's level of wild resource use was perhaps related to the household's cultural background, length of residency in the community, and commercial fishing status.

A community profile from the mid-2000s (Sepez et al. 2005:398) noted that subsistence and commercial fisheries (especially for salmon and herring) are important components of the Bethel economy, along with its regional hub role.

Bethel's comprehensive plan (City of Bethel Planning Department 2011:6) includes the following overview of Bethel's cash economy:

Bethel is the central service hub for the Yukon-Kuskokwim Delta, serving 56 remote villages with a regional population of about 26,000 people. The majority of the cash economy of Bethel derives from providing regional services including government administration, transportation, fuel and freight distribution, education, health care and social services. Employment from these public-serving agencies and organizations provides the foundation for Bethel's retail and other economic sectors including restaurants and grocery stores, taxis, construction, and telecommunications.

The economic overview adds:

With an expansive, intact natural environment rich in resources, subsistence activities are an integral part of life in Bethel and area settlements. Many residents supplement their income with subsistence activities, such as fishing, hunting and collecting berries.

2. The stability of the economy.

Bethel's steady population growth over the last several decades is evidence of a relatively stable cash sector to the local economy due to its role as a regional service center. The cash sector of Bethel's economy shows less seasonal variation than surrounding villages.

The household survey conducted by the Division of Subsistence found that about 71% of Bethel's adults were employed for at least a portion of 2012. On average, employed adults worked 11 months; 69% were employed year-round.

3. Extent and kinds of employment for wages, including full-time, part-time, temporary, and seasonal employment.

Wolfe et al. (1986:25) noted that for the 1980s public sector employment and commercial fishing provided "the monetary base in Bethel." About 49% of jobs were in services in 1980, 19% in public administration, 11% in trade, and 10% in transportation and communication. In 1985, 63% of wages derived from various government employment. In 1986, Bethel residents held 157 Kuskokwim Area commercial salmon permits and 42 Bering Sea herring permits.

Figure 6.4-1 depicts the percentage of jobs held by Bethel residents in 2011 by sector, showing a similar pattern to the 1980s and reflecting Bethel's continuing role as a regional center. Educational and health services provided 29% of jobs, followed by local government with 20%, and then trade, transportation, and utilities with 19% (see also Shanks 2009).

Sepez et al. (2005:399) provide an overview of Bethel’s involvement in North Pacific fisheries in the early 2000s. They note that commercial fishing, especially salmon, is an important part of the local economy. In 2000, there were 201 registered crew members, and 199 Bethel residents held a total of 213 commercial fishing permits; 186 Bethel residents held 187 limited entry salmon permits in 2000.

In 2012, 186 Bethel residents held 195 commercial fishing permits (85 were fished); 174 residents held 177 salmon limited entry permits (85 were fished), 15 residents held 16 herring permits, and 1 each held a Pacific halibut permit and an “other finfish” permit (CFEC 2013).

From 2002–2010, Bethel residents held an annual average of 102 commercial crew member permits, including 127 in 2010 (Figure 6.4-2).

Regarding commercial fish processing, one land-based processor in Bethel (Kuskokwim Seafoods) was permitted by the Alaska Department of Environmental Conservation in 2011.¹⁵

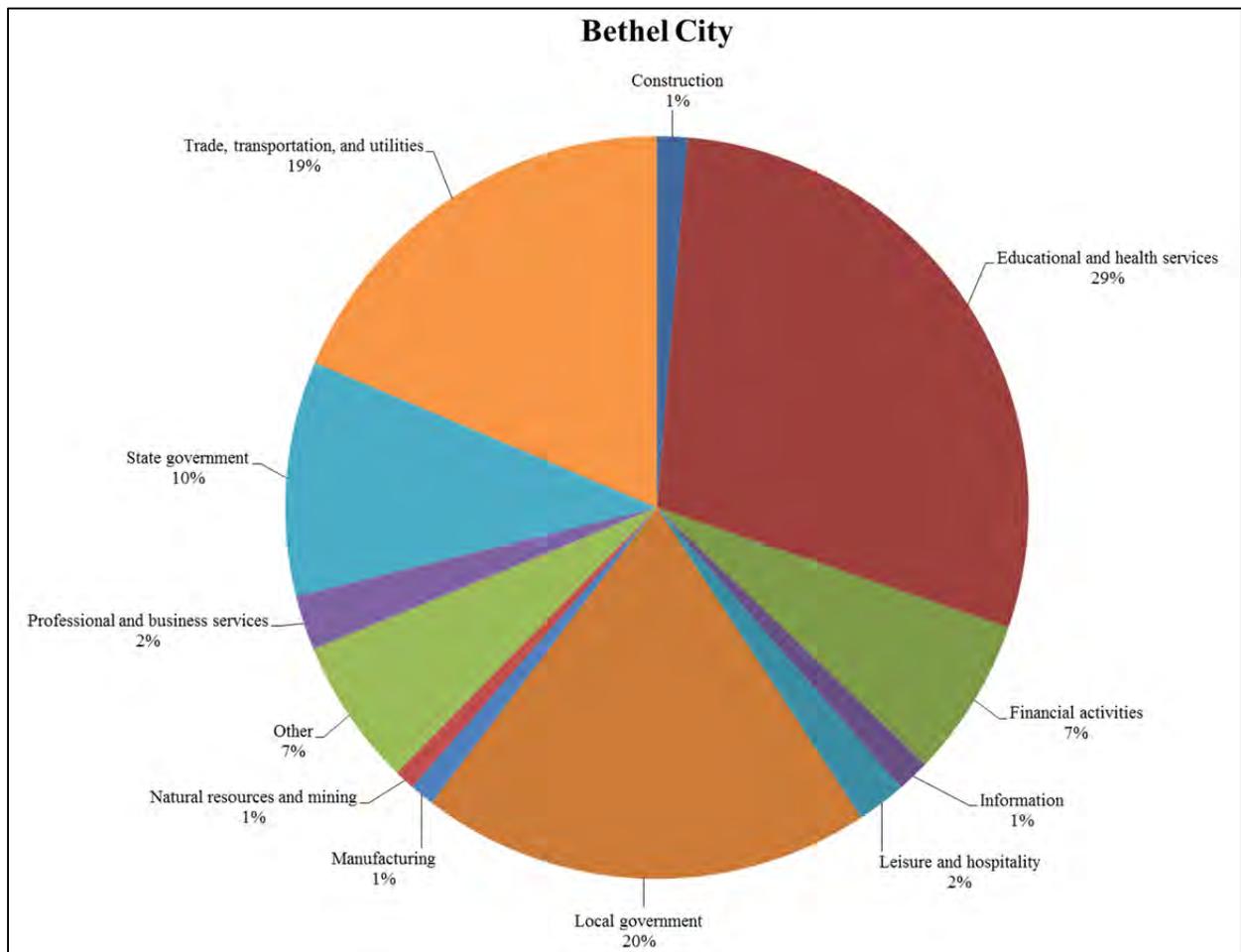


Figure 6.4-1.—Percentage of jobs by industry, Bethel City, 2011.

15. Source is map “Yukon Delta Region Canneries and Land-Based Seafood Processors” produced by the Alaska Department of Labor and Workforce Development: <http://labor.alaska.gov/research/seafood/YukonDelta/YDProcLocMap.pdf>.

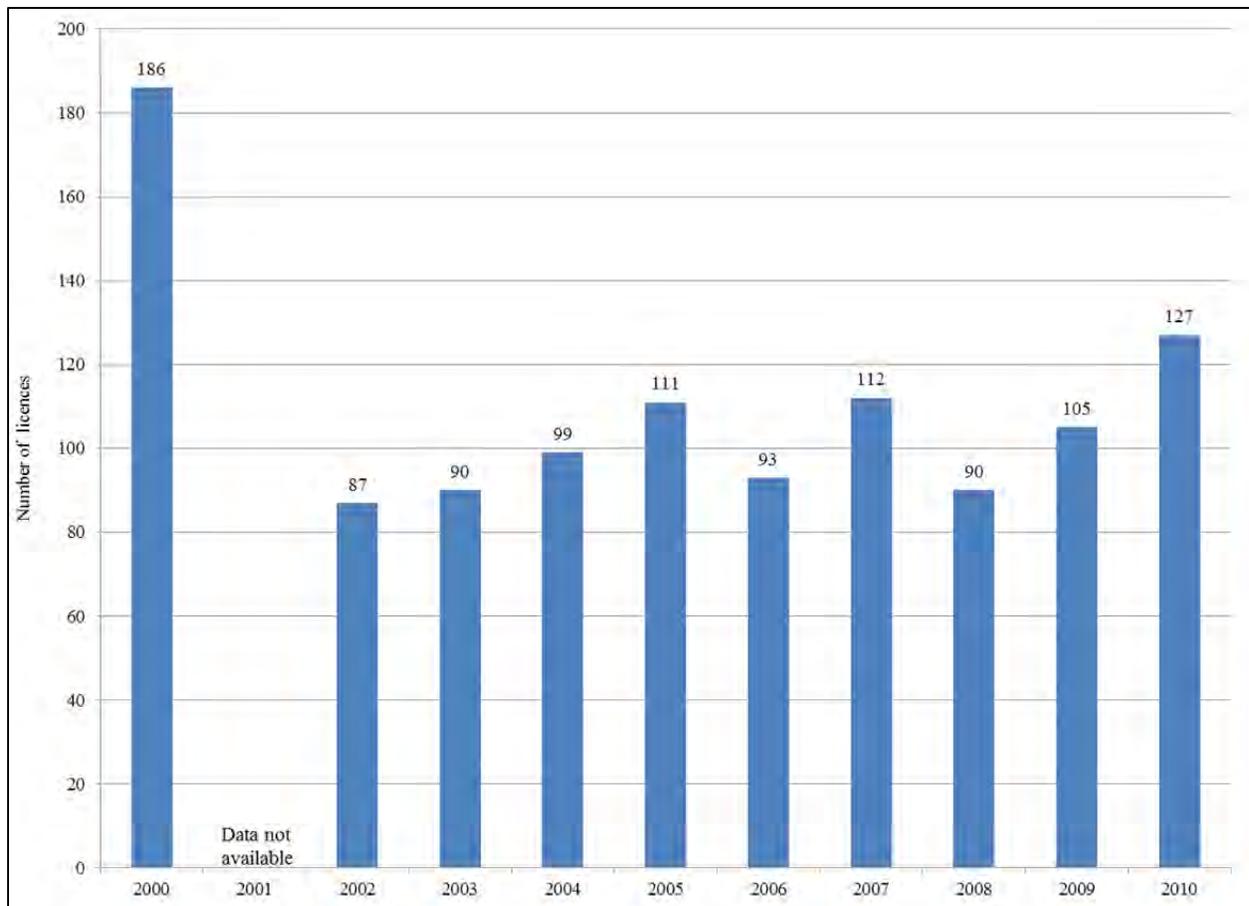


Figure 6.4-2.—Number of commercial crewmember licenses, Bethel, 2000–2010.

4. The amount and distribution of cash income among those domiciled in the area or community.

In 1979, household incomes in Bethel were \$26,526 (mean) and \$22,468 (median) and were lower than Anchorage (\$32,073 mean and \$27,375 median) (Wolfe et al. 1986:25).

For the period 2007–2011, the annual per capita income for Bethel’s residents averaged \$29,261 (\pm \$2,645), compared to \$31,944 (\pm \$423) for the state population. There was a large disparity between ethnic groups regarding income, however: for this period, per capita incomes for individuals classified as “white” by the federal census averaged \$54,657, while incomes for Alaska Natives and American Indians averaged \$19,862 per capita, incomes for African-Americans averaged \$9,360 per capita, and incomes for households classified as Asian averaged \$43,607 per capita (ADLWD 2013b).

On average from 2007–2011, 8.1% of Bethel’s population lived below poverty levels, compared to 9.5% for Alaska overall.

5. The cost and availability of goods and services to those domiciled in the area or community.

Costs of goods and services in Bethel are high compared to those of communities along the road and marine highway systems. The *Alaska Geographic Differential Study* for 2008 (McDowell Group 2009) assigned an index of 1.53 for total costs for Bethel (Anchorage is 1.00), with food at 1.72 and fuel at 1.56. The University of Alaska’s Cooperative Extension Service food cost survey found that in 2011, costs of

food in Bethel were about double those of Anchorage (index of 198), having increased from about 50% higher in 1991 (index of 151) (Figure 6.4-3).

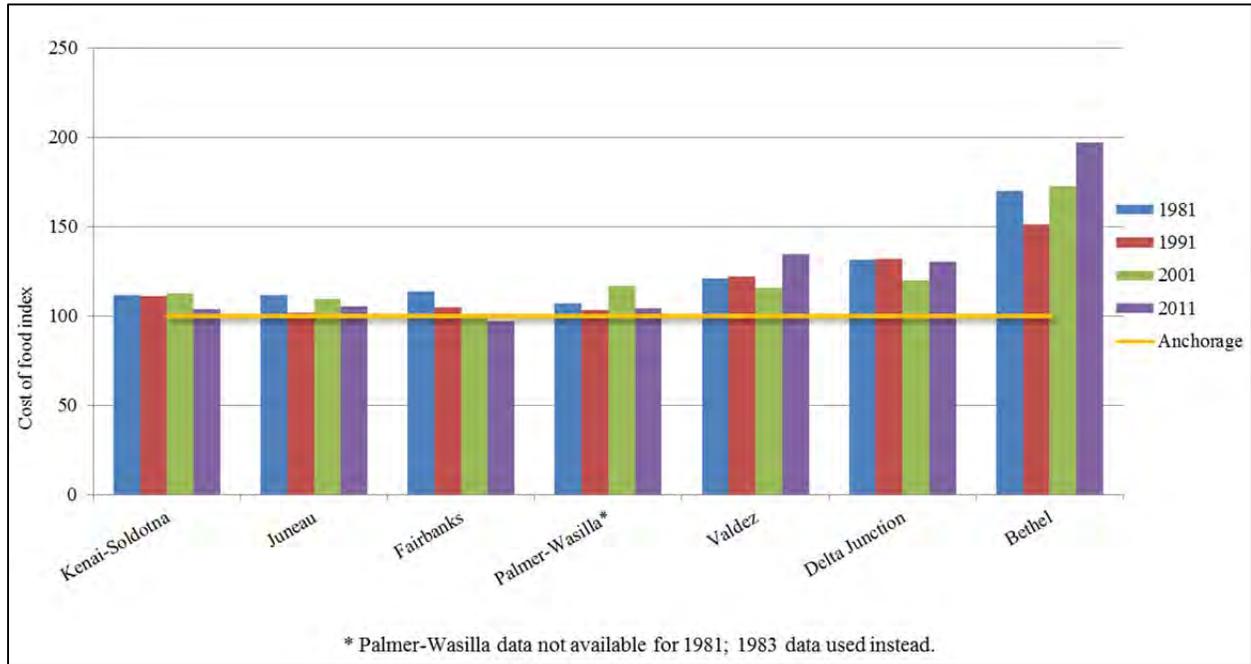


Figure 6.4-3.–Cost of food index for selected communities, referenced from Anchorage, 1981–2011.

6. The variety of fish and game species used by those domiciled in the area or community.

According to the results of the household survey pertaining to 2012, on average Bethel households used 14.7 kinds of wild resources in 2012, and harvested 8.4 kinds (Figure 6.4-4). Resources used by the most households included moose, king salmon, coho salmon, sockeye salmon, caribou, and chum salmon.

The estimated harvest by Bethel residents in 2012 was composed of 41% salmon, 26% land mammals (mostly moose and caribou), 20% other fish, 6% birds and eggs, 5% wild plants, 2% marine mammals, and less than 1% marine invertebrates (Figure 6.4-5).

Post-season surveys designed primarily to collect subsistence salmon harvest data also document harvests of other fish in Bethel. For 2001–2003, these surveys recorded harvests of northern pike, burbot, various whitefish species, Arctic grayling, Dolly Varden, rainbow trout, and lake trout (Simon et al. 2007).

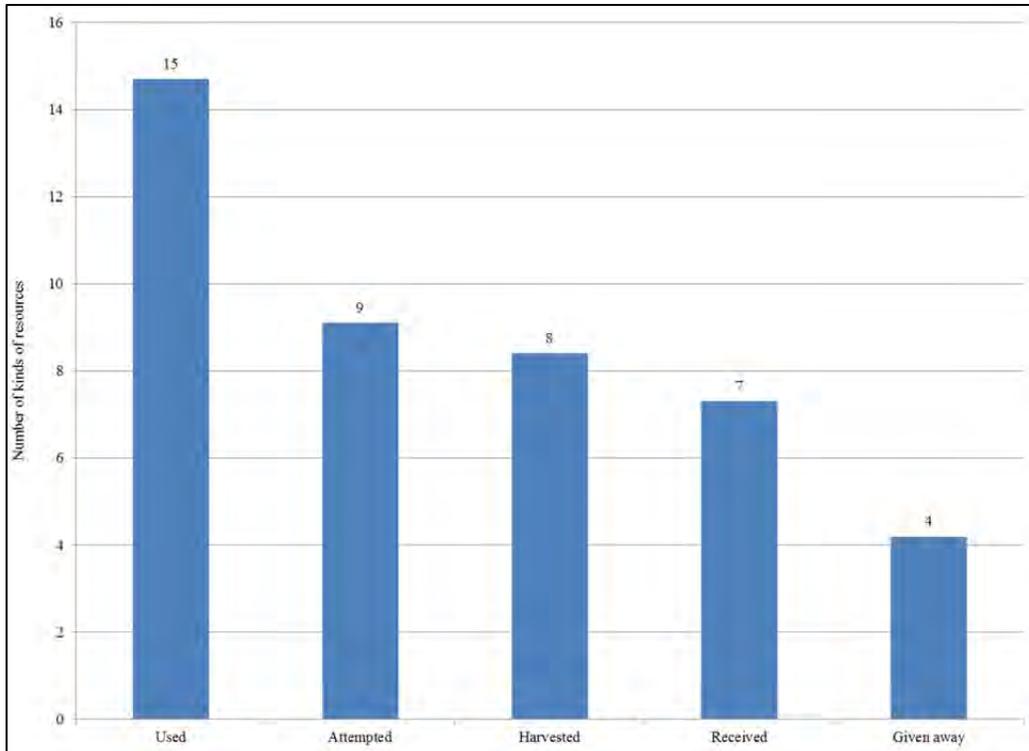


Figure 6.4-4.—Average number of kinds of resources per household used, attempted to harvest, harvested, received, and given away, Bethel, 2012.

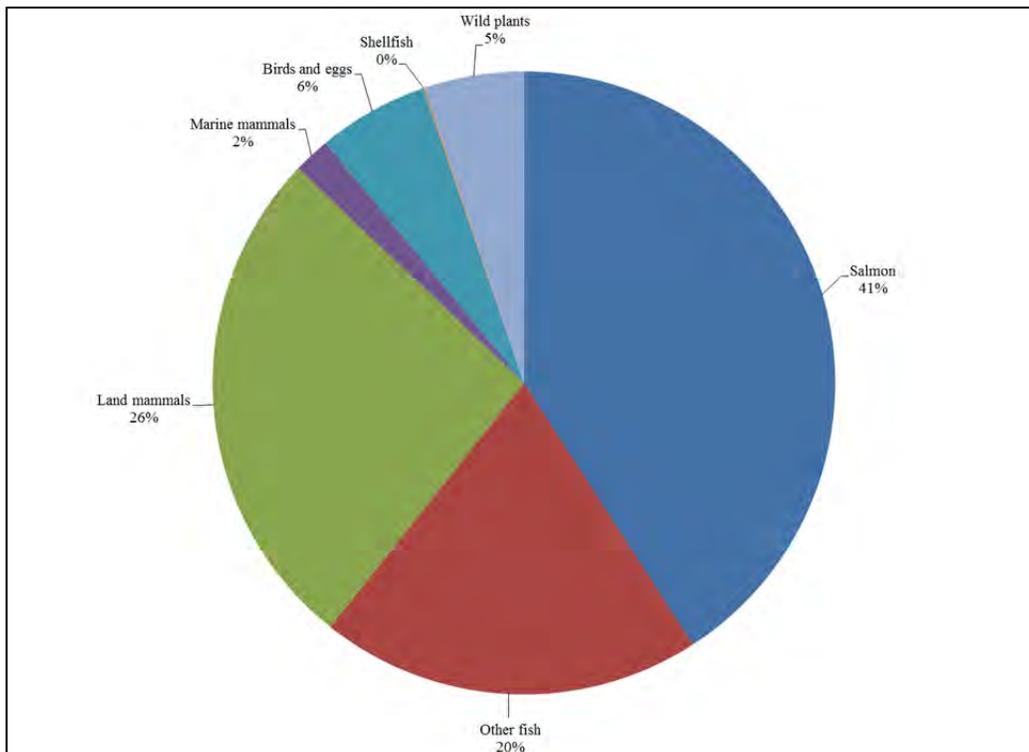


Figure 6.4-5.—Estimated harvests of wild resources, pounds usable weight per person, by resource category, Bethel, 2012.

7. The seasonal cycle of economic activity.

Due to its role as a regional service center, the cash sector of Bethel's economy shows less seasonal variation than surrounding villages.

The household survey conducted by the Division of Subsistence found that about 71% of Bethel's adults were employed for at least a portion of 2012. On average, these employed adults worked 11 months; 69% were employed year-round.

The subsistence sector of Bethel's economy is shaped directly by the seasonal availability of key resources such as salmon and other fish, large land mammals, migratory waterfowl, and wild plants.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities and using wild fish and game.

According to survey results, in 2012, 97% of Bethel households used wild resources, 86% attempted a harvest, 85% were successful harvesters, 92% received gifts of wild resources, and 70% gave resources away. As shown in Figure 6.4-6, 54% of households harvested fish other than salmon and 52% harvested salmon, while 30% harvested land mammals and 43% harvested birds and eggs.

Surveys of a random sample of Bethel households to document harvests of large game and furbearers in 2011 found that 73% of Bethel households used land mammals in the study year, 38% hunted, 27% harvested, 35% gave away harvests, and 62% received gifts of land mammals from others (Runfola and Brenner *In prep*).

In 2012, 920 Bethel residents held hunting/combination licenses, which was 15% of the population (Figure 6.4-7).¹⁶

In 2012, 492 Bethel residents held sport fishing/combination licenses, or about 8% of the population (Figure 6.4-7). This relatively low percentage is likely explained by Kuskokwim Area subsistence regulations, which include rod and reel as legal gear for subsistence salmon fishing and for subsistence fishing for fish other than salmon (5 AAC 01.270(a)(c)). Cultural proscriptions against "sport fishing," perceived by many people of Yupik heritage as "playing with fish" (Wolfe 2006:64–77), may also, in part, account for the relatively low number of sport fishing licenses issued in Bethel.

16. Totals include individuals holding any license, except senior licenses, that authorizes them to engage in the activity, including combination licenses. Senior licenses are reported separately because they are valid for life and it is unknown how many individuals in any year hold these licenses.

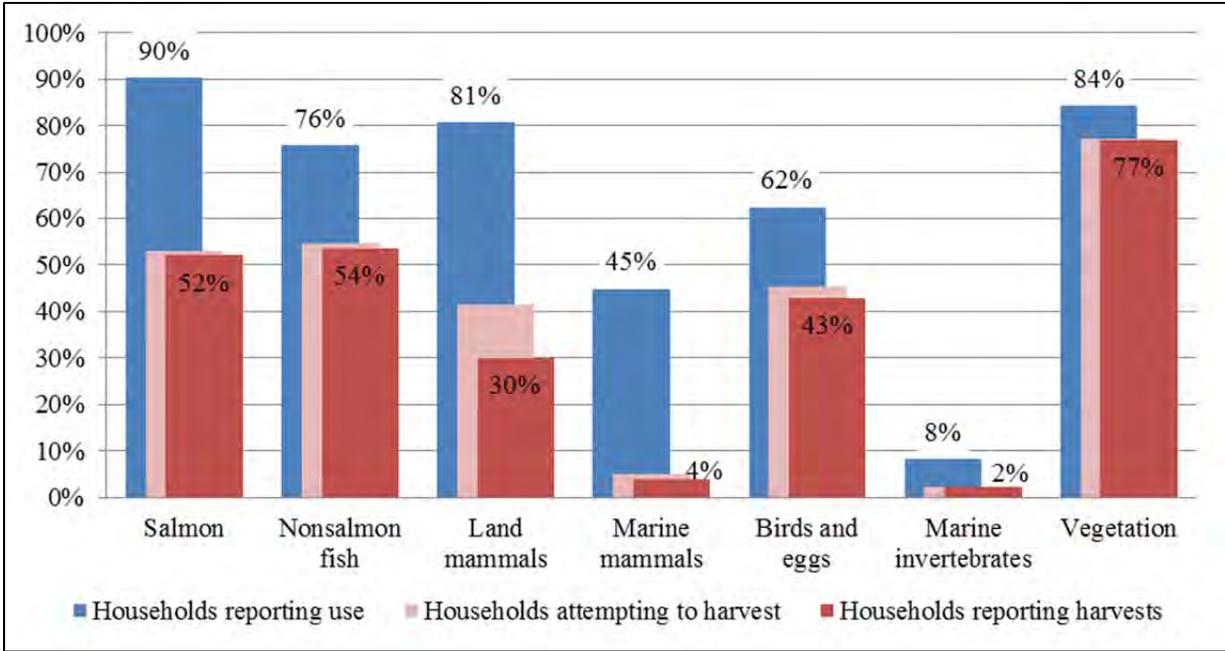


Figure 6.4-6.—Percentages of households using, attempting to harvest, or harvesting wild resources by category, Bethel, 2012.

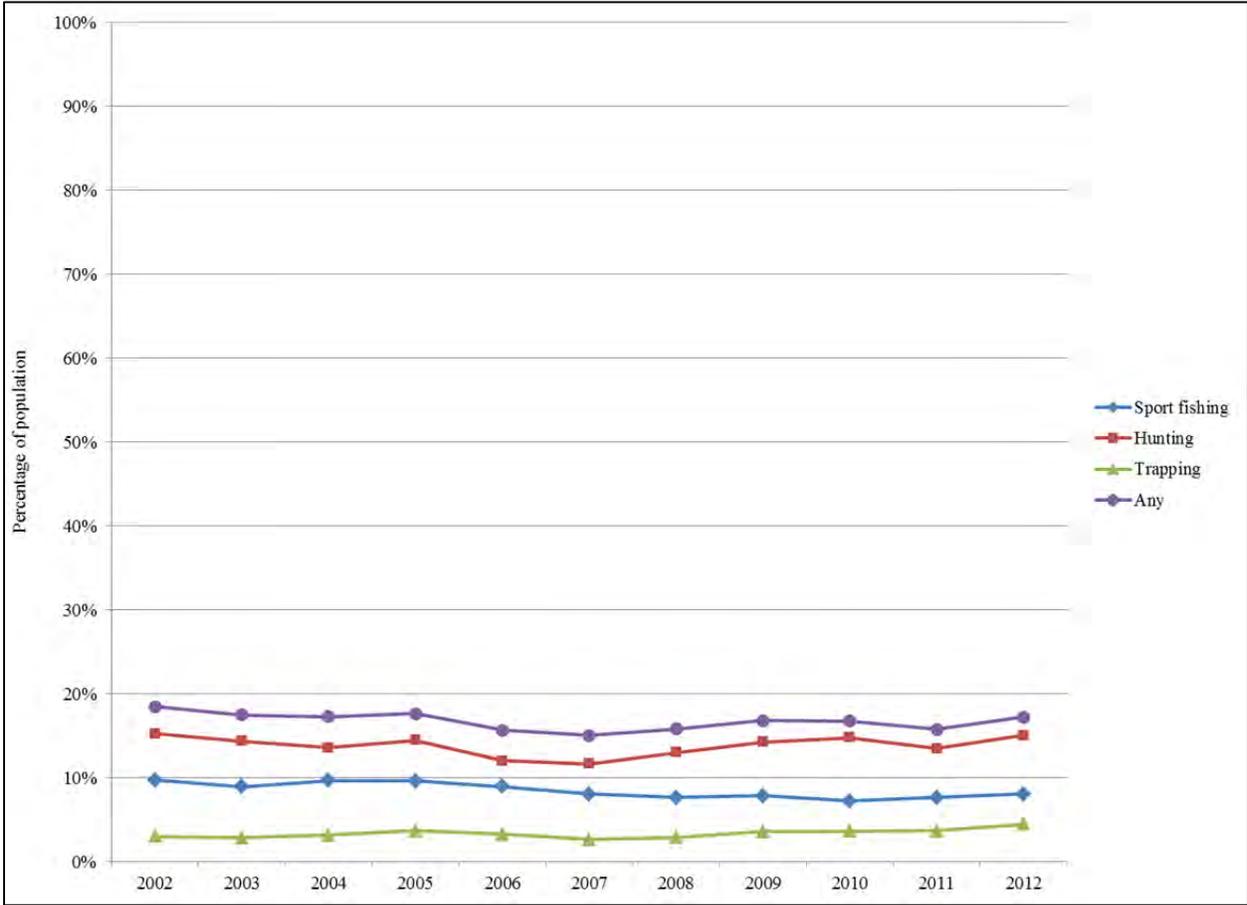


Figure 6.4-7.—Percentage of Bethel residents holding hunting, sport fishing, and trapping licenses.

9. The harvest levels of fish and game by those domiciled in the area or community.

Bethel's comprehensive plan (City of Bethel Planning Department 2011:6-3) states:

While Bethel residents have access to grocery stores in town, bulk purchased food from Anchorage and air-delivered produce, many residents rely extensively on subsistence resources. For many Bethel households, subsistence resources account for between a third and a half of their annual food.

According to the department's survey results, harvests of fish, wildlife, and wild plants by Bethel residents in 2012 averaged 168 lb per person and 580 lb per household (Figure 6.4-8). This represents 73% of the annual consumption of meat, fish, and poultry by Americans, 97% of protein requirements, and 16% of caloric requirements.

Resources taken in the largest quantities as estimated in pounds usable weight in 2012 were moose, chum salmon, coho salmon, sockeye salmon, king salmon, northern pike, and caribou.

A survey of a random sample of Bethel households regarding harvests of large game and furbearers for 2011 estimated a harvest of 36 lb per person, with moose (25 lb per person) and caribou (9 lb per person) composing the bulk of the harvest.

Figure 6.4-9 reports estimated subsistence salmon harvests by Bethel residents in pounds usable weight per person based on the department's annual post-season harvest survey program. The recent 5-year average was 83 lb per person; the estimate for 2012 based on the comprehensive survey was 70 lb per person ($\pm 17\%$).

King salmon harvests in the Kuskokwim River were unusually low in 2012 due to regulatory closures caused by poor returns; thus total harvests of wild foods in 2012, and especially subsistence salmon harvests, might not be representative of other recent years without subsistence fishing restrictions.

Based on survey results, subsistence nets produced 96% of the salmon harvest for home use in Bethel in 2012, rod and reel (legal sport and subsistence gear) produced 2%, and removal from commercial fisheries produced 2% (Figure 6.4-10).

Annual post-season household harvest surveys designed primarily to collect salmon harvest data also collect harvest estimates for other fish. In pounds usable weight, estimated nonsalmon fish harvests totaled 95,440 lb in 2001 (17 lb per person), 126,861 lb in 2002 (22 lb per person), and 78,615 lb in 2003 (13 lb per person). Due to the timing of the surveys in the fall, they likely underestimate nonsalmon fish harvests, much of which take place during winter months. Fish taken in the largest quantities included northern pike, burbot, and various species of whitefish (Simon et al. 2007).

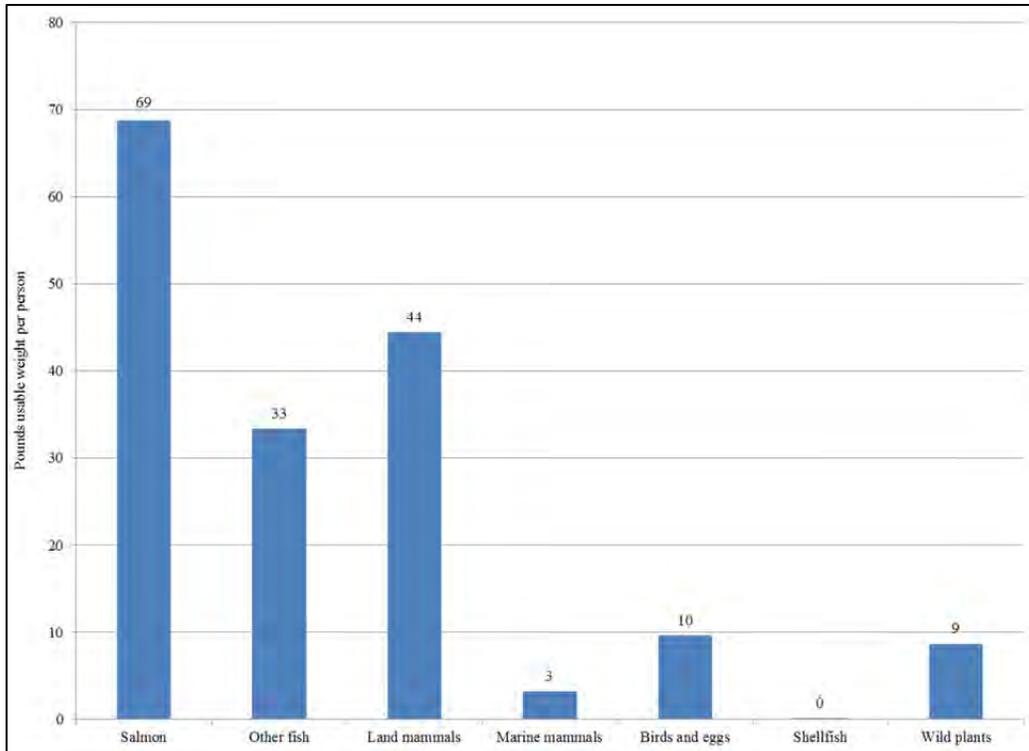


Figure 6.4-8.—Estimated harvests of wild resources, pounds usable weight, by resource category, Bethel, 2012.

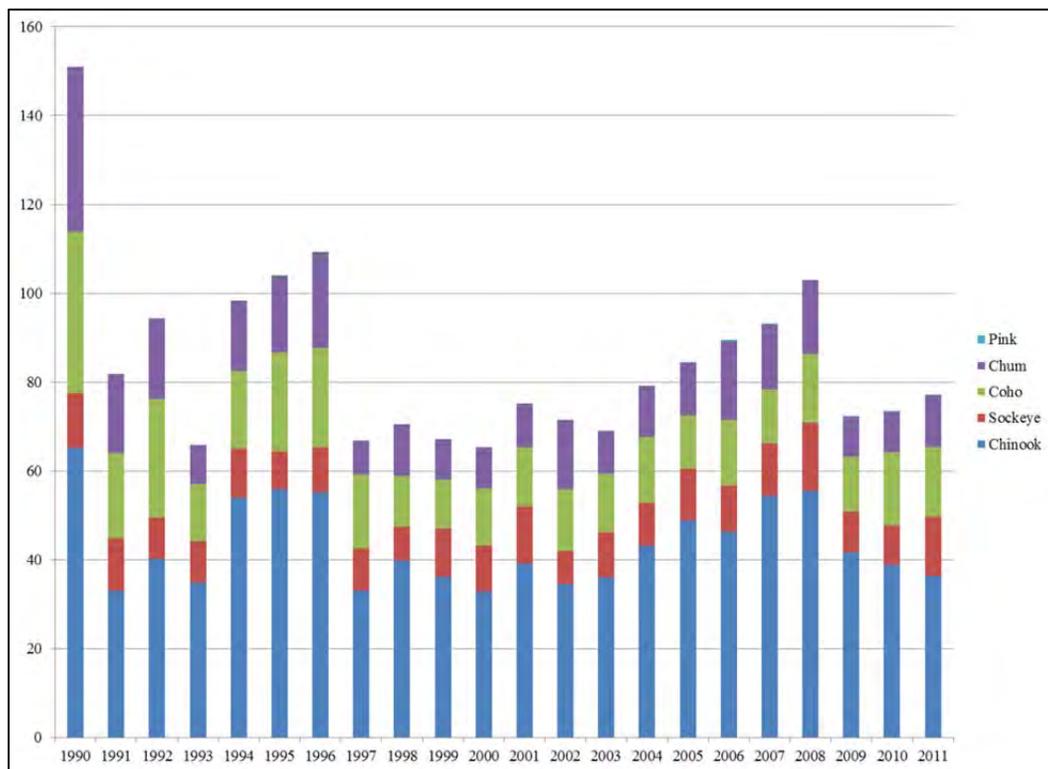


Figure 6.4-9.—Estimated subsistence salmon harvests, pounds usable weight per person, by species, Bethel, 1990–2011.

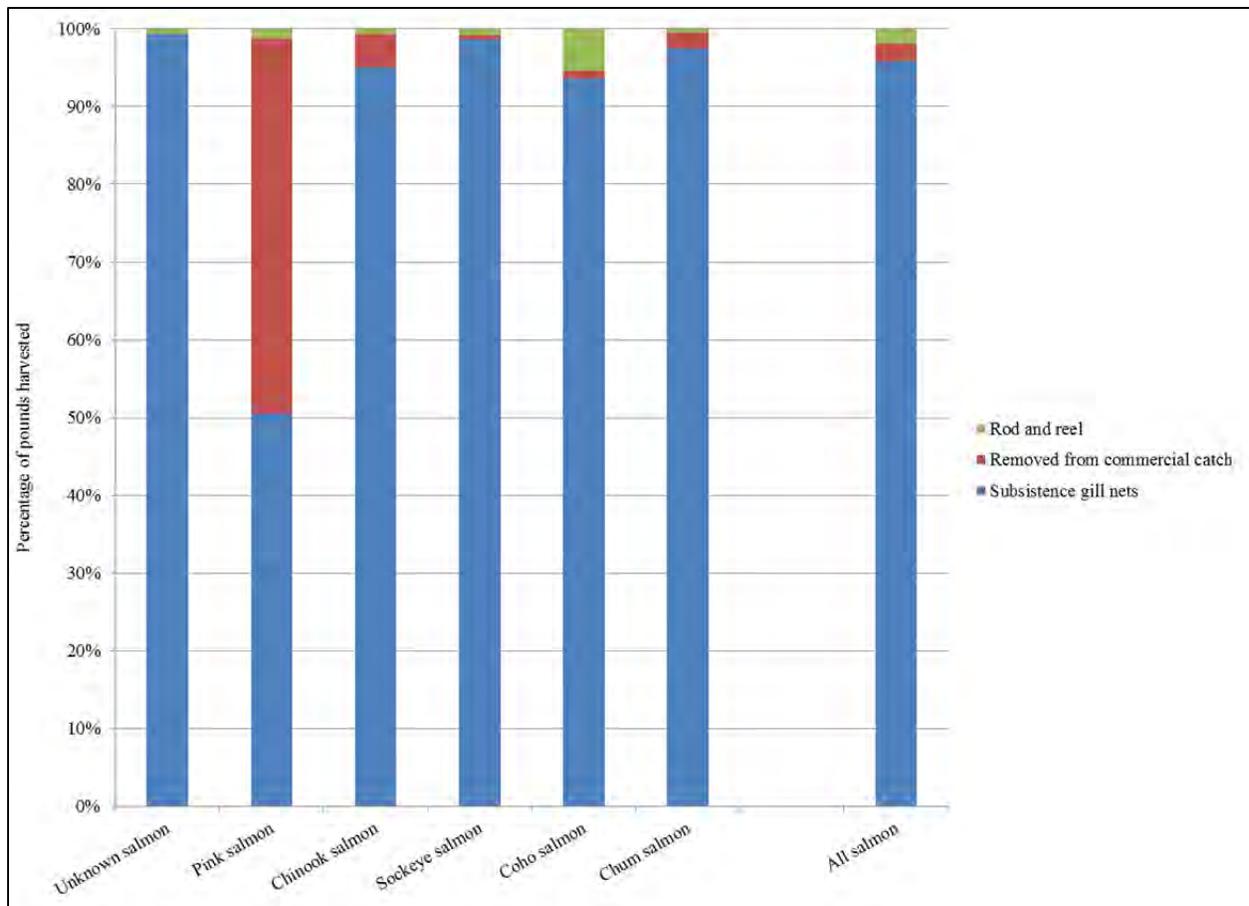


Figure 6.4-10.—Percentage of estimated pounds of salmon harvested by gear type, Bethel, 2012.

10. The cultural, social, and economic values associated with taking and use of fish and game.

In 2010, 71% of Bethel’s population was Alaska Native—primarily Central Yup’ik. According to findings of the *American Community Survey* for the period 2007–2011, about 41% of Bethel’s population speaks Central Yup’ik in the home, as does 66% of the population of the Bethel Census Area (compared to 5% of Alaska’s population that speaks an Alaska Native language in the home). With such a large percentage of Central Yup’ik speakers and others of Central Yup’ik heritage, the values associated with taking and using fish and game in Bethel are likely very similar to those of the other communities of the lower Kuskokwim area (see, for example, Kawagley 2006 and Hensel 1996).

Bethel’s comprehensive plan (City of Bethel Planning Department 2011) includes the following “community vision” statement.

We value Bethel as a place where people care about each other, the natural environment, and living close to the land. We envision a future in which the quality of our natural environment is protected for subsistence and recreation, and the land managed for the sustained prosperity of Bethel’s people.

During key respondent interviews conducted as part of the household harvest survey project in 2013, several Bethel residents commented on the role of subsistence resources for their community and way of life.

We have to count on our subsistence resources ..., our resources for our subsistence way of life. Because of the cost of existing out here, you depend on the fish, and the birds, and the berries, and the greens, and the big game.

[Subsistence is] wholeness ... mind, body, spirit You are what you eat.

You know there are people in Bethel who genuinely need subsistence fish. That part of their spiritual, part of their cultural upbringing are genuinely attached to it.

[What subsistence means] is health, community ... like a loose way to find spirituality ... staying active and then the nutrition that all the wild foods provide.

It [subsistence] means the connection to the ancestry It makes them feel good to be able to work on the animals and eat the animals and berries and whatever, just like their ancestors did.

11. The geographic locations where those domiciled in the area or community hunt and fish.

For the most recent 5-year period, data from harvest tickets and permits show that Bethel residents mostly hunted in GMU 18 for moose, caribou, and muskoxen. Moose hunting also took place in GMUs 19, 20, and 21 (Table 6.4-1; Figure 6.4-11). Most subsistence salmon fishing by Bethel residents takes place in the Kuskokwim River, and other subsistence fishing occurs primarily in the Kuskokwim River watershed.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community.

According to the results of the survey, in 2012, 92% of Bethel's households received gifts of wild foods from other households, and 70% gave at least one type of wild resource away. On average, Bethel households received 7.3 kinds of wild foods in 2012 and gave away 4.2 kinds. That the average household in Bethel used 14.7 kinds of wild resources while harvesting, on average, 8.4 kinds is evidence of the significance of sharing and exchange of fish and game in the community.

Bethel residents also engage in exchanges of wild foods with residents of other Kuskokwim River communities. For example, a recent study of wild food harvesting and processing networks in 8 central Kuskokwim communities documented numerous incidents involving sharing with Bethel households (Brown et al. 2012).

Table 6.4-1.—Total hunters by species and GMU, Bethel residents, 2007–2011.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Unk.	Total
Black bear		2			1									1				3	8		1						4	20	
Brown bear	1				1			3	1	2							3	28	7				1		1			2	50
Bison																													0
Caribou																		752	19	3						3	5	782	
Deer	2	7	6			2		19																					36
Elk																													0
Moose									1			1		2	2		9	1,741	348	8	89	1		1	2		60	1 2,266	
Mt. goat							1	2			1				2												1	7	
Muskox																		45				1					1	47	
Dall sheep												2	1		1					6	5		1	2	1	8		27	
Total	3	9	6		2	2	1	24	2		1	3	1	3	5		12	2,569	388	16	90	2	2	3	4	11	71	3 3,233	

Source Alaska Department of Fish and Game, Division of Wildlife Conservation database WinfoNet.

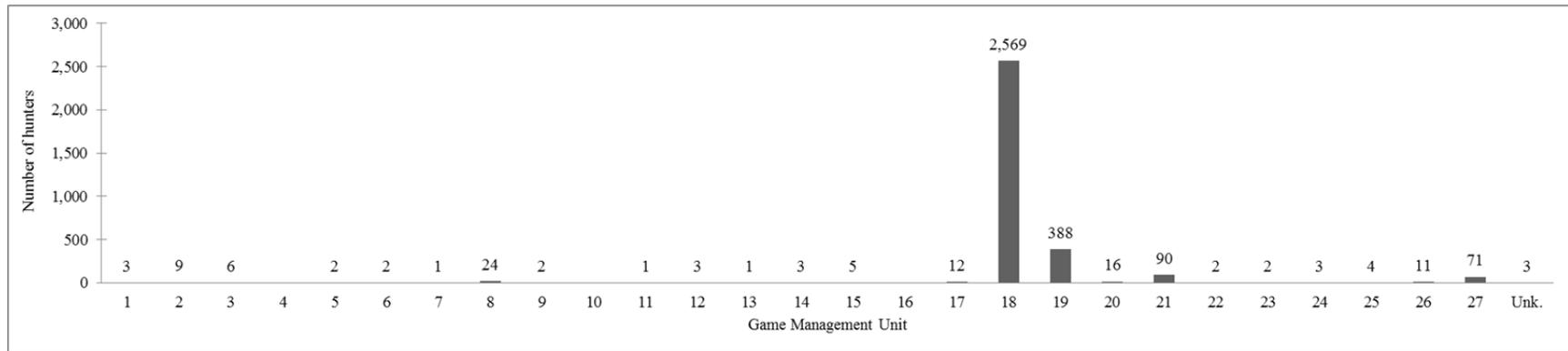


Figure 6.4-11.—Total hunters by GMU, Bethel residents, 2007–2011.

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APPENDIX A. SOURCES AND METHODS

Demographic information

The federal decennial census, conducted by the U.S. Census Bureau, is the primary source of demographic information for Alaska communities. Population estimates for years between the decennial censuses are developed by the Alaska Department of Labor and Workforce Development, Research and Analysis Section (ADLWD). The ADLWD website at <http://labor.alaska.gov/research/census/> includes detailed results of the federal censuses and state estimates.

Economic data

Through 2000, the federal decennial census collected selected social, economic, and housing data from the “long form,” administered to a sample of households. After 2000, the long form was replaced by the *American Community Survey* (ACS), also administered by the U.S. Census Bureau. The ACS is a nationwide, continuous survey that provides demographic, housing, social, and economic data every year based upon a sample of households. Beginning in 2010, the ACS has provided 5-year average estimates of demographic, housing, social, and economic data. These 5-year estimates are updated annually by removing the earliest year and replacing it with the latest year. The goal is to monitor social and economic trends in local communities. When this report was prepared, the most recent ACS data covered the period 2007–2011. Also, selected economic data, such as unemployment rates, are collected and reported by the ADLWD. The ADLWD provides the ACS findings at its website.

Systematic household surveys conducted by the Alaska Department of Fish and Game Division of Subsistence collect data on employment, earned income, and other sources of income for selected communities. The results are reported in the Community Subsistence Information System (CSIS), an online database found at <http://www.adfg.alaska.gov/sb/CSIS/>. Findings are also reported in volumes of the Division of Subsistence Technical Paper Series.

Costs of living

The Cooperative Extension Service of the University of Alaska Fairbanks conducts quarterly market basket surveys of the costs of food in selected Alaska communities. The findings are reported as an index relative to Anchorage, which is assigned a value of 100. For example, a community with food costs at 50% above those of Anchorage is assigned an index of 150. Results can be found at <http://www.uaf.edu/ces/hhfd/fcs/>.

In 2009, the McDowell Group published the findings of the *Alaska Geographic Differential Study* for 2008, which it conducted for the Alaska Department of Administration. The study compared the costs of living in 18 “pools” or “sampling blocks” of communities, 12 individual communities, and 19 districts that matched those used in a similar study for 1985. Costs were estimated for 6 major categories (housing, food, transportation, clothing, medical, and other) and 21 subcategories. A “price differential” for each category was calculated relative to Anchorage, which for each category was assigned a value of 1.00. An overall “geographic cost of living differential” was also calculated. Results are published in McDowell Group (2009).

Fish and wildlife harvest and use data

Most Alaska personal use and subsistence salmon fisheries require a permit and that a record of harvest is returned to the department. The department produces annual reports that summarize subsistence and personal use salmon harvests by species, location of harvest, and place of residence of the permit holders (e.g., Fall et al. 2013a). For most subsistence salmon fisheries for which permits are not required, such as fisheries in the Kuskokwim Area and most of the Yukon Area, the department conducts post-season harvest surveys. For this report, harvests reported in numbers of salmon were converted to pounds usable weight using standard Division of Subsistence factors.

Subsistence harvest information for crab for the Kodiak Management Area is based on data from permits returned to the Division of Commercial Fisheries in Kodiak. Reported harvests are not expanded to account for unreturned permits in this fishery.

The Division of Sport Fish conducts an annual mail survey (Statewide Harvest Survey) of a random sample of sport fishing license holders to estimate sport fish harvests by water body and species. The Division of Sport Fish analyzed the angler survey data for the year 2004–2011 to produce estimates of sport harvests by residents of nonsubsistence areas, the remainder of the state, and nonresidents. Harvests reported in numbers of fish or other units were converted to pounds usable weight using standard Division of Subsistence factors and data provided by the Division of Sport Fish on the average weights of sport-caught halibut.

Most Alaska harvests of big game must be reported to the Division of Wildlife Conservation, which compiles the information in the WinfoNet database (Wildlife Information Network). Reported harvests in the database are not expanded to account for nonreporting. For this report, big game harvests were aggregated by place of residence of the hunter. Harvests reported in numbers of animals were converted into pounds usable weight using standard factors.

The Division of Subsistence conducts comprehensive household surveys to collect harvest information for all finfish, shellfish, wildlife, and wild plant resources, and to estimate harvests at the community level. Study findings appear in the division's Technical Paper Series and are summarized in the Community Subsistence Information System (CSIS)—an online database. The CSIS includes 462 datasets for 227 communities. Not all Alaska communities are represented in the CSIS. Most of these studies are supported through special project funding.

APPENDIX B. JOINT BOARD NONSUBSISTENCE AREAS

5 AAC 99.015. Joint Board nonsubsistence areas

- (a) The following areas are found by the Joint Board of Fisheries and Game to be nonsubsistence use areas:
- (1) The Ketchikan Nonsubsistence Area is comprised of the following: within Unit 1(A), as defined in 5 AAC 92.450(1) (A), all drainages of the Cleveland Peninsula between Niblack Point and Bluff Point, Revillagigedo, Gravina, Pennock, Smeaton, Bold, Betton, and Hassler Islands; all marine waters of Sections 1-C, as defined by 5 AAC 33.200(a) (3), 1-D, as defined by 5 AAC 33.200(a) (4), 1-E, as defined by 5 AAC 33.200(a) (5), that portion of Section 1-F, as defined by 5 AAC 33.200(a) (6), north of the latitude of the southernmost tip of Mary Island and within one mile of the mainland and the Gravina and Revillagigedo Island shorelines; and that portion of District 2, as defined by 5 AAC 33.200(b) , within one mile of the Cleveland Peninsula shoreline and east of the longitude of Niblack Point.
 - (2) The Juneau Nonsubsistence Area is comprised of the following: within Unit 1(C), as defined by 5 AAC 92.450(1) (C), all drainages on the mainland east of Lynn Canal and Stephens Passage from the latitude of Eldred Rock to Point Coke, and on Lincoln, Shelter, and Douglas islands; within Unit 4, as defined by 5 AAC 92.450(4) , that portion of Admiralty Island that includes the Glass Peninsula, all drainages into Seymour Canal north of and including Pleasant Bay, all drainages into Stephens Passage west of Point Arden, the Mansfield Peninsula, all drainages into Chatham Strait north of Point Marsden; all marine waters of Sections 11-A and 11-B, as defined in 5 AAC 33.200(k) (1) and (k)(2), Section 12-B, as defined in 5 AAC 33.200(l) (2), and that portion of Section 12-A, as defined in 5 AAC 33.200(l) (1), north of the latitude of Point Marsden and that portion of District 15, as defined in 5 AAC 33.200(o) , south of the latitude of the northern entrance to Berners Bay, and including Berners Bay.
 - (3) The Anchorage-Matsu-Kenai Nonsubsistence Area is comprised of the following: Units 7, as defined by 5 AAC 92.450(7) (except the Kenai Fjords National Park lands), 14, as defined by 5 AAC 92.450(14) , 15, as defined by 5 AAC 92.450(15) (except that portion south and west of a line beginning at the mouth of Rocky River up the Rocky and Windy Rivers across the Windy River/Jakolof Creek divide and down Jakolof Creek to its mouth, including the islands between the eastern most point of Jakolof Bay and the eastern most point of Rocky Bay), 16(A), as defined by 5 AAC 92.450(16) (A); all waters of Alaska in the Cook Inlet Area, as defined by 5 AAC 21.100 (except those waters north of Point Bede which are west of a line from the eastern most point of Jakolof Bay north to the western most point of Hesketh Island including Jakolof Bay and south of a line west from Hesketh Island; the waters south of Point Bede which are west of the eastern most point of Rocky Bay; and those waters described in 5 AAC 01.555(b) , known as the Tyonek subdistrict).
 - (4) The Fairbanks Nonsubsistence Area is comprised of the following: within Unit 20(A), as defined by 5 AAC 92.450(20) (A), east of the Wood River drainage and south of the Rex Trail but including the upper Wood River drainage south of its confluence with Chicken Creek; within Unit 20(B), as defined by 5 AAC 92.450(20) (B), the North Star Borough and that portion of the Washington Creek drainage east of the Elliot Highway; within Unit 20(D) as defined by 5 AAC 92.450(20) (D), west of the Tanana River between its confluence with the Johnson and Delta Rivers, west of the east bank of the Johnson River, and north and west of the Volkmar drainage, including the Goodpaster River drainage; and within Unit 25(C), as defined by 5 AAC 92.450(25) (C), the Preacher and Beaver Creek drainages.
 - (5) The Valdez Nonsubsistence Area is comprised of the following: within Unit 6(D), as defined by 5 AAC 92.450(6) (D), and all waters of Alaska in the Prince William Sound Area as defined by 5 AAC 24.100, within the March 1993 Valdez City limits.

- (b) The provisions of this section do not apply during the period from April 28, 1994 until a final decision by the Alaska Supreme Court in State v. Kenaitze, No. S-6162, concerning the constitutionality of AS 16.05.258 (c).

**APPENDIX C. JOINT BOARD FINDING IN 1992:
ANCHORAGE-MATSU-KENAI NONSUBSISTENCE AREA**

ANCHORAGE/MATSU/KENAI
NONSUBSISTENCE AREA
#92-25-JB

A. During the publicly convened board meeting on November 1, 1992, the Joint Boards of Fisheries and Game ("Joint Board") heard and considered public testimony, ADF&G staff reports and advisory committee reports, and deliberated on the information in relation to the totality of the twelve socio-economic characteristics in the 1992 subsistence law at AS 16.05.258(c). Based on the information and deliberations, the Joint Board found that for the Anchorage-MatSu and the Kenai Peninsula nonsubsistence areas described in Section B below, subsistence is not a principle characteristic of the economy, culture and way of life. The Joint Board incorporates by reference the information provided by the ADF&G in the worksheets included in the Joint Board workbook as well as additional information presented during deliberations. Additionally, the Board found the following:

Geographic locations where those domiciled in the area or community hunt and fish: The Joint Board first examined (under factor 11) patterns of hunting and fishing by residents of the proposed nonsubsistence areas. The Board found that residents of both areas hunt and fish throughout the proposed areas as well as adjacent areas such as GMU's 13 and 16, including the additional portion of the Kenai Peninsula not contained in the area originally proposed. Within the Nonsubsistence Use Area, GMU 14 accounts for 37% of successful Anchorage moose hunters and 56% of successful MatSu moose hunters. GMU 15 accounts for 73% of Kenai moose harvests. As much as 75% of the moose hunting by residents is done within the proposed areas and more than 1 million angler days are dedicated annually to sport fishing within these areas, and in marine waters beyond the scope of the management proposal as well as in outlying freshwater systems such as the Western Susitna. The Board also reviewed the use patterns of Eklutna, Knik, and Ninilchik which are highway connected communities located within the proposed area, as well as uses by the Kenaitze and Chickaloon members. The Board determined that these persons and their characteristics of use, as well as the characteristics of the road located communities have been integrated into the surrounding areas and are no longer distinguishable from the uses of the populations of the nonsubsistence area as a whole.

The Board examined harvest levels and patterns of use of English Bay (Nanwalek), Port Graham, Seldovia, and Tyonek which lie outside the Nonsubsistence Use Area. Some use of hooligan, invertebrates and waterfowl occur within Nonsubsistence Use Area but they were found not to constitute a significant component of harvest of fish and game resources by these communities.

Boundary adjustments of proposed nonsubsistence area: The Board made minor adjustments to Nonsubsistence Use Area boundaries in the vicinity of Seldovia, Port Graham, and English Bay. A minor adjustment to the mainland boundary made the Nonsubsistence Use Area boundary consistent with existing management units used in data collection by the Game Division after it was determined this would not affect subsistence uses of game. The Board deleted the western portion of GMU 7 which conflicted with federal management of Kenai Fjords National Monument.

The Board closely examined a proposed boundary which would place a small subpopulation of the greater Nelchina caribou herd in GMU 14(B) within the Nonsubsistence Use Area. The Board determined an average harvest of 10 animals annually out of 3000 taken in the overall hunt would not significantly affect subsistence users hunting with Nelchina Caribou Tier II permits. The Joint Board discussed future management actions which could be considered for the Nelchina hunt. This determination made the Nonsubsistence Use Area boundary consistent with existing management units.

The Board expanded the original description of marine waters of the Nonsubsistence Use Area to more accurately reflect the areas in which major sport and commercial fisheries occur by the residents of the Nonsubsistence Use Area. An area in the vicinity of Tyonek was exempted from Nonsubsistence Use Area in order to provide for subsistence gillnet fisheries and other uses by Tyonek residents. Adjustments to Nonsubsistence Use Area marine boundaries occurred seaward of GMU 15(C) to allow residents of Seldovia, Port Graham and English Bay to utilize resources outside of Nonsubsistence Use Area.

Specific comments remaining factors:

1. The socio-economic structure: The Joint Board finds that the socio-economic structure of this area is consistent with the information provided by the ADF&G staff at No. 1 of the Kenai Peninsula and Anchorage-MatSu Nonsubsistence Area reports. The area is highly urbanized and acquires goods and services through the commercial sector. The population of Anchorage is 260,000, half of those domiciled in the state. The Board examined characteristics of communities within the Nonsubsistence Use Area boundary, focusing specifically on those brought to their attention by public oral and written comments. Several Board members spoke to the growth of Ninilchik, a community where 11 years ago, the Subsistence Division documented higher per capita consumption and more sharing than in the overall area. The growth is attributed to housing for oil field workers and the growing sportfish industry. Opportunities to obtain and dispose of large parcels of private land as well as growth of the marine saltwater fishery have contributed to the growth of this community. Lifelong residents

have experienced the steady change from an area where most persons domiciled partook in subsistence use of fish and game to an economy in which subsistence uses are no longer a principle characteristic of economy, culture and way of life.

Characteristics of Eklutna, Knik and Kenaitze and Chickaloon groups were examined within the scope of experience of the Board, as informed by their own knowledge of the areas and people and as informed by testimony and written comment. Subsistence Division had no current data on these groups. Without further information, the Board could only conclude that the socio-economic characteristics of Ninilchik, Knik, Eklutna and the Kenaitze and Chickaloon groups were indistinguishable from those of the region as a whole.

2. The stability of the economy: The Board found that the information presented at No. 2 of the ADF&G report supports the finding that the economy is stable and expanding. The mean annual population growth rate was 7.6% for the Anchorage-MatSu Nonsubsistence Area and 7.5% for the Kenai Peninsula Nonsubsistence Area during the 1980s. Both areas are urbanized. During the decade of the 1980s the number of wage-paying jobs increased from 80,050 to 113,100 in the Anchorage-MatSu portion of the Nonsubsistence Area and from 5,637 to 9,270 in the Kenai Peninsula portion of the Nonsubsistence Area.

The Anchorage-Kenai-MatSu area has grown by 790 percent since 1950. The Anchorage-Kenai-MatSu area demonstrates characteristics of a capital-industrial society.

3. Extent and kinds of employment for wages, including full time, part time, temporary, and seasonal employment: In the Anchorage-MatSu portion of the Nonsubsistence Area, employment for 1991 includes government jobs (22-35%), service industries (20-23%), trade (21-26%), and transportation (10%). The military bases of Elmendorf Air Force Base and Fort Richardson also contribute to employment in the area. Seasonal employment includes jobs in tourism, commercial fishing, and mining.

In the Kenai Peninsula portion of the Nonsubsistence Area, employment for 1991 includes government jobs (21-33%), service industries (13-22%), trade (17-23%), and manufacturing (primarily fish processing) (14-18%). Commercial fishing and fish processing are major industries on the Kenai Peninsula as are recreational fishing and tourism.

Wage employment dominates the proposed combined area. Services, manufacturing, tourism, recreational hunting and fishing and commercial fishing make up the majority of employment. In 1991

there were 2,857 limited entry commercial fishing permits in the combined area and ex-vessel value of the commercial fishing harvest totaled \$89.2 million.

The combined factors outlined above and the information presented in the staff reports indicate the area is characteristic of a capital-industrial economy in which reliance on the harvest of fish and game for subsistence uses is not a principle characteristic of the economy.

4. The amount and distribution of cash income among those domiciled in the area or community: Per capita income in the area approximates the state average with a wide range from \$16,000 to \$93,000. Although income distribution is not even among the residents, it is typical of an urban, cash-based economy as opposed to a subsistence economy.

5. The cost and availability of goods and services to those domiciled in the area or community: The area has a well developed system of commerce offering a variety of goods and services. Costs in the Kenai Peninsula and MatSu portions of the Nonsubsistence Area are slightly higher than in Anchorage. Households use recreational, commercial and personal use fishing regulations and general hunting regulations for their harvesting activities.

6. The variety of fish and game species used by those domiciled in the area or community: Species used by residents of the Nonsubsistence Use Area include moose, caribou, bear, mountain goat, sheep, all species of Pacific salmon, grayling, pike, burbot, whitefish, dolly varden, trout, halibut, lingcod, rockfish, clams, cockles, and crab.

7. The seasonal cycle of economic activity: The area shows seasonal fluctuations in the tourism, recreation and commercial fishing industries. The primary types of employment in the area (government, trade, services, and transportation) are not normally affected by seasonal cycles.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities or using wild fish and game: In the area during 1989 to 1991, 40-71% of the residents fished with rod and reel, and during 1991 approximately 7,000 area residents obtained permits for non-commercial net fishing. About 40,700 residents of the area obtained hunting licenses during 1991. The Board found that households within the area do not predominantly harvest wild fish or game as a community wide method of food production.

9. The harvest levels of fish and game by those domiciled in the area or community: In the area, wild food harvests are low; 19 pounds per person for the Anchorage-MatSu area and 40 pounds per person for the Kenai Peninsula portion of the area. Low food production rates by households are characteristics of an industrial-capital system, where most foods are produced and distributed through commercial businesses and are purchased by households with wage earnings.

10. The cultural, social, and economic values associated with the taking and use of fish and game: Diverse cultural values are represented in the Nonsubsistence Area. There are instances of hunting and fishing values that derive from Alaska Native cultural traditions. However, the Board found the predominant values associated with the taking and use of fish and game to be recreational. Fishing and hunting are periodic outdoor activities that are valued as breaks from the economic work routine and as high quality outdoor experiences which supplement the households diet.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community: Although there was testimony reflecting sharing among the area population, there have been no recent studies which determine the extent of such sharing. The Board found that distribution of fish and game through non-commercial networks is not a significant mechanism for supplying food in the area.

Conclusion: Based on these findings the Joint Board concludes that the Anchorage/MatSu/Kenai Peninsula area is a Nonsubsistence Area under AS 16.05.258(c).

B. Area Boundaries

Based on the information provided to the Joint Board and the Board's deliberations, the Joint Board concludes that the boundaries of the Anchorage/MatSu/Kenai Nonsubsistence Area is as follows:

The Anchorage-MatSu-Kenai Nonsubsistence Area is comprised of the following: Units 7 as defined by 5 AAC 92.450(7) (except the Kenai Fjords National Park lands), 14 as defined by 5 AAC 92.450(14), 15 as defined by 5 AAC 92.450(15) (except that portion south and west of a line beginning at the mouth of Rocky River up the Rocky and Windy Rivers across the Windy River/ Jackolof Creek divide and down Jackolof Creek to its mouth and the islands between the eastern most point of Jackolof Bay and the eastern most point of Rocky Bay, including the Chugach Islands), 16(A) as defined by 5 AAC

92.450(16)(A); all Cook Inlet Area Statewaters as defined by 5 AAC 21.100 (except those waters north of Point Bede which are west of a line from the eastern most point of Jakolof Bay north to the western most point of Hesketh Island including Jackolof Bay and south of a line west from Hesketh Island; the waters south of Point Bede which are west of the eastern most point of Rocky Bay; and those waters described in 5 AAC 01.555(b), known as the Tyonek subdistrict).

The Joint Board agrees with and incorporates by reference the ADF&G recommendations contained in the worksheets used during this deliberation. It became evident to the Board as the discussion progressed that the area original area proposed needed to be expanded to incorporate an area used extensively by Anchorage, Matanuska Valley and Kenai Peninsula residents. Based on examination of the 12 factors the Joint Board concludes that the Anchorage/Matsu/Kenai area is a Nonsubsistence Area.

Michael R. Martin

Michael Martin, Chair
Joint Boards of Fisheries and Game

Adopted: November 7, 1992
Anchorage, Alaska

**APPENDIX D. JOINT BOARD FINDING IN 1992: FAIRBANKS
NONSUBSISTENCE AREA**

FAIRBANKS NONSUBSISTENCE AREA
FINDINGS
#92-24-JB

A. Introduction to Written Findings: During the publicly convened board meeting on November 1 - 7, 1992, the Joint Boards of Fisheries and Game (Joint Board) heard and considered public testimony, ADF&G staff reports and advisory committee reports, and deliberated on the information in relation to the totality of the twelve socio-economic characteristics in the 1992 subsistence law at AS 16.05.258(c). Based on the information and deliberations the Joint Board found that in the Fairbanks-Denali area described in Section B below, subsistence is not a principal characteristic of the economy, culture, and way of life. The Joint Board incorporates by reference the information provided by ADF&G in the worksheets included in the Joint Board Workbook. Additionally the board found the following:

Geographic locations where those domiciled in the area or community hunt and fish: The Joint Board examined (under factor 11) patterns of hunting and fishing by residents of the proposed nonsubsistence area. The Board finds that area residents hunt and fish throughout the proposed area as well as GMU 13 and other areas of the state. The Board considered including the Minto Flats State Game Refuge and later added the Minto Flats Management Area and Uniform Coding Unit 0100 south of the Tanana River. The additional area was used by residents of the proposed nonsubsistence area for fishing and hunting for moose, waterfowl, and other wildlife uses. The Minto Refuge and Management Area was removed from consideration as a nonsubsistence area based on information submitted by the department from a 1983-84 household survey of Minto residents and wildlife use and consumptive patterns. Specifically there is not a well developed cash economy. Only 25 percent of the population is employed, primarily in seasonal jobs. 75 percent of the residents were below the poverty level with only a third having motor vehicles. There is a small store but costs are 1.8 times those of Fairbanks. There is a high use of fish and game resources by Minto residents which is consistent with a subsistence lifestyle dependent on the natural resources.

In discussing the area of 20(C) west of the Nenana River, the Board concluded that the land area in the proposed nonsubsistence area was predominantly Denali National Park over which the State has no authority. Hunting is by subsistence permit only and restricted to rural residents as defined by Federal regulations. This area was removed from the proposed nonsubsistence area. Additionally, the board reviewed fish and game harvest and use patterns of the residents along the Parks Highway in GMU 20(A) between Nenana and Wood Rivers to see if that area should be removed from the nonsubsistence area. In applying the 12 factors, the Board found a mixed social and economic lifestyle that was characterized by

average incomes higher than Fairbanks and wildlife use patterns that fluctuated from high to low use. The proximity to Fairbanks, employment at the Usibelli Mine, Clear Air Force Base, Golden Valley Power Plant and Denali National Park and the accompanying service sectors brought many jobs, some seasonal in nature. The use patterns of highway residents showed use of the area, i.e., an average annual moose harvest by Healy residents of 8.3, Denali Park 2.3, Anderson 6.5 and Fairbanks of 155.8; an average annual sheep harvest by Healy residents of 5.7, Denali Park 1.3, Anderson 3, and Fairbanks 45. Based on the totality of the factors, the Board left the area in the proposed nonsubsistence area as it determined it was an area used by a high percentage of the residents of the nonsubsistence area.

1. The socio-economic structure: The socio-economic structure of this area is consistent with the information provided by the ADF&G in no. 1 of the nonsubsistence area report for proposal no. 1. The Board recognizes that most segments of the population within the area support an industrial-capitalism economy. However, there is a mixture of lifestyles and a high percent of the residents obtain food by hunting and fishing. Evidence supplied by Board members from the area support the department's information indicating that Fairbanks typifies the type of cash economy envisioned by the legislature as a nonsubsistence area. Based on the information presented and the Board's discussion, the Board found that subsistence was not a principal characteristic of the socio-economic structure.

2. The stability of the economy: The Board found that the information presented in Section 2 of the ADF&G staff report indicates that the Fairbanks area's economy is heavily dependent on government, military, and services jobs. Unemployment is low, 10.7 percent, compared to remote isolated Alaskan communities where unemployment is above 30 percent and the state average of 9.7%. Overall wages are higher than most areas of the state, unemployment is low, and the numbers of jobs are expanding. The board concludes the area has a relatively stable industrial-capitalism economy and subsistence is not a principal characteristic of the economy.

3. Extent and kinds of employment for wages, including full time, part time, temporary, and seasonal employment: Department of Labor statistics for 1991 have 27,800 jobs in Fairbanks of which 7,650 are in military, 9,950 in government, 6,250 in services, 6,400 in trade, and 600 in manufacturing. This indicates the heavy dependence in Fairbanks on government and military employment. The Board also explored the Department of Labor statistics for Healy and McKinley Village communities within the proposed area. Based on percent of households having employed members (1987), Healy has 53 percent employed in mining, 20 percent in transportation/utilities/communications, 19 percent in services,

and 29 percent in government (local, state, & federal). McKinley Village's percent of households having employed members for 1987 were 10 percent in mining, 18 percent for transportation/utilities/communications, 13 percent services, and 74 percent in government (local, state, & federal). Reviewing Fairbanks and McKinley Village labor statistics, reveals a capital-industrial economy. Reliance on subsistence is not a principal characteristic of the area.

4. The amount and distribution of cash income among those domiciled in the area or community: In 1989 the average per capita income for the Fairbanks North Star Borough was \$15,914, slightly below Alaska's average of \$17,610. The average income in 1989 for McKinley Park Village was \$20,917, in Healy \$18,160. Board members summarized the economic data for Delta Junction and Fort Greely based on personal knowledge and information provided the Board by ADF&G. The average household incomes discussed in Delta Junction and Fort Greely were \$35 - 40,000 for Delta Junction and \$20 - 30,000 for Fort Greely. 11.5 percent of the households earning less than the federal poverty standards (1989) were in Fairbanks. The Board recognized that distribution of cash income varies among the residents within the proposed nonsubsistence area but is consistent with an urban environment in Alaska.

5. The cost and availability of goods and services to those domiciled in the area or community: The Fairbanks area has a large range of goods and services available. Fairbanks' cost of food index at 7 percent higher than Anchorage is relatively low for Alaskan communities. The cost of food index for Delta Junction is 33 percent higher than Anchorage and for the Parks Highway area is 56 - 89 percent higher. The communities located along the Parks Highway do most of their shopping in Fairbanks due to road access.

6. The variety of fish and game species used by those domiciled in the area or community: Residents of the proposed area used a wide variety of fish and game resources locally available as well as resources distant from their residence. Primary big game species used in order of importance are moose, caribou, sheep, black and brown bears. Major fish species include salmon, grayling, pike, burbot and white fish. Halibut are also taken in other areas of the state. The Board of Game previously found a positive customary and traditional finding for moose in Game Management Units (GMU) 20A, 20B, 20C & 20D. There were no findings for GMU 25C. There are also no findings for black and brown bears. There are negative findings for sheep in GMUs 20D and 25C, and negative findings for bison in GMU 20D. There were no positive C&Ts for caribou in the area. The Board of Fisheries previously determined positive C&Ts for salmon and other finfish (sheefish, white fish, lamprey, burbot, sucker, grayling, pike,

char, and blackfish). Subsistence fishing permits for residents of the nonsubsistence area were used mainly in areas along the Tanana River, outside the proposed area.

7. The seasonal cycle of economic activity: The Fairbanks area has seasonal fluctuations in economic activity related to tourism. The primary types of jobs in the Fairbanks area (government, military, services and trade) are not normally affected by seasonal changes. Residents along the Parks Highway have seasonal cycles of employment associated with Denali National Park tourism. Healy and Anderson residents are not affected as much by seasonal changes because of coal mine and electrical production employment. The Board finds overall economic activity of the proposed area to be representative of an economy where reliance on wage employment is a principal characteristic of the economy.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities or using wild fish and game: Based on a household survey in the Fairbanks North Star Borough, 50 - 59 percent hunted and 74 - 82 percent fished. In McKinley Park Village households, 70 percent fished and 45 percent hunted. The Board notes some individual households within the proposed area may be hunting and fishing for larger amounts for food production, but overall residents of the proposed area hunted and fished for nonsubsistence use.

9. The harvest levels of fish and game by those domiciled in the area or community: The Board considered harvest levels of fish and game species in communities within the proposed area by using department reports and verbal and written comments by the public and Board members. The Board noted the range of pounds per person, per year for communities in the proposed area with Fairbanks at 16 pounds, Healy at 132 pounds and McKinley Village at 242 pounds. The Board finds the overall proposed area the harvest levels are representative of a nonsubsistence area.

10. The cultural, social, and economic values associated with the taking and use of fish and game: The Board notes there are subsistence uses outside the proposed area and protected Minto and Nenana subsistence uses when it deleted the proposed addition of the Minto Flats area. The Board determined the area's cultural, social, and economic values represent a nonsubsistence value system.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community: Sharing and exchange of wild fish and game occurs within and between families in and adjacent to the proposed area. The extent of sharing for the proposed area has not been quantified in all communities.

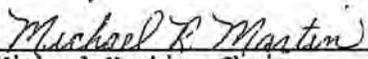
Conclusion: Based on all the information before the Joint Board, deliberations and the finding above, the Board concludes that dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life of the Fairbanks/Denali areas as defined below. In making this determination, the Board noted that Fairbanks is easily defined as a nonsubsistence area when applying the 12 factors. There is a wide variety of uses and a mixture of lifestyles of which subsistence was not a principal characteristic of the area.

B. Area Boundaries

Based on the information provided to the Joint Board and the Board's deliberations, the Joint Board concludes that the boundaries of the Fairbanks Nonsubsistence area are as follows:

The Fairbanks Nonsubsistence Area is comprised of the following: within Unit 20(A) as defined by 5 AAC 92.450(20)(A) east of the Wood River drainage and south of the Rex Trail but including the upper Wood River drainage south of its confluence with Chicken Creek, within Unit 20(B) as defined by 5 AAC 92.450(20)(B) the North Star Borough and that portion of the Washington Creek drainage east of the Elliot Highway, within Unit 20(D) as defined by 5 AAC 92.450(20)(D) west of the Tanana River between its confluences with the Johnson and Delta Rivers, west of the west bank of the Johnson River, and north and west of the Volkmar drainage, including the Goodpaster River drainage, and within Unit 25(C) as defined by 5 AAC 92.450(25)(C) the Preacher and Beaver Creek drainages.

The Joint Board agrees with and incorporates by reference the ADF&G recommendations contained in the worksheets used during this deliberation. Based on examination of the 12 factors the Joint Board concludes that the reduced Fairbanks-Denali area is a nonsubsistence area.



Michael Martin, Chair
Joint Boards of Fisheries and Game

Adopted: November 7, 1992
Anchorage, Alaska

**APPENDIX E. JOINT BOARD FINDING IN 1993: VALDEZ
NONSUBSISTENCE AREA**

**Valdez Nonsubsistence Area
Findings #93-27-JB**

A. Introduction to Written Findings: During the publicly convened board meeting on March 6 - 8, 1993, the Joint Boards of Fisheries and Game (Joint Board) heard and considered public testimony, ADF&G staff reports and advisory committee reports, and deliberated on the information in relation to the totality of the twelve socio-economic characteristics in the 1992 subsistence law at AS 16.05.258(c). Based on the information and deliberations the Joint Board found that in the Valdez area described in Section B below, subsistence is not a principal characteristic of the economy, culture, and way of life. The Joint Board incorporates by reference the information provided by ADF&G in the worksheets included in the Joint Board Workbook. Additionally the Board found the following:

Geographic locations where those domiciled in the area or community hunt and fish: The Joint Board examined (under factor 11) patterns of hunting and fishing by residents of the proposed nonsubsistence area. The Board finds that area residents hunt and fish throughout the proposed area as well as other areas of the state.

1. The socio-economic structure: The socio-economic structure of this area is consistent with the information provided by the ADF&G in no. 1 of the nonsubsistence area report. The Board recognizes that most segments of the population within the area participated in an industrial-capitalism economy; example: oil industry, commercial fishing & commercial guiding. However, there is a mixture of lifestyles and a percent of the residents obtain food by sport hunting and fishing. Based on the information presented and the Board's discussion, the Board found that subsistence was not a principal characteristic of the socio-economic structure.

2. The stability of the economy: The socio-economic structure of this area is consistent with the information provided in Section 2 of the nonsubsistence area report. The Valdez area economy is dependent on wage employment in the following job categories: transportation (31 percent), government (27 percent), services (14 percent), and manufacturing (13 percent). Unemployment is low for the Valdez area compared to remote isolated Alaskan communities where unemployment is above 30 percent and the state average of 9.7 percent. Overall wages are higher than most areas of the state and the numbers of jobs are stable. The Board concludes that the harvest of fish and game for subsistence uses does not contribute significantly to the stability of the economy.

3. Extent and kinds of employment for wages, including full time, part time, temporary, and seasonal employment: In the proposed area most wage-paying jobs were in transportation (31 percent) and government (27 percent). This reflects the importance of shipping oil in the local economy. In 1991, there were 48 limited entry commercial fishing permits issued to Valdez residents. The Board after reviewing the data on the extent and kinds of employment found that Valdez's unemployment rate typifies a stable urban environment. The Board found that subsistence is not a principal characteristic of the area.

4. The amount and distribution of cash income among those domiciled in the area or community: In 1989, per capita income of \$26,968 in Valdez was above the state's average of \$17,610. The Board recognized that distribution of cash income varies among

residents within the proposed area but is consistent with an urban environment in Alaska and is typical of a nonsubsistence area.

5. The cost and availability of goods and services to those domiciled in the area or community: Valdez has a well developed system of commerce providing needed goods and services. Valdez's cost of food index is 23 percent higher than Anchorage but is below the cost of food index for Dillingham (45 percent higher than Valdez). The availability of goods and services and the relative low harvest of wild foods supports a finding that Valdez residents are typical of residents of a nonsubsistence area.

6. The variety of fish and game species used by those domiciled in the area or community: The residents of Valdez make use of the wide variety of fish and wildlife in their area. Game species used include black bear, brown bear, caribou, goat, moose, sheep, and deer. Fish species used include salmon (all five species), halibut, varieties of trout, other freshwater fish, and shellfish. The Board found that Valdez residents harvest a variety of resources within the proposed area and a high percent harvested outside the proposed area. The Board found that the proposed nonsubsistence area supported only a limited amount of hunting effort, but did support a large majority of the recreational sport fishing effort.

7. The seasonal cycle of economic activity: The majority of Valdez's employment is year-round with summer seasonal increase due to tourism and commercial fishing. The Board finds the overall economic activity of the proposed area to be representative of an economy where reliance on wage employment is a principal characteristic of the economy.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities or using wild fish and game: In Valdez, 44-68 percent of the population fished with rod and reel during 1989-91, based on angler surveys. Valdez's percentages for rod and reel compare closely with Anchorage percentages, representative of a nonsubsistence area. In 1991, 788 hunting/fishing combination licenses were sold to Valdez residents. Based on the data provided, the Board found that hunting and fishing is recreational in nature rather than for food production. The Board finds overall residents of the proposed area hunted and fished for recreational purposes.

9. The harvest levels of fish and game by those domiciled in the area or community: The wild resource harvests pounds per person for 1991 was 85 pounds (excluding wild plants). The 1991 harvest levels are closely aligned with the Anchorage/Matsu/Kenai Nonsubsistence area which has 80 pounds per person for wild resource harvests, and much less than subsistence use areas (example: Chenega Bay at 188 pounds). The Board found that this level of harvest typifies a nonsubsistence area.

10. The cultural, social, and economic values associated with the taking and use of fish and game: The predominant values associated with fish and wildlife harvests are recreational. Fishing and hunting are periodic outdoor activities, valued as breaks from the wage-employment. For residents directly employed in commercial fishing and outdoor recreational industries values are commercial in nature with a percent harvested for

recreational values. Environmental awareness and nonconsumptive uses (wildlife viewing) are other values Valdez residents associate with fish and game resources. The Board determined the area's cultural, social, and economic values represent a nonsubsistence value system.

11. The geographic locations where hunting and fishing takes place: During 1986-91 Valdez hunted primarily in GMUs 13, 6, 20, 11, and 12. The Board found that 75 percent of the sport fishing effort by residents domiciled in Valdez takes place within the proposed nonsubsistence area. The Board had difficulty with the proposed boundaries based on straight line surveys and not topographical features. The Board was unable to describe the proposed nonsubsistence area using other boundaries based on information provided. The game harvests by residents of Valdez as well as residents of Anchorage, Tatitlek, and Chenega Bay overlap within Prince William Sound which made separation of use areas into an expanded nonsubsistence area difficult. No reasonable solution was evident in attempts to adjust the boundaries to better reflect area uses.

12. The extent of sharing and exchange of fish and game: The 1991 average number of fish and game resources shared per household was four which closely matches the Anchorage/Matsu/Kenai Nonsubsistence Area. The Board felt the amount of wild foods shared on a per capita basis by Valdez residents is indicative of a nonsubsistence area.

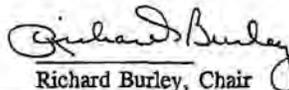
Conclusion: Based upon an examination of the relative importance of subsistence in the context of the totality of the 12 socio-economic characteristics established in AS 16.05258(c), the Joint Board concludes that subsistence is not a principal characteristic of the economy, culture, and way of life of the Valdez area as defined below.

B. Area Boundaries:

Based on the information provided to the Joint Board and the Board's deliberations, the Joint Board concludes that the boundaries of the Valdez Nonsubsistence area are as follows:

The Valdez Nonsubsistence Area is comprised of the following: within Unit 6(D), as defined by 5 AAC 92.450(6)(D), and all waters of Alaska in the Prince William Sound Area as defined by 5 AAC 24.100, within the March 1993 Valdez City limits;

The Joint Board agrees with and incorporates by reference the ADF&G recommendations contained in the worksheets used during this deliberation. Based on examination of the 12 factors the Joint Board concludes that the Valdez area is indeed a nonsubsistence area.



Richard Burley, Chair
Joint Boards of Fisheries and Game

Adopted: March 7, 1993
Juneau, Alaska

**APPENDIX F. JOINT BOARD FINDING IN 1992: JUNEAU
NONSUBSISTENCE AREA**

**JUNEAU NONSUBSISTENCE AREA
FINDINGS
#92-22-JB**

A. Introduction to Written Findings: During the publicly convened board meeting on November 1 - 7, 1992, the Joint Boards of Fisheries and Game (Joint Board) heard and considered public testimony, ADF&G staff reports and advisory committee reports, and deliberated on the information in relation to the totality of the twelve socio-economic characteristics in the 1992 subsistence law at AS 16.05.258(c). Based on the information and deliberations the Joint Board found that in the Juneau area described in Section B below, subsistence is not a principal characteristic of the economy, culture and way of life. The Joint Board incorporates by reference the information provided by the ADF&G in the worksheets included in the Joint Board Workbook. Additionally the board found the following:

Geographic locations where those domiciled in the area or community hunt and fish: The Joint Board first examined (under criteria 11) patterns of hunting and fishing by residents of the proposed nonsubsistence area. The Board finds that residents of the area hunt and fish throughout the proposed area. Additionally, hunting takes place on the Mansfield Peninsula, Young Bay, Oliver Inlet, the drainages of Seymour Canal and the Glass Peninsula as well as various other areas in Southeast Alaska. Fishing occurs primarily in Lynn Canal south of Eldred Rock, Berners Bay, northern Chatham Strait, Stephens Passage north of Tracy Arm, contiguous bays within this boundary, and other waters of Southeast Alaska. The Board reviewed statistics reflecting where the residents of nearby communities of Tenakee, Kake, Haines, Klukwan, Angoon and Hoonah hunted and fished. These communities hunt and fish predominantly on lands and in waters adjacent to their own communities, but do exhibit a pattern of dispersed effort which is typical of the region as a whole. Some of their hunting and fishing does take place in the nonsubsistence area, but it is not a significant portion of their harvest. The board determined it was appropriate to expand the proposed nonsubsistence area to include those areas used often and almost exclusively by Juneau area residents. The final nonsubsistence area incorporates approximately 90-95% of the recreational fishing area and 47% of the deer harvest for those domiciled in the area.

1. The socio-economic structure: The socio-economic structure of this area is consistent with the information provided by the ADF&G at no. 1 of the nonsubsistence area report. The information presented at no. 1 does include the expanded boundaries. The importance of fishing for recreation and as an industry was recognized as were other industries such as commercial fishing, tourism and government. Additionally Juneau is a transportation hub for northern Southeast and is the state's

capital. Evidence supplied by board members from the area support the department's information indicating that Juneau typifies the type of economy envisioned by the legislature as a nonsubsistence area. Based on the information presented and the Board's discussion the Board found that subsistence was not a principal characteristic of the socio-economic structure.

2. The stability of the economy: The Board found that the information presented at Section No. 2 of the ADF&G staff report supports the finding that this economy is stable and expanding. The Juneau area economy is heavily dependent on government and the service sector needed to support it. Approximately 11,000 of the 14,000 jobs in Juneau can be traced to government, trade and the service sector. Unemployment is low compared to statewide averages. For example, unemployment in Juneau is 7.5% while unemployment in Koyukuk is 30.9% and in Fairbanks 10.7%. The board concludes that the harvest of fish and game for subsistence uses does not contribute significantly to the stability of the economy.

3. Extent and kinds of employment for wages, including full time, part time, temporary, and seasonal employment: Department of Labor statistics indicate that of the 14,000 jobs in Juneau, 2416 are in trade, 2279 in services and over 7000 in the government sector accounting for 11,000 of the 14,000 jobs. This indicates the heavy dependence in the Juneau area on the government and tourism sectors of the economy. The number of jobs compared to the population and the fact that incomes in Juneau are higher than statewide averages are indicative of a strong employment for wages. The combined factors outlined above and the information presented are characteristic of a capital-industrial economy in which reliance on the harvest of fish and game for subsistence uses is not a principal characteristic of the economy.

4. The Joint Board relies on the information presented at no. 4 of the ADF&G staff report and finds that while income is not distributed evenly over the various racial and ethnic groups in Juneau, that unemployment is low and that Juneau is a wage economy as opposed to a subsistence economy.

5. The cost and availability of goods and services to those domiciled in the area or community: Chart #11 indicates that Juneau enjoys a wide availability of goods and services with some of the lowest costs in the state. The information presented and board discussion, as well as chart #18 (showing a relatively low harvest of wild foods) supports a finding that Juneau area residents rely on commercial markets rather than relying on harvest of fish and game for subsistence uses.

6. The variety of fish and game species used by those domiciled in the area or community: Information was provided that Juneau area residents use a variety of the resources available locally and that they travel some distances in the state to harvest other resources. Important resources include salmon, halibut, shellfish, deer, bear (brown and black), goat and moose.

7. The seasonal cycle of economic activity: Information at no. 7 of the ADF&G staff report and Board discussion confirm that the area's seasonal employment is principally tied to tourism and the legislative session rather than to gathering natural resources. This is indicative of a community that does not rely on wildlife resources, but rather on wage employment associated with other factors.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities or using wild fish and game: The popularity of sport fishing was noted, with 44-50% of the population having sport fishing licenses. Only 12% have hunting licenses. This supports the concept that hunting and fishing is more recreational in nature rather than a community-wide method of food production.

9. The harvest levels of fish and game by those domiciled in the area or community: According to chart #18, and other information provided by ADF&G, per capita use of fish and wildlife resources by the area residents was one of the lowest in the state.

10. The cultural, social, and economic values associated with the taking and use of fish and game: Although predominantly Euro-American, Juneau is a socially and culturally diverse community with an active and strong Alaska Native culture and a South Pacific culture both of which are widely reflected by cultural activities and native art. It is not possible to distinguish separate use patterns among any certain groups in the community. The information indicated an integrated community with a pattern of uses in which recreational hunting and fishing predominate, although some subsistence uses take place.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community: Although there was testimony reflecting sharing among the local population, there have been no specific studies to determine the extent of such sharing.

Conclusion: Based on all the information before the Joint Board, deliberations and the finding above, the Board concludes that dependence upon subsistence is not a principal characteristic of the economy, culture and way of life of the Juneau area as defined below.

B. Area Boundaries

Based on the information provided to the Joint Board and the Board's deliberations, the Joint Board concludes that the boundaries of Juneau Nonsubsistence area are as follows:

The Juneau Nonsubsistence Area is comprised of the following: within Unit 1(C) as defined by 5 AAC 92.450(1)(C), all drainages on the mainland east of Lynn Canal and Stephens Passage from the latitude of Eldred Rock to Point Coke, including Lincoln, Shelter, and Douglas islands; within Unit 4 as defined by 5 AAC 92.450(4), that portion of Admiralty Island including the Glass Peninsula, all drainages into Seymour Canal north of and including Pleasant Bay, all drainages into Stephens Passage west of Point Arden, the Mansfield Peninsula, all drainages into Chatham Strait north of Point Marsden; all marine waters of Sections 11-A and 11-B as defined in 5 AAC 33.200(k)(1) and (k)(2), Section 12-B as defined in 5 AAC 33.200(1)(2), and that portion of Section 12-A as defined in 5 AAC 33.200(1)(1) north of the latitude of Point Marsden.

The Joint Board agrees with and incorporates by reference the ADF&G recommendations contained in the worksheets used during this deliberation. It became evident to the Board as the discussion progressed that the area original area proposed needed to be expanded to incorporate an area used almost exclusively by Juneau residents. This expansion added lands where Juneau residents hunt and fish and where there is little and relatively insignificant use by other residents. Based on examination of the 12 factors the Joint Board concludes that the expanded Juneau area was indeed a nonsubsistence area.

Michael R. Martin
Michael Martin, Chair
Joint Boards of Fisheries and Game

Adopted: November 7, 1992
Anchorage, Alaska

Footnote to Juneau Nonsubsistence Area Findings #92-22-JB

NOTE: The Juneau Nonsubsistence Area description was adopted by the Joint Board at the November 1992 meeting in Anchorage. During that meeting there was some board discussion about including the waters of Berners Bay and the marine waters of Lynn canal south of Berners Bay to the area. However, there was no formal board action to add those waters to the area description. After the meeting two board members approached staff for clarification and to insure Berners Bay was included in the area. Since it was not, the board directed the department to draft Proposal B for board action at the March 1993 Joint Board meeting. At that meeting the board voted to add the following language to end of the Juneau Nonsubsistence Area description:

, and that portion of District 15 as defined in 5 AAC 33.200(o) south of the latitude of the northern entrance to Berners Bay, and including Berners Bay.

(4) The commissioner will at the time of issue or rejection of each exception notify the respective board members.

Michael R. Martin
Michael Martin, Chair
Alaska Board of Fisheries

Dick Burley
Dick Burley, Chair
Alaska Board of Game

Adopted 10/28/92
Anchorage, Alaska

Vote: For 12 (2 absent - Maher and Johns)
Against 0

**APPENDIX G. JOINT BOARD FINDING IN 1992: KETCHIKAN
NONSUBSISTENCE AREA**

**KETCHIKAN NONSUBSISTENCE AREA
FINDINGS
#92-23-JB**

A. Introduction to Written Findings: During the publicly convened board meeting on November 1 - 7, 1992, the Joint Boards of Fisheries and Game (Joint Board) heard and considered public testimony, ADF&G staff reports and advisory committee reports, and deliberated on the information in relation to the totality of the twelve socio-economic characteristics in the 1992 subsistence law at AS 16.05.258(c). Based on the information and deliberations the Joint Board found that in the Ketchikan area, described in Section B below, subsistence is not a principal characteristic of the economy, culture and way of life. The Joint Board incorporates by reference the information provided by the ADF&G in the worksheets included in the Joint Board Workbook as well as additional information presented during deliberations. Additionally the board found the following:

Geographic locations where those domiciled in the area or community hunt and fish: The Joint Board first examined (under criteria 11) patterns of hunting and fishing by residents of the proposed nonsubsistence area. The Board found that residents of the area hunt and fish throughout the proposed area as well as on the Cleveland Peninsula, Yes Bay and Northern Prince of Wales Island and other areas of Southeast Alaska. The Boards considered inclusion of Game statistical area UCU 614 which includes Meyer's Chuck and is an area where Meyer's Chuck residents hunt. This area was excluded from the proposed nonsubsistence area. The Board applied the criteria and found that Meyer's Chuck was a small, separate rural community whose residents may participate in subsistence activities, and was not typical of the socio-economic structure found in Ketchikan. There is a personal use fishery in Yes Bay used by Ketchikan residents. The Board determined it was appropriate to expand the original area to include a portion of the Cleveland Peninsula, including Yes Bay, due to its nearly exclusive use by Ketchikan residents. The final nonsubsistence area incorporates approximately 90-95% of the recreational fishing area used by Ketchikan area fishermen and 43% of the Ketchikan area deer hunters.

1. The socio-economic structure: The Joint Board finds that the socio-economic structure of this area is consistent with the information provided by the ADF&G at no. 1 of the nonsubsistence area report. The information presented at no. 1 is pertinent to the expanded area. The growth pattern of Ketchikan from 1950 to 1990 was 110% (from 6446 to 13,828 residents). Ketchikan is a large community spread out along the water with a pulp mill, large commercial fishing fleet, port for a state ferry, retail stores, and a hospital. The complexion is that of an urban area with a dense population. Saxman is an enclave within the Ketchikan

community that demonstrates some reliance upon fish and game harvested for subsistence uses. The examination of information and criteria is particularly complicated when dealing with Saxman, a community within a community. The residents have a history of subsistence over a long period and there is concern whether the intent of the 1992 subsistence law is to include such communities in a nonsubsistence area. After examining all evidence available, the Joint Board determined that the industrial-capitalism culture dominates the area's social and economic structure even though there are other uses present in the community. For these reasons, the Board concluded that subsistence uses of fish and game is not a principal component of the overall social and economic structure of Ketchikan.

2. The stability of the economy: The Board found that the information presented at No. 2 of the ADF&G staff report supports the finding that the economy is stable, while showing growth over four decades. The Board found no evidence that subsistence uses contributed significantly to the stability of the economy.

3. Extent and kinds of employment for wages, including full time, part time, temporary, and seasonal employment: Department of Labor statistics indicate a wide diversity of employment including 188 jobs in the military, 1234 service jobs, 1367 trade jobs, 1657 manufacturing jobs, government jobs at 1802, and an additional 1200+ jobs in other sectors. Unemployment is among the state's lowest at 9.7%. The Joint Board concluded that the factors outlined above and those in the report, specifically Figures 4, 7 and 8, are characteristic of a capital-industrial economy in which reliance on subsistence harvest of fish and game is not a principal characteristic of the economy.

4. The amount and distribution of cash income among those domiciled in the area or community: Per capita income in Ketchikan Borough is \$18,789 which is above the state average, and only 6.6% of the population is below the federal poverty scale. Income distribution is not even among the residents, but is typical of an urban, cash-based economy in the state.

5. The cost and availability of goods and services to those domiciled in the area or community: With Ketchikan's close proximity to the lower 48 and its corresponding lower transportation costs, goods are readily available at lower costs than other areas of the state. Ketchikan is also a transportation hub which increases the availability of goods and services. The availability of goods and services and the relative low harvest of wild foods, supports a finding that Ketchikan residents are not reliant on subsistence.

6. The variety of fish and game species used by those domiciled in the area or community: Ketchikan residents use a wide variety of fish and game species including deer, goat, bear, salmon, halibut, rockfish and shellfish.

7. The seasonal cycle of economic activity: There is a high incidence of seasonal employment in Ketchikan, attributable to a large commercial fishing community, tourism and a pulp mill. There is considerable seasonal employment including commercial fishing and manufacturing. The Board determined that Ketchikan was an industrial-capital economy as opposed to a subsistence economy.

8. The percentage of those domiciled in the area or community participating in hunting and fishing activities or using wild fish and game: The Board found that residents participate in recreational hunting and fishing and commercial fishing. Those domiciled in Saxman showed a higher percentage of households harvesting fish and game than the Ketchikan Borough as a whole.

9. The harvest levels of fish and game by those domiciled in the area or community: Testimony from staff and board members and information from figure #19 show a per capita harvest of wild resources of 33 pounds for the Ketchikan area which was among the lowest in the state. Figure #20 shows Ketchikan to be similar to Juneau in terms of protein requirements satisfied by wild foods. The harvest level in Saxman is 89.3 pounds per capita.

10. The cultural, social, and economic values associated with the taking and use of fish and game: Diverse cultural values are represented in the Ketchikan area. The information presented and testimony from staff and board members shows a community that places a high value on recreational hunting and fishing and includes some subsistence uses.

12. The extent of sharing and exchange of fish and game by those domiciled in the area or community: Although there was testimony from area residents reflecting sharing among the local population, there have been no specific studies to determine the extent of such sharing.

13. In 1986 using the old rural/urban criteria the Boards designated Saxman a rural community. Customary and traditional findings were developed for deer, finfish and shellfish for those domiciled in Saxman. The Board found that Saxman residents would not lose the opportunity to harvest fish and game resources under general hunting regulations in the nonsubsistence use area. However, the subsistence preference, under which residents of

Saxman would hunt and fish at times of resource shortage while those domiciled in Ketchikan would be prohibited from harvest, would no longer be extended.

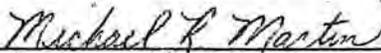
Conclusion: Based on the information before the Joint Board, deliberations and the findings above, the Board concludes that dependence upon subsistence is not a principal characteristic of the economy, culture and way of life of the Ketchikan area as defined below.

B. Area Boundaries

Based on the information provided to the Joint Board and the Board's deliberations, the Joint Board concludes the boundaries of Ketchikan Nonsubsistence Area are as follows:

The Ketchikan Nonsubsistence Area is comprised of the following: within Unit 1(A) as defined in 5 AAC 92.450(1)(A), all drainages of the Cleveland Peninsula between Niblack Point and Bluff Point; Revillagigedo, Gravina, Pennock, Smeaton, Bold, Betton, and Hassler islands; all marine waters of Sections 1-C as defined by 5 AAC 33.200(a)(3), 1-D as defined by 5 AAC 33.200(a)(4), 1-E as defined by 5 AAC 33.200(a)(5) and that portion of Section 1-F as defined by 5 AAC 33.200(a)(6) north of the latitude of the southernmost tip of Mary Island and within one mile of the mainland and the Gravina and Revillagigedo Island shorelines and that portion of District 2 as defined by 5 AAC 32.200(b) within one mile of the Cleveland Peninsula shoreline and east of the longitude of Niblack Point.

The Joint Board agrees with and incorporates by reference the ADF&G recommendations contained in the worksheets used during this deliberation as well as additional information presented by the public, staff and board members. The Board examined the area originally proposed, and considered an enlarged area before deciding on an area larger than the original. This area added lands where Ketchikan residents hunt and fish and where there is little or no use by other residents. Based on examination of the 12 factors, the Joint Board concludes that the Ketchikan area is a nonsubsistence area.


Michael Martin, Chair
Joint Boards of Fisheries and Game

Adopted: November 7, 1992
Anchorage, Alaska

**APPENDIX H. FEDERAL REGULATION FOR IDENTIFYING
RURAL/NONRURAL AREAS**

' _____ .15 Rural determination process.

(a) The Board shall determine if an area or community in Alaska is rural. In determining whether a specific area of Alaska is rural, the Board shall use the following guidelines:

(1) A community or area with a population of 2,500 or less shall be deemed to be rural unless such a community or area possesses significant characteristics of a nonrural nature, or is considered to be socially and economically a part of an urbanized area.

(2) Communities or areas with populations above 2,500 but not more than 7,000 will be determined to be rural or nonrural.

(3) A community with a population of more than 7,000 shall be presumed nonrural, unless such a community or area possesses significant characteristics of a rural nature.

(4) Population data from the most recent census conducted by the United States Bureau of Census as updated by the Alaska Department of Labor shall be utilized in this process.

(5) Community or area characteristics shall be considered in evaluating a community's rural or nonrural status. The characteristics may include, but are not limited to:

(i) Use of fish and wildlife;

(ii) Development and diversity of the economy;

(iii) Community infrastructure;

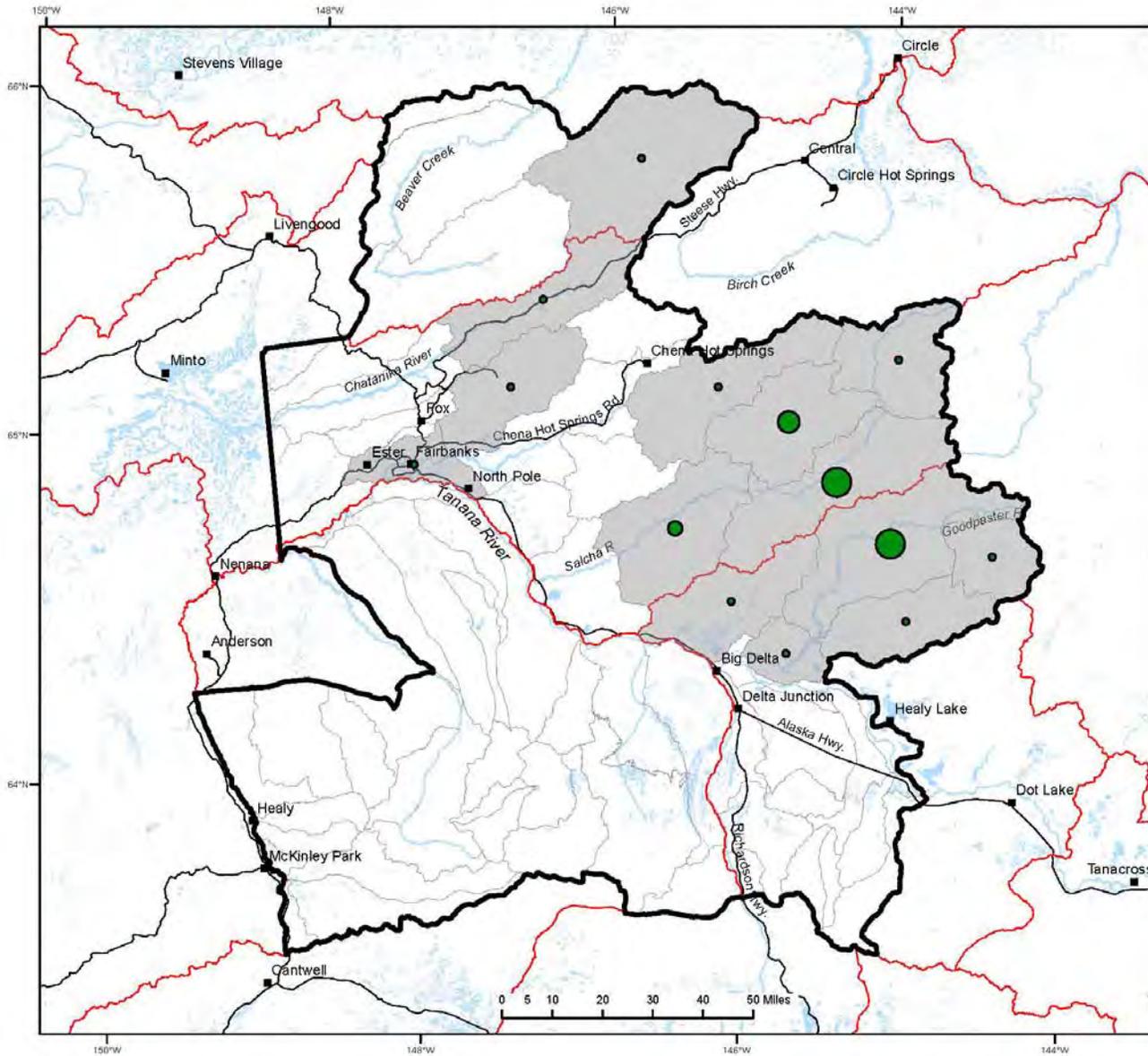
(iv) Transportation; and

(v) Educational institutions.

(6) Communities or areas which are economically, socially, and communally integrated shall be considered in the aggregate.

(b) The Board shall periodically review rural determinations. Rural determinations shall be reviewed on a ten year cycle, commencing with the publication of the year 2000 U.S. census. Rural determinations may be reviewed out-of-cycle in special circumstances. Once the Board makes a determination that a community has changed from rural to nonrural, a waiting period of five years shall be required before the nonrural determination becomes effective.

**APPENDIX I. MAPS OF FORTYMILE CARIBOU HARVESTS
BY UNIFORM CODING UNIT, 2006–2012**




Fortymile Caribou Herd 2006

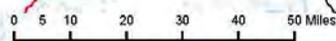
Caribou harvested

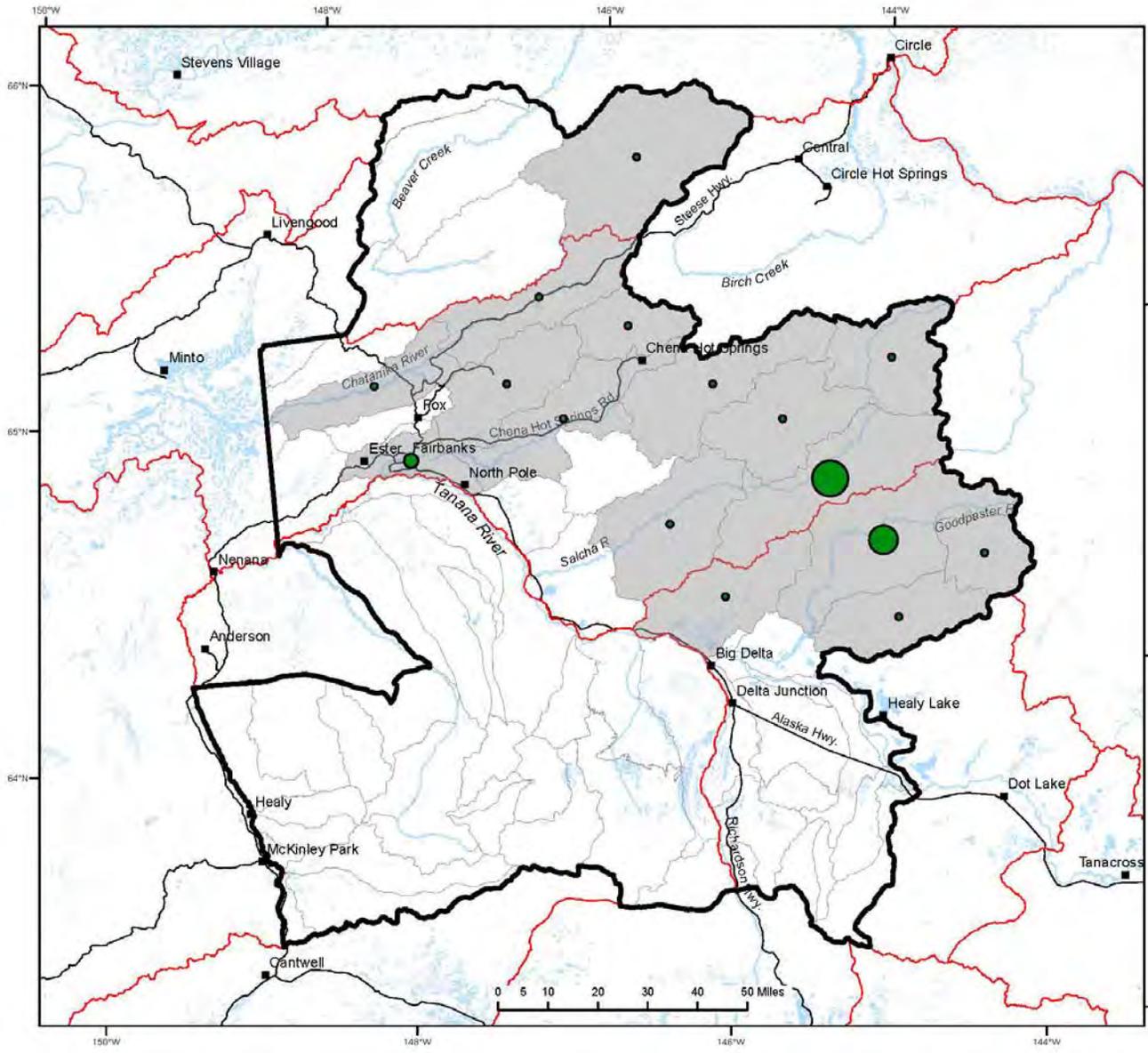
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

 Nonsubsistence Area
 GMUs
 UCUs



Prepared by:
 Alaska Department of Fish and Game
 (ADF&G) Division of Subsistence
 June 2013
 North American Datum 1987
 Albers Albers Projection







**Fortymile
Caribou Herd
2007**

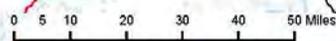
Caribou harvested

- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

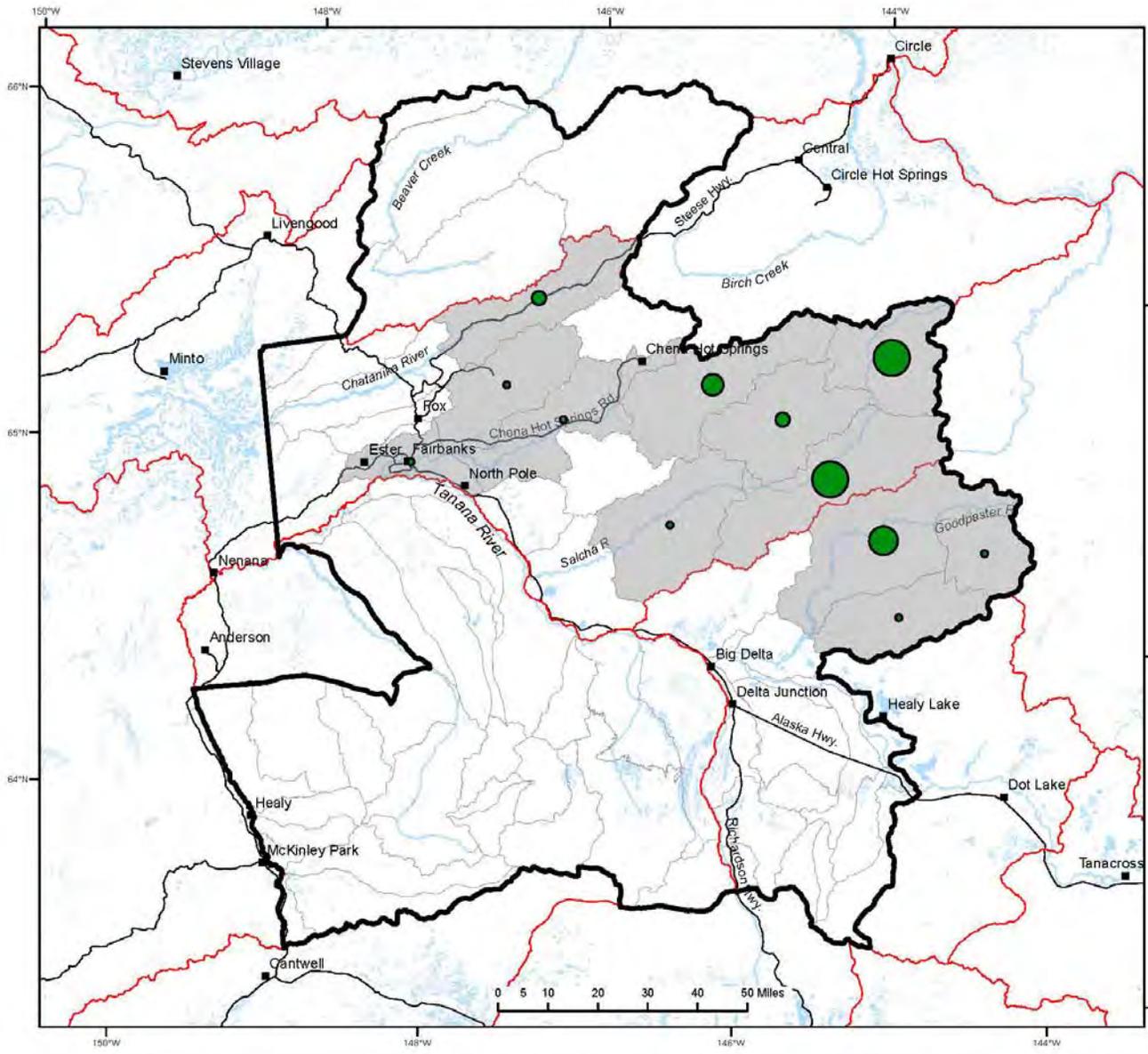
Nonsubsistence Area
 GMUs
 UCUs



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June 2013
North American Datum 1987
Alaska Albers Projection.



200




Fortymile Caribou Herd 2008

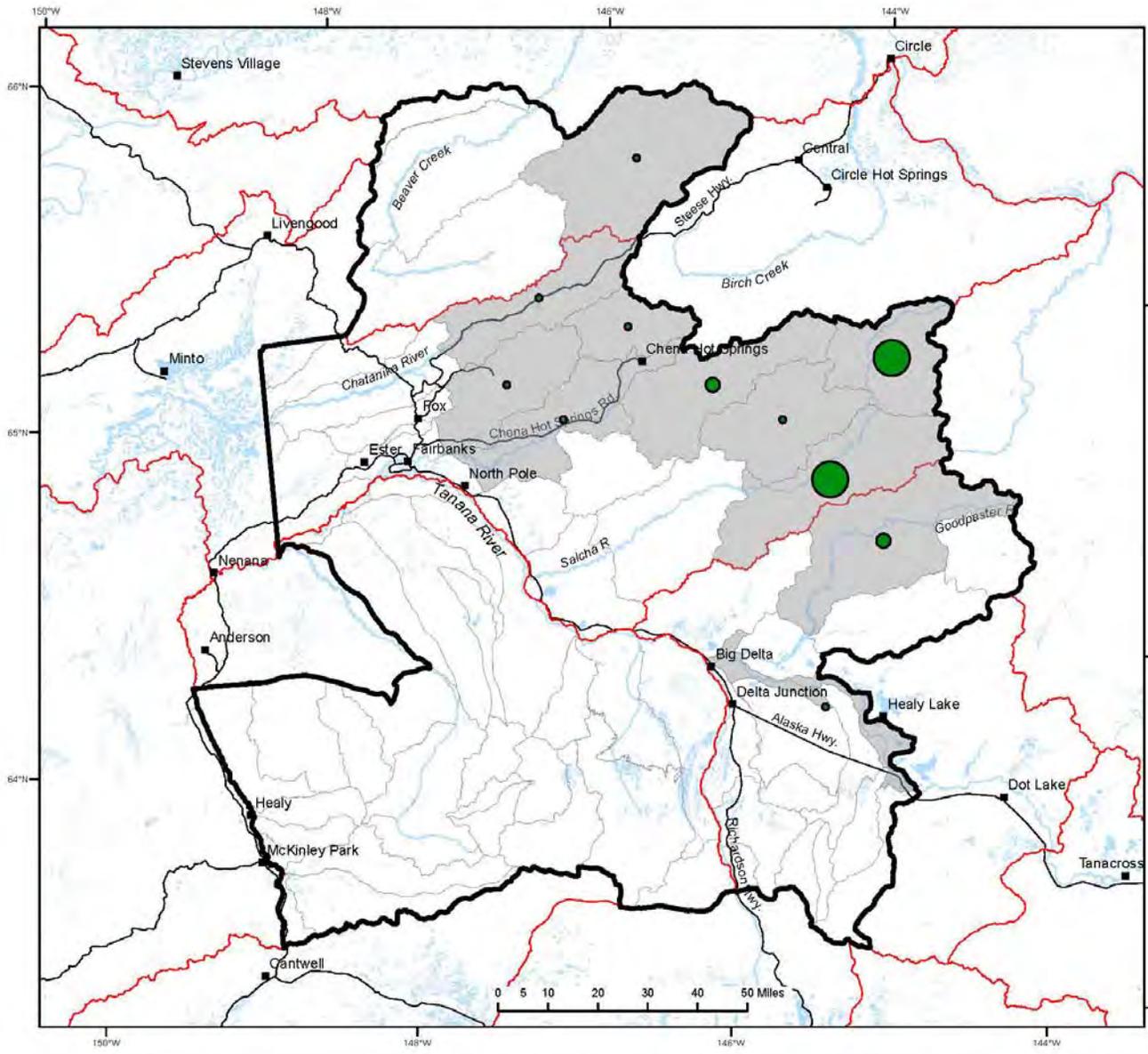
Caribou harvested

- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

 Nonsubsistence Area
 GMUs
 UCUs



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 Alaska Department of Fish and Game
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Fortymile Caribou Herd 2009

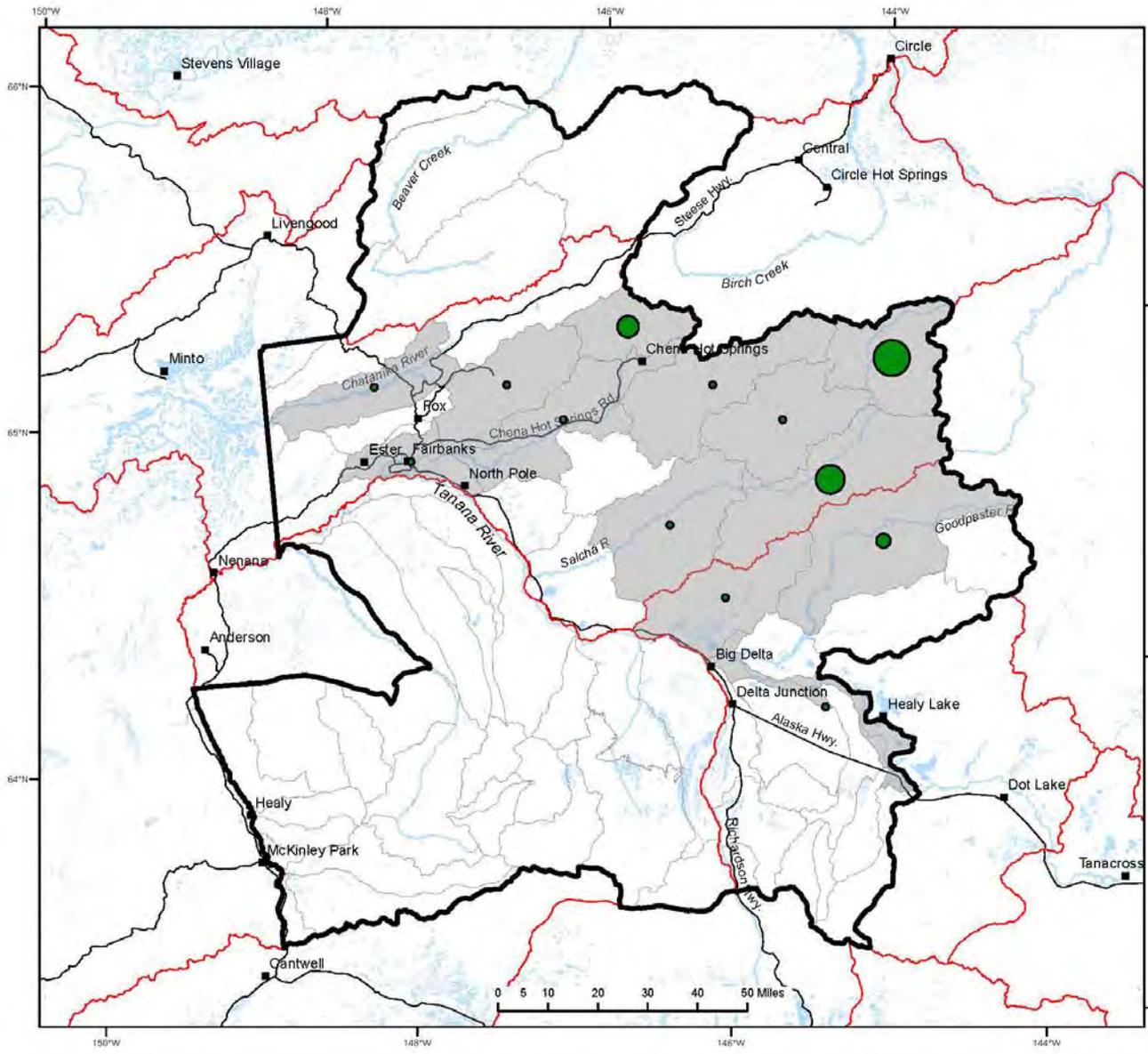
Caribou harvested

- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

 Nonsubsistence Area
 GMUs
 UCUs



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 Alaska Department of Fish and Game
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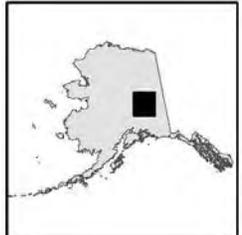



Fortymile Caribou Herd 2010

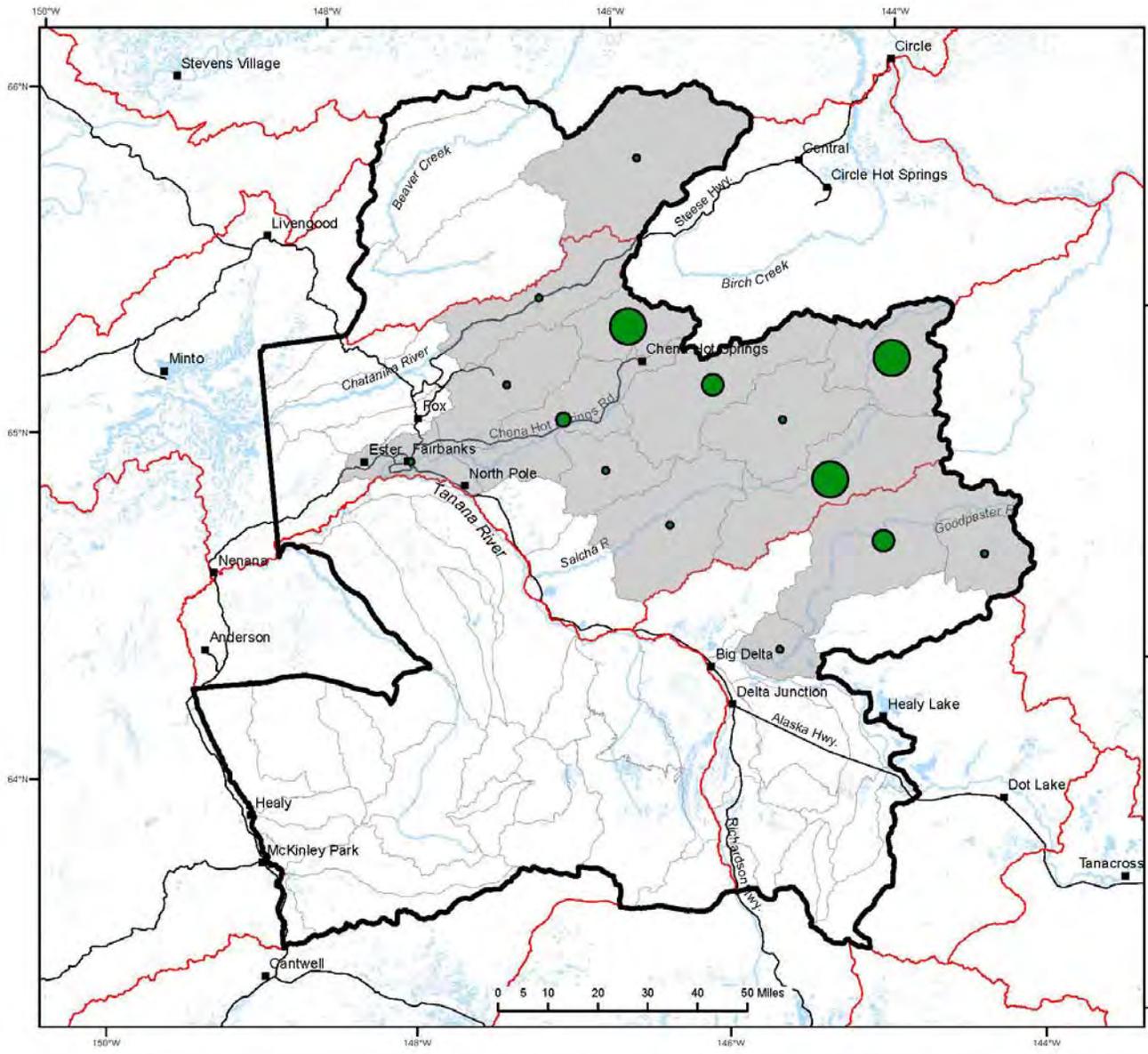
Caribou harvested

- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

 Nonsubsistence Area
 GMUs
 UCUs



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Fortymile Caribou Herd 2011

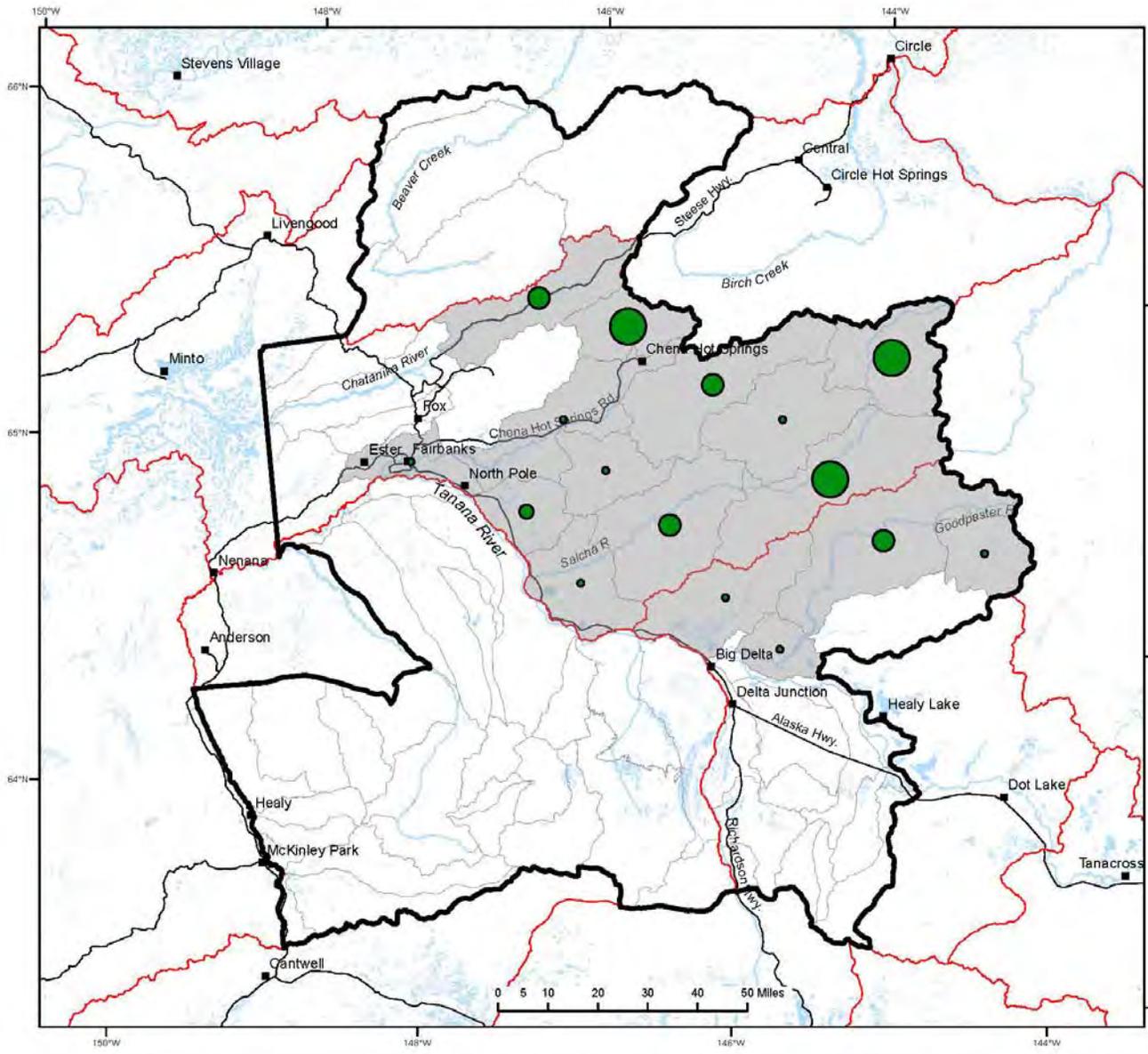
Caribou harvested

- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

 Nonsubsistence Area
 GMUs
 UCUs



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 June 2013
 North American Datum 1987
 Albers Albers Projection




Fortymile Caribou Herd 2012

Caribou harvested

- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- > 20

 Nonsubsistence Area
 GMUs
 UCUs



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