OCS Study
BOEM 2022-053

Kenai Peninsula Borough Economy, 2008 to 2020

U.S. Department of the Interior
Bureau of Ocean Energy Management
[Anchorage, AK]

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September 2022

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Prepared under Contract No. 140M0121F0003
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CITATION

Cuyno L., Schug D. (Northern Economics, Inc. Anchorage, AK), Flight M., Bhattacharya A., and Horsch E. (Industrial Economics, Inc. Cambridge, MA). 2022. *Kenai Peninsula Borough Economy, 2008 to 2020.* Anchorage, AK: U.S. Department of the Interior, Bureau of Ocean Energy Management. 271 p. Report No.: OCS Study BOEM 2022-053. Contract No.: 140M0121F0003.

ACKNOWLEDGMENTS

IEc and NEI are deeply appreciative of the valuable input provided by BOEM throughout the development of this report, particularly Jeffrey Brooks, John Primo, Timothy Harper, and James Lima. We also gratefully acknowledge the Kenai Peninsula Economic Development District (KPEDD) for supporting our community outreach and data gathering efforts; Federal and State of Alaska agencies for providing data and responding to questions regarding our analyses; the local government of the KPB for supporting our study; and the Alaska Native regional and village corporations of the KPB.

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List of Abbreviations and Acronyms

Term	Definition
ACS	American Community Survey
ADCCED	Alaska Department of Commerce, Community, and Economic Development
ADF&G	Alaska Department of Fish and Game
ADOLWD	Alaska Department of Labor and Workforce Development
ADOR	Alaska Department of Revenue
ANCSA	Alaska Native Claims Settlement Act
AVTEC	Alaska Vocational Technical Center
BOEM	Bureau of Ocean Energy Management
CAC	Chugach Alaska Corporation
CARES Act	Coronavirus Aid, Relief, and Economic Security Act
CDP	Census-designated place
CEDS	Comprehensive Economic Development Strategy
CIRI	Cook Inlet Region, Incorporated
CMCNA	Chickaloon Moose Creek Native Association, Inc.
CPH	Central Peninsula Hospital
DCRA	Division of Community and Regional Affairs of the ADCCED
GDP	Gross Domestic Product
KPB	Kenai Peninsula Borough
KPC	Kenai Peninsula College
KPEDD	Kenai Peninsula Economic Development District
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
PFD	Permanent Fund Dividend
QCEW	Quarterly Census of Employment and Wages
SPH	South Peninsula Hospital

Executive Summary

This report provides a comprehensive account of the socioeconomic characteristics of the Kenai Peninsula Borough (KPB) over a thirteen-year period between 2008 and 2020. The objective of this study is to provide the Bureau of Ocean Energy Management (BOEM) with information on the population, economy, and institutions of the KPB and its diverse communities over this timeframe, including identifying important trends and drivers. For BOEM, the information in this report provides a baseline for evaluating future potential socioeconomic effects of oil and gas or renewable energy development in the Cook Inlet Outer Continental Shelf (OCS) Planning Area. For other researchers, decision-makers, and stakeholders, this report provides valuable historical information and insights into how this region and its communities changed over the years and what factors influenced these changes. The data presented in this report are a combination of publicly available sources and primary information collected from outreach to regional agencies and organizations. This included stakeholder outreach facilitated through the Kenai Peninsula Economic Development District (KPEDD). KPEDD published a video of the study's objectives and scope of work, which was shared with their partners in industry and in the KPB community. Appendices B and C describe the data sources and data limitations of this study, respectively.

The Kenai Peninsula Borough

The KPB has rich natural resources and is known as one of the most economically and geographically diverse regions in Alaska.

Photo credit: KPEDD

The KPB is in Southcentral Alaska and covers an area of about 25,000 square miles; 65 percent of the area is land and 35 percent is water. The area includes Cook Inlet, which runs through the center of the KPB, and the western coastal areas of the Gulf of Alaska.

The KPB's natural environment is its greatest asset and has generated significant opportunities for economic development. The rich natural resources of the region sustain two of its major industries: commercial fishing and oil and gas. Additionally, the region's magnificent landscapes and waterways attract visitors for fishing, scenic and wildlife viewing, and other outdoor recreation activities, making recreation and tourism another major industry.

Demographic Characteristics and Trends

The KPB is home to close to 60,000 people, about 8 percent of the population of Alaska. The KPB had a continuous but modest upward trend in population, which grew at an average annual rate of less than 1 percent from 2008 to 2020 (Figure ES-1). The KPB population grew by about 5,000, a 10 percent change over the study period.

The KPB population grew at a modest average annual rate of 0.8% from 2008 to 2020

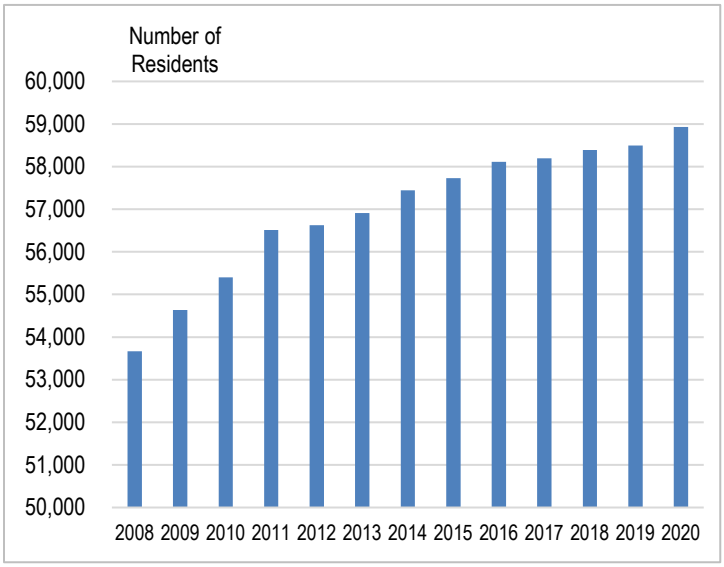


Figure ES-1. KPB Population Growth, 2008–2020

The population growth was driven by in-migration, particularly among the senior population, as the region became increasingly popular as a retirement destination and location for second homes, which earned the KPB a reputation as "the Florida of Alaska."

The KPB has a median age substantially higher than that of the broader state and the U.S. (see Figure ES-2). It has the fastest growing senior population among the Alaska boroughs and census areas (102 percent increase between 2008 and 2020). In 2008, the segment of the population 65 years and older accounted for 10 percent of the population, increasing to 19 percent by 2020.

The KPB population is aging with a dramatic shift in share of population 65 years and older, and increasing median age that has been consistently higher than the state and the national average

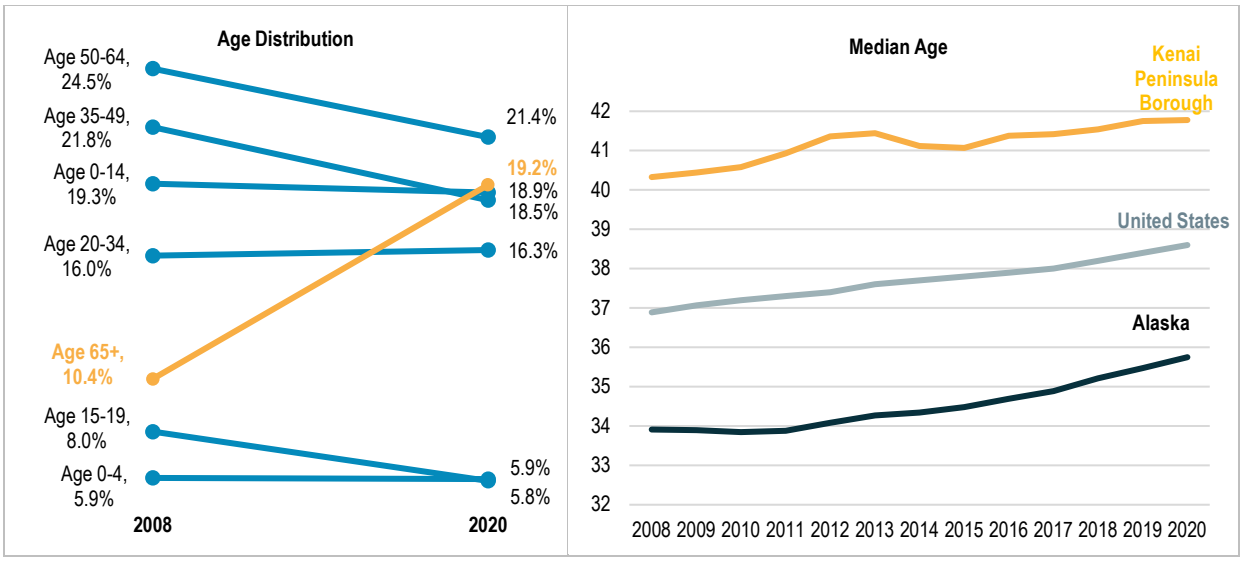


Figure ES-2. KPB Age Distribution and Median Age Trend Compared to Alaska and U.S., 2008–2020

The educational level of KPB adults increased between 2010 and 2019, with a higher number of adults who completed at least four years of college, and more college graduates going on to earn higher degrees. At the high school level, dropout rates identified a declining trend, falling from 4.5 percent in 2008 to 1.1 percent by 2020 (Figure ES-3).

Improvements in education: declining high school dropout rates and increasing educational attainment.

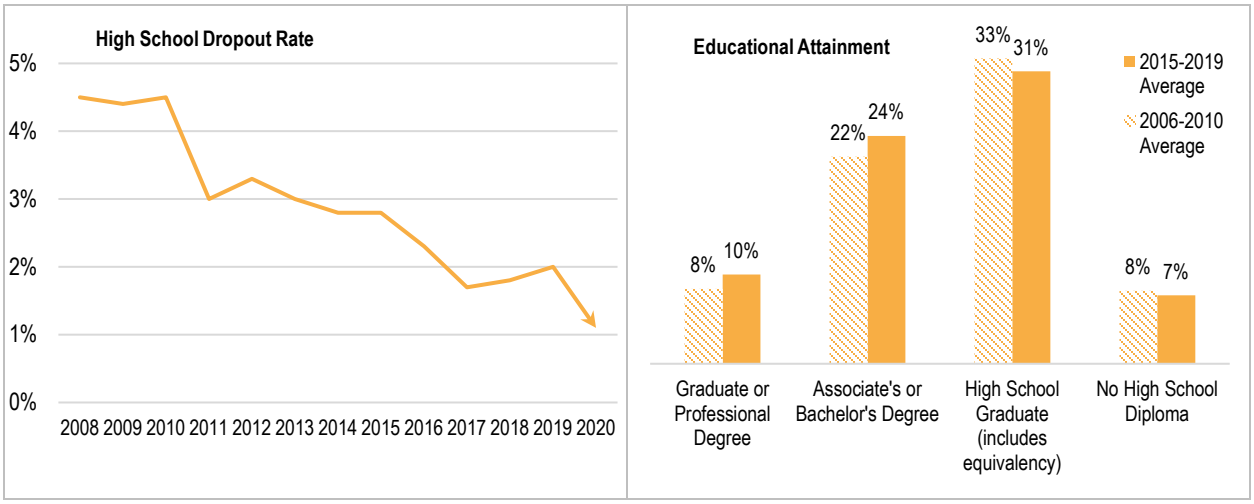


Figure ES-3. KPB High School Dropout Rate, 2008-2020 and Change in Educational Attainment[1]

The KPB is less ethnically and racially diverse than Alaska and the United States as a whole. The majority of the region's residents are white (79 percent in 2020, compared to 59 percent statewide, and 62 percent for the U.S. as a whole). Between 2010 and 2020, the share of the population that is white decreased (from 84.6 percent to 79 percent) and there were marginal increases in the non-white segment of the population. The Alaska Native population is the second largest group in the region, accounting for 7 percent of the population (compared to 15 percent statewide, and only 1 percent of the total U.S. population).

[1] Note that while high school dropout rates declined from 2008 and 2020, there was also a marginal decline in percent of the population that graduated from high school. These indicators are measured differently so it is difficult to compare the changes in these indicators. The educational attainment figure was based on comparing two points in time (averages over a 5-year period) and is based on a survey (self-reporting). The dropout rates on the other hand, are annually tracked by the KPB school district.

Minority percentage increased while the share of the population that identified as white decreased.

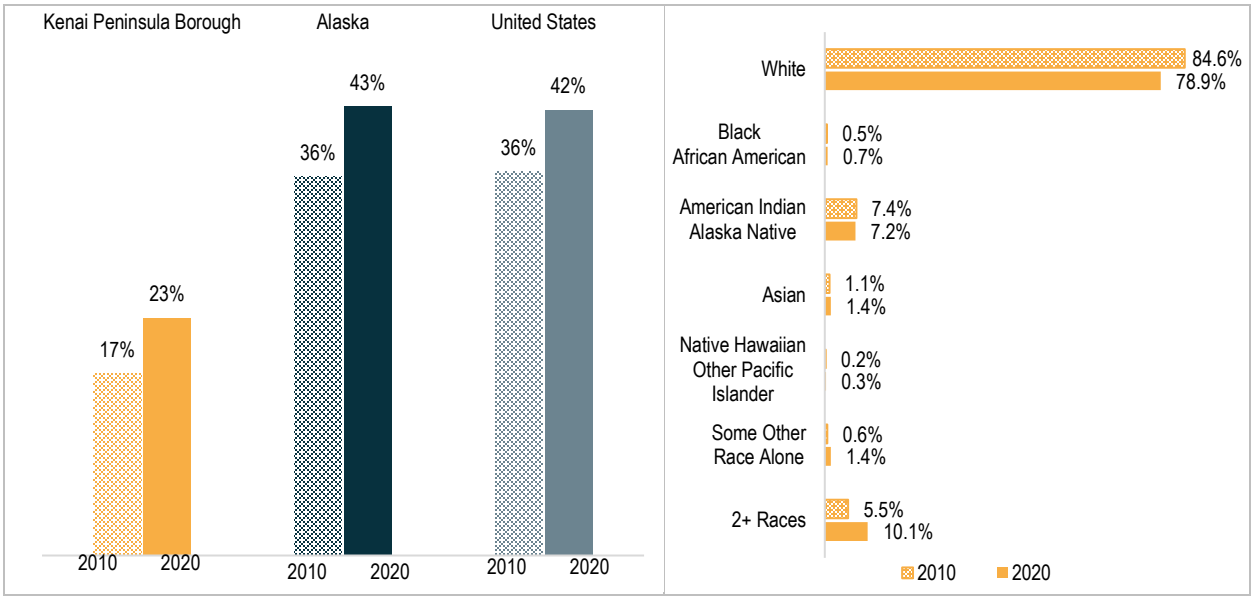


Figure ES-4. KPB Minority Percentage Compared to Alaska and U.S. 2010 versus 2020, and Change in KPB Racial Distribution 2010 to 2020

The geographic diversity of the KPB is manifested in its numerous communities of all sizes spread out across the region.

The population of the KPB is spread out among 37 permanent residential communities. Six communities are incorporated as cities—Kenai, Seward, Soldotna, Seldovia, Homer, and Kachemak City—and 31 are unincorporated. The communities range in size from a population of just 12 people living in Sunrise (founded around 1895 and formerly a mining town) to a population of 8,700 in Kalifornsky (a bedroom community adjacent to the City of Kenai). The majority (99 percent) of the KPB population lives on the peninsula; only two small communities exist on the west side of the KPB (the Village of Tyonek and Beluga). Although the cities of Kenai, Soldotna, Homer, and Seward are the largest incorporated communities in the KPB, they represent just a little over a third of the borough's population; the rest resides in the unincorporated communities and small cities of Seldovia and Kachemak.

Six communities in the KPB are federally recognized Alaska Native tribes: Village of Port Graham, Village of Nanwalek, Seldovia Village, Ninilchik Village, Village of Tyonek, and Village of Salamatof. In addition, there are two Alaska Native tribes that are based in incorporated areas, the Kenaitze Indian Tribe is based in the City of Kenai, and the Qutekcak Native Tribe, which has not yet been federally recognized, is based in Seward.

The KPB additionally includes Old Russian Believer communities and settlements in the southern side of the Peninsula: Nikolaevsk, Razdolna, Kachemak Selo, and Voznesenka (Figure ES-5).

Figure ES-5. Map of the Kenai Peninsula Borough and its Communities

At the community level, the population changes over the study period were influenced by factors such as highway access, buildable land, and proximity to an existing population center. Population growth rates among the communities varied considerably (see Figure ES-6). The highest areas of growth occurred in the bedroom communities of the central Kenai Peninsula (a highway accessible area that spans from Sterling to Kasilof). These communities include Sterling, Kalifornsky, and Salamatof, all of which are located a short drive from the Kenai-Soldotna-Nikiski area, where a large portion of the KPB's commercial development is concentrated. Seward was an exception to the steady growth experienced in other cities in the KPB; its population dropped by almost 100 people from 2008 to 2020. Eleven out of the 37 communities experienced a decline in population, all located outside of the central peninsula. On the east side, five communities near Seward including Sunrise saw reductions in population, as did Tyonek (across the peninsula), and a number of small communities on the South Peninsula including Seldovia, Nikolaevsk, and Fox River shrank in population.

Photo credit: KPEDD

Some of the smaller communities underwent relatively high growth even when they exhibited just marginal increases in the absolute number of residents. In Halibut Cove for example, the population increased by only 18 people in 12 years, but this small number represented a 30 percent increase in the community's population. Point Possession, a remote area at the mouth of the Swanson River, saw the most growth, on a small scale; its population increased from 4 to 54 between 2008 and 2020, an increase of 1,250 percent.

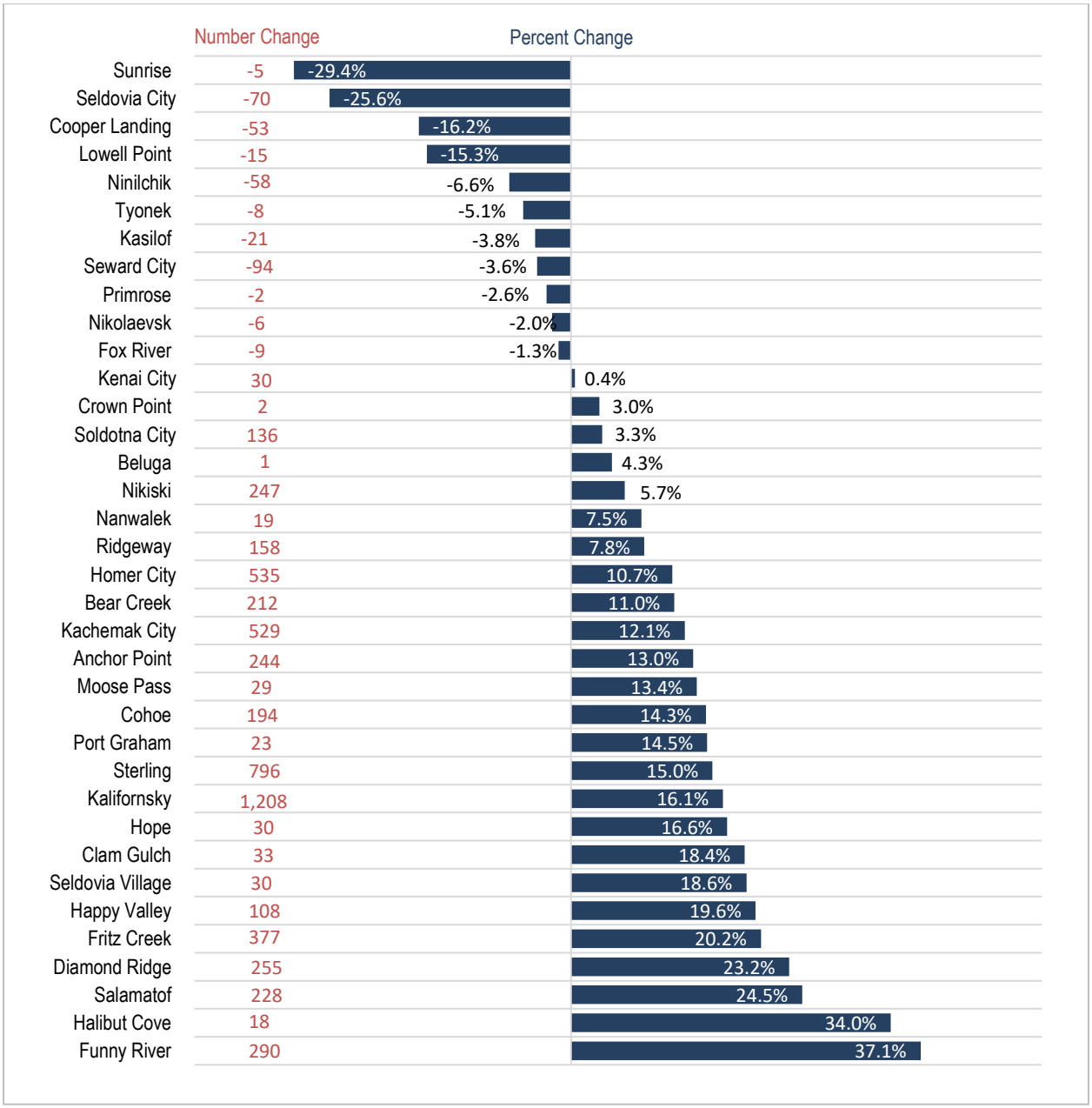


Figure ES-6. Population Changes in the Kenai Peninsula Borough Communities between 2008 and 2020

The aging of the population was more pronounced in the cities and large communities.

The cities experienced significant shifts in the share of population 65 years and older between 2008 and 2020. The larger communities had median ages higher than the KPB average. This, however, is not the case for the Native villages. The Native villages generally have a younger population compared to other communities in the region. The median age of these communities, except for Ninilchik is lower than the boroughwide median age. Except for Tyonek, the rest of the Native villages experienced an increase in

median age between the 2006–2009 average and the 2015–2019 average (ACS 5-year average data), following the trend in the other communities in the region.

As expected, the minority percentages in most of the KPB communities in which federally recognized Alaska Native tribal entities are located are relatively high.[2]

The average minority population percentage in the Native communities from 2015 to 2019 was 80 percent, with a value of 97 percent reported for Tyonek; this is in contrast to the minority population percentage in the KPB as a whole, which was 17 percent in 2019. The large, incorporated cities of Kenai and Homer also have a higher percentage of minority populations (comparable to Ninilchik and Salamatof) compared to the KPB as a whole and relative to the small residential communities in the region, which all had less than 12 percent minority populations.

There are no significant differences in educational attainment at the community level.

There were no significant shifts in educational attainment in most of the communities and not many differences in educational levels among communities. There was, however, a notable increase in share of adults with a high school degree or higher among the Alaska Native villages as a group, from an average of 85 percent from 2006 to 2010 to an average of 93 percent from 2015 to 2019. The graduation rate for Alaska Natives residing in the KPB improved in recent years due to the development and implementation of targeted strategies to improve Alaska Natives' educational outcomes (Sorensen 2017).

Economic Characteristics and Trends

The KPB economy is a microcosm of the state economy with the oil and gas industry, commercial fisheries, tourism, and government as major economic drivers and employment sectors. The trends in the KPB's economic indicators generally followed statewide trends. Changes in supply and demand factors that drive its major industries caused several shifts in regionwide economic indicators between 2008 and 2020.

The KPB's average Gross Domestic Product (GDP) from 2008 to 2020 was $3.16 billion, which accounts for about 5 percent of the state's GDP. From 2008 to 2020, the KPB's GDP increased by 7 percent; the growth was higher (9 percent) before the 2020 pandemic. GDP levels fluctuated over the study period with most of the significant declines driven by reductions in non-durable manufacturing goods sectors (petroleum manufacturing and seafood processing).

Changes in Economic Indicators

Gross Domestic Product
- *7 % growth*, 2008–2020
- *9 % growth, 2008–2019*

Total Employment
- 7 % increase, 2008–2019
- 1 % increase, 2008–2020
- Declines during 2009 financial crisis, AK recession, and 2020 pandemic

Total Wages
- 16 % increase, 2008 to 2020
- 62 % increase, 2008 to 2019

[2] In most cases the tribal entity cannot be considered as identical to the census-designated place in which the tribe is located, as some residents may be non-tribal members.

Total employment grew by 7 percent between 2008 and 2019; however, due to losses during the pandemic, the difference in employment in 2008 and 2020 is only 1 percent.

The increase in total wages over time was higher than the change in employment, increasing by 16 percent from 2008 to 2020, and 62 percent from 2008 to 2019 (pre-pandemic). Average monthly wages across most major industries increased with the highest jump in real wages in the health care (61 percent), wholesale trade (61 percent), finance and insurance (43 percent), and oil and gas (27 percent) sectors. There was a decline in total wages in the region during the Alaska recession (from 2015 to 2016 and again from 2016 to 2017).

Unemployment rates in the KPB were on a decreasing trend between 2010 and 2020, with the lowest rate achieved in 2019 at 6 percent; however, due to the pandemic, the unemployment rate increased to 9 percent in 2020.

The KPB economy was affected by three major external events that transpired between 2008 and 2020, causing declines in employment levels:

- The Great Recession from 2007 to 2009 caused by the collapse of the U.S. housing market and accompanying financial crisis;[3]
- The Alaska recession that began in late 2015 and lasted until 2018 due to a steep drop in oil prices; and
- The economic disruptions resulting from the COVID-19 pandemic that began in 2020.

[3] The National Bureau of Economic Research (2021) defines a recession as a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales. A recession begins just after the economy reaches a peak of activity and ends as the economy reaches its trough.

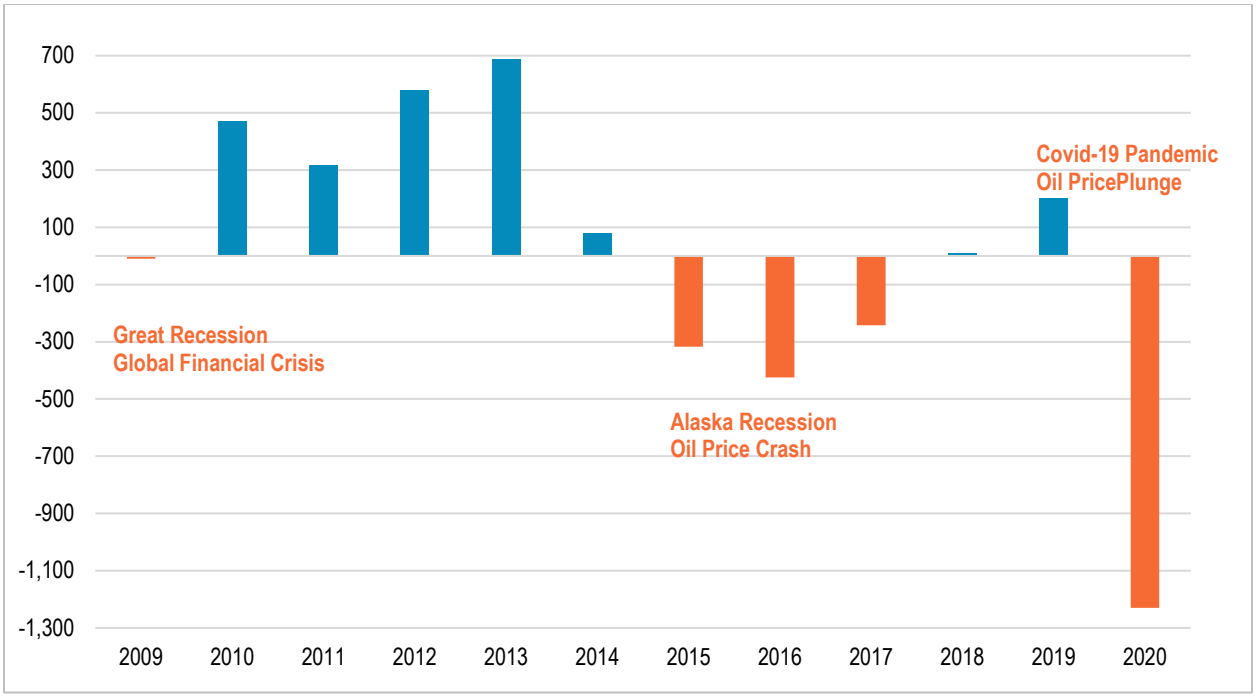


Figure ES-7. Change in Employment Levels in the Kenai Peninsula Borough, 2008–2020

Trends in KPB Economic Drivers

Oil and Gas Industry

Total employment and wages for the oil and gas industry declined after peaking in 2013 (Figure ES-8). The industry's economic indicators reflect the low oil prices during the 2015 to 2017 period and then again in 2020. Prior to 2015, oil prices were hovering well over $100 per barrel ($114 per barrel average from 2008 to 2014) and from 2015 to 2017 prices dropped to an average of $56 per barrel (2021$). In 2018, the price went up to $77 per barrel and in 2020 the price dropped again to $44 per barrel (Alaska North Slope [ANS] Oil Prices, [Herbert 2022]).

Changes in Oil and Gas Indicators, 2008 to 2020

Production Volumes
- *Oil: 7 % decline*
- *Natural gas: 47% decline*

Gross Industry Sales
- 229 % increase
- 23 % annual average increase

Employment
- 35 % decline
- 2.7 % annual average rate of decline

Total Wages
- 11 % decline
- < 1% annual average rate of decline

Overall, industry sales had an increasing trend from 2008 to 2020. This boost in sales was due to the increase in oil production in the Cook Inlet, which peaked in 2015. Industry sales however fluctuated over the years with changes in oil and gas production volumes and prices (Figure ES-8).

From 2008 to 2020, 1.36 trillion cubic feet of natural gas and 64 million barrels of oil were produced in the region. Production of both oil and gas were generally on a declining trend between 2008 and 2020, although there was a period of resurgence of oil production between 2009 and 2015. Before 2008, oil

production in the Cook Inlet had been declining steadily from 2001 to 2008, and between 2009 and 2010 was the first positive year-over-year change in oil production levels.

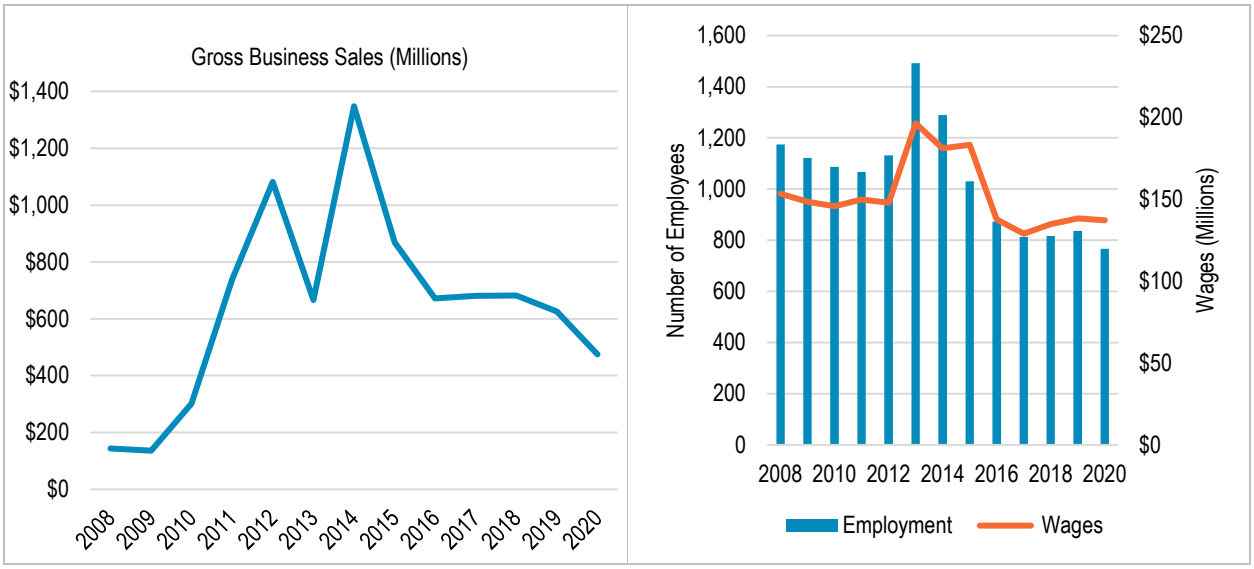


Figure ES-8. Oil and Gas Sales, Employment and Wages in the Kenai Peninsula Borough, 2008–2020

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Commercial Fisheries

Change in Commercial Fisheries Indicators, 2008–2020

Participation/employment and revenues/wages varied with periods of growth and declines but had declining trends overall

Harvesting Sector

Participation: 0.1 % average annual rate of decline

Revenues: 0.4 % average annual rate of decline

Seafood Processing Sector

Employment: 3.2 % average annual rate of decline

Wages: 0.2 % average annual rate of decline

Commercial fisheries activities include both harvesting and processing of fish. Employment in the harvesting sector of the commercial fishing industry is measured using the number of commercial fishery permit holders in the KPB who are actively fishing. Note that if the number of crew members are also taken into account, the total number of individuals employed would be three or four times the number of permit holders. Over the study period, the number of KPB residents that participated in commercial fisheries varied by year from a low of 974 in 2018 to a high of 1,130 in 2015. Participation in commercial fisheries among KPB residents declined by 3 percent from 2008 to 2020; but there were periods in between when participation levels were higher than the 2008 level. The period from 2012 to 2015 in particular, had increasing and high participation levels compared to the period between 2008 and 2010.

KPB residents that hold State of Alaska commercial fishing permits fish in many different areas of Southcentral Alaska, including Cook Inlet, Gulf of Alaska, Prince William Sound, and Bristol Bay; fish for many different species, including salmon, halibut, sablefish, and groundfish; and fish with many types of gear, including drift gillnets, set gillnets, purse seines, pots, jigs, and longlines. From 2008 to 2020, KPB residents made an average of $123 million annually in revenues from various commercial fisheries.

The salmon fishery is by far the most economically important commercial fishery for KPB residents in terms of fishing revenue. From 2008 to 2020, the fishery annually accounted for an average of 62 percent of all commercial fishing earnings of KPB residents. Sockeye salmon is the most consistently abundant species, and it is the mainstay of the commercial salmon fishery. Revenues of the harvesting sector declined from $131 million in 2008 to $87.5 in 2020; the revenues varied based on harvest levels and prices.

Employment and wages information for the seafood processing sector are available from the Alaska Department of Labor and Workforce Development (ADOLWD). The data include both residents and non-residents that participate in seafood processing in the KPB. In general, Alaska's seafood processing industry is well known for the many nonresidents who come to the state in the summer to work the processing lines. One reason for the heavy reliance on nonresident workers to fully staff production jobs in seafood processors is the seasonality of many Alaska fisheries, especially salmon. From 2008 to 2020, an average of 57 percent of the seafood processing jobs in the KPB were filled by nonresidents. While this nonresident workforce is large, it is smaller than that of many other major seafood processing regions in Alaska. Total employment and wages in seafood processing declined from 2008 to 2020, but the declining trend began in 2015 and carried through to 2020.

Shore-based plants account for nearly all of seafood product preparation and packaging in the KPB. The number of these plants operating in the KPB experienced a downward trend between 2015 and 2020. Facilities likely closed due to some of the same economic difficulties experienced by the harvesting sector, including variability in the scale of salmon runs. Note that many of the larger processors purchase and process a variety of species caught in fisheries around the state.

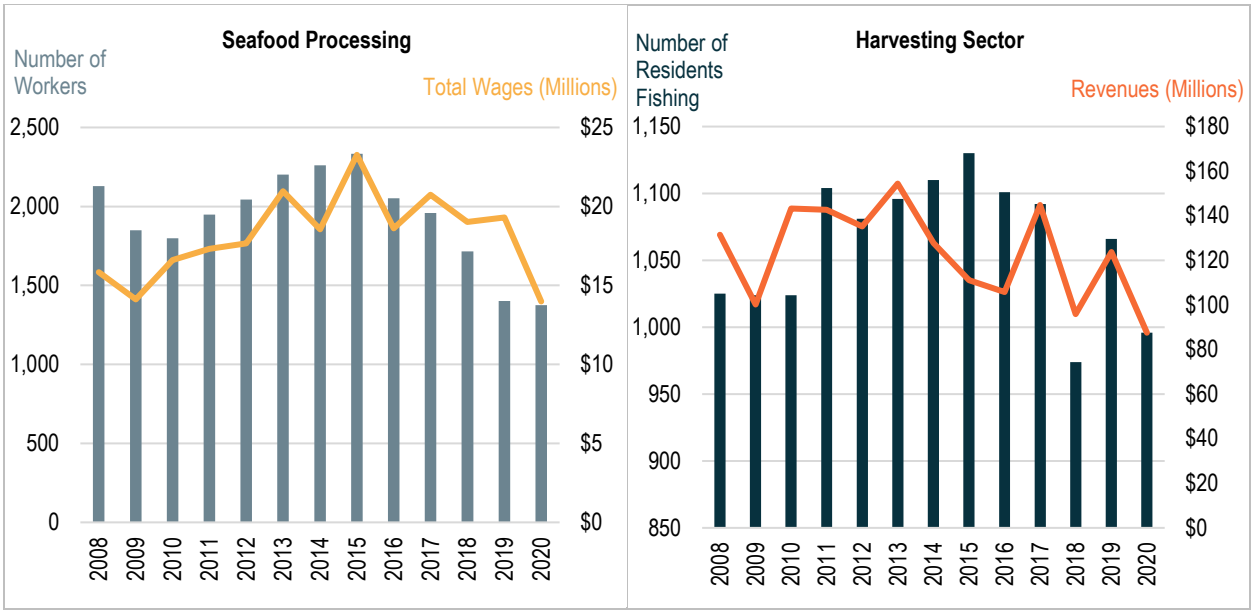


Figure ES-9. Seafood Processing and Harvesting Employment and Wages in the Kenai Peninsula Borough, 2008–2020

Notes: Seafood Processing workers include non-residents working in the KPB. Harvesting Sector participation only includes KPB residents with fishing permits.

Recreation and Tourism

The KPB is a popular destination for outdoor recreation due to its rich wildlife and natural scenic beauty. It provides a variety of outdoor recreational opportunities, which vary by season and include hunting and fishing, birding, glacier viewing, renting recreational vehicles and boats, hiking, camping, and skiing, among other activities. Recreators include both local residents of the KPB, visitors from across the state, and out-of-state tourists. "Tourism" refers to the economy associated with outdoor recreation as well as the economy linked to vacationing, retail, and leisure activities (e.g., arts and entertainment, sightseeing, and restaurants).

Key Trends in Recreation and Tourism, 2008-2020

- *Relatively constant levels of outdoor, public lands recreation 2008-2019, with a steep decline in participation in 2020 due to the pandemic*
- *Overfishing, shifts in predation, and effects of climate change led to a decline in king salmon runs and size of salmon since 2010, affecting regional recreational fishing opportunities*
- *The tourism industry experienced a steady recovery from the Great Recession through 2019 before experiencing a dramatic decline in 2022 due to the pandemic*

Based on visitor counts to public lands for recreation, including National and State Parks, National Wildlife Refuges, and National Forestlands, participation in outdoor recreation fluctuated from year to year over the study period but held relatively steady between 2008 and 2019. Figure ES-10 is an example of the trends in National Park visitation over the study period, identifying the adverse effects of the 2020 global pandemic on visitation levels to these areas.

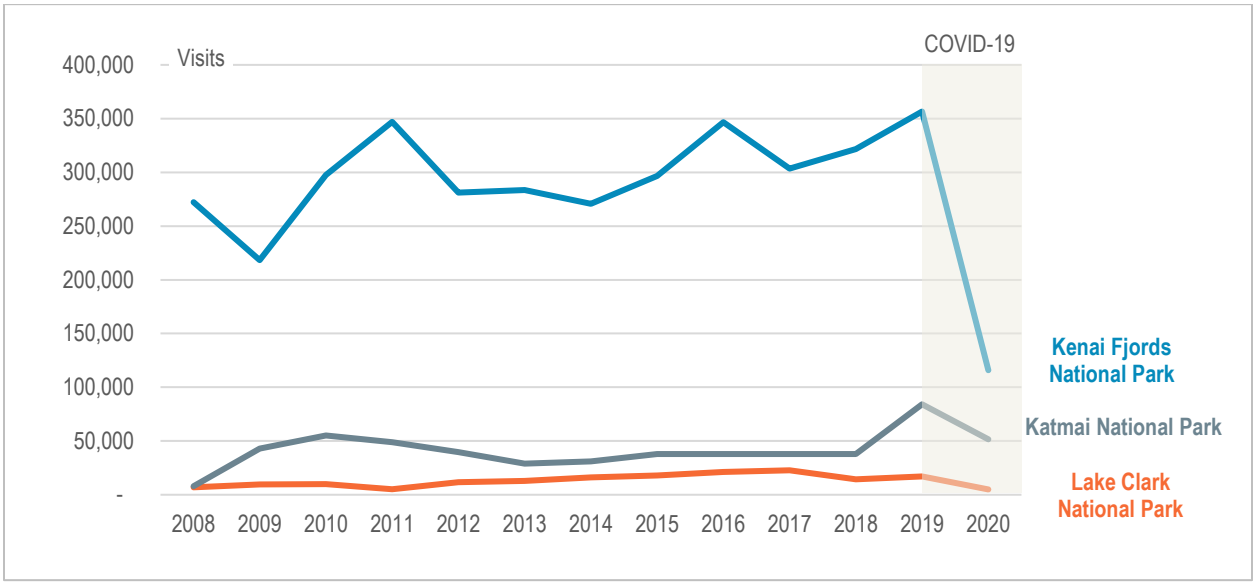


Figure ES-10. National Parks Visitation in the Kenai Peninsula Borough by Park, 2008–2020

Source: Irma NPS Visitor Use Stats (https://irma.nps.gov/STATS/)

Notes: "Visits" include single-day visits and distinct overnight visits.

Sportfishing, included guided and unguided trips in both salt- and freshwater, is a particularly significant recreational activity in the KPB. Target fish species include Chinook, coho, pink, and sockeye salmon, as well as non-salmon species, including Dolly Varden, rainbow and steelhead trout, and Pacific halibut. Sportfishing is permitted along the Kenai River, Anchor River, Ninilchik River, Deep Creek, Kasilof River, Russian River, McNeil River, Cook Inlet, and roadside streams of the Kenai Peninsula. Alaskan

residents generally make up for the majority of sportfishing angler days in the Cook Inlet region. However, growing visitor interest in sportfishing led to increased spending by nonresidents on guided fishing packages from charter operations (Kenai Peninsula Borough 2019). Throughout the study period, sportfishing opportunities have been influenced by increasingly weak salmon runs and declining salmon sizes in the area. This resulted in fisheries being closed or restricted to preserve salmon and many fishing businesses closed or were forced to turn to other ventures (Kenai Peninsula Borough 2019). However, while salmon fishing declined, anglers were able to fish for other species and the overall level of angling licenses in the region was relatively steady across the study before a drastic decline in 2020 due to the pandemic (Figure ES-11).

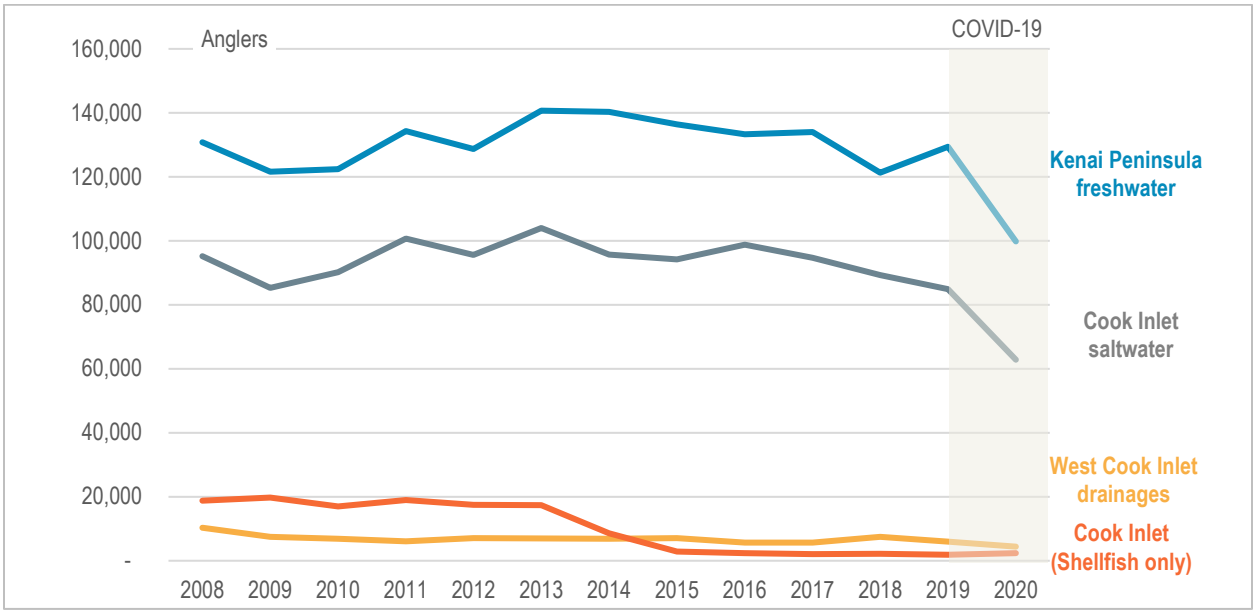


Figure ES-11. Number of Anglers in Southcentral Alaska, 2008–2020

Source: Data provided by Division of Sport Fish, Alaska Department of Fish and Game (ADF&G), in August 2021.

Due to these outdoor recreational opportunities, as well as the broader appeal of the region for vacation and leisure activities, hundreds of thousands of tourists visit the KPB each year from an expanding global market (Petersen 2019). Due to this growing interest in the region as a vacation destination, the tourism economy grew slightly over the study period following some lingering effects of the 2008 Great Recession before experiencing a significant decline in 2020 due to the pandemic. Figure ES-12 describes gross sales in the tourism industry by business type over the study period.

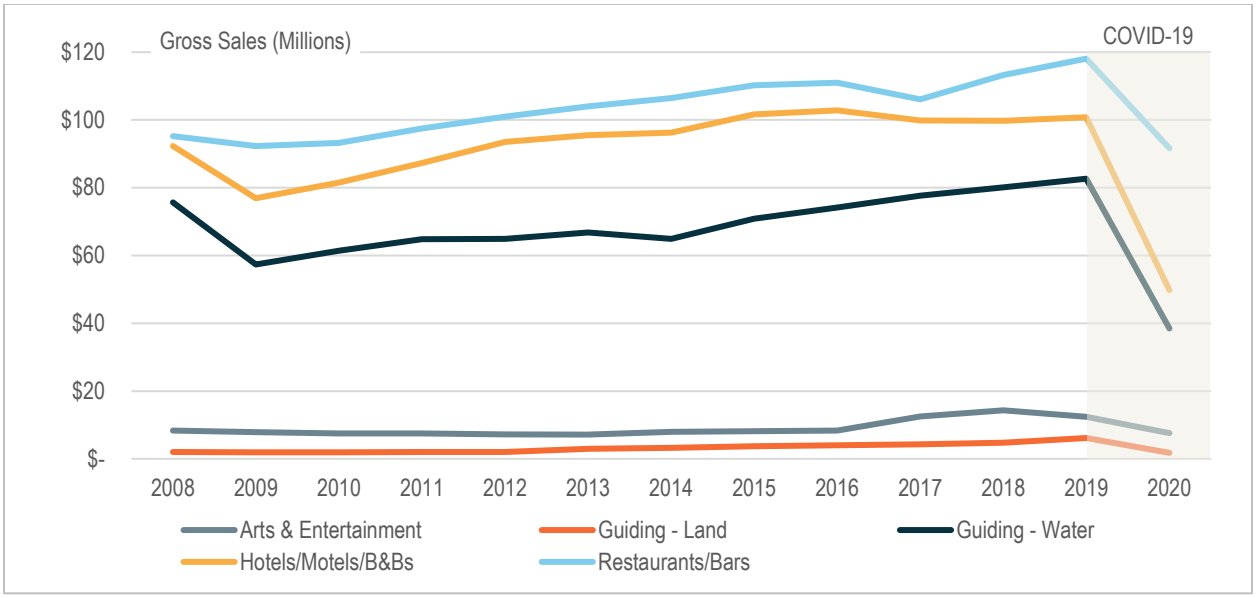


Figure ES-12. Tourism Industry Gross Sales in the Kenai Peninsula Borough by Activity, 2008–2020

Source: Data provided by Deputy Clerk, KPB Department of Finance in September 2021.

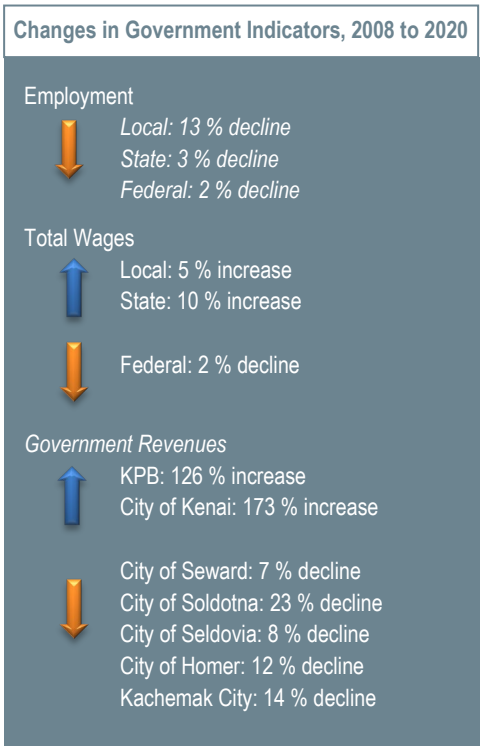
Notes: Adjusted to 2020 dollars using the Consumer Price Index (CPI).

Beyond local and global economic drivers, the effects of climate change influence recreation and tourism on the Kenai Peninsula. Watersheds statewide are experiencing drier summers and wetter falls, leading to notable changes in salmon runs and migration patterns (KDLL 2020). The vast public lands in the KPB are beginning to shift into new ecosystems as they lose characteristics of their existing ones in response to changing climactic conditions; the Kenai National Wildlife Refuge started to shift from forest to grassland (Weiss 2020). The warming Alaskan climate, with temperatures increasing at twice the national rate over the last 60 years (KDLL 2020), created challenges for the KPB's recreation and tourism industry. As glaciers continue to retreat and spring thaws arrive earlier in the season each year, sightseeing opportunities and the landscape of the peninsula will continue to fundamentally change, and skiing opportunities may dwindle (USDA 2017). How these changes will ultimately shape future recreation and tourism in the KPB is uncertain.

Government Sector

The government sector includes Federal, state, and local government. The KPB has several layers of local government. These include the KPB government and city governments, with varying powers and responsibilities, as well as several tribal governments that operate in the region. Tribal governments offer a variety of services to residents of the villages including health care, social services, housing, utilities, educational assistance, employment, environmental safeguards, and judicial services.

The number of jobs in the Federal, state, and local government was fairly stable from 2008 to 2020, although all three segments had a declining trend (see Figure ES-13). The number of local government jobs declined 13 percent from 2008 to 2020, while Federal and state government jobs declined by only 2 percent and 3 percent, respectively. The trends in total wages, however, were different, with state and local government wages increasing between 2008 and 2020 by 10 percent and 5 percent, respectively; total wages in Federal government decreased 2 percent over the same time period.



In 2020, the number of workers in both the local and state government sectors dropped from the previous year's levels. As suggested by Rosewicz and Maciag (2020), state and local governments issued hiring freezes, furloughed staff, or laid off seasonal employees in the face of substantial projected budget shortfalls due to the pandemic, although the KPB and the city governments received a significant amount of Coronavirus Aid, Relief, and Economic Security (CARES) Act grant funding that increased their revenues in FY 2021. Employment in Federal government in the KPB, however, was not negatively impacted by the pandemic; in 2020 the number of Federal government jobs in the KPB increased by 396 jobs.

Local governments in the KPB generate revenues primarily from property taxes, sales taxes, and intergovernmental transfers (funds from state and Federal agencies). The KPB and the City of Kenai generated higher revenues from all three sources (property tax, sales tax, and intergovernmental transfers) in FY 2020 compared to FY 2008. All the other city governments, however, experienced declines in total revenues, which was generally due to declines intergovernmental transfers, although for some cities sales tax revenues also declined.

Given the three main sources of revenues for local governments, their ability to provide services and build and maintain public infrastructure are influenced by economic activities in the other major economic sectors. For example, recreation and tourism and commercial fisheries activities affect sales tax revenues, and oil and gas activities affect sales taxes and property taxes in the KPB and the City of Kenai. And given the state of Alaska's dependence on petroleum revenues, changes in oil prices or disruptions in production also affect state revenue sharing and funding of local government services and capital projects.

Figure ES-13. Local, State, and Federal Government Employment and Wages in the Kenai Peninsula Borough, 2008–2020

ANCSA Regional and Village Corporations

The Alaska Native regional and village corporations in the KPB play a significant role in the regional economy, adding even more economic diversity to the region. These corporations are landowners, investors, and employers, and provide critical services to the residents of the communities in the KPB.

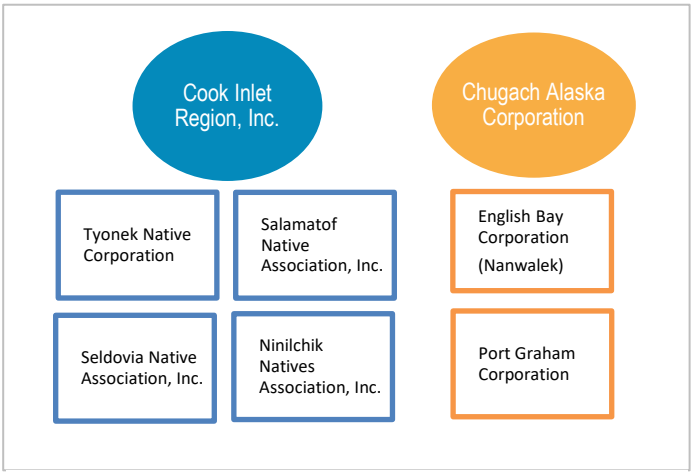


Figure ES-14. ANCSA Regional and Village Corporations in the KPB

ANCSA Corporations as stewards of the lands

Combined, the corporations own and manage over 3.2 million acres across the KPB and adjacent regions. In total, these corporations own 9 percent of the land within the KPB (Agnew::Beck Consulting 2019). Cook Inlet Region, Incorporated (CIRI) is the KPB's largest private landowner, with over 330,000 acres of surface lands in the KPB and nearly 600,000 acres in subsurface rights.

ANCSA Corporations as an economic driver

The corporations expanded their role as stewards of their lands and natural resources by engaging in a wide array of enterprises and investments beyond resource development. As for-profit corporations, the Native regional and village corporations operate businesses and subsidiaries and hold investments both within the region and outside. These businesses generate employment and income and bring an infusion of cash into the region that benefits not only the shareholders of the ANCSA corporations but other KPB residents as well. The dividends paid out to their shareholders are an important source of new money brought into the region, generating further multiplier effects in the local economy.

ANCSA Corporations as providers of health and social services in KPB communities

The corporations invest in their people and communities through various programs. The corporations spend significant amounts of their revenues each year to support shareholders through educational opportunities, scholarships, internships, elder benefits, and programs to maintain their cultures, languages, and heritage. The revenues generated by the ANCSA corporations also supported nonprofit organizations across the region. These organizations deliver health care, housing, education, and other cultural benefits to the region. These affiliated organizations provide critical services to the KPB communities.

The ANCSA Corporations' diverse business interests include oil and gas services, government contracting, local tourism enterprises, real estate, financial investments, and other professional services. The ANCSA Corporations' revenues are influenced by local, national, and global market forces and trends. From 2008 to 2020, the ANCSA Corporations' businesses were affected by the global financial crisis, crash in real estate markets, changes in Federal contracting rules (Section 8[a] Program) and declines in tourism activities during the Great Recession and the pandemic.

1 Introduction

1.1 Description of KPB

The Kenai Peninsula Borough (KPB) extends 150 miles southwest from the Chugach Mountains south of Anchorage, Alaska. The borough is bordered by the Gulf of Alaska and Prince William Sound to the East, the Gulf of Alaska to the south, and the Chigmit Mountains along the west. Cook Inlet divides the borough into two land areas: the peninsula and a sparsely populated portion of mainland Alaska to the west of Cook Inlet. The Kenai Mountains run north and south along the peninsula. Overall, the KPB covers approximately 25,600 square miles, of which 15,700 square miles are land.

Scenic lake in the KPB

The population of the KPB is approximately 60,000 people, about 8 percent of the population of Alaska, and 99 percent of the KPB population resides on the peninsula. Six of 37 KPB communities are incorporated cities (Homer, Kachemak City, Kenai, Seldovia, Seward, and Soldotna). The other 31 communities in the KPB are unincorporated or Census-designated Places. The communities additionally include federally recognized Alaska Native villages, including the Seldovia Village Tribe, Village of Nanwalek, Village of Port Graham, Village of Salamatof, Village of Tyonek, and Ninilchik Village Traditional Council; additionally, the Kenaitze Indian Tribe is based in the City of Kenai. Chapter 2 of this report details the demography of the region and Chapter 3 characterizes the KPB communities.

The rich natural resources of the region support economic opportunities, including commercial and recreational fishing and oil and gas exploration and development. Additionally, the majestic landscapes make the region a popular recreation and tourism destination, both for Alaskans and out-of-state visitors. Chapters 5 through 9 detail trends and drivers of these and other important sectors of the KPB economy.

1.2 Research Scope and Objectives

The primary purpose of this study is to document baseline conditions and document trends in the KPB economy from 2008 to 2020, a period that was marked by multiple external events that influenced the resources and economic vitality of the borough and its communities, including the Great Recession of 2008, the cyclical effects of the boom and bust of oil and gas exploration and development, and the coronavirus pandemic of 2020. The information provided in this report will help the Bureau of Ocean Energy Management (BOEM), as well as other federal, state, and local resource management agencies and industries, to understand the major socioeconomic trends and changes in the region in order to evaluate impacts of potential future projects and planning efforts. This research additionally provides information on important data sources for future analyses of this region and highlights information gaps that may be useful targets for future research.

The Outer Continental Shelf Lands Act (OCSLA) directs BOEM to manage the oil and natural gas resources of the OCS for protection of marine and coastal environments. The OCSLA authorizes BOEM to research areas or regions of potential oil and gas development to determine the impacts on marine and coastal environments, including socioeconomic impacts. Additionally, the National Environmental Policy Act (NEPA) requires evaluating potential impacts of oil and gas development and other federal projects and activities on the human environment, including social, economic, and cultural impacts. The information collected, synthesized, and analyzed in this study will improve the consistency and efficiency of future BOEM assessments of oil and gas activity in the Cook Inlet Planning Area. Specifically, the document will serve as a characterization of the baseline socioeconomic conditions for affected environment, environmental consequences, and cumulative effects analyses required in NEPA analysis, and may be leveraged for other BOEM and federal and state agency planning efforts in the region.

The scope of work of this study required collecting, synthesizing, and analyzing information and socioeconomic indicators on population, economy, and institutions relevant to the KPB region and its communities. In particular, the scope of work involved the following major components:

1) Collect and compile baseline data relevant for assessing social and economic effects of future energy development activities in the KPB region;
2) Describe the components of the KPB economy with focus on oil and gas, recreation, tourism, health care, social services, commercial fishing, and subsistence;
3) Describe the socioeconomic structure of the KPB and its communities and changes from 2008 to 2020;
4) Evaluate the role of the Alaska Native Claims Settlement Act (ANCSA) regional and village corporations in the KPB.

Overall, this study reflects the most comprehensive and up-to-date baseline information for the KPB that will be valuable not only to BOEM for future planning and assessment efforts under the OSCLA and NEPA but also to other agencies and organizations in the region.

1.3 Organization of Report

This report first provides an overview of the regional populations both at the borough and community levels. It then describes the importance of Native Alaskan Regional and Village Corporations to the region. The report includes individual chapters on key economic sectors, including oil and gas, recreation and tourism, commercial fishing, and government, followed by a synthesis chapter defining other important sectors. Finally, the report characterizes the economic and cultural significance of subsistence harvests of wild resources in the KPB. The individual chapters of the report are organized as follows:

- Chapter 2 presents a demographic and economic profile of the region at the borough level, including comparisons of the KPB with state- and national-level socioeconomic characteristics.
- Chapter 3 details the demographic and economic characteristics of the KPB communities, including population size, age, race/ethnicity, education, housing, income, and employment statistics.
- Chapter 4 describes the role of ANCSA Corporations to the KPB economy.

- Chapter 5 focuses on trends in the oil and gas industry in the region (Appendix A provides more detail on the history of the industry in Cook Inlet).
- Chapter 6 details trends in recreational activities and the tourism industry over the study period.
- Chapter 7 describes trends in the commercial fishing and mariculture industries in the KPB.
- Chapter 8 characterizes the government sector in the KPB, including the structure of the government at the borough, city, and tribal levels, as well as contributions to employment.
- Chapter 9 describes trends in other industries in the KPB, including construction, health care and social assistance, transportation and warehousing, trade, utilities, agriculture, forestry, and fishing and hunting.
- Chapter 10 provides information on the importance of the region's subsistence economy.
- Chapter 11 lists the report references.
- Appendix A provides a historical overview of the Cook Inlet oil and gas industry.
- Appendix B is a compendium of data sources employed throughout the report.
- Appendix C highlights information gaps influencing the analysis.

2 Demographic and Economic Profile of the Kenai Peninsula Borough

This section presents the socioeconomic characteristics of the KPB region and describes its similarities and differences with Alaska and the United States as a whole, with respect to various demographic and economic variables, including changes in population size, age, race/ethnicity, housing, education level, employment, and income. Comparing the KPB to Alaska and the United States provides useful context in which to view borough-level trends and events. For some demographic and economic variables, the comparative data are supplemented with data specific to the KPB to provide additional detail on socioeconomic conditions and trends in the KPB.

The major external events that contributed to changes in the KPBs socioeconomic indicators include the following:

- the Great Recession from 2007 to 2009 caused by the collapse of the U.S. housing market and accompanying financial crisis[4]
- the Alaska recession that began in late 2015 and lasted until 2018 due to a steep drop in oil prices
- the economic disruptions resulting from the COVID-19 pandemic that began in 2020

2.1 Overview

The most notable shifts in the KPB's demographic indicators are its increasing share of senior population and the rising cost of housing; changes in other indicators were minor over the study timeframe.

Changes in Demographic Indicators

Population growth
- *10 % growth in population*, 2008-2020
- *102 % increase* in 65 years and older population, 2008-2020

Racial and Ethnic Composition
- *Decline in share of white population, 86 % tin 2010 to 79 % in 2020*
- *Increase in minority percentage, 17 % in 2020 to 23% in 2020*

Educational Attainment
- Decline in high school dropout rate, 4.5 % in 2008 to 1.1 % in 2020

Housing Costs
- 14 % increase in average sales price of new single-family homes, 2008-2020

The KPB is home to close to 60,000 people, about 8 percent of the population of Alaska. The KPB experienced a steady but modest growth in population from 2008 to 2020 (annual average rate of less than one percent). The KPB population grew by about 5,000 (10 percent change from 2008 to 2020) primarily as a result of net migration.

The KPB's population is aging. The KPB has a median age substantially higher than that of the state and the U.S. It has the fastest growing senior population among the boroughs and census areas in the state (102 percent increase between 2008 and 2020). In 2008, the segment of the population 65 years and older accounted for 10 percent of the population and by 2020 it was up at 19 percent.

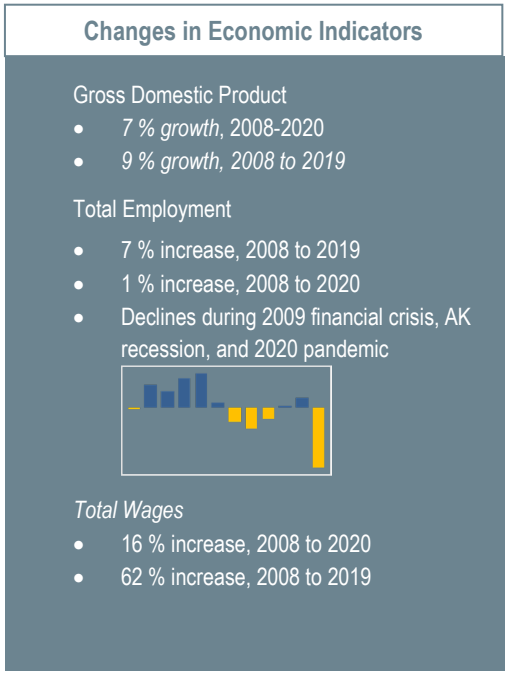
[4] The National Bureau of Economic Research (2021) defines a recession as a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales. A recession begins just after the economy reaches a peak of activity and ends as the economy reaches its trough.

The KPB is less ethnically and racially diverse than Alaska and the United States as a whole. The majority of the region's residents are white (79 percent in 2020, compared to 59 percent statewide, and 62 percent for the U.S. as a whole). Between 2010 and 2020 however, the share of the population that is white decreased (from 86 percent to 79 percent); and there were marginal increases in the non-white segment of the population. The Alaska Native population is the second largest group in the region, accounting for 7 percent of the population (compared to 15 percent statewide, and only 1 percent of the total U.S. population).

The educational level of KPB adults increased between 2010 and 2019, with higher number of adults who completed at least four years of college, and more college graduates going on to earn higher education. At the high school level, dropout rates in the KPB showed a declining trend, falling from 4.5 percent in 2008 to 1.1 percent in 2020.

Housing costs in the KPB are among the lowest in Alaska but housing costs were on an increasing trend between 2009 and 2020. The average sales price for a new single-family home in the KPB increased by 14 percent (from $325,000 in 2009 to $371,000 in 2020), compared to 24 percent increase statewide, and 20 percent increase nationwide.

The KPB has a diverse economy driven by several major industries, including fisheries, oil and gas, and recreation and tourism. Economic activity, employment, and income in the region have been subject to changes in supply and demand factors that affected its major industries, including major external events.



The KPB's average GDP from 2008 to 2020 was $3.16 billion, which accounts for about 5 percent of the state's GDP. From 2008 to 2020, the KPB's GDP increased by 7 percent; the growth was higher (9 percent) before the 2020 pandemic. GDP levels fluctuated over the study period with most of the significant declines driven by decreases in the GDP value of non-durable manufacturing goods (petroleum manufacturing and seafood processing).

Total employment grew by 7 percent between 2008 and 2019, however due to the pandemic, growth from 2008 to 2020 was only 1 percent. Employment levels in the region were adversely impacted by the 2009 financial crisis, the Alaska recession, and 2020 pandemic.

The increase in total wages over time was higher than the change in employment, increasing by 16 percent from 2008 to 2020, and 62 percent from 2008 to 2019 (pre-pandemic). Average monthly wages across most major industries increased with the highest jump in real wages in the health care (61 percent), wholesale trade (61 percent), and finance and insurance (43 percent), and oil and gas (27 percent) sectors. There was a decline in total wages in the region during the Alaska recession (from 2015 to 2016 and again from 2016 to 2017).

Unemployment rates in the KPB were on a decreasing trend between 2010 and 2020 with the lowest rate achieved in 2019 at 6 percent. However, due to the pandemic, the unemployment rate increased to 9 percent in 2020.

2.2 Demographics

2.2.1 Population Size

The KPB experienced steady, modest population growth from 2008 to 2020. In 2020, the population of the KPB was 58,934 (Figure 2-1), a 9.8 percent increase since 2008. By comparison, the percent increase was 6.1 percent for Alaska and 8.7 percent for the United States. In contrast to the KPB and United States, Alaska's population has been decreasing since 2016.

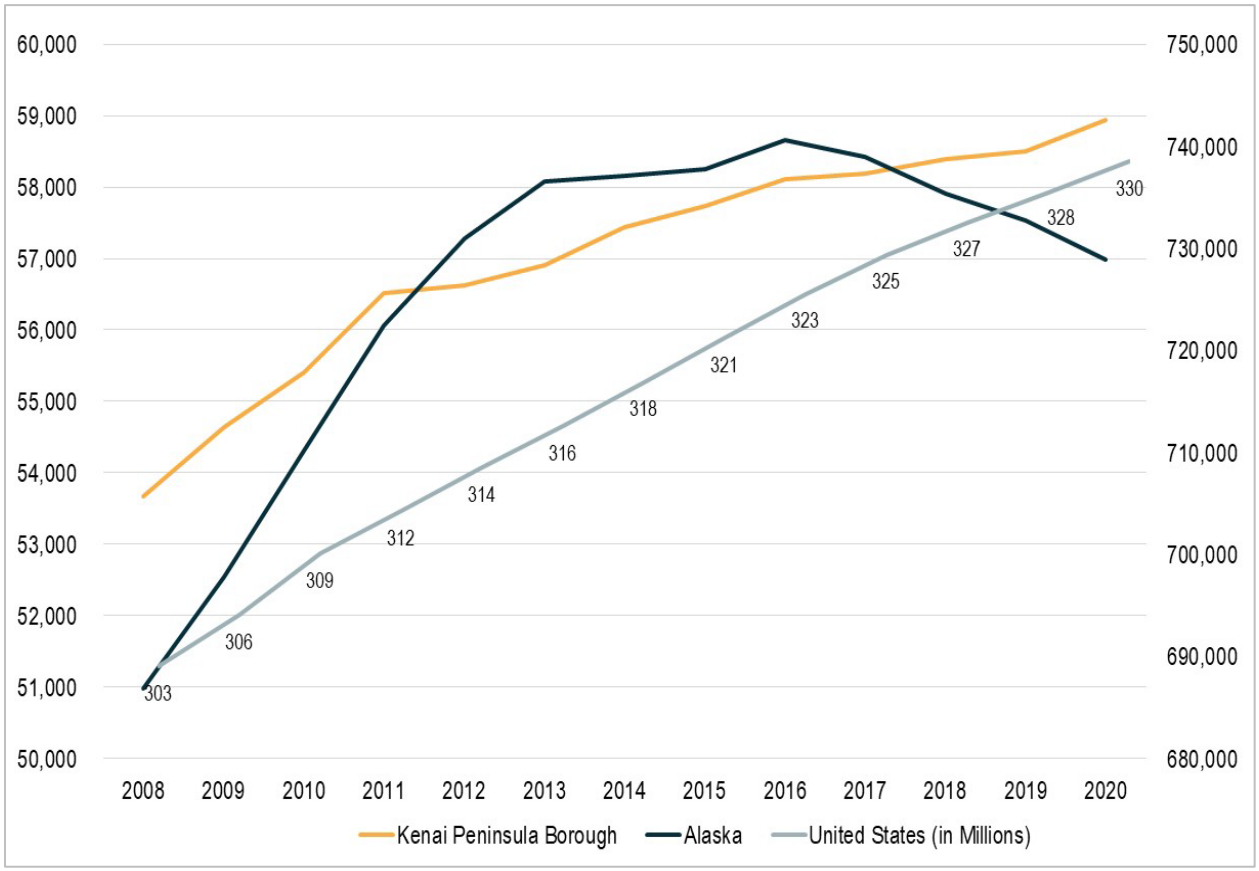


Figure 2-1. Annual Population of the Kenai Peninsula Borough, Alaska, and the United States, 2008–2020

Source: Alaska Department of Labor and Workforce Development (ADOLWD 2021a); U.S. Census Bureau (2021e)

Figure 2-2 shows the annual percent change in population from 2008 to 2020. While many of Alaska's other regions lost population between 2017 and 2020, the relative stability of the KPB's population from 2017 to 2019 and the increase in 2020 suggests some degree of resilience against the impacts of the Alaska recession (Agnew::Beck Consulting 2019).

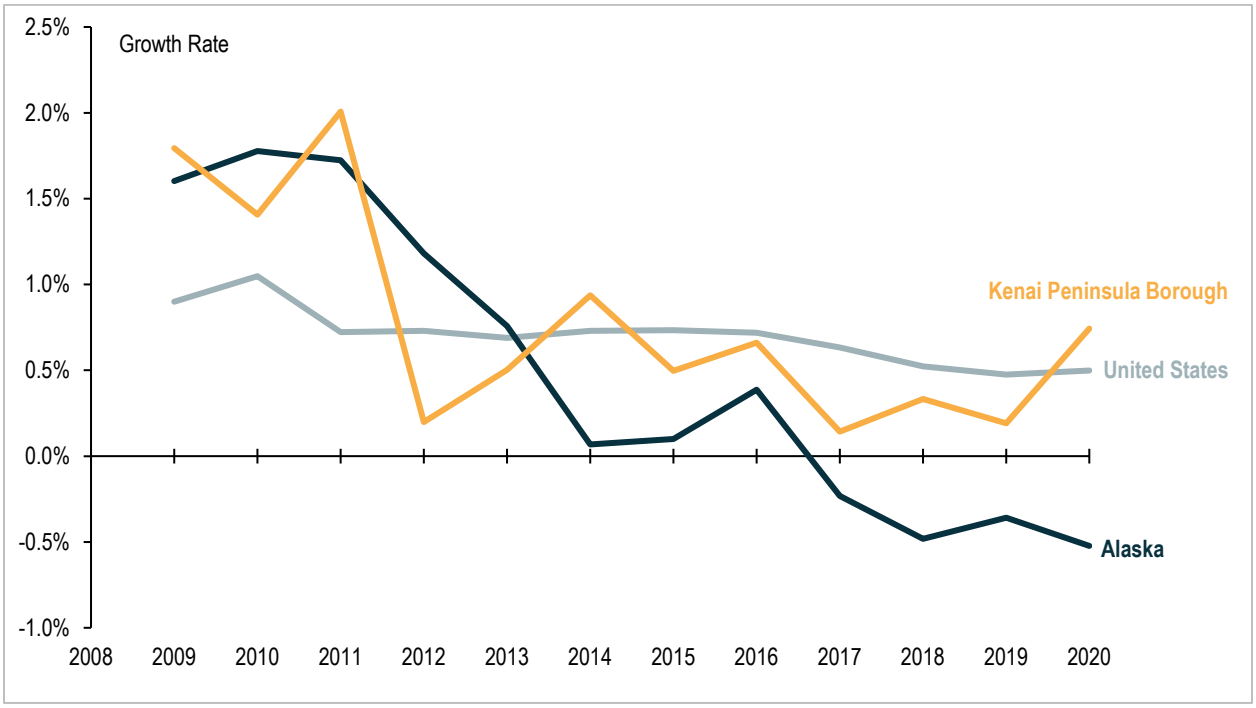


Figure 2-2. Annual Percent Change in Population in the Kenai Peninsula Borough, Alaska, and the United States, 2008–2020

Source: ADOLWD (2021a); U.S. Census Bureau (2021e)

As shown in Figure 2-3, migration into and out of the KPB fluctuated. Average annual net migration in the KPB from 2008 to 2015 was mainly positive due in large part to inflow from Anchorage (Sandberg 2018). The state last had positive net migration in 2011, when the U.S. economy was still emerging from the Great Recession (Robinson 2019). Net migration tends to be positive in Alaska when the U.S. unemployment rate is high. Both the KPB and Alaska experienced a period of negative net migration after the start of the Alaska recession in 2015. During the five years leading up to 2020, Alaska lost population to other states at a higher rate than any other state. Robinson (2019) suggests that this recent migration loss mainly stems from a decrease in the number of people moving to Alaska. He notes that the older, more rooted population in Alaska today has been less likely to leave despite the extended period of job loss. In contrast to the state's negative net migration in 2019, the KPB's net migration was positive.

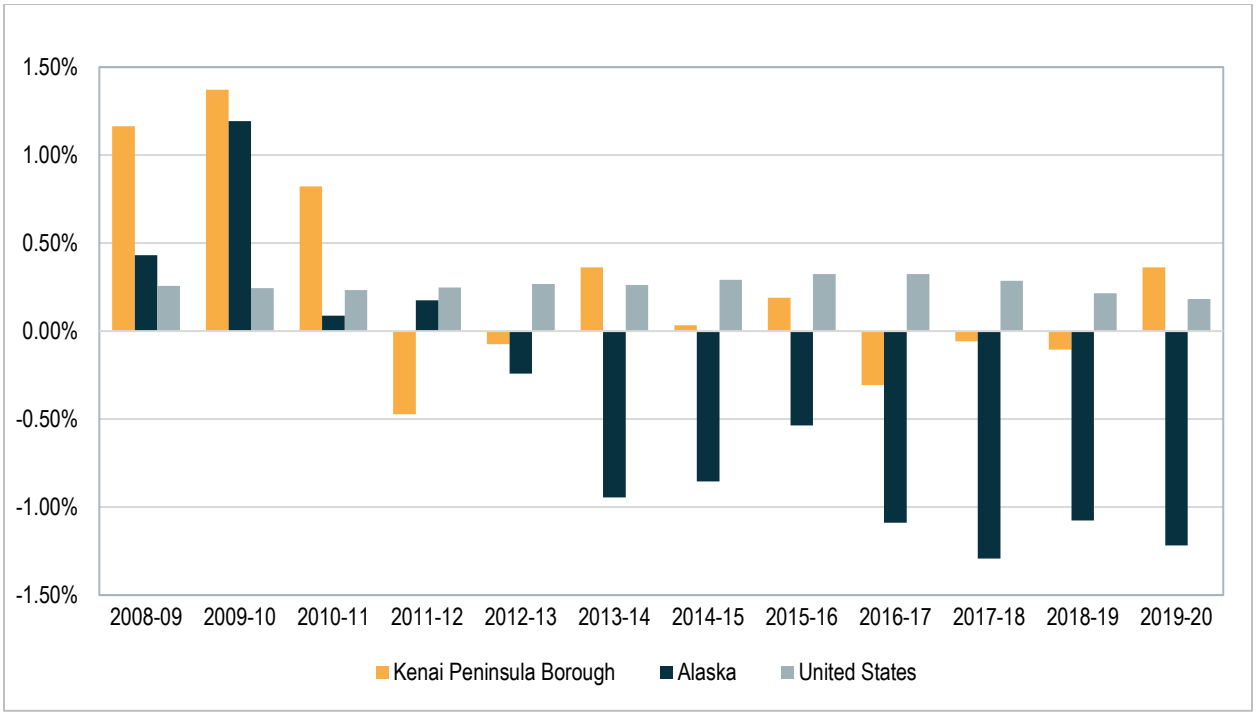


Figure 2-3. Net Migration by Share of Population in the Kenai Peninsula Borough, Alaska, and the United States, 2008–2020

Source: ADOLWD (2021a); U.S. Census Bureau (2021f); U.S. Census Bureau (2000)

Notes: Net migration is the difference between the numbers of persons entering a geographic area and those leaving the area. U.S. data for 2008, 2009, and 2010 are projections from 2000.

2.2.2 Age

Figure 2-4 shows the age distribution of the population in the KPB, Alaska, and the United States in 2008 and 2020. While Alaska has one of the fastest-growing senior populations of any state (Agnew::Beck Consulting 2019), seniors are still a smaller share of the population than they are nationwide. The trend of a rapidly increasing senior population was magnified in the KPB; in 2008, the 65 and older age group accounted for 10 percent of the KPB population and by 2020 the senior population accounted for 19 percent. The number of residents aged 65 and older more than doubled between 2008 (5,591) and 2020 (11,317). Currently, the KPB has the fastest growing senior population of any borough or census area in the state. Agnew::Beck Consulting (2019) notes that discussions with borough residents, real estate professionals, and others indicate that some of this growth is due to existing residents aging in place, as well as the KPB's popularity as a retirement or second-home destination. Many residents of the KPB are remaining in the area when they retire, and a substantial number of retirees from elsewhere in Alaska and even from the lower 48 states are moving to the KPB. The relatively mild climate, lower cost of living, recreational opportunities, and attractive lifestyles the KPB has to offer are characteristics that often proved a powerful force in resort community development around the nation (Fried and Windisch-Cole 2004). Given the KPB's growing reputation as a mecca for retirees, it has been called the "Florida of Alaska" (Shanks and Rasmussen 2010). The KPB government encouraged growth of its retiree

population by offering property tax incentives for older residents.[5] The KPB's growing senior population has multiple implications for community planning. Aging residents will have different needs for housing, medical care, and other services, such as transportation options when they are unable to drive, and they will have different spending patterns (Agnew::Beck Consulting 2019; Headwaters Economics 2021).

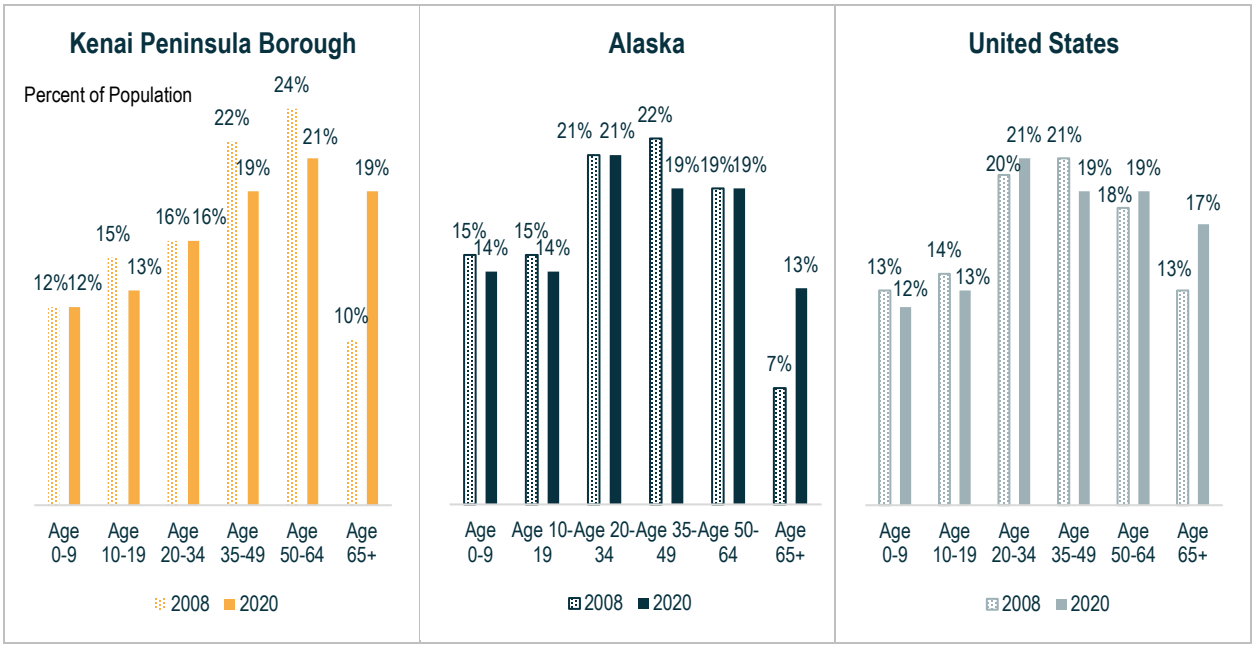


Figure 2-4. Age Distribution in the Kenai Peninsula Borough, Alaska, and the United States, 2008 and 2020

Source: ADOLWD (2021a); U.S. Census Bureau (2021g); U.S. Census Bureau (2021k)

In addition to older adults, the KPB attracted younger adults in the 20 to 34 age group. Much of the KPB's positive net flow has been people in this age group and their children (Sandberg 2021). However, the KPB's working age population (individuals between the ages of 15 and 64) was still relatively low. In 2020, this segment made up 62 percent of the KPB's total population, while it made up 66 percent of the statewide population.

Figure 2-5 shows the change in the median age in the KPB, Alaska, and the United States which is another indicator of whether a population has gotten older or younger. As shown in the figure, the aging of America continued, with increases in the median age in the KPB, Alaska, and the United States of 1.4,

[5] The state of Alaska mandates that the first $150,000 of assessed value on real property for a qualified senior citizen be exempt from all local property taxes. Since 1987, the KPB government has provided an additional exemption to qualified senior citizen residents of the KPB on their primary residence. As a result of these combined exemptions, a majority of senior-owned properties in the KPB pay no borough property taxes. In 2015, for example, 78 percent of senior-owned properties were exempt (Kenai Peninsula Borough Mayor's Office 2016). In 2016, concerns about decreasing state financial assistance to municipalities due to the Alaska recession prompted the KPB Assembly to propose an ordinance that would gradually phase out the optional senior property tax exemption. However, borough voters rejected the proposed ordinance (Kelly 2017).

1.8, and 1.7 years, respectively between 2008 and 2020. The KPB had a median age substantially higher than that of the state and the U.S., which is consistent with the KPB's lower percentage of people under 34 years of age and higher percentage of people 65 and over (Figure 2-4). The relatively low median age in Alaska is likely the result of the state's high birth rate. Alaska had the third highest birth rate of any state in 2019 (The Centers for Disease Control and Prevention 2021).

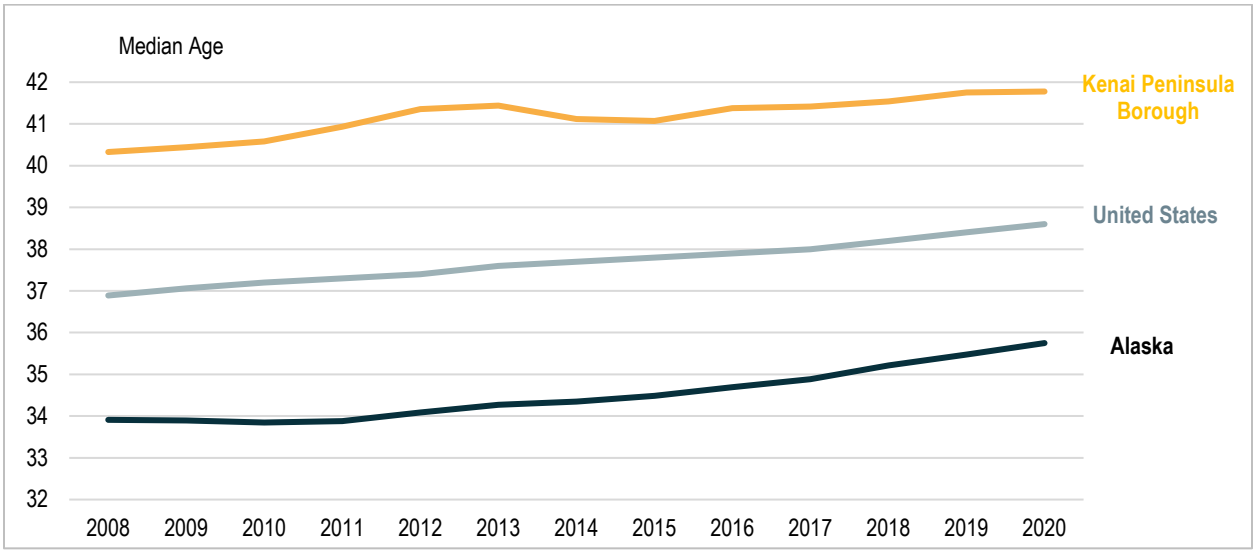


Figure 2-5. Median Age in the Kenai Peninsula Borough, Alaska, and the United States, 2008–2020
Source: ADOLWD (2021a); U.S. Census Bureau (2021g); U.S. Census Bureau (2021f); U.S. Census Bureau (2021k)

2.2.3 Race/Ethnicity

Race and ethnicity are self-identification U.S. Census data items in which respondents choose the race(s)/ethnicity with which they most closely identify (Humes et al. 2011). In addition to showing the sociocultural diversity of an area, these data are important when considering whether proposed Federal policies and management actions could have disproportionately high and adverse effects on minority populations in an area (Headwaters Economics 2021).

Figure 2-6 shows the racial and ethnic composition of the KPB, Alaska, and the United States in 2010 and in 2020. The share of KPB residents that were white in 2020 was 79 percent, compared to 59 percent statewide and 62 percent nationwide. The second largest group in the KPB and Alaska was American Indian and Alaska Native, making up approximately 7 percent of the KPB population and 15 percent of the statewide population; the vast majority of whom are Alaska Natives. A number of cultural and linguistic groupings are represented among the people of Alaska Native descent in the KPB, including Alaska Athabaskan, Aleut, Iñupiat, Tlingit-Haida, Tsimshian, and Yup'ik.

Across time, there were no significant shifts in the KPB racial and ethnic composition, although the share of KPB residents that were white decreased from 85 percent in 2010 to 79 percent in 2020. Both Alaska and the United States had similar decreases in the share of the population that were white. The share of the population that identified as Asian alone increased from 2010 to 2020 in all areas, including the KPB.

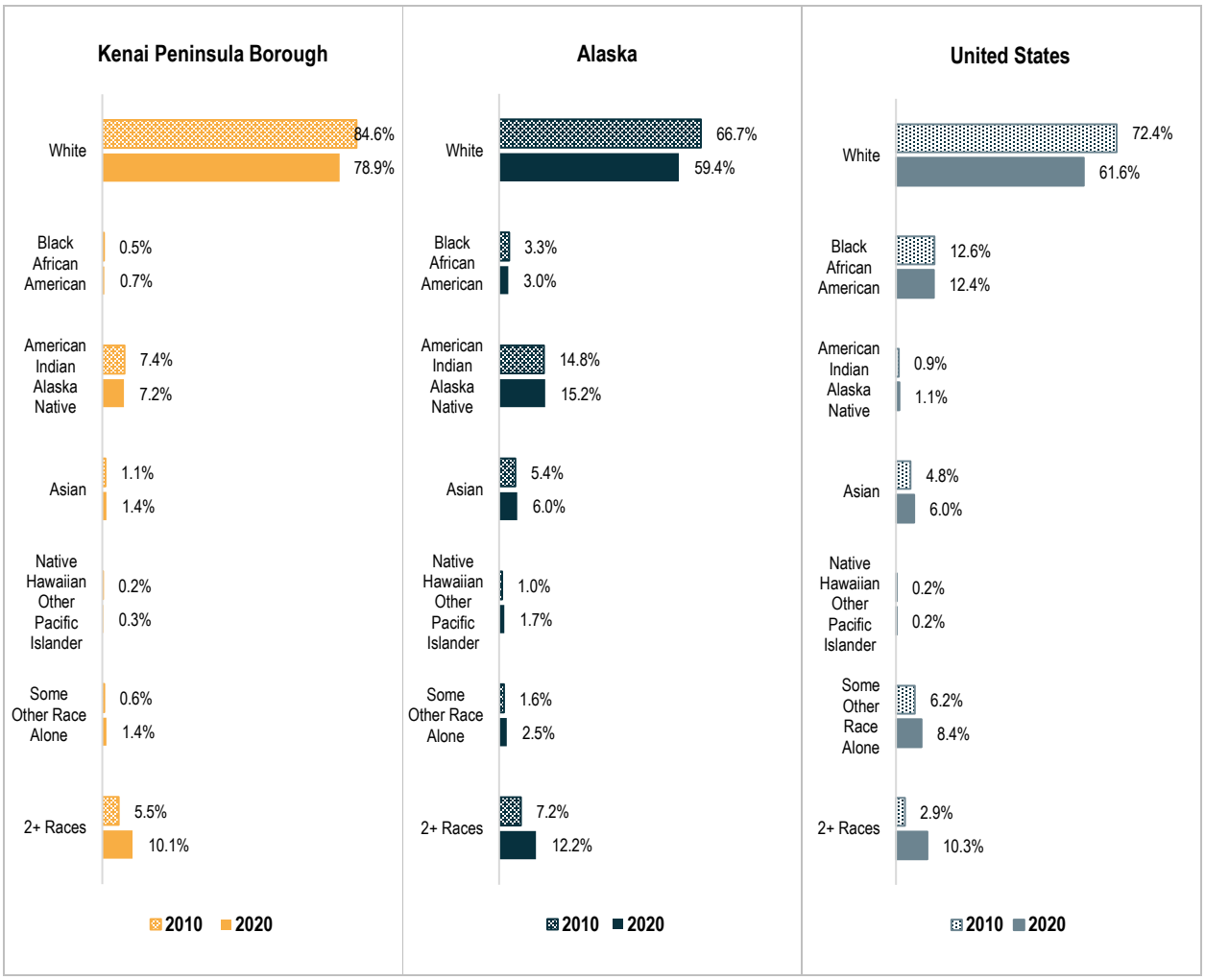


Figure 2-6. Racial and Ethnic Composition of the Kenai Peninsula Borough, Alaska, and the United States, 2010 and 2020

Source: U. S. Census Bureau (2022)

The U.S. Census Bureau uses a diversity index to measure racial and ethnic diversity of an area. A zero value indicates that everyone in the population has the same racial and ethnic characteristics and a value close to 100 percent indicates that everyone in the population has different racial and ethnic characteristics. Another measure is the diffusion score which indicates the percentage of the population that is not in the first, second, or third largest racial and ethnic groups combined in the area. The calculation shows how diverse and diffused the population is relative to the largest groups. As indicated by the diversity index and diffusion scores shown in Figure 2-7, the KPB is less racially and ethnically diverse than Alaska and the United States as a whole.

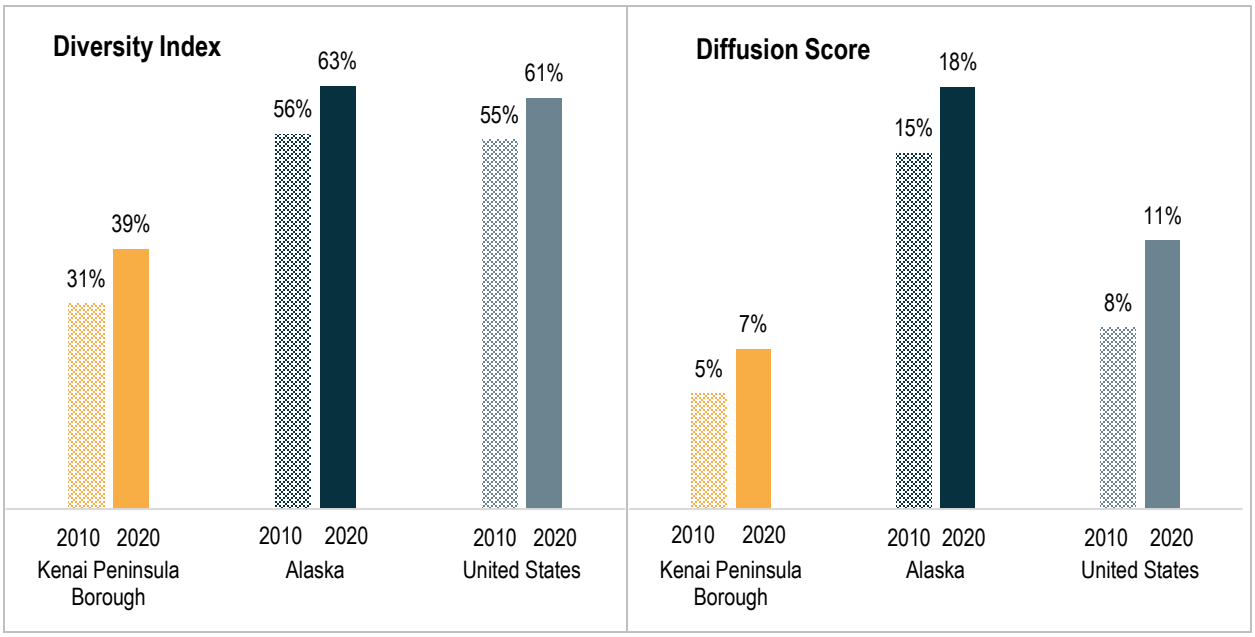


Figure 2-7. Diversity Index and Diffusion Score in the Kenai Peninsula Borough, Alaska, and the United States, 2010 and 2020

Source: U. S. Census Bureau (2022)

Figure 2-8 shows the minority percentage for the KPB, Alaska, and United States populations in 2010 and 2020. The Council on Environmental Quality's guidance on environmental justice defines a minority as an individual who is a member of one of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (Council on Environmental Quality 1997). The share of this segment of the population in each of the areas increased over time.

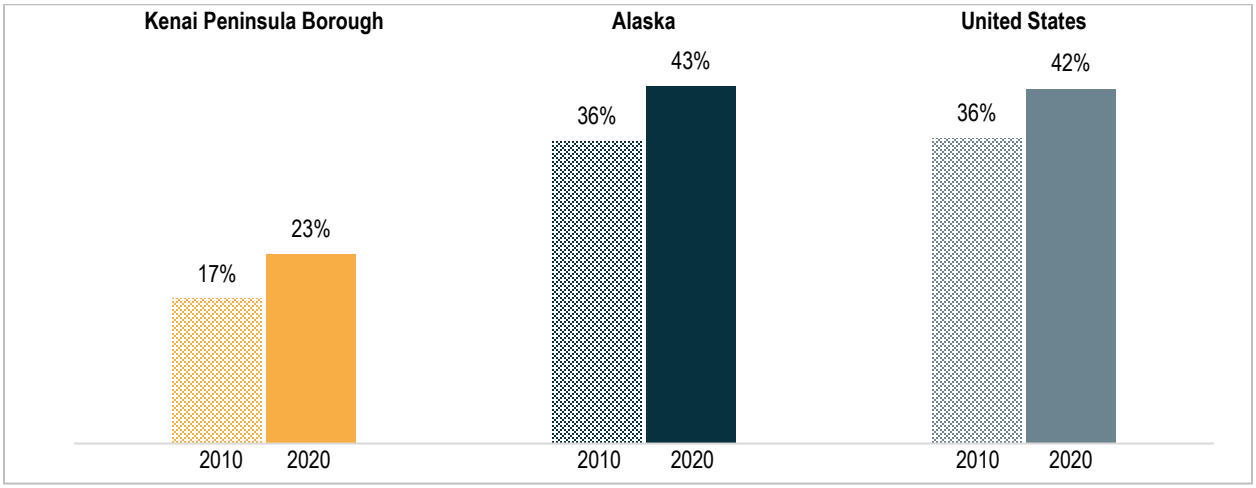


Figure 2-8. Minority Percentage in the Kenai Peninsula Borough, Alaska, and the United States, 2010 and 2020

Source: U.S. Census Bureau (2021m)

Notes: The U.S. Environmental Protection Agency's Environmental Justice Screening (EJSCREEN) Tool calculates the percentage of minority individuals in a population as 100 percent minus the White Alone, Non-Hispanic percent (U.S. Environmental Protection Agency 2021).

2.2.4 Education

Educational attainment refers to the highest level of education that an individual aged 25 and over has completed. Higher attainment levels can positively impact an individual's job opportunities and earnings and are often correlated with an area's ability to respond to changes in the economy (Headwaters Economics 2021).

Figure 2-9 shows the educational attainment level in the KPB, Alaska, and United States. Between 2010 and 2019, the educational level of American adults increased as the number of adults who completed at least four years of college increased, and as more college graduates went on to earn master's, professional, and doctoral degrees. The KPB and Alaska also saw an increase but of a lower magnitude. The percentage of adult residents in the KPB with a college degree or higher was less than that of adult residents in Alaska as a whole, with an average of 34 percent from 2015 to 2019 compared to the state's 38 percent. The nationwide percentage was 41 percent.

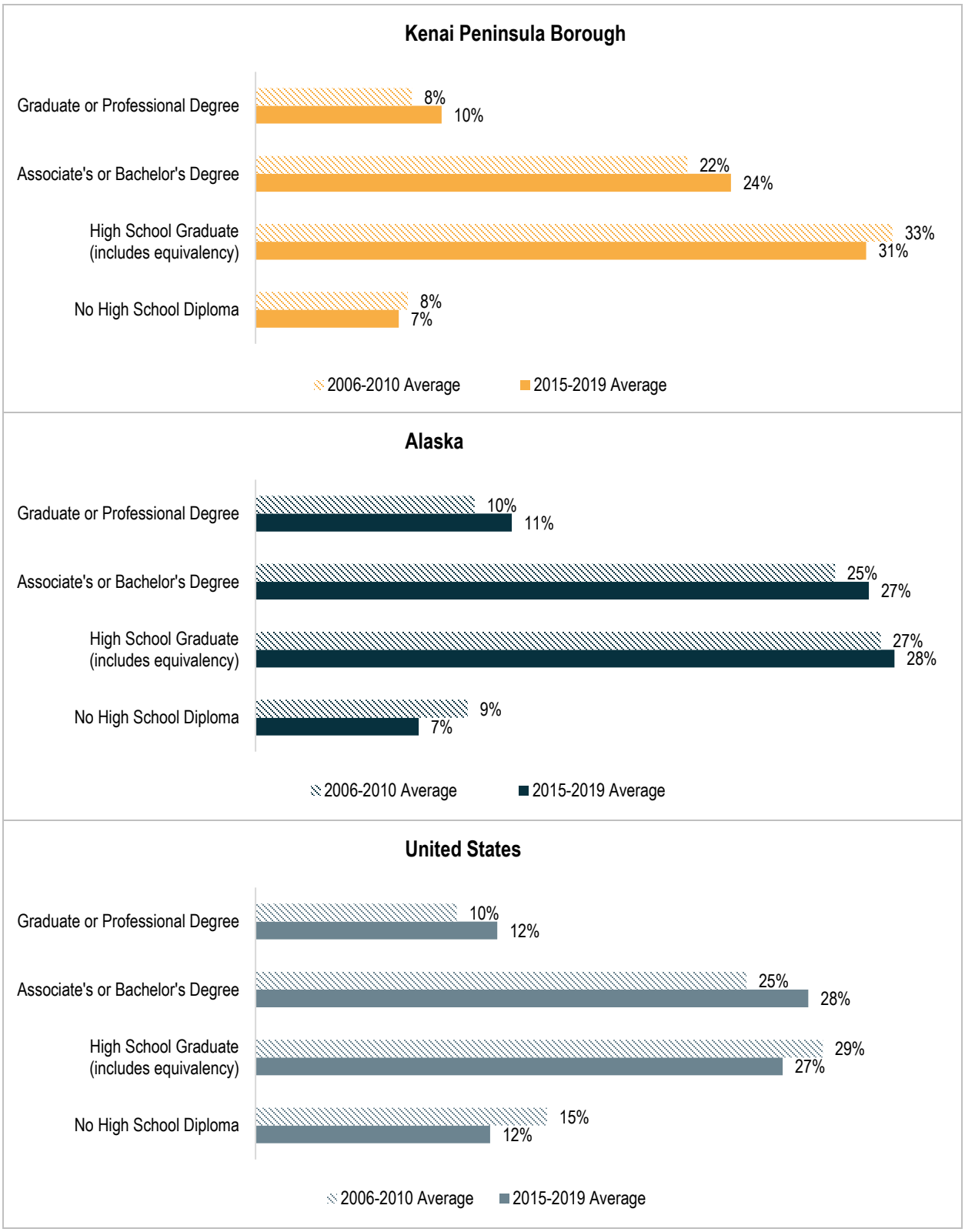


Figure 2-9. Change in Share of Educational Attainment of Adults in the Kenai Peninsula Borough, Alaska, United States, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021d)

In recent years, the Kenai Peninsula Borough School District provided free public K-12 education for about 9,000 students, operated 44 schools, and employed over 1,200 personnel. This diverse school district includes traditional public schools, optional and alternative high schools, Pre-K programs, charter schools, performance-based schools, hybrid high schools, and a district homeschool program (Agnew::Beck Consulting 2019).

As shown in Figure 2-10, the percent of KPB residents aged 25 and older with a high school degree or higher rose between 2010 and 2019, but the percentage increase was not as high as the increases in Alaska and the United States as a whole. Moreover, within the KPB the percentage of adults with a high school degree or higher differed across racial groups. From 2015 to 2019, for example, the average proportion of Alaska Natives in the KPB with that educational level was 83 percent, compared to 94 percent for whites (U.S. Census Bureau 2021e). However, the graduation rate for Alaska Natives residing in the KPB improved in recent years due to the development and implementation of plans, methods, strategies, and activities to improve Alaska Native's educational outcome, and in 2017, the Alaska Native graduation rate surpassed the overall district graduation rate (Sorensen 2017).

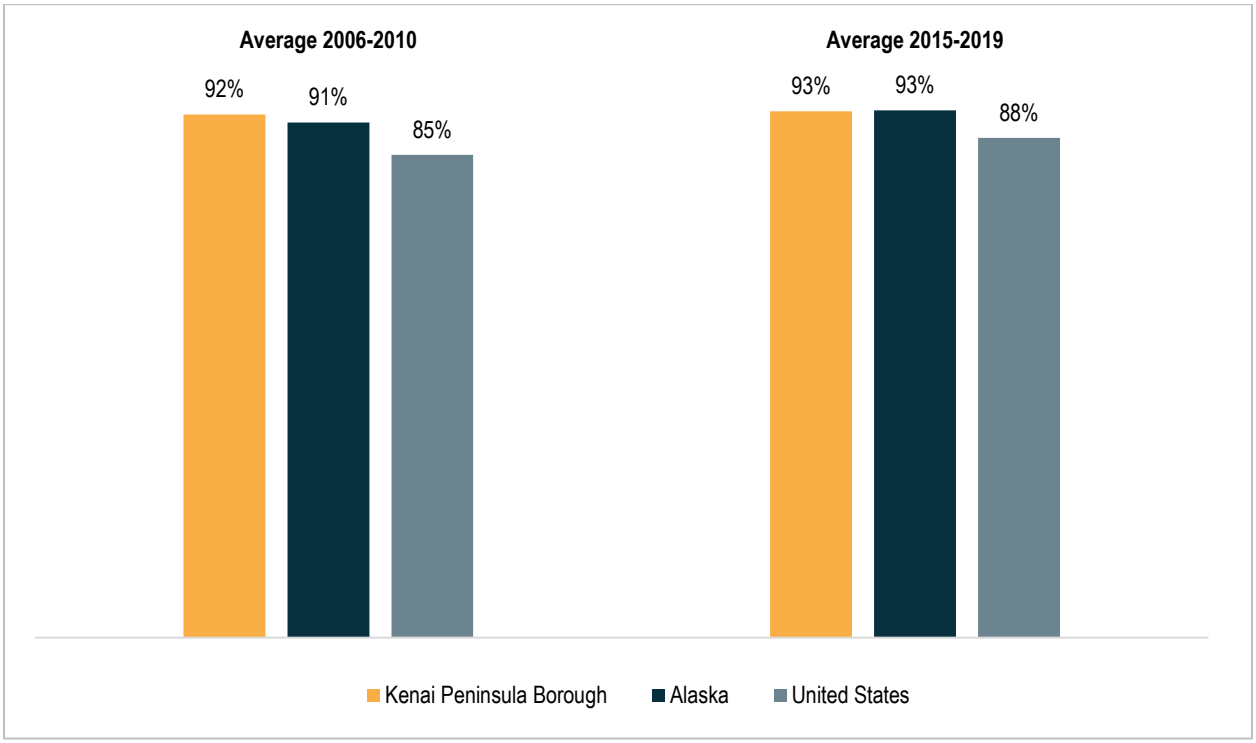


Figure 2-10. Percent of Adults with a High School Degree or Higher in the Kenai Peninsula Borough, Alaska, and United States, 2006-2010 Average and 2015-2019 Average
Source: U.S. Census Bureau (2021d)

Agnew::Beck Consulting (2019) noted that the state's recession and growing opioid epidemic affected the stability of KPB communities. The increased rate of homelessness and over-burdened assistance programs stressed the school system as more students struggled with erratic attendance, under-performance, and emotional challenges.

In 2020, the operations of the KPB's school system were further challenged by restrictions to prevent the spread of the coronavirus. At the start of the 2020 to 2021 school year a large number of schools opened with only online classes (Williams 2021). The effectiveness of online learning may have been hindered by a lack of high-quality internet service. Many areas of the KPB are without access to high-speed internet, making it difficult to provide quality education (Agnew::Beck Consulting 2019). Even when schools are open with in-person learning, a lack of access to digital learning resources outside of the classroom may hamper students' ability to fully participate and engage in school (National Center for Education Statistics 2021). Approximately 84 percent of households in the KPB have internet subscriptions, which is lower than in Alaska as a whole, with an average of 88 percent of households. Of the households in the KPB with internet access, 66 percent have broadband access. The remaining households utilize dial-up or satellite internet (University of Alaska Center for Economic Development 2021). In 2020, the KPB government allocated $1.2 to $2 million in Coronavirus Aid, Relief, and Economic Security (CARES) Act funding to improve public access to internet. That allocation is funding the construction of new communication towers intended to expand broadband across underserved areas of the KPB (O'Hara 2021).

Despite these challenges, the high school dropout rate in the KPB showed a declining trend over the study period, falling from 4.5 percent in 2008 to 1.1 percent in 2020 (Figure 2-11). [6]

[6] Note that while high school dropout rates declined from 2008 and 2020, there was also a marginal decline in percent of the population that graduated from high school. These indicators are measured differently so it is difficult to compare the changes in these indicators. The educational attainment figure was based on comparing two points in time (averages over a 5-year period) and is based on a survey (self-reporting). The dropout rates on the other hand, are annually tracked by the KPB school district.

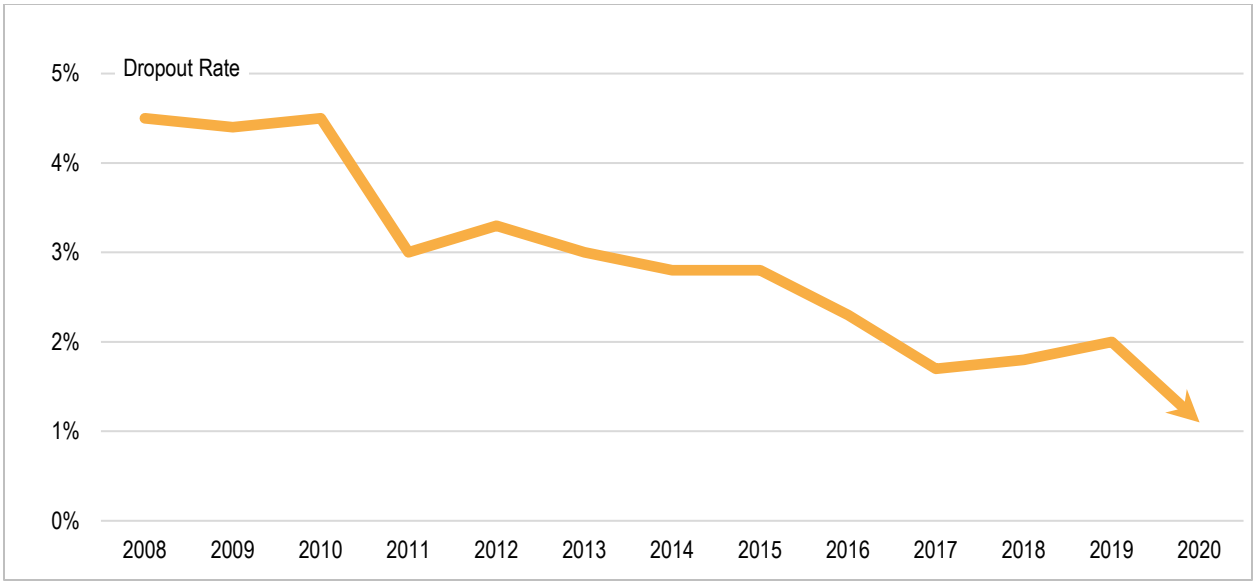


Figure 2-11. High School Dropout Rate in the Kenai Peninsula Borough, 2008–2020
Source: Alaska Department of Education and Early Development (2021)
Notes: According to state regulations, a student is reported to have dropped out if that student was enrolled in an Alaska public school district and ended his or her enrollment in that same school year. This does not include students who transferred schools, completed another district-approved program, or are on leave due to suspension or illness. It may include those who left to attend a GED program.

The KPB's two primary institutions offering postsecondary and vocational education are the Kenai Peninsula College (KPC) and Alaska Vocational Technical Center (AVTEC). KPC is a unit of the University of Alaska Anchorage with campuses in Soldotna and Homer and extension sites in Seward and Anchorage. AVTEC, which offers programs ranging from culinary arts to industrial welding, is located in Seward. These post-secondary educational institutions play an important role in the continuing education of KPB residents. Other technical and vocational programs are also present in the KPB. These include, but are not limited to, the Alaska Construction Academy, Amundsen Educational Center, and Alaska Petroleum Academy (University of Alaska Center for Economic Development 2021).

As shown in Figure 2-12, enrollment in KPC declined over the last five years, a trend which is likely tied to decreased funding for the University of Alaska system and cuts to academic programing system wide (University of Alaska Center for Economic Development 2021). State fiscal declines especially affected funding for postsecondary education and support services. Moreover, students may be reluctant to commit their limited resources to tuition and classes when faced with uncertain job security (Boettger 2017; Agnew::Beck Consulting 2019). More recently, the COVID-19 pandemic contributed to the decline in enrollment at KPC. According to KPC's director, about 80 percent of KPC students are considered "nontraditional": that is, they are older adults who often have family and work responsibilities. As a result of the economic hardships created by the pandemic, many of these individuals did not have the financial resources to attend classes (Poux 2021a)

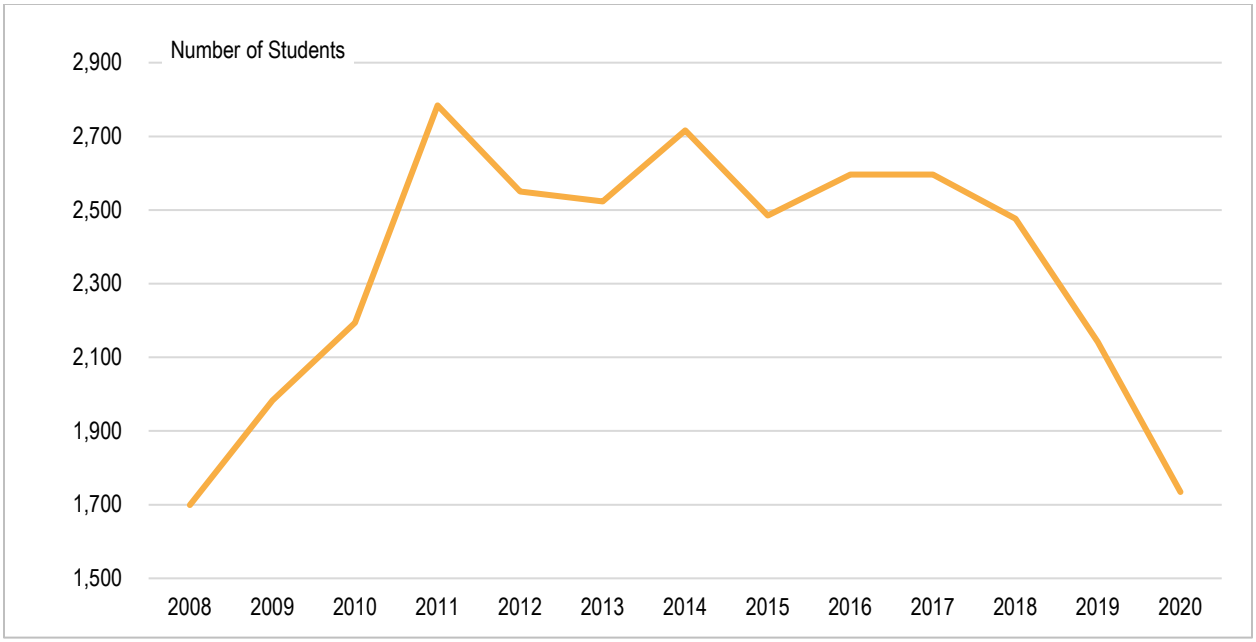


Figure 2-12. Fall Semester Enrollment in the Kenai Peninsula College, 2008–2020
Source: University of Alaska Anchorage (2021)

State funding cuts in postsecondary educational programs and economic uncertainty also affected enrollment in AVTEC. To fulfill mandated budget reductions, programs had to be reduced or eliminated (Kenai Peninsula Economic Development District 2018). AVTEC enrollment dropped from 1,209 in the 2016–2017 academic year to 630 in the 2019–2020 academic year (College Tuition Compare 2021).

2.2.5 Housing

A housing unit is defined by the U.S. Census Bureau (2022a) as a house, apartment, group of rooms, or single room occupied or intended for occupancy as separate living quarters. Housing represents the largest expenditure for the average household (Fried 2019b).

Housing costs in the KPB are among the lowest in Alaska, with both the median rent and average home sales price lower than those in Alaska and the United States as a whole (Figure 2-13 and Figure 2-14). More recent data from ADOLWD indicates that in 2020, the adjusted median monthly rent in the KPB was $1,009 (ADOLWD 2021f). The median monthly price of a rental unit in the KPB was about $130 cheaper than one in Anchorage, and the average new home in the KPB was more than $200,000 cheaper than the average Anchorage home (ADOLWD 2021k). The average sales price for a new single-family home in the KPB increased from $325,000 in 2009 to $371,000 in 2020.

The Alaska recession and accompanying job losses and net migration losses led to a softening of the rental market in the KPB, with vacancies up and rents down (Wiebold 2017).

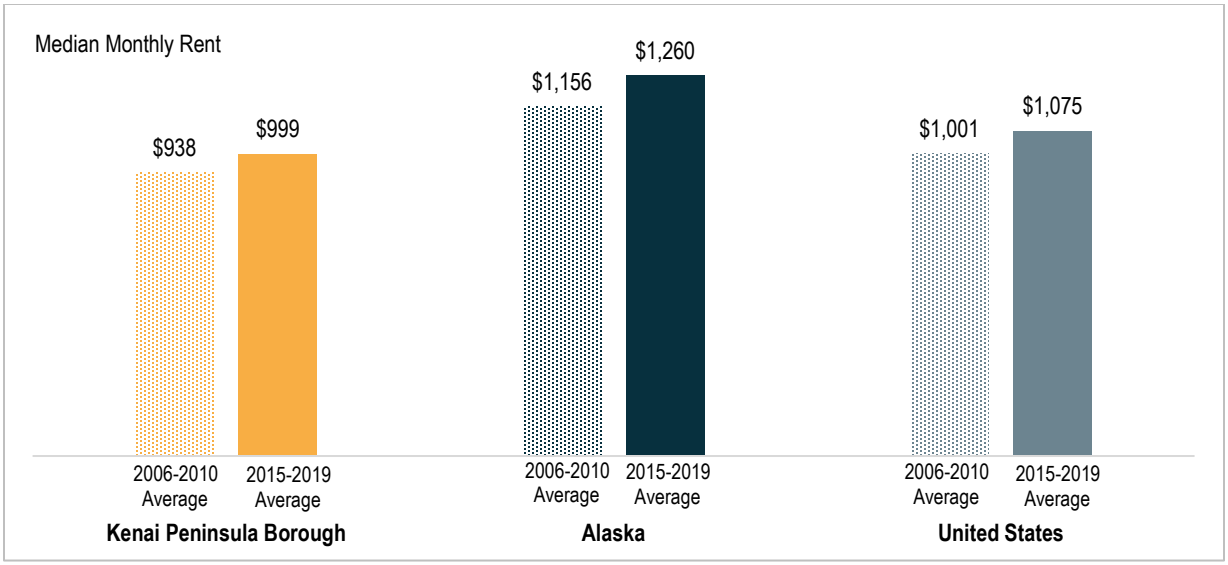


Figure 2-13. Median Monthly Gross Rent in the Kenai Peninsula Borough, Alaska, and the United States, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2020a); U.S. Census Bureau (2021c)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

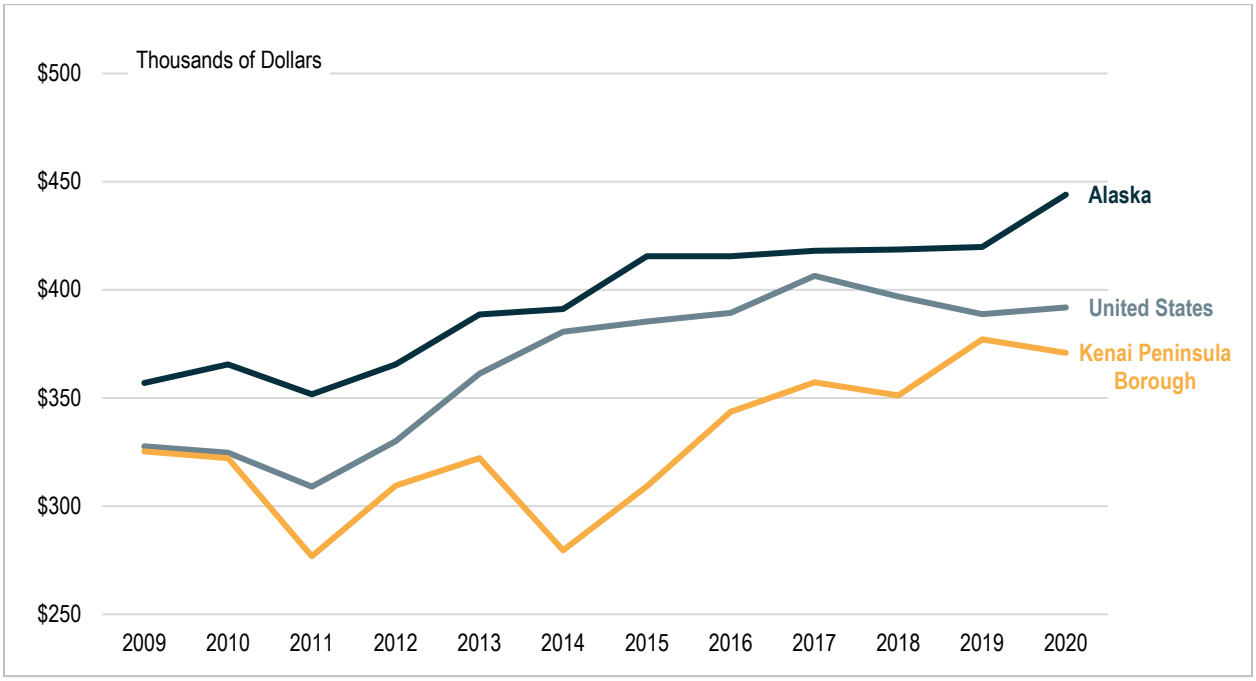


Figure 2-14. Average Sales Price for a New Single-Family Home in the Kenai Peninsula Borough, Alaska, and the United States, 2009–2020

Source: ADOLWD (2021k); U.S. Census Bureau (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

According to the U.S. Census Bureau (2022a), seasonal, recreational, or occasional use housing units refer to vacant units used or intended for use only in certain seasons or for weekends or other occasional use throughout the year. They are occupied temporarily by persons whose usual place of residence is elsewhere. These "second homes" are often an indicator of the desirability of a place for recreation and tourism (Headwaters Economics 2021). As shown in Figure 2-15, the KPB has a substantially higher percentage of seasonal, recreational, or occasional use housing units than either Alaska or the United States as a whole. The KPB is a popular choice for second homes and retirement homes both for Alaska residents and out of state buyers. Scenic views and waterfront properties, especially along the Kenai River, are the most valuable amenities for prospective buyers (Agnew::Beck Consulting 2019).

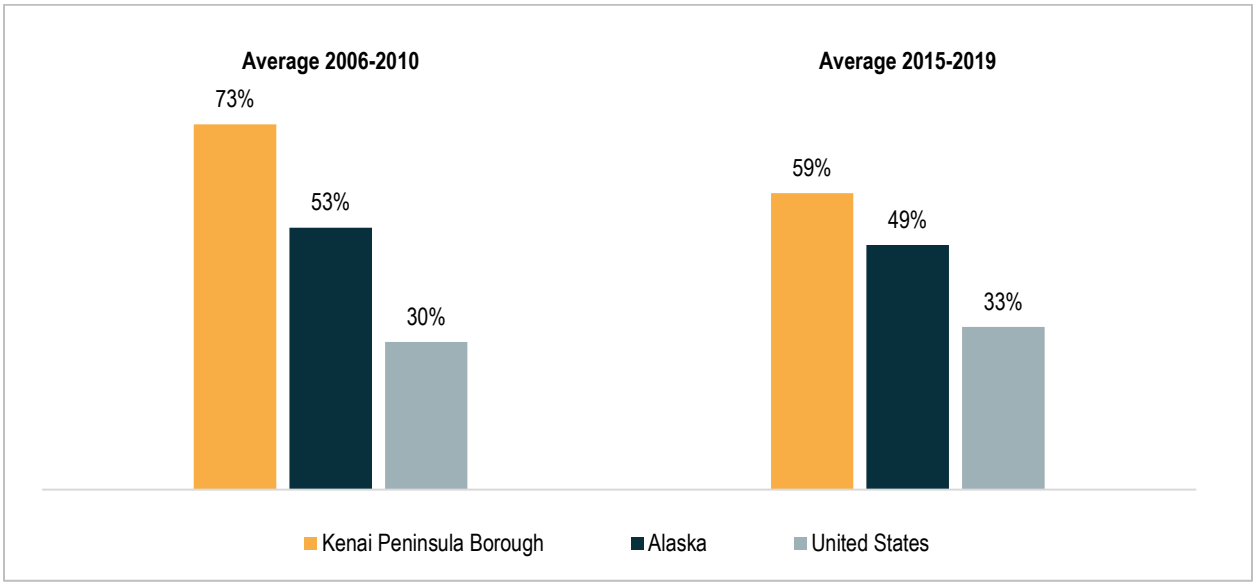


Figure 2-15. Seasonal, Recreational, or Occasional Use Housing Unit Percentage in the Kenai Peninsula Borough, Alaska, and the United States, 2006–2010 Average and 2015–2019 Average
Source: U.S. Census Bureau (2021a)

Agnew::Beck Consulting (2019) reports that interviews with local real estate agents suggest that the demand for seasonal, recreational, or occasional use housing in the KPB created a two-tiered real estate market. Over the last decades, prices for relatively scarce properties (e.g., high-amenity waterfront parcels, or land in highly desirable small towns) climbed, offsetting stable or declining prices in other categories. More than a third (24,823 of the 65,552 or 37.9 percent) of parcels in the KPB have a primary owner with an out-of-area address. This group often seeks high amenity parcels, paying $150,000–$250,000 for waterfront or view properties, more than twice the cost of standard lots. Demand for these relatively scarce, high-amenity parcels is strong throughout the KPB.

With the continued growth in the senior population of the KPB, senior housing is expected to become a growing concern. In 2016, it was estimated that the KPB had 22 senior citizens per licensed senior facility bed, significantly higher than the statewide average of 15 seniors per licensed senior facility bed. In the next ten years, this statistic is estimated to grow to 39 senior citizens per licensed senior facility bed. While not every senior citizen is in need of a bed at a care facility, the statistic does represent a growing concern over senior housing and care capacity in the region (University of Alaska Center for Economic Development 2021).

Data on the number of people experiencing or at risk of homelessness in the KPB are limited because of their transience and because oftentimes a state of homelessness is variable and/or temporary (Wilson and Lowe 2007). The most commonly cited numbers are generated from an annual count of people who are homeless conducted statewide, which relies on local outreach in each community to produce an estimate of the total homeless population. In August 2018, the most recent period for which data are available, the count identified 85 people in the KPB who were homeless (Agnew::Beck Consulting 2019; Alaska Coalition on Housing and Homelessness 2021).

However, the count may understate the need in the KPB. Love INC, a faith-based organization based in Soldotna that provides homeless prevention and permanent housing placement services in the KPB, works closely with 50 local churches to provide emergency shelter locally for over 950 adults and 600 children who are homeless. The Kenai Peninsula Borough School District estimates that an average of 250 students are identified as being "in transition" each academic year. This means that they or their families are homeless or do not have stable housing (Agnew::Beck Consulting 2019; Petersen 2020). In 2020, there was likely an increase in the number of KPB residents experiencing housing insecurities because the COVID-19 pandemic resulted in more families experiencing economic hardship (Petersen 2020)

As of 2015, within the KPB there were 56 emergency shelter beds, 14 permanent supportive housing units, 25 transitional housing units, and 67 domestic violence victim beds. The KPB has relatively few low-income or emergency housing options (1.64 beds per 1,000 residents), and some of the need is absorbed by networks of family and friends who provide an informal safety net for many otherwise homeless youth, adults, and families. A variety of housing and social services organizations formed a coalition, the Kenai Peninsula Continuum of Care, to better coordinate services for populations in need and to identify gaps in the current system, such as limited housing options for people with disabilities and a need for emergency and transitional housing facilities (Agnew::Beck Consulting 2019).

The number of affordable housing units for low-income renters in the KPB is also limited. The Alaska Housing Finance Corporation has 299 housing choice vouchers for privately-owned units. The Kenai Peninsula Housing Initiative operates a number of rental facilities specifically to help keep people from remaining or becoming homeless (Earl 2016). The Kenaitze Indian Tribe also offers subsidized housing. One of 32 units in the Tribe's Toyon Villa Apartments in Old Town Kenai is designated for transitional housing, offering free rent. Four other units in the complex are subsidized by the tribe (Kenaitze Indian Tribe 2018).

2.3 Economy

2.3.1 Gross Domestic Product

GDP measures the value of the final goods and services produced in the region and is a comprehensive measure of economic activity. Variations in GDP reflect changes in an area's overall economic health. Figure 2-16 shows the annual percent change in GDP in the KPB, Alaska, and the United States. Alaska's highest year-over-year increase in GDP occurred in 2009 but during that same period the United States experienced a decline in GDP as the global financial crisis impacted the economic health of the country. The highest annual percent decrease in GDP levels for Alaska and the United States was during the COVID-19 pandemic. The KPB's average GDP from 2008 to 2020 was $3.16 billion, which accounts for

about 5 percent of the state's GDP. Alaska's GDP on the other hand, accounted for less than 1 percent of the United States' GDP. From 2008 to 2020, the KPB's GDP increased by 7 percent, Alaska's GDP decreased by 2 percent, and the United States' GDP increased by 18 percent. The highest annual percent increase in GDP in the KPB occurred in 2014, with a 10.6 percent change from the 2013 GDP level which can be mostly attributed to an increase in GDP in non-durable manufacturing sector. In the KPB, non-durable manufacturing includes seafood processing and petroleum manufacturing. And from 2013 to 2014, oil and gas industry sales also increased significantly (Figure 5). The highest annual percent decline in GDP occurred in 2018, again the decline can be mostly attributed to the decrease in value of seafood processing.

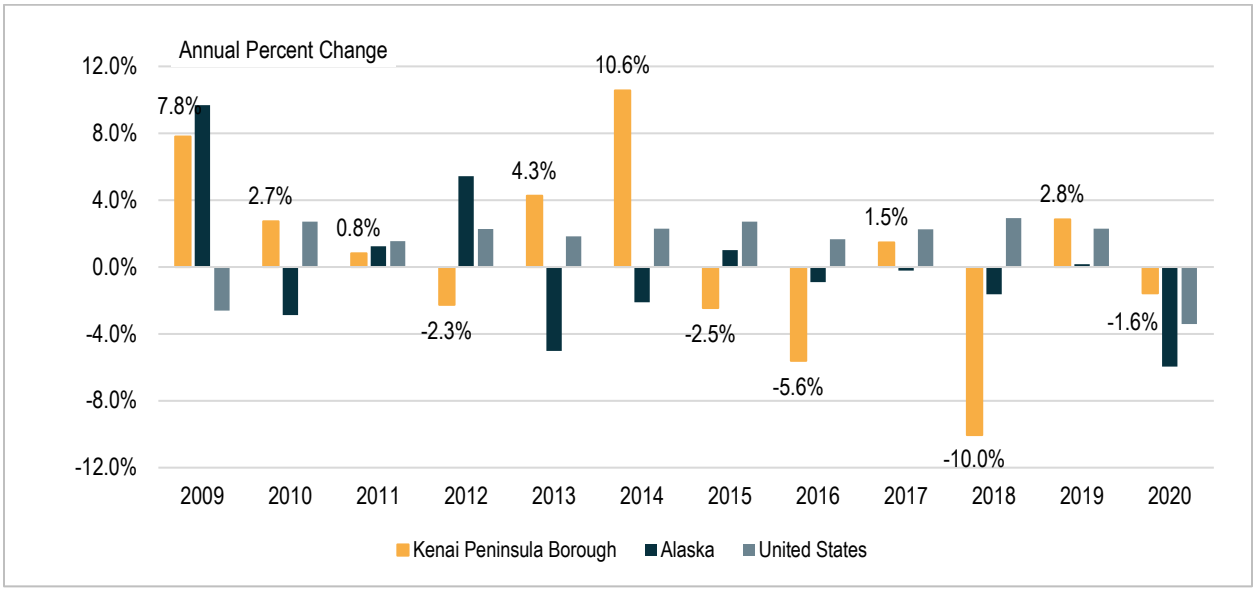


Figure 2-16. Annual Percent Change in Gross Domestic Product in the Kenai Peninsula Borough, Alaska, and the United States, 2008-2020
Source: U.S. Bureau of Economic Analysis (2022)

2.3.2 Employment

2.3.2.1 Total Employment

Employment trends are prime indicators of the economic growth of an area. Figure 2-17 shows the annual percent change in total employment in the United States, Alaska, and the KPB. During the Great Recession, the U.S. economy lost 7.3 million jobs, but by 2010, the national economy had begun a record streak of job creation (Alaska Department of Revenue [ADOR] 2018). Alaska's reliance on the oil industry and government helped the state weather the Great Recession better than most of the rest of the country. Oil prices dipped in 2009 but rapidly rose again, supporting state revenues and employment and resulting in a period of positive employment growth (Forgey 2010). However, Alaska began losing jobs in 2015 as the impact of falling oil prices reverberated through the broader state economy (Robinson 2019). The KPB was among the four areas of Alaska that sustained the largest job losses between 2015 and late 2017 (the others were the North Slope Borough, Anchorage, and the Fairbanks North Star

Borough) (Fried 2018).[7] Pre-pandemic job numbers in the KPB and the state showed the beginning of an economic recovery, but they soon plunged due to the economic impacts of the COVID-19 pandemic (University of Alaska Center for Economic Development 2021). Job losses in the KPB were less severe than those in the state as a whole because of the KPB's relatively diverse economy (Fried 2021). It is uncertain what the pandemic's long-term effects, if any, will be on employment levels. As some businesses may close permanently, there may be an extended reduction in available jobs in some industries.

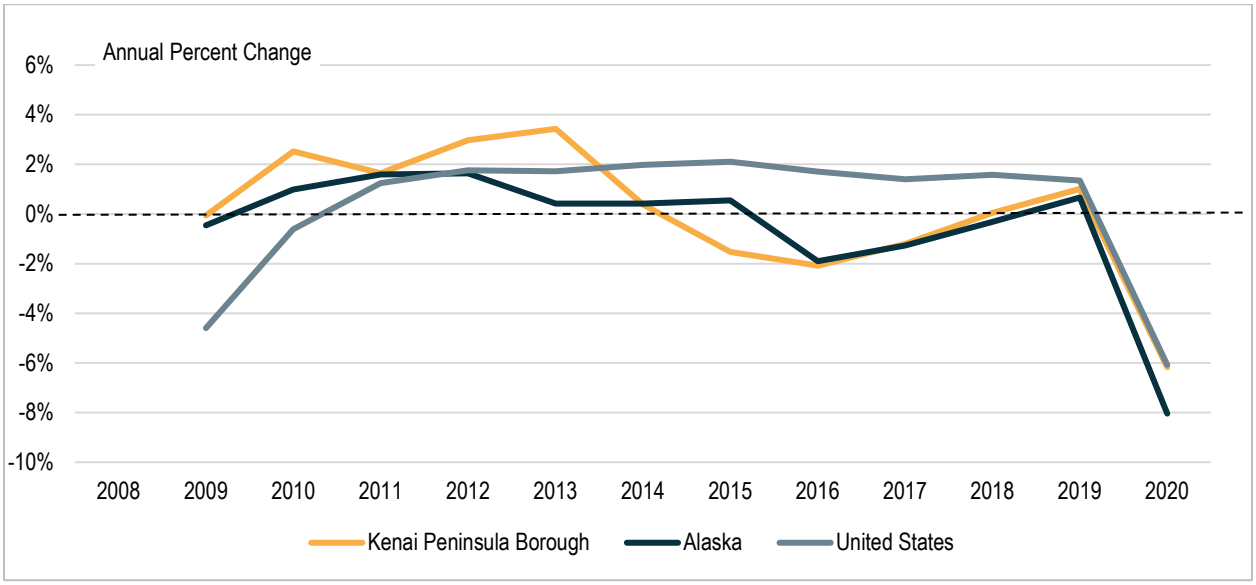


Figure 2-17. Annual Percent Change in Total Employment in the Kenai Peninsula Borough, Alaska, and United States, 2008–2020

Source: ADOLWD (2021b); U.S. Bureau of Labor Statistics (2021a)

Notes: Total employment excludes proprietors, the unincorporated self-employed, unpaid family members, and certain farm and domestic workers.

2.3.2.2 Employment by Industry and Occupation

2.3.2.2.1 Employment by Industry

The relative diversity of an area's economy and its degree of dependence on certain industries is key to understanding the type of economy that exists and its competitive strengths (Headwaters Economics 2021). This section describes which industries in the United States, Alaska, and KPB were responsible for the most jobs from 2008 to 2020, while Chapter 3 focuses on annual employment trends within specific industries.

[7] The North Slope Borough experienced a sharp economic downturn because its economy is tied to the oil and gas industry in the greater Prudhoe Bay region. Anchorage, headquarters to the state's oil and industry, lost jobs as the oil and gas industry and state government both contracted. Fairbanks experienced both of those impacts plus the added impact of job cuts at University of Alaska Fairbanks (Fried 2018).

With a focus on those industries most important in the KPB, Figure 2-18 shows annual employment by industry percentage averaged over the 2008–2020 period in the United States, Alaska, and KPB. Most jobs created in the U.S. economy were in services-providing industries (Headwaters Economics 2021), including retail trade, professional and business services, health care and social assistance services, and accommodation and food services. Alaska had about the same percentages of jobs as the U.S. in most of these industries. An exception was the professional and business services industry; in Alaska these services mainly support in-state businesses and residents, unlike parts of the U.S. where they are exported throughout the nation and world (Robinson 2020).

Due to the KPB's growing senior population and attendant demand for health services, the health care and social assistance industry is the Borough's largest private sector employer, representing 15.1 percent of all local jobs. Employment in industries that cater to visitors as well as to KPB residents, including the retail trade and accommodation and food services industries, accounted for a 24.2 percent of the KPB's total employment.

Both Alaska and the KPB had a substantially higher percent of state and local government jobs than the U.S overall. Local government was the single largest source of employment in the KPB.[8] The transportation and warehousing industry is also a larger employer in both the KPB and Alaska than in the rest of the nation. Among the reasons are the state's size, the stretch of its peninsular appendages, and its isolation from other states (Fried and Keith 1999). Finally, both Alaska and the KPB had a relatively high proportion of jobs in the mining industry; in the KPB virtually all of these jobs are in the oil and gas industry. On the other hand, Alaska and the KPB had a smaller share of manufacturing jobs than the U.S overall. Nearly all of Alaska's and the KPB's manufacturing jobs are in seafood processing, while most of the manufacturing jobs outside the state involve the production of durable goods (Robinson 2020).

[8] Local government includes all K-12 public school, city, borough, tribal government, and municipal-owned hospital employment. According to Kenai Peninsula Economic Development District (2018), data for 2016 and 2017 show that local government employees are split approximately as follows: 37 percent work for the borough and city governments; 34 percent for the school district; 16 percent for tribal governments including health care facilities under tribal ownership; and 13 percent for municipal-owned hospitals.

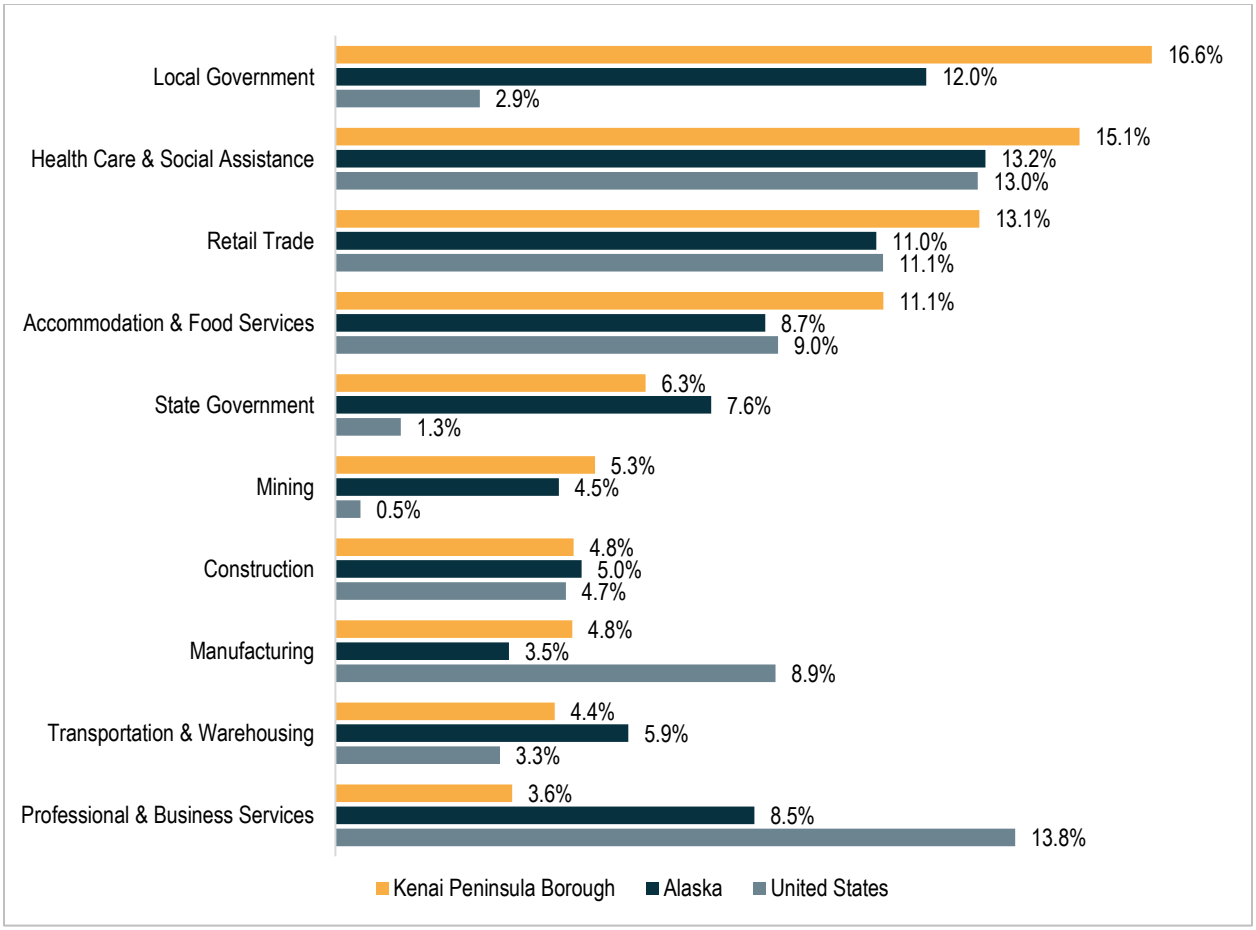


Figure 2-18. Share of Employment by Industry in the Kenai Peninsula Borough, Alaska, and United States, 2008–2020 Average

Source: ADOLWD (2021b); U.S. Bureau of Labor Statistics (2021a)

Notes: This chart focuses on industries of particular importance to the KPB in terms of employment levels. From 2008 to 2020, these industries combined accounted for 85 percent of total employment in the KPB, 80 percent in Alaska, and 69 percent in the U.S.

As noted in Section 2.3.2.1 the KPB's relatively diverse economy helped it avoid the severe job losses that occurred in other parts of Alaska due to the COVID-19 pandemic. Moreover, industries that are among the top employers in the KPB (including retail trade; health care and social assistance services; and local government) were listed as "Essential Services and Critical Infrastructure industries" and exempted from mandatory closures (Office of Governor 2020). However, the pandemic had a major economic impact on some KPB industries, most notably the oil and gas; accommodation and food services; and commercial fishing industries. At the height of pandemic-induced restrictions, Alaska crude oil prices fell to near zero when the demand for delivered energy dropped sharply (Brehmer and Earl 2020; U.S. Energy Administration 2021). Prior to the pandemic, it was hoped that the 2020 tourist season would help the KPB's tourism-related businesses recover from a poor 2019 season, when a lightning-caused wildfire curtailed visitor activities in some areas of the KPB. However, pandemic travel constraints, including the cancellation of all cruise ship sailings, led to another poor tourist season in 2020 (Barrett 2020). The KPB's commercial fishing industry experienced a sharp decrease in revenue in 2020

due to the disruption the pandemic had on domestic and foreign seafood markets (National Marine Fisheries Service 2020).

The KPB received more state and municipal CARES Act funds in response to the COVID-19 pandemic than almost anywhere else in Alaska (second only to the Municipality of Anchorage). In 2020, although the KPB accounts for about 7 percent of Alaska's population, it received around 20 percent of all of Alaska's CARES Act small business relief grants. A total of just under $50 million in grant funds were distributed in the KPB. The KPB's commercial fishing industry received the most support, with 298 individual business grants totaling over $16 million. Businesses in the accommodation and food services industry received 142 grants for just under $6.6 million, and retail trade businesses received 80 grants for about $4.2 million (Mazurek 2021)

2.3.2.2.2 Employment by Occupation

While employment by industry reflects the type of activity at a person's place of work (economic sector), employment by occupation describes the nature of work a person does to earn a living, regardless of the industry. For example, office and administrative support occupations could exist in any number of industries.

With a focus on those occupations most important in the KPB, Figure 2-19 shows employment by occupation percentage averaged over the 2008–2020 period in the United States, Alaska, and KPB. Many of the jobs in the KPB were concentrated in four groups of occupations: teachers and instructors; food preparation and services workers; healthcare workers (including registered nurses, personal care aides, and home health aides); and retail salespersons. These occupations accounted for a greater percentage of workers in the KPB than they did in Alaska and the United States, which reflects the relatively high dependence of the KPB's economy on local government, which employs public school teachers, and on the health care and social assistance; retail trade; and accommodation and food services industries. Other occupations of particular importance in the KPB in terms of employment levels were construction laborers and roustabouts (i.e., workers who assemble or repair oil and gas field equipment).

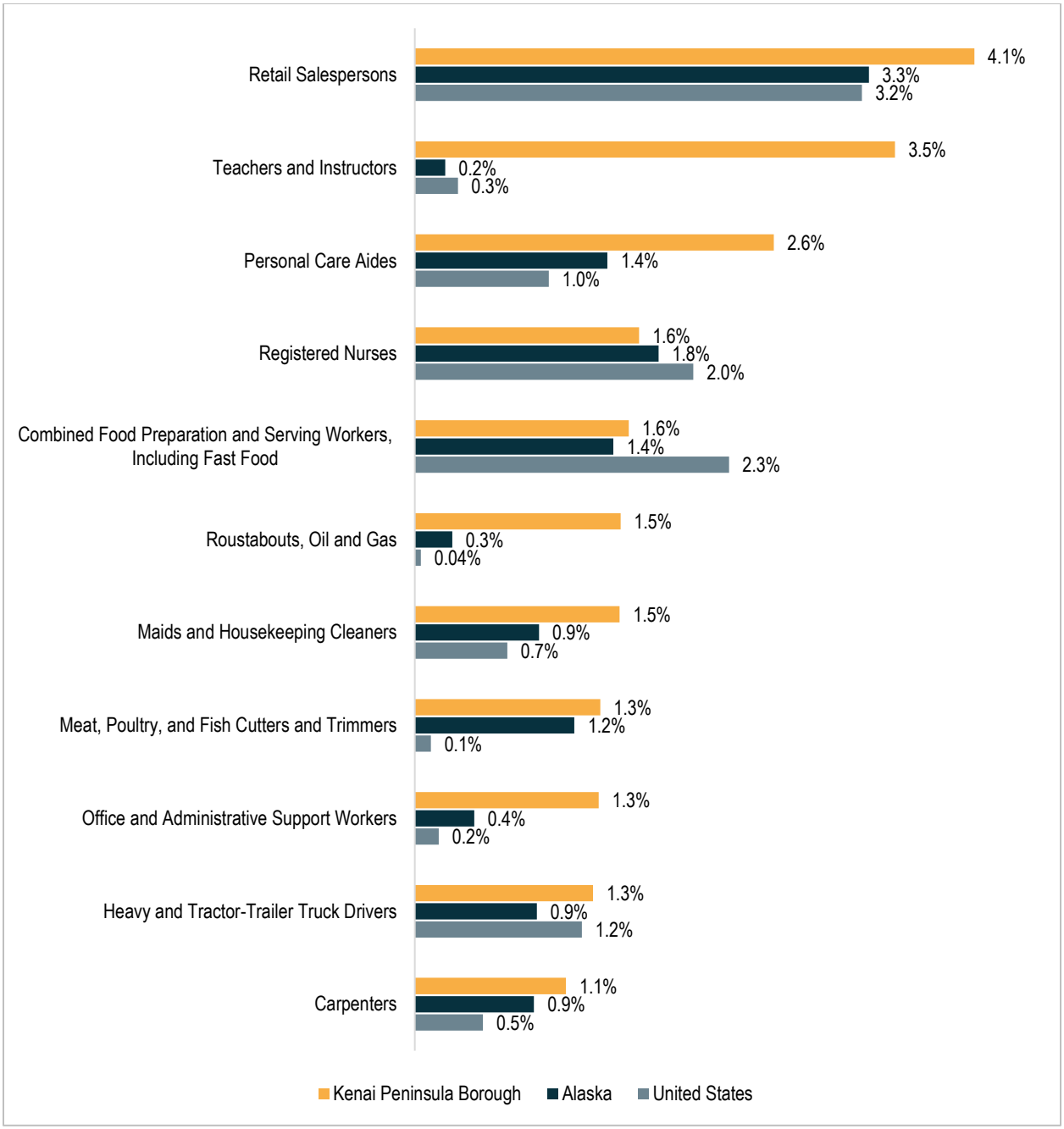


Figure 2-19. Employment by Occupation Percentage in the Kenai Peninsula Borough, Alaska, and United States, 2008–2020 Average

Source: U.S. Bureau of Labor Statistics (2021b)

Notes: This chart focuses on occupations of particular importance to the KPB in terms of employment levels. From 2008 to 2020, these occupations combined accounted for 21 percent of total employment in the KPB, 13 percent in Alaska, and 12 percent in the U.S.

2.3.2.3 Unemployment

The unemployment rate is the number of jobless people actively seeking but not finding work divided by the labor force.[9] During the Great Recession the U.S. unemployment rate reached a high of 9.6 percent. With the economic recovery, the unemployment rate had dropped to less than 4 percent by 2019. As discussed above, Alaska's economy avoided the deep lows of the Great Recession, and the state's unemployment rate had dropped to 6.3 percent by early 2015. However, the rate started to increase as the economy reacted to lower oil prices and state budget cuts (ADOR 2018). Unemployment in the KPB rose sharply during the Great Recession, probably because the nationwide economic downturn led to a large decrease in the number of visitors to Alaska during the summers of 2009 and 2010 (McDowell Group 2012). There was a steady decline in the unemployment rate in all three areas from 2016 to 2019, but the COVID-19 pandemic sharply reversed that trend. As discussed in Section 2.3.2.1, it is uncertain what the pandemic's long-term effects, if any, will be on employment in the KPB. The permanent closure of some businesses could contribute to longer-term unemployment issues.

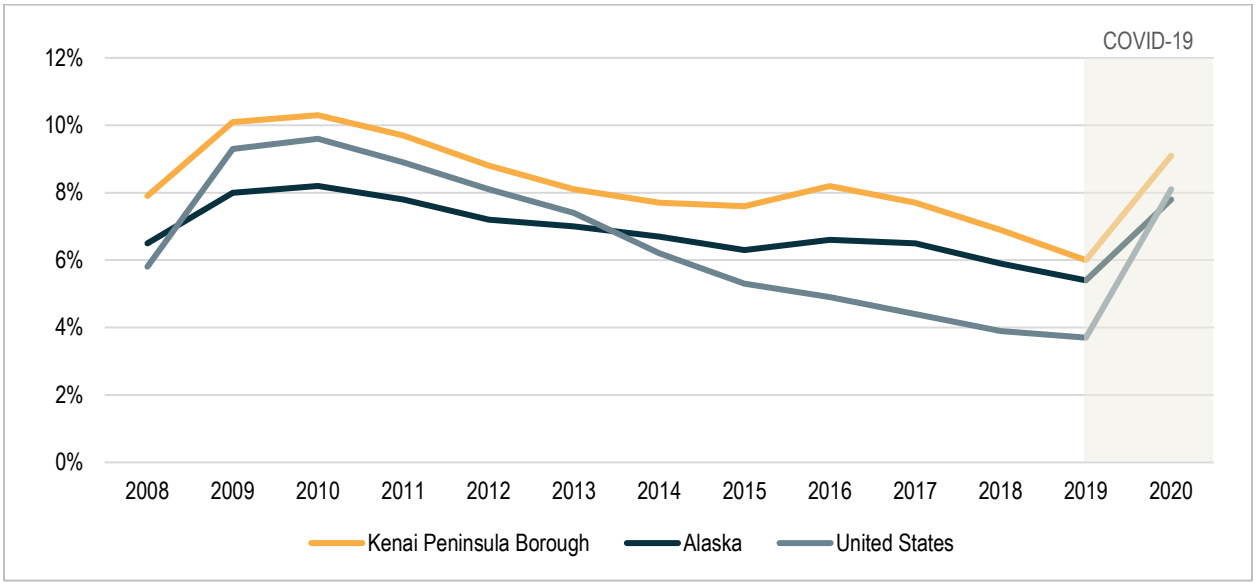


Figure 2-20. Annual Unemployment Rate in the Kenai Peninsula Borough, Alaska, and United States, 2008–2020
Source: U.S. Bureau of Labor Statistics (2021c)

The unemployment rate is not always an accurate measurement of joblessness in a given area, as it does not measure individuals who dropped out of the labor force. Figure 2-21 shows that in the United States, Alaska, and the KPB, the percent of working-age people (persons 16 years of age and older) who were

[9] The labor force includes all people classified in the civilian labor force. Excluded are people 16 years old and over who are not actively looking for work, such as students, homemakers, retired workers, seasonal workers who are not looking for work, people doing only incidental unpaid family work, and institutionalized people (e.g., people confined to prisons, jails, and other correctional institutions and detention centers, and people living in residential care facilities such as skilled nursing homes). Also excluded are working-age individuals who stopped looking for work because they believe there is simply no work available.

not in the labor force increased between the early 2000s and late 2010s. An increase in the proportion of people of retirement age, together with the economic downturns during the Great Recession and Alaska recession, probably account for the uptick (University of Alaska Center for Economic Development 2021). During both time periods the percentage of persons not in the labor force was higher in the KPB than in Alaska and the U.S. due primarily to the KPB's large retiree population.

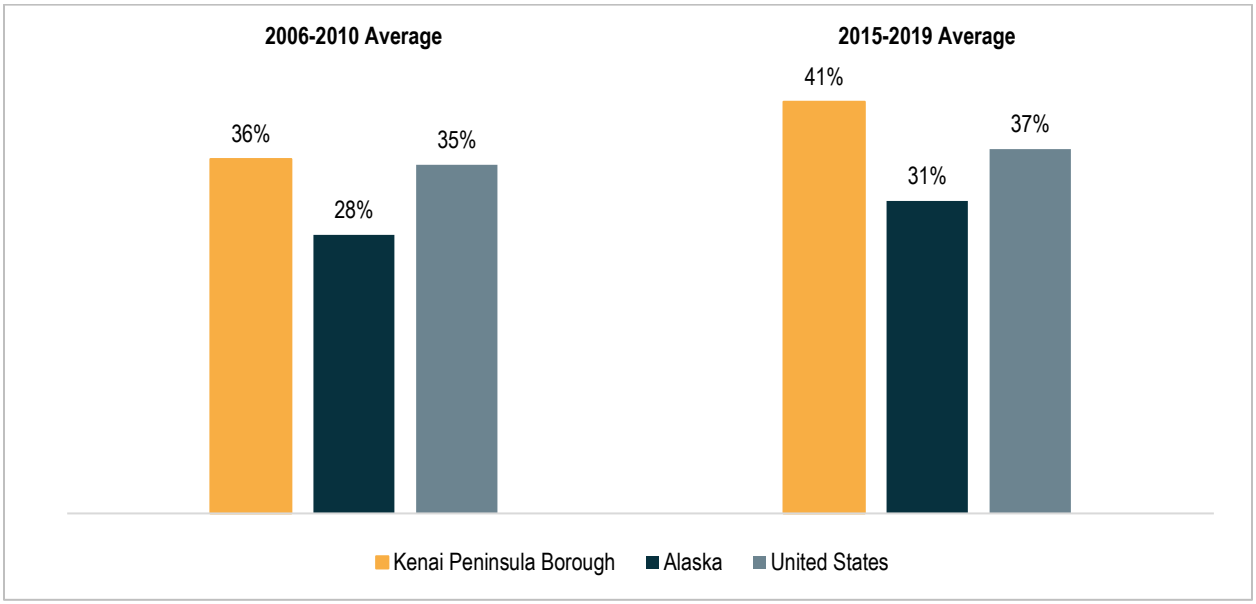


Figure 2-21. Change in Share of Working-Age People Who Are Not in the Labor Force in the Kenai Peninsula Borough, Alaska, and United States, Alaska, 2006-2010 Average to 2015-2019 Average
Source: U.S. Census Bureau (2021h)

2.3.2.3.1 Seasonal Unemployment

Figure 2-22 shows the monthly unemployment in the United States, Alaska, and KPB averaged over the 2008–2019 period. While data for 2020 are available, they were not included in the average because lockdowns and other economic restrictions imposed during the COVID-19 pandemic severely distorted the economies in all three areas. The monthly unemployment rate fluctuated substantially in the KPB due to its summer tourism industry. The large majority of visitors arrive between late May and early September. Consequently, it is during these months that the sport fishing, rafting operations, sightseeing tours, and other visitor-related activities in the KPB are most active. In addition, the KPB's seafood and construction industries are more active during the non-winter months (Agnew::Beck Consulting 2019). Unemployment drops during the same months. In comparison, the Alaska and U.S. unemployment rate is relatively steady throughout the year.

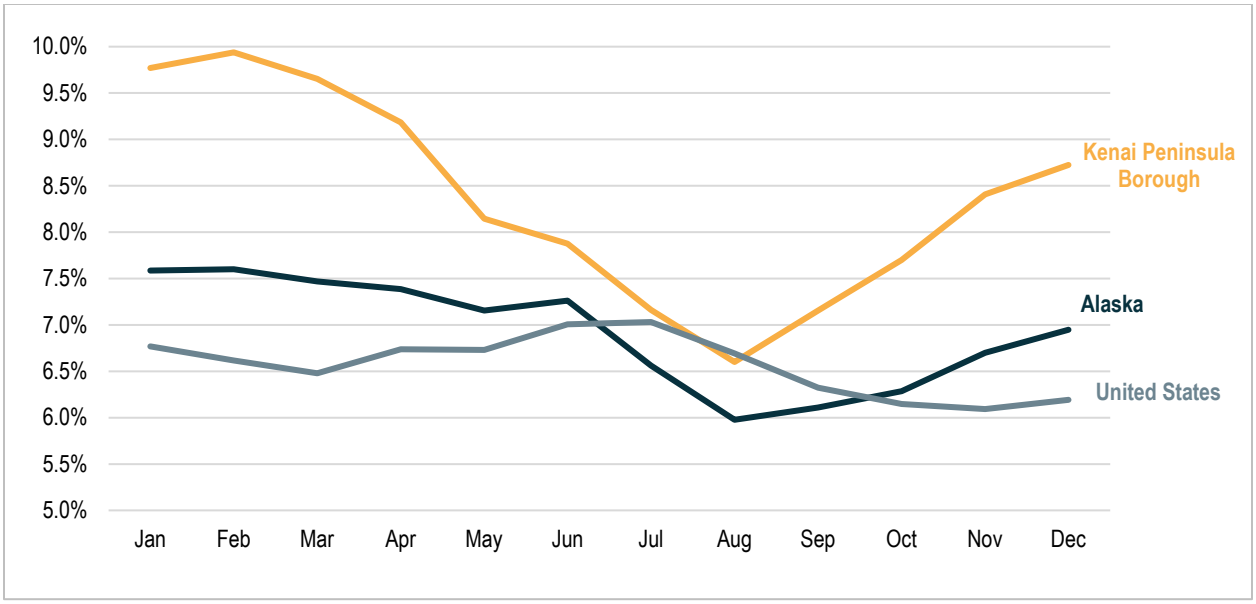


Figure 2-22. Average Monthly Unemployment Rate in the Kenai Peninsula Borough, Alaska, and the United States, 2008–2020 Average
Source: U.S. Bureau of Labor Statistics (2021c)

2.3.3 Income

2.3.3.1 Per Capita Income

This section presents trends in per capita income, which is a measure of individual wealth in each geographic area. Per capita income equals total personal income (from both labor and non-labor sources) divided by the total population. Because personal income takes all income sources and all residents into account, it is considered the most comprehensive measure of what residents take in and is a useful barometer of an area's overall economic well-being (Fried 2019a).

Per capita income trends in the KPB, Alaska, and United States from 2008 to 2020 are shown in Figure 223. Per capita income in Alaska has historically been higher than the national average due to the state's higher wage rates. Between 2008 and 2015, this per capita income gap averaged 19 percent as the national economy suffered through several years of the Great Recession. From 2016 to 2019, as the state entered its own recession while the national economy thrived, the average percentage difference dropped to 11 percent. Two major reasons for the declining difference were that Alaska's economic growth slowed and the state lost jobs in high-wage industries such as oil and gas (Fried 2019a). The KPB's per capita income has been consistently less than that for the entire state due to the seasonality of important industries in the KPB, including the seafood and visitor industries, the lower wage levels in tourism-related service jobs, and the large population of retirees. Despite the disruptions caused by the pandemic, per capita income in the KPB and in the U.S. increased from 2019 to 2020, although statewide, there was a relatively marginal decrease in per capita income.

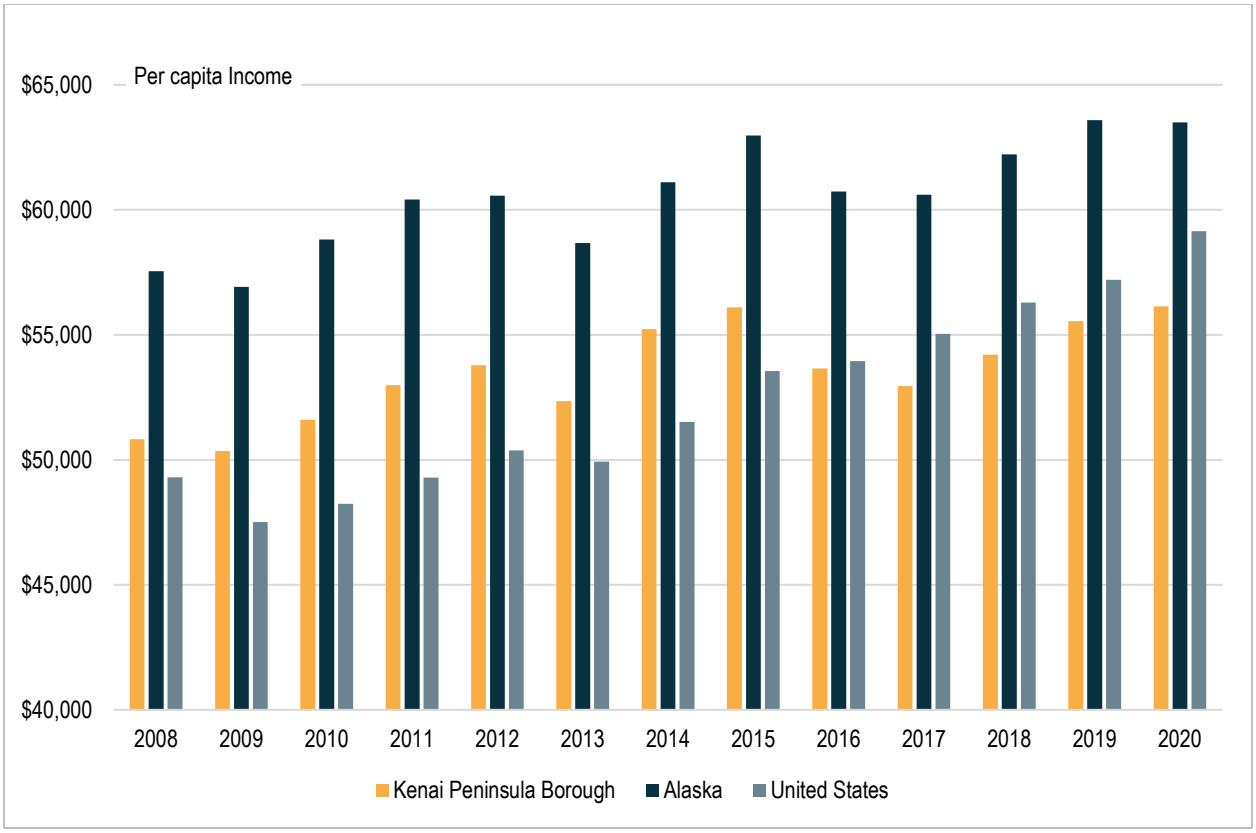


Figure 2-23. Per Capita Income in the Kenai Peninsula Borough, Alaska, and United States, 2008-2020
Source: U.S. Bureau of Economic Analysis (2021c)
Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Not only is per capita income relatively low in the KPB, but prices for food, gasoline, and electricity in the KPB tend to be higher than in Anchorage or the Matanuska-Susitna Borough. This means that many KPB residents must spend a higher percentage of their income on these necessities. However, the lower incomes and higher living costs are offset by the relative affordability of housing in the KPB (Kenai Peninsula Economic Development District 2018). As described in Section 2.2.5, housing costs in the KPB are among the lowest in Alaska.

Per capita income has not kept pace with inflation in the KPB or statewide (Kenai Peninsula Economic Development District 2018). From 2008 to 2019, per capita income in the KPB rose 9 percent. In contrast, the Anchorage Consumer Price Index rose 21 percent (ADOLWD 2021g).

2.3.3.2 Wages by Industry

Figure 2-24 compares the 2008–2019 average annual wage across selected industries in the United States, Alaska, and KPB. As noted previously, wages in Alaska have historically been high in comparison to those in the rest of the country. Fried (2015) suggests that the relatively high wages are due to a number of reasons, including the cost of living, the harsher climate, and the seasonality of many jobs. Within the state, jobs in the oil and gas industry are among the highest paying, with average earnings in the industry more than two-and-a-half times the average for all Alaska industries (Fried 2013). On the lower end of the scale are jobs in service industries such as the retail trade and accommodation and food services

industries. Wages within a given industry tended to be lower in the KPB than those statewide, perhaps because the overall cost of living in the KPB is relatively low. As described in Section 2.2.5, housing represents the largest expenditure for the average household, and housing costs in the KPB are among the lowest in Alaska.

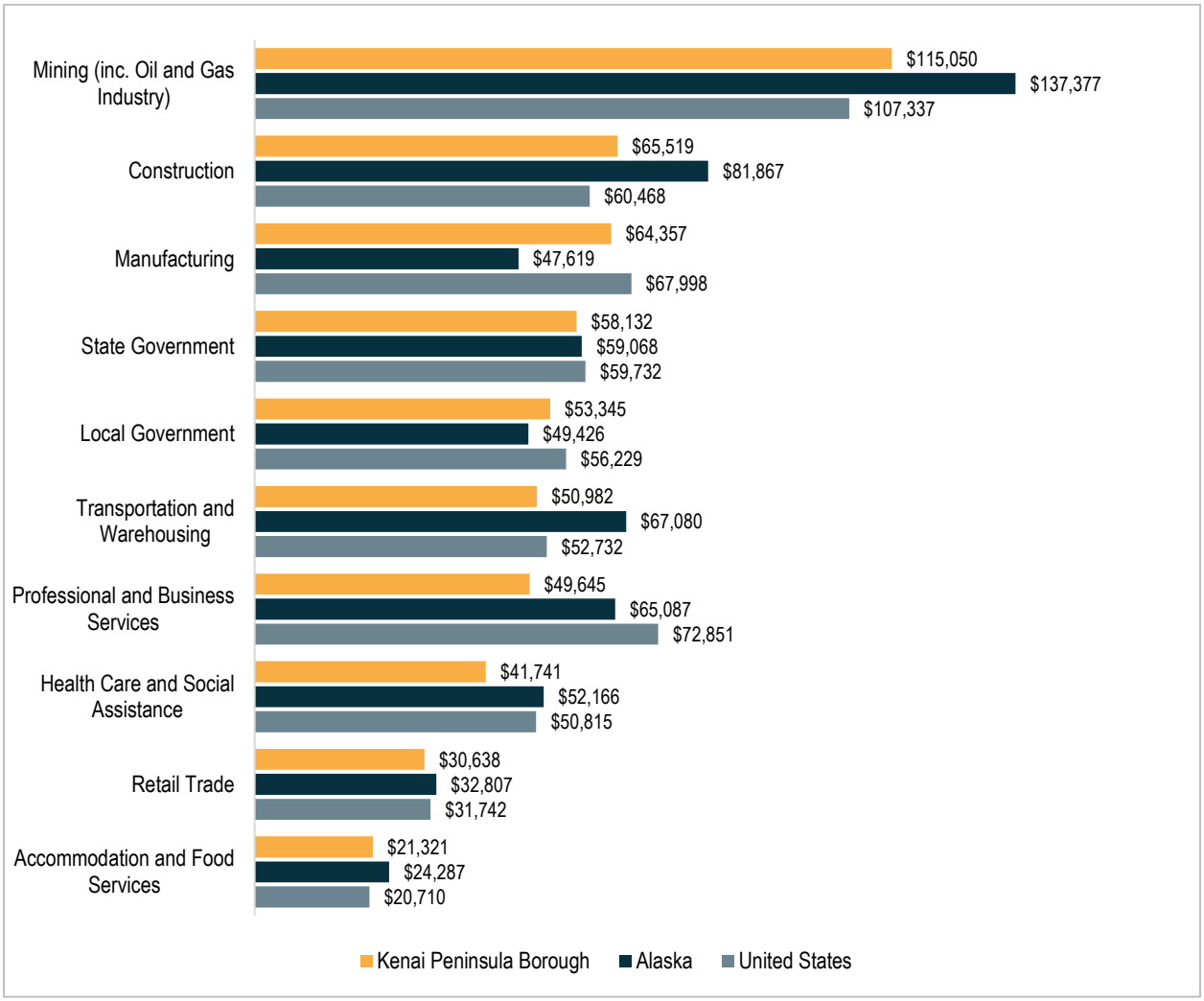


Figure 2-24. Annual Wage by Industry in the Kenai Peninsula Borough, Alaska, and United States, 2008–2019 Average

Source: ADOLWD (2021b); U.S. Bureau of Labor Statistics (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

2.3.3.3 Non-Labor Earnings

From 2008 to 2019, wage and salary disbursements accounted for an average of 41 percent of total personal income each year, while proprietors' income accounted for 9 percent.[10] The remaining portion of

[10] Proprietors' income includes current-production income of sole proprietorships, partnerships, and tax-exempt cooperatives (U.S. Bureau of Economic Analysis 2021a).

the total consists of non-labor income, which includes dividends, interest, and rent plus various types of transfer payments. A high dependence on non-labor income can indicate an area with an aging population, an influx of retirees, and/or attractiveness to people with investment income. However, in some cases, it can also signal economic hardship, such as when there is a high dependence on Medicaid and income maintenance payments (Headwaters Economics 2021).

Figure 2-25 shows the components of non-labor income as a percent of total personal income in the United States, Alaska, and the KPB averaged over the 2008 to 2019 period. Dividends, interest, and rent are the largest sources of non-labor income in all three areas. The comparatively high percent of this source in the KPB is consistent with the KPB's large retiree population. Slaper (2021) notes that regions with high dividend returns are indicative of concentrations of retirees with stock market investments and retirement plans. In addition, rising real estate values due to strong demand for homes in some areas of the KPB (e.g., along the Kenai River) may account for the elevated rental income. The KPB's high percent of age-related transfer payments, which include Medicare and Social Security benefits, compared to Alaska as a whole is also consistent with the KPB's large retiree population. The percent of total personal income represented by hardship-related transfer payments, such as unemployment insurance, Medicaid, and Supplemental Security Income, was similar across the three areas. Amenities that attract people with investment and retirement income can contribute to local economic well-being since growth in non-labor income often stimulates other sectors of the economy, including healthcare and real estate. If, on the other hand, contracting populations or industries results in a shrinking labor market, non-labor income may be important as a remaining source of income and can help stabilize downturns (Headwaters Economics 2021).

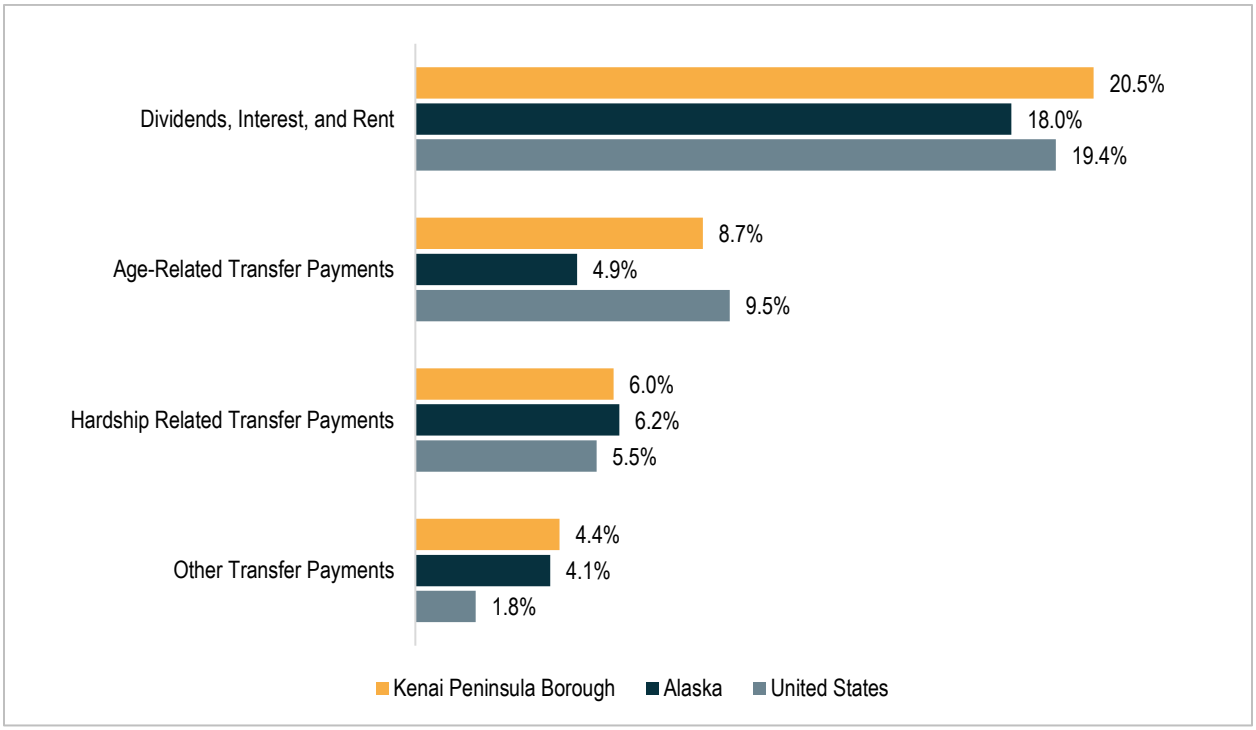


Figure 2-25. Components of Non-Labor Income as a Percent of Total Personal Income in the Kenai Peninsula Borough, Alaska, and the United States, 2008–2019 Average
Source: U.S. Bureau of Economic Analysis (2021c)

Figure 2-26 shows the trend in the major components of non-labor income in the KPB. Between 2008 and 2019, the combined percent of total personal income accounted for by dividends, interest, and rent and age-related transfer payments (the two sources of non-labor income that are positively correlated with a growing retiree population) increased from 25 percent to 32 percent. This is an economic advantage that financially secure seniors provide to the KPB, as a large percentage of residents living off retirement earnings, social security, and investment earnings helps stabilize the regional economy during downturns (Kenai Peninsula Economic Development District 2018).

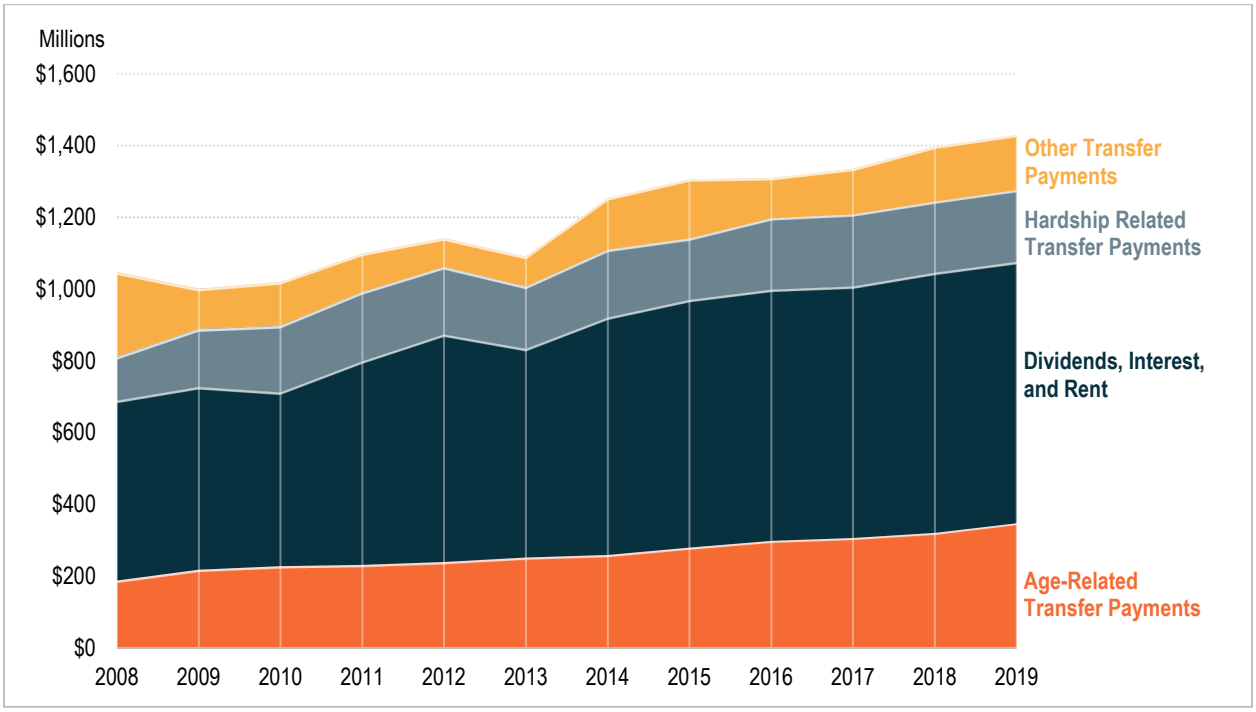


Figure 2-26. Components of Non-Labor Income in the Kenai Peninsula Borough, 2008–2019

Source: U.S. Bureau of Economic Analysis (2021c); U.S. Bureau of Economic Analysis (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Dividends, Interest, and Rent: Personal dividend income, personal interest income, and rental income of persons with capital consumption adjustments that are sometimes referred to as "investment income" or "property income."

Age-Related Transfer Payments: Medicare and Social Security benefits.

Hardship-Related Transfer Payments: Payments associated with poverty, including Unemployment Insurance, Medicaid, Supplemental Nutrition Assistance Program, Supplemental Security Income, and other income maintenance benefits.

Other Transfer Payments: Payments from veteran's benefits, education and training, Workers Compensation insurance, railroad retirement and disability, other government retirement and disability, and other receipts of individuals and non-profits.

2.3.3.4 Poverty Rate

The U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. These thresholds are updated every year by the U.S. Census Bureau to reflect changes in the Consumer Price Index. The thresholds are not adjusted for regional, state, or local variations in the cost of living. The poverty rate in Alaska has historically been substantially lower than the national average due in large part to the distribution of dividends from the Permanent Fund (Berman

and Reamey 2016).[11] As shown in Figure 2-27, the Alaska-U.S. divergence in the poverty rate continued from 2008 to 2020, but the degree of difference declined as the national economy recovered from the Great Recession and Alaska entered its own recession. In some years, especially more recently, the percent of the KPB's population living below the poverty line was larger than the percent in the entire state. The highest levels of poverty rate are concentrated in the remote areas of the KPB (University of Alaska Center for Economic Development 2021). The poverty rate also differs across demographic segments of the KPB's population. From 2015 to 2019, the average proportion of Alaska Native residents in the KPB with incomes below the poverty level was 21 percent, compared to 11 percent for whites (U.S. Census Bureau 2021e). More than one-fourth of households consisting of single mothers and their children had incomes below the poverty level (Agnew::Beck Consulting 2019).

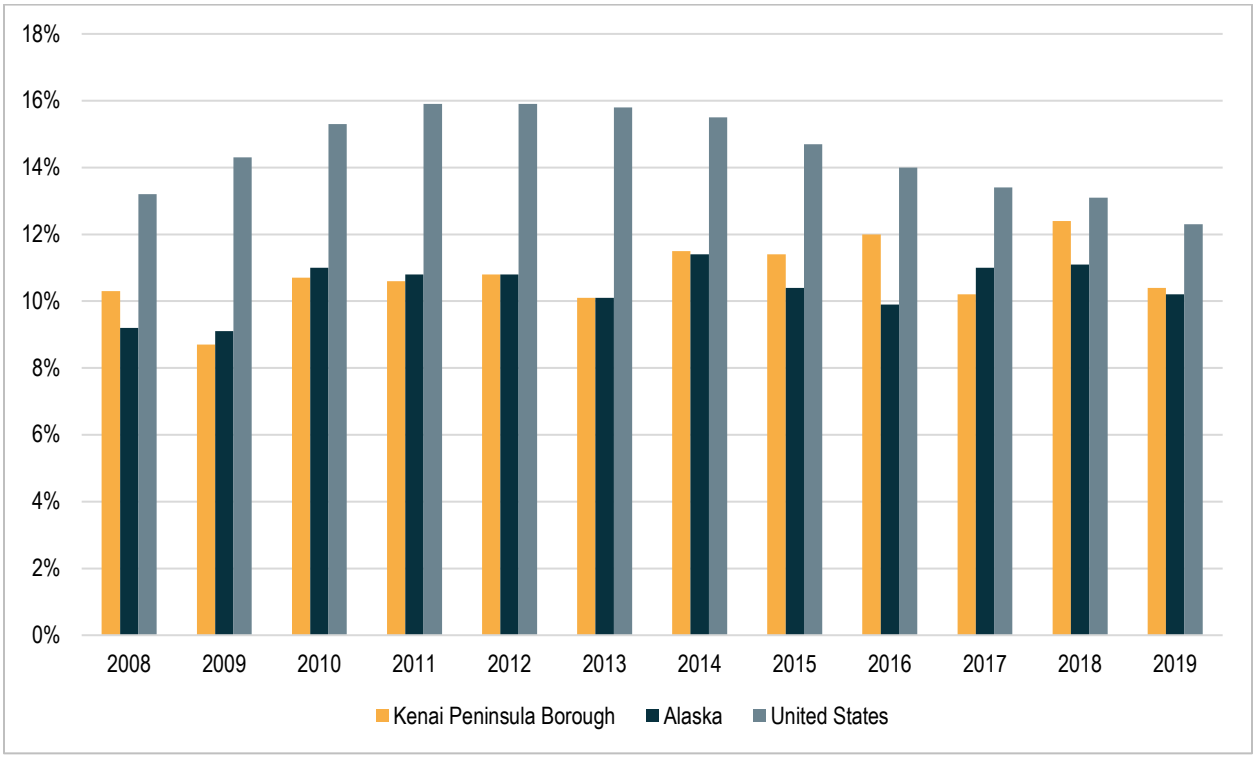


Figure 2-27. Percent of People in Poverty in the Kenai Peninsula Borough, Alaska, and United States, 2008–2020
Source: U.S. Census Bureau (2021j)

[11] The Permanent Fund was established in 1976, with fund deposits coming from a 25 percent share of state oil and gas royalties. The fund balance was invested in a portfolio of assets to maximize its long-term rate of return. To ensure that all Alaska residents benefited from oil production on state-owned lands, the Alaska Legislature passed a plan in 1982 that annually paid each Alaska resident, regardless of age, an equal amount out of the appropriable earnings of the Permanent Fund (Goldsmith 2010).

3 Demographic and Economic Characteristics of Kenai Peninsula Borough Communities

This section presents at the community level, many of the socioeconomic indicators that Section 2 presents at the borough level. These indicators include population size, age, race/ethnicity, education, housing, income, unemployment rate, and labor force participation rate. Information on the participation of KPB communities in selected industries is provided in Sections 5 through 9.

Sources of population statistics from the U.S. Census Bureau included the 5-year American Community Survey (ACS). All ACS estimates should be interpreted as average values over the designated 5-year period. The smaller overall sample size of the ACS means its estimates are subject to higher sampling error levels than estimates provided by the decennial censuses. In particular, the small populations in many communities within the KPB make it difficult to present accurate recent estimates of socioeconomic characteristics. Estimates for the populations of some small communities are subject to a high margin of error, while in other small communities there were either no sample observations or too few sample observations to compute an estimate. In the tables below some communities may be omitted because data are unavailable for a given socioeconomic indicator.

The two community-level geographic entities for which the U.S. Census Bureau publishes data are incorporated places (referred to as cities in Alaska) and census-designated places (CDPs). Cities are governmental entities sanctioned by the state of Alaska to perform general-purpose functions. CDPs are unincorporated places delineated by state and borough officials in Alaska and are intended to encompass all people at a given location. They are the statistical equivalents of incorporated places, with the primary differences being the lack of a legally defined boundary and an active, functioning governmental structure, chartered by the state and administered by elected officials (*Federal Register* 83 (13 November 2018): 56290-5629). Cities and CDPs are mutually exclusive of each other because, by definition, a CDP represents a named, unincorporated area.

3.1 The Communities in the Kenai Peninsula Borough

The KPB covers an area of about 25,600 square miles and its residents live in 37 different communities located across the region (Figure 3-1).

Six of the communities are incorporated cities: 1) *Homer*, 2) *Kachemak City*, 3) *Kenai*, 4) *Seldovia*, 5) *Seward*, and 6) *Soldotna*. About one-third of the population live in these cities, which by definition are urban or semiurban in character (Alaska Department of Commerce, Community and Economic Development [ADCCED] 2004). Incorporated cities in Alaska enjoy broad powers, including the ability to collect property, sales, and use taxes levied within their boundaries (Section 8.3.2 describes the city government functions and revenues in more detail).

The other 31 communities in the KPB are unincorporated or CDPs where two-thirds of the KPB residents live. There is no official local government representing these communities, besides the Borough government, but several of these communities are officially recognized by the Borough through the creation of Advisory Planning Commissions, and two have community councils that provide mechanisms for self-governance and representation to the Borough (Agnew::Beck Consulting 2019).

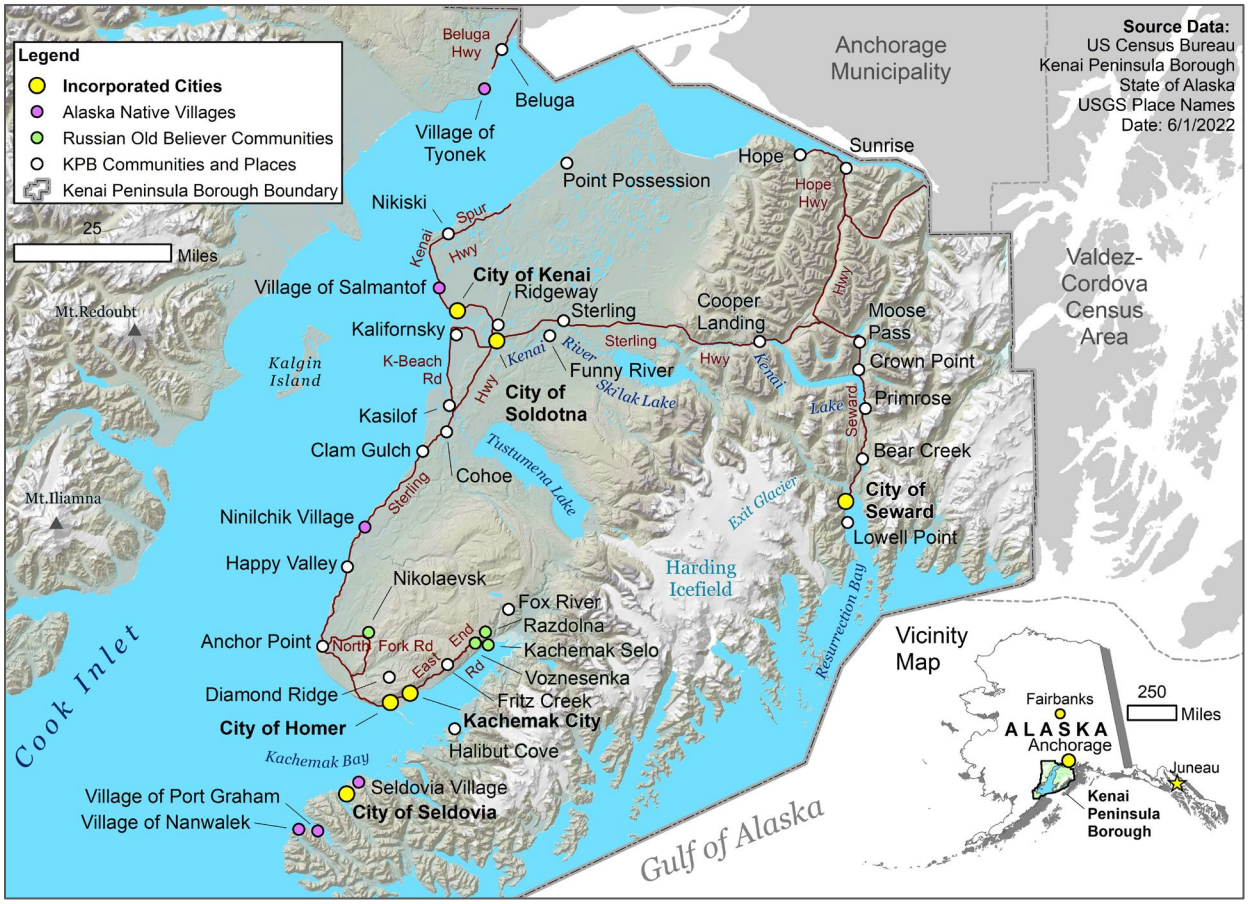


Figure 3-1. Kenai Peninsula Borough Communities: Incorporated Cities and Census Designated Places

Some communities in the KPB are federally recognized Alaska Native tribes (shown in the map with pink dots). This group of communities include the Seldovia Village Tribe, Village of Nanwalek, Village of Port Graham, Village of Salamatof, Village of Tyonek, and Ninilchik Village Traditional Council. In addition, the Kenaitze Indian Tribe is based in the City of Kenai. One other Alaska Native tribe in the KPB, the Qutekcak Native Tribe based in Seward, has not yet been federally recognized. There are several ANCSA regional and village corporations that have land holdings in the KPB. A description of these corporations, their associated communities, and their linkages to the KPB economy is presented in Section 4.

Port Graham Supportive Housing Facility Opening. Photo Credit: Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community Photo Library.

There are also a number of Russian Old Believer communities and settlements located in the southern region of the KPB (shown as green dots on the map). This group of communities includes Nikolaevsk, Razdolna, Voznesenka, and Kachemak Selo. Russian fur traders were the first European group to settle in Alaska, arriving in the 18th century and establishing communities in the Kenai Peninsula. Russian influence in the Borough can be seen in place names and in the presence of Russian Orthodox churches and other historic buildings.

Nikolaevsk Church. Photo Credit: Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community Photo Library.

The other residential areas in the region are shown with white dots on the map. The Kenai-Soldotna-Nikiski area is the urban center for the central Kenai Peninsula and associated with this urban center are several associated "bedroom communities."[12] The associated bedroom communities include Salamatof, Sterling, Ridgeway, and Kalifornsky. For residents of the southern and eastern regions of the Kenai Peninsula, Homer and Seward serve a similar function as urban centers but on a smaller scale (Bureau of Ocean Energy Management 2016). Bedroom communities near Homer include Fritz Creek, Anchor Point, and Kachemak, while bedroom communities near Seward include Moose Pass and Bear Creek.

The Kenai Spur Highway connects the large population centers of the Central Peninsula to the Sterling Highway. The Seward and Sterling Highways connect Seward to Homer; this allowed for the development of communities like Moose Pass, Cooper Landing, and Anchor Point, which lie between. One of the oldest communities in the region is Hope, located in the northeast part of the region. Hope is a former gold mining community that reached its peak population in the late 19th century (Agnew::Beck Consulting 2019).

A number of communities and villages in the Southern Peninsula are not connected to the road system, including Seldovia, Nanwalek, and Port Graham. These communities are accessible only by boat or air. On the western side of the region, the village of Tyonek is also only accessible by boat or air.

The following sections describe the changes in the demographic and economic characteristics of the KPB communities over the study timeframe. For most of the socioeconomic indicators, the data are summarized and presented according to the following groupings: 1) the incorporated cities; 2) the Alaska Native Villages; 3) large residential communities; and 4) small residential communities. The Alaska Native Villages are the rural communities in which the federally recognized Alaska Native tribal entities

[12] "Bedroom communities" are rural or semi-rural residential areas that generally have high levels of out-commuting. Residents of these communities travel to larger, more urban communities both for jobs and for many goods and services such as medical, household food and goods, dining and entertainment, air transportation, and government agencies.

are located.[13] These rural communities include Tyonek, Port Graham, Nanwalek, Seldovia, Ninilchik, and Salamatof.[14] The large residential communities are those with more than 1,000 residents in 2020 and the small residential communities have populations less than 1,000.

3.2 Demographics

3.2.1 Population Size

Population growth or decline in a given community is influenced by many factors, including, but not limited to, local employment opportunities, highway access, buildable land, and proximity to an existing population center (University of Alaska Center for Economic Development 2021).

As noted earlier, the population of the KPB as a whole increased by 9.8 percent from 2008 to 2020. Figure 3-2 shows that much of the population growth occurred in communities near the cities. In particular, the bedroom communities of the central Kenai Peninsula (a highway accessible area that spans from Sterling to Kasilof) showed substantial growth over this period. These communities include Sterling, Kalifornsky, and Salamatof, all of which are located a short drive from the Kenai-Soldotna-Nikiski area, where a large portion of the KPB's commercial development is concentrated (Bureau of Ocean Energy Management 2016; University of Alaska Center for Economic Development 2021). The average population increase across these three communities was 18 percent, nearly twice the KPB average. In contrast, Soldotna, Kenai, and Nikiski experienced only a modest population increase.

Communities near Homer that showed relatively high population growth include Fritz Creek, Anchor Point, and Kachemak. Near Seward are the communities of Moose Pass and Bear Creek, both of which experienced growth from 2008 to 2020, while Seward itself lost population. The small, non-road-connected coastal communities of Tyonek and Seldovia saw a shrinking population from 2008 to 2020. However, the populations of two other communities off the road system—Port Graham and Nanwalek—rose substantially. The presence of the Cook Inlet Aquaculture Association's salmon hatchery in Port Graham, which employs residents of Nanwalek as well as Port Graham (ADCCED 2022b), likely contributed to this population increase.

Salmon Hatchery Port Graham. Photo Credit: Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community Photo Library.

[13] Federally recognized tribes possess certain inherent rights of self-government (i.e., tribal sovereignty). In addition, these tribes are eligible to receive certain Federal benefits, services, and protections, such as funding and services from the U.S. Bureau of Indian Affairs (ANCSA Regional Association 2022c).

[14] This grouping did not include the Kenaitze Indian Tribe; although it is a federally recognized tribe, the Kenaitze Indian Tribe is based in the urban area of Kenai.

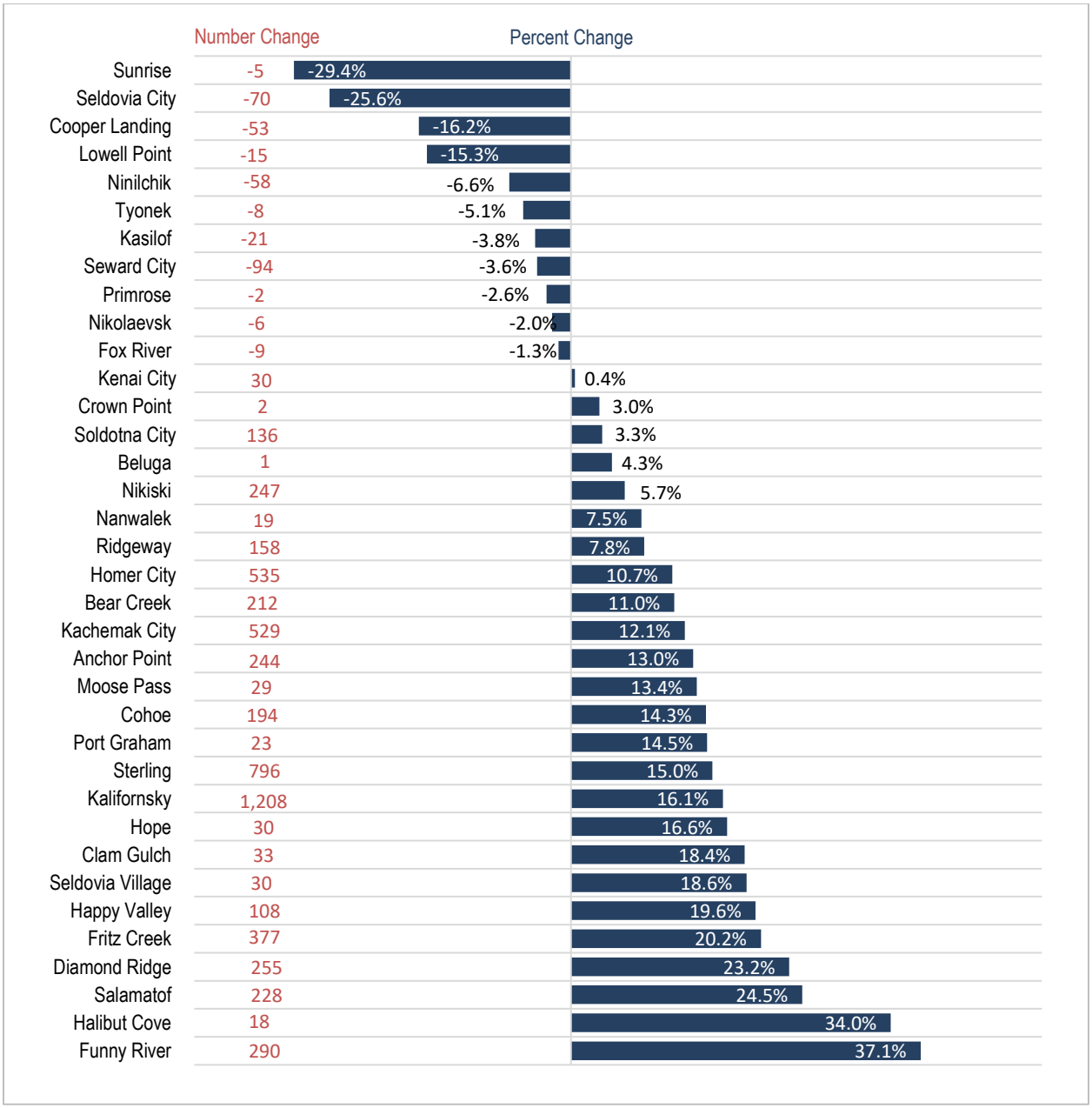


Figure 3-2. Number and Percent Change in Population in the Kenai Peninsula Borough by Community, 2008 to 2020

Source: ADOLWD (2021d); ADOLWD (2021a)

Notes: Kachemak City data are for 2010 to 2020. Due to chart scaling issues, Point Possession is not shown in the chart. Its population increased from 4 to 54 between 2008 and 2020, an increase of 1,250 percent.

Figure 3-3 shows the trends in population in the incorporated cities in the KPB. Among the cities, Kenai has the highest population, however the city has not grown in population since 2008. The Cities of Homer and Soldotna grew in population but at a modest rate of 0.9 and 0.3 percent per year, respectively. Seldovia's population on the other hand declined between 2008 and 2020 (at a rate of 2 percent per year); Seward also had a declining trend in population but at a relatively minor rate of 0.3 percent per year.

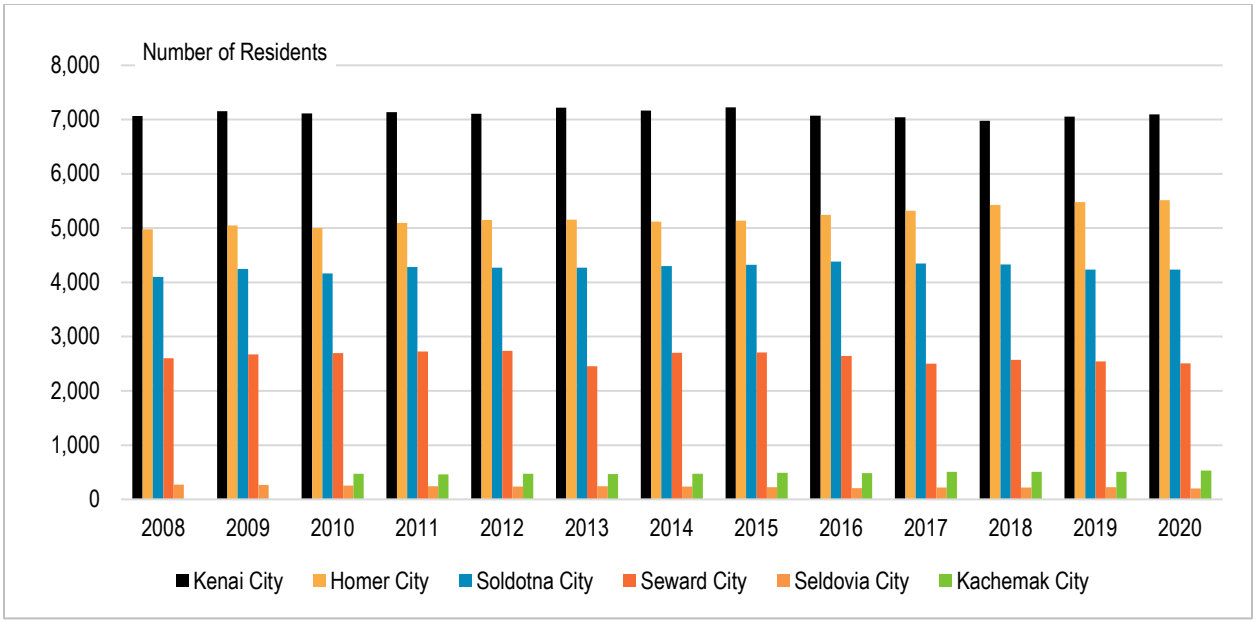


Figure 3-3. Annual Population in Incorporated Cities in the Kenai Peninsula Borough, 2008-2020
Source: ADOLWD (2021d); ADOLWD (2021a)

The trends in population in the Alaska Native villages have also been mixed (Figure 3-4). Salamatof (1.9 percent), Seldovia Village (1.4 percent), and Port Graham (1.1 percent) all grew at relatively robust rates on annual average basis, while Nanwalek grew at an average annual rate of less than 1 percent. Ninilchik and Tyonek both had a declining rate in population at less than 1 percent per year.

Of the six native villages, Salamatof and Ninilchik are the biggest in terms of population; both villages are accessible via the Sterling highway and Salamatof is located in the greater central Kenai area. The smaller villages of Tyonek, Port Graham, Nanwalek, and Seldovia Village are not on the road system. Tyonek is the smallest Alaska Native village in the region with only 150 residents in 2020; the community is located on the northwest side of the Cook Inlet, across from the peninsula.

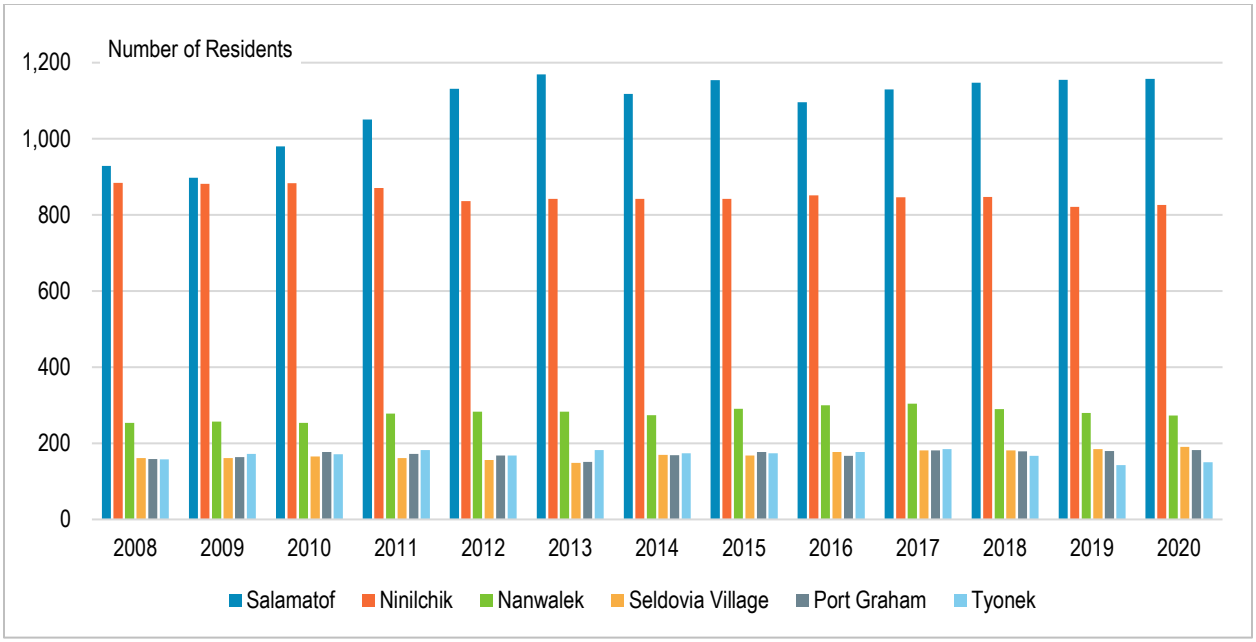


Figure 3-4. Annual Population in Alaska Native Villages in the Kenai Peninsula Borough, 2008-2020
Source: ADOLWD (2021d); ADOLWD (2021a)

3.2.2 Age

Annual data on population by age group and median age are available only for communities with populations over 1,000 people. In the KPB, there are 15 communities on this list and four of the six cities are included. As shown in Figure 3-5, the larger cities in the KPB all had significant shifts in the share of senior population from 2010 to 2020, indicating an aging population. However, as can be seen in Figure 3-6, the median age in both Homer and Seward remained relatively flat, while the median age in Soldotna and Kenai increased by 3 years and 1.4 years, respectively. The median age in Homer is higher compared to the other cities and the borough as a whole; the KPB's median age ranged from 40.4 to 41.8 years. Kenai, Seward, and Soldotna all have lower median age relative to the KPB as a whole.

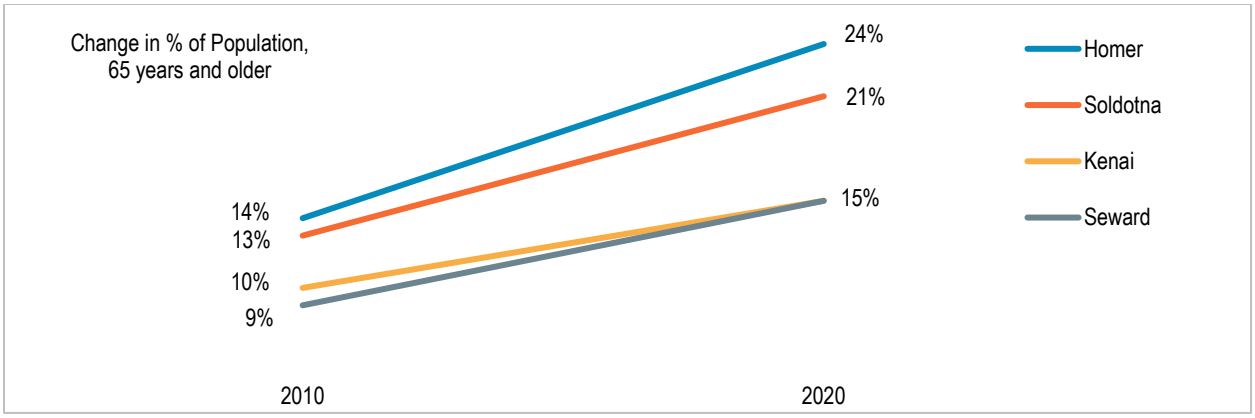


Figure 3-5. Share of Population 65 years and Older in Incorporated Cities in the Kenai Peninsula Borough, 2010 and 2020
Source: ADOLWD (2021d); ADOLWD (2021a)

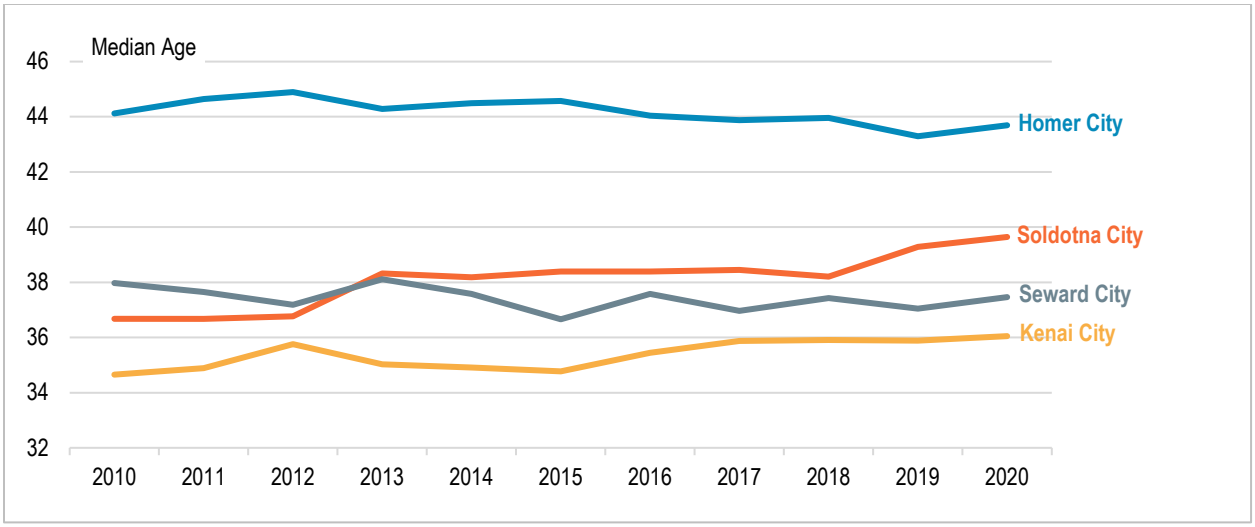


Figure 3-6. Median Age in Incorporated Cities in the Kenai Peninsula Borough, 2008-2020
Source: ADOLWD (2021d); ADOLWD (2021a)

The median ages of the other large communities in the region are shown in Figure 3-7. These communities are mostly in the greater central Kenai area, the bedroom communities around the Cities of Kenai and Soldotna and are known to have a large share of retiree populations. All of these communities have higher median ages compared to the KPB as a whole.

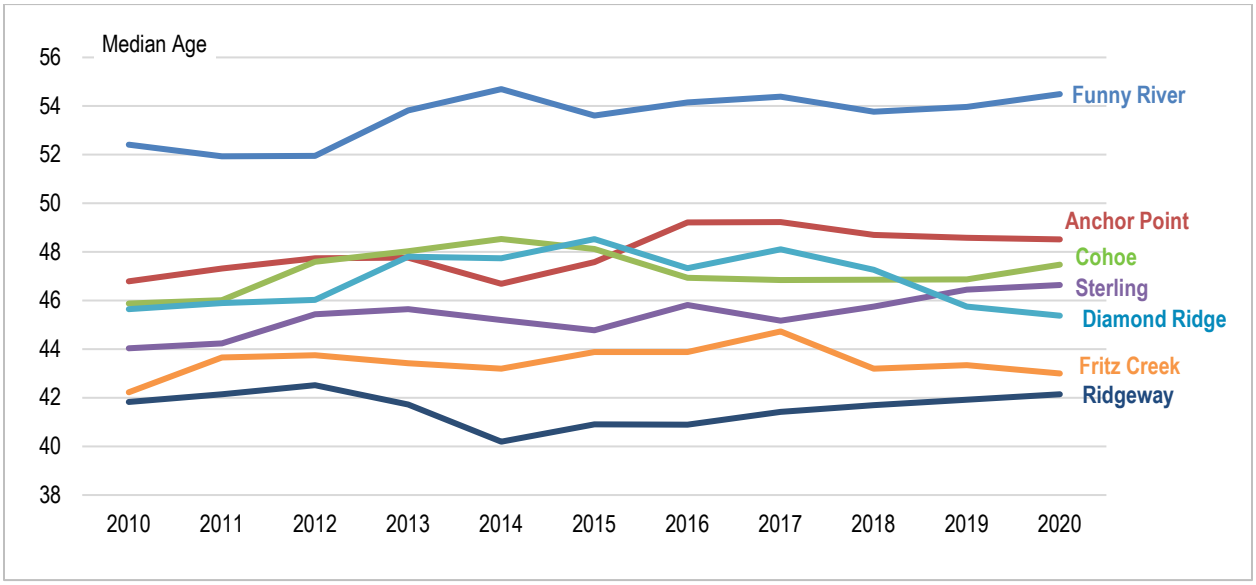


Figure 3-7. Median Age in the Larger Communities in the Kenai Peninsula Borough, 2008-2020
Source: ADOLWD (2021d); ADOLWD (2021a)

For the smaller communities, which includes the Native villages, median age data are only available for two points in time from the 5-year ACS data (2006 to 2009 average and 2015 to 2019 average) published by the U.S. Census Bureau.

Figure 3-8 presents the median age of the Native villages for the two points in time. The Native villages have a younger population compared to other communities in the region. All villages, except Tyonek showed an increase in median age from the 2006 to 2009 average to the 2015 to 2019 average, following the trend in most of the communities in the region. The median ages for these villages, except for Ninilchik, were lower than the borough-wide median age during the 2006 to 2009 period. However, by the 2015 to 2019 period, Seldovia Village, Salamatof, and Ninilchik had higher median ages compared to the borough-wide average of 41.4 for the same time frame.

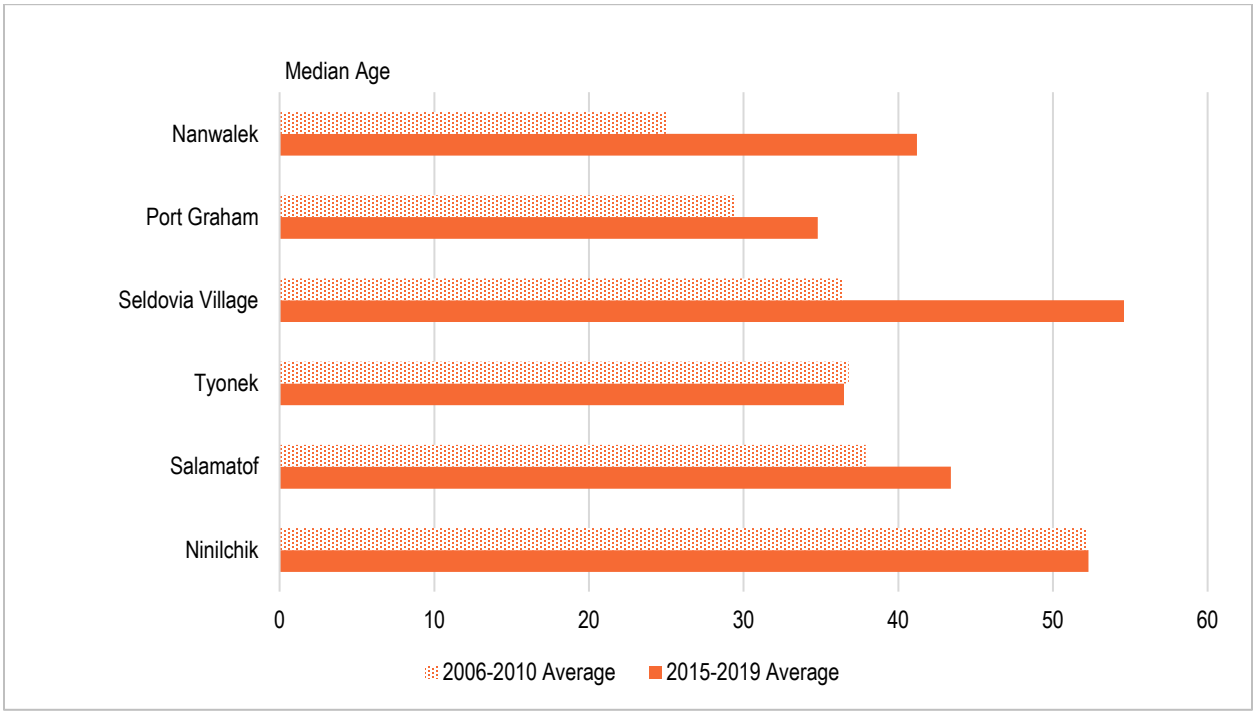


Figure 3-8. Median Age in Alaska Native Villages in the Kenai Peninsula Borough, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2022c)

Notes: Communities for which data are unavailable are not shown.

The median ages in other small communities in the region are shown in Figure 3-9. What is noteworthy for these small communities is that there is no consistent pattern in this group in the changes over time as well as in median age levels. Primrose, Clam Gulch, Happy Valley, and Funny River have relatively high median ages compared to the KPB as a whole. These communities are all on the road system and have a large retiree populations. The communities of Fox River and Moose Pass both have significantly younger residents compared to the other communities in the region. Fox River is adjacent to the Russian Old Believer communities and according to the latest ACS 5-year data, the community's population is 100 percent white, and more than half of the residents are under the age 20; 17 percent of the residents are under the age of 5.

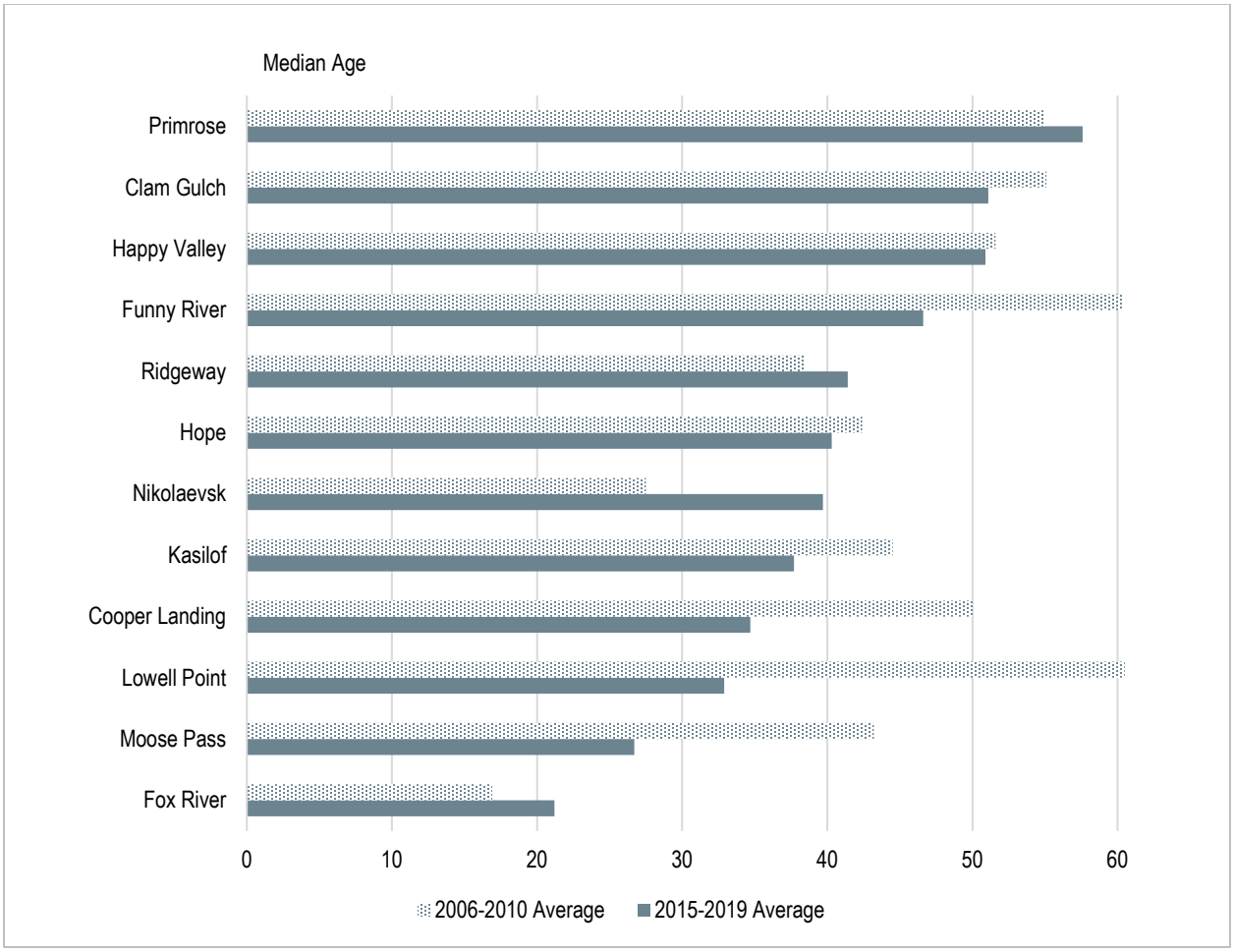


Figure 3-9. Median Age in the Small Communities in the KPB, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2022c)

Notes: Communities for which data are unavailable are not shown.

3.2.3 Race and Ethnicity

Figure 3-10 presents the minority percentage in the Native villages, incorporated cities, large residential, and small residential communities in the KPB.

As expected, the minority percentages in most of the KPB communities in which federally recognized Alaska Native tribal entities are located were relatively high compared to the minority percentage in the KPB as a whole which had 17 percent minority population in 2019.[15] The average annual minority percentage in the Native communities from 2015 to 2019 was 80 percent, with a value of 97 percent reported for Tyonek. The large, incorporated cities of Kenai and Homer also have higher minority

[15] In most cases the tribal entity cannot be considered as identical to the census-designated place in which the tribe is located, as some residents may be non-tribal members.

percentage population (comparable to Ninilchik and Salamatof) compared to the KPB as a whole and relative to the small residential communities in the region which all had less than 12 percent minority population. As noted earlier though, the Alaska Native population in the region reside all throughout the KPB.

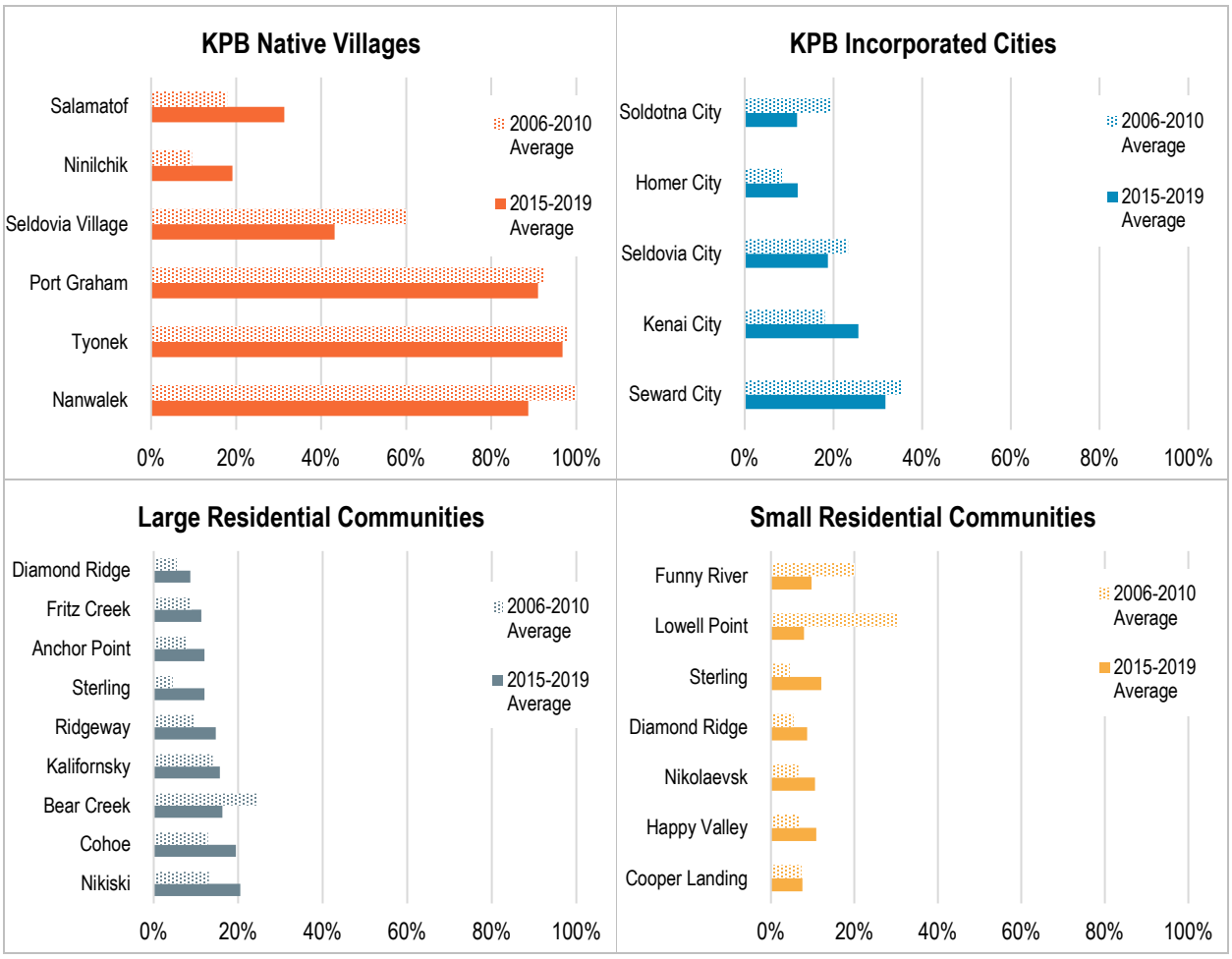


Figure 3-10. Minority Percentage in the Kenai Peninsula Borough by Community Type, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021i)

Notes: The percentage of minority individuals in a population is calculated as 100 percent minus the White Alone, Non-Hispanic percent. Communities for which data are unavailable are not shown.

3.2.4 Education

Figure 3-11 shows that the percent of individuals aged 25 and older with a high school degree or higher did not differ markedly across KPB communities. However, there was a marked increase among the Alaska Native villages as a group: from an average of 85 percent from 2006 to 2010 to an average of 93 percent from 2015 to 2019. As discussed in Section 2.2.4, the graduation rate for Alaska Natives residing in the KPB improved in recent years due to the development and implementation of plans, methods strategies, and activities to improve Alaska Native's educational outcome (Sorensen 2017).

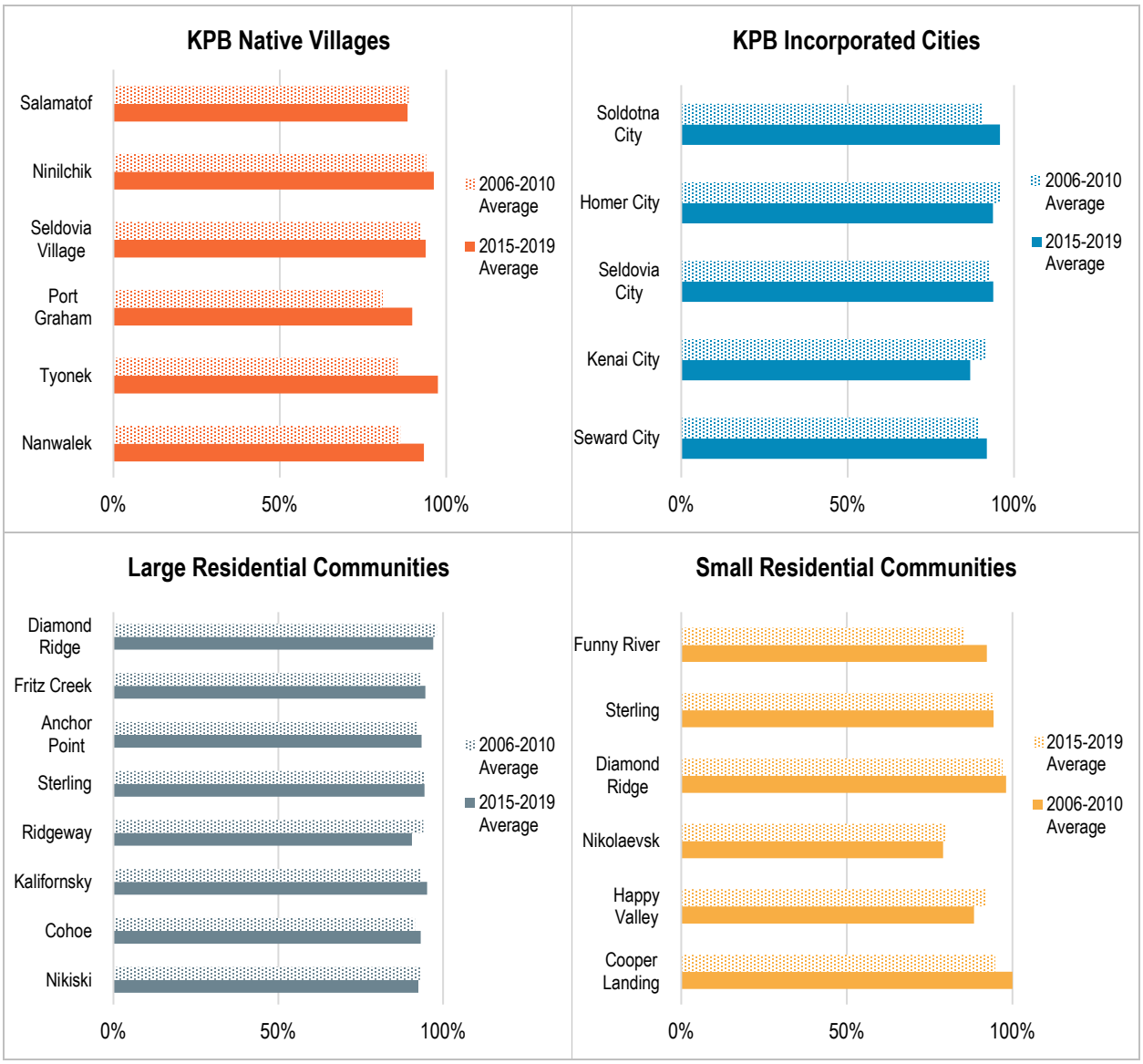


Figure 3-11. Percent of Adults with a High School Degree or Higher in the Kenai Peninsula Borough by Community Type, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021d)

Notes: Communities for which data are unavailable are not shown.

3.2.5 Housing

As noted in Section 2.2.5, housing costs in the region are among the lowest in Alaska, with both median rent and sales prices lower than medians in other major regions like Anchorage and the Matanuska-Susitna Borough. The average home sales price in the KPB in 2020 was $301,608 compared to $354,560 statewide, and the median monthly rent was $1,009 compared to $1,155 statewide. Housing affordability however varies across the different KPB communities. Demand for "in-town" living makes housing more expensive in some communities (Agnew::Beck Consulting 2019).

Figure 3-12 shows median value of owner-occupied homes in selected KPB communities over two time periods. For this indicator, the differences across the communities are driven by location (proximity to the larger cities in the region) and availability of housing, and not by the type of community.

Generally, the communities near the larger cities (so-called bedroom communities) over the two periods of time have historically been higher compared to communities that are further away, but there are a few small and more remote communities that have higher average house prices compared to prices in the KPB cities and larger communities, mainly due to shortage of housing.

House prices in the bedroom communities of the central Kenai Peninsula, including Sterling, Kalifornsky, Salamatof, and Kasilof increased substantially over the past several years. In contrast, house prices in the nearby urban communities of Soldotna and Kenai increased only slightly. Moreover, from 2015 to 2019, the average annual median value of homes in the four-bedroom communities was substantially higher than that in the Kenai-Soldotna area: $313,400 versus $220,250. This difference may be the result of a phenomenon reported in other bedroom communities whereby the development of these communities leads to rising housing prices in a process akin to gentrification (Wikipedia 2022).

According to a survey of real estate agents in the region, prices for relatively scarce properties like high-amenity waterfront parcels, or land in highly desirable towns like Hope, have been relatively high. Demand for these types of properties is strong throughout the region, from Hope to Homer (Agnew::Beck Consulting 2019). According to the survey, the current housing demand is driven by:

- Purchases by second homeowners and retirees (38 percent of parcels in the KPB have a primary owner with an out-of-state address)
- Demand from higher income working professionals like local health care workers (doctors, nurses, and other healthcare practitioners, many of whom are relatively new to the KPB can afford high value properties, affecting real estate demand in residential areas near the major regional hospitals such as the Central Peninsula Hospital in Soldotna).

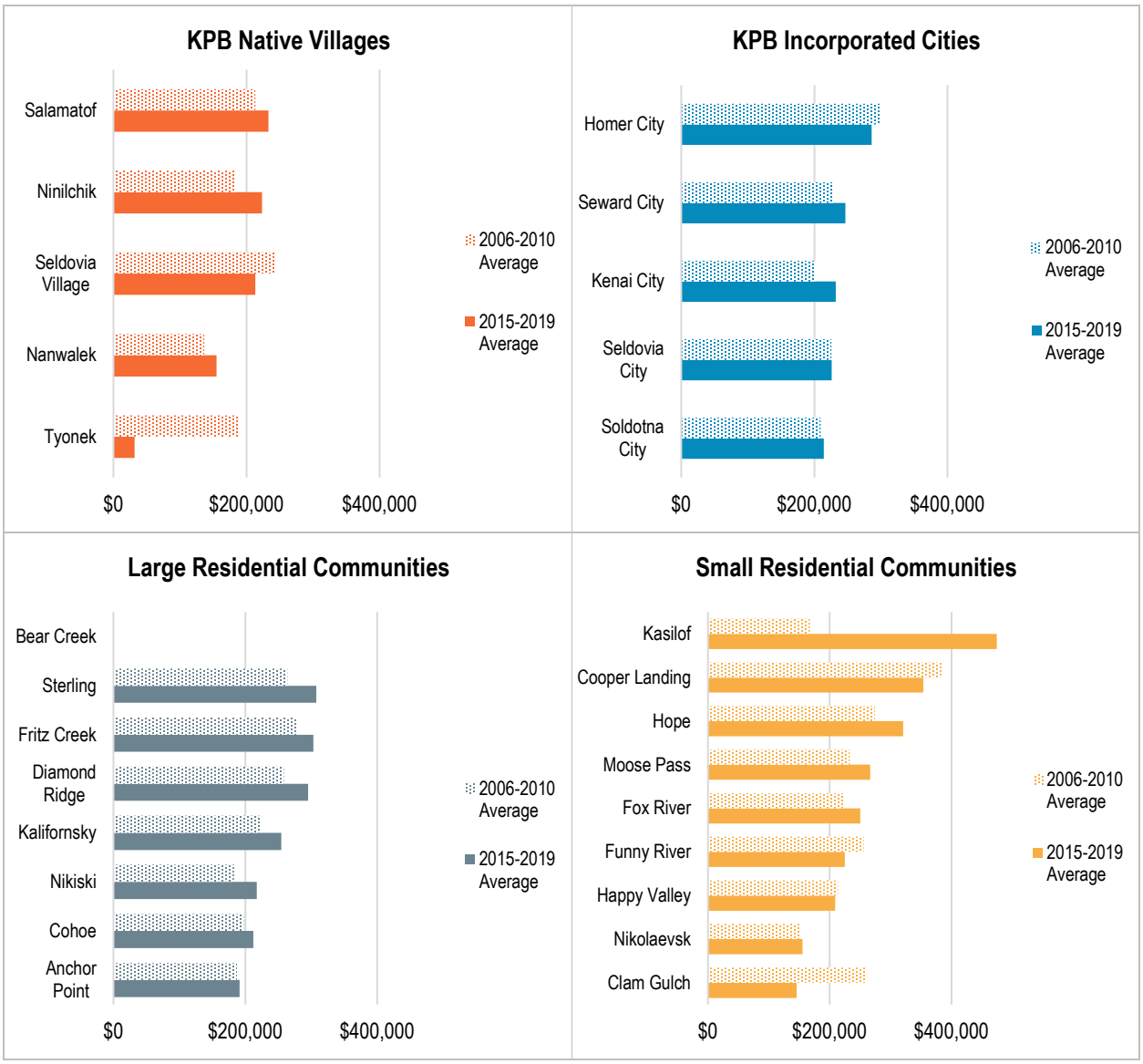


Figure 3-12. Median Value of Owner-occupied Homes in the Kenai Peninsula Borough by Community, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021c)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS). Communities for which data are unavailable are not shown.

As discussed in Section 2.2.5, seasonal, recreational, or occasional use housing refers to units intended for use only in certain seasons or for weekend or other occasional use throughout the year. They can include housing units used solely for leisure by vacationers or as second homes by retirees. They also can include housing units used for sport and subsistence hunting and fishing. Section 2.2.5 notes that the KPB has a comparatively higher percentage of seasonal, recreational, or occasional use housing units. As shown in Figure 3-13, communities in the KPB where there is a prevalence of this housing include Cooper Landing, which has a high level of recreation and tourist activity; Primrose, a small community near

Seward that has a number of vacation homes; and Funny River, where there is a high concentration of retirees.

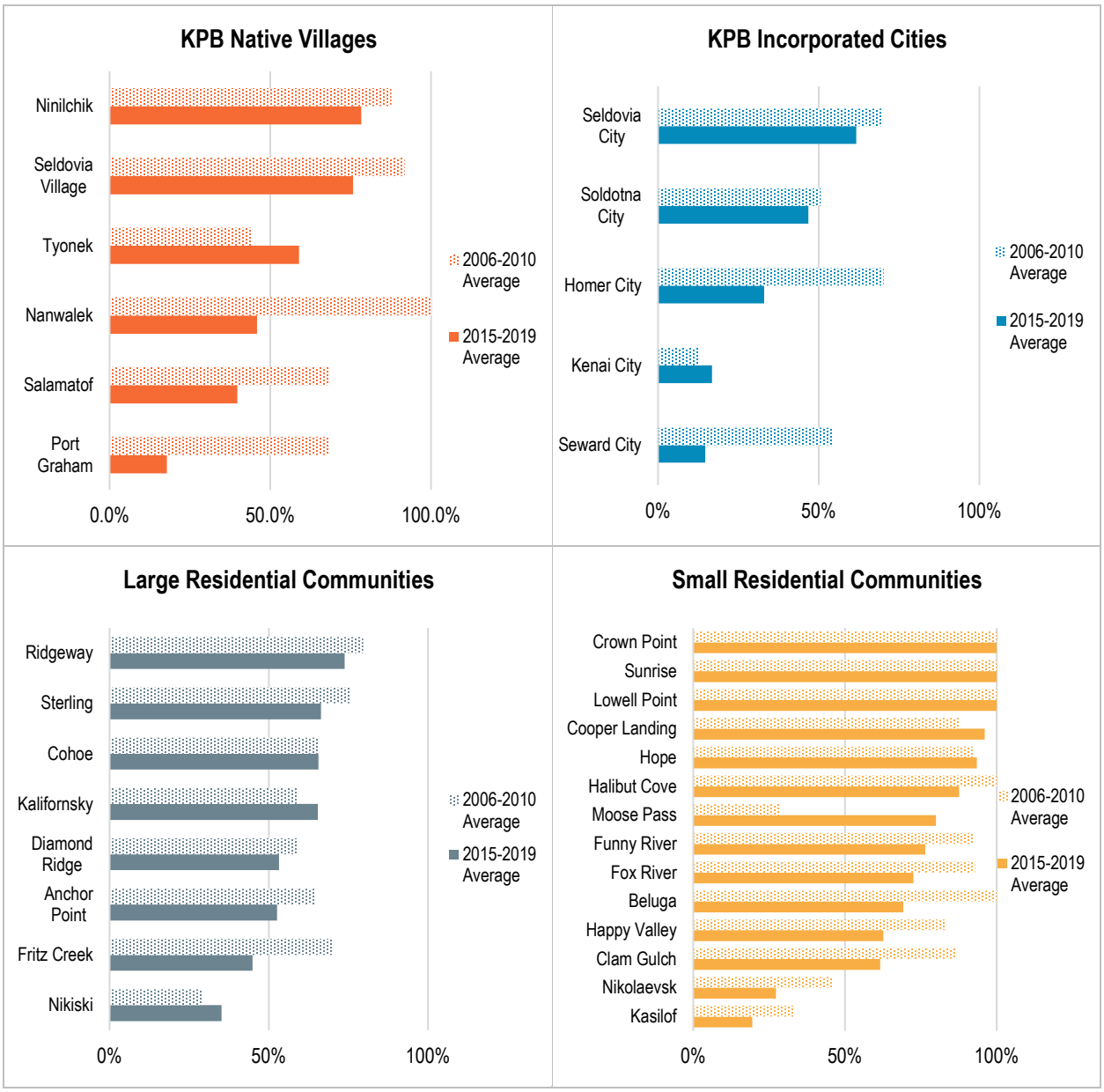


Figure 3-13. Seasonal, Recreational, or Occasional Use Housing Unit Percentage in the Kenai Peninsula Borough by Community, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021a)

Notes: Communities for which data are unavailable are not shown.

3.3 Economy

3.3.1 Income

Median household income (which represents the middle value) may more accurately reflect wealth in smaller geographic areas than per capita income, which may be skewed by households with incomes that are extremely high or low compared to the majority.

Figure 3-14 shows that in most of the incorporated cities and the larger residential communities, there was an increase in median household incomes over the two time periods; this trend was also true for most of the Native villages, except for Salamatof and Ninilchik. Several of the smaller communities experienced a decrease in median household incomes.

The average annual median household income in some of the bedroom communities of the central Kenai Peninsula, including Sterling, Kalifornsky, and Kasilof, was relatively high: $88,200 from 2015 to 2019, compared to $59,541 in the Kenai-Soldotna-Nikiski area, and $66,889 for the entire KPB.

The Native villages, particularly Tyonek, Port Graham, Nanwalek, and Ninilchik, had lower median household income levels compared to the cities and larger residential communities. The average annual median household income in the Native villages as a group from 2015 to 2019 was $51,611.

Figure 3-14. Median Household Income in the Kenai Peninsula Borough by Community, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021h)

Notes: Adjusted to 2020 dollars using the Consumer Price Index for all Urban Consumers. Communities for which data are unavailable are not shown.

3.3.2 Unemployment, Poverty, and Labor Force Participation

Figure 3-15 shows that there was a marked variation in unemployment rates among KPB communities. As expected, unemployment rates in the cities and large residential areas are lower compared to the small residential communities. Tyonek and Nanwalek, two of the Native villages, experienced periods of especially high unemployment rates. For example, from 2015 to 2019, the average annual unemployment rate in Tyonek was 30.3 percent compared to 7.6 percent across the entire KPB (Figure 2-20). Large retiree populations likely account for the high unemployment rates in Happy Valley and Funny River. In addition, employment opportunities are limited in small, rural villages, particularly during the winter

when there is little market-based activity. The unemployment rates in the bedroom communities and their associated urban centers were similar to the borough-level rates.

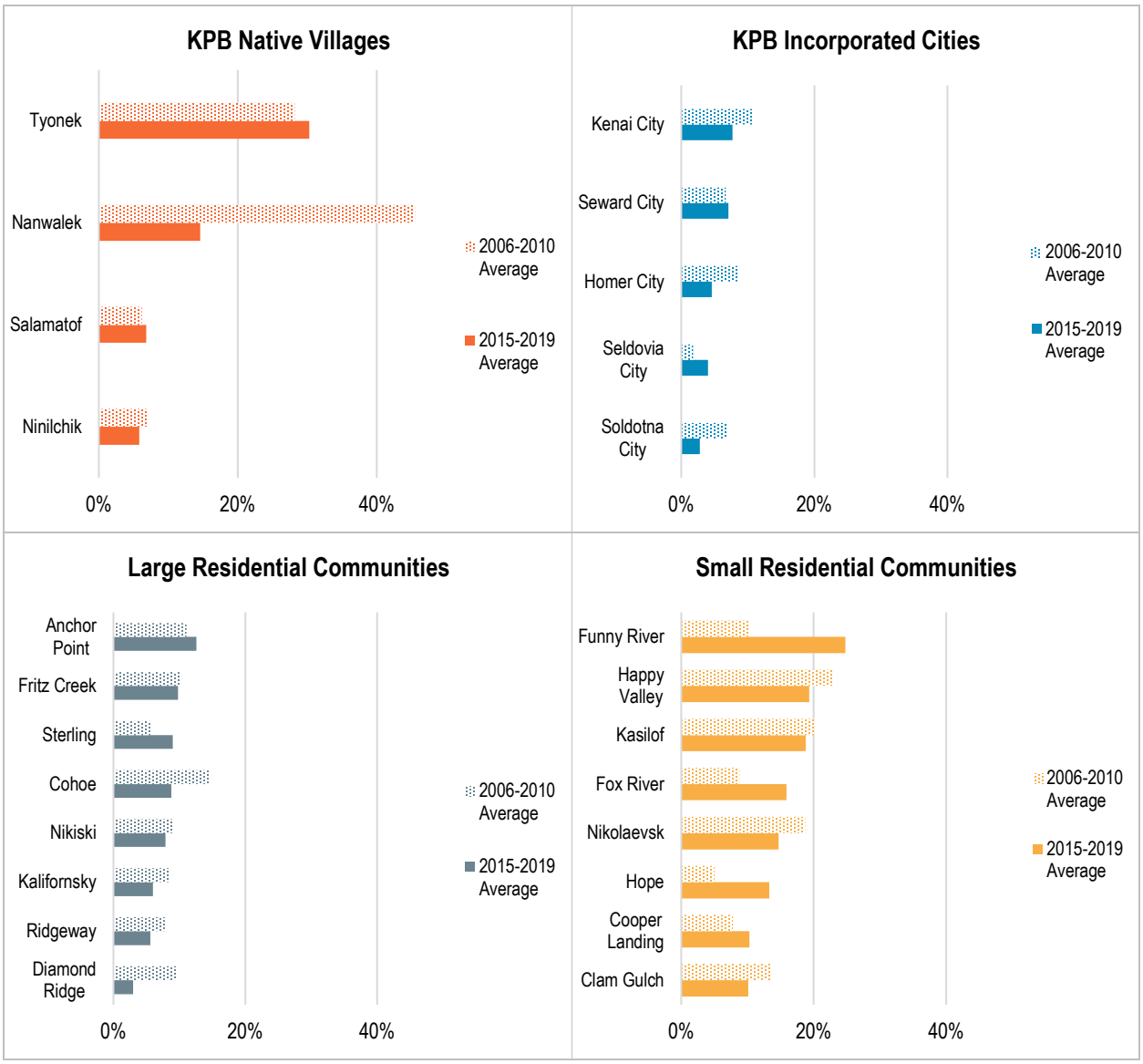


Figure 3-15. Annual Unemployment Rate in the Kenai Peninsula Borough by Community, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021h)

Notes: Communities for which data are unavailable are not shown.

Median household income and unemployment in a given community are often significant determinants of the poverty rate in that community (Gorman 2006). As with high unemployment rates and low median incomes, poverty rates in some of the Native villages and small residential communities were relatively high (Figure 3-16). The information for Tyonek and Port Graham are not shown because the data were not available for the 2006 to 2010 period, but the poverty rates in these communities averaged 24 percent and 32 percent, respectively from 2015 to 2019. Port Graham's unemployment rate (also not shown in the

previous figure) averaged 30 percent from 2015 to 2019. From 2015 to 2019, the average poverty rate in the Native villages was 21.2 percent, while the average poverty rate in the KPB from 2015 to 2019 was 11.3 percent.

Some communities with large seasonal economies have high unemployment rates but relatively low poverty rates because while few jobs are available in these areas during the winter off-season, incomes during the summer can be substantial.

The poverty rates in the bedroom communities and their associated urban centers were similar to the borough-level rates.

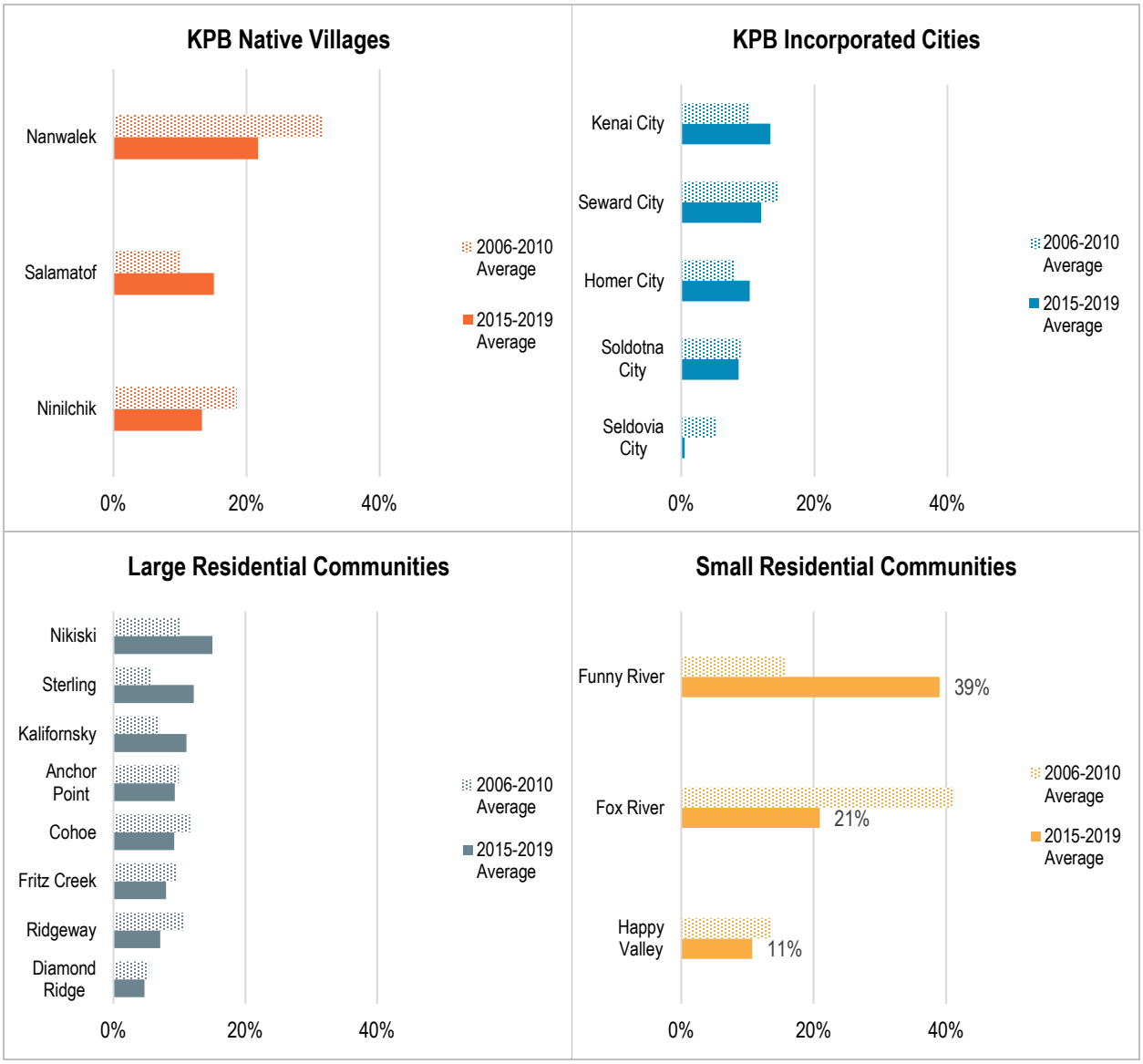


Figure 3-16. Percent of People in Poverty in the Kenai Peninsula Borough by Community, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2022d)

Notes: Communities for which data are unavailable are not shown.

People who are neither working nor looking for work are counted as "not in the labor force." The percentage of working-age people not in the labor force in KPB communities is shown in Figure 3-17.

A majority of the communities experienced an increase in the percentage of working-age population who are not in the labor force over the two time periods shown. Generally, the more common reasons for people to drop out of the labor force are going to school, illness or disability, home responsibilities, and retirement. The age distribution of the population can influence the overall percentage of the population that is not in the labor force and the aging of the population in the KPB contributed to the trend in this indicator. The high percentages in the smaller communities like Happy Valley and Funny River for example, are likely due to the large retiree populations in those small communities.

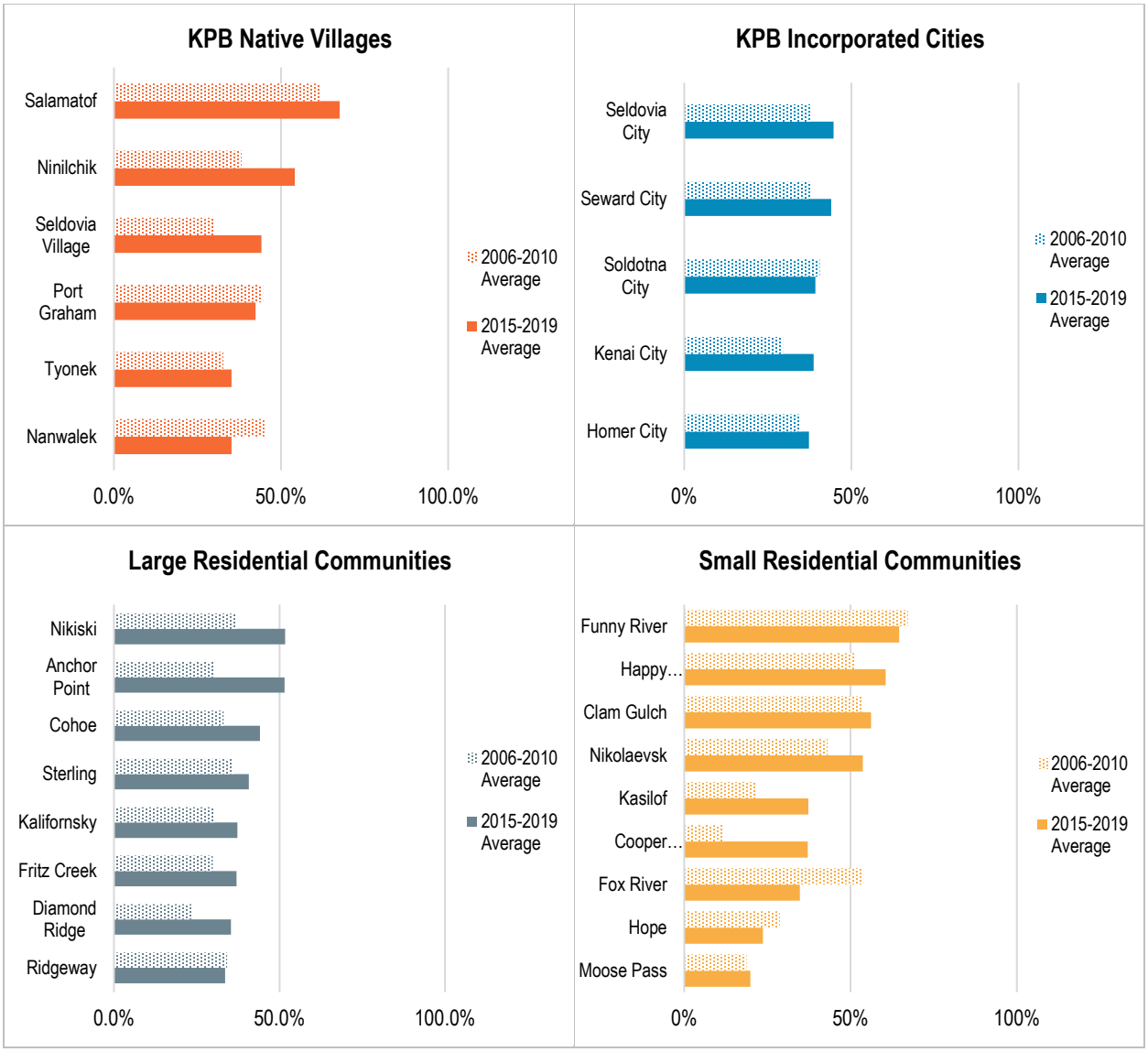


Figure 3-17. Percent of Working-Age People Who Are Not in the Labor Force in the Kenai Peninsula Borough by Community, 2006–2010 Average and 2015–2019 Average

Source: U.S. Census Bureau (2021h)

Notes: Communities for which data are unavailable are not shown.

4 Role of ANCSA Corporations in the Kenai Peninsula Borough Economy

4.1 Background

The Alaska Native Claims Settlement Act of 1971 (ANCSA) divided Alaska into twelve distinct regions and mandated the creation of twelve private, for-profit "Alaska Native regional corporations" (Figure 4-1), as well as several "Alaska Native village corporations" within each region.[16] These regional boundaries established which of the twelve Alaska Native regional corporations would serve the people, villages, and communities within the area. ANCSA mandated that corporations be owned by enrolled Alaska Native shareholders (ANCSA Regional Association 2022b).

In exchange for the extinguishment of Alaska Native aboriginal land claims, the regional corporations received rights to the subsurface and some surface lands, and certain village corporations received title to surface lands (ANCSA Regional Association 2022b). About 44 million acres of Alaska lands were returned to Native ownership, and Congress appropriated $962 million in cash as compensation for the lands not returned to Alaska Natives. The corporations were trusted with land as property owners to not only maximize the economic health of their respective communities, but to also use returns earned from investments to preserve and strengthen their Native cultures (Alaska Senate Oil and Gas Tax Credit Working Group 2015).

The corporations derive revenues from a wide array of investments including resource development on their lands. Some of the regional corporations' lands received as their ANCSA entitlement are richer in natural resources (i.e., oil, timber, gas, coal, etc.) than others. To equalize this disparity, ANCSA requires regional corporations to share 70 percent of the resource revenues received from ANCSA lands with the other corporations.[17]

Since the passage of the ANCSA, some ANCSA regional and village corporations experienced periods of financial crisis, and the Act was amended to help ensure their continued financial solvency. Most notably, the corporations were provided with special contracting advantages under the U.S. Small Business Administration 8(a) business development program (Government Accounting Office 2012; Manuel et al. 2012). The Small Business Act of 1958 included measures to ensure that a fair share of Federal government contracts are awarded to small businesses. Small Business Administration 8(a) program-certified small businesses can receive sole-source contracts with the Federal government (U.S. Small

[16] The twelve regions were defined by the common heritage and shared interests of the indigenous peoples within each geographic area. Although the boundaries did not directly represent land ownership, they defined the areas in which each regional corporation could select lands to be conveyed under the provisions of ANCSA (ANCSA Regional Association 2022b).

[17] Section 7(i) of ANCSA requires that 70 percent of the annual revenues that an ANCSA regional corporation receives from ANCSA lands must be shared with other regional corporations. Section 7(j) of ANCSA directs each regional corporation to disperse 50 percent of the Section 7(i) revenues they receive to ANCSA village corporations within their region. The remaining 50 percent can be paid directly to shareholders at-large (ANCSA Regional Association 2022b).

Business Administration 2022). Under ANCSA, all regional and village corporations and their subsidiaries, regardless of their size, are considered to be minority-owned and economically disadvantaged businesses and therefore eligible for Small Business Administration 8(a) program certification (Government Accounting Office 2012; Manuel et al. 2012). The rule opened up Federal contracts worldwide for the Alaska Native corporations.

The corporations' most broadly distributed benefits are shareholder dividends, which are drawn from a portion of their profits. According to shareholders, the dividends are often the most important benefit they receive from the corporations; the payments provide a critical source of income to help defray living expenses, especially in communities with high cost of living (Government Accounting Office 2012).

Besides dividends, ANCSA regional corporations and village corporations, together with their subsidiaries, provide employment opportunities for their shareholders. Internships and other types of employment support may also be offered. To facilitate shareholder employment programs, the 1988 amendments to ANCSA allowed regional and village corporations, plus some entities owned by these corporations, to hire shareholders in preference over others (Government Accounting Office 2012).

In addition to providing monetary benefits, ANCSA regional and village corporations deliver a range of social services to their shareholders. All of the regional corporations and some village corporations established nonprofit organizations for this purpose. The social service programs offered by these nonprofit organizations include health care, burial assistance, elder benefits, student scholarships, sponsorship of cultural events, and a range of other services (ANCSA Regional Association 2022c). These programs also generate additional employment opportunities for shareholders.

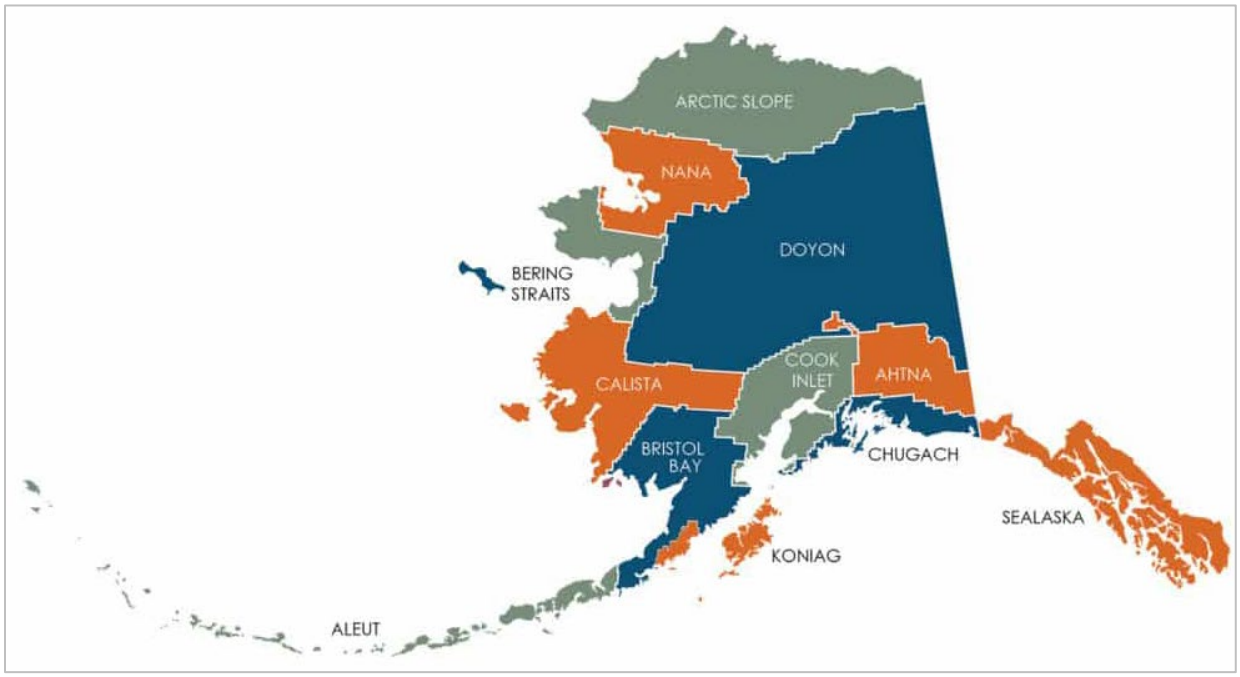


Figure 4-1. Regions of the ANCSA Regional Corporations

Source: ANCSA Regional Association (2022a)

4.2 Overview of the Alaska Native Regional and Village Corporations in the Kenai Peninsula Borough

Figure 4-2 shows the two regional corporations and six village corporations operating within the KPB.

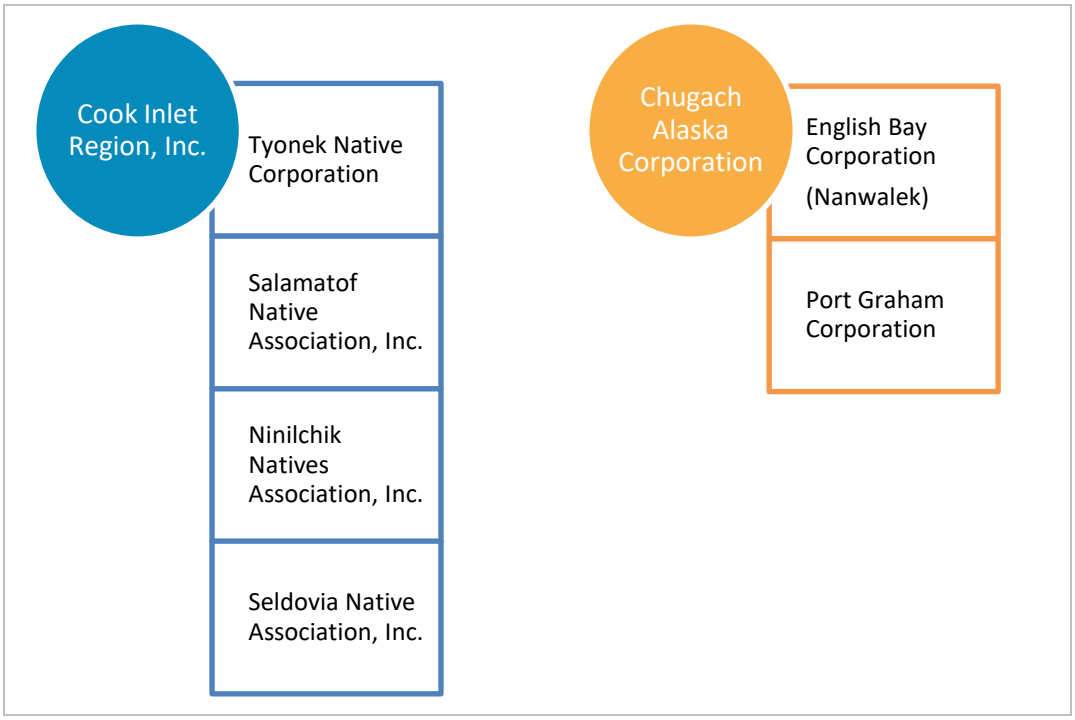


Figure 4-2. Alaska Native Regional and Village Corporations in the Kenai Peninsula Borough

The Alaska Native regional and village corporations in the KPB play a significant role in the regional economy, adding even more economic diversity to the region. These corporations are landowners, investors, employers, and provide critical services to the residents of the communities in the KPB.

- **ANCSA Corporations as stewards of their lands**

  Combined, the corporations own and manage over 3.2 million acres across the KPB and adjacent regions. In total these corporations own nine percent of the land within the Borough (Agnew::Beck Consulting 2019). Cook Inlet Region, Incorporated (CIRI) is the KPB's largest private landowner, with over 330,000 acres of surface lands in the KPB and close to 600,000 acres in subsurface rights.

> *"Our lands are the foundation of our corporation and our culture."*
>
> *—Chugach Alaska Corporation*
>
> *"The Alaska Native people of the Cook Inlet Region have spent generations in accord with the land, growing with it, harvesting plants and animals from it, acting as its stewards. The land, with its abundant resources, is the reason CIRI exists today."*
>
> *—CIRI*

- **ANCSA Corporations as an economic driver**

  The corporations expanded their role as stewards of their land and natural resources by engaging in a wide array of enterprises and investments beyond resource development. As for-profit corporations, the Native regional and village corporations operate businesses and subsidiaries and

hold investments both within the region and outside. These businesses generate employment, income, and brings an infusion of cash into the region that benefit not only the shareholders of the ANCSA corporations but other KPB residents as well. The dividends paid out to their shareholders are an important source of new money brought into the region.

- **ANCSA Corporations as providers of health and social services in KPB communities**

  The corporations invest in their people and communities through various programs. The corporations spend significant amounts of their revenues each year to support shareholders through educational opportunities, scholarships, internships, elder benefits, and programs to maintain their cultures, languages, and heritage. The revenues generated by the ANCSA corporations also supported nonprofit organizations across the region. These organizations deliver healthcare, housing, education, and other cultural benefits to the region. These affiliated organizations provide critical services to the KPB communities.

4.3 Trends in ANCSA Corporation Indicators

Historical information on the financial performance, shareholder benefits, and employment generated by the ANCSA corporations over the 2008 to 2020 period is not readily available. Dividend information in particular are confidential. There are a few data sources that provide insights on the contribution of the corporations to the region, including annual reports for certain years, the corporations' websites, and Alaska Business Monthly, which has for more than ten years, published total revenues of the regional corporations. Some of the corporations also provided valuable information for this report including current data on number of shareholders, number of workers employed in the state and in the region, and a few highlights regarding their shareholder distributions.

4.3.1 Landholdings

The size of the corporations' landholdings evolved over time. Since the passage of ANCSA, some corporations still have not received their full conveyance of land and some corporations engaged in land transfers with state and Federal agencies and with other corporations, resulting in a mix of surface and subsurface rights owned by regional and village corporations.

Figure 4-3 shows the current landholdings of the regional and village corporations. Note that these landholdings also include areas outside of the KPB. The corporations are the largest private landowner in the KPB, accounting for 9 percent of the 12 percent of lands that are privately owned. Two-thirds of the land in the KPB are federally owned and managed (65.5 percent). The state owns 21 percent, and the cities own less than 1 percent of the lands in the region.

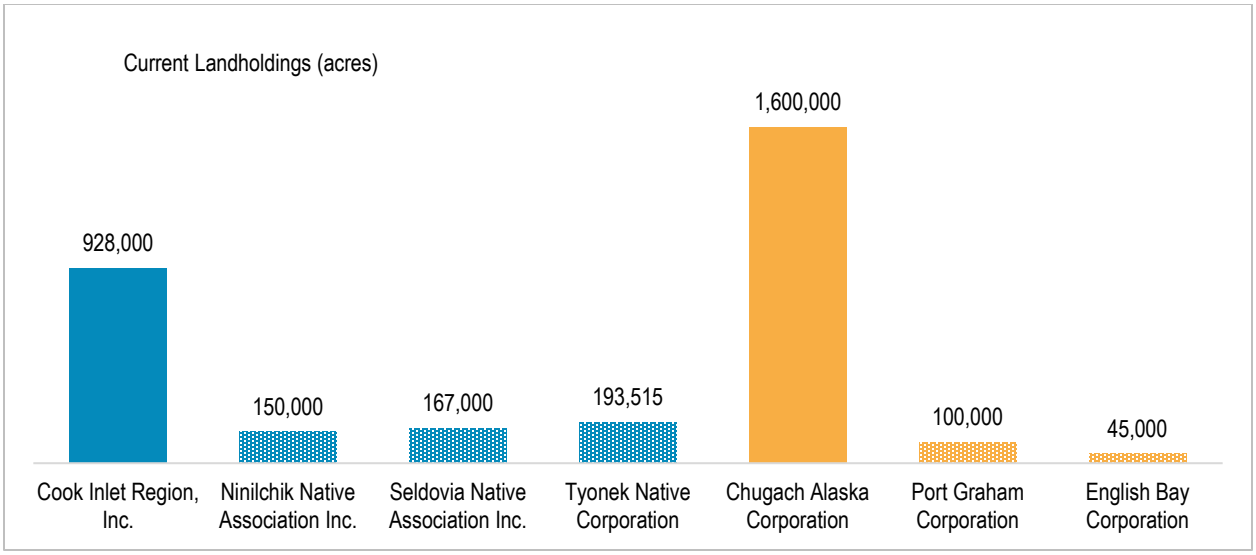


Figure 4-3. Current Landholdings of ANCSA Corporations

Source: Cook Inlet Region, Inc. and Chugach Alaska Corporation

Notes: The values for the regional corporations include surface and subsurface estate. The village corporations have surface lands. The Salamatof Native Association, Inc. received money under ANCSA but did not receive any land.

4.3.2 Number of Shareholders

The number of shareholders also evolved over time. Corporations had to enroll shareholders within two years from the date that ANCSA was signed into law. The original language in ANCSA defined the eligibility requirements for enrollment as only those Alaska Native people of one-fourth blood quantum who were born on or before 11:59 p.m. on December 18, 1971, were eligible to enroll in Alaska Native regional and village corporations. In 1991 amendments were passed that allowed, through a vote of their shareholders, changes to expand shareholder enrollment eligibility.

In 2009, CIRI had 7,693 shareholders and Chugach Alaska Corporation (CAC) had 2,002 shareholders. Today, CIRI is owned by 8,300 shareholders and 892 are residents of the KPB. CAC now has 2,500 shareholders and 220 live in the KPB.

The following village corporations have information on number of shareholders:

- Ninilchik Natives Association Inc. had 206 shareholders in 1972 and now has 415 shareholders. The Corporation has 130 shareholders residing in the KPB.
- English Bay Corporation had 73 original shareholders.
- Seldovia Native Association, Inc. had 434 shareholders in 2018.
- Tyonek Native Corporation has 900 shareholders.
- Salamatof Native Association had 129 original shareholders and now has 218 shareholders.

4.3.3 Revenues

As noted above financial information about the ANCSA corporations are difficult to obtain as most corporations keep their financial statements confidential. The only available historical data on gross

revenues are from the Alaska Business Monthly which publishes the data every September of each year; data are only available for the regional corporations.

CIRI's gross revenues are shown in Figure 4-4. CIRI's various investments generated significant revenues over the study period, increasing from $242 million in 2009 to $594 million in 2019, with the highest revenue realized in 2018. CIRI's business interests are influenced by local, national, and global market forces and trends. CIRI's diversified business portfolio and cash reserves helped the corporation remain financially sound through the Alaska recession which affected several industries in the state from 2015 to 2017. CIRI however was not immune to the global financial crisis of 2008 and 2009 which resulted in economic downturns across the country and across the world. Some of their investments however were affected by the crisis and resulted in revenue losses through their 2010 fiscal year. CIRI Alaska Tourism Corporation, CIRI's wholly owned Alaska tourism subsidiary experienced a downturn in 2009. The company's marine tour, lodging and booking businesses were affected by Alaska's significant tourism decline in 2009 as many travelers avoided travel during the financial crisis. However, the company was able to refine its marketing efforts by targeting more independent travelers which resulted in a stronger economic performance in subsequent years (CIRI 2010). CIRI reported that the corporation earned a net profit of $16.5 million in 2010 which was down from $24.5 million in 2009. Total shareholders' equity at year-end 2010 was $627.4 million, down from $635.4 million from 2009 (CIRI 2011).

CIRI's long-term investment strategy allowed the corporation to maintain revenues and avoid significant losses during the Alaska recession and the pandemic. During the pandemic, CIRI took steps to reduce general and administrative costs and delayed large capital expenditures. CIRI's private equities and securities segments benefitted from strong market conditions, and the government services segment achieved its highest revenue and net income that resulted in very strong financial performance in 2021. At the end of 2021, CIRI owned $1.1 billion in assets and had generated $99.9 million of net income (compared to $50 million in 2020). Shareholders' equity also increased, totaling $754.1 million at year-end 2021 (compared to $722.9 at year-end 2020).

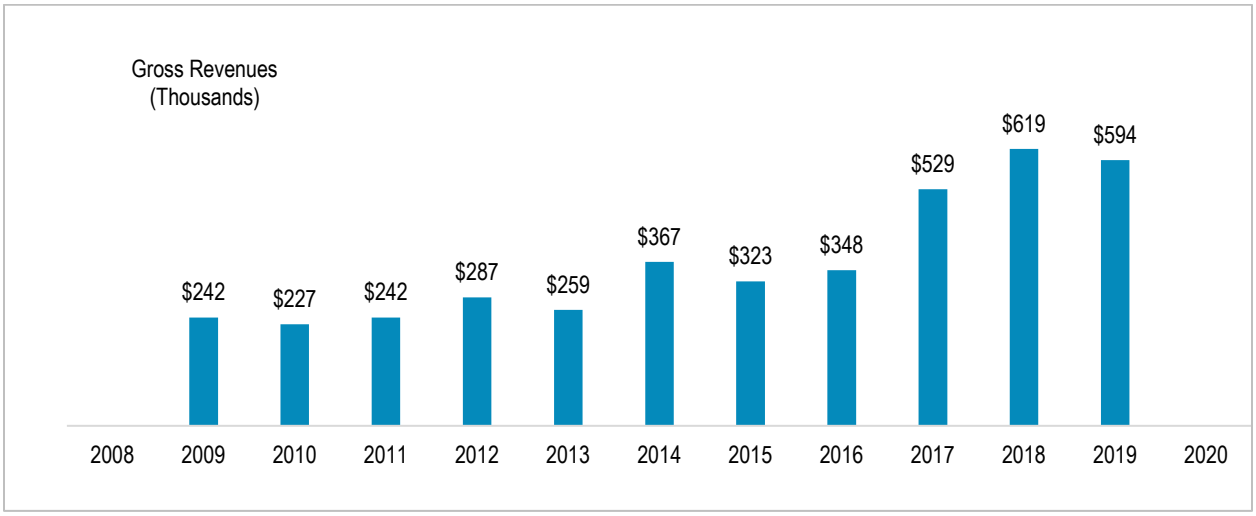


Figure 4-4. Cook Inlet Region Inc. Total Revenues, Fiscal Year 2009 to 2019

Source: Data compiled by Northern Economics from AK Business Monthly (2010-2021) and Stricker (2010-2018).
Notes: Adjusted to 2020 dollars using the Consumer Price Index for all Urban Consumers. Values for 2008 and 2020 are not available.

CIRI also provided the following information regarding their total assets, shareholder dividends, resource revenue sharing (Juliussen 2022):

- The value of CIRI's total assets identifies an overall upward trend, increasing from $687.3 million in 2008 to $1,096 million in 2020.
- Annual shareholder dividends increased from $22.2 million to $24.6 million over that period (CIRI 2022a).
- In 2017, the shareholder equity amount was $668.7 million, the second highest of any ANCSA regional corporation (Snigaroff and Richards 2021).[18] By 2020, shareholder equity had reached $723 million (CIRI 2022a).
- The resource revenue payments CIRI made to its associated communities since 1974 totaled $37,088,076, with the distribution as follows: Ninilchik, $8,555,592; Salamatof, $5,357,628; Seldovia, $10,632,192; and Tyonek, $12,542,664.
- Since its inception, the Company funded cumulative dividends and distributions totaling $1.2 billion to its Shareholders, more than any other Alaska Native regional corporation.

In 2008, CAC's Board of Directors adopted a new organizational structure and diversification strategy to expand its business to commercial operations and investments. By 2009, the Corporation's revenues increased and Federal government contracting operations revenue reached $1 billion, employing about 5,000 people worldwide (CAC 2022). In 2010 however, scrutiny of the Section 8(a) Program caused revenue declines[19]. In 2012, CAC purchased Heide & Cook, a company that specializes in building/facilities services such as plumbing, elevators, refrigeration, heating, cooling, and ventilation systems (this was CAC's first acquisition under their commercial diversification strategy). Further diversification efforts were undertaken in 2015 and 2016 with the acquisition of two additional companies (American Oilfield and Rex Electric and Technologies), and establishment of the Chugach Investment Holdings. CAC sold its coal rights within Bering River Coal Field in 2016, and in the same year began a carbon offset project that generated additional revenues. As of 2018, CAC had nearly 6,000 employees worldwide (18 percent in Alaska). By 2020, CAC achieved its highest operating profit, despite a slight decline in gross revenues from pandemic disruptions.

CAC's revenues from 2008 to 2020 are presented in Figure 4-5. CAC's total revenues showed an increasing trend from 2013 to 2019. The year 2020 was the first decline in total revenues in six years. In 2020, CAC generated $1.1 billion in gross revenues.

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[18] The term shareholder equity refers to a company's net worth or the total dollar amount that would be returned to its shareholders if the company is liquidated after all debts are paid off (i.e., total assets minus total liabilities) (Hayes 2022).

[19] The 8(a) Business Development program, which is administered by the U.S. Small Business Administration (SBA), was created to provide support to small, disadvantaged businesses, particularly with gaining access to the Federal marketplace. In the early 1990s ANCs were given the right to participate in the Program and were given special rights including no-limitation on the size of sole-source contracts awarded in the 8a program. Scrutiny of the Program's special rights that benefited ANCs started in 2010, this led to changes in the Program rules that made sole-source contracts more difficult to obtain.

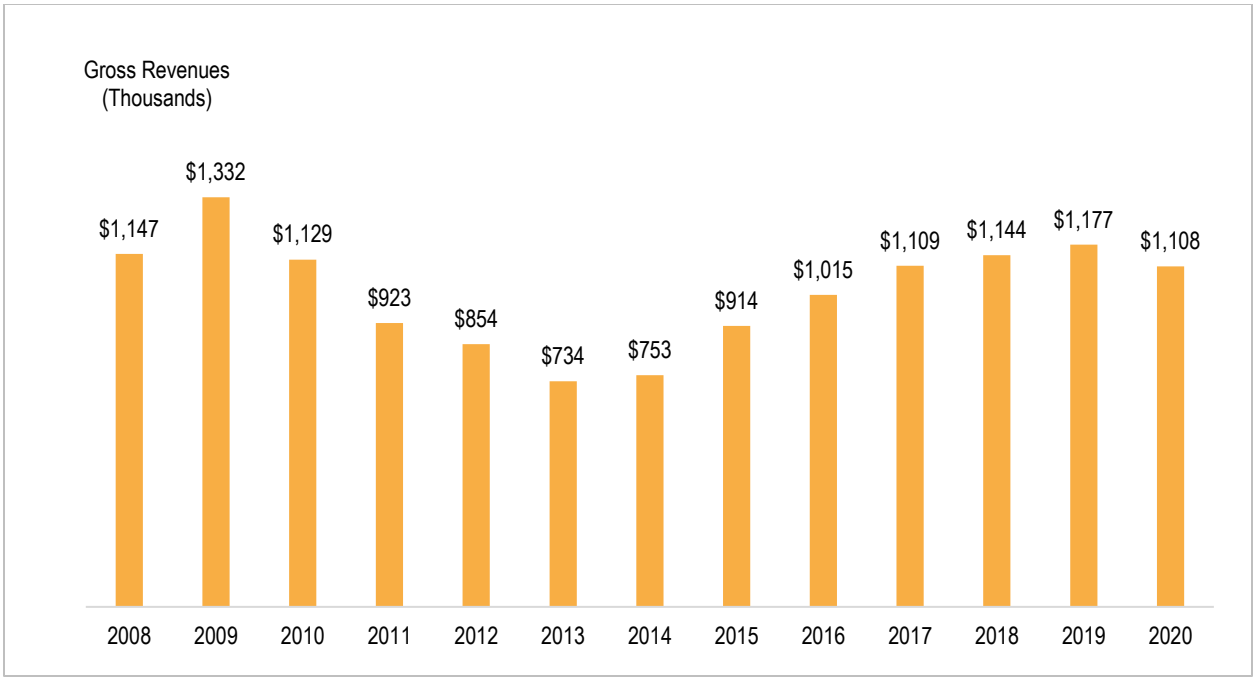


Figure 4-5. Chugach Alaska Corporation Total Revenues, Fiscal Year 2008 to 2020

Source: Data compiled by Northern Economics from AK Business Monthly (2010-2021) and Stricker (2010-2018).
Notes: Adjusted to 2020 dollars using the Consumer Price Index for all Urban Consumers.

CAC keeps their dividend information confidential but some of the noteworthy milestones in CAC's shareholder programs since 2008 include the following:

- CAC invested funds to establish the Chugach Heritage Foundation (CHF) endowment and committed $30 million in funding for educational scholarships and the Nuuciq culture camp.
- CAC established a goal to create intergenerational prosperity.
- In 2017, the shareholder equity amount reached $309 million, which was the fourth highest among the twelve ANCSA regional corporations (Snigaroff and Richards 2021).
- In 2021 CHF was awarded funding from the EVOS Trustee Council to establish a museum and archaeological repository and to fund regional culture camps.

In addition to the revenues from their various businesses and investments, CIRI and CAC also derive revenues from 7(i) revenue sharing[20]. These are the revenues from resource development shared by other

[20] ANCSA's revenue sharing provisions, which are contained in sections 7(i) and 7(j), ensure that all Alaska Native corporations and their shareholders benefit from revenues derived from natural resource development on ANCSA lands. Section 7(i) requires that any revenues an Alaska Native regional corporation receives from ANCSA lands (from timber resources or natural resources in subsurface estate) must be shared in a 70/30 split. Seventy percent of the revenue is disbursed to the other Alaska Native regional corporations and the remaining 30 percent is kept by the regional corporation that developed the natural resource. Section 7(j) ensures that revenues from natural resource wealth are shared with Alaska Native village corporations. The regional corporations disburse 50 percent of the Section 7(i) revenues they receive to Alaska Native village corporations within the region.

regional corporations. Therefore, CIRI and CAC's revenue streams are also affected by changes in the oil and gas, lead, and timber industries. The crash in oil prices during the Alaska recession affected all the regional corporations in Alaska, resulting in a significant reduction in 7(i) revenues shared by other corporations. There was a 40 percent decline in 7(i) sharing from 2015 to 2016 for all corporations statewide (Stricker 2017).

Finally, Federal relief funds in response to the COVID-19 pandemic also had a major economic impact on both ANCSA regional and village corporations. In 2021, the U.S. Supreme Court held that these corporations were eligible for U.S. Treasury Department funding under the 2020 CARES Act. The Department reserved $444 million from the Act to distribute to these corporations. CIRI alone received $112 million from the CARES Act, some of which the regional corporation spent to meet the immediate household needs of its shareholders and their descendants (Ruskin 2021; Ristroph 2022).

4.3.4 Employment

Section 4.4 and Section 4.5 describe the various businesses and social services organizations owned, managed, and supported by the Alaska Native regional and village corporations. These entities support employment not just in the KPB communities but also in other regions of Alaska.

An annual survey of regional corporations by the Alaska Business Monthly provides historical data on the number of Alaska employees supported by CAC and CIRI. The trends from 2009 to 2020 are presented in Figure 4-6. Alaska employment for the corporations varied over the study period; employment levels are determined by the changes in the corporations' Alaska business ventures. Between 2008 and 2020, the regional corporations adopted diversification strategies to ensure sustainability of their profitability, this meant new acquisitions in new lines of businesses in some years and selling some assets in certain years.

CAC's core businesses are base operations and facilities maintenance. CAC also provides business services in the areas of general construction and construction management, civil engineering, oil and gas services, educational services, environmental/oil spill response services, information technology, telecommunications, employment services, and manufacturing services.

CIRI's well-diversified business portfolio includes energy and resource development, oilfield and heavy construction services, commercial and retail real estate development and management, environmental remediation services, renewable energy, private equity, venture capital, and marketable securities investments. CIRI's employment information in the KPB is not available.

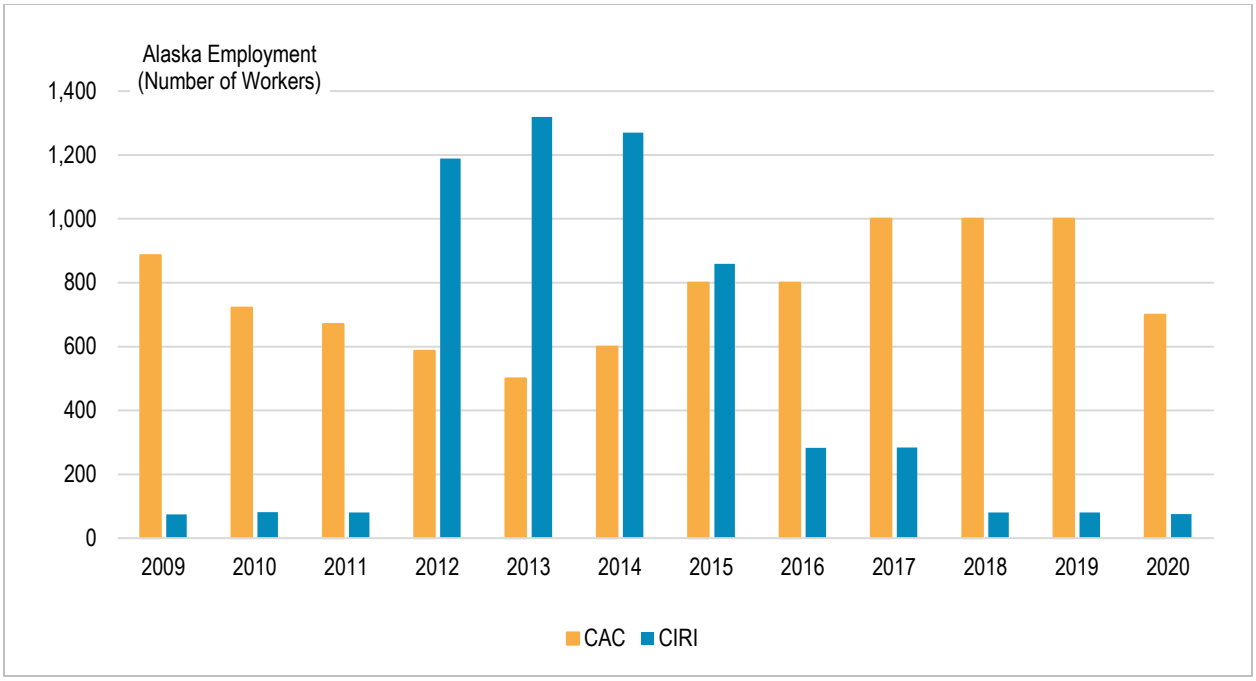


Figure 4-6. Alaska Employment by Cook Inlet Region Inc. and Chugach Alaska Corporation, 2009 to 2020

Source: Data compiled by Northern Economics from AK Business Monthly (2010-2021) and Stricker (2010-2018).

Since both corporations are headquartered in Anchorage, employment data are not reported in the KPB. According to CAC, their KPB business units currently supports 50 employees in the region. In addition, Chugachmiut which is the non-profit that provides services in the region (in collaboration with the Qutekcak Native Tribe) and Chugach Regional Resources Commission which is the non-profit that runs the Alutiiq Pride hatchery in Seward, employ about 15 to 20 people (Hickel 2022). CIRI's local employment data are not available.

In addition to the direct employment by the corporations and their subsidiaries, there are also numerous indirect and induced jobs in the KPB that are supported by local spending of the corporations within the reigon. Their spending on their shareholder programs, support of other non-profit entities operating in the region, and the spending of their shareholders support indirect and induced jobs in the services sector, health care sector, retail trade sector, and other sectors in the cities and communities in the KPB.

4.4 ANCSA Regional Corporations

4.4.1 Cook Inlet Region, Inc.

CIRI is the KPB's largest private landowner, with over 330,000 acres of surface lands in the KPB and more in subsurface rights (Agnew::Beck Consulting 2019). CIRI's associated communities in the KPB include Ninilchik, Seldovia, Tyonek, and Salamatof, together with the greater Kenai area. Of all the ANCSA regional corporations, CIRI is by far the most culturally diverse (Ristroph 2022). Currently, the regional corporation is owned by around 8,300 shareholders of Athabascan, Tlingit, Haida, and

Tsimshian, Iñupiat, Yup'ik, Alutiiq/Sugpiaq and Aleut/Unangax̂ descent. As of December 31, 2021, 892 CIRI shareholders were residents of the KPB (Juliussen 2022).

Except where indicated, all content in the subsections below was sourced from CIRI (2022a).

4.4.1.1 Businesses

CIRI's business operations and investments include energy and infrastructure; real estate; government services; investment securities; private equity and venture funds; land and natural resources; and technology services. Subsidiary companies include CIRI Land Development Company in Anchorage; Fire Island Wind, LLC in Anchorage; and North Wind Group in Idaho Falls, Idaho.

CIRI and its subsidiaries played a significant role in the development of the oil and gas industry in the KPB. The corporation holds a minority interest in Alaska Storage Holding LLC, a partnership that constructed and owns the State's first underground gas storage facility (CIRI 2022c). This facility is described in more detail in Section 53. In addition, CIRI is southcentral Alaska's largest private landowner, with more than 750,000 acres of subsurface land in and around oil-producing regions on the Kenai Peninsula and the west side of Cook Inlet. The corporation encouraged new Cook Inlet gas development by attracting new exploration entrants, including independent oil and gas companies (CIRI 2022b).

4.4.1.2 Social Service Organizations

CIRI also has several socially driven enterprises that provide services to shareholders and their communities. These enterprises include the following:

Alaska Native Heritage Center: located in Anchorage, the Center's mission is to preserve and strengthen the traditions, languages, and art of Alaska's Native Peoples through statewide collaboration, celebration, and education (Alaska Native Heritage Center 2022).

Cook Inlet Housing Authority: provides safe and affordable housing. Its properties in the Kenai Peninsula Borough include Chuda House in Kenai; Ninilchik House in Ninilchik; and Seldovia House in Seldovia (Cook Inlet Housing Authority 2022).

CIRI Foundation: promotes education and career development through post-secondary scholarships and grants. The Foundation administers village scholarship and grant programs for two organizations in the KPB: the Ninilchik Native Association and the Salamatof Native Association (The CIRI Foundation 2022).

Cook Inlet Tribal Council: provides social service programs, including crisis intervention and a continuum of child welfare services; a variety of supplemental programs for students from elementary school through post-secondary adult training and higher education programs; employment and training services, including welfare-to-work case management, supported work experience, child-care financial assistance, vocational rehabilitation, individual development accounts, employment placement referral, career and job counseling, and employee recruitment; and substance abuse and re-entry services (Cook Inlet Tribal Council 2022).

Koahnic Broadcast Corporation: addresses the need for a media service to preserve culture and languages, combat widespread misconceptions and prejudices against Alaska Natives, and create cross-cultural bridges (Koahnic Broadcast Corporation 2022).

Southcentral Foundation: provides health and wellness services for Alaska Native and American Indian people living in Anchorage, the Matanuska-Susitna Borough, and 55 rural villages in Southcentral Alaska (Southcentral Foundation 2022).

4.4.2 Chugach Alaska Corporation

The CAC region includes more than 5,000 miles of coastline along the southern tip of the Kenai Peninsula, through the Kenai Fjords, Prince William Sound and the Gulf of Alaska. KPB communities in the CAC region include Seward, Port Graham, and Nanwalek (English Bay) (CAC 2021). In 2022, CAC had more than 2,500 shareholders of Aleut, Eskimo and Indian heritage, with about 220 shareholders residing in the KPB (Hickel 2022).

4.4.2.1 Businesses

CAC provides a wide array of business services (Resource Development Council for Alaska 2022), including services that support the KPB's oil and gas industry. In 2015, for example, CAC entered into an agreement to acquire a substantial portion of All American Oilfield Associates, LLC and its wholly owned subsidiary, All American Oilfield Equipment, LLC. Headquartered in Kenai, All American Oilfield Equipment provides oil and gas services in the Cook Inlet region and other areas of Alaska (CAC 2015).

A complete listing of CAC's family of subsidiary companies is provided below.

All American Oilfield, Associates, LLC: provides oilfield support services related to drilling and workover operations for oil and gas operators and exploration companies; a modularized drilling and workover pulling unit; administrative, technical, and professional staffing support services; and oil spill response labor support.

Chugach Alaska Services: provides administrative, technical, and safety services.

Heide & Cook: a Hawaii-based company providing mechanical services in HVAC, refrigeration, and plumbing.

REX Electric and Technologies: serves the Chicago area market offering electrical construction, lighting, data centers, security, access control and fire alarm, audio-visual technology, riser management, voice, and data services.

Chugach Government Solutions: provides facilities management and maintenance; IT, technical and support services; education services and construction.

Prince William Sound Granite Quarry: granite sales from a commercial hard rock quarry.

4.4.2.2 Social Service Organizations

4.4.2.2.1 Chugach Heritage Foundation

The Chugach Heritage Foundation (CHF) is a nonprofit organization providing scholarship and cultural programs (Chugach Heritage Foundation 2022), including the following:

Nuuciq Spirit Camp: offers a variety of classes including traditional kayak building, traditional dance, Sugt'stun and Eyak language, subsistence, beading, and fur sewing.

Cultural Workshops: provides in-person and virtual programs on topics such as language, arts, food, and other culturally relevant aspects of CAC Shareholders' heritage.

Scholarships: awards scholarships for college and university degrees from associate to doctoral programs as well as vocational certificates, job training, and internship opportunities.

4.4.2.2.2 Chugachmiut, Inc.

Chugachmiut is a nonprofit 501(c)(3) organization managed by CAC that serves Alaska Native tribes in the CAC region. The organization works with these tribes to pursue funding in areas such as economic infrastructure, health care, heritage and language preservation, behavioral health, information technology and self-governance (Chugachmiut 2022).

4.5 ANCSA Village Corporations

4.5.1 English Bay Corporation

The English Bay Corporation was established in 1974 and is the for-profit village corporation for the community of Nanwalek (formerly known as English Bay). The corporation had 73 original shareholders.

The English Bay Corporation currently has surface estate on approximately 45,000 acres, including lands with conservation easements. It is one of two Native corporations that selected lands in the Kenai Fjords area, which later was designated as a national park. Between 1997 and 2007, *the Exxon Valdez* Oil Spill Trustee Council acquired 32,470 acres of land within Kenai Fjords National Park and the Alaska Maritime National Wildlife Refuge from the English Bay Corporation at a cost of $15,156,790. Certain access rights for hunting, fishing and gathering activities were reserved and retained by the English Bay Corporation on 6,068 acres in the Beauty Bay area of Nuka Bay (*Exxon Valdez* Oil Spill Trustee Council 2022).

4.5.1.1 Businesses

The English Bay Corporation is estimated to have an annual revenue of $2,500,000 and employ a staff of approximately 40 (Manta Media 2022). It operates a community retail store in Nanwalek.

4.5.2 Port Graham Corporation

The Port Graham Corporation was incorporated in 1973 and is the for-profit village corporation for the community of Port Graham. A portion of Port Graham's ANCSA lands lie in the Cook Inlet Region. Over 44,000 acres of the Corporation's land falls within the current boundaries of the Kenai Fjords National

Park (Port Graham Corporation 2022a). In total, Port Graham has approximately 100,000 acres of surface estate lands.

The corporation's business activities include oil and gas, commercial and institutional building construction, maintenance and repair, facilities support services, an array of program support and administration services, and professional and project management services.

4.5.2.1 Businesses

The Port Graham Corporation is the parent company of a family of subsidiary companies (Port Graham Corporation 2022b). These subsidiaries and their business activities are as follows:

Windy Bay Corporation and PGC Energy: oil rig mooring and maintenance

Windy Bay Corporation: utilities delivery, management, and maintenance

Port Graham Development Corp.: project management for engineering, IT, and construction

Port Graham Technologies, LLC: IT and telecommunications

Port Graham Wilderness Adventures: tourism

4.5.2.2 Social Service Organizations

The Port Graham Corporation's Paluwik Heritage Foundation is a nonprofit organization created to improve employment and other community concerns in Port Graham (Port Graham Corporation 2022c). The Foundation administers a scholarship program for students seeking college degrees and vocational certificates.

4.5.3 Seldovia Native Association, Inc.

The Seldovia Native Association serves the community of Seldovia. A large portion of the village corporation's land is located adjacent to the City of Seldovia and along the shoreline and uplands adjacent to Kachemak Bay (Seldovia Native Association 2022b). As of 2018, the Seldovia Native Association had a total of 434 shareholders.

4.5.3.1 Businesses

In addition to its land holdings, the Seldovia Native Association owns a large commercial property on the waterfront in the City of Seldovia, and it owns and operates numerous businesses, including the Dimond Center Hotel in Anchorage (Seldovia Native Association 2022b). The Association allows access to its lands via various permits, including seasonal non-commercial recreation permits, hunting permits, and longer-term land-leases for non-commercial recreational cabin or home sites.

4.5.3.2 Social Service Organizations

The Seldovia Native Association's SNA Foundation provides shareholders and their descendants with scholarships, grants, student aid, stipends and other means of support in connection with educational training at colleges, universities, vocational schools or other educational institutions, as well as

educational training through apprenticeships, internships, or other educational programs approved by the Board of Directors (Seldovia Native Association 2022a).

4.5.4 Tyonek Native Corporation (TNC)

The Tyonek Native Corporation serves the community of Tyonek. The village corporation owns and manages more than 200,000 acres of land, much located in western and lower Cook inlet and on the upper portions of the Kenai Peninsula (Tyonek Native Corporation 2022).

The Corporation represents and supports the interests of approximately 900 shareholders. The Corporation provides life insurance to all shareholders, payable to their designated beneficiaries. To provide support for shareholders seeking a career, the Corporation developed a career development database that provides job alerts if there are job opportunities at the Tyonek Native Corporation that match the shareholder's skills, education, and experience.

4.5.4.1 Businesses

The Tyonek Native Corporation and its subsidiaries operate across various locations in several different states. The Corporation is headquartered in Anchorage, with offices in Tyonek and Madison, Alabama. It offers a range of services for businesses in the oil and gas industries, and also provides local employment opportunities for shareholders in their local business operations. The Corporation's Alaska operations include the Tyonek Lodge and the North Foreland Barge Facility. In addition, the Corporation has a number of subsidiary companies, including the following:

Tyonek Manufacturing Group, Inc.: provides mechanical and electrical assemblies, components, and kits for aviation, missile, and ground systems.

Tyonek Services Group, Inc.: offers aircraft engineering, modification, maintenance, and testing; and support services for U.S. Government cyber operations.

Tyonek Contractor Services, LLC: provides general contracting services.

4.5.4.2 Social Service Organizations

The Tyonek Native Corporation's Tebughna Foundation provides educational resources, including scholarships and vocational training grants. In addition, the Foundation's Cultural Donations Program helps fund community events that promote traditional values, and its Emergency Medical Assistance Program provides short-term financial assistance to needy families in medical emergencies (Tebughna Foundation 2022).

The Tyonek Tribal Conservation District is a nonprofit 501(c)(3) organization whose mission is to conserve, enhance, and encourage the wise use of natural resources (Tyonek Tribal Conservation District 2022). Programs include the Tyonek Youth Conservation Science Program, which focuses on educational projects and a youth camp, and the Technical Assistance Program, which focuses on energy efficiency projects for tribal buildings.

4.5.5 Salamatof Native Association, Inc.

The Salamatof Native Association, Inc. serves the community of Salamatof. The majority of shareholders of the corporation reside in Salamatof and across the KPB. The corporation received money under ANCSA but did not receive land. Its business ventures primarily in real estate and land development. The Corporation had 129 original shareholders. Today, there are 218 shareholders and 91 of the shareholders live in the KPB. The Corporation employs 17 workers in the KPB (Daniels 2022).

4.5.5.1 Businesses

The Salamatof Native Association's primary business is land sales and development. Salamatof Residential, Inc. is the Association's real estate development business, working in partnership with Linwood Homes. Projects in the KPB include Grande View Heights, a housing development in Sterling; Moose Range Meadows, a housing development in Soldotna; Cook Inlet Shores, a housing development in Kenai; Renaissance Subdivision, a housing development in Nikiski; Strawberry Acres, a housing development in Kenai; and Salamatof Professional Center, a professional office space for lease in Kenai (Salamatof Native Association 2022).

The Salamatof Native Association's other subsidiary companies include the following:

Teya Technologies, LLC: provides professional services in areas including construction, demolition, project management, logistics support services, operations and maintenance, staffing, custodial services, computer/electronic product manufacturing, energy studies, master planning, conference and event planning, IT technical support services, and custom application development.

Teya Services, LLC: services offered include construction and project management, event planning, manufacturing, information and technology support, professional and accounting services, operations and maintenance support, and infrastructure support.

BMGC, LLC: provides construction services ranging from road building to gravel sales.

4.5.6 Ninilchik Natives Association, Inc.

The Ninilchik Natives Association serves the community of Ninilchik. The village corporation was incorporated in 1972 and owns approximately 150,000 acres of land, much of it in the KPB (Ninilchik Natives Association 2022b). The Corporation currently has about 415 shareholders. In 1972, Ninilchik Natives Association, Inc. represented 206 shareholders.

4.5.6.1 Businesses

One of the Ninilchik Natives Association's primary businesses is land sales (Ninilchik Natives Association 2022b). In addition, the Association has surface land leases with an oil company along with several gravel sales and property rentals. Its business ventures include two construction companies, White Mountain Construction, LLC and Red Point Construction, LLC. The Corporation also owns a general store in Ninilchik.

4.5.6.2 Social Service Organizations

The Ninilchik Natives Association's scholarship and grant program provides post-secondary education scholarships and vocational training grants (Ninilchik Natives Association 2022a).

4.6 Other ANCSA Corporations with Land Entitlements in the KPB

Two other ANCSA village corporations that received title to the surface rights of lands in the KPB are Point Possession, Inc. and the Chickaloon Moose Creek Native Association (CMCNA). Both village corporations have a portion of their ANCSA land entitlements in the KPB; these corporations are in the CIRI region.

Point Possession, Inc., which is based in Anchorage, serves the community of Point Possession, the population of which fluctuated between zero in 2014 and 54 in 2020 over the 2008-2020 period (ADOLWD 2021a). In 2002, the 4,247-acre tract of land in the KPB owned by Point Possession, Inc. was sold for $3.3 million to the U.S. Fish and Wildlife Service and became part of the Kenai National Wildlife Refuge (U.S. Fish and Wildlife Service 2009).

Chickaloon Moose Creek Native Association is based in Palmer, which is in the Matanuska-Susitna Borough. The community of Chickaloon is also located in the Matanuska-Susitna Borough. Its population was fairly stable from 2008 to 2020, averaging 256 (ADOLWD 2021a). CMCNA has landholdings in the KPB. As a result of ANCSA, CMCNA was vested with surface rights to 69,120 acres. The largest single parcel (20,000 acres) is across the Matanuska River from Chickaloon, with no road or bridge access. Other parcels are as small as 40 acres and are as far as several hundred miles from the community (Ristroph 2022). Landholdings in the KPB include parcels on the west side of Cook Inlet in the remote Tuxedni and Iniskin areas (Chickaloon Moose Creek Native Association 2022). In the mid-1980s, all CMCNA lands, except for timber rights, were deeded to the Chickaloon Village Traditional Council, which maintains offices in Moose Creek and Sutton as well as Chickaloon. One way the Council earns revenue is by issuing access permits to recreate on or otherwise use Chickaloon lands (Ristroph 2022).

4.7 ANCSA Designated Urban Corporation

In addition to ANCSA regional and village corporations, there is one ANCSA-designated urban corporation in the KPB, the Kenai Natives Association (KNA).[21] This urban corporation lies within CIRI's regional boundary. The KNA's entitlement of surface rights to 23,040 acres under ANCSA included 4,000 acres north of Kenai at the former Wildwood Air Force Base, together with 18,083 acres within the Kenai National Wildlife Refuge. About 400 acres of land were sold to the State of Alaska in

[21] A provision in ANCSA allowed four urban areas—Juneau, Sitka, Kenai, and Kodiak—that did not meet the requirements for Native villages to form urban corporations. ANCSA described these urban places as communities that were "originally Native villages, but [came to be] ... composed primarily of non-Natives" [43 U.S.C. § l613(h)(3)]. Shareholders in urban corporations receive the same benefits under ANCSA that shareholders in village corporations receive. Under ANCSA, each urban corporation was entitled to 23,040 acres [43 U.S.C. § l613(h)(2)] (Gorsuch et al. 1994).

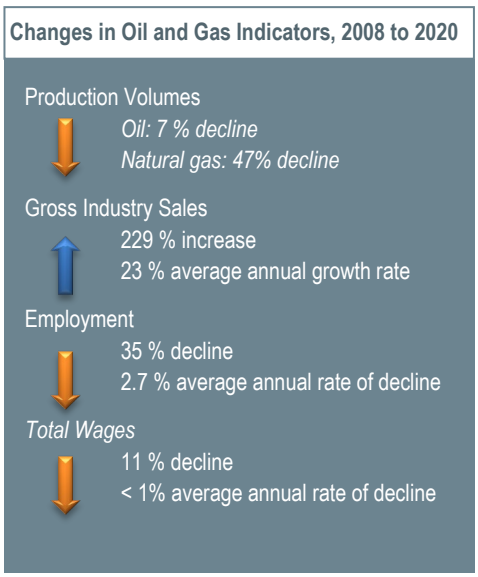
1992 for the Wildwood Correctional Center (City of Kenai 2016). In 1997, the U.S. Fish and Wildlife Service and KNA agreed to transfers of certain land rights in and near the Kenai National Wildlife Refuge. In exchange for $4.4 million, the KNA transferred ownership of 3,254 acres of wildlife habitat inside the Refuge to the U.S. Fish and Wildlife Service.

In addition, in order to provide the KNA with additional opportunities for economic development, the U.S. Department of the Interior amended the boundary of the Refuge to exclude about 15,500 acres of KNA-owned land and removed development restrictions from this land that had been imposed by ANCSA. Under the land exchange, the KNA also received a five-acre site in the "Old Town" neighborhood of Kenai (U.S. Department of the Interior 1997).

Today, KNA sells sand and gravel and manages its real estate (City of Kenai 2016).

5 Trends in the Oil and Gas Industry

5.1 Overview



The oil and gas industry has a long history and substantial presence in the KPB. Oil and gas production in the Cook Inlet area began in 1958, a decade before the discovery of oil in the North Slope. A historical overview of the oil and gas industry in Cook Inlet is provided in Appendix A of this report.

The industry has a significant impact on the economic well-being of the region. The oil and gas industry is a major source of employment and income for KPB residents (and non-residents), an important source of energy for Southcentral and Interior Alaska, and an important source of revenues for the state and local governments.

Oil and gas production in the Cook Inlet provides high paying jobs for KPB residents, as does the refinery operation in Nikiski, and the oilfield services companies that support the activities for oil and gas operations. The oil and gas industry accounted for 6 percent of KPB jobs (annual average employment from 2008 to 2020) and 15 percent of total wages.

Total employment and wages have been on a declining trend since it peaked in 2013. The industry's economic indicators as expected were adversely impacted by low oil prices during the 2015 to 2017 period and then again in 2020. Prior to 2015, oil prices were hovering around $100 per barrel and from 2015 to 2017 prices averaged below $55 per barrel. In 2018, the average price went up to $71 per barrel and in 2020 the price dropped again to $42 per barrel (Herbert 2022). Industry sales also declined during low oil prices but overall had an increasing trend from 2008 to 2020. This boost in sales was due to the increase in oil production in the Cook Inlet which peaked in 2015. From 2008 to 2020, 1.36 trillion cubic feet of natural gas and 64 million barrels of oil were produced in the region. Production of both oil and gas were generally declining between 2008 and 2020, although as noted, there was a period of resurgence of oil production between 2009 and 2015. Before 2008, oil production in the Cook Inlet had been declining steadily from 2001 to 2008, and between 2009 and 2010 was the first positive year-over-year change in oil production levels since early 2001 (see Appendix A).

Cook Inlet natural gas powers several utilities in and around the KPB. A previous report noted that in 2015, over 80 percent of the electricity generated by utilities serving the Kenai Peninsula, Anchorage, and the Matanuska-Susitna Borough used natural gas from Cook Inlet (University of Alaska Center for Economic Development. 2021). Cook Inlet natural gas is also a primary heat source for commercial and residential customers in Southcentral Alaska, and a small number of those in the Fairbanks area as well.

The contribution of the Cook Inlet oil and gas industry to local government revenue is described in Section 8.3. The following sections describe the economic indicators for the oil and gas industry in more detail.

5.2 Upstream Oil and Gas Activities and Production in Cook Inlet

The Cook Inlet region is home to 28 producing oil and gas fields, with all the developed fields in the region in state waters or onshore. Most of the basin's units fall within the boundaries of the KPB (Keenan 2021; University of Alaska Center for Economic Development 2021). Existing infrastructure in the upper portion of Cook Inlet includes 18 offshore platforms (13 of which are active) and approximately 126 kilometers (80 miles) of subsea oil pipelines and 266 kilometers (165 miles) of subsea gas pipelines (Bureau of Ocean Energy Management 2016). Although some platforms are not currently producing, they are likely to remain in place and in some instances could become operational again. There are currently 14 active OCS leases in the Cook Inlet planning area.[22]

Table 5-1. Cook Inlet Offshore Oil and Gas Production Platforms on State Lands

Cook Inlet Oil and Gas Field	Platform by Name	Oil and/or Gas Production	Year Installed	Cook Inlet Location	Platform Status
Redoubt Shoal Unit	Osprey	Oil	2000	mid-channel, west of Nikiski	In operation
Trading Bay Unit	King Salmon	Oil	1967	west side, adjacent to shore	In operation
	Dolly Varden	Oil & Gas	1967	west side, adjacent to shore	In operation
	Grayling	Oil & Gas	1967	west side, adjacent to shore	In operation
	Steelhead	Gas	1986	west side, adjacent to shore	In operation
	Monopod	Oil & Gas	1966	west side of channel	In operation
North Trading Bay Unit	Spurr	none	1966	west side of channel	Decommissioned
	Spark	none	1968	west side of channel	Decommissioned
Middle Ground Shoal Unit	"A"	Oil	1964	mid-channel	In operation
	Baker	Oil	1965	mid-channel	In operation
	Dillon	Oil	1966	mid-channel	In operation
	"C"	Oil	1967	mid-channel	In operation
Granite Point Unit	Bruce	Oil	1966	west side, adjacent to shore	In operation
	Anna	Oil & Gas	1966	west side, adjacent to shore	In operation
	Granite Point	Oil & Gas	1966	west side, adjacent to shore	In operation
North Cook Inlet Unit	Tyonek/Phillips A	Oil & Gas	1968	mid-channel	In operation

[22] Over the last 50 years, six Federal oil and gas lease sales have been held in the Cook Inlet Planning Area. The first lease sale occurred in October 1977, Sale CI, which resulted in 88 leases being issued. In September 1981, Sale 60 resulted in 13 leases being issued. A reoffering sale, Sale RS-2, was held in August 1982 but no bids were received. Sale 149, held in June 1997, resulted in two leases being issued. Lease Sale 191 (2004) was held but received no bids. These leasing activities precipitated only a limited degree of oil and gas activities. Between 1978 and 1985, a total of 13 exploratory wells were drilled in the Cook Inlet Planning Area, all of which have been permanently plugged and abandoned (Bureau of Ocean Energy Management 2016). Two other proposed lease sales (Sale 211 in 2009, and Sale 219 in 2011) were cancelled due to a lack of industry interest. The most recent lease sale, Lease Sale 244, was held in June 2017 and resulted in 14 leases being issued (Bureau of Ocean Energy Management 2021). The planned Lease Sale 258 was cancelled on May 11, 2022.

Cook Inlet Oil and Gas Field	Platform by Name	Oil and/or Gas Production	Year Installed	Cook Inlet Location	Platform Status
Kitchen Lights Unit	Julius R	Gas only (not within unit)	2016	mid-channel	In operation
Drift River	Christy Lee	none	1965	west side	Decommission pending

Source: Bureau of Ocean Energy Management (2021)

The recent construction of new offshore oil and gas infrastructure (i.e., the Kitchen Lights Unit platform) had little direct impact on employment in the KPB, as the infrastructure consists of modular components built elsewhere and shipped to Alaska. Specialized crews from the Gulf of Mexico constructed the platform because its construction required specialization. The crews resided on support vessels, rarely interacting with the community, and most vendor supplies were from outside Alaska (Bureau of Ocean Energy Management 2016).

Offshore oil rig in Cook Inlet.

Currently, Hilcorp Alaska is the dominant on and offshore oil and gas producer in the Cook Inlet basin, and with the purchase of BP's Prudhoe Bay oil and gas producing properties in 2020, it became the dominant oil and gas producer in the state. In 2020, the company operated some 20 fields in the Cook Inlet basin, a figure that changes annually as the result of acquisition, development, and consolidations. Offshore, the company operated the North Cook Inlet, Granite Point, Middle Ground Shoal, Trading Bay unit, and North Trading Bay units (Lidji 2020). In addition, Hilcorp is the sole leaseholder in the Federal waters of Cook Inlet (Sutherlin 2019). In 2020, Hilcorp Alaska produced 88 percent of the natural gas and 87 percent of the oil derived from the Cook Inlet basin (University of Alaska Center for Economic Development 2021)

Cook Inlet natural gas is transported via onshore distribution pipelines on both the east and west sides of Cook Inlet. (Bureau of Ocean Energy Management 2021).[23] Natural gas is consumed by a variety of users in Alaska, and natural gas processed liquids go to a storage facility in Kenai. Cook Inlet crude oil production is piped either to Hilcorp Alaska's Trading Bay Production Facility located on the west side of Cook Inlet, or to the Marathon Kenai Refinery in Nikiski (Section 3.1.2.1). Wholesale delivery occurs through terminals in Kenai, Anchorage, the Nikiski dock, and the Port of Alaska. The Drift River Oil Terminal on the west side of Cook Inlet has been closed due to proximity to Mt. Redoubt, an active

[23] Currently, most of the natural gas and crude oil pipeline facilities in the Cook Inlet region are operated by Hilcorp Alaska and its midstream subsidiary, Harvest Alaska. There are other transportation-related pipelines located in Cook Inlet that are operated by Alaska Pipeline Company, Tesoro Alaska Pipeline Co., or Aircraft Service International Group, Inc. (U.S. Department of Transportation 2018).

volcano. Drift River and the associated Christy Lee Loading Platform are scheduled to be decommissioned (Bureau of Ocean Energy Management 2021).

Figure 5-1 shows oil and natural gas production volumes in the Cook Inlet region from 2008 to 2020. Natural gas production declined by almost half, from 407 million cubic feet per day (MMcfd) in 2008 to about 214 MMcfd in 2020. Production of natural gas declined at an average rate of 5 percent per year. Oil production on the other hand increased between 2009 and 2015 and has been declining since then.

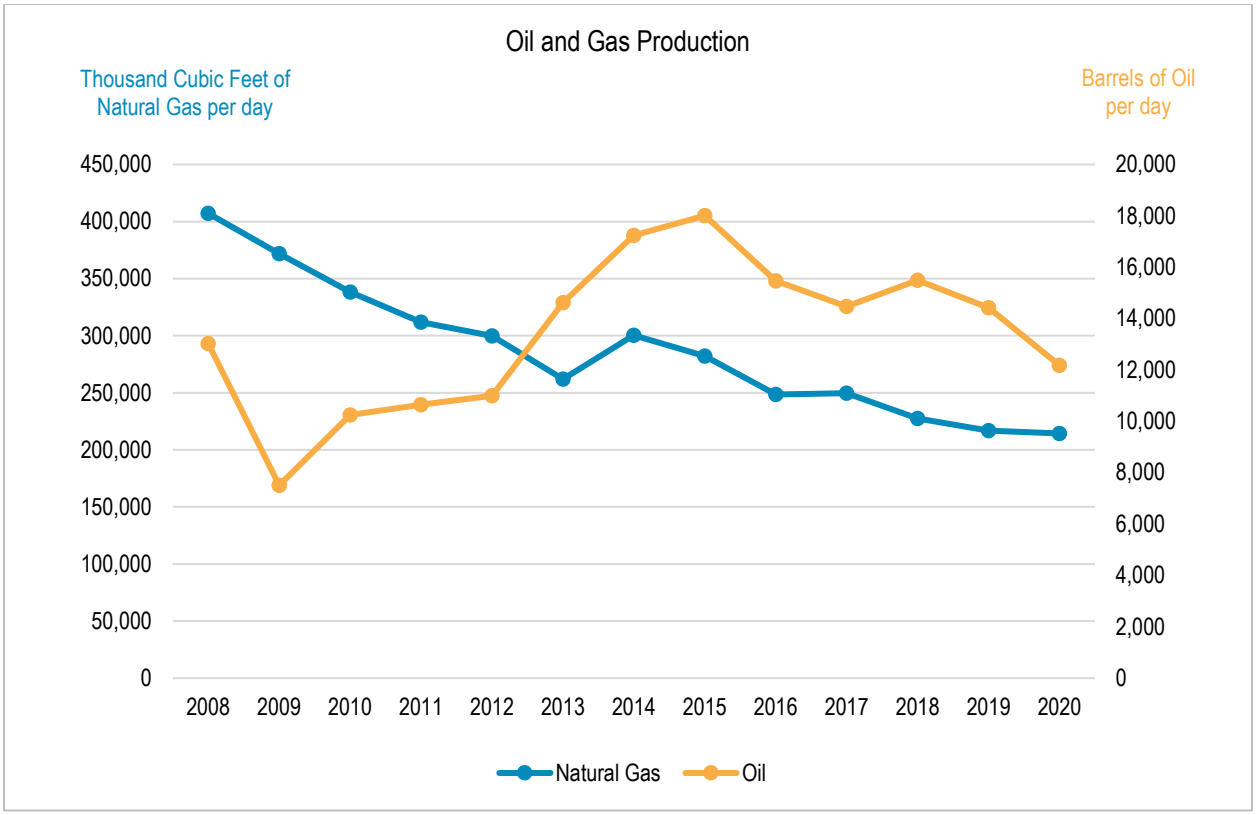


Figure 5-1. Oil and Natural Gas Production in the Kenai Peninsula Borough, 2008–2020
Source: Turner (2021)

5.3 Oil and Gas Industry Sales

Figure 5-2 shows the gross sales of the oil and gas industry in the KPB from 2008 to 2020. Sales increased in 2014 as smaller, independent oil and gas companies began operating in Cook Inlet and increased exploration and development (See Appendix A for additional details). However, sales experienced a steep decline in 2015 due to the drop in global crude oil prices that started in mid-2014. Despite the economic disruptions resulting from the COVID-19 pandemic, the oil and natural gas output of Cook Inlet operators was only slightly less in 2020 than in 2019 (Figure A-1 and Figure A-2 in Appendix A). However, the onset of the pandemic caused a drop in demand for crude oil worldwide, which, in turn, led to a precipitous decrease in oil prices (Fried and Teel 2020). Notwithstanding the considerable fluctuation, at an average of $648 million in annual sales from 2008 to 2020, this industry

was one of the largest in the KPB for overall gross sales activity (Kenai Peninsula Economic Development District 2018).

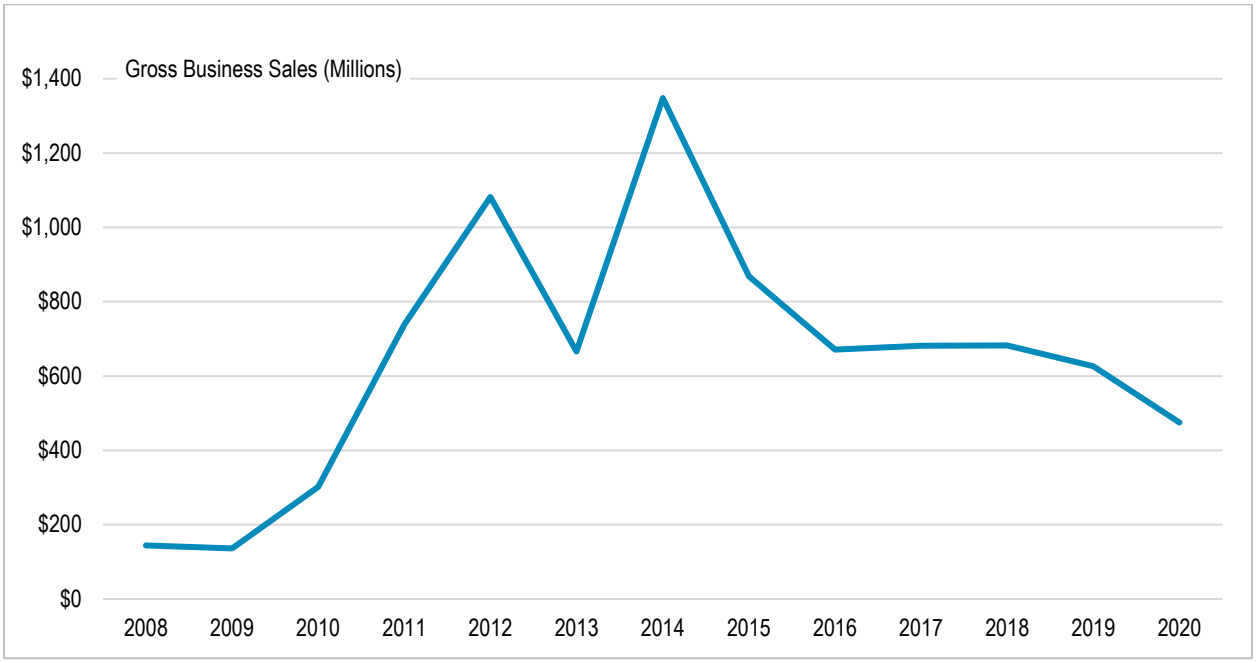


Figure 5-2. Oil and Gas Industry Sales in the Kenai Peninsula Borough, 2008–2020

Source: Turner (2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

5.4 Oil and Gas Industry Employment and Wages

From 2008 to 2020, the mature oil and gas industry in the KPB remained an important part of the KPB's economy, as it was the single largest source of well-paying, non-seasonal jobs in the area (Bureau of Ocean Energy Management 2016). As shown Figure 5-3, oil and gas industry employment hit a peak in 2013 despite a sharp drop in sales that year. Part of this apparent paradox is explained by a combination of high oil prices, new exploration and development in Cook Inlet, and the need for more labor to produce the same amount of oil as oil production facilities age and additional labor is required for repair and maintenance, as well as extraction (Schultz 2013; Fried and Teel 2020). In 2014, the oil and gas industry saw a drop in employment due to the uncertainty in oil prices and ability to invest in new infrastructure to support extraction (Agnew::Beck Consulting 2019).

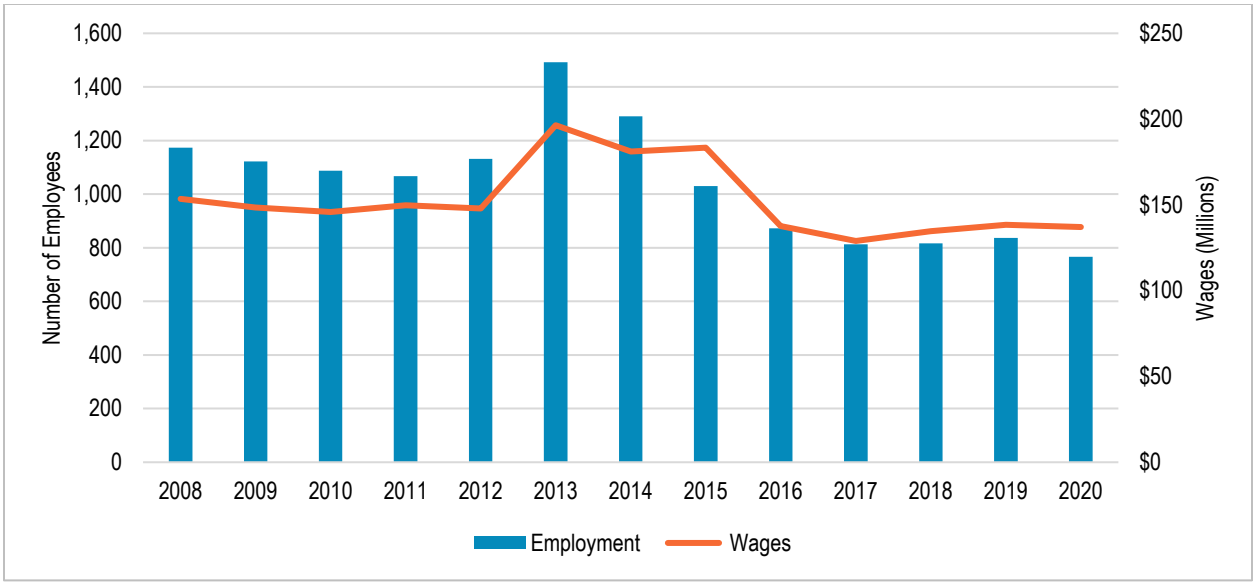


Figure 5-3. Oil and Gas Industry Employment and Wages in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021c); Fried (2022)

Notes: The data presented in the figure represent a unique aggregation for the oil and gas sector to avoid the non-disclosure limitations at the regional level. The data in the figure include oil and gas extraction, oil and gas well drilling, work on oil and gas field wells, and petroleum manufacturing. Wages are adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

While the oil and gas industry contributes heavily to the KPB's overall employment, its impact on total KPB wages is even more pronounced (Northern Economics 2014). As discussed in Section 2.3.3.2, average earnings in the industry are among the highest of any industry in the KPB. From 2008 to 2020, the oil and gas industry accounted for 6.2 percent of KPB average annual jobs but 15.4 percent of average annual wages. While the average hourly wage of an unskilled or semiskilled worker in Alaska's oil and gas industry in 2020 ($24.12) was less than the average hourly wage of all occupations in the state ($29.69), petroleum engineers made $72.30 per hour (U.S. Bureau of Labor Statistics 2020). In addition, hourly workers typically accrue large amounts of overtime pay during their 14-day, 12-hours per day rotation schedules. Given that the oil and gas industry in the KPB is an employer of skilled, high-wage workers, the industry's downturn in employment discussed above accounts for much of the overall decline in economic activity in the KPB in recent years (Agnew::Beck Consulting 2019).

The heart of the Cook Inlet oil and gas industry is in the industrial area of Nikiski. As described in Appendix A, over the years the industry spawned associated downstream "value-added" economic activities such as oil refining, natural gas liquification, and chemical manufacturing, all of which were located in Nikiski. While some of these activities have been discontinued, numerous companies related to the Cook Inlet oil and gas industry continue to support the economy of Nikiski, together with that of the adjoining Kenai-Soldotna area, with a diverse array of well-paying, non-seasonal jobs (Shanks and Rasmussen 2010; Bureau of Ocean Energy Management 2016).

The percentage of nonresident workers in Alaska's oil and gas industry has historically been higher than the statewide average for all industries (ADOLWD 2021h).[24] However, the percentage of nonresident workers in the Cook Inlet oil and gas industry is lower than the average for all industries in the KPB. In 2019, around 14 percent of the workers in the Cook Inlet oil and gas industry were not Alaska residents (ADOLWD 2021h). By comparison, approximately 20 percent of the workers across all industries in the KPB were nonresidents. The percentage of out-of-state workers in the Cook Inlet oil and gas industry is substantially less than in the KPB's seafood processing industry, where about 61 percent of the employees were nonresidents in 2019 (ADOLWD 2021h). Moreover, in contrast to industries in the KPB with highly seasonal work, such as seafood processing and tourism, employment in the oil and gas industry is year-round.

Some of the workers who fill jobs in the Cook Inlet oil and gas industry are Alaska residents but live in other parts of the state. In 2019, about 10 percent of the workers in the Cook Inlet oil and gas industry were Alaska residents who did not live in the KPB (ADOLWD 2021h). It is likely that many of these workers live in Anchorage, which is the headquarters or service center for many of the companies engaged in the Cook Inlet oil and gas industry (McDowell Group 2020).

The ability of KPB residents to fill future jobs in the oil and gas industry depends not only employment availability but also on the extent to which they have the necessary skills for those jobs or can be trained for them (Bureau of Ocean Energy Management 2016). The *2016 Cross-Industry Workforce Development Priorities* report by McDowell Group found that the oil and gas industry shares occupational and skill needs with other industries important to the KPB economy, including construction and transportation.[25] The report also noted a lack of Alaskans who are pursuing careers in these industries (ADOLWD 2018b). During the past several years, recognition that construction of a major natural gas pipeline in Alaska would require the development of a skilled workforce led to increased efforts to address workforce development in the state. In 2014, for example, ADOLWD released a workforce development plan for Alaska's oil and gas industry that includes an action agenda to increase alignment of education, training, and incentives to produce a qualified resident workforce (ADOLWD 2014). Also in 2014, the Kenai Peninsula Borough School District founded the Alaska Petroleum Academy, which offers petroleum industry training from chemical handling certifications to advanced hazardous waste operations and emergency response certifications (Kenai Peninsula Borough School District 2021).

More recently, however, it has been difficult to expand or even maintain these training programs because of the state's fiscal shortfall caused by the drop in crude oil prices. Moreover, capital budget cuts affected the ability of Alaska construction contractors to support expansion of contractor-related training

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[24] To estimate nonresident employment in Alaska in 2019, the Alaska Department of Labor and Workforce Development considered a person to be a nonresident if he or she did not apply for an Alaska Permanent Fund Dividend in either 2019 or 2020. Because a person must live in Alaska for a full calendar year to become eligible for a dividend, those who move to Alaska and consider it their new principal residence will be initially identified as nonresidents (Alaska Department of Labor and Workforce Development 2021h).

[25] These industries directly and indirectly employ (through contractors) welders, equipment operators, pipefitters, skilled laborers, truck drivers, electricians, carpenters, technicians, engineers, safety specialists, information technology and communication technicians, culinary workers, and security personnel.

programs. The cuts to the capital budget also mean fewer union workers are contributing training program fees, which hampers the functioning of union apprenticeship programs. Given these constraints, it is anticipated that current training programs will only provide replacements for the persons retiring over the next decade (Robinson and Krieger 2016).

A number of companies that support the oil and gas industry in the Cook Inlet region are based in the KPB. These companies offer a wide array of goods and services, including permitting and other technical support; construction; drilling engineering and exploration support; operations support; and oil spill response management and equipment (McDowell Group 2020). In 2018, about 1,380 oil and gas support services employees resided in the KPB, with total annual wages of just under $100 million (McDowell Group 2020).

Some oil and gas support-service companies based in the KPB also provide support operations in North Slope oil fields. As a consequence, an estimated 6 percent of the KPB's working residents commuted to the North Slope in 2018 (Kreiger 2019).

5.5 Downstream Use of Cook Inlet Oil and Gas

Over the years, the oil and gas industry in the Cook Inlet region spawned associated industries such as refining and chemical manufacturing (Bureau of Ocean Energy Management 2016). As discussed in Appendix A, many of these industries are no longer active. However, as described in the following sections, some industries directly utilizing Cook Inlet oil and gas continue to contribute to the economies of the KPB and state as a whole.

5.5.1 Oil Refining Facility

While Cook Inlet oil production is small compared to North Slope production, a significant portion of Cook Inlet's crude oil is refined at the Marathon plant in Nikiski, whereas nearly all North Slope oil is exported to refineries outside the state (Keenan 2021). Marathon's Kenai Refinery has a crude oil capacity of 68,000 to 72,000 barrels per day (Agnew::Beck Consulting 2019; Keenan 2021). The refinery produces gasoline, jet fuel, diesel fuel, heating oil, propane, and asphalt. Double hulled tankers deliver crude oil to the Kenai refinery, as do pipelines. For example, Hilcorp Alaska recently completed a subsea pipeline project to allow oil produced from West Cook Inlet fields to be piped to the refinery (Keenan 2021). A 69-mile pipeline transports petroleum products from the refinery to the Port of Anchorage and Ted Stevens Anchorage International Airport (Agnew::Beck Consulting 2019). The refinery employs about 225 people (Agnew::Beck Consulting 2019).

5.5.2 Electrical and Heating Utilities

Whereas most of the natural gas produced during oil extraction on the North Slope is reinjected into the ground, Cook Inlet natural gas is a vitally important energy source for Southcentral and Interior Alaska (Keenan 2021). Cook Inlet natural gas is both abundant and far less expensive than other fuels used for heat or electric generation elsewhere in Alaska (Northern Economics 2014). In 2015, utilities serving the KPB, Anchorage, and Matanuska-Susitna Borough generated 83 percent of their electricity using natural gas from the Cook Inlet basin. In addition, Cook Inlet natural gas is a primary heat source for commercial

and residential customers in Southcentral Alaska, and a small number of those in the Fairbanks area (University of Alaska Center for Economic Development 2021).

Utilities contract with oil and gas producers in the Cook Inlet basin to receive supplies of natural gas. For example, Furie Operating Alaska, which operates the Kitchen Lights Unit, currently has contracts to supply Homer Electric Association and ENSTAR Natural Gas Company, a public utility that delivers natural gas to customers in Southcentral Alaska. The company also signed a contract with Chugach Electric Association in 2017 to supply the Anchorage electric utility with natural gas shipments beginning in 2023 (Brehmer 2020). In 2021, Interior Gas Utility, which supplies natural gas to the Fairbanks area, signed a feedstock supply contract with Hilcorp Alaska, the dominant on and offshore oil and gas producer in the Cook Inlet basin (Brehmer 2021). In addition, some utilities own oil and gas production assets and essentially supply themselves with their own gas at the cost of gas production. In 2016, for example, Chugach Electric Association and Anchorage-based electric utility Municipal Light & Power jointly purchased ConocoPhillips' ownership interests in the Beluga River gas field on the west side of Cook Inlet (Bailey 2016).

5.5.3 Underground Gas Storage Facility

In 2012, Cook Inlet Natural Gas Storage Alaska, LLC established an underground storage facility to meet seasonal demand for natural gas (Iversen 2018). Located in Kenai, the facility is capable of storing up to 11 billion cubic feet of natural gas. By substantially improving the reliability and delivery of natural gas supplies during the winter months, the facility provides a critical service to residents and communities in Southcentral Alaska (CIRI 2019). The facility is owned by SEMCO Energy Inc., which also owns ENSTAR Natural Gas. CIRI holds a minority interest in CINGSA. ENSTAR operates the facility and is its largest customer. Other customers include Chugach Electric Association, Homer Electric Association, and Municipal Light & Power (CIRI 2019).

6 Trends in the Recreation and Tourism Industry

6.1 Overview

Locally known as "Alaska's playground," the KPB provides ample opportunities for outdoor recreation and tourism (Glusac 2021). In this report, "recreation" refers to participation in a variety of outdoor activities, which vary by season and include hunting and fishing, renting recreational vehicles and boats, hiking, camping, and skiing, among other activities. Recreation participants include both local residents and non-local tourists. "Tourism" refers to the economy associated with outdoor recreation as well as the economy linked to vacationing, retail, and leisure activities.

The KPB's recreation and tourism industry recently benefitted from a growing public interest in an "experience economy," which provides visitors opportunities to view wildlife and natural scenic beauty (KPEDD 2018). In particular, glacier viewing, guided and unguided fishing, and birding are popular tourist activities. Hundreds of thousands of tourists visit the KPB each year from an expanding global market. Tourists from western and southeastern American states as well as international visitors from Asian countries represent a growing portion of the KPB's tourist demographic (Petersen 2019). Industries related to arts and entertainment, sightseeing and guided outdoor activities, hospitality, and food and drink grew to meet these trends in demand.

More than 87 percent of the KPB's land is owned by local, state, or Federal government agencies that maintain a variety of parks, forests, and wildlife refuges for public use by residents and tourists alike (Kenai Peninsula Borough 2019). Federal and state public lands within the KPB (entirely or in part) include Chugach National Forest, Kenai Fjords National Park, Lake Clark National Park, Katmai National Park, Kenai National Wildlife Refuge, Kachemak Bay State Park, and McNeil River State Game Sanctuary. Figure 6-1 shows the major public recreational land areas of the KPB.

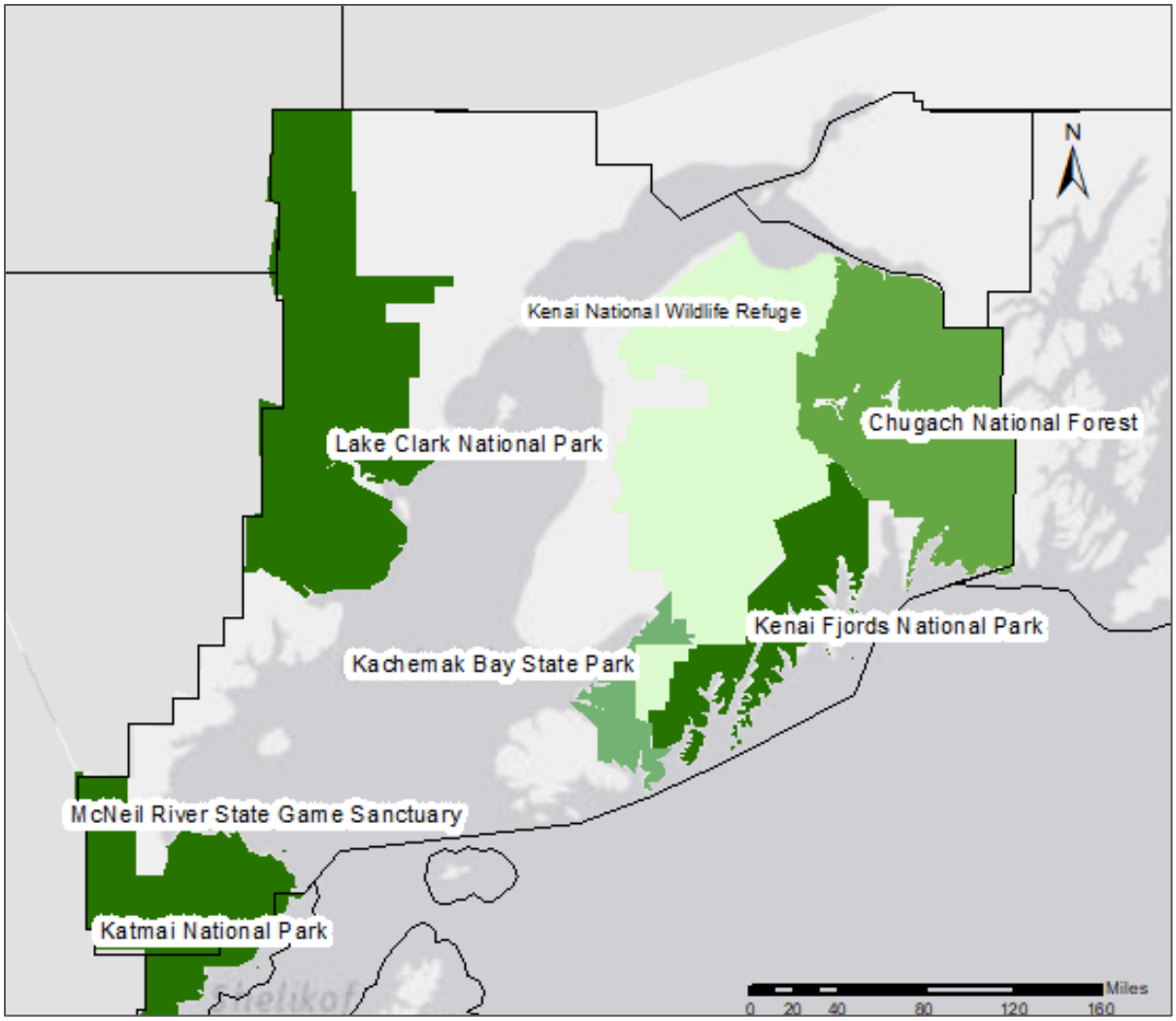


Figure 6-1. Map of Public Recreational Lands in the Kenai Peninsula Borough
Source: Data from Alaska Department of Fish and Game (ADF&G 2022); ESRI (2022).

Beyond the public recreational areas, people visit KPB communities, including Seward, Homer, Soldotna, Kenai, and Seldovia, and fish saltwater species in Cook Inlet or freshwater species in rivers and streams. Major fishing rivers in the KPB include the Kenai, Russian, and Kasilof.

While recreation and tourism in the KPB generally increased during much of the study period, several external events between 2008 and 2020 adversely influenced visitation and the tourism economy. The first few years of the study period saw lingering effects from the 2008 Great Recession, though the recreation and tourism industry seemed to have largely recovered from the recession by 2010 (KPEDD 2018). Recreation and tourism in the region were not dramatically influenced by the 2015 Alaskan recession, as the KPB experienced record numbers of out-of-state visitors in 2015 and 2016, and tourism grew at a greater rate in the KPB than at the state level in 2015 (Kenai Peninsula Borough 2019).

Data from 2020 demonstrate the harm of the COVID-19 pandemic to the KPB's tourism industry. The first months of the pandemic in 2020 coincided with Alaska's spring and summer tourism season, leading

to substantial losses in visitation and associated business revenue due to lockdowns and Federal and state travel guidelines. Statewide, cruise lines suspended trips to and from Alaska, flights were canceled, international highway borders shut down, and visitation levels dropped as a result (McKinley Research Group 2020). The recreation and tourism industry, a key driver of the KPB economy, was most affected by the onset of COVID-19 (KPEDD 2021). To mitigate losses in revenue, the Kenai Peninsula Tourism Marketing Council turned to strategies to boost in-state visitation in the first year of the pandemic. Recreation and tourism data from 2020, therefore, largely represent visitors from within Alaska.

Beyond local and global economic drivers, the effects of climate change influence recreation and tourism on the Kenai Peninsula. Watersheds statewide are experiencing drier summers and wetter falls, leading to notable changes in salmon runs and migration patterns (KDLL 2020). The vast public lands in the KPB are beginning to shift into new ecosystems as they lose characteristics of their existing ones in response to changing climactic conditions; the Kenai National Wildlife Refuge started to shift from forest to grassland (Weiss 2020). The warming Alaskan climate, with temperatures increasing at twice the national rate over the last 60 years (KDLL 2020), created challenges for the KPB's recreation and tourism industry. As glaciers continue to retreat and spring thaws arrive earlier in the season each year, sightseeing opportunities and the landscape of the peninsula will continue to fundamentally change, and skiing opportunities may dwindle (USDA 2017). It is unclear how these changes will ultimately impact future recreation and tourism in the KPB. While traditional tourist activities may no longer be available, the KPB may attract different types of recreational activities as the industry adapts.

6.2 Recreational Visitation

Review of state and Federal agency data for all public lands in the study area identified annual visitation levels for each recreational land site (Figure 6-1). The study team collected data using existing databases maintained by state and Federal agencies as well as personal communication with employees of state and Federal agencies. Figure 6-2 through Figure 6-5 present visitation data for federally owned public lands. Figure 6-6 through Figure 6-8 present visitation data for state-owned public lands.

Pandemic Effects on Federal Land Recreation

- *68% decline* in visitation at Kenai Fjords National Park, 2019-2020
- *Substantial increase* in visitation to Kenai National Wildlife Refuge in 2020

Kenai Fjords National Park, Lake Clark National Park, and Katmai National Park are the three national parks in the KPB. At Kenai Fjords National Park, the only national park that lies fully within the KPB, visitors view glaciers on boat tours, go kayaking, and hike icefield trails. Lake Clark National Park provides opportunities for backpacking, bear viewing, and fishing for sockeye salmon. At Katmai National Park, visitors can also look for bears, sportfish, camp, and hike (NPS 2022). National Park visitation remained relatively stable throughout the study period, with a notable dip in 2020, likely due to the pandemic (Figure 6-2). Kenai Fjords National Park was the most popular of the three parks during the study period.

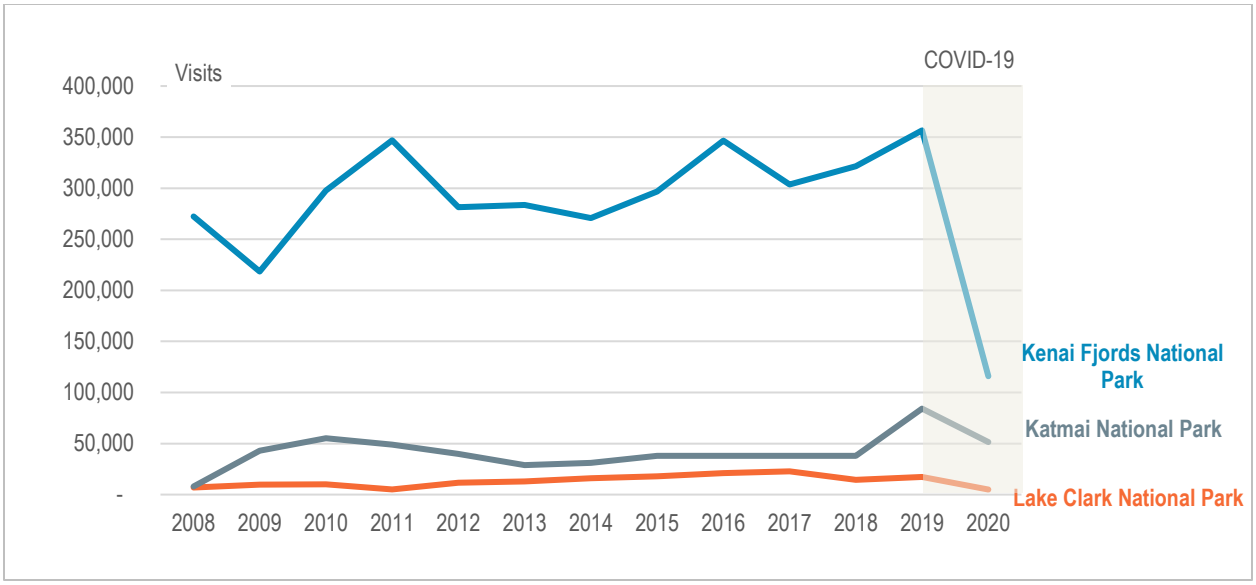


Figure 6-2. National Parks Visitation in the Kenai Peninsula Borough by Park, 2008–2020

Source: Irma NPS Visitor Use Stats (2022).

Notes: "Visits" include single-day visits as well as distinct overnight visits.

Kenai National Wildlife Refuge experiences the highest levels of visitation of the KPB's public lands. As shown in Figure 6-3, visitation was consistently above one million visits each year apart from 2019. The refuge sits on almost two million acres of land and is home to natural landscapes like mountains, forests, lakes, and wetlands which provide habitats for wildlife including salmon, bears, moose, mountain goats, and bald eagles (Weiss 2020). Visitors can camp and view wildlife in the Skilak Wildlife Recreation Area and fish on the Russian River. The Swan Lake and Swanson River canoe systems are also popular attractions in the refuge, providing 100 miles of canoe routes for visitors (Alaska Geographic Association 2013).

Photo of Kenai National Wildlife Refuge by Kenai Peninsula Tourism Marketing Council.

Figure 6-3 highlights a dip in visitation from 2008 to 2009 followed by a period of relative stability in visitation. Visits declined dramatically in 2019 due to the 260-square mile Swan Lake Fire, which was caused by a lightning storm and resulted in the refuge closing for the remainder of the summer. Despite the onset of the pandemic, the data identify a significant increase in visitation in 2020 (above the pre-2019 levels). This may be attributable to state residents using certain public lands more often after the onset of the pandemic because of limitations on other types of leisure activities, as was the case in other parts of the country (Pope 2020).

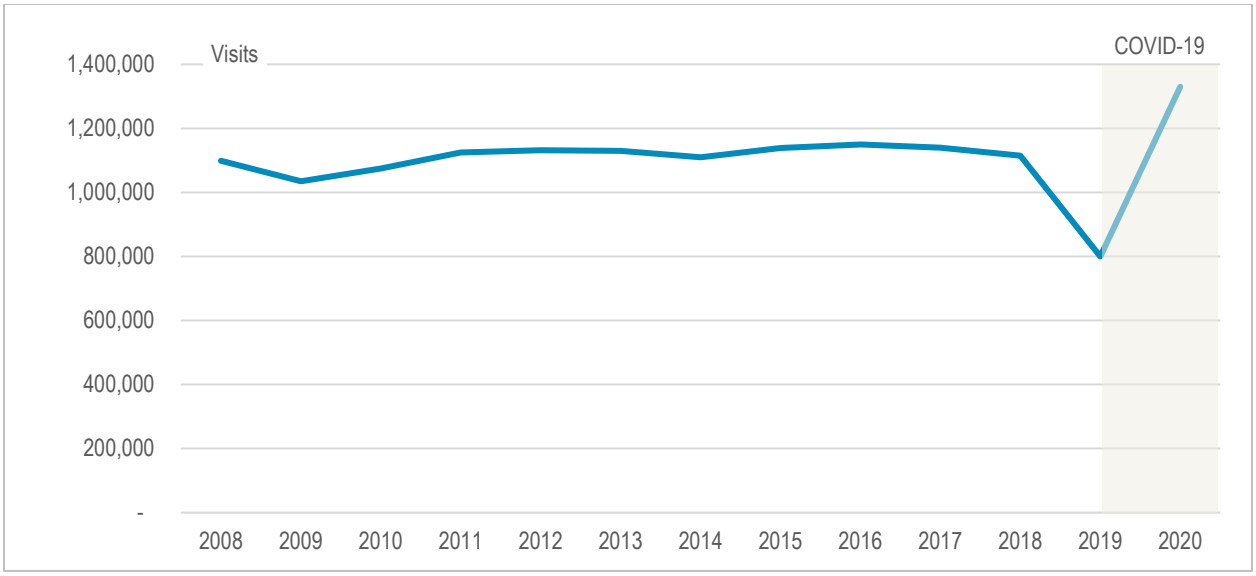


Figure 6-3. Kenai National Wildlife Refuge Visitation, 2008–2020

Source: Personal communication with Ecologist, U.S. Fish and Wildlife Service (2021).

Chugach National Forest spans 700,000 acres of southcentral Alaska, with only approximately 21 percent of the forest falling within the KPB's boundaries. In the Kenai Peninsula's share of the forest, visitors find the Kenai Lake and opportunities for fishing on the headwaters of the Kenai River and Russian River. Visitors may hike, sightsee, fish, ski, camp, snowmobile, and hunt in the forest, among other recreational activities (USDA 2022b).[26] Figure 6-4 provides visitation numbers for the whole national forest from 2008, 2013, and 2018.

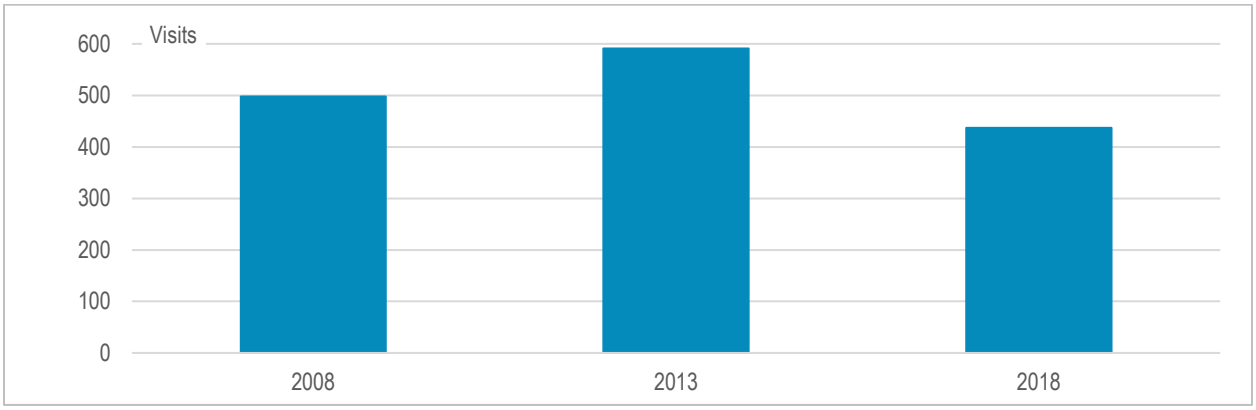


Figure 6-4. Chugach National Forest Visitation, 2008, 2013, and 2018

Source: USDA Forest Service National Visitor Use Monitoring (https://apps.fs.usda.gov/nvum/results/)

Notes: Data are available only for 2008, 2013 and 2018 as U.S. Forest Service's Visitor Use Monitoring Program estimates visitation once every five years.

[26] In some areas of the Chugach National Forest overlapping with the KPB, operation of snowmobiles is permitted only for rural residents of Alaska and subsistence users (USDA 2022a).

Figure 6-5 presents visitation by residency at Kachemak Bay State Park except in 2015 and 2017 for which only total visitation is available. Data for 2008–2010 and 2020 were not available. Kachemak Bay State Park consists of 400,000 acres of recreational land where visitors can go fishing, kayaking, hunting, and camping. Visitors can also view marine life in the waters of Kachemak Bay, bird-watch, and look for wildlife including moose and bears (Alaska DNR 2022). In the earlier years of the study period, visitors to the park consisted of out-of-state and in-state visitors (including locals) in approximately equal parts. Out-of-state visitors accounted for a larger share of visitors in the more recent years as in-state visitation in particular declined. Visitation peaked in 2016 but declined consistently in the following years.

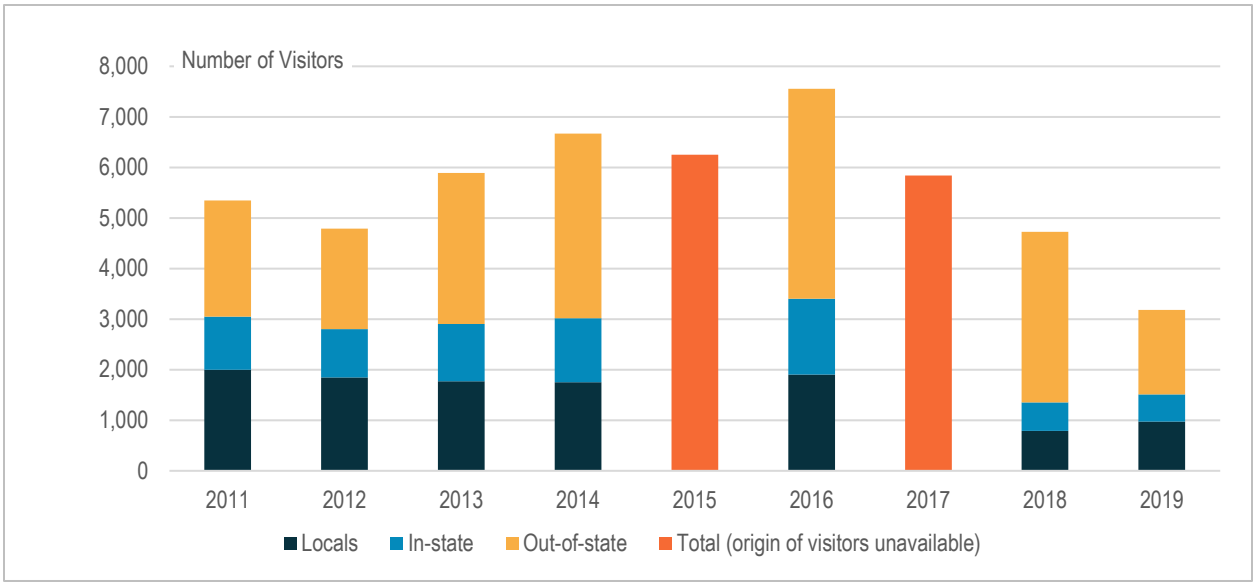


Figure 6-5. Kachemak Bay State Park Visitation by Visitor Residency, 2011–2019

Source: Data provided by Natural Resources Specialist, Alaska Department of Natural Resources, December 2021.

Photo of McNeil River State Game Sanctuary by Alaska Department of Fish and Game.

Bear viewing is the primary attraction at the McNeil River State Game Sanctuary, which is home to the largest concentrated population of brown bears in the world (ADF&G 2022a). Visitor use for bear viewing remained relatively constant throughout the study period with a peak in 2009 (Figure 6-6). Although the sanctuary is known for its bears, visitors also participate in recreational fishing. Figure 6-7 describes guided and unguided fishing use at the sanctuary from 2009 to 2020 (2008 data were not reported). Fishing use in the sanctuary primarily takes place on the McNeil River. From 2009 to 2018, participation in guided and unguided fishing followed similar trends, with a spike in fishing use in 2015 followed by a steep drop leading into 2016 (Figure 6-7). Data for 2008 were not available.

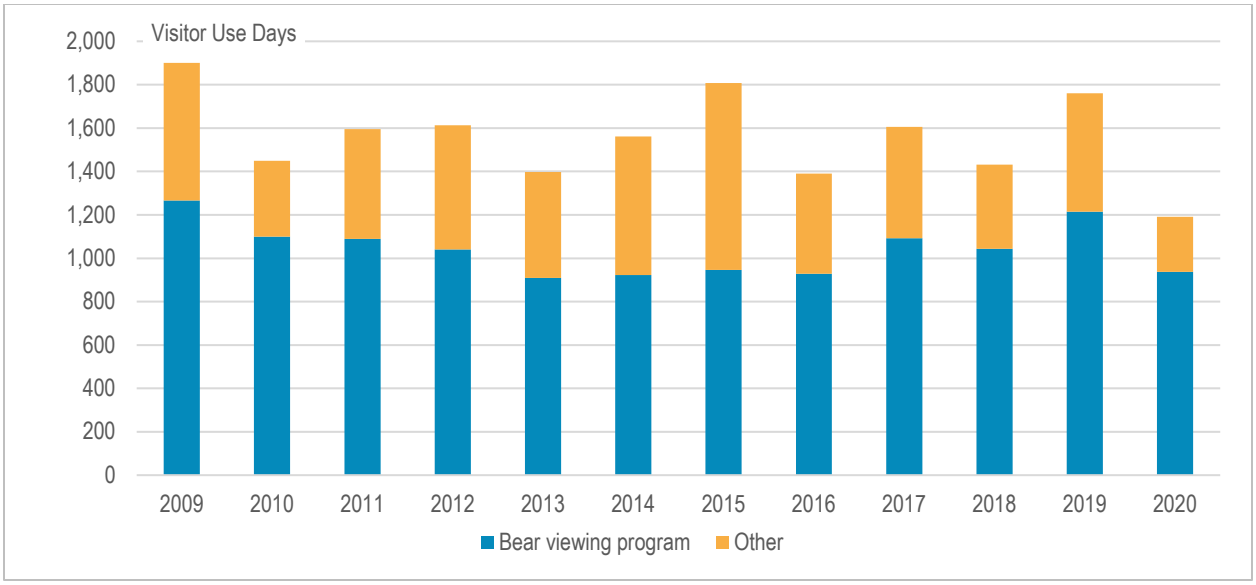


Figure 6-6. Visitor Use Days – McNeil River State Game Sanctuary Bear Viewing Program, 2008–2020
Source: Griffin and Weiss (2021).

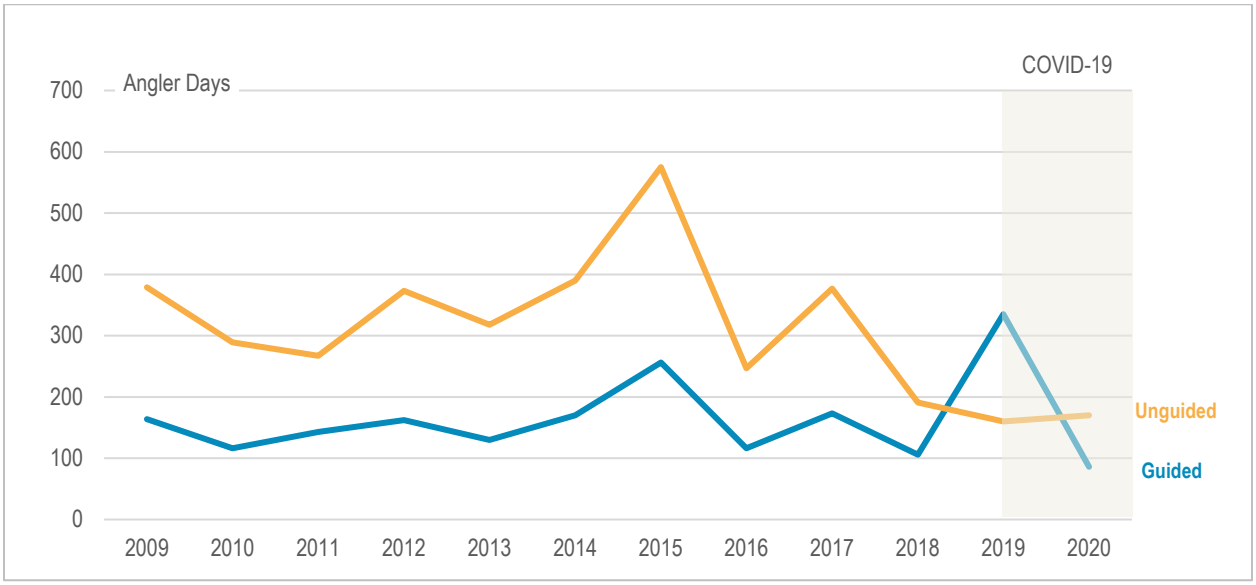


Figure 6-7. McNeil River State Game Sanctuary Fishing Use, 2009–2020
Source: Griffin and Weiss (2021).

The Alaska Maritime National Wildlife Refuge Islands and Ocean Visitor Center is an educational research facility located in Homer. Typical visitors are participants of school and interpretive programs that take advantage of opportunities to hike, explore tidepools, and learn about marine environments. Figure 6-8 shows a drop in visitation to the Alaska Maritime National Wildlife Refuge's educational center after 2008 followed by relatively stable visitation until another steep drop to almost zero visitors in 2020 due to the pandemic. Figure 6-8 does not include visitation to the Alaska Maritime National Wildlife Refuge, which is located in the Aleutians West Borough.

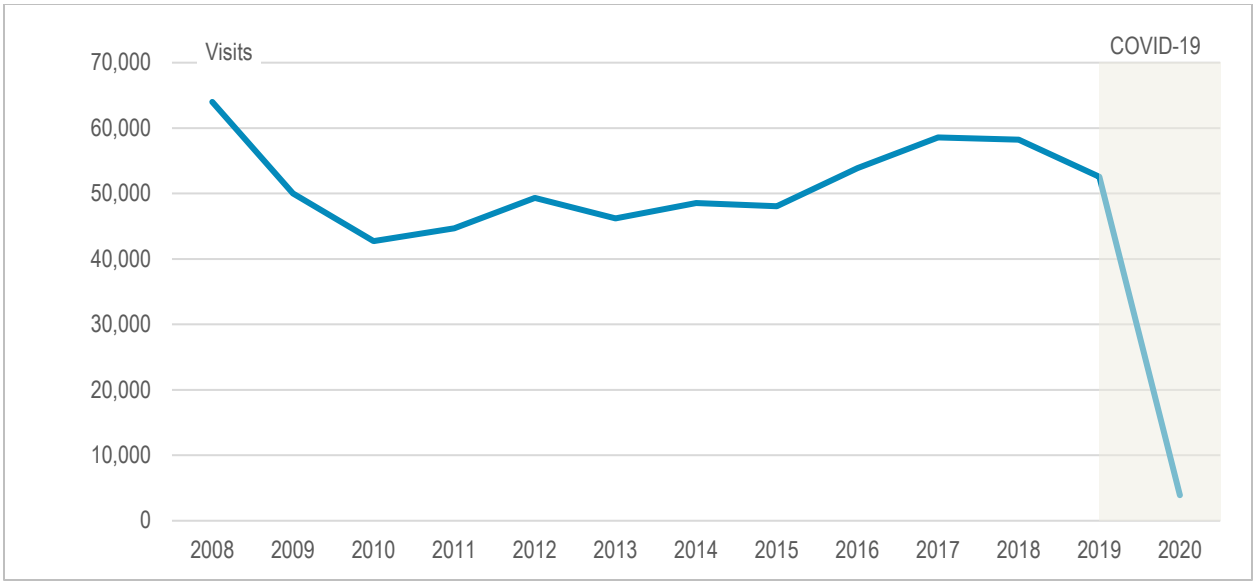


Figure 6-8. Alaska Maritime National Wildlife Refuge Visits, 2008–2020
Source: Data provided by Visitor Center Manager, U.S. Fish and Wildlife Service (2021).

6.3 Tourism Industry

This section characterizes the KPB's tourism industry, describing travel mode of arrival and tourism industry sales, employment, and tax revenues. These metrics highlight the people, both visitors and local workers, who are most affected by the tourism economy, the key places in the KPB that provide recreational and economic opportunities, and the external events shaping economic outcomes in the KPB.

Cruise and rail services are integral to recreation and tourism in the Borough, particularly for out-of-state tourists. More than 50 percent of tourists visiting Alaska arrive via cruise ship and take advantage of scenic rail journeys to travel between Alaskan communities (McDowell Group 2017a). Figure 6-9 identifies cruise ship arrivals in Seward. Although a small number of cruise ships arrive in Homer each year, the data from Seward are representative of the entire Borough. The number of passengers declined after the 2008 recession. After 2013, however, the industry recovered and significantly expanded through 2019. The data show a drop to zero passengers in 2020 as a result of the shutdown of the cruise industry at the beginning of the pandemic. In the ten years prior to 2020, cruise ridership rose by 75 percent, demonstrating the KPB's growing appeal to tourists and value of cruise ships to the KPB's recreation and tourism industry.

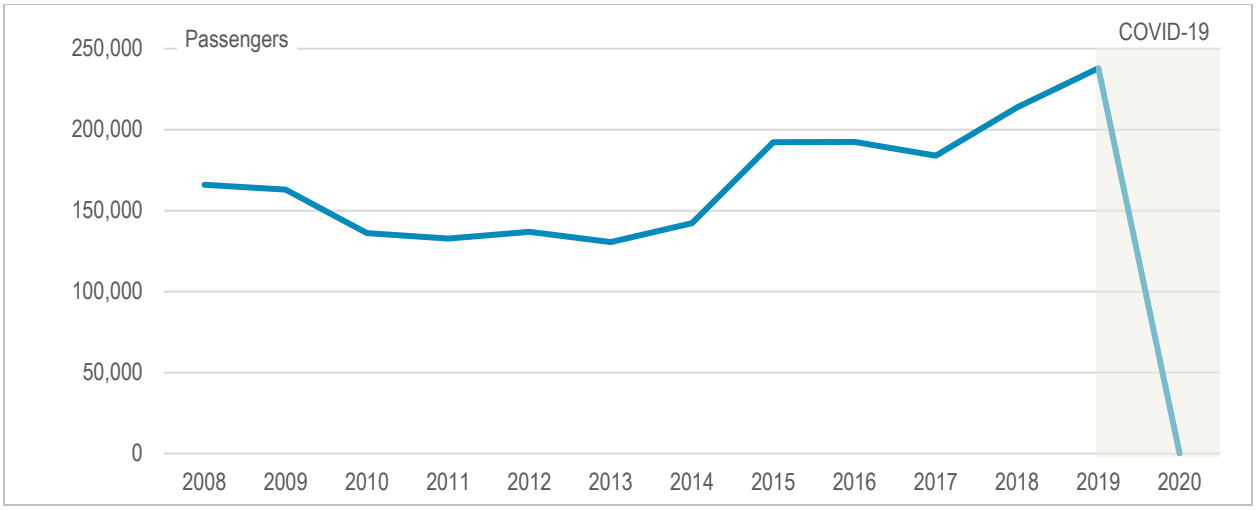


Figure 6-9. Seward Cruise Ship Passenger Arrivals, 2008–2020

Source: Data provided by Senior Director, Community Relations & Public Affairs, Alaska Cruise Association (October 2021).

Alaska Railroad's Coastal Classic and Grandview trains allow visitors to enjoy scenic rail journeys to and from Seward. Passengers of these trains include both tourists and residents. Usage of the Coastal Classic train generally rose until a steep drop after 2019 (Figure 6-10), when trains were canceled for much of the summer season due to the pandemic. However, because the Coastal Classic, which runs from Anchorage to Seward, is used by residents in addition to tourists, some level of ridership continued during the pandemic. The Grandview train serves passengers arriving by cruise ship who subsequently travel by train between Anchorage and Seward. The train follows most of the Coastal Classic's route with an added journey to Whittier and extra stops for glacier and wildlife viewing opportunities (Alaska Railroad 2022). Passengers arriving from Anchorage to Seward may take a glacier viewing cruise into Kenai Fjords National Park, go sea kayaking, or participate in dog sledding once they reach Seward (Alaska Channel 2022). Data for the Grandview train were not available for 2020.

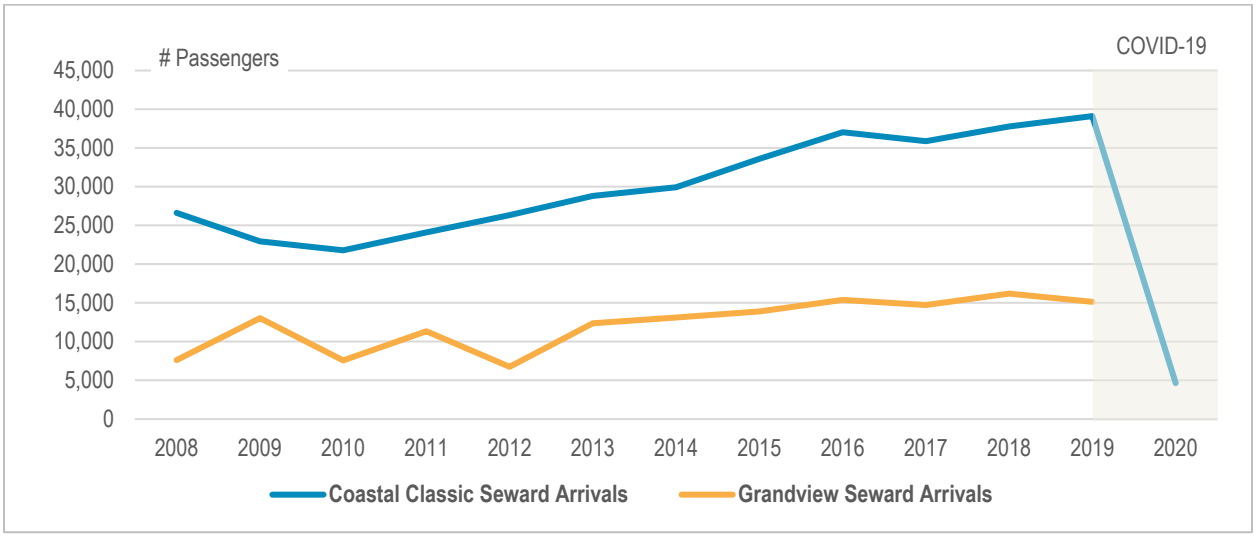


Figure 6-10. Seward Train Arrivals and Departures, 2008–2020

Source: Personal communication with Budget Analyst, Alaska Railroad (December 2021).

Ferries run by the Alaska Marine Highway System operate across the Southcentral region of Alaska, making stops in Homer and Seldovia as well as other stops outside of the KPB. Figure 6-11 shows the number of passengers that disembarked at Homer, the KPB's regional ferry hub, and Seldovia from 2008 to 2019. Data for other destinations and 2020 are not yet available; however, ferries remained open for booking in 2020 with significantly reduced service to most communities. Service and funding cuts affected ferry ridership since before the pandemic; declining ridership in 2017 was thought to be caused by ongoing reductions in state funding for the Alaska Marine Highway System (KPEDD 2018).

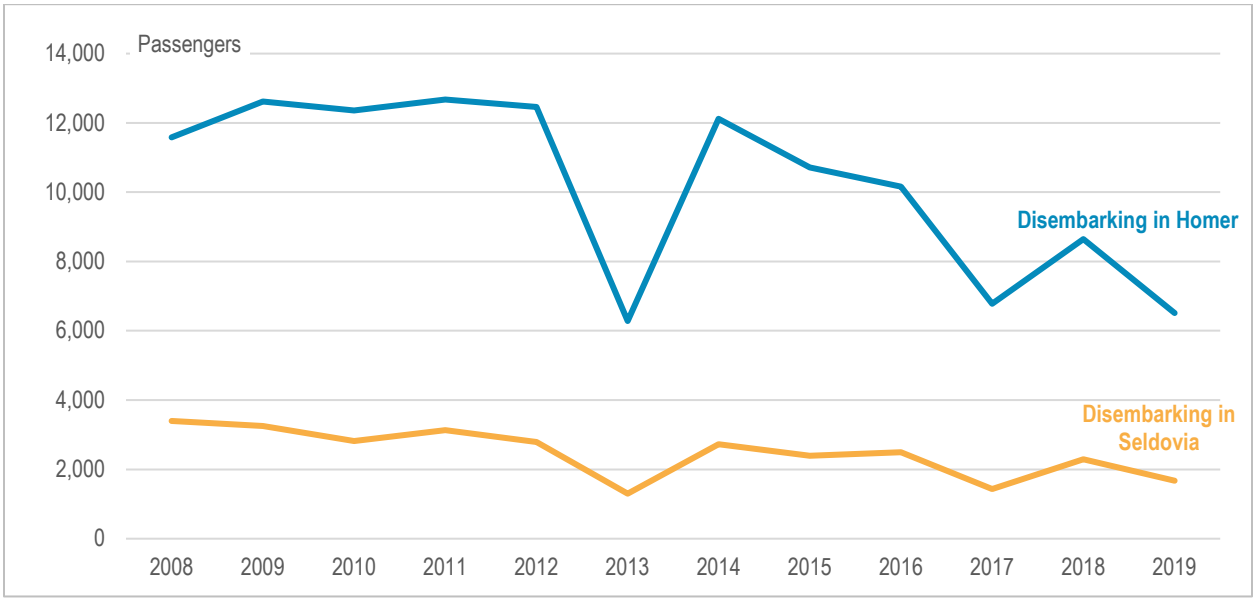


Figure 6-11. Homer and Seldovia Ferry Passenger Disembarkations, 2008–2019

Source: Alaska Department of Transportation and Public Facilities (2020).

Notes: The Chambers of Commerce did not have records for various years of the study period.

Local visitor center usage in the KPB during the study period shows a slightly different trend than other tourism metrics. While cruise ship and train arrivals generally increased during the study period, visitor center use in Homer and Seward, towns of arrival for cruise ships, trains, and ferries, remained relatively stable with some periods of slightly increased use. Visitor center use in Soldotna and Kenai decreased during the study period (Figure 6-12). According to the Kenai Peninsula Economic Development District, this may be attributable to tourists' increasing reliance on the internet for trip planning and directions (KPEDD 2018).

Visitors	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Homer	#N/A	#N/A	#N/A	#N/A	#N/A	14,000	6,245	14,995	19,085	16,309	16,525	16,572	8,040
Seward	#N/A	#N/A	#N/A	16,268	14,238	14,467	15,363	16,026	16,339	16,135	#N/A	16,445	7,395
Soldotna	49,913	44,663	34,817	39,469	38,820	43,320	40,071	28,940	28,994	26,869	26,072	22,620	7,280
Kenai	62,805	38,785	51,143	#N/A	39,343	38,593	35,354	41,971	40,239	35,848	32,674	34,357	10,572

Figure 6-12. Chamber of Commerce Visitor Center Use

Source: KPEDD (2018). Additional data provided by Homer, Seward, Soldotna, and Kenai Chambers of Commerce (September 2021).

6.3.1 Sales and Employment in the Tourism Industry

Pandemic Effects on Tourism Industry, Comparison of 2019 to 2020

- Land guiding businesses suffered *71% decline* in gross sales
- Water guiding gross sales dropped by *53%*
- Gross sales in the hospitality industry declined by *50%*

Figure 6-13 highlights an overall upward trend in total gross sales in the KPB from 2008 to 2019, largely driven by annual sales increases in the food, hospitality (e.g., lodging, event planning, travel agencies), and guided water recreation industries. The data (Figure 6-13) indicate a decline of about 41 percent in total gross sales between 2019 and 2020. Impacts of the pandemic on the KPB's tourism industry vary by sector. Land guiding businesses were hit hardest with an overall 71 percent decline in gross sales. In 2020, gross sales for water guiding businesses and hotels, motels, and bed and breakfasts were 53 percent and 50 percent below 2019 levels, respectively.

The 2020 decline in gross sales reflects the steep drop in visitors more broadly across the state of Alaska during the peak of the first COVID-19 wave. In April through December of 2019, 2.4 million visitors to Alaska spent $2.2 billion. The same period in 2020 saw only 427,000 visitors spending $484 million—an 82 percent drop in visitation and 78 percent drop in spending (McKinley Research Group 2020).

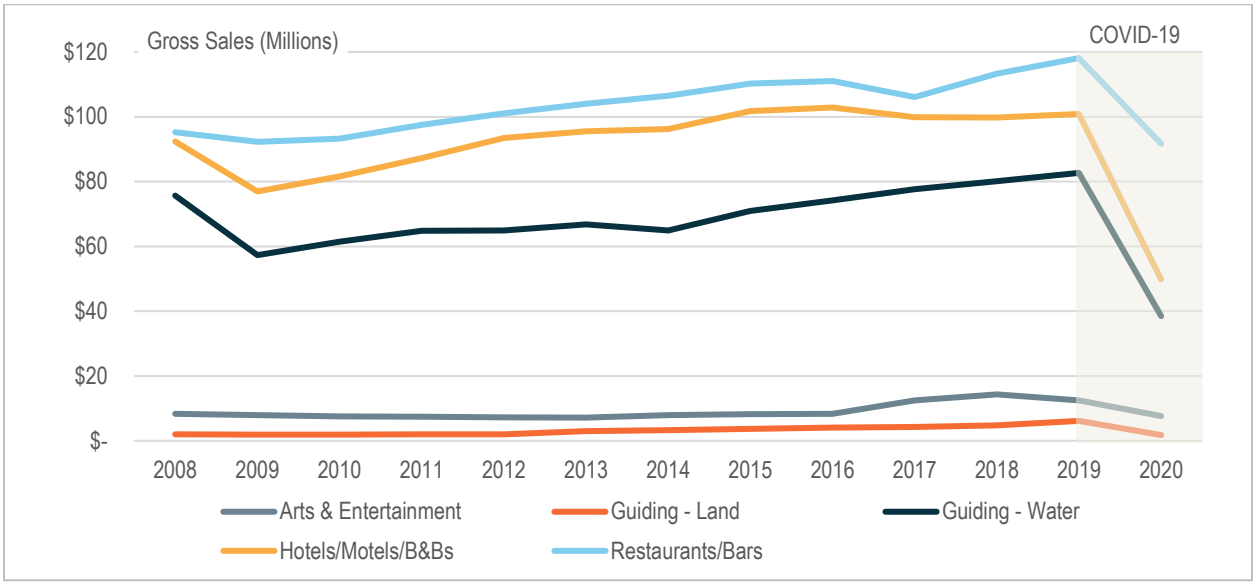


Figure 6-13. Tourism Industry Gross Sales in the Kenai Peninsula Borough by Activity, 2008–2020

Source: Turner (2021).

Notes: Adjusted to 2020 dollars using the Consumer Price Index (CPI).

The KPB's tourism industry employs residents in accommodation and food services; recreational services related to arts and entertainment; recreational services related to gambling; and sightseeing services. Of these service areas, employment is greatest in the accommodation and food services industries (Figure 6-14). The data indicate a reduction in tourism industry employment in the years immediately following the 2008 recession. After 2010, employment rose until 2020, as businesses in the industry suffered from the COVID-19 pandemic that year. The southcentral region of Alaska, including the Kenai Peninsula,

Prince William Sound, and Anchorage, among other communities near the Cook Inlet, experienced the greatest losses in tourism industry employment and labor income in 2020 compared to 2019, losing a total of 11,000 jobs and $340 million from the April to December period of 2020 compared to the same period in 2019 (McKinley Research Group 2020).

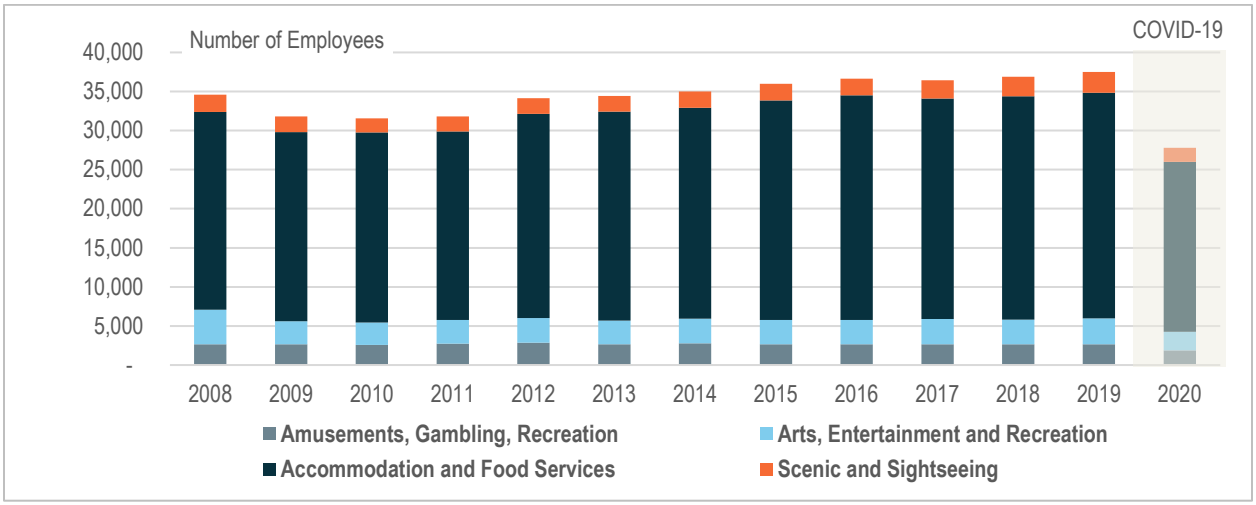


Figure 6-14. Tourism Industry Employment in the Kenai Peninsula Borough by Activity, 2008–2020

Source: ADOLWD (2021b)

Average nominal wages per employee (Figure 6-15) were highest in the scenic and sightseeing group across the thirteen-year study period, ranging from about $33,000 to $40,000 annually. Wages per employee in the other categories ranged from about $14,000 to $24,000 throughout the study period. Note that Figure 15 does not show a decline in average wages per employee in 2020 because both wages and number of employees in each sector declined due to the pandemic. That is, tourism industry employees who were able to keep their jobs did not experience a change in wage rate in 2020.

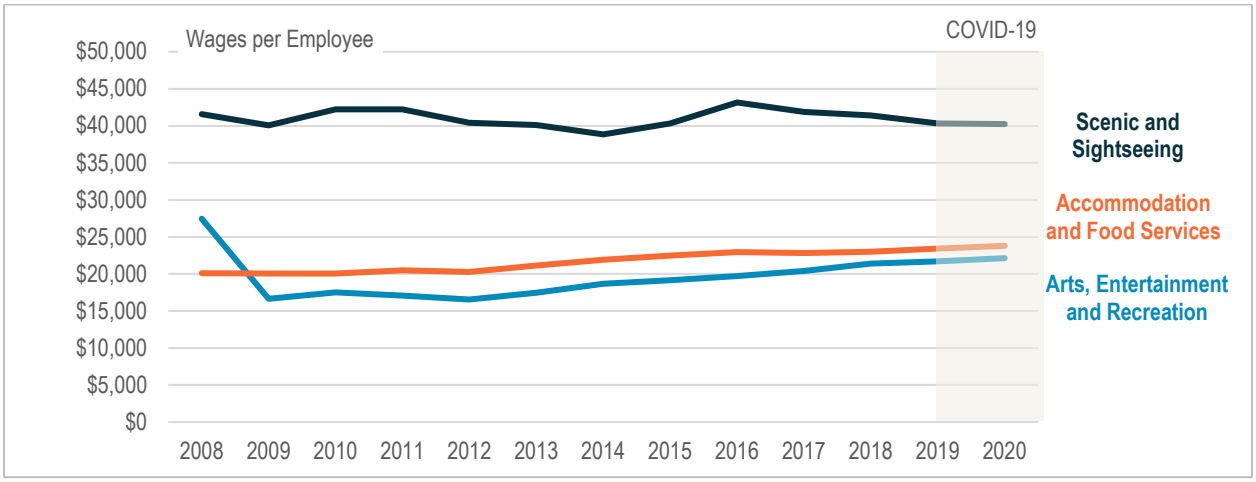


Figure 6-15. Tourism Industry Average Annual Wages per Employee in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index (CPI).

6.3.2 Tax Revenues from Tourism Industry

Tax data further characterize trends in the KPB's recreation and tourism industry. The state of Alaska collects several taxes from tourism industry businesses, including the Commercial Passenger Vessel (CPV) excise tax and the vehicle rental tax. The CPV tax is collected from cruise ship companies providing overnight accommodations to passengers. Tax revenue is collected by the state and distributed to the relevant boroughs, which then split the revenue with the first seven qualifying ports of call in the state (KPEDD 2018). In the KPB, CPV revenue sharing occurs between the state, Borough, and the cities of Seward and Homer.[27] Figure 6-16 identifies annual shared CPV tax revenue during the study period. CPV tax revenue is distributed to Boroughs and cities a year after collection of the tax; each year's revenue is therefore representative of the prior year (KPEDD 2018). Effects of the pandemic on tax revenue should therefore be observed in 2021 data. The data presented in Figure 6-16 are consistent with cruise passenger data from Figure 6-9 when accounting for the one-year data collection lag. The initial years of the study period do not identify a consistent trend while the last five years of the period indicate an uptick in CPV tax revenue each year, possibly as a reflection of the Alaskan cruise industry's growing popularity and post-2016 boom in tourism.

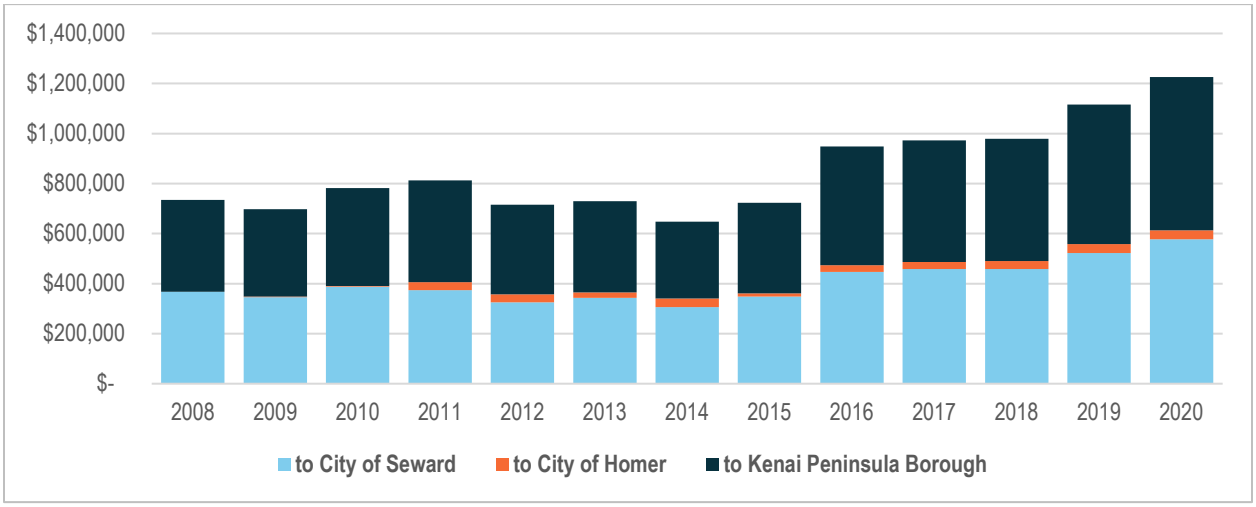


Figure 6-16. State Commercial Passenger Vessel Tax Shared with Kenai Peninsula Municipalities, 2008–2020

Source: ADOR (2022).

Note: The dollar amounts in this table reflect the actual dollar amounts shared with the municipalities in the year specified; they are not adjusted for inflation over time.

[27] The City of Seward's CPV tax document states: "When eligible ports of call are cities located in a borough, the city and the borough each receive $2.50 of every $5 passenger fee shared with the port community. In addition to receiving shared CPV revenue directly from the State of Alaska, Seward also receives CPV revenue from the Kenai Peninsula Borough after the borough assembly passed an ordinance making the borough's share of the CPV tax available to Homer and Seward through grants. The ordinance stipulates that the funds must be used for port and harbor improvements that benefit cruise ship passengers for purposes that comply with state law." https://www.cityofseward.us/home/showpublisheddocument/34/637001832934400000

The state vehicle rental tax is collected for passenger and recreational vehicle rentals. Passenger vehicle rentals are subject to a 10 percent tax and recreational vehicle rentals are subject to a 3 percent tax. Borough-level tax was estimated using state tax data and Borough visitation data from the Alaska Visitor Statistics Program (Figure 6-17). Passenger vehicle rentals (and tax revenues) generally increased from 2014 to 2019, followed by a 14 percent dip in rental tax from 2019 to 2020.

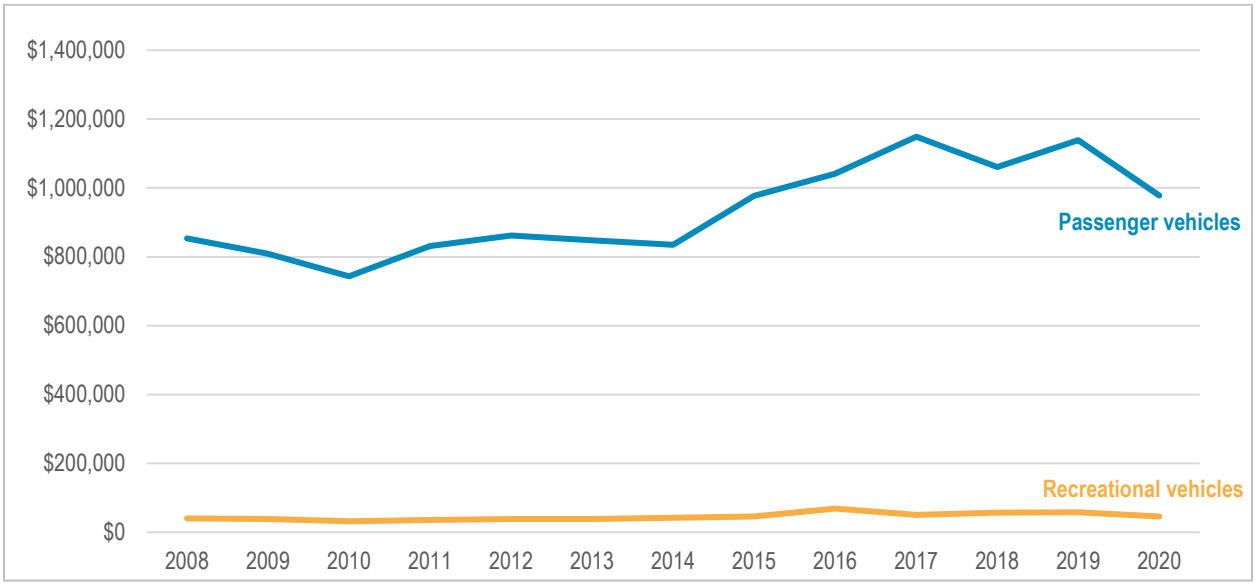


Figure 6-17. Estimated Vehicle Rental Tax, 2008–2020

Source: Estimated using vehicle rental tax rates and revenue from Alaska DOR Vehicle Rental Tax 2016 Annual Report and KPB and Alaska visitation numbers from Alaska Visitor Statistics Program 7

6.4 Sport Fisheries

Sportfishing is an important recreational activity for residents and non-residents in the KPB. Sportfishing may be guided or unguided and is allowed in freshwater and saltwater locations on the peninsula. Commonly caught fish and shellfish in the sportfishing waters of the study area include Chinook, coho, pink and sockeye salmon; Dolly Varden, rainbow, and steelhead trout; rockfish; lingcod; Pacific halibut; and razor clams.

Photo of Kenai River by Alaska Department of Fish and Game.

Sportfishing is permitted along the Kenai River, Anchor River, Ninilchik River, Deep Creek, Kasilof River, Russian River, McNeil River, Cook Inlet, and roadside streams of the Kenai Peninsula. Alaskan residents generally comprise the majority of sportfishing angler days in the Cook Inlet region. However, growing visitor interest in sportfishing led to increased spending by nonresidents on guided fishing packages from charter operations (Kenai Peninsula Borough 2019).

Several external events shaped sportfishing in the KPB during the study period. Chinook, or "king" salmon runs declined

drastically in the early 2010s. This trend continued through the end of the study period, with consistently weak salmon runs and declining salmon sizes in the area. In response to weak king salmon runs, fisheries were shut down to preserve salmon, restrictions were placed upon anglers, and many fishing businesses closed or were forced to turn to other ventures such as guided tours (Kenai Peninsula Borough 2019). The ripple effects of low levels of king salmon runs were devastating to businesses in the sportfishing sector and the local economy as spending levels dropped (Kenai Peninsula Borough 2019). In the 1980s, Kenai River king salmon weighing in at 60 to 80 pounds were commonly caught. Since those years, Kenai king salmon weighing 80 pounds have become rare or obsolete (Chihuly 2017). The exact reason for dwindling sizes and runs is unclear. Removal of large spawning king salmon, predation in ocean habitat, and climate change leading to warmer ocean temperatures have all likely played a part in the trend.

External Impacts on Sport Fishing Activities

Overfishing, shifts in predation, and effects of climate change → decline in king salmon runs and size of salmon since 2010

COVID-19 pandemic → statewide drop of 49% in for-hire guided sport fishing trips

Although climate change is not the sole cause of declining salmon runs in the KPB, the warming of the region affected king salmon in the area and will likely continue to affect salmon runs in the future. Watersheds and salmon migration corridors face rapidly increasing temperatures leading to shrinking wetlands and glaciers and unproductive spawning patterns among salmon (KDLL 2020). Changes in glacier size could mean more dramatic changes to water temperatures. Cook Inlet and Kenai Peninsula freshwater rivers and streams are key habitats for salmon and may change drastically due to climate change. Experts are uncertain what these changes will look like because streams in the area react to warming temperatures in different ways. Climate change will continue to create uncertain outcomes for salmon. In some cases, new, previously unsuitable habitats like Copper River may become available for king salmon runs (KDLL 2020). In combination with existing barriers related to salmon fishing, the warming climate is likely to lead to changes in sportfishing locations, harvest characteristics, and other trends.

The COVID-19 pandemic also affected the sportfishing economy. Nationally, the for-hire sector serving anglers looking for guided opportunities experienced an 18 percent decrease in trips in 2020 compared to a five-year baseline period from 2015 to 2019. However, the impacts of the pandemic on these activities were amplified in Alaska, where for-hire businesses mainly target out-of-state visitors and tourists. Statewide, there were 48.6 percent fewer for-hire trips in 2020 than during the baseline period (NOAA 2021a).

Sportfishing regulations for the KPB fall under ADF&G's Southcentral regional regulations. These regulations split the region into eight areas including West Cook Inlet, Kenai River, Kenai Peninsula, Susitna River Drainage, Knik Arm, Prince William Sound, Anchorage Bowl, and North Gulf Coast (ADF&G 2022b). Of these subregions, West Cook Inlet, Kenai River, and Kenai Peninsula are part of the study area for this report. ADF&G's Sport Fish Division collects sportfishing data based on saltwater and freshwater locations for the Alaska Sport Fishing Survey.

Figure 6-18 and Figure 6-19 display the number of anglers and angler days across the West Cook Inlet drainages, Kenai Peninsula freshwater, and Cook Inlet fishing locations during the study period. The figures show similar trends, with highest sportfishing use in the freshwaters of the Kenai Peninsula followed by Cook Inlet saltwater. Sportfishing activity is significantly lower in the areas of Cook Inlet

reserved for harvesting shellfish and the West Cook Inlet drainages. Sportfishing in the region remained relatively stable from 2008 to 2020. In 2020, sportfishing levels measured in number of anglers and angler days were lower than in 2008 across the four locations.

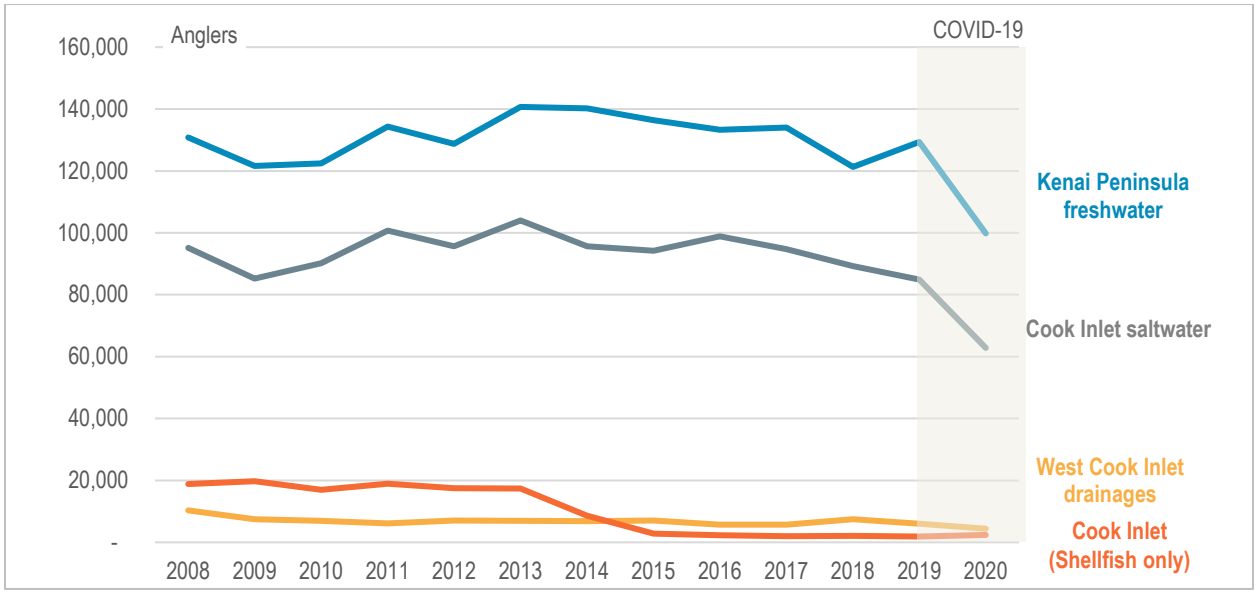


Figure 6-18. Number of Anglers in Southcentral Alaska, 2008–2020

Source: Data from ADF&G (2020a), provided to IEc by ADF&G Division of Sport Fish in August 2021.

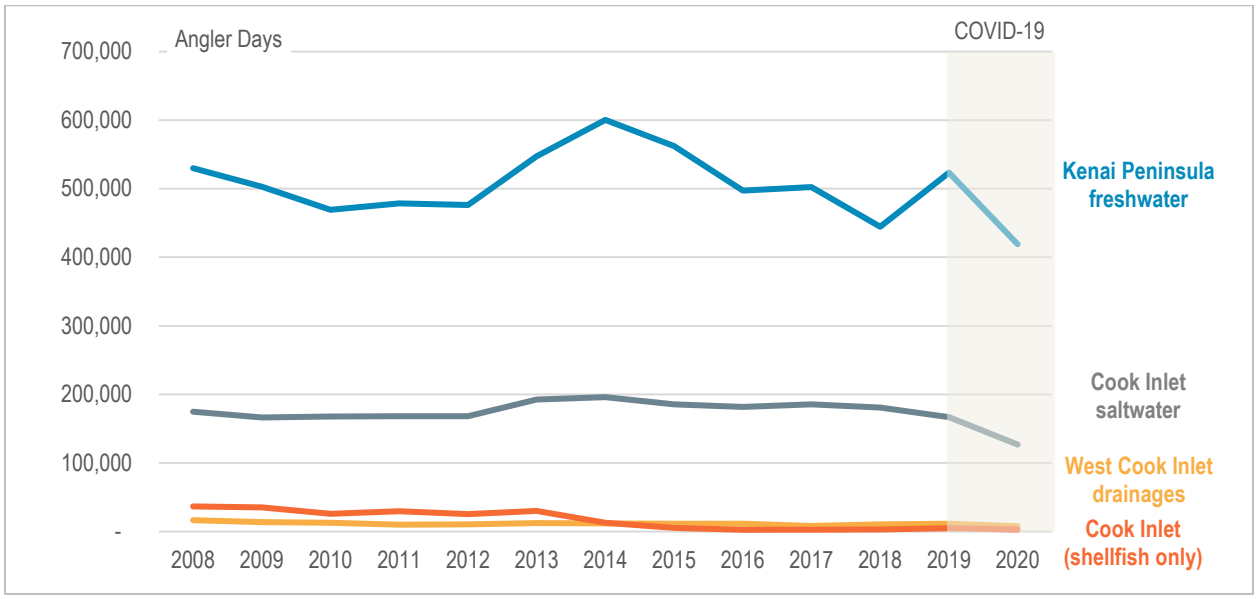


Figure 6-19. Number of Angler Days in Southcentral Alaska, 2008–2020

Source: Data from ADF&G (2020a), provided to IEc by ADF&G Division of Sport Fish in August 2021.

ADF&G's sport fishing survey also distinguishes sportfishing use by residency. Figure 6-20 below highlights state resident fishing patterns in freshwater and saltwater fishing areas similar to those displayed in Figure 6-18 and Figure 6-19. The Kenai Peninsula and West Cook Inlet locations are

freshwater while the Cook Inlet boat and shore locations are saltwater. Like the previous figures, an overall decline in number of anglers is visible in the study period. However, Figure 6-20 highlights an uptick in number of anglers from 2019 to 2020, indicating that residents continued sport fishing while nonresident sport fishing declined.

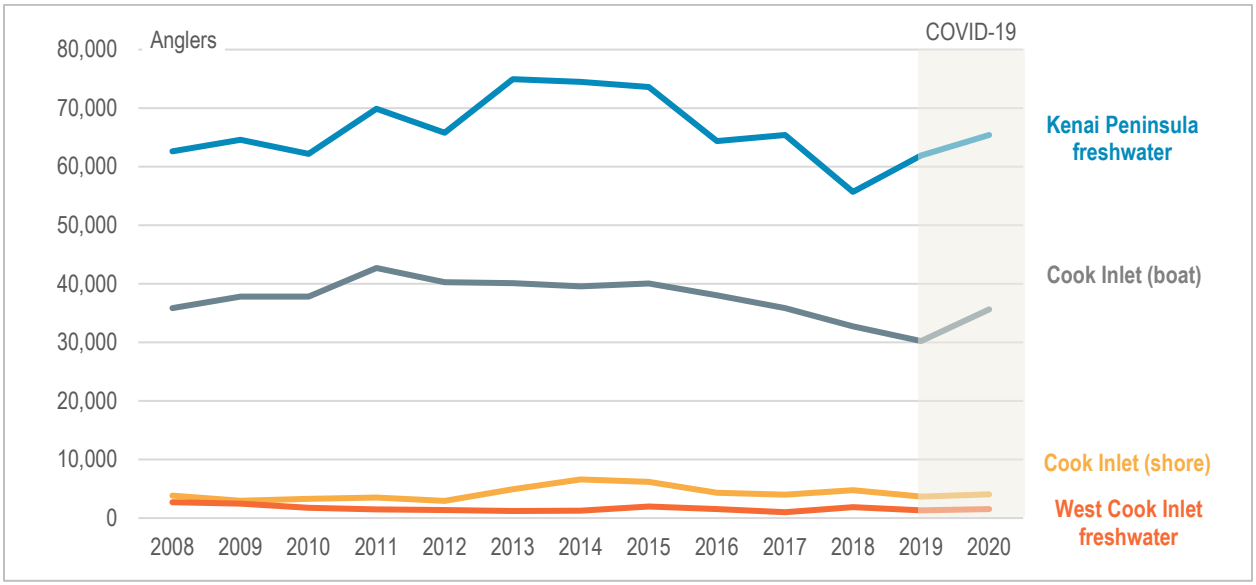


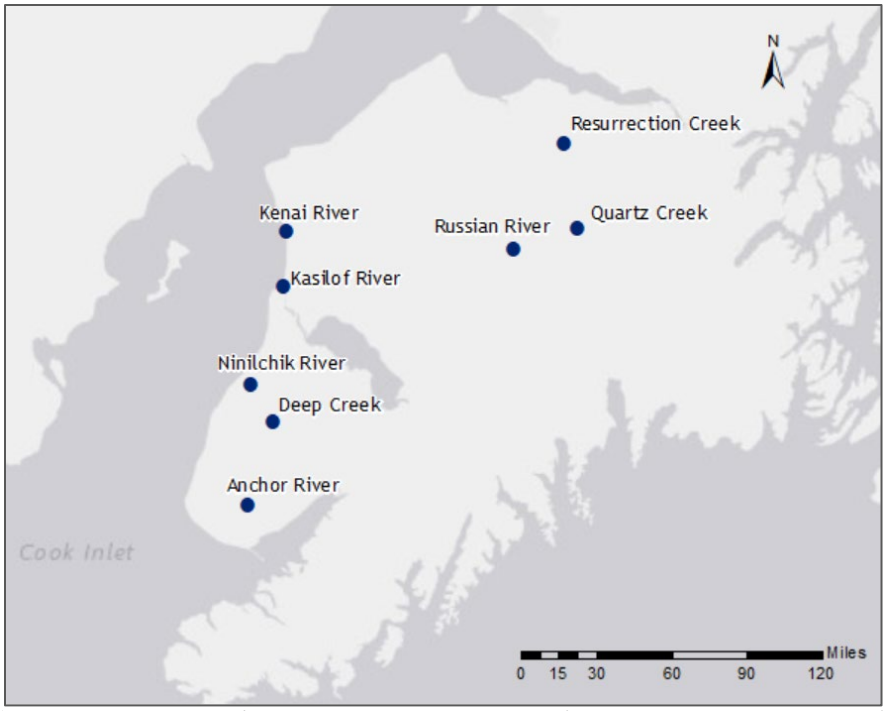
Figure 6-20. Number of Resident Anglers in Southcentral Alaska by Freshwater and Saltwater Location, 2008–2020,

Source: Data from ADF&G (2020a), provided to IEc by ADF&G Division of Sport Fish in August 2021.

ADF&G collects angler data for multiple freshwater locations on the peninsula. Figure 6-21 identifies the number of anglers in each freshwater location in 2008 and 2019. Generally, fewer anglers visited the common freshwater sportfishing sites in 2019 than in 2008. These data are consistent with the lower sportfishing participation from the start to the end of the study period presented in Figure 6-18 and Figure 6-19.

Changes in Freshwater Sport Fishing, 2008 to 2019

Locations with significant decline in use: Anchor River, Ninilchik River, Deep Creek, Quartz Creek



Location	Number of Anglers, 2008	Number of Anglers, 2019
Kenai River	119,425	117,216
Anchor River	8,957	2,527
Ninilchik River	4,181	1,058
Deep Creek	4,111	1,499
Russian River	23,899	23,941
Kasilof River	455	15,858
Quartz Creek	3,283	1,042
Resurrection Creek	4,711	3,876

Figure 6-21. Number of Anglers in the Kenai Peninsula Borough by Key Freshwater Sportfishing Location, 2008 and 2019

Source: Data from ADF&G (2020a), provided to IEc by ADF&G Division of Sport Fish in August 2021.

Note: low angler count in 2008 for Kasilof River is due to low survey response rates.

7 Trends in the Commercial Fishing and Mariculture Industries

7.1 Commercial Fishing

7.1.1 Harvesting Sector

KPB residents that hold state of Alaska commercial fishing permits fish in many different areas of southcentral Alaska, including Cook Inlet, Gulf of Alaska, Prince William Sound, and Bristol Bay; fish for many different species, including salmon, halibut, sablefish, and groundfish; and fish with many types of gear, including drift gillnets, set gillnets, purse seines, pots, jigs, and longlines.[28] From 2008 to 2020, KPB residents earned an average of $123 million annually from various commercial fisheries. As shown in Figure 7-1, the salmon fishery is by far the most economically important commercial fishery for KPB residents in terms of fishing revenue. From 2008 to 2020, the fishery annually accounted for an average of 62 percent of all commercial fishing earnings of KPB residents, with a low of 47 percent in 2009 and a high of 76 percent in 2018. Sockeye salmon is the most consistently abundant species, and it is the mainstay of the commercial salmon fishery.

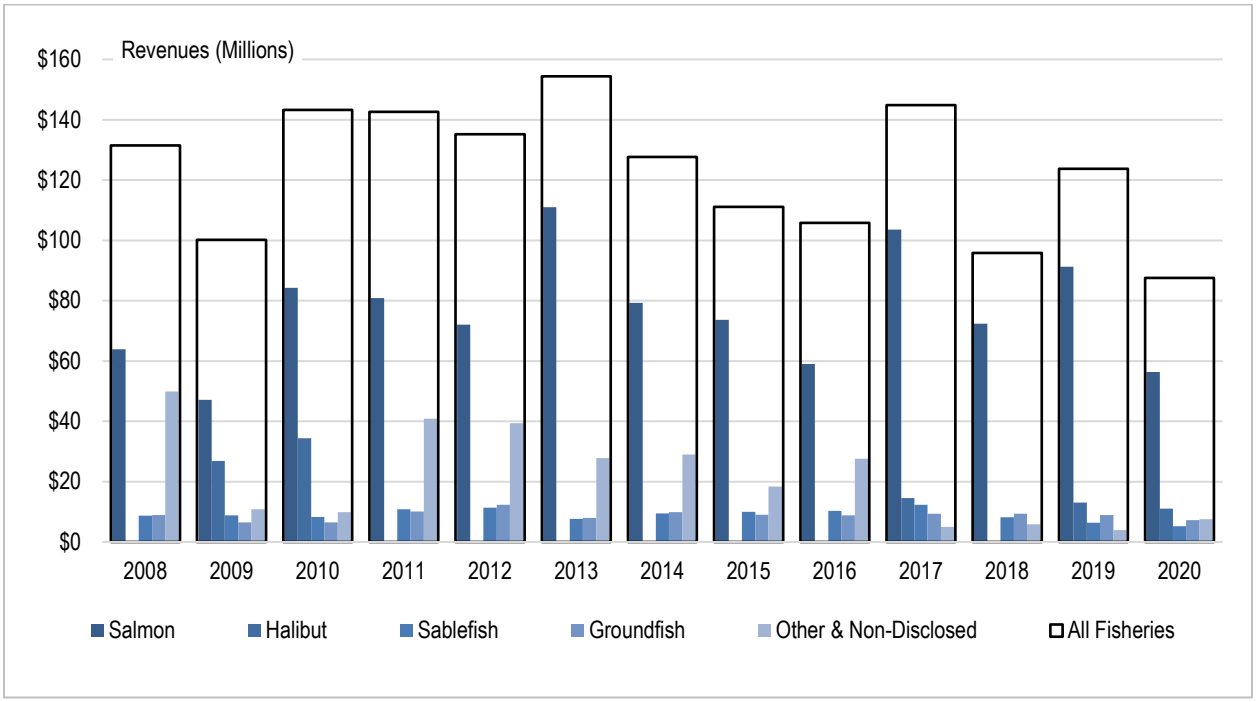


Figure 7-1. Commercial Fishing Revenue of Kenai Peninsula Borough Residents by Fishery, 2008–2020

Source: Alaska Commercial Fisheries Entry Commission (2021)

Notes: Adjusted to 2020 dollars using the Producer Price Index by Industry: Seafood Product Preparation and Packaging: Prepared Frozen Fish. Revenue from the halibut fishery could not be disclosed for some years due to state of Alaska data confidentiality restrictions.

[28] Groundfish species include Pacific cod, lingcod, and a variety of rockfish species.

Commercial salmon fishing in Alaska is mostly a summer activity. For example, the Cook Inlet fishery, which is the main salmon fishery for the KPB's commercial harvesters, begins in June and ends in mid-September. Due to the inherent annual variability in the scale of wild salmon runs, salmon revenues fluctuated from year to year (Figure 7-1). The exact causes of changes in salmon abundance are unknown, but they may involve a variety of factors outside the control of fishery managers, including ocean conditions, freshwater environmental factors, and disease (National Marine Fisheries Service 2021b). In 2020, the KPB's commercial harvesters experienced a sharp decrease in earnings, with the combined revenue for all commercial fisheries falling to 69 percent of the previous 12-year average. In addition to poor salmon runs in some areas of the state, the COVID-19 pandemic emerged as a factor capable of disrupting seafood markets (National Marine Fisheries Service 2020; Warren 2021). As restaurant restrictions and other social distancing measures were implemented both domestically and abroad, the seafood industry experienced an almost immediate decline in sales. The Alaska salmon fishery decreased the production of higher valued product forms, which, in turn, substantially lowered harvest revenues (National Marine Fisheries Service 2020).

The number of KPB residents employed in the harvesting sector of the commercial fishing industry is uncertain because these data are not fully captured by the U.S. Bureau of Labor's Quarterly Census of Employment and Wages .[29] However, data on the number of commercial fishery permit holders in the KPB who are actively fishing are available from the Alaska Commercial Fisheries Entry Commission.[30] Figure 7-2 summarizes the number of active harvesters residing in the KPB by fishery, along with the total number of unique harvesters. From 2008 to 2020, an average of 1,063 KPB residents participated in commercial fisheries. If the number of crew members are also taken into account, the total number of individuals employed would be three or four times this number.

[29] One factor that makes estimating harvesting employment and comparing it to other industries difficult is that compensation for permit holders and crew members is based on a percentage, or share, of the earnings that result from fishing trips; therefore, there is no convenient measure for the months they worked and for how long (Warren 2021).

[30] In 1972, Alaska voters amended the state constitution to allow limited entry in the state's commercial fisheries. Following the amendment, in 1973, the Alaska State Legislature enacted the Limited Entry Act (AS 16.43), giving the Commercial Fisheries Entry Commission the authority to administer the program. Permit fisheries are defined by the Commission as a specific gear type for a fishery resource within a defined administrative area. To participate in one of the limited entry fisheries, such as salmon, a person must hold a permit. The permits can be bought and sold, but the total number of permits doesn't typically change in an established fishery (Alaska Commercial Fisheries Entry Commission 2019; Warren 2021).

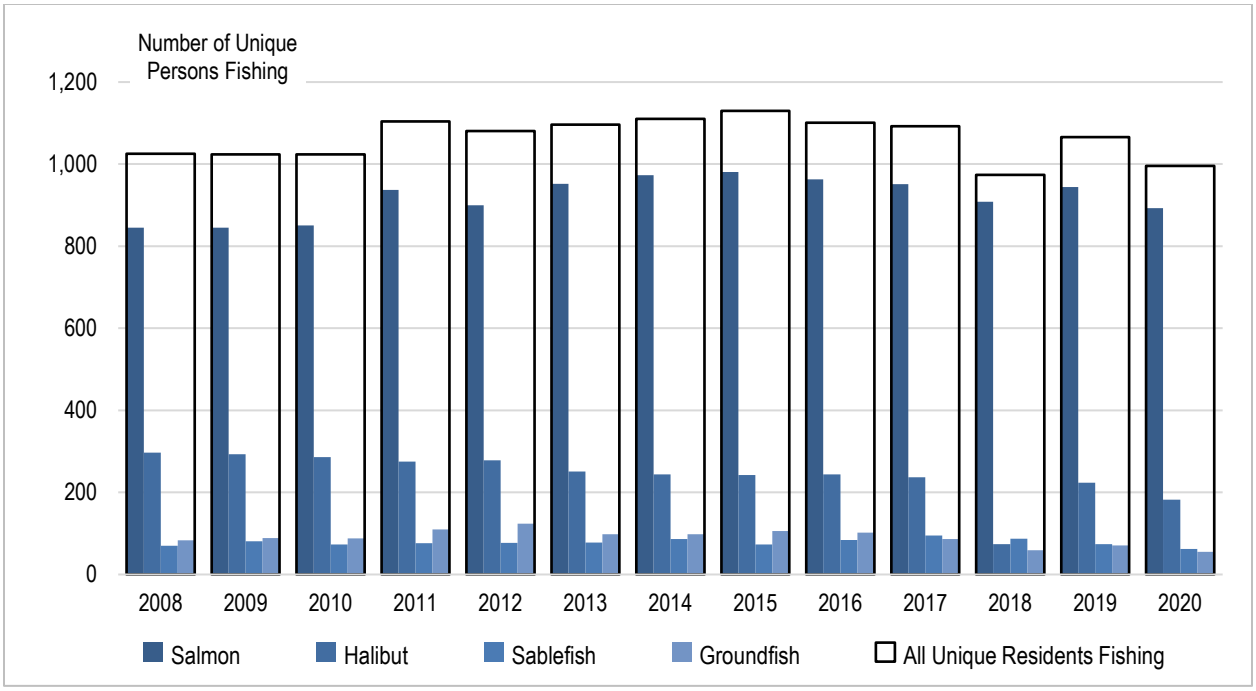


Figure 7-2. Number of Active Commercial Fishery Permit Holders in the Kenai Peninsula Borough by Fishery, 2008–2020

Source: CFEC (2021)

Notes: The number of unique harvesters is not the sum of all fisheries, as many harvesters participate in multiple fisheries.

The harvesting sector of the KPB's commercial fishing industry is centered in Homer, Kenai, and Seward. Figure 7-3 shows the ex-vessel value (the price paid to harvesters) of landings in each of these ports from 2008 to 2020. In 2008, these three ports accounted for 51 million pounds of seafood, with an ex-vessel value of $39.5 million. According to a ranking of the top commercial fishing ports in the U.S. by National Marine Fisheries Service (2022), in 2008, Seward ranked twenty-second for landed weight, followed by Kenai (fifty-third), and Homer (seventy-seventh). By 2015, landings in these ports had increased to 151 million pounds, with an ex-vessel value of $107.7 million. That year, Seward ranked twelfth in the nation for landed weight, Kenai ranked twenty-third, and Homer ranked sixty-seventh. In 2020, the market disruptions related to the COVID-19 pandemic caused landings across the three ports to drop to 39 million pounds, with an ex-vessel value of $41.6 million. That year, Seward ranked twenty-fourth, Kenai ranked fifty-fifth, and Homer ranked seventy-eighth.

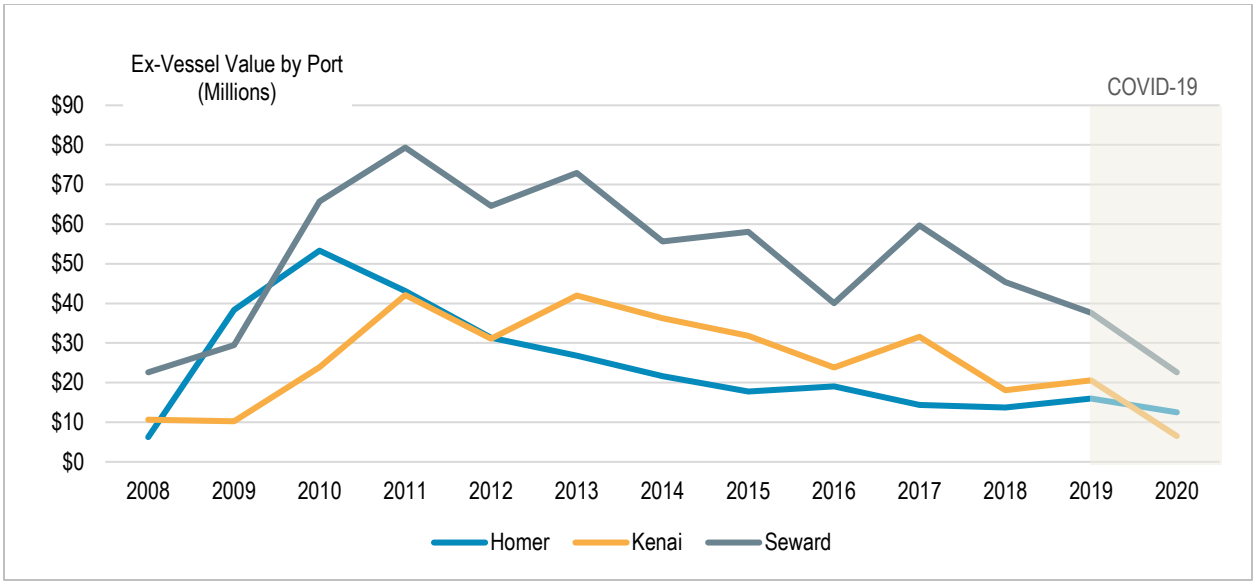


Figure 7-3. Ex-Vessel Value of Landings in the Kenai Peninsula Borough by Major Port, 2008–2020

Source: National Marine Fisheries Service (2022)

Notes: Adjusted to 2020 dollars using the Producer Price Index by Industry: Seafood Product Preparation and Packaging: Prepared Frozen Fish.

From 2008 to 2020, residents of the KPB who commercially fished were spread over approximately twenty communities. Figure 7-4 shows the distribution of residents with active commercial fishery permit holders across community groups. The Homer/Fritz Creek area was home to the greatest number of commercial harvesters, accounting for 44 percent of the active commercial fishing permitholders in the KPB from 2008 to 2020. Homer's well-developed marine support sector provides products and services to approximately 500 commercial fishing vessels based in the city as well as vessels from Seldovia, Kenai, Seward, Valdez, and even Bristol Bay. Homer's resident fishing fleet is a diversified group with many participating in multiple fisheries. Most of their earnings come from landing fish in other communities (McDowell Group 2015). The Kenai-Soldotna area was home to the second greatest number of commercial harvesters, accounting for 28 percent of the active commercial fishing permit holders in the KPB from 2008 to 2020. The Kenai-Soldotna area's seafood industry relies primarily on sockeye salmon caught in Cook Inlet, although many harvesters who live in the area also participate in fisheries outside of Cook Inlet and bring those earnings home with them (McDowell Group 2015). Although Seward ranked first among the KPB's fishing ports in terms of landed weight, it has a relatively small resident fishing fleet. The city accounted for 4 percent of the active commercial fishing permitholders in the KPB during the study period.

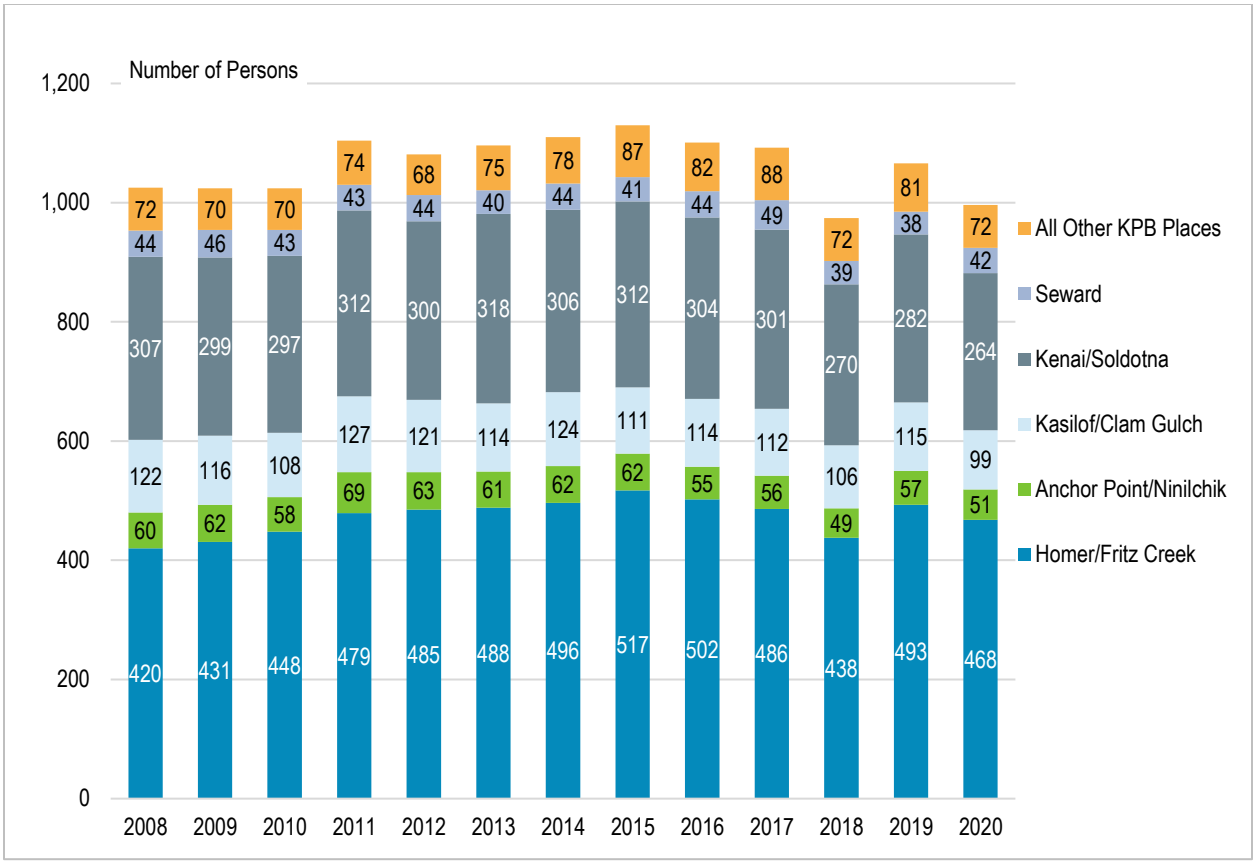


Figure 7-4. Number of Persons with Active Commercial Fishery Permits in the Kenai Peninsula Borough by Community Group, 2008–2020

Source: CFEC (2021)

Notes: Homer/Fritz Creek area includes Homer, Fritz Creek, and Nikolaevsk; Kenai/Soldotna area includes Kenai, Soldotna, Nikiski, and Nikishka.

In some of the smaller KPB communities the number of active commercial fishing permitholders is relatively low, but a high percentage of the labor force is engaged in commercial fishing. Among these communities are the "Russian Old Believer" communities of Nikolaevsk, Razdolna, Voznesenka, and Kachemak Selo. On average, about 17 percent of Nikolaevsk's working-age adults annually engaged in commercial fishing from 2008 to 2020 (CFEC 2021). It is not uncommon for the harvesters in these communities to fish throughout the year, in contrast to a substantial portion of other harvesters in the KPB who are active only during the summer salmon fishing season (Loring and Harrison 2013). In addition, some of the Alaska Native villages in the KPB, including Tyonek, Port Graham, Ninilchik, and Seldovia, had a large number of local residents engaged in commercial fishing. Tyonek, Port Graham, and Seldovia are also non-road-connected communities supported by a limited economic base, which contributes to their high reliance on commercial fishing for income. For example, an annual average of 48 percent of Seldovia's working-age adults participated in commercial fishing from 2008 to 2020.

KPB residents made the borough one of the centers of Alaska's commercial fishing industry. While the KPB accounts for about 8 percent of Alaska's population, during the past several years KPB residents landed between 10 and 17 percent of all the pounds of commercial fish harvested by Alaska residents and

accounted for 17 to 19 percent of all commercial fishing gross earnings of Alaskans (Kenai Peninsula Economic Development District 2018). These statistics evince the ability of residents to consistently harvest large volumes of fish and to target high-value species such as halibut and sablefish.

Over the last decade, however, the KPB's seafood harvesting community faced a number of challenges. Chinook salmon stocks in Alaska have been in decline, a trend that has had significant impacts on the industry as a whole because ADF&G has been restricting the harvest of healthy salmon stocks to preserve the Chinook salmon runs.[31] While the Chinook salmon's decline in local rivers and streams has not been fully explained, research points to climate change-related events, including rising sea surface temperature and other factors that limit survival at sea (Crozier et al. 2021), together with increased water temperature and precipitation during certain times of the year that significantly impact salmon freshwater habitats in southcentral Alaska (Jones et al. 2020). Climate change has also affected the Gulf of Alaska Pacific cod fishery. Following cuts in the allowable harvest in the directed Federal Pacific cod fishery in 2018 and 2019 due to low biomass, the National Marine Fisheries Service completely closed the fishery in 2020. The dramatic declines in Pacific cod biomass and productivity were linked to a series of warm years and marine heatwaves beginning in late 2013 (Fry 2019; Peterson Williams et al. 2021).

The KPB's seafood harvesting community has also been affected by the ongoing conflict over the allocation of Cook Inlet salmon resources among user groups. Over the years Cook Inlet's salmon fisheries grew in popularity due their proximity to major population centers and their relatively easy accessibility by public roads (ADF&G 2020b). As the competition for Cook Inlet's limited salmon resources increased, management concerns erupted among commercial gear groups, between Anchorage/Matanuska-Susitna Borough and KPB fishing groups, and between area sport and commercial fishing associations. Years with lower size runs of Chinook salmon and other salmon species exacerbate these allocation issues (Harrison and Loring 2014; Kenai Peninsula Economic Development District 2018).

As noted above, in 2020, the KPB's commercial harvesters experienced a sharp decrease in earnings due to the effect of the COVID-19 pandemic on seafood markets. In addition, in order to sell their fish to processors, commercial fishing vessel captains and crewmembers were required to comply with requirements designed to slow the spread of the coronavirus, including state-issued COVID-19 testing and quarantine mandates (Helminiak 2020). These requirements contributed to higher costs for vessel operators even before fishing started (Wiebold 2020). To some extent, the economic impacts of lower revenues and higher costs on local commercial fishing operations were mitigated by pandemic economic relief funds. As stated in Section 2.3.2.2.1, in 2020, these operations, together with eligible seafood processors, were the single largest recipients of relief funds among small businesses in the KPB.

Also in 2020, the KPB's salmon drift gillnet fleet became enmeshed in fisheries management jurisdictional issues between the state and Federal government. In October 2020, the North Pacific Fishery Management Council took final action to amend its fishery management plan for salmon fisheries

[31] Measures designed to protect and rebuild one or more salmon stocks may require a substantial curtailment of catches of healthy salmon stocks because of the overlap in the runs of different salmon species and the limited selectivity of the fishing gear.

in the Federal waters (3–200 nautical miles from shore) off Alaska. The Council's recommended amendment closed Federal waters in Cook Inlet to commercial salmon fishing.[32] The drift gillnet fleet is the only commercial fleet operating in these waters, which on average accounted for a little less than half of the fleet's annual salmon catch and about 20 percent of the total commercial salmon harvest in Cook Inlet (National Marine Fisheries Service 2021b). The Council's action does not impact commercial salmon fishing in state waters (0–3 nautical miles from shore). In November 2021, National Marine Fisheries Service issued a final rule to implement the Council's recommended amendment, and the amendment became effective on December 3, 2021 (National Marine Fisheries Service 2021a).

7.1.1.1 Interactions with the Oil and Gas Industry

The oil and gas industry's primary effect on the KPB's commercial fishing industry is from displacement of fishing boats and available fishing areas during oil and gas exploration, production, and transportation The additional vessel traffic associated with oil and gas development, plus the physical presence of platforms and other equipment and structures used in offshore oil and gas production, can create space-use conflicts with commercial fishing activities (Bureau of Ocean Energy Management 2016).

Crude oil produced outside Cook Inlet, including limited international crude, is delivered by double-hulled tankers through Cook Inlet to the Kenai refinery (Bureau of Ocean Energy Management 2021). A vessel engaged in fishing is prohibited from impeding the passage of any other vessel navigating within a narrow channel, fairway, or traffic lane (U.S. Coast Guard 2015). Moreover, there are normative nautical rules for smaller vessels, such as fishing boats, giving way to larger vessels. Apart from these basic rules, there are no restrictions against fishing boats working in or steaming through shipping lanes. As noted by Impact Assessment (2004), this is, in fact, a common occurrence throughout the salmon fishing season in Cook Inlet. To avoid conflicts with fishing vessels operating in Cook Inlet, most large, deep-draft cargo ships, including LNG carriers, announce their presence on VHF marine radio channels at specific waypoints in the Cook Inlet shipping lane (Weil 2003).

There is history of interactions between salmon drift gillnet operations and oil and gas industry infrastructure in the state jurisdiction waters of Cook Inlet, particularly in the northerly reaches of the Inlet (Glazier et al. 2006). Some local harvesters reported that the presence of platforms such as Dillon and "A" and "C" have on occasion figured into the manner in which they conducted their drift gillnet operations, and some report having wrapped their nets on the platforms in years past (Impact Assessment 2004). More recently, however, there has been little market incentive to fish in those areas and, therefore, little interaction between vessels and industry infrastructure occurred (Glazier et al. 2006).

[32] In 2016, the U.S. Ninth Circuit Court of Appeals ruled that the Council had to develop regulations for salmon fishing in the Federal waters of Cook Inlet rather than continue deferring to the Alaska Department of Fish and Game. The Council proposed a co-management arrangement between Federal and state agencies, but it was compelled to close the waters to commercial fishing after the Alaska Board of Fish and Game rejected this arrangement (Earl 2020; National Marine Fisheries Service 2021a).

7.1.2 Processing Sector

Nearly all of Alaska's seafood products go through the hands of seafood processors, which add value by turning raw fish and shellfish into a myriad of products for markets around the world (McDowell Group 2017b). In contrast to other seafood producing regions of Alaska, where the processing sector is dominated by one or two shorebased plants, the processing sector in the KPB is relatively diverse.[33] As shown in Figure 7-5, there are numerous fish and shellfish processors in the KPB, located in Homer, Kenai, Nikiski, Ninilchik, Seward, and Soldotna. Among the largest plants are the Pacific Seafood facility in Seward, the Pacific Star Seafoods plants in Kenai, and the Copper River Seafoods plant in Kenai (Kenai Peninsula Economic Development District 2018). The smallest processors are harvesters who sell only their own catch. Their catch is processed on their vessel or at their own shorebased plant, or it is custom processed by a licensed vessel or plant (ADF&G 2021b).[34]

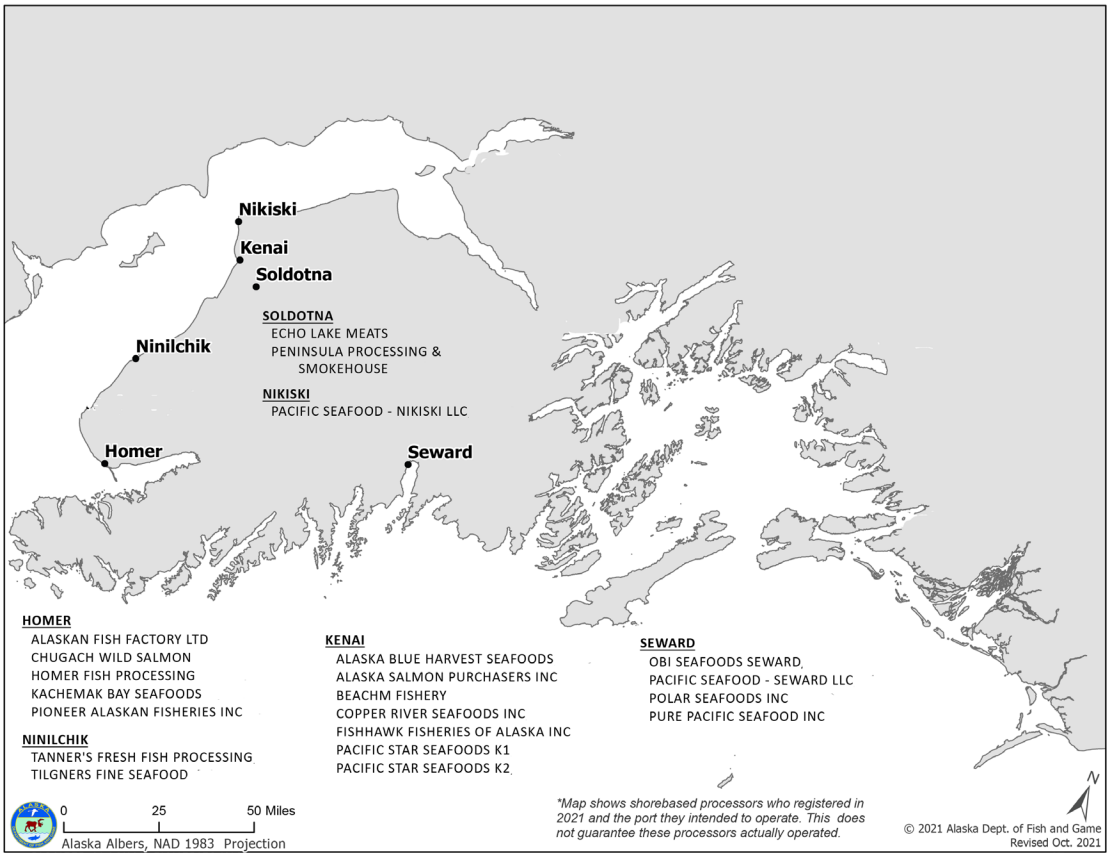


Figure 7-5. Seafood Processors in the Kenai Peninsula Borough, 2021

Source: Adapted from ADF&G (2022d)

[33] A shorebased processor is defined as a facility located onshore that can buy fishery resources and process, export, and/or be a custom processor or that has another facility process on their behalf. A cannery license is required if any canning is to be conducted (Alaska Department of Fish and Game 2021b).

[34] Due to the location of many KPB communities on the road system and the borough's proximity to the heavily populated Anchorage/Matanuska-Susitna Borough region, some salmon harvesters are also able to sell their unprocessed and unpackaged catch directly to consumers (McDowell Group 2015).

Shore based plants account for nearly all of seafood product preparation and packaging in the KPB. As shown in Figure 7-6, the number of these plants operating in the KPB identifies a downward trend over the past several years. Facilities likely closed due to some of the same economic difficulties experienced by the harvesting sector, including variability in the scale of salmon runs. Many of the larger processors purchase and process a variety of species caught in fisheries around the state (National Marine Fisheries Service 2021b)

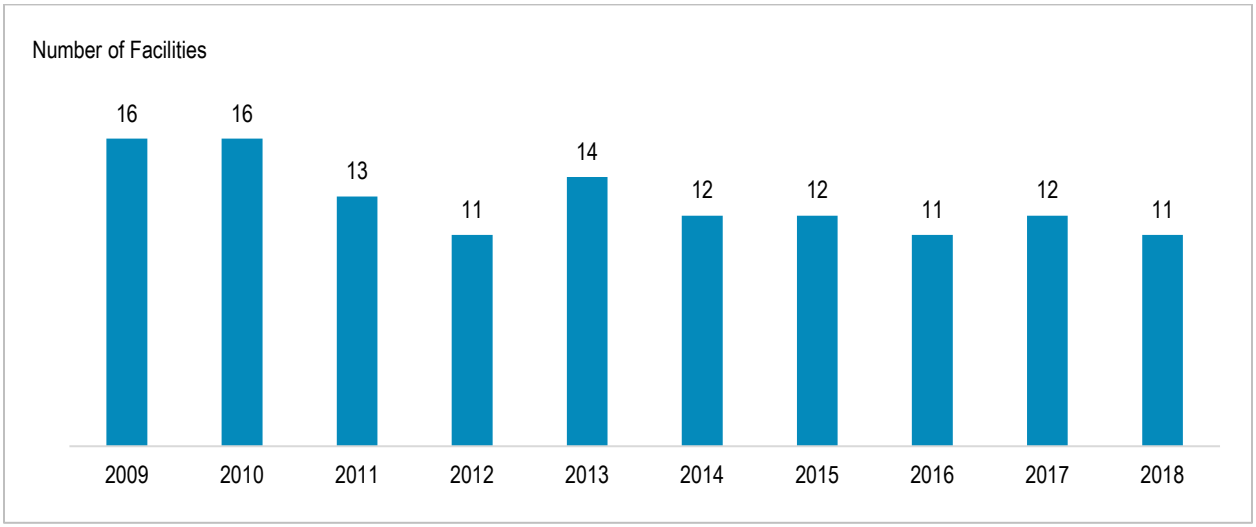


Figure 7-6. Number of Shore based Seafood Processing Facilities in the Kenai Peninsula Borough, 2009–2018

Source: National Marine Fisheries Service (2021b)

Figure 7-7 presents the first wholesale value of seafood products supplied by processors in the KPB from 2008 to 2020. This is the value of the raw fish delivered to the processor (ex-vessel value) plus the value added by the first processor. Over the 13-year period, the KPB's seafood processors generated an average of $171 million annually. On average, salmon accounted for 60 percent of the total annual wholesale value, while halibut and sablefish accounted for 23 percent and 15 percent of the total, respectively. Total wholesale values for all species decreased by 48 percent from 2008 to 2020. The decrease prior to 2020 (pre-Covid) from 2008 to 2019 was only 4 percent. Wholesale values of salmon decreased 38 percent from 2008 to 2020; but from 2008 to 2019, wholesale values increased 40 percent.

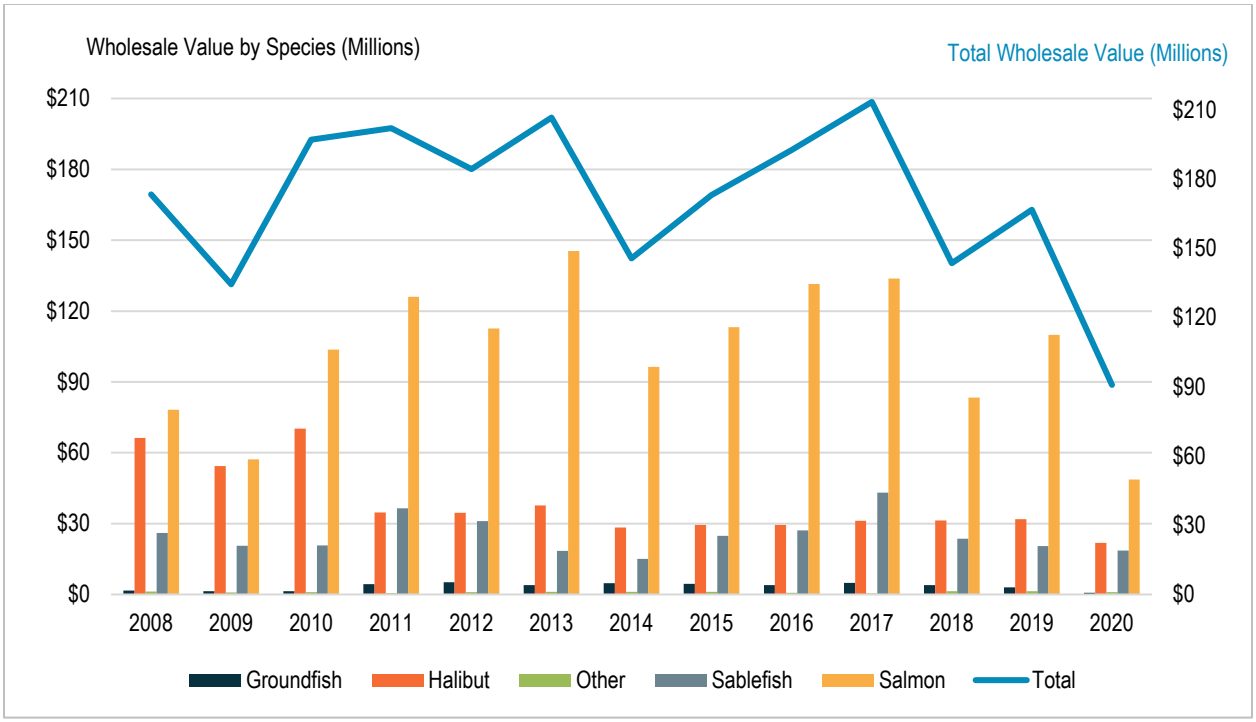


Figure 7-7. Wholesale Value of Products Produced by Seafood Processing Facilities in the Kenai Peninsula Borough by Fishery, 2008–2020

Source: ADF&G (2022e)

Notes: Adjusted to 2020 dollars using the Producer Price Index by Industry: Seafood Product Preparation and Packaging: Prepared Frozen Fish.

In addition to adding significant value to the seafood products derived from Alaska's fisheries, the KPB's seafood processors contribute to the KPB economy by employing workers in the industry. Figure 7-8 shows the annual number of workers employed in the KPB's seafood processors from 2008 to 2020. Typically, processor operators bring on a similar sized workforce each year. That is because the details of the salmon harvest are unknown until it is well underway, and even then, how many boats will deliver each day is uncertain. Processing plants have to prepare for any effort necessary (Wiebold 2020). In 2020, however, seafood processing employment dropped to 70 percent of the previous 12-year average. Just as processors were preparing to hire for the summer salmon season, the state of Alaska issued COVID-19 testing and quarantine mandates that resulted in a sharp increase in costs for the processors.[35] Despite these measures, coronavirus outbreaks in some processing plants still occurred. In July 2020, for example, nearly 100 workers at a seafood processing plant in Seward tested positive for the coronavirus and were taken to Anchorage and put in quarantine (Mazurek 2020). The KPB's seafood processors contribute to

[35] Working with Alaska Department of Health and Social Services, Alaska Department of Fish and Game, and local governments, the KPB's seafood processors developed a plan to keep seafood processing workers as safe as possible. The State and City of Kenai helped fund the development and implementation of the plan using funds provided by the Federal Coronavirus Aid, Relief, and Economic Security Act, but local seafood processors also spent their own money on coronavirus mitigation (Helminiak 2020).

the economy with the wages and salaries they pay their workers. Figure 7-9 shows the total wages paid to resident and non-resident workers in the seafood processing sector; historically about 52 percent of wages in this sector are paid to non-resident workers.

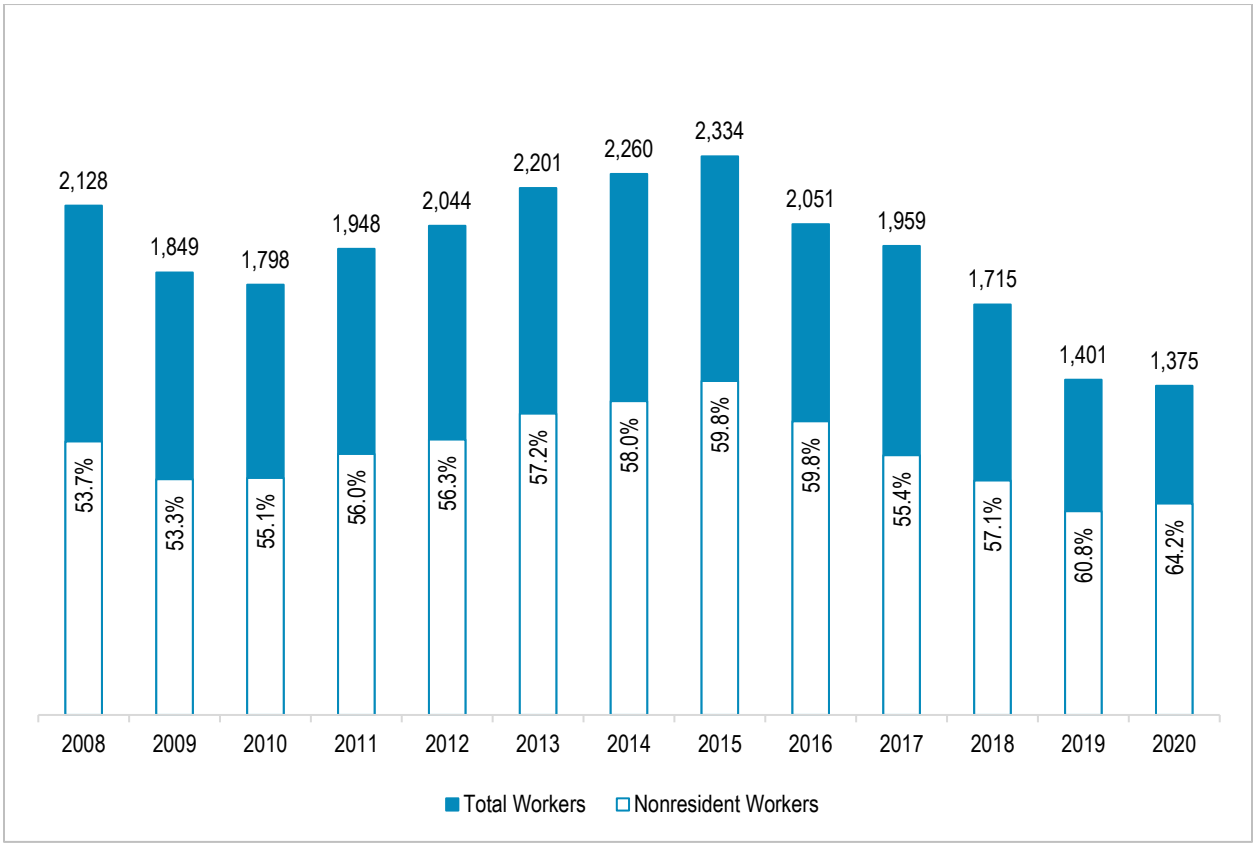


Figure 7-8. Number of Resident and Non-resident Workers in Seafood Processing Facilities in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021j)

Notes: These employment data, which count workers rather than jobs, are based on quarterly information in the ADOLWD's Occupational Database for all Alaska workers covered by unemployment insurance. Counts of workers are not directly comparable to full-time equivalency measures or average monthly counts of fish harvesting jobs. The seafood industry is mostly seasonal, and workers often work only a few months out of the year (ADOLWD 2021i).

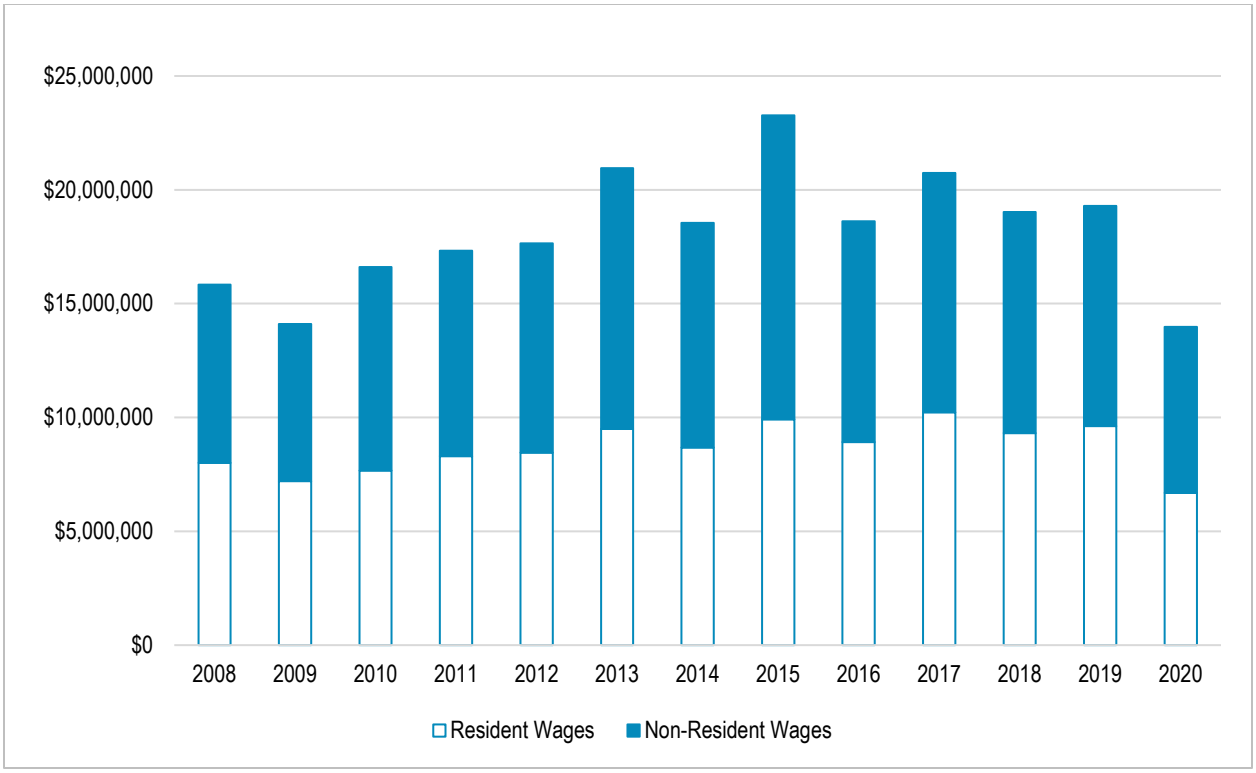


Figure 7-9. Wages of Resident and Non-resident Workers in Seafood Processing Facilities in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021j)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

In general, Alaska's seafood processing industry is well known for the many nonresidents who come to the state in the summer to work the processing lines (Kreiger 2016). One reason for the heavy reliance on nonresident workers to fully staff production jobs in seafood processors is the seasonality of many Alaska fisheries, especially salmon (McDowell Group 2015). Figure 7-8 shows the annual proportion of seafood processing jobs in the KPB held by persons who were not Alaska residents. From 2008 to 2020, an average of 57 percent of the jobs were filled by nonresidents. While this nonresident workforce is large, it is smaller than that of many other major seafood processing regions in Alaska. For example, during the same time period, an average of 88 percent of the workers at Bristol Bay Borough seafood processors were nonresidents (ADOLWD 2021j). Moreover, from 2008 to 2020, an average of 13 percent of workers in the KPB's processors worked in the KPB's seafood processing industry for five consecutive years, as compared to 10 percent of workers in Bristol Bay Borough processors (ADOLWD 2021j). As a result of this job longevity, these individuals are more likely to be employed in management and maintenance positions, and therefore, they earn a disproportionately high share of processing wages (McDowell Group 2017b). While residents accounted for 43 percent of the processing jobs in the KPB from 2008 to 2020, they accounted for 47 percent of the wages (ADOLWD 2021j).

Over the past several years the KPB's seafood processors pursued strategies to further increase their resident workforce. For example, some processors participated in the Alaska Department of Corrections' work release program that offers selected prison inmates the opportunity to work in seafood processing

after their release. Many skills learned in prison are valuable in the seafood processing industry, such as carpentry, welding, refrigeration, heating, and air conditioning (ADOLWD 2018a). In addition, beginning in 2018, some inmates were allowed to complete the last part of their sentences by working at Pacific Star Seafood Cannery's facility in Kenai. Working up to 14-hour shifts, inmates earned minimum wage plus overtime, and they were housed at the processing plant, with the cost of the room and board deducted from their pay (Anonymous 2018).

7.2 Mariculture

Over the past several years the KPB has emerged as one of the centers of Alaska's expanding mariculture industry. Aquatic farms of various sizes operate in the KPB, and while the KPB's mariculture production is dominated by Pacific oysters, Table 7-1 shows that a wide range of shellfish and seaweeds are cultured.[36] Two shellfish hatchery and seed distribution providers are located in the KPB: the Alutiiq Pride Shellfish Hatchery operates on Resurrection Bay in Seward (Alutiiq Pride Shellfish Hatchery 2021); and the Kachemak Shellfish Mariculture Association, a cooperative based in Homer that was formed to market and distribute mussels and oysters, provides seed at its facility in Halibut Cove (Kachemak Shellfish Mariculture 2021). As shown in Table 7-1, the majority of the aquatic farms operating in the KPB are located in and around Kachemak Bay, with a smaller number located near Seward.

[36] Although Pacific oysters are not a native species to Alaska, the cold, plankton-rich coastal waters in certain parts of the State have proven to be an especially good place to grow them. In warm waters the species reach sexual maturation during their second summer of life, causing them to become soft and a milky color. These characteristics make the oysters unmarketable. In Alaska, because cold water retards maturation, high-quality Pacific oysters are available year-round (Alaska Department of Fish and Game 2021c).

Table 7-1. Aquatic Farms Operating in the Kenai Peninsula Borough, 2021

Name of Company	Location of Operation	Organisms Cultured
Sunset Cove Oyster Farm	Jakolof Bay	Blue Mussel, Bull Kelp, Pacific Oyster, Ribbon Kelp, Sugar Kelp
Jakolof Bay Oyster Company	Jakolof Bay	Blue Mussel, Bull Kelp, Green Sea Urchin, Pacific Oyster, Pink Scallop, Purple-Hinged Rock Scallop, Red Ribbon-Dulse, Red Sea Urchin, Ribbon Kelp, Spiny Scallop, Split Kelp, Sugar Kelp, Three Ribbed Kelp, Weathervane Scallop
Clam Gulch Seafoods LLC	Jakolof Bay	Blue Mussel, Bull Kelp, Pacific Oyster, Red Ribbon-Dulse, Ribbon Kelp, Sugar Kelp, Three Ribbed Kelp
Oyster Cove Seafarms	Jakolof Bay	Blue Mussel, Pacific Oyster, Pink Scallop
Seims Sea Farms	Peterson Bay	Blue Mussel, Pacific Oyster, Red Ribbon-Dulse, Ribbon kelp, Sea Lettuce, Sugar Kelp
Otter Rock Oyster Company	Peterson Bay	Blue Mussel, Pacific Oyster
Moss Island Oyster Farm	Peterson Bay	Blue Mussel, Kumamoto Oyster, Pacific Oyster
Kachemak Shellfish Mariculture Association	Halibut Cove	Pacific Oyster
K-Bay Oyster Company	Halibut Cove	Pacific Oyster
Alaska Shellfish Farms LLC	Halibut Cove	Blue Mussel, Bull Kelp, Five Ribbed Kelp, Green Sea Urchin, Pacific Oyster, Red Ribbon-Dulse, Ribbon Kelp, Split Kelp, Sugar Kelp, Three Ribbed Kelp
Kachemak Shellfish Mariculture Association	Halibut Cove	Pacific Oyster
Snug Harbor Seafoods Inc	Halibut Cove	Blue Mussel, Pacific Oyster, Ribbon Kelp, Sugar Kelp
Sea Farms of Alaska	Halibut Cove	Pacific Oyster
Kachemak Shellfish Mariculture Association	Homer Spit	Pacific Oyster
Early Tide Seafarms	Bear Cove	Pacific Oyster
Old Gregg Oyster Co.	Bear Cove	Blue Mussel, Pacific Oyster
Fisherman Fresh Hatchery	Seward	Bull Kelp, Giant Kelp, Nori, Red Ribbon-Dulse, Ribbon Kelp, Sugar Kelp
Alutiiq Pride Shellfish Hatchery	Seward	Blue King Crab, Blue Mussel, Bull Kelp, Butter Clam, Cockle, Geoduck, Giant Kelp, Littleneck Clam, Pacific Oyster, Pacific Razor Clam, Purple-Hinged Rock Scallop, Red King Crab, Red Sea Cucumber, Ribbon Kelp, Sugar Kelp

Source: ADF&G (2021d)

The annual revenue of mariculture operations in the KPB from 2008 to 2020 is shown in Figure 7-10. Start-up costs, financing constraints, long product grow-out times, logistical challenges in remote locations, and regulatory factors can result in expenses that challenge the profitability of many mariculture operations in the state (McDowell Group 2017c). Currently, many operations are earning insufficient income to fully support the households engaged in farming (ADF&G 2021c). Despite these

economic challenges, mariculture operations in the KPB accounted for an annual average of 37 percent of the total mariculture revenue in Alaska, with a high of 45 percent in 2018. However, after a number of years of relatively high revenue, the local mariculture industry experienced a sharp economic downturn in 2020 as a result of the COVID-19 pandemic. While aquatic farms were allowed to continue operations amid the pandemic with health safety precautions, closures in restaurants and tourism-related businesses around the country reduced the demand for seafood (Good 2020).

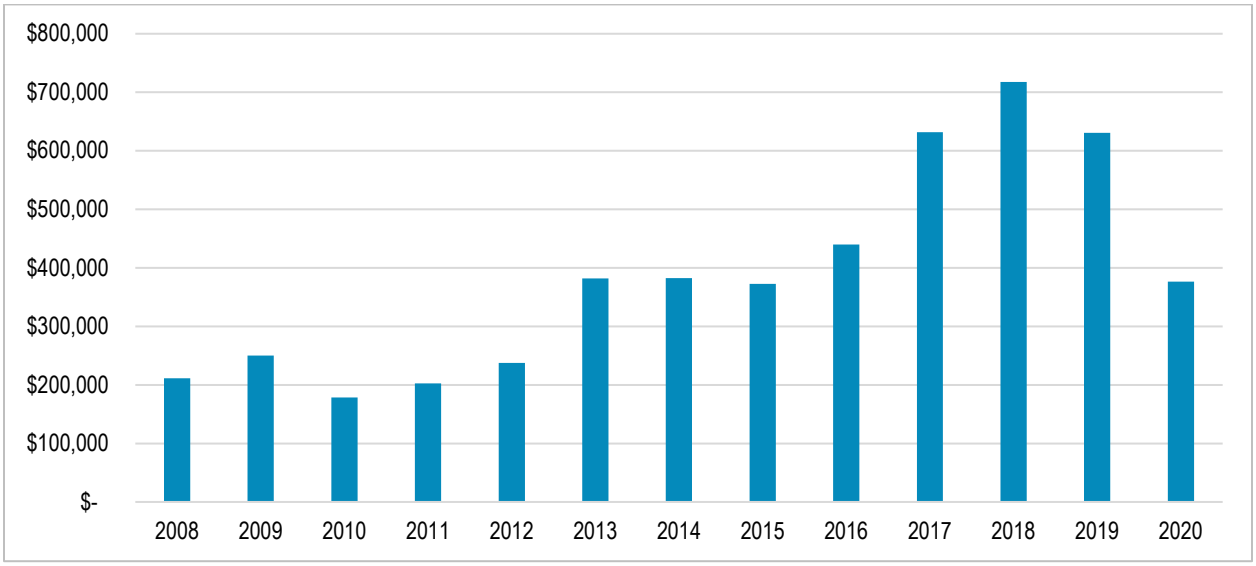


Figure 7-10. Revenue of Aquatic Farms in the Kenai Peninsula Borough, 2008–2020

Source: Pryor (2021)

Notes: Adjusted to 2020 dollars using the Producer Price Index by Industry: Seafood Product Preparation and Packaging: Prepared Frozen Fish.

Employment data for the KPB's mariculture industry are unavailable, but the number of full-time workers in the industry is likely small. In 2015, aquatic farm employment state-wide included a total of 138 positions. About one-third of the positions were self-employed permit holders and owners, with paid and volunteer labor, including family members, making up the remaining two-thirds of the workforce (McDowell Group 2017c). Hatchery operations generally employ full-time and/or seasonal employees. Farmers and hatchery operators identify workforce needs as an ongoing challenge. Impediments to meeting workforce needs include remote farm locations, short seasons, physically demanding and repetitive work, outdoor work in inclement weather, and relatively low wages (Alaska Mariculture Task Force 2021).

7.2.1 Salmon Hatcheries

Finfish farming is prohibited by law in Alaska waters. Since the early 1970s, however, salmon have been raised in hatcheries from eggs to fry or smolt and then released into the wild to enhance catches in Alaska salmon fisheries (Wilson 2021). Most salmon hatcheries are located in southeast Alaska, but three are located in the KPB: Trail Lakes Hatchery in Moose Pass: Tutka Bay Lagoon Hatchery in Kachemak Bay; and Port Graham Hatchery in the community of Port Graham.

Cook Inlet hatchery-derived salmon account for only around two percent of the average annual value of the statewide commercial salmon harvest (McDowell Group 2018), but in lower Cook Inlet they played a major role in catches in commercial, sport, personal use, and subsistence salmon fisheries (ADF&G 2021a). In addition, the economic impact of hatcheries includes their own employment and wages. Hatcheries maintain a group of year-round employees, supplemented by seasonal workers as necessary (McDowell Group 2018).

8 Trends in the Government Sector

The government sector in the KPB is a top employer, pays high wages, and brings stability to the otherwise cyclical and seasonal employment patterns in the economy since government jobs are primarily year-round jobs with good benefits.

The government owns over 87 percent of lands within the KPB. Federal and state workers employed by agencies that manage the public lands and resources are part of the public sector employment in the region. The local government employs public school teachers, healthcare workers at the public hospitals, public enforcement officers, city and borough government staff, and people who work for the tribal entities. This entire group make up two-thirds of government sector employment. The Kenai-Soldotna area is the KPB's primary administrative center. The headquarters of the Borough government and school district are located in the area, together with many of the major Federal and state offices (Fried and Windisch-Cole 2004).

The region has several layers of local government. The borough government and city governments have varying powers and responsibilities, and there are also several tribal governments that operate in the region. Tribal governments offer a wide variety of services to their tribal members and residents of the villages including health care, social services, housing, utilities, educational assistance, employment, environmental safeguards, and judicial services. These services may be delivered directly through the tribal government or through non-profit Native owned and operated organizations.

The following sections describe the trends in employment and wages in the government sector, and present historical fiscal data for the Borough government and each of the municipalities in the KPB. The fiscal data presented shows the trends in revenues and expenditures over the study period, as well as the municipalities' major sources and uses of funds.

8.1 Overview of Government Sector

The government sector accounts for 25 percent of the total employment in the region, directly supporting 4,884 workers (average from 2008 and 2020); and contributes 29 percent of the total wages in the KPB. The local government dominates the government sector in terms of employment and total wages. Federal government workers however earn the highest wages in the sector.

As shown in Figure 8-1, the local government employs two thirds of the public sector workforce and generates the majority of the total public sector wages. Total wages in the local government sector averaged $178 million (2020$) per year from 2008 to 2020 compared to $73 million and $32 million in state and local government wages. Local government jobs pay less on average compared to state and Federal jobs but higher than the average wage for all industries. Also, not captured in the wage data, is a significant portion of government compensation in the form of benefit packages (Bell 2015). The local government sector in the KPB includes the KPB government, city governments, and tribal governments. Six communities in the borough are incorporated cities: Homer, Kachemak City, Kenai, Seldovia, Seward, and Soldotna.

At the Federal level, the Federal Aviation Administration, the Bureau of Land Management, U.S. Fish and Wildlife Service, and the National Park Service have local presence. At the state level some of the

large employers are the Department of Corrections, the Departments of Fish and Game, Department of Health and Social Services, and the Department of Transportation.

The Federal and state governments own 65 percent and 21 percent of the land in the region; while the local governments (including the six incorporated cities) only own 1 percent of the land; the rest are owned by other private entities including the Alaska native Corporations.

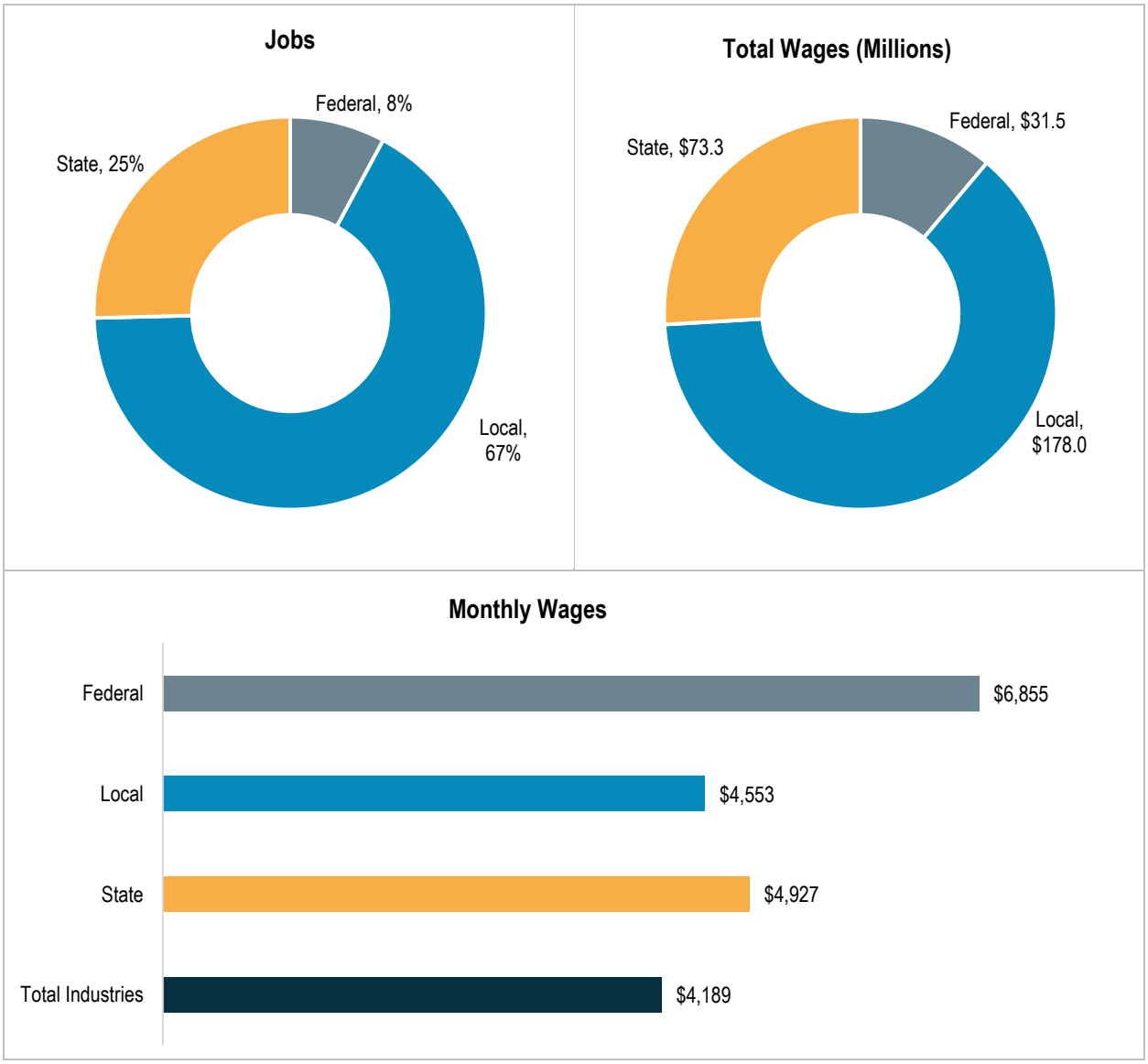


Figure 8-1. Local, State, and Federal Government Employment, Total Wages, and Average Monthly Salary in the Kenai Peninsula Borough, Average from 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

8.2 Trends in Government Sector Employment and Wages

Figure 8-2 shows the historical trends in local, state, and Federal government employment and wages in the KPB. The number of jobs in all three segments of the government was fairly stable from 2008 to 2020, although all three segments had a declining trend. The number of local government jobs declined 13 percent from 2008 to 2020, and Federal and state government jobs declined by only 2 percent and 3 percent, respectively.

The trends in total wages however were different, with state government and local government wages increasing between 2008 and 2020 by 10 percent and 5 percent, respectively; total wages in Federal government decreased 2 percent over the same time period.

In 2020, the number of workers in both the local government and state government sectors dropped from the previous year's levels. As suggested by Rosewicz and Maciag (2020), state and local governments issued hiring freezes, furloughed staff, or laid off seasonal employees in the face of substantial projected budget shortfalls due to the pandemic, although the Borough received a significant amount of CARES grant funding that increased revenues in FY2021 (see section 8.3.1). Moreover, school districts made significant cuts to noninstructional hourly staff, such as bus drivers and maintenance workers. Employment in Federal government in the KPB however was not negatively impacted by the pandemic; in 2020 the number of Federal government jobs increased by 396 jobs.

Figure 8-2. Government Sector Employment and Wages in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

8.3 Municipal Governments

The region has a borough government and six incorporated cities. An organized borough exercises its powers on a regional basis and may provide services on three levels: areawide (throughout the borough), non-areawide (that part of the borough outside of cities), and service areas (size and make up vary). A city government exercises its powers within its established boundary (normally encompassing a single community). Under the state's constitution, a city is also part of the borough in which it is located. Cities and boroughs are divided into classes with varying powers and responsibilities. In a city, the governing body is the city council, and in a borough, the governing body is the borough assembly.

The following sections describe the trends in revenues and expenditures of the KPB's municipal governments over the study period, their major sources of funds and the services they provide to the region and the communities.

8.3.1 KPB Government

The KPB was incorporated in 1964 as a second-class borough. The boundaries of the KPB encompass 24,750 square miles, of which 16,000 square miles are land and fresh water. The Borough government is based in Soldotna. The KPB is governed by a nine-member assembly and administrative functions are carried out by staff, who are overseen by an elected mayor.

The Borough collects sales and property taxes and provides services such as road maintenance, waste collection facilities, emergency services and major funding for public schools. Some services are provided boroughwide and others through localized authority known as a service area. A service area has distinct geographic boundaries, and revenue is generated locally through a property tax assessment within that service area (Agnew::Beck Consulting 2019).

The Borough's historical total annual revenues and expenditures from fiscal years 2008 to 2021 are shown in Figure 8-3. Total Borough revenues grew from $112 million in FY2008 to $145 million in FY2021 (34 percent change); while total expenditures grew from $110 million to $145 million (32 percent increase) over the same time frame. Total revenues grew at an annual rate of 2 percent and total expenditures grew at an annual rate of 1 percent.

The increase in revenues (and expenditures) in FY2021 was primarily related to the pandemic relief grants. CARES grants received in FY2021 funded health and safety focused infrastructure improvements, additional education funding, and support for local businesses and organizations (KPB 2021). Sales Tax revenues also saw an increase of roughly 9 percent from FY2020 to FY2021; realized from positive recovery in the retail trades, restaurants and utilities; as well as an increase in remote sales tax collections. Investment earnings saw a decrease of over 25 percent due to a continued decline in interest rates (KPB 2021b).

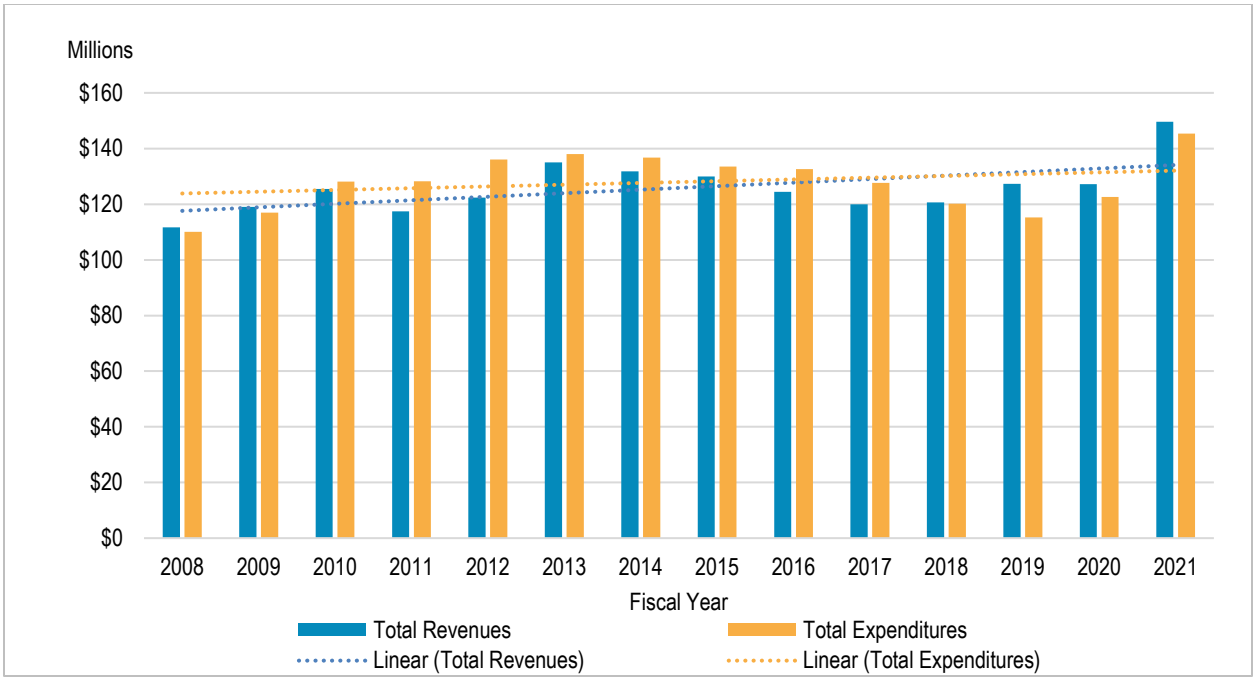


Figure 8-3. Kenai Peninsula Borough Revenues and Expenditures, FY 2008 to FY 2021

Source: KPB (2012, 2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

The KPB government's operations are primarily funded through taxation; property taxes and sales taxes account for 75 percent of the total Borough revenues. Other revenue sources include intergovernmental transfers, primarily from the State of Alaska for direct funding of local education programs, other revenues from enterprise funds, and investment earnings (Figure 8-4).

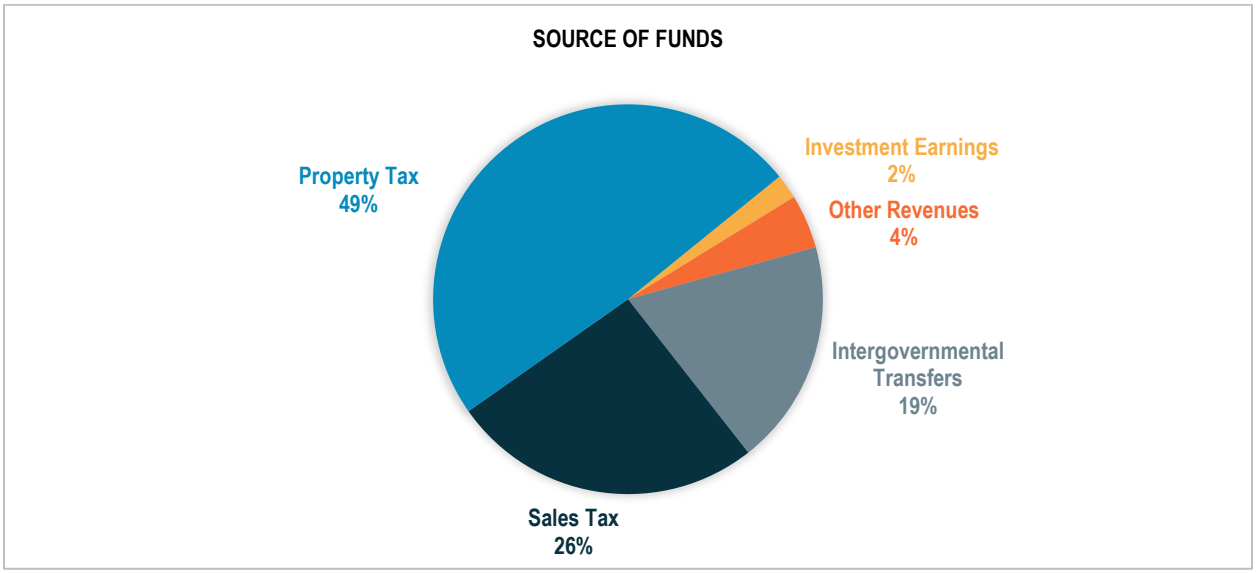


Figure 8-4. Kenai Peninsula Borough Major Revenues Sources, Average FY2008 to FY2021

Source: KPB (2012, 2021)

Figure 8-5 shows tax revenues collected by the KPB government from FY2008 to FY2019. The largest revenue growth has come from sales tax, which doubled from 2008 to 2020. The increase was due, in part, to the growth of the KPB's visitor industry. It is estimated that visitor spending is responsible for about one quarter of the collected sales tax (Agnew::Beck Consulting 2019). Taxable sales decreased in FY2020 as a result of the COVID-19 pandemic, but sales tax revenue remained constant due to an increase in prior year delinquency collections (Kenai Peninsula Borough 2021). The proceeds of the sales tax are dedicated exclusively to supporting the operations of the Kenai Peninsula Borough School District (Kenai Peninsula Borough 2021). K-12 education is the largest KPB government expenditure, accounting for over 40 percent of the government's budget (Agnew::Beck Consulting 2019).[37]

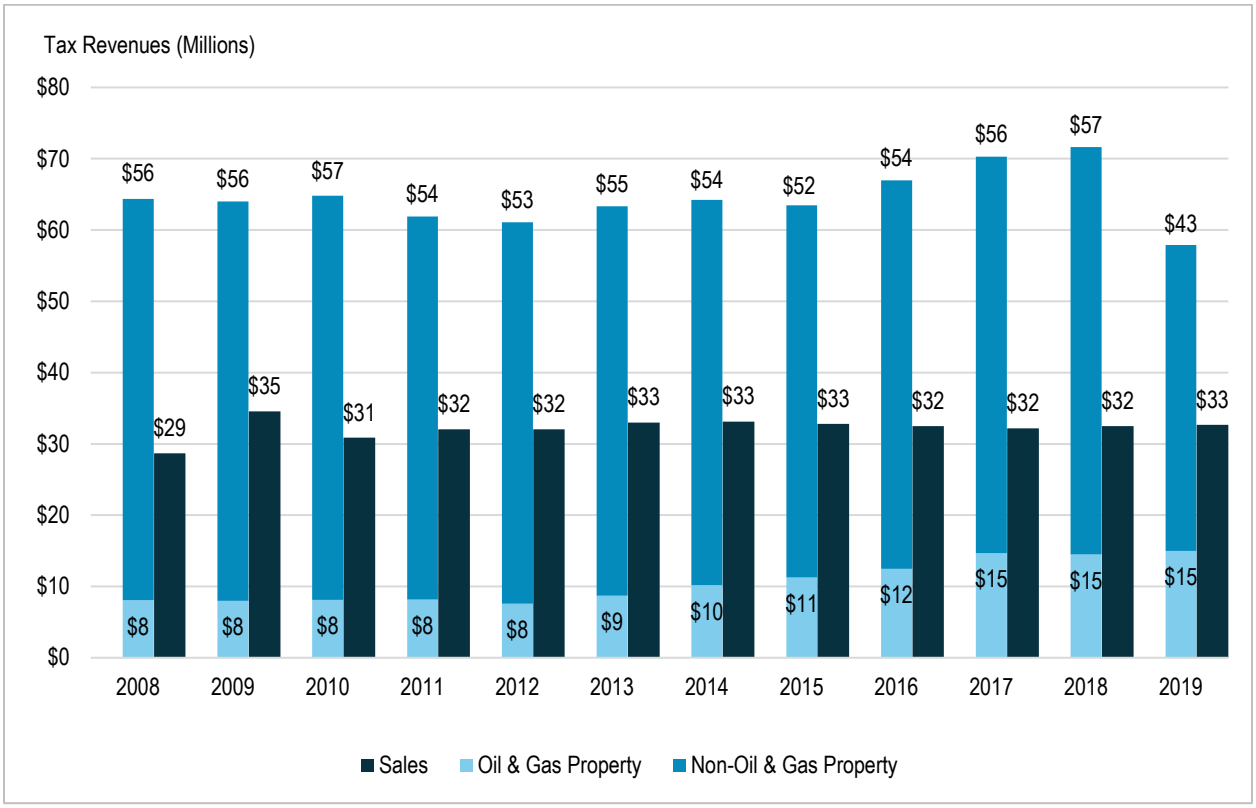


Figure 8-5 Tax Revenue of the Kenai Peninsula Borough Government by Source, 2008–2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

As shown in Figure 8-5, non-oil and gas property taxes collected by the KPB government showed a slight decline in 2019. The increase in the KPB's senior population led to growing property tax exemptions under state and KPB government statutes. The number of applications for senior citizen and disabled veteran property tax exemptions more than doubled from 2008 to 2019, reaching 5,886 applicants. In

[37] The KPB government has also funded a variety of programs and positions in Kenai Peninsula College since 1991, when borough voters approved that up to 1/10th mill of property taxes could be directed to the college. To date, KPC received $12,714,226 from the KPB government (Kenai Peninsula College 2021)

2019, the value of tax exemptions for senior citizens and disabled veterans totaled $7.7 million, with about $881 million of assessed property value exempted (ADCCED 2021b). Additional information on the KPB property tax exemptions specific to older residents is described in Section 2.2.2.

Municipalities in Alaska with oil and gas property in their jurisdiction may levy a tax on the annual ADOR assessment of the oil and gas property if all other property in their jurisdiction is taxed at the same rate.[38] Taxes paid to a municipality on oil and gas property assessments are credited against the tax due to the state on the same oil and gas property (Alaska Gasline Development Corporation 2017). From 2008 to 2020, tax revenue from oil and gas properties in the KPB varied but has shown an increasing trend in more recent years (Figure 8-5). As detailed in Appendix A, prior to 2012, Cook Inlet oil and gas production was in decline, which, in turn, led to a decrease in the oil and gas property tax revenues collected by the KPB government. However, production began to grow as smaller independent oil and gas companies began operating in Cook Inlet and increased exploration. With the increase production and an influx of new oil and gas infrastructure in Cook Inlet, oil and gas property tax revenue rose sharply in the KPB from just under $6.7 million in 2008, or 13 percent of the total property tax, to $14.8 million in 2019, or 26 percent of all property taxes (ADCCED 2021a). In 2020, nine of the top ten property taxpayers in the KPB were companies involved in the oil and gas industry (Kenai Peninsula Borough 2021a).

In addition to the major revenue sources of the KPB government discussed above, a number of other sources should be mentioned because they highlight aspects of the KPB's economy. Section 6 describes the importance of the recreation and tourism industry to the KPB's economy. Since the state's Commercial Passenger Vessel excise tax was enacted in 2007, the KPB government received a portion of the revenue, generated from cruise ship dockings in Seward and Homer. Currently, the tax is $34.50 per passenger per voyage, of which local governments receive $5 for vessels docking in their communities. The city governments of Seward and Homer receive half, or $2.50 of the per-head tax, with the KPB government receiving the other half. However, the KPB government redistributes its share to the two cities as grants for port-related capital improvement projects (Agnew::Beck Consulting 2019). The KPB government's share of the cruise passenger vessel excise tax in FY2020 was $612,640, compared to $367,430 in FY2008 (ADOR 2008, 2020). Section provides more detail on trends in the Commercial Passenger Vessel tax revenue collected by KPB municipalities.

Section 7.1.2 describes the importance of the seafood processing sector to the KPB's economy. Under Alaska's fisheries business tax, each seafood processor pays to the state government a tax based upon a percentage of the ex-vessel value of all fish processed in the facility. For processing activity within a municipality, the state government shares half of the tax collected with the incorporated city or borough in which the processing took place. If an incorporated city is within an organized borough, the state government divides the shareable amount equally between the incorporated city and the organized borough. The KPB government's share of the fisheries business tax varies substantially from year to year

[38] As discussed in Section 5, the oil and gas industry accounts for a large amount of overall gross sales activity in the KPB. However, most of these are raw oil and gas sales to refineries and utilities, which are later resold. Since the good is resold, these raw oil and gas sales are not subject to the borough's sales tax (Kenai Peninsula Economic Development District 2018).

due to fluctuations in seafood landings and prices. In FY2020, the amount received by the KPB government was $530,894 (ADOR 2020).

Figure 8-6 shows how the Borough allocates its revenues among the different major expenditure categories. Funding the schools is the highest use of the Borough's funds, accounting for 43 percent of total expenditures. The Borough also provides a range of services, including fire and emergency medical services, recreational programs and activities, road maintenance, permitting, and solid waste program. Aside from funding services, the Borough also spends 9 percent of its revenues on capital projects and 4 percent for debt service payments.

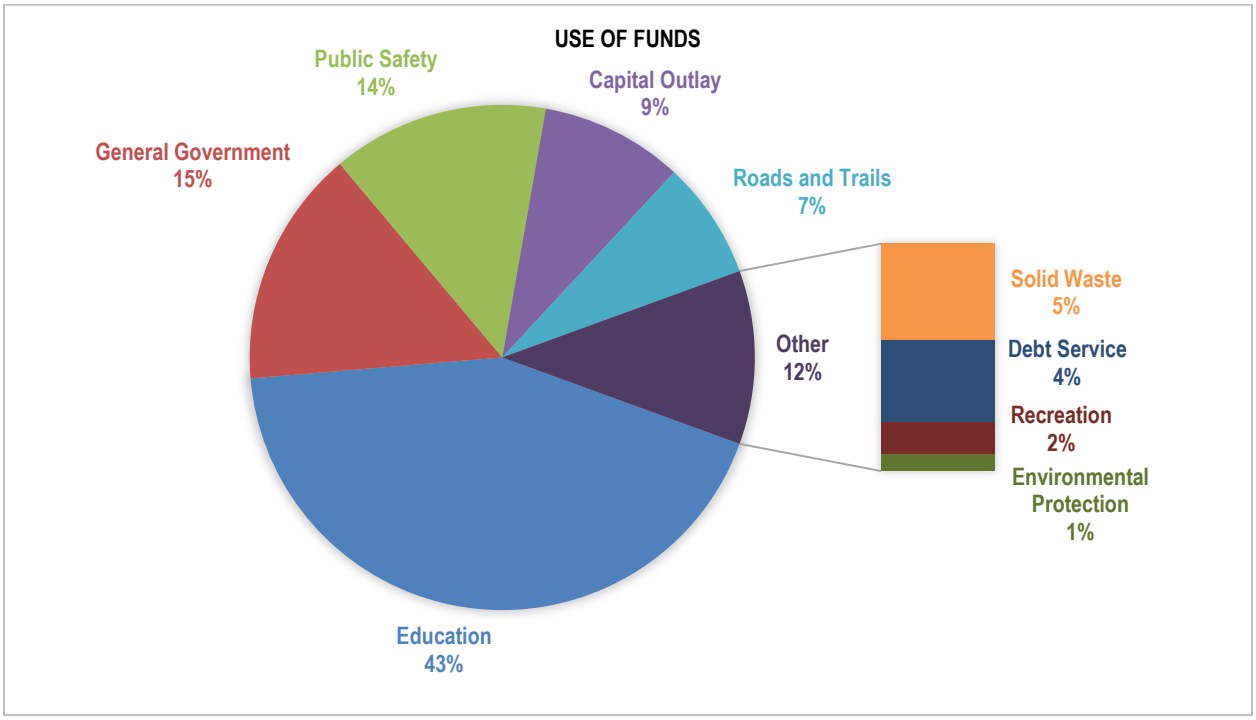


Figure 8-6. Kenai Peninsula Borough Major Expenditure Categories, Average FY2008 to FY2021
Source: KPB (2012, 2021)

Among the Borough's responsibilities include maintaining 645 miles of road within a road service area, overseeing the school district and its 43 schools on an areawide basis, overseeing operations of two hospital service areas, and operating other facilities including fire stations within fire service areas, landfills and solid waste transfer facilities. Borough staff also carry out many other functions including emergency management, managing Borough-owned lands and facilities, processing platting and other land use applications, review of permit applications and administration of ordinances, property assessment and tax collection, financial management, administering contracts and formal areawide operating agreements with other agencies, and general administrative functions.

8.3.2 City Governments

8.3.2.1 City of Homer

The City of Homer was established as a first-class municipality in March 1964 with a city manager/city council form of government.

The City area encompasses 15 square miles of land and 10 square miles of water. Homer is the service hub for outlying residential areas and smaller communities of the southern Kenai Peninsula.

View of Homer Spit in Homer, Alaska: "Where the land ends and the sea begins"

The City currently employs 100 full-time equivalent employees and provides a wide range of services for the residents of Homer and the surrounding areas. In addition to public safety, public utilities and general governmental duties, the City operates a Port and Harbor facility, an airport terminal, public library, recreational program, and it manages a system of trails, parks and campgrounds. The local hospital and area schools are operated by the Kenai Peninsula Borough; the airport is operated by the State of Alaska.

The City's total revenues and expenditures declined since the 2008 levels (Figure 8-7). The City's revenues are driven by sales taxes, property taxes, state revenues, interest earnings, Federal revenue, and other sources. Figure 8-8 presents the trends in tax revenues in particular. Interestingly, the impacts of the decline in tourism activities during the financial crisis were more pronounced in FY 2010, sales tax revenues were highest in 2009. Property tax revenues on the other hand, have been more stable. The City's governmental funds were higher at the end of 2020 than the previous year primarily due to CARES Act funding that covered payroll costs and a decrease in capital spending. The City's total operating budget (general fund) in 2020 was approximately $12 million.

Figure 8-9 shows the City's major sources and uses of funds. Public safety (20 percent), general government (16 percent), and capital projects (15 percent) account for half of the City's annual spending. The other half goes to debt service, public works, water, sewer, and other services.

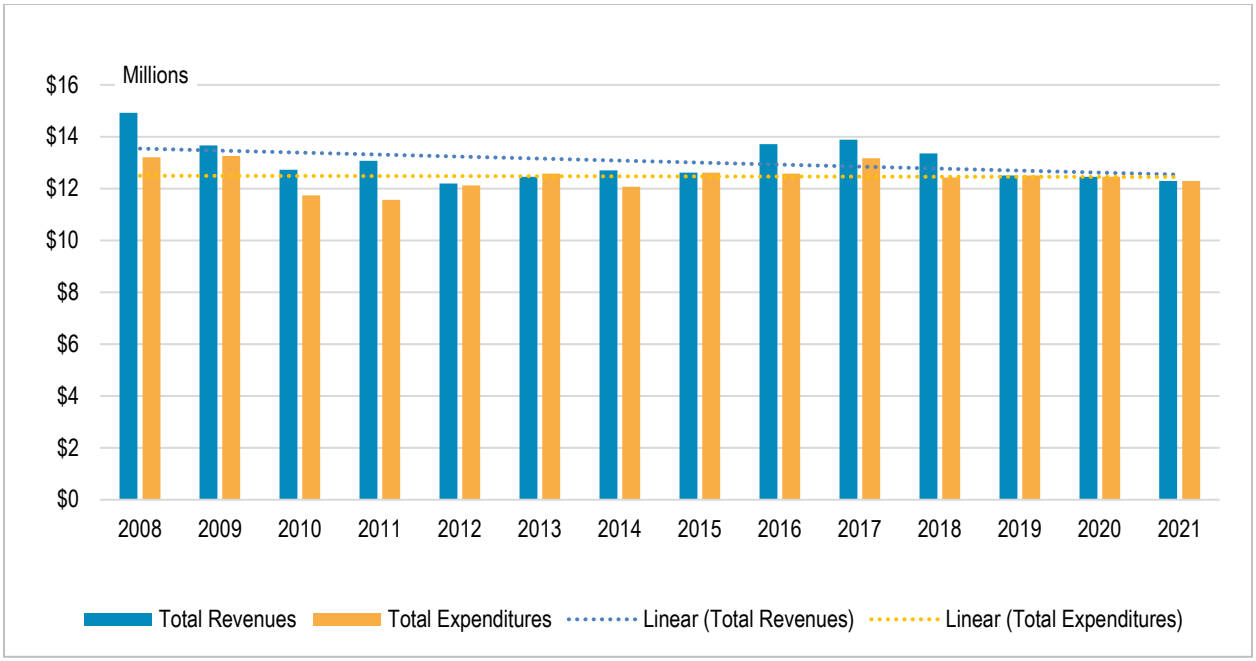


Figure 8-7. City of Homer Revenues and Expenditures, FY 2008 to FY 2021

Source: ADCCED (2022a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

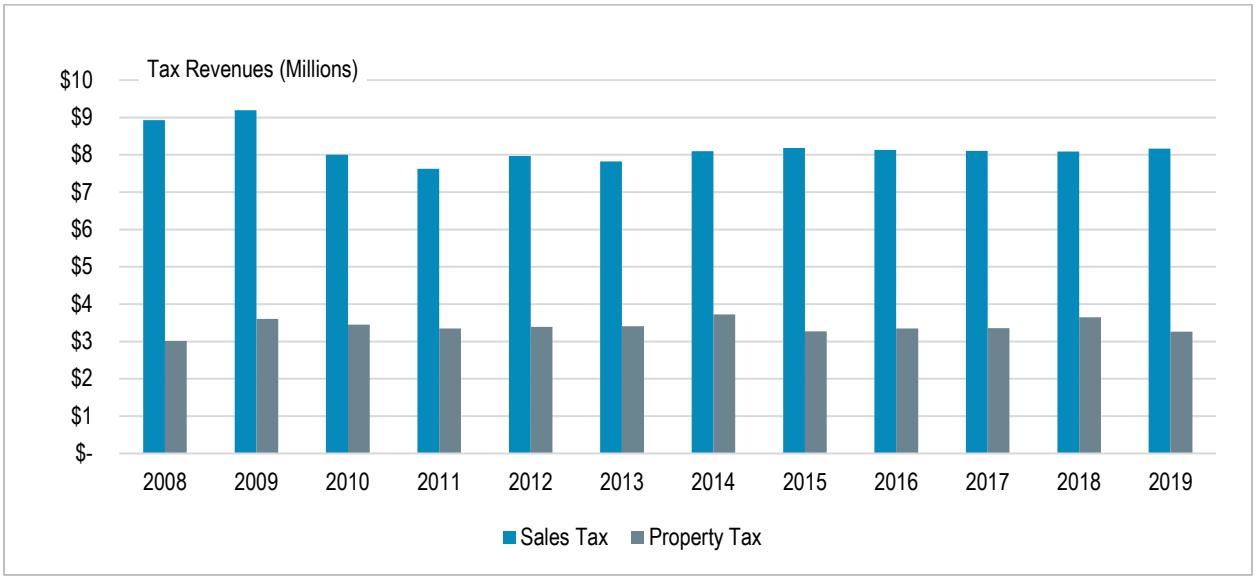


Figure 8-8. City of Homer Tax Revenues, FY 2008 to FY 2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

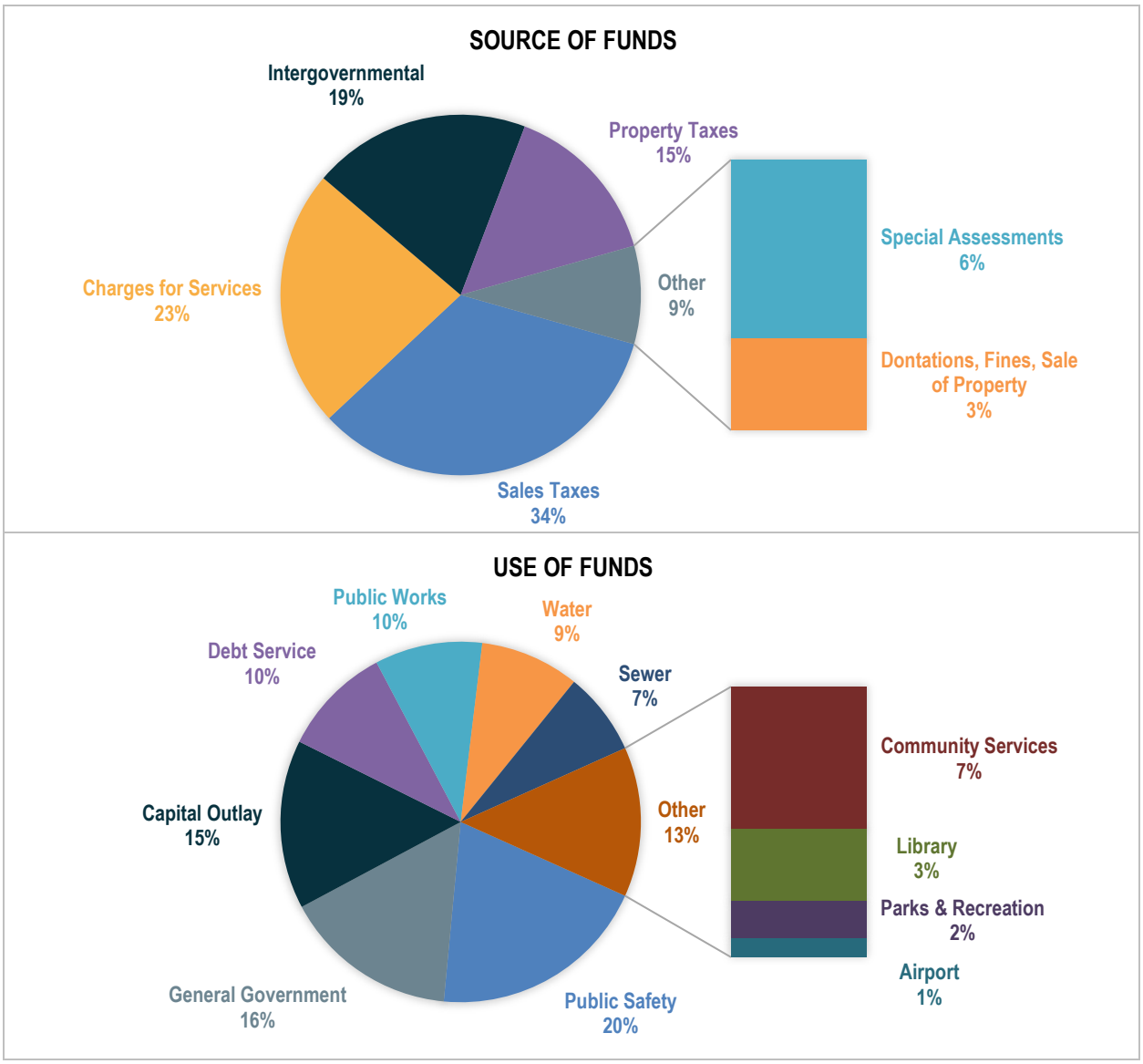


Figure 8-9. City of Homer Major Sources and Uses of Funds, Average FY2008 to FY2021

Source: ADCCED (2022a)

8.3.2.2 City of Kenai

Kenai incorporated as a home rule city in 1960 and became part of the KPB when the Borough incorporated in 1964. The City has a council-manager form of government (City of Kenai 2016).

Aerial View of the City of Kenai

The City of Kenai occupies a geographic area of approximately 45 square miles. The City provides a variety of services to its residents, including road construction and maintenance, port and harbor facilities, police and fire protection, emergency medical services, water and sewer utilities, airport, parks and recreation, library, senior services, and animal control.

The City's operating budget (spending) grew from $13.6 million in FY 2008 to about $16 million in FY 2021 (Figure 8-10). Revenues also grew slightly over this time period, but the highest total revenues were received in FY 2015, primarily due to an increase in funds from the State of Alaska.

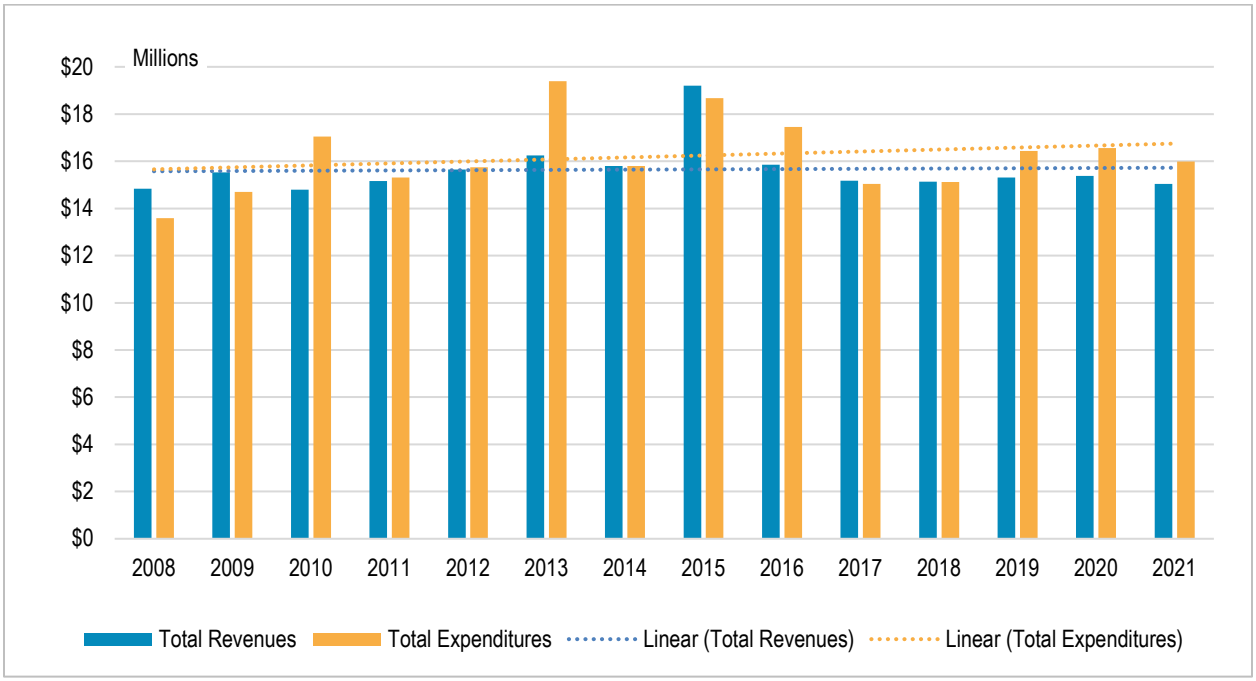


Figure 8-10. City of Kenai Revenues and Expenditures, FY 2008 to FY 2021

Source: ADCCED (2022a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Tax revenues support the City's General Fund operations exclusively. The City levies a consumers' sales tax of three percent on all retail sales, rents, and services made or rendered within the City limits measured by the gross sales price of the seller. With the exception of a seasonal tax exemption on non-prepared food, the City adopts the code of the KPB for the taxation and collection of sales tax. In addition to the City's sales tax levy, the KPB levies an additional three percent sales tax. Collection of sales taxes is provided by the KPB. Sales tax is the largest revenue source for the City, with the retail sales businesses generating the largest share of sales tax revenue (Figure 8-11). Sales taxes contribute 46 percent of the City's total revenues while property taxes account for 23 percent (Figure 8-12).

Kenai also receives a local share of the oil and gas property assessed by the State of Alaska (AS 43.56). The revenue from this tax increased in recent years. From 2008 to 2013, oil and gas companies annually paid an average of $102,450 in oil and gas property taxes to the City, but since 2013, the annual tax payments have more than doubled, averaging $249,300. This revenue stream peaked in 2016 and has been declining since then. The assessed values of oil and gas production and office facilities, transmission pipelines, and drilling rigs and the assets of oilfield service companies declined. The City closely monitors assessed values resulting from drilling rigs and oilfield service company assets as it is transient in nature and could be absent from the property rolls in future years.

Public safety is the highest use of the City's funds; accounting for 45 percent of the total expenditures. The rest of the funds are spent on general government functions, public works, parks and recreation, and other non-operating expenses (Figure 8-12).

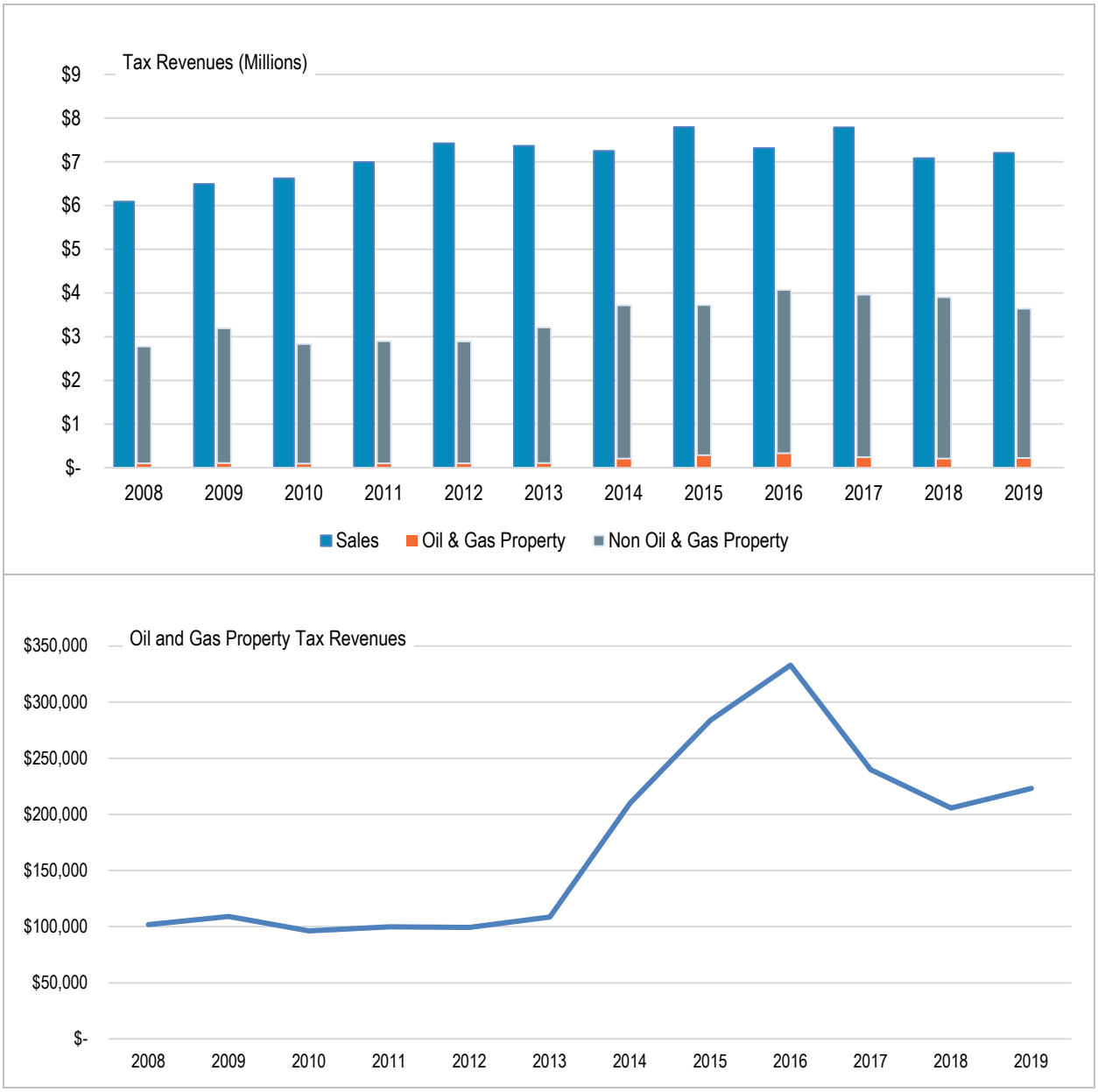


Figure 8-11. City of Kenai Tax Revenues, FY 2008 to FY 2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

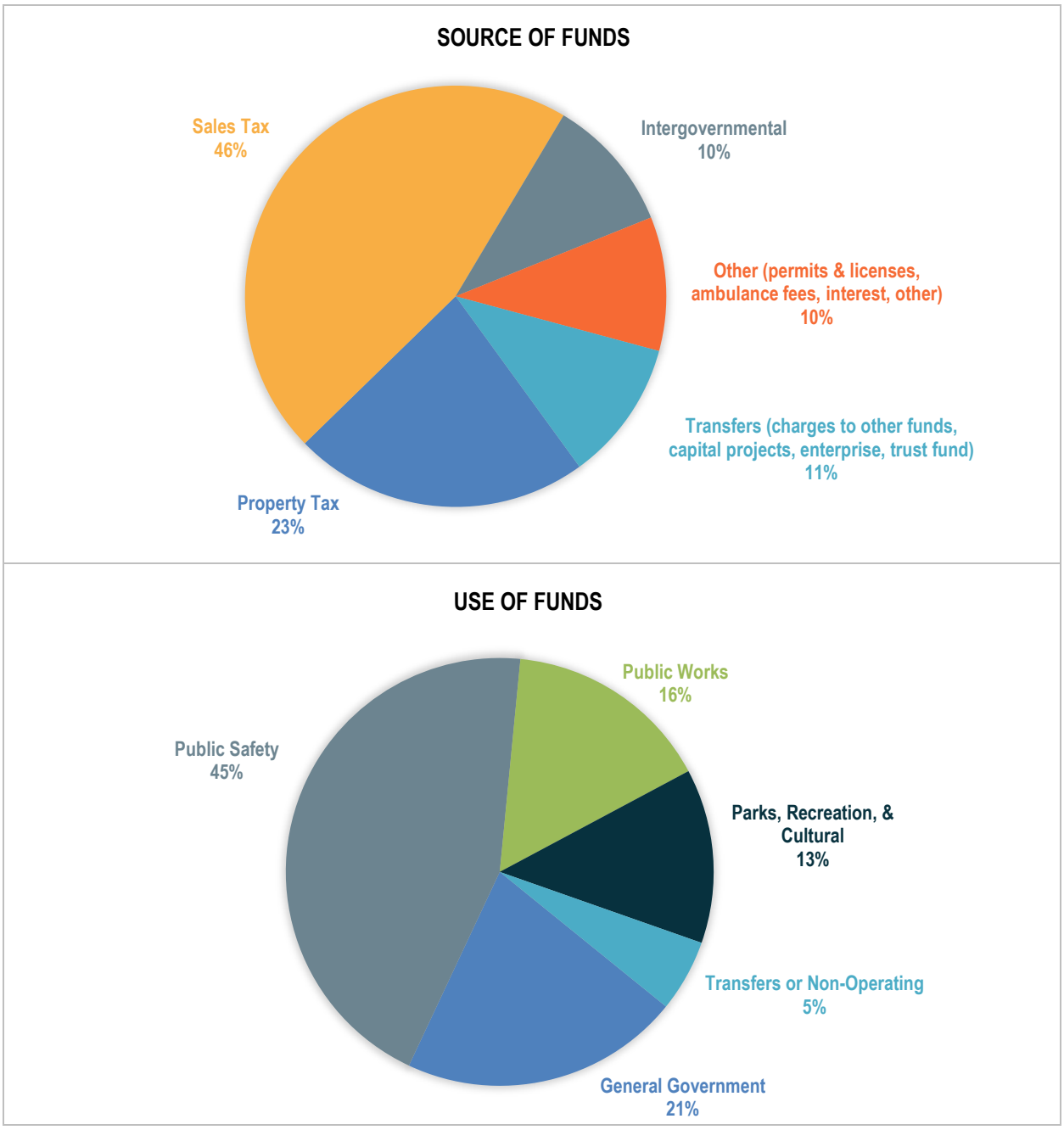


Figure 8-12. City of Kenai Major Sources and Uses of Funds, Average FY2008 to FY2021

Source: ADCCED (2022a)

8.3.2.3 City of Seward

Seward, founded in 1903 as the ocean terminus of the railway to Interior Alaska, was incorporated as a city in 1912. Seward is a home-rule city with a police department, fire department, library, hospital, boat harbor, youth center, and an electric utility. Other departments include community development, engineering and building, parks and recreation, and water/wastewater. There are approximately 88 year-round employees working for the city government An elected seven-member council directs the city manager (City of Seward 2022).

Seward Boat Harbor

The City's total revenues and expenditures are shown in Figure 8-13. The City's budget fluctuated over the years, but the change between FY 2008 and FY2020 has been minor, staying at over $12 million (2020$). Principal revenue sources include sales tax, property tax, intergovernmental revenues, charges for services, and payments-in-lieu-of-taxes from the City's enterprise funds (Figure 8-14 and Figure 8-15). Taxes include a four percent sales tax, a four percent bed tax, and a property tax of 3.12 mils. Most of Seward's sales tax is generated during the summer (June-August) with the influx of summer visitors. The City's top property taxpayers have become more diverse over the past few years. The top taxpayers represent various industries including tourism, seafood processing, grocery, hotel/motel, communications, petroleum products, and marine businesses. Most of these entities are visitor-related and drive the City's tourism industry (City of Seward 2021). The revenue from Seward's hotel/motel room tax has been on an increasing trend.

General Fund expenditures are primarily for the operations of basic municipal services such as police and fire protection, public works, recreation, library, planning, legal, and administrative services. The highest use of funds is public safety, accounting for 31 percent of the expenditures.

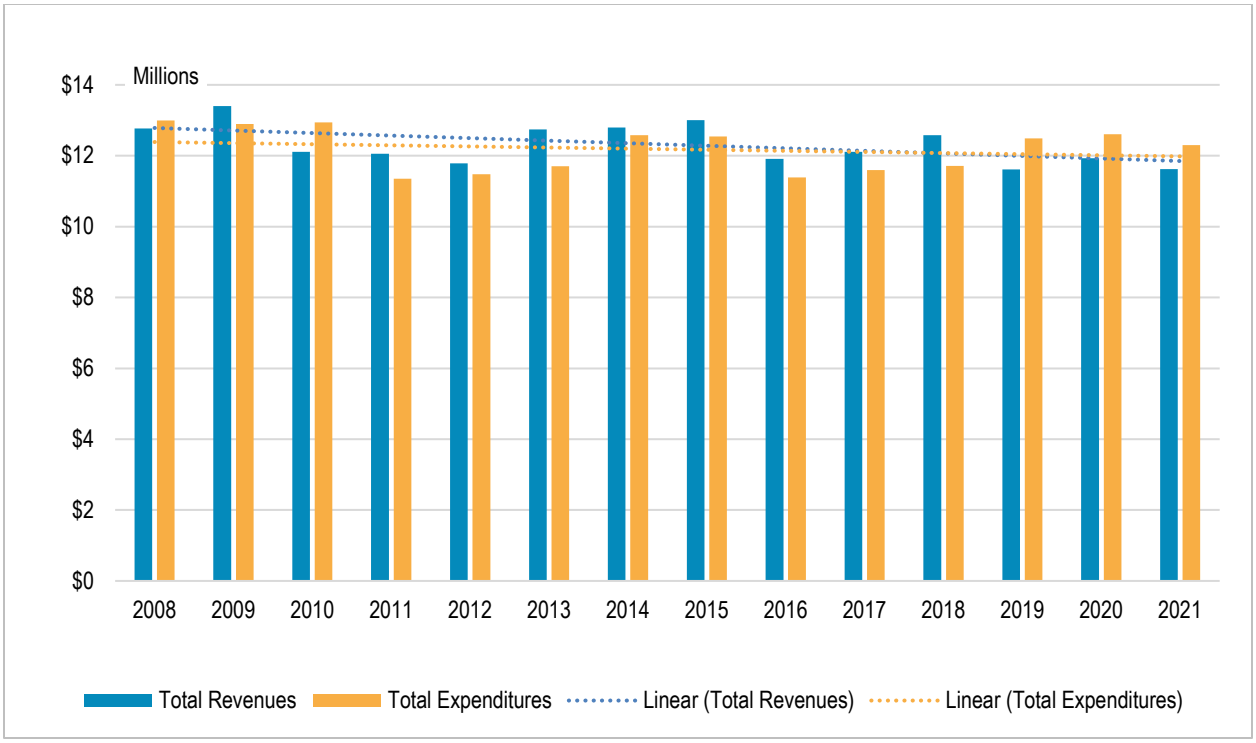


Figure 8-13. City of Seward Revenues and Expenditures, FY 2008 to FY 2021

Source: City of Seward (2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

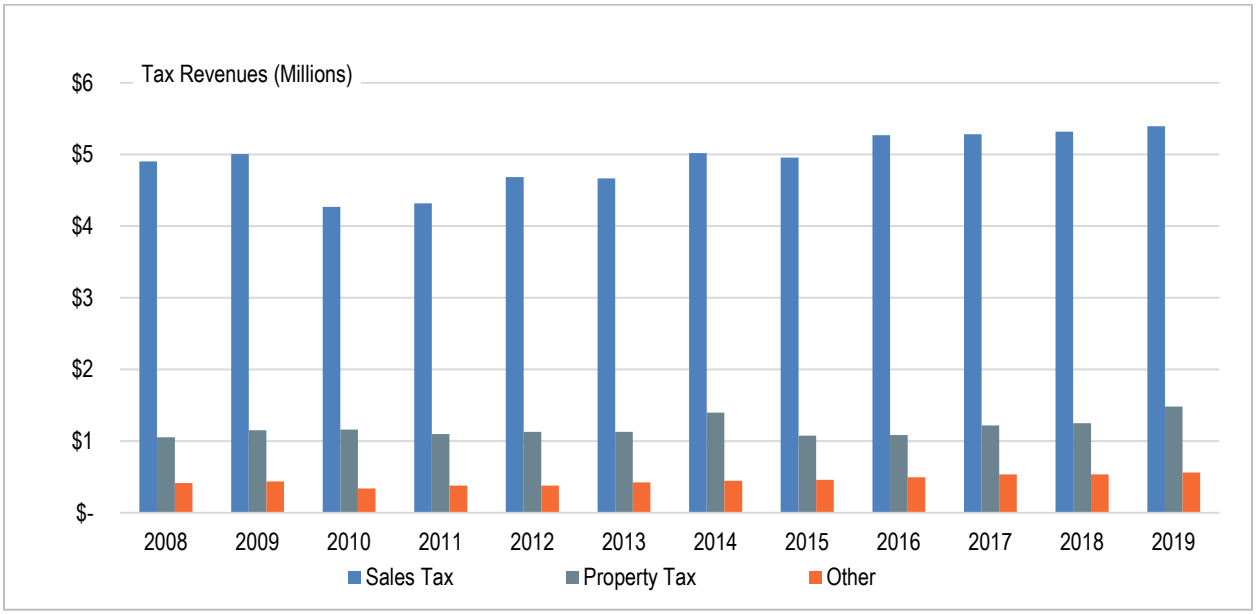


Figure 8-14. City of Seward Tax Revenues, FY 2008 to FY 2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

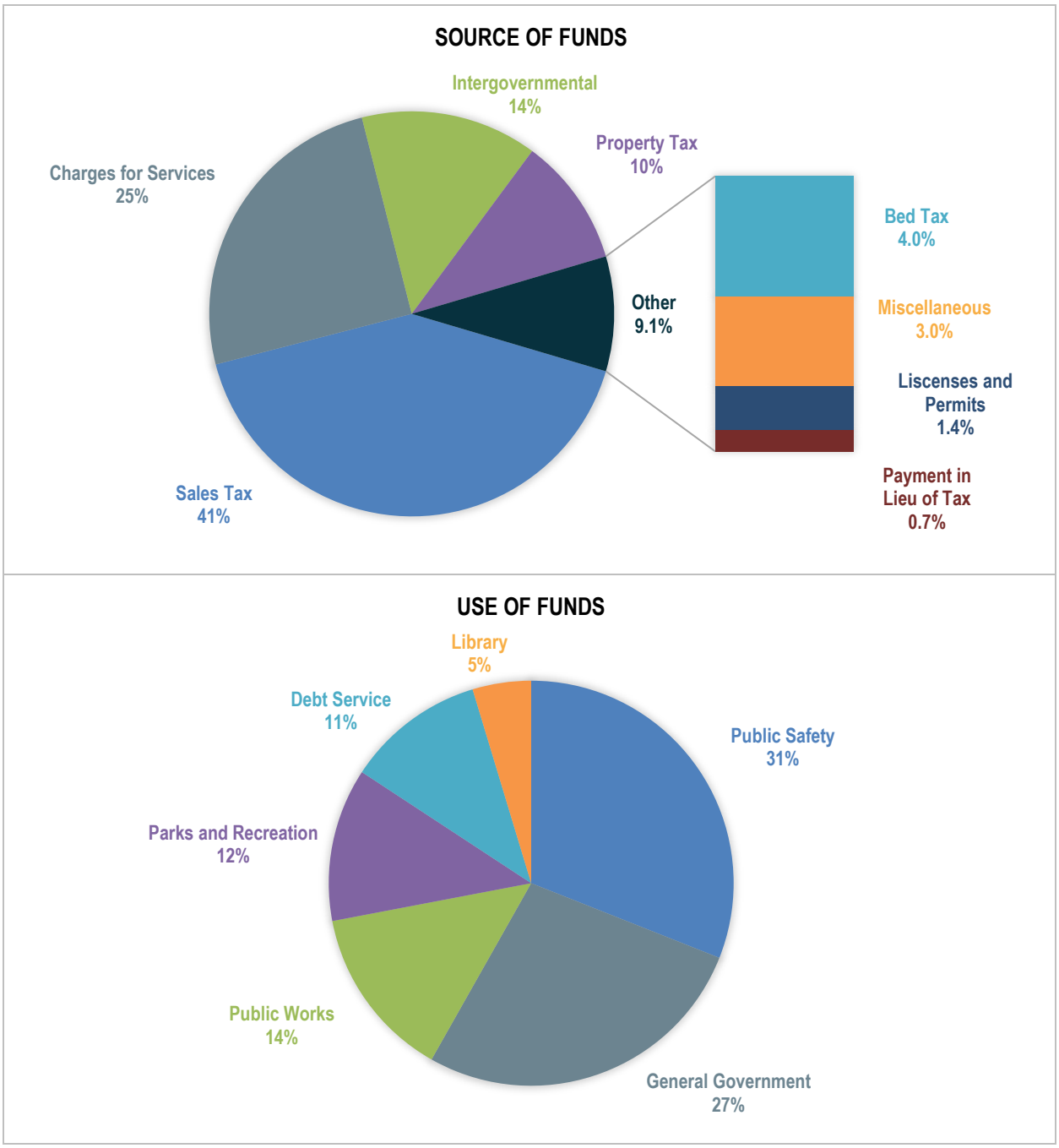


Figure 8-15. City of Seward Major Sources and Uses of Funds, Average FY2008 to FY2021

Source: ADCCED (2022a)

8.3.2.4 City of Seldovia

In 1945, Seldovia was incorporated as a second-class city with 285 residents. In 1962, the City of Seldovia became a first-class city with an expanded role. The City of Seldovia has a total area of 0.6 square miles (0.4 square miles of land and 0.2 square miles of water).

Seldovia, Alaska

The City operates under a council-manager form of government and provides a full range of services including public safety, streets, water and sewer, boat harbor, dock and general administration. Many additional services are provided on a volunteer/grant/non-profit basis including library, fire/EMS, community hall, senior meals, trails, city beautification, and a health clinic.

Figure 8-16 shows the trends in the City's revenues and spending and Figure 8-17 presents the trends in the City's tax revenues. In FY 2008, the City generated more revenues from sales taxes, by FY 2020, the majority of the tax revenues were from property taxes. The lowest revenue and spending by the City were in FY2021, when the city experienced drops in all sources of revenues particularly in property and sales taxes. Spending across major expenditure categories also dropped in FY2021, primarily affecting the police, council, and general administration budgets. City income is primarily from property tax, seasonal sales tax receipts, intergovernmental transfers, and fees for services (Figure 8-18). Public safety and public works are the highest uses of City funds, each accounting for 34 percent of the total expenditures.

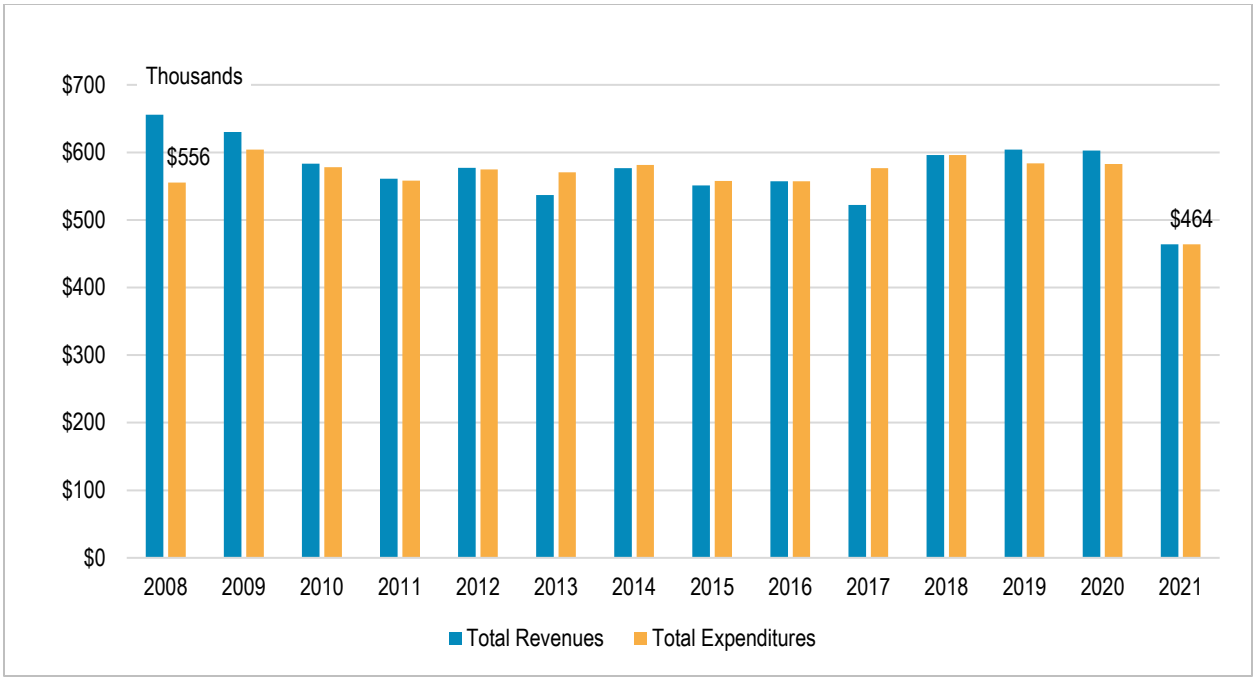


Figure 8-16. City of Seldovia Revenues and Expenditures, FY 2008 to FY 2021

Source: ADCCED (2022a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

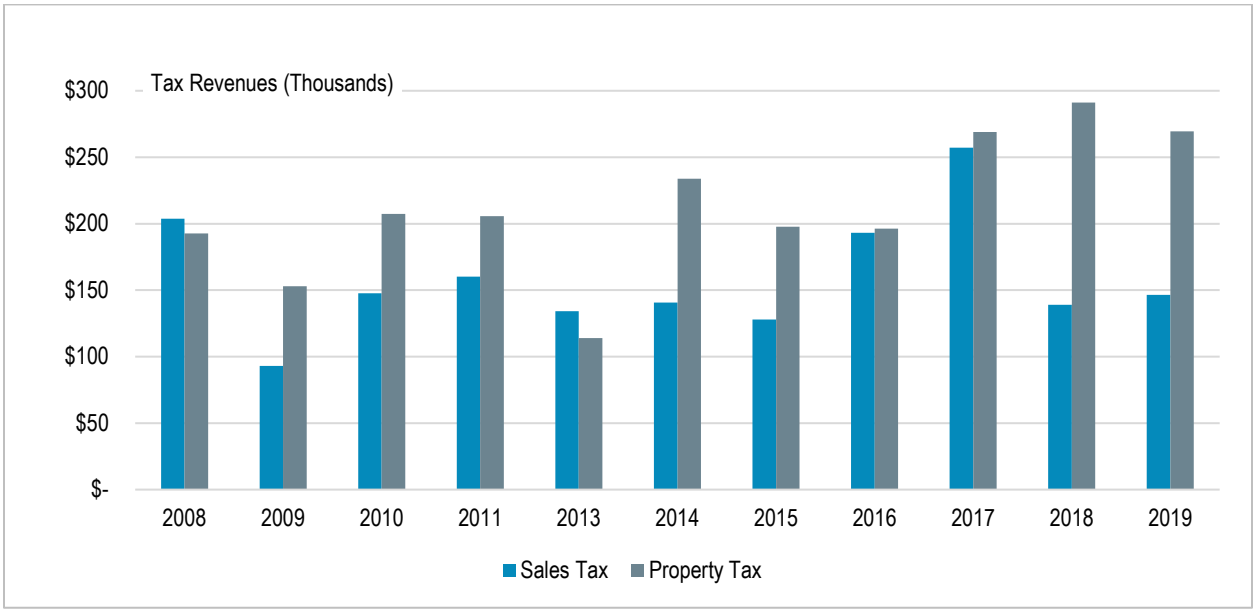


Figure 8-17. City of Seldovia Tax Revenues, FY 2008 to FY 2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS). Data for FY2012 are not available.

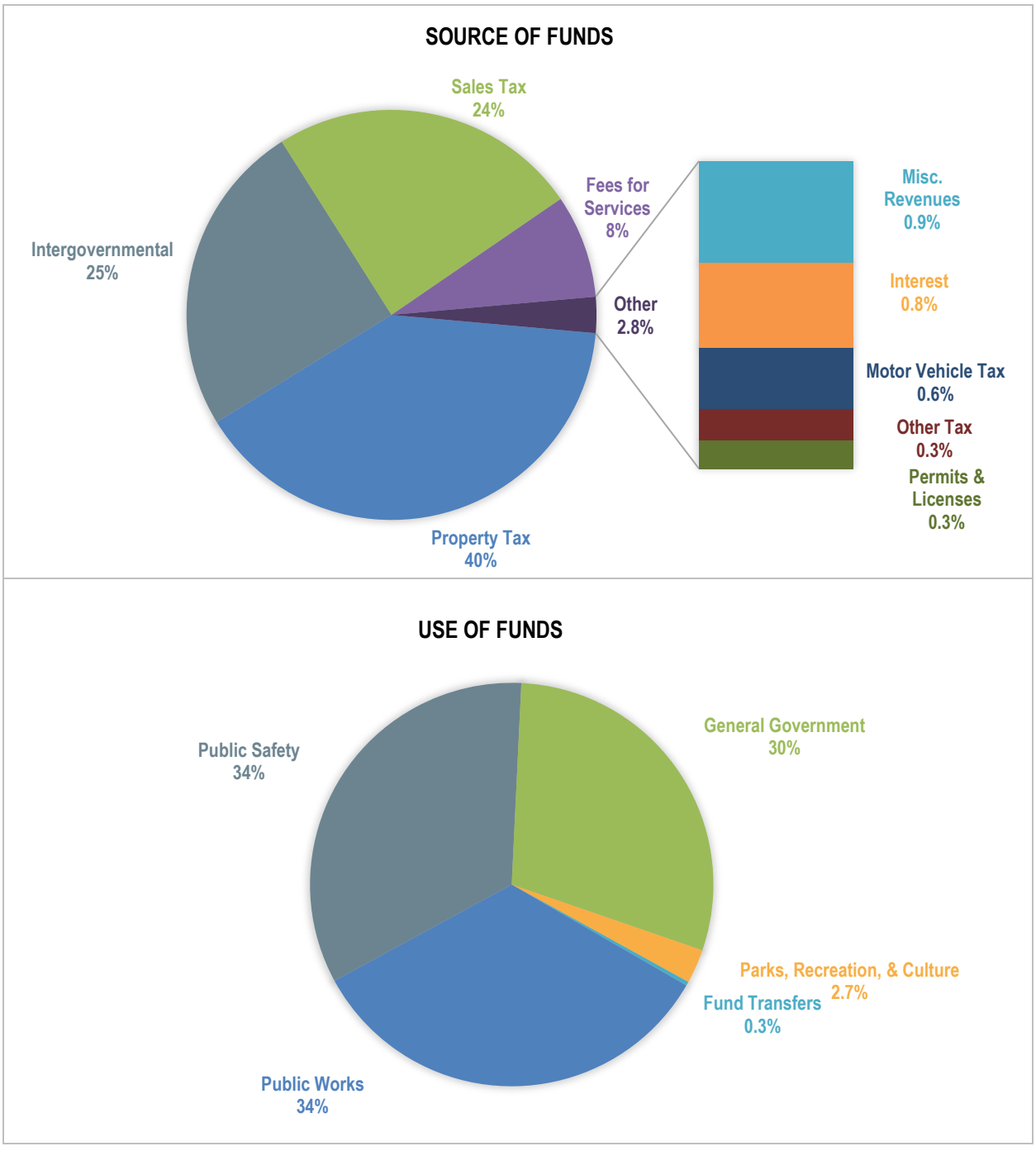


Figure 8-18. City of Seldovia Major Sources and Uses of Funds, Average FY2008 to FY2021

Source: ADCCED (2022a)

8.3.2.5 City of Soldotna

The City of Soldotna was incorporated in 1960. It is a home rule city with an appointed City Manager as the Chief Administrative Officer and the City Council provides directions and policies. The City Council is the legislative body of the City and is comprised of six members that are elected at large to designated seats. The office of Mayor is an elected position that serves as the ceremonial head of government, executing official City documents on authorization of the governing body (City of Soldotna 2022).

Aerial view of Soldotna, Alaska

The City covers an area of 7.4 square miles and is home to several of the KPB's largest employers in the health care, education, retail, entertainment and tourism sectors. Soldotna has become a center for commercial and recreational opportunities.

The City of Soldotna's governmental fund revenues dropped from about $13 million in FY 2008 to $9 million in FY2020, while total expenditures increased from $8 million to $12 million over the same period (Figure 8-19). City services are funded primarily from sales tax receipts (Figure 8-20). Sales tax revenues make up 77 percent of the City's total revenues (Figure 8-21). The City levies a 3 percent sales tax in addition to the 3 percent sales tax levied by the KPB. Property taxes and intergovernmental transfers account for 9 percent and 5 percent of revenues, respectively. The City spends almost equal share of their operating budget on public safety (24 percent), general government (23 percent), and public works (23 percent); 12 percent of the budget is spent on capital projects.

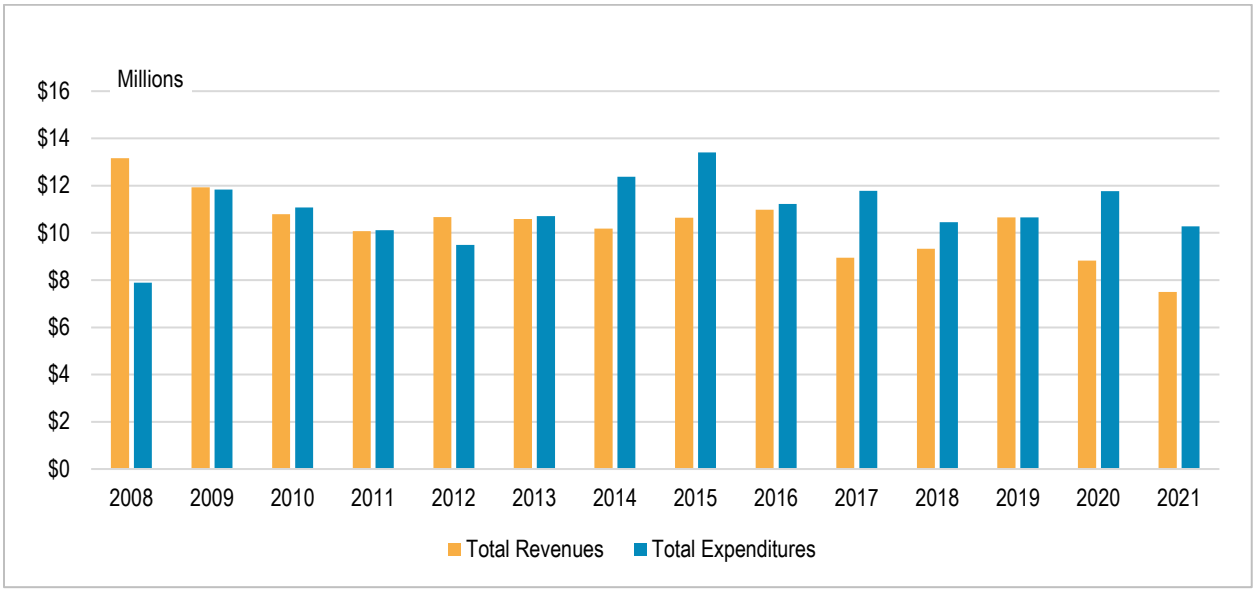


Figure 8-19. City of Soldotna Revenues and Expenditures, FY 2008 to FY 2021

Source: ADCCED (2022a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

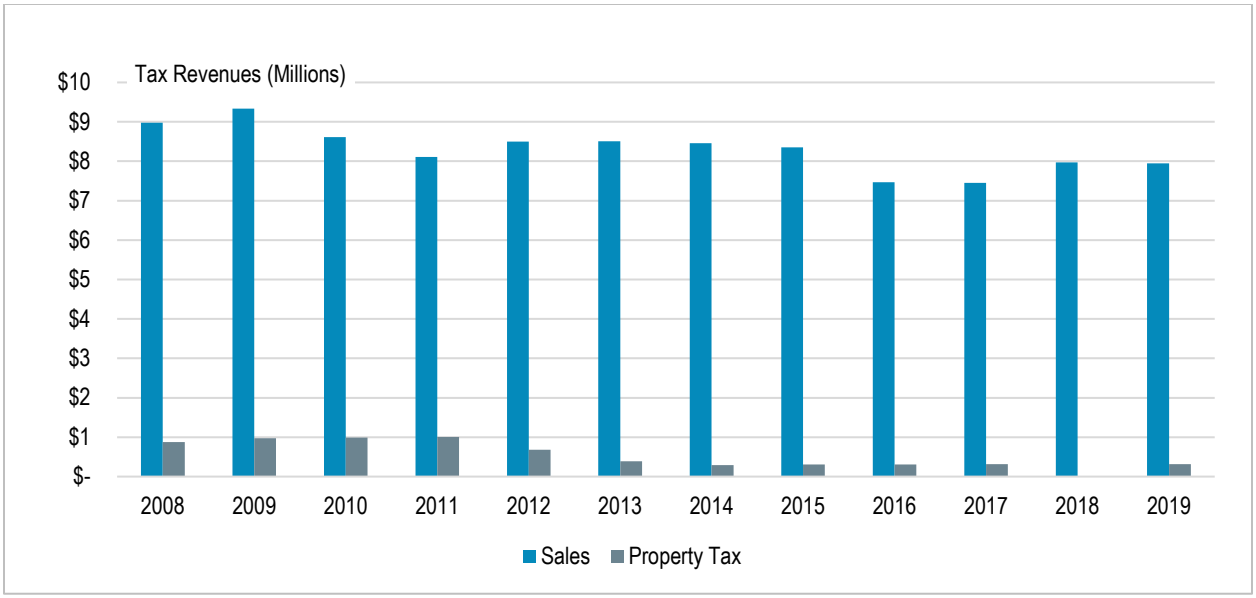


Figure 8-20. City of Soldotna Tax Revenues, FY 2008 to FY 2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

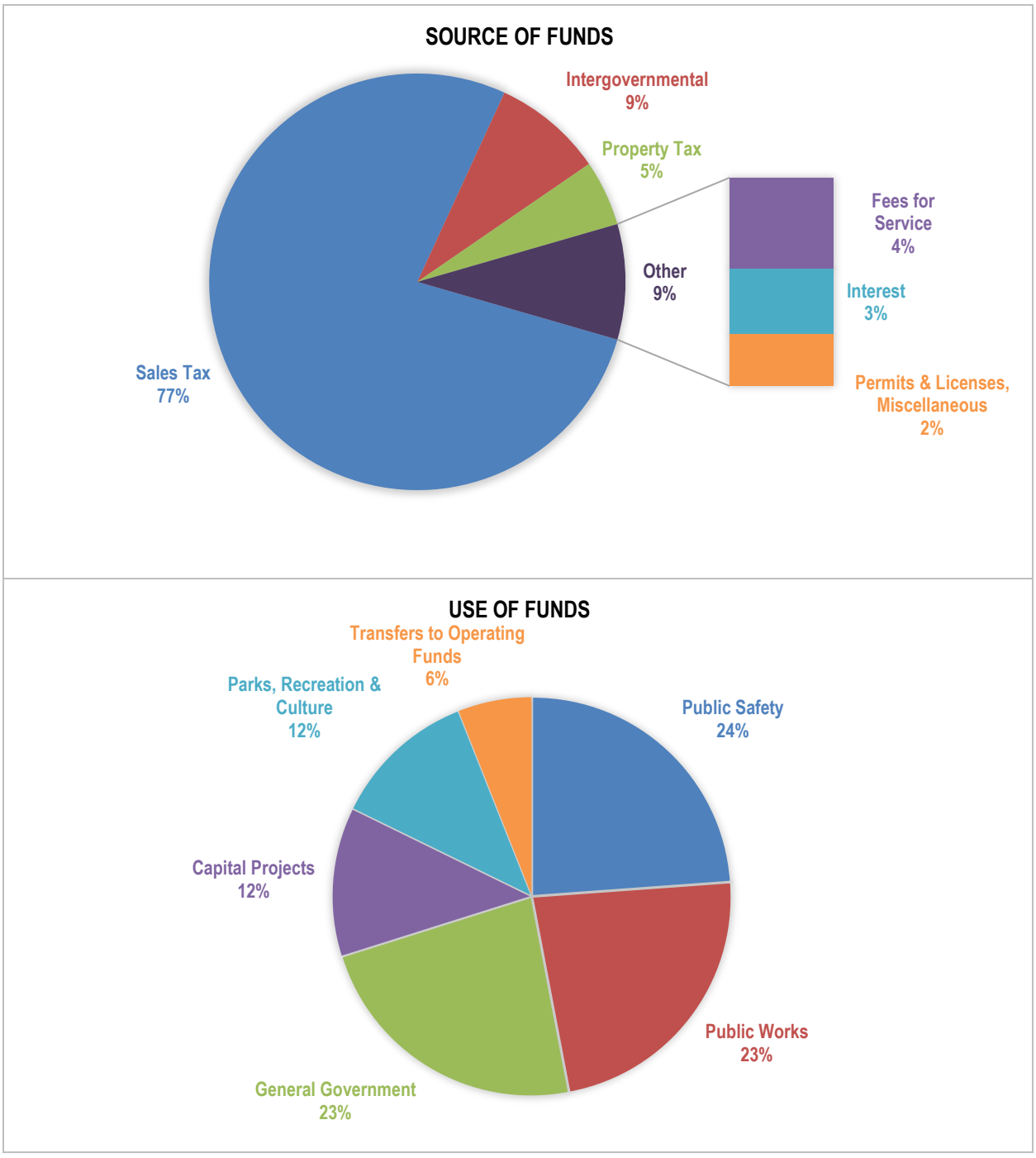


Figure 8-21. City of Soldotna Major Sources and Uses of Funds, Average FY2008 to FY2021

Source: ADCCED (2022a)

8.3.2.6 Kachemak City

Kachemak City is a second-class city, incorporated in 1961. Kachemak City is a small city in the southern portion of the KPB. The City consists of several subdivisions and properties along a two-mile stretch of road. In 2020, the City had over 500 residents.

Kachemak City's revenues and expenditures increased from 2008 to 2021 but were subject to many changes over the years (Figure 8-22). The City's only tax revenue is from property taxes and the tax base has been relatively stable (Figure 8-23). Property tax revenues account for 35 percent of the City's revenues; majority of the revenues are intergovernmental transfers. Major expenses include elections (25 percent), public safety (18 percent), and occupancy/rent (18 percent) (Figure 8-24).

Not included in the figure below are $1.36 million expenditures for natural gas pipeline installation from 2013 to 2016. Over $1 million was spent in FY2014 and at the same time the City revenues included funds received for the pipeline, $1.27 million in FY2014.

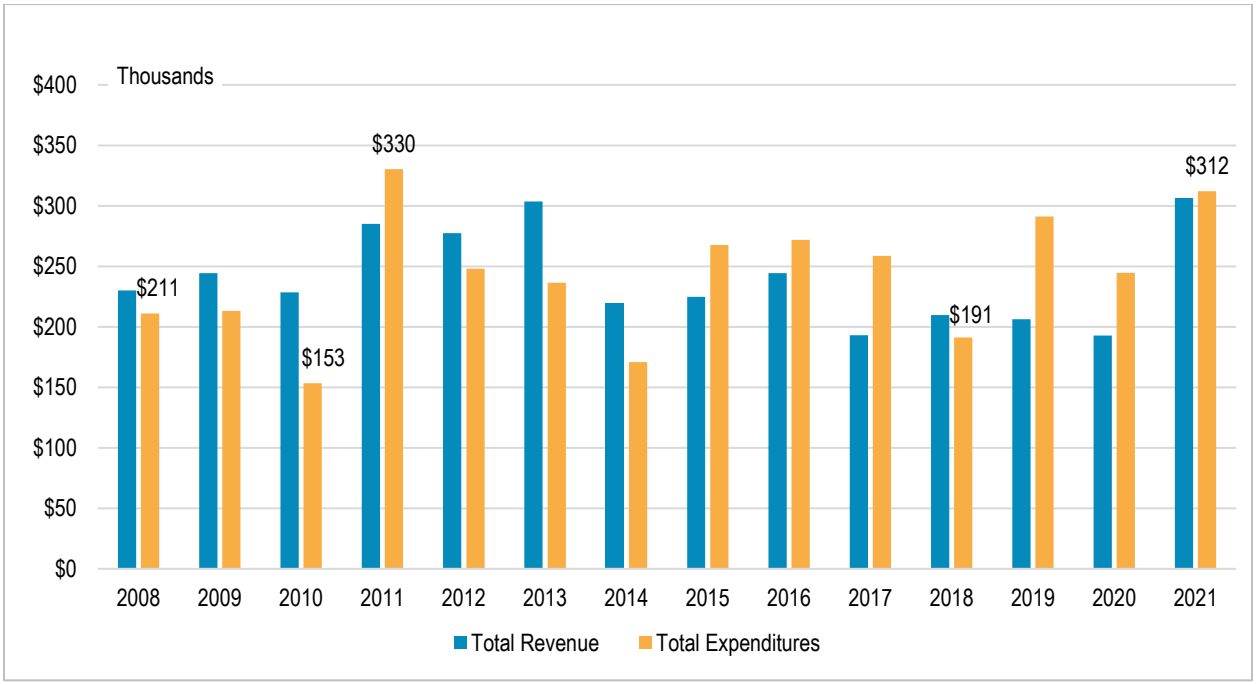


Figure 8-22. Kachemak Revenues and Expenditures, FY 2008 to FY 2021

Source: ADCCED (2022a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

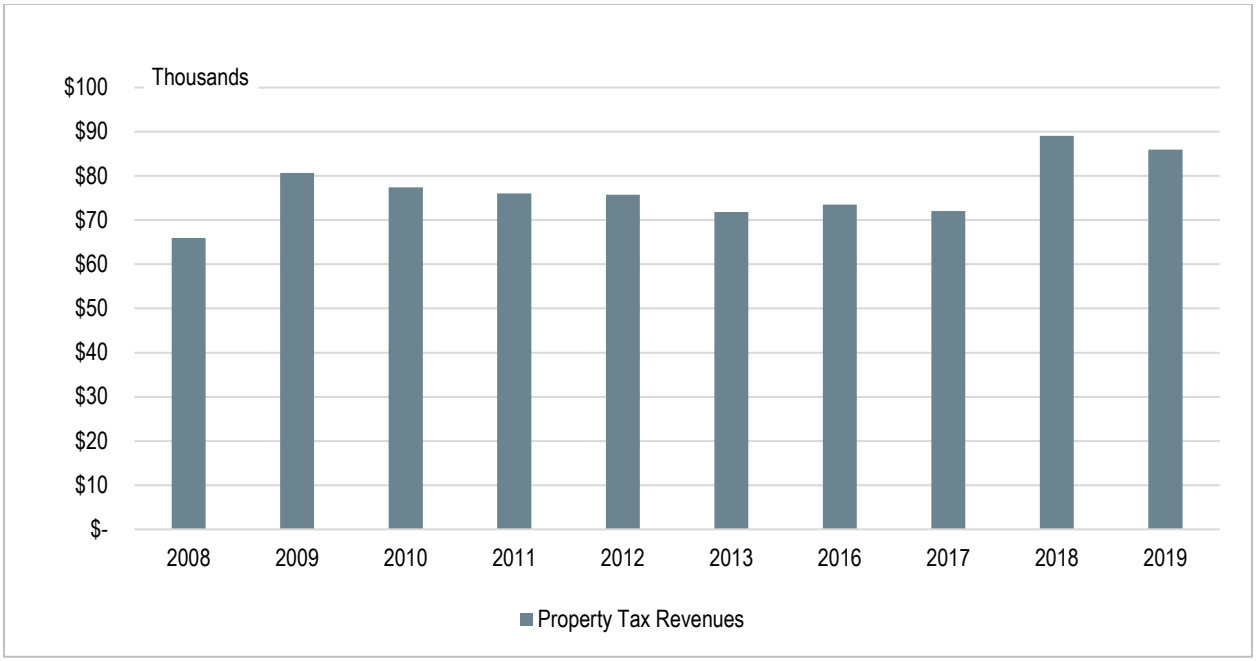


Figure 8-23. Kachemak City Tax Revenues, FY 2008 to FY 2019

Source: ADCCED (2021a)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS). Data for FY2014 and FY2015 are not available.

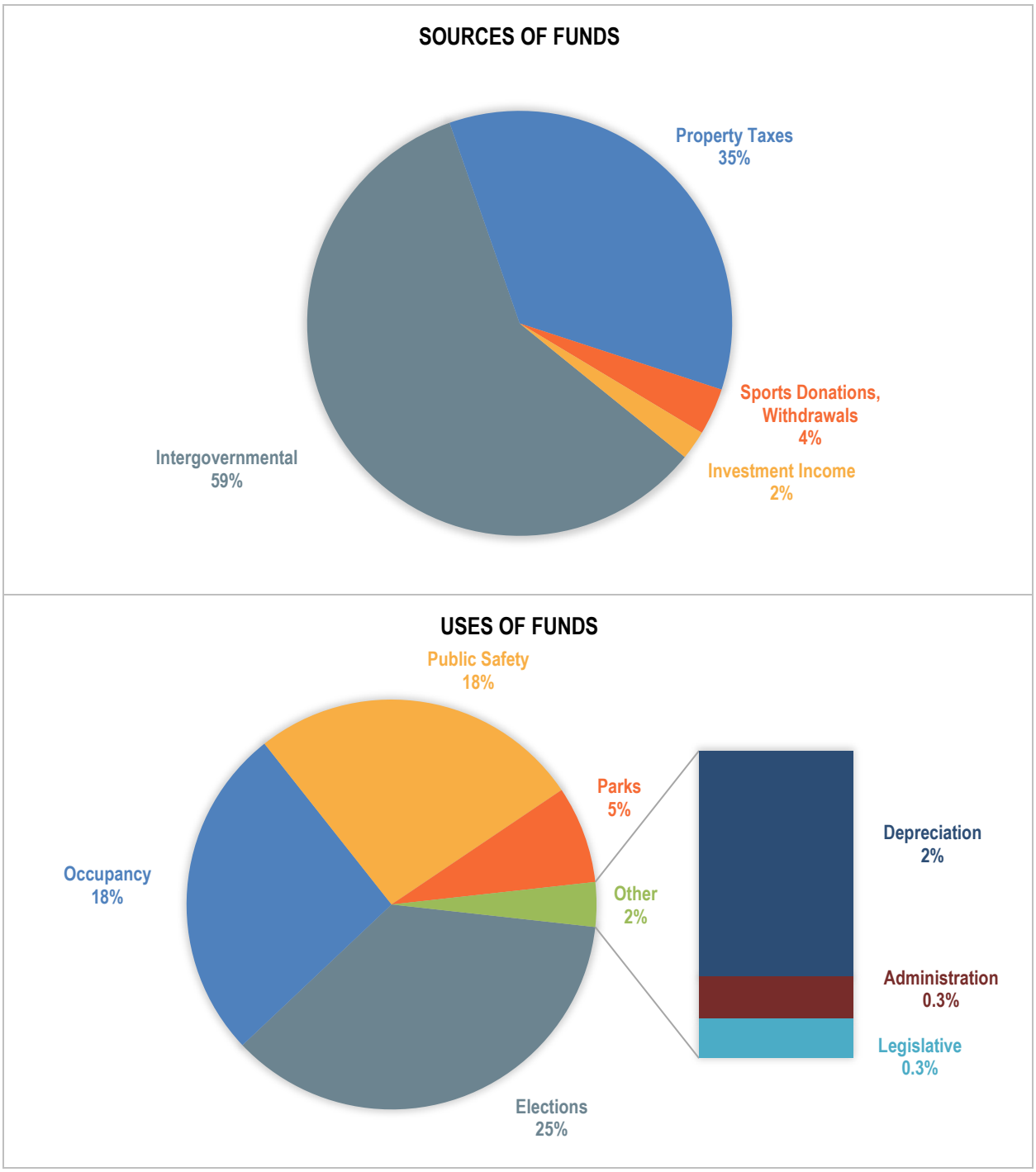


Figure 8-24. Kachemak City Major Sources and Uses of Funds, Average FY2008 to FY2021

Source: ADCCED (2022a)

8.4 Tribal Governments

There are several Alaska Native tribal entities in the KPB that are governed by tribal governments, including the following:

- The Salamatof Tribe is governed by the Salamatof Tribal Council.
- The Ninilchik Village Tribe is governed by the Ninilchik Traditional Council.
- The Kenaitze Indian Tribe is governed by the Kenaitze Tribal Council.
- The Village of Port Graham is governed by the Port Graham Tribal Council.
- The Native Village of Nanwalek is governed by the Nanwalek IRA Council.
- The Native Village of Tyonek is governed by the Tyonek Tribal Council.
- The Seldovia Village Tribe is governed by the Seldovia Tribal Council.
- The Qutekcak Native Tribe is governed by the Qutekcak Tribal Council.

The majority of tribal government revenue comes from the Federal government (Fried and Windisch-Cole 2006). However, some of the tribal governments in the KPB derive a portion of their revenue from enterprises that they operate in the Borough. The Kenaitze Indian Tribe owns the Dena'ina Health and Wellness Center, a healthcare facility located in Kenai (See Section 9.2 for a more detailed description of this facility). The Ninilchik Traditional Council offers services that range from housing, health, social services and education, and is also one of the largest employers in the community (CIRI 2022). The Seldovia Village Tribe (SVT) was federally recognized in 1992 and received its Self-Governance compact in 2001, giving it authority and funding to run local prevention, environmental protection, childcare services, and various health and education programs. SVT also began operating a health clinic in Seldovia in 2008. The Tribe operates the SVT Health and Wellness Community Health Centers in Seldovia, Homer, and Anchor Point. In addition, the Tribe owns the Seldovia Bay Ferry, a passenger and light freight service that operates in the summer months between Seldovia and Homer, and the Seldovia Conference Center, which offers a meeting space, daycare facility, and fitness center (Seldovia Village Tribe 2019).

During the COVID-19 pandemic, tribal governments in the United States received Federal funding from the 2020 CARES Act, which set aside $453 million from the U.S. Bureau of Indian Affairs and $8 billion directly from the U.S. Treasury for tribes, and the 2021 American Rescue Plan Act, which established a $20 billion tribal relief fund. Each tribal government had the flexibility of how and when to use their funds to meet immediate needs as long as they adhered to Federal guidance and requirements. A number of Alaska's tribal governments took advantage of the funding to construct pandemic isolation units (which may house vulnerable village residents in the future), provide for village public safety officers, and invest in water, sewer, and Internet infrastructure. In addition, many tribal governments disbursed a portion of their CARES Act allocation directly to their members to cover pandemic needs (Ruskin 2021; Ristroph 2022).

9 Trends in Other Industries

9.1 Construction Industry

The construction industry is another important source of jobs and income in the KPB, and construction spending is a significant contributor to economic activity in the Borough. However, it is not considered a major industry in the KPB. Historically, the construction industry accounted for 5 percent of the salary and wage employment, 6 percent of total wages, and 13 percent of total business sales (average from 2008 to 2020). In terms of business sales, construction contracting is the third highest by line of business ($561 million in 2020$), with only retail trade ($1.1 billion), and oil and gas ($648 million) generating higher business sales.

The construction industry's economic indicators are generally responsive to investment conditions in other industries and the overall health of the regional economy.

9.1.1 Overview

The construction industry is comprised of heavy construction, building construction, and specialty trade contractors. Heavy construction includes roads, bridges, pipelines, utility infrastructure, land subdivision, and other civil engineering projects. Building construction includes residential and commercial buildings, and specialty trade contractors include establishments involved in specialized activities such as site preparation, plumbing, painting, and electrical work.

Specialty trade contractors dominated construction industry activities in the KPB over the study period, accounting for more than half of the number of employers, number of jobs, and total wages in the Borough's construction industry (Figure 9-1). Average monthly wages in all three construction activities have been higher than the average wage for all industries in the KPB. The average wage in heavy construction is the highest of the three types of construction activities and is 60 percent higher than the average for all industries in the KPB. Higher wages in the construction industry, specifically in heavy construction, reflect the long work hours during seasonal construction and the associated overtime pay.

Figure 9-1. Construction Industry Employers, Jobs, Total Wages, and Average Monthly Wages in the Kenai Peninsula Borough by Activity, 2008–2020 Average

Source: ADOLWD (2021b)

Notes: Wages were adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

9.1.2 Trends in Employment and Wages

Between 2008 and 2020, the construction industry in the KPB experienced periods of growth and decline. The most significant period of decline coincided with the statewide recession that was precipitated by the drop in oil prices that started in 2014. This period of decline mirrored the statewide trend which was characterized by ADOLWD as "second wave" losses in construction (and professional services), as the industry relies on oil and gas activities and state government work, both of which were directly impacted by the crash in oil prices (Wiebold 2018). During this recession, the oil and gas industry cut projects and the state capital budget dropped, thereby affecting construction activities and employment levels in the Borough.

Figure 9-2 shows the trends in construction industry wage and salary employment levels and total wages over the study period. There were two notable declines in construction employment over this time period: 1) from 2008 to 2010, the number of construction jobs dropped from 985 to 926 (a 6 percent decline), and

2) a longer period and more significant decline occurred from 2014 to 2018 (the Alaska recession noted above), this time a 20 percent decline (from 1,066 jobs to 856 jobs).

Total construction industry wages in the KPB generally followed the trends in employment levels, showing the same decline from the peak level in 2014 ($76 million) to a low $51 million in 2018 (2020$). The number of companies engaged in construction activities on the other hand, has been relatively stable over the years, with just a slight decline from 265 entities in 2008 to 257 in 2020 (ADOLWD (2021b).

The growth years in employment and wages lasted longer than the period of growth in business sales (Figure 9-4). Between 2010 and 2014, the number of jobs increased by 15 percent (from 926 to 1,066), resulting in a 15 percent increase in wages. During these growth years, there were several major building construction permits issued with valuations greater than $500,000; at least seven projects had valuations of over $1 million (City of Kenai 2016). The major projects at that time included the Dena'ina Health and Wellness Center, Cook Inlet Natural Gas Storage Alaska, Baker Hughes oilfield development, Walmart Supercenter facility, facility expansions by the Kenaitze Indian Tribe and Homer Electric Association, an assisted living facility, several private commercial developments and single-family homes, and local government projects (i.e., library and water treatment facility). Other notable capital projects from Federal and state spending are discussed below.

More recently, starting in 2018, construction employment and wage levels have been on an upward trend. Unlike other industries, total employment and wages in the construction industry were not negatively impacted by the pandemic; with 2020 levels slightly higher than 2019 levels, except for the employment level in building construction which declined in 2020.

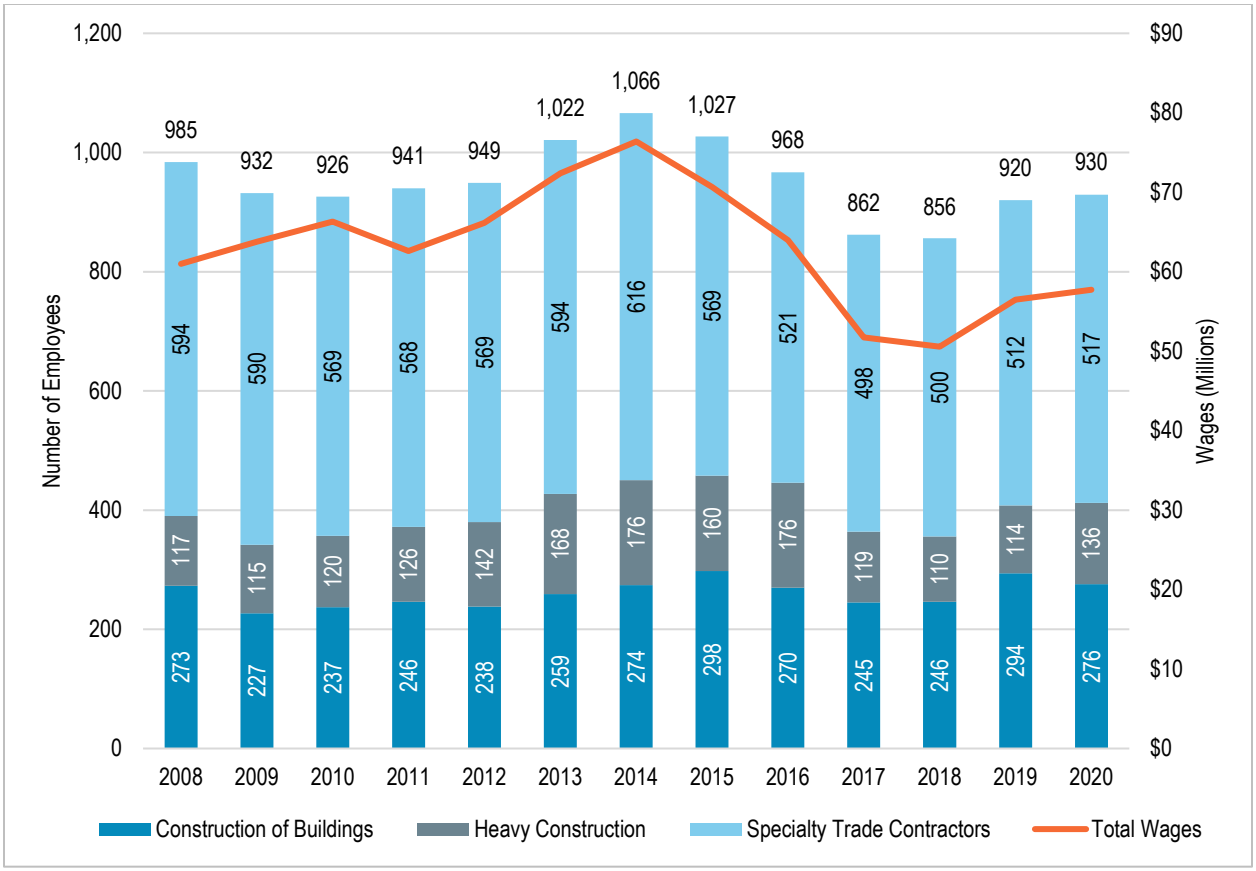


Figure 9-2. Construction Industry Employment and Wages in the Kenai Peninsula Borough by Activity, 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Not everyone who works in the construction industry is employed by a company; there are also self-employed business proprietors (without employees) involved in construction. The wage and salary employment data that are collected by ADOLWD and presented above do not include the self-employed. Data on self-employed proprietors by industry are available from the Nonemployer Statistics (NES) published by the U.S. Census Bureau. Self-employed workers in the construction industry make up approximately 40 percent of the construction workforce. Figure 9-3 below shows the total construction workforce including both the wage and salary employment and the self-employed workers from 2008 to 2018; the self-employed workers data are only available through 2018. Note that the trend in the number of self-employed workers and wage and salary employment tend the move in opposite directions. The number of self-employed grew during the Alaska recession and declined from 2010 to 2013 when wage and salary employment increased.

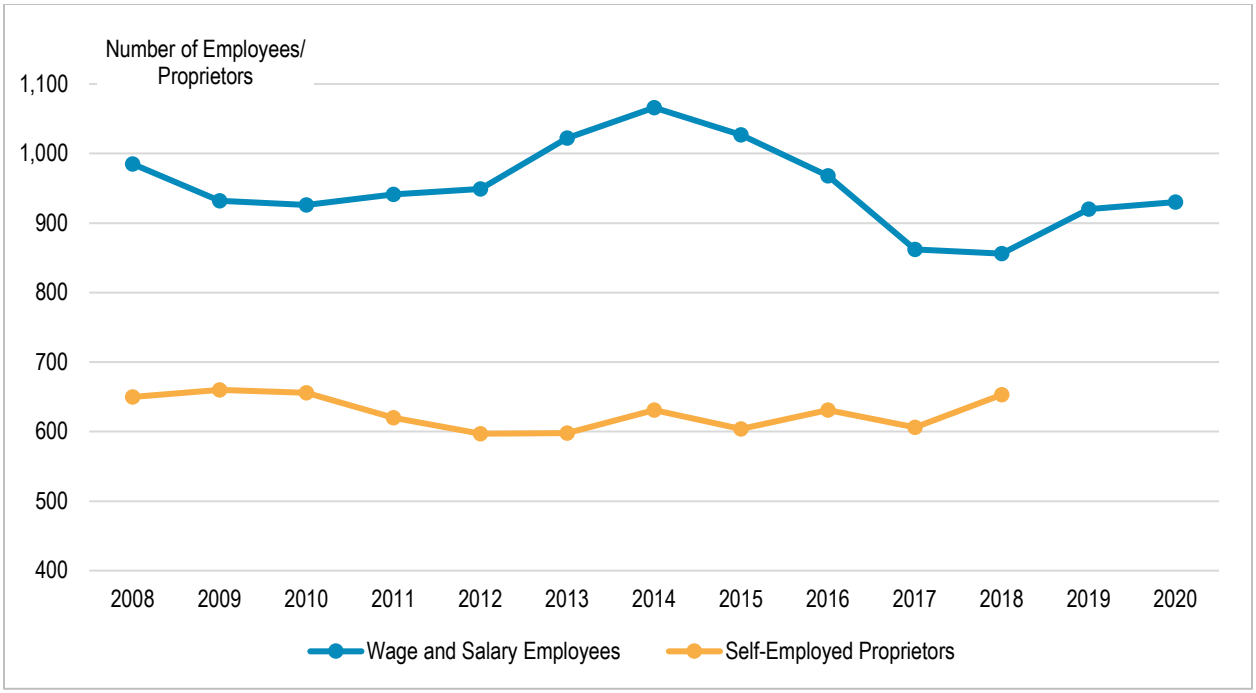


Figure 9-3. Construction Industry Workforce in the Kenai Peninsula Borough, 2008–2018

Source: U.S. Census Bureau (2022e); ADOLWD (2021b)

Notes: U.S. Census NES data for 2019 and 2020 have not yet been released.

9.1.3 Trends in Business Sales, Construction Activities, and Construction Funding Sources

The construction industry's contribution to the KPB economy is driven by private sector investments in construction projects and government spending on public infrastructure and other capital projects. There are no consistent and comprehensive measures of the value of construction activities but there are a number of indicators that provide insights into the trends in construction activities and publicly funded capital projects in the KPB.

Gross business sales information is a good proxy for business activity and investment. Historical sales data, presented in Figure 9-4, show the trends in the value of construction contracts over the study period. Business sales values in construction contracting fluctuated over the years and according to the KPB Finance Department, these fluctuations are linked to oil and gas and government spending and contracts. The figure shows a pattern of ups and downs similar to the historical trends in employment and wages. There was a significant increase in construction-associated sales from 2010 to 2012, increasing from $365 million to over a $1 billion (2020$) in 2012; the peak year in construction contracting. This was followed by five consecutive years of decline in sales that hit a low of $321 million in 2017 (a 69 percent decline from peak level), and then another period of increasing sales between 2017 and 2019, this time peaking at $821 million. However, sales dropped slightly in 2020 by $76 million, over the pandemic year.

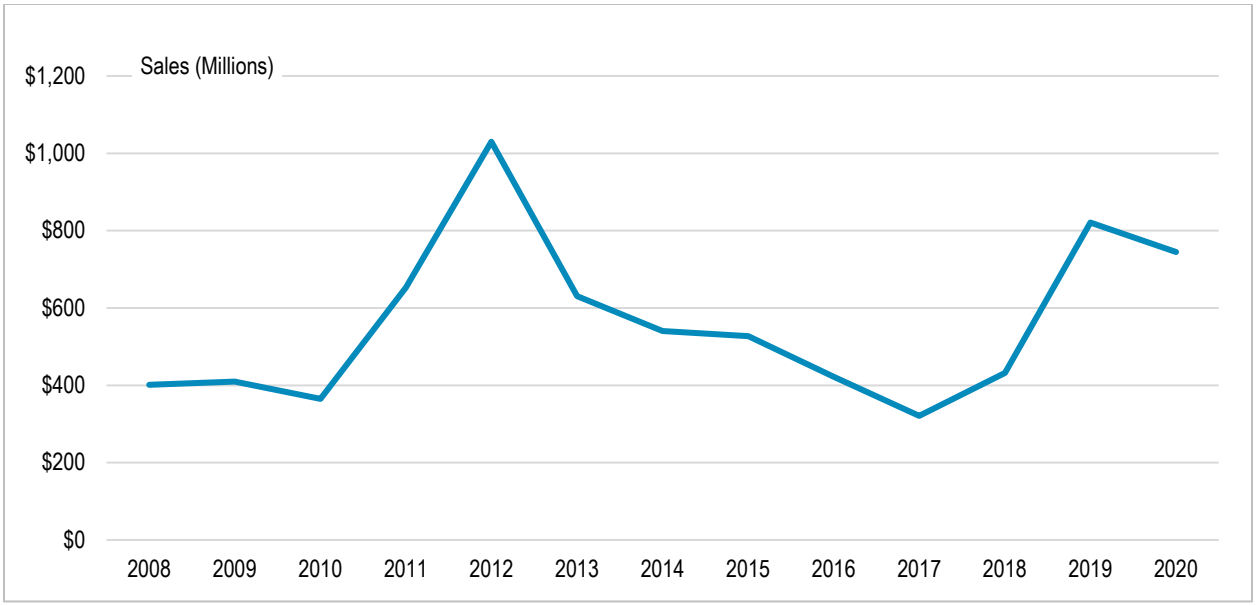


Figure 9-4. Construction Contracting Gross Business Sales in the Kenai Peninsula Borough, 2008–2020

Source: Turner (2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

The number of permits issued for new dwellings is a leading indicator of building construction activity, particularly residential construction. The number of new dwelling units permitted in the cities within the KPB are shown in Figure 9-5. The Kenai Peninsula Borough totals are given for five of the borough's most populated cities: Homer, Kenai, Seldovia, Soldotna, and Seward. The data are based on a quarterly survey of local governments and housing agencies (Alaska Housing Finance Corporation 2022) and provide a count of authorizations (permits) for single-family homes including attached units, multi-family homes defined as properties with two or more dwellings, and mobile homes. Note that not all new units permitted lead to construction and there are also construction activities in communities that do not require building permits. Residential building construction activity is typically driven by population changes and the overall health of the Borough economy. The figure below shows periods of growth and decline similar to the trends in employment, wages, and sales discussed above. The number of new housing units permitted peaked in 2014 and has been on a declining trend except in 2018 and 2020. Despite these year-over-year fluctuations, the annual average change in the number of new dwelling units permitted over the 13-year period was less than 1 percent (0.4 percent); the average annual change in population in the KPB was also less than 1 percent (0.8 percent) over the same timeframe.

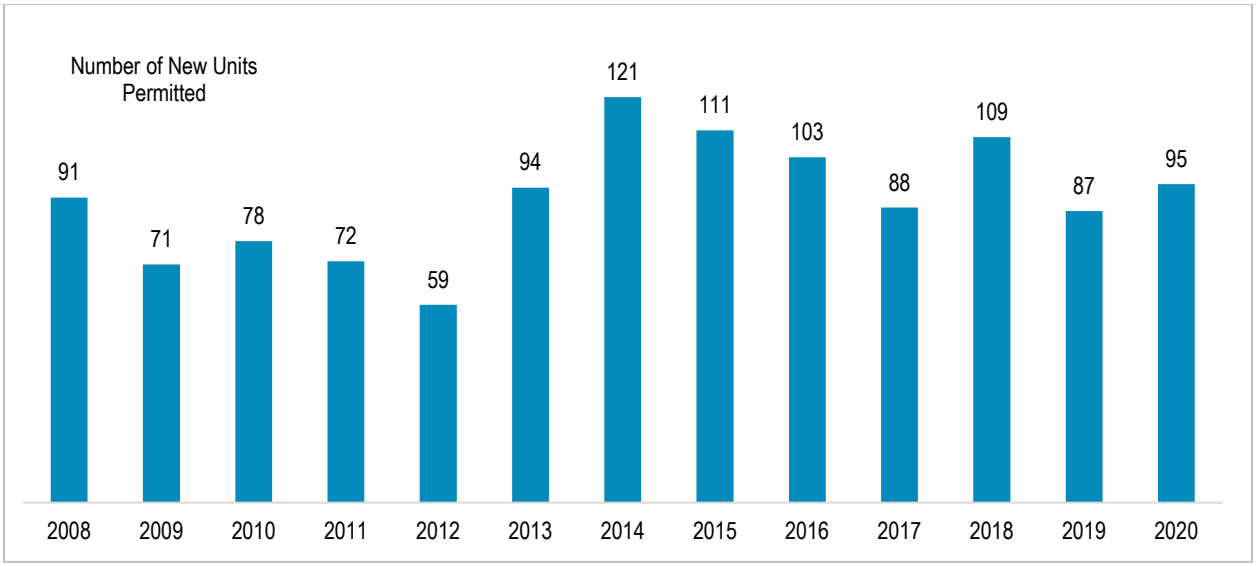


Figure 9-5. New Housing Units Permitted in the Kenai Peninsula Borough, 2008–2020
Source: Alaska Housing Finance Corporation (2022); ADOLWD (2021e)

The Division of Community and Regional Affairs (DCRA) of the ADCCED provides information on grants managed by the Department. DCRA provides oversight of Federal and state-funded financial assistance programs and grants to municipalities, tribes, nonprofit community associations, state agencies and other entities. Direct grants include Community Assistance Program, Community Development Block Grants, Community Service Block Grants, emergency law enforcement, commercial passenger vessel, Comprehensive Economic Development Strategy (CEDS) grants, as well as designated legislative grants (appropriations for projects that are included in the legislature's Capital Bill). Historical data on the number of grants and grant amounts awarded to various entities in the KPB for construction and capital projects are shown in Figure 9-6. Some projects are one-time grants and others are administered over several years. The amount of grants for construction projects peaked in 2013 with over 100 grants amounting to about $115 million in 2020$. Some of the most notable capital projects awarded in 2013 include the $15 million grant for the Dena'ina Health and Wellness Center, $20 million for the Marine Industrial Center expansion, $14 million for various road projects, $8.15 million for the South Peninsula Natural Gas Pipeline project, and $2 million grant for the oncology center at the Central Peninsula Hospital. Since 2013, these types of grants significantly declined to three or fewer capital projects. Note however that the data presented in the figure do not include the recent Coronavirus Relief Fund and the American Rescue Plan Act grants.

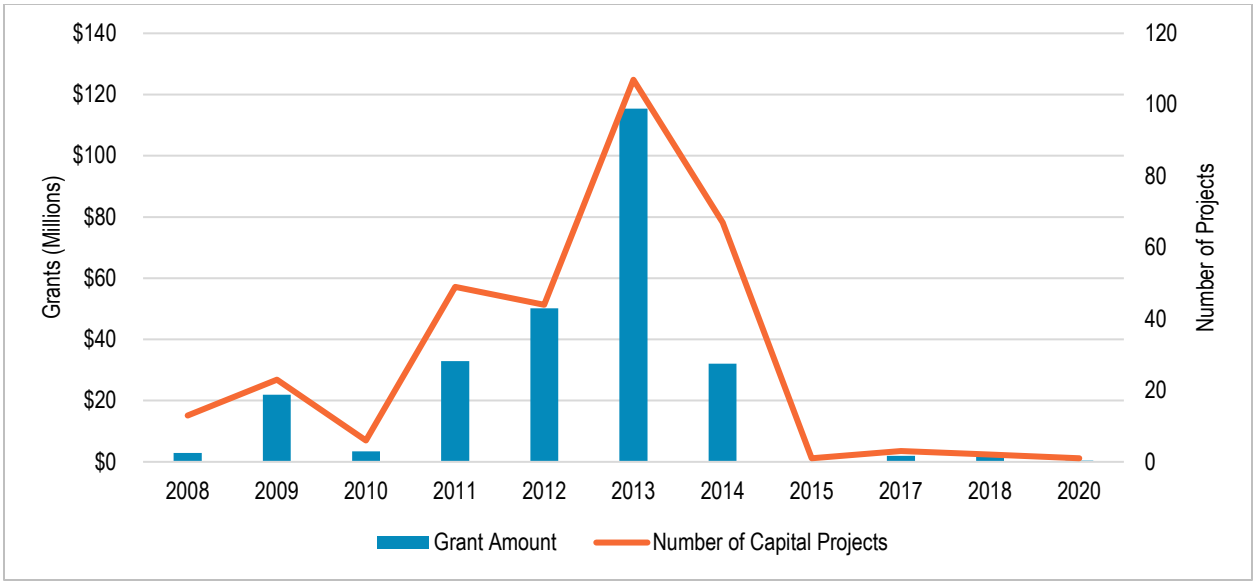


Figure 9-6. Construction Grant Amounts and Capital Projects in the Kenai Peninsula Borough, 2008–2020.

Source: ADCCED (2022c)
Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Another source of information on publicly funded capital projects in the KPB is the Alaska Office of Management and Budget, which provided historical data on capital projects that were included in the capital appropriations (enacted capital appropriations) from fiscal year 2008 to 2020 in the KPB (Figure 9-7). The data exclude capital grants managed by DCRA. Federally funded capital projects accounted for 41 percent of the total appropriations over the study period, the majority of which were for road projects including $28 million for the Seward Highway and more than $50 million for various sections of the Sterling Highway. State general funds accounted for 30 percent of total appropriations, which funded public infrastructure projects such as school capital projects, harbor facilities, water storage and transmission, sewer facilities, and other community infrastructure. Other funds, which accounted for 29 percent, were primarily local matching funds for transportation projects.

As shown in Figure 9-7, capital appropriations were relatively high in fiscal years 2009, 2011, and 2013, but since 2015, remained under $20 million (2020$).

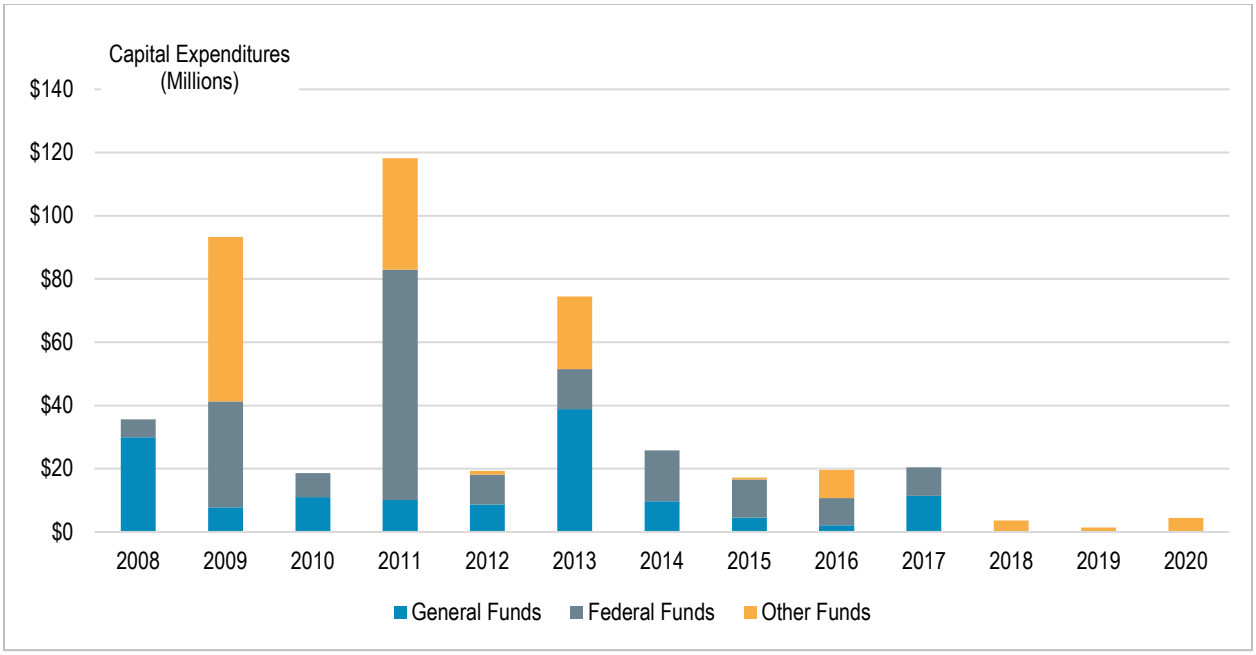


Figure 9-7. Capital Project Expenditures in the Kenai Peninsula Borough by Source of Funds, FY 2008–2020.

Source: Belknap (2022)
Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

9.1.4 Other Employment Indicators: Worker Counts by Place of Residence and Seasonality of Employment

The employment data (QCEW) provided in the previous section are by place of work. These include workers (both residents and non-residents of the KPB) who are employed by construction firms that have construction activities in the KPB. ADOLWD also has information on residency of construction workers. The residency data are counts of individuals (number of workers) who reside in the KPB and work in construction activities anywhere in Alaska (not just in the KPB) and are different from employment by place of work (QCEW data), which are based on the number of construction jobs in the KPB. Information on employment by place of residence was provided by ADOLWD upon request for this study and is presented in Figure 9-8. Historical data are only available through 2019. ADOLWD's methodology for calculating workforce residence is based on Permanent Fund Dividend (PFD) applications; note that a new resident to the state must reside in Alaska for a full calendar year before they are eligible to apply for a PFD. The data are available at the community level. The number of KPB residents in the construction industry has ranged from 1,383 (lowest) in 2012 to its highest level in 2019 with 1,667 workers. Most of the construction workers (about 58 percent) are concentrated in the communities of Homer, Kenai, and Kalifornsky.

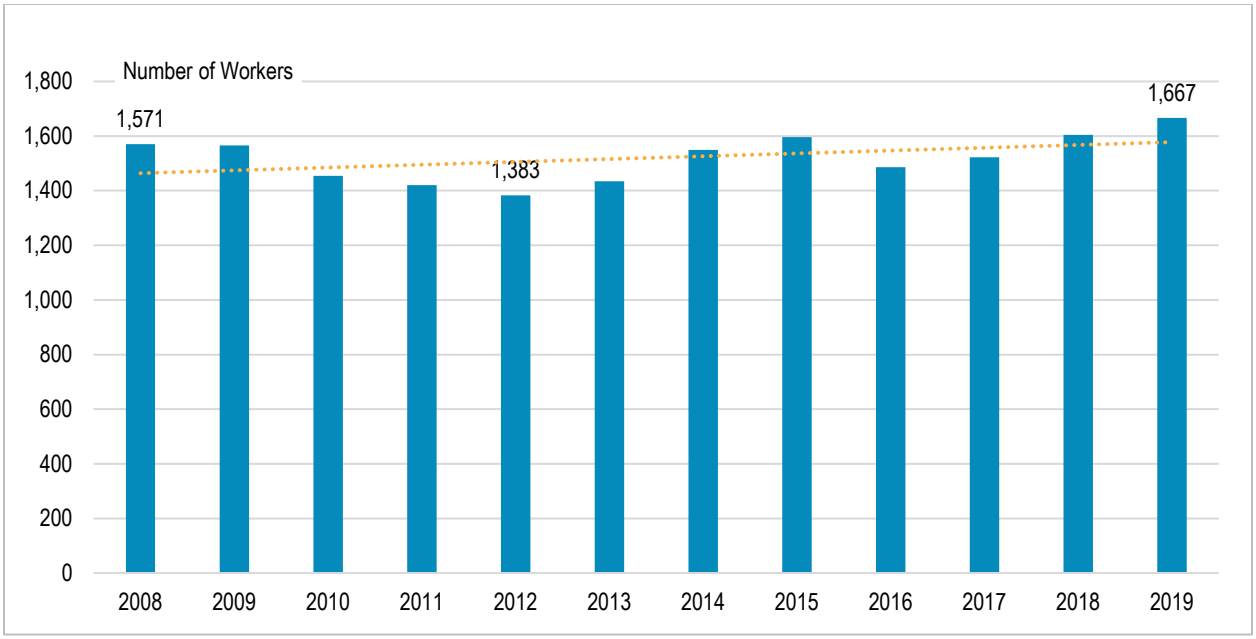


Figure 9-8. Construction Industry Employment in the Kenai Peninsula Borough, 2008–2019.
Source: Robinson (2021a)

ADOLWD also has employment counts of construction industry occupations (number of workers in construction-related occupations who live in the KPB). The top ten construction industry occupations held by KPB residents over the study period are shown in Figure 9-9.

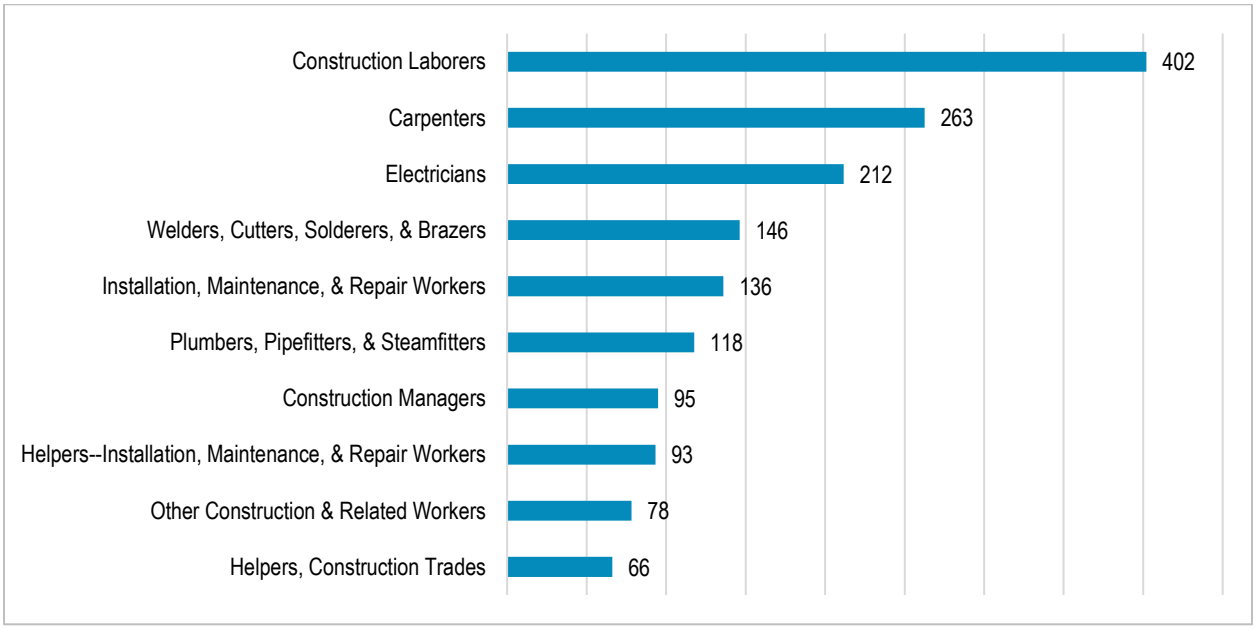


Figure 9-9. Construction Industry Employment in the Kenai Peninsula Borough by Occupation, 2008–2019 Average.
Source: Robinson (2021a)

Construction employment in the KPB tends to be seasonal, with the peak summer employment (in August) about 60 percent higher than the winter lowest point (in February). Heavy construction activity, which includes roads and bridges, is the most seasonal, with an 87 percent increase in employment from the winter low in January to the summer peak in August.

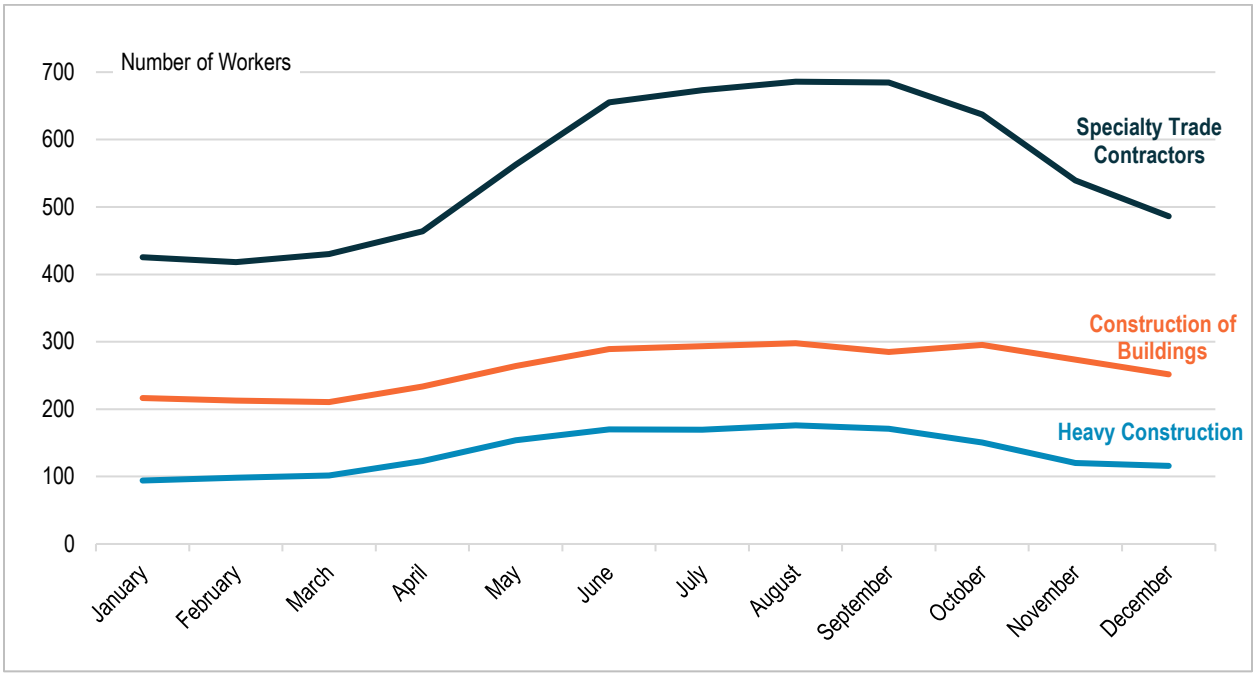


Figure 9-10. Construction Industry Average Monthly Employment in the Kenai Peninsula Borough by Activity, 2008–2020
Source: ADOLWD (2021b)

9.2 Health Care and Social Assistance Industry

The health care and social assistance industry includes establishments primarily engaged in providing health care by diagnosis and treatment, providing residential care for medical and social reasons, and providing social assistance. Social assistance includes, counselling, welfare, child protection, community housing and food services, vocational rehabilitation and childcare to individuals requiring these kinds of assistance. The industry as a whole includes both health care and social assistance because it is sometimes difficult to distinguish between the boundaries of these two activities. Establishments in this industry only include health services delivered by trained professionals and health practitioners (U.S. Census Bureau 2022b).

The regional-level economic data available for the health care and social assistance industry are broken out in Figure 9-11.

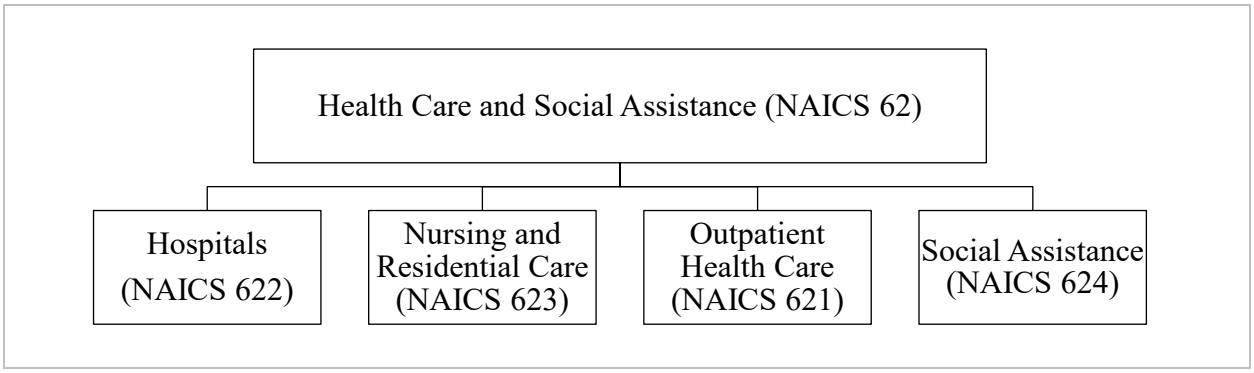


Figure 9-11. Health Care and Social Assistance Service Industry North American Industry Classification System (NAICS) Codes

There are a number of things that are worth noting regarding the data presented in the following sections:

- Industry data on employment and wages from the ADOLWD's QCEW data have limitations at the regional level due to confidentiality and disclosure rules.
- Data for the hospitals and the nursing and residential care establishments are not disclosed for the KPB due to the disclosure rules; instead, data for these sub-sectors are aggregated and reported as part of the entire health care and social assistance industry.
- Data for outpatient care and social assistance are reported separately, so industry data in this section are grouped into 3 sub-sectors or types of service: 1) Hospitals and Nursing and Residential Care Services, 2) Outpatient Health Care (also referred to as Ambulatory Health Services), and 3) Social Assistance Services.
- There are health care jobs in the Federal, state, and local governments that are *not* counted in the ADOLWD QCEW data because they are part of departments or units whose primary activity is something other than health care (i.e., a school nurse is counted in the local government education and a nursing aide in a state-run public health center is counted in state government) (Fried 2008).
- ADOLWD's occupational data capture jobs in health care occupations held by KPB residents. The data are referred to as worker counts by place of residence and represent the number of individuals that work in healthcare associated occupations who live in the KPB and work anywhere in the state.
- The data do not include jobs held by health care providers who own their practices and are considered self-employed. Data on self-employed are available from the U.S. Census Bureau NES, and data are presented separately in this section.

9.2.1 Overview

The health care and social assistance industry is a major employer in the KPB. It is the largest private sector employer and second only to local government in number of jobs across all industries in the

Borough. Employment levels in the health care and social assistance industry between 2008 and 2020 averaged about 3,000 jobs, accounting for 15 percent of total employment in the KPB, and contributing 14 percent of the total wages.

Figure 9-12 shows the historical share of each healthcare sub-sector for various economic indicators, as well as the average monthly wages compared to average wage for all industries in the Borough. Establishments in Outpatient/Ambulatory health care services significantly outnumber establishments in the other sub-sectors, accounting for 60 percent of the total number of establishments. In terms of the share of total wages however, hospitals, nursing, and residential care account for the majority of the total wages in the health care and social assistance industry (51 percent). Note that workers in hospitals, nursing, and residential care earn higher wages compared to the other types of health care services and higher than the average wage for all industries in the KPB. With respect to the number of employees, not one sub-sector dominates; hospitals, nursing, and residential care facilities and ambulatory health care services are equal, accounting for 38 percent of the total jobs in the industry, and social assistance accounts for 24 percent.

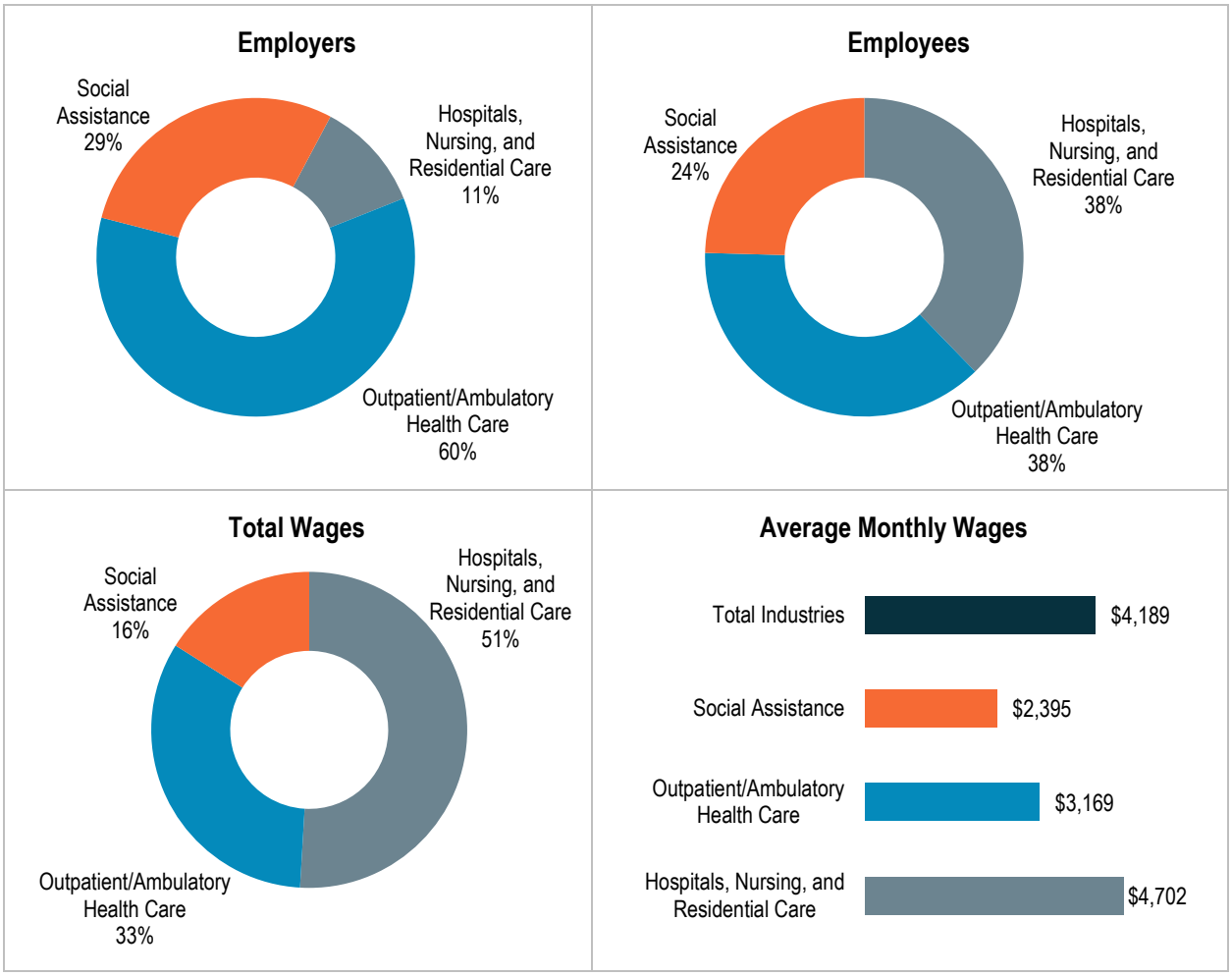


Figure 9-12. Health Care and Social Assistance Service Industry Number of Employers, Jobs, Total Wages, and Average Monthly Wages in the Kenai Peninsula Borough, 2008–2020 Average

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

The three largest employers in the KPB's health care and social assistance industry are the Central Peninsula Hospital, South Peninsula Hospital, and the Dena'ina Health and Wellness Center. Central Peninsula Hospital (CPH) is the largest of the three facilities and is an acute care hospital with a roughly 49-bed full-service hospital and 60-bed house with a long-term skilled nursing center, six family and specialty physician services clinics, and a specialty medical office building. The hospital is located in Soldotna and serves a significant portion of the KPB population in the central Kenai peninsula including the Kenai, Soldotna, and Sterling areas, totaling over 40,000 residents. CPH currently employs more than 980 employees.The hospital is owned by the KPB, which leases the facility and its operations to CPH. CPH is a private nonprofit corporation (Central Peninsula Hospital 2022).

South Peninsula Hospital (SPH) is located in Homer and is a full-service critical access hospital that serves the Southern Kenai Peninsula. SPH has an emergency room, 22 acute care beds, and several other health and wellness services. It also has a 28-bed long term and extended care facility. SPH is run by a nonprofit organization. The KPB provides service-area tax support for the facility and capital investments and the City of Homer owns the land. Some ancillary project funding is provided through grants, the South Peninsula Hospital Foundation, Inc., and the South Peninsula Hospital Auxiliary. The hospital employs over 400 residents. SPH serves a population base of 13,500, including Homer, Anchor Point, Seldovia, and other communities across Kachemak Bay. The hospital now also owns the Homer Medical Clinic, which provides primary care services (South Peninsula Hospital 2022).

The Dena'ina Health and Wellness Center is a 52,000-square foot facility that offers medical, dental, behavioral health, chemical dependency, wellness, physical therapy, pharmacy support, and traditional healing services for Alaska Native and American Indian beneficiaries in the Borough. The facility opened in 2014 and is owned and operated by the Kenaitze Indian Tribe (Kenaitze Indian Tribe 2022).

The Southcentral Foundation, a CIRI nonprofit health care organization, supports primary health care delivery by village clinics operated by the Ninilchik Village Traditional Council, Seldovia Village Tribe, and Native Village of Tyonek (Southcentral Foundation 2022). Chugachmiut, a nonprofit organization managed by CAC, operates a health care system with hub facilities in Seward and clinics in Port Graham and Nanwalek (Chugachmiut 2022).

Providence Seward Medical and Care Center, located in Seward, is a six-bed critical access hospital with a separate skilled nursing facility. It is owned by the City of Seward, which leases the facility and its operations to Providence Health and Services, a nonprofit corporation. This facility serves a population of about 5,000, mostly Seward area residents (Providence Seward Medical Center 2022).

There are two state-funded public health nursing centers in Kenai and Homer that provide services such as health education, immunizations, and screenings for cancer and chronic diseases, as well as contributing resources and expertise in responding to disease outbreaks and drug overdoses. Public health nurses also provide itinerant services to Seward, Hope, Cooper Landing, Tyonek, and other communities within the KPB (Agnew::Beck Consulting 2019). The healthcare workers in these state-run facilities are part of the state government employment and are not counted in the healthcare and social assistance industry. Finally, there are also a variety of private health practitioners that provide health services to KPB residents (Figure 9-14).

9.2.2 Trends in Employment, Wages, and Business Sales

The health care industry has been essential to the KPB especially given its growing senior population. The demand for health services in the KPB increased between 2008 and 2020. Over this period, the number of health care establishments increased by 31 percent (52 additional establishments) and the growth in employment and wages were even more significant. Employment levels increased 66 percent and total wages increased 166 percent from 2008 to 2020.

The trends in employment and wages are presented in Figure 9-13. The period from 2008 to 2014 was a particularly high growth period for the industry, employment and wages grew at an average annual rate of 10 percent and 15 percent, respectively. Employment and total wages stabilized since then with employment levels declining slightly but wages continuing an upward trend but at a more modest growth rate. Most of the recent decline in employment can be attributed to job loss in the social assistance sub-sector, which lost 31 percent of the jobs between the peak in 2013 and 2020. Employment in the hospitals and nursing and residential care sub-sector continued a modest growth. In fact, the year 2020 (pandemic year) was the highest level since 2008; this sub-sector of the health care and social assistance industry is one of the few sectors not negatively impacted by the 2020 pandemic.

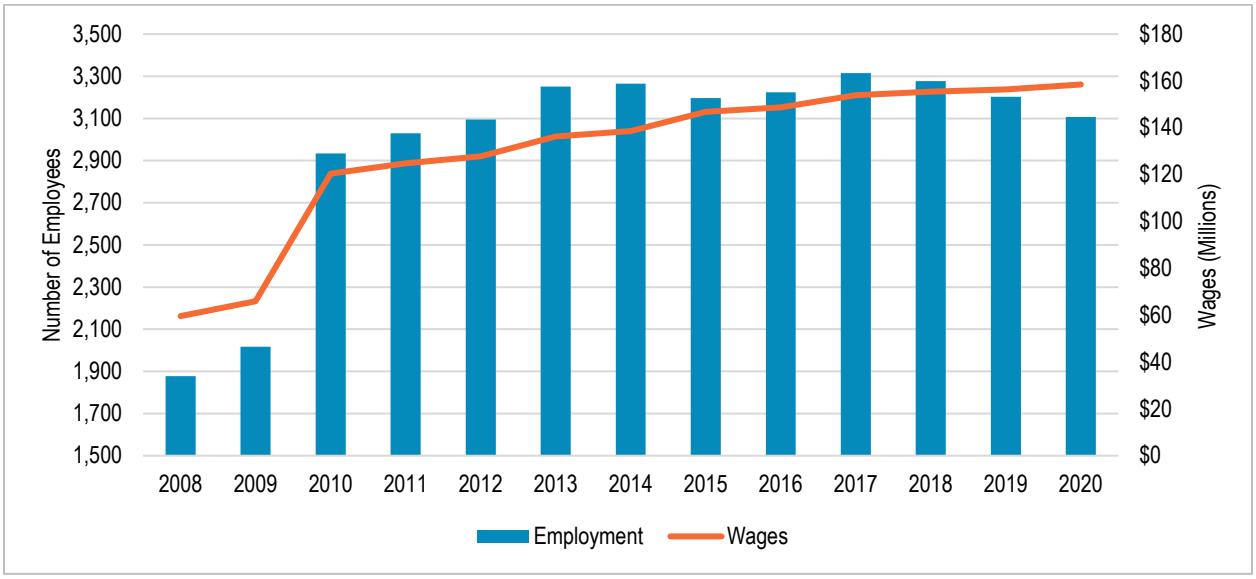


Figure 9-13. Health Care and Social Assistance Service Industry Employment and Wages in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

As noted earlier, in addition to wage and salary employees, there are also health care workers that are self-employed. The number of self-employed in the health care and social assistance industry ranged between 240 and 300 over the study period. The trends in the number of self-employed and total earnings are presented in Figure 9-14. Unlike the wage and salary employment (QCEW), the number of self-employed proprietors had a declining trend from 2008 to 2013, but overall was stable with just a -0.6 percent annual average change over the 13-year period, while total earnings grew by 1.8 percent per year.

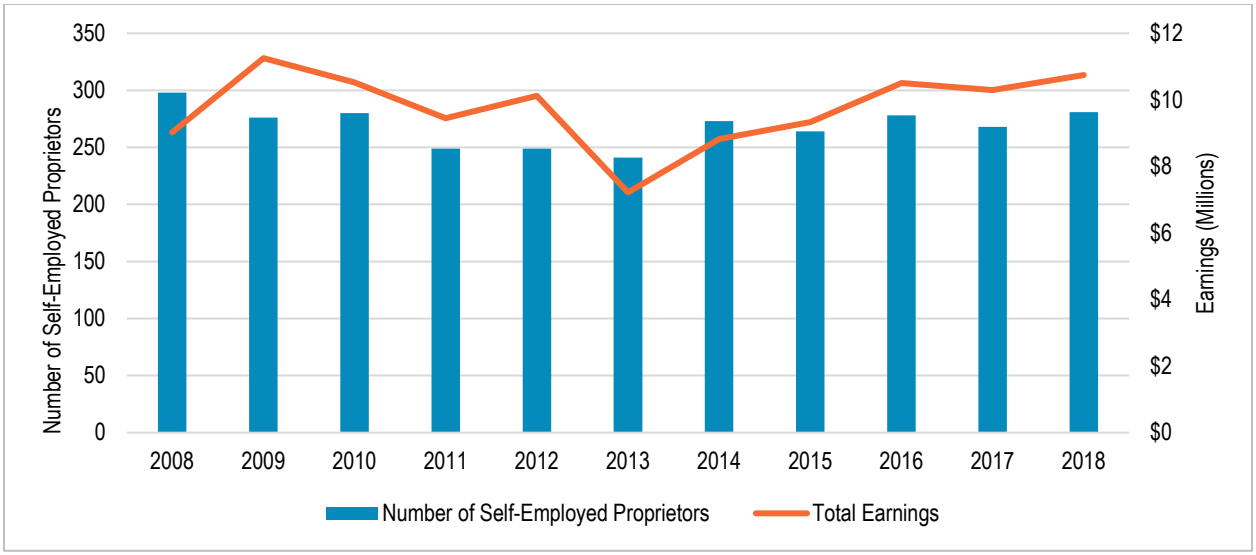


Figure 9-14. Health Care and Social Assistance Service Industry Self-Employed Proprietors and Earnings in the Kenai Peninsula Borough, 2008–2018.

Source: U.S. Census Bureau (2022e)

Notes: U.S. Census NES data for 2019 and 2020 have not yet been released. Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Gross business sales by health care and social assistance businesses in the KPB also increased, with the highest year-over-year increase occurring in 2014. Sales levels then remained relatively high until a decline in 2020 (Figure 9-15). The growth in business sales can be attributed to the opening of the Dena'ina Health and Wellness Center in 2014 and expansion of other medical facilities around that time. It should be noted that business sales in the Borough are likely under reported. All businesses are required to report their gross sales to the KPB government prior to taking exemptions, however most sales of health services are tax exempt; hence, it is likely that several medical offices do not report. Only about 6 percent of all health care-related sales are subject to sales tax (Kenai Peninsula Economic Development District 2018).

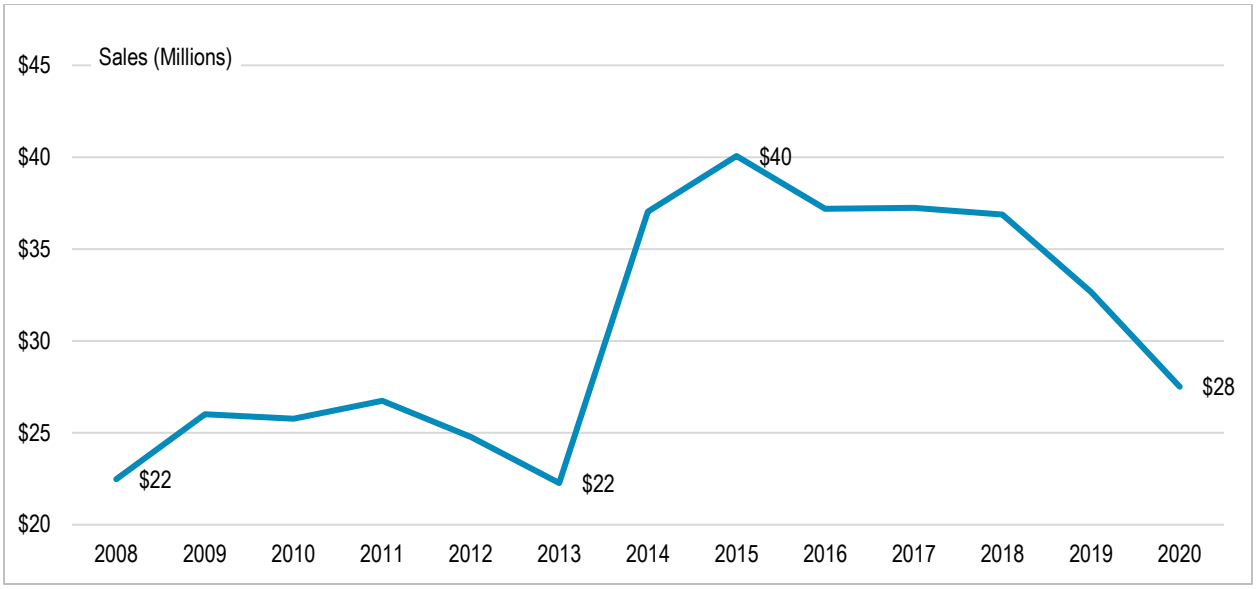


Figure 9-15. Health Care and Social Assistance Service Industry Sales in the Kenai Peninsula Borough, 2008–2020

Source: Turner (2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Fried (2010) noted that the remarkable increases in employment and wages in the KPB's health care and social assistance industry can be explained by supply and demand, suggesting that medical and technological advancements boosted the demand for health care services and the number of medical procedures continued to grow. As the number of health care establishments grew, more services became locally accessible, reducing the need for residents to seek medical care outside the Borough.

As the senior population grows, demand will also likely increase for services for traditional assisted living and long-term care; home health, hospice, palliative, and respite care; and related services. While there will continue to be opportunities for growth to meet the senior population's health care needs, rising health care costs and the challenges of providing affordable care in small communities could impact the long-term sustainability of the health care and social assistance industry and employers' ability to offer competitive wages and benefits (Agnew::Beck Consulting 2019).

9.2.3 Worker Counts by Place of Residence and by Occupation

As noted earlier, ADOLWD also has information on employment by place of residence and by occupation. The employment by place of residence data and the occupational data are compiled using the Alaska PFD distribution database. To determine residency, the Department matches Alaska unemployment insurance records (which contain industry, occupation, wages, and place of work) for each worker with Alaska PFD applications. Records, however, are not available for Federal employees, the military, or the self-employed, so those workers are not part of these data.

A limitation of using PFD applications to determine residency is the lag due to the strict requirement that a person live in Alaska a full calendar year to become eligible. Hence, a certain percentage initially identified as nonresidents may become residents and some people may not live in the state long enough to

meet the PFD criteria. An analysis of 2019 worker information showed that for the health care and social assistance industry, about 23 percent of the non-Alaska residents ultimately applied for a PFD and were considered residents in 2020 (ADOLWD 2022a).

For this study, ADOLWD provided borough-level and community level worker counts by place of residence data from 2008 to 2019 (Robinson 2021b). As discussed above, worker counts are different from QCEW data. Over the 13-year period, the number of healthcare workers who are residents of the KPB grew 13 percent (an increase of 268 workers) (Figure 9-16).

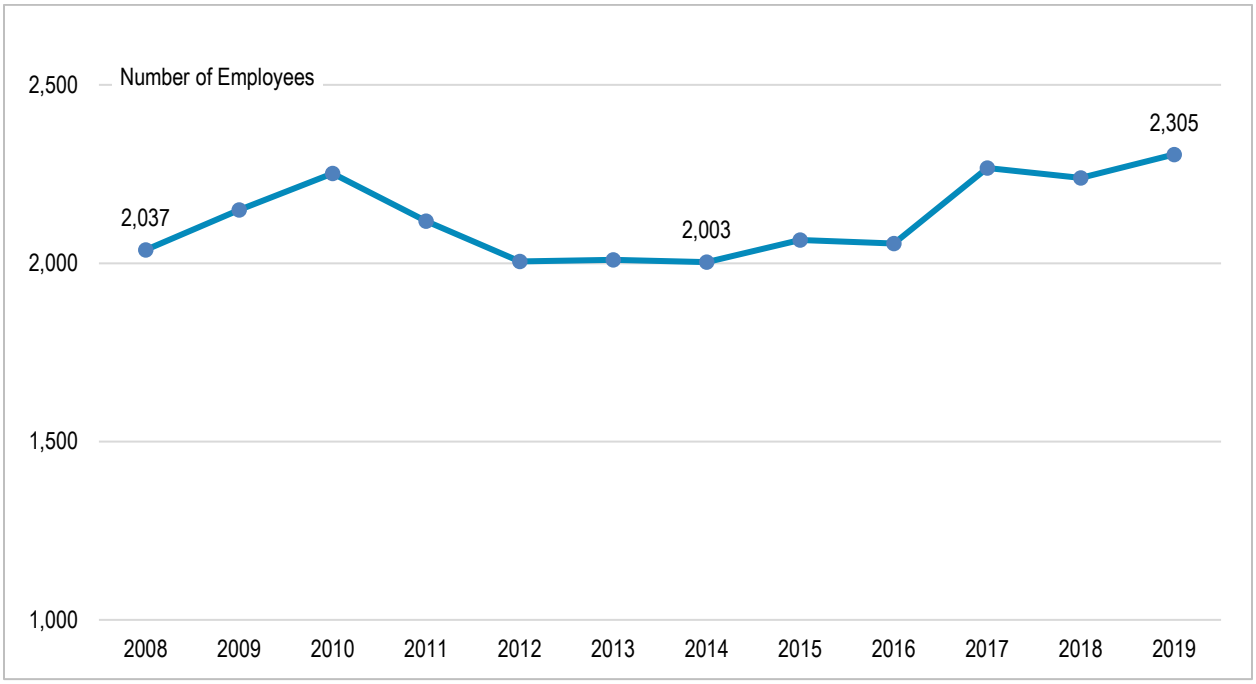


Figure 9-16. Health Care and Social Assistance Service Industry Employment in the Kenai Peninsula Borough, 2008–2019

Source: Robinson (2021b)

Many of the healthcare workers live in the major residential areas in the KPB, especially around the Cities of Kenai, Soldotna, and Homer (Figure 9-17).

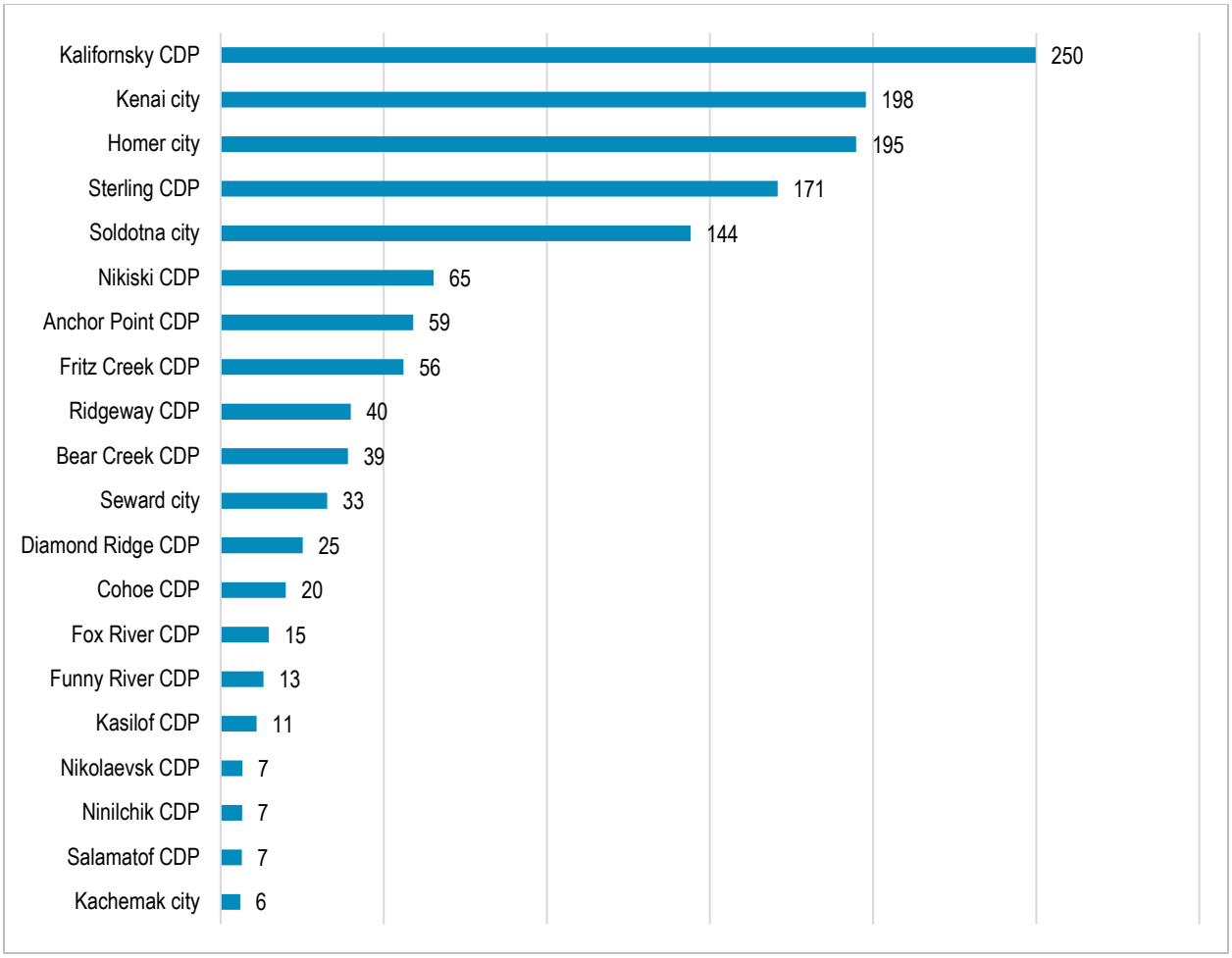


Figure 9-17. Health Care and Social Assistance Service Industry Employment by Community of Residence, 2008–2019 Average

Source: Robinson (2021b)

Figure 9-18 presents the top 20 health care occupations held by residents of the KPB. The largest healthcare occupation in the KPB is registered nurse (380 nurses). It is also the occupation with the greatest increase from 2008 to 2019; with 138 more registered nurses living in the KPB in 2019 compared to 2008 levels. Another occupation that had a high growth over this period is medical assistants with an increase of 104 workers.

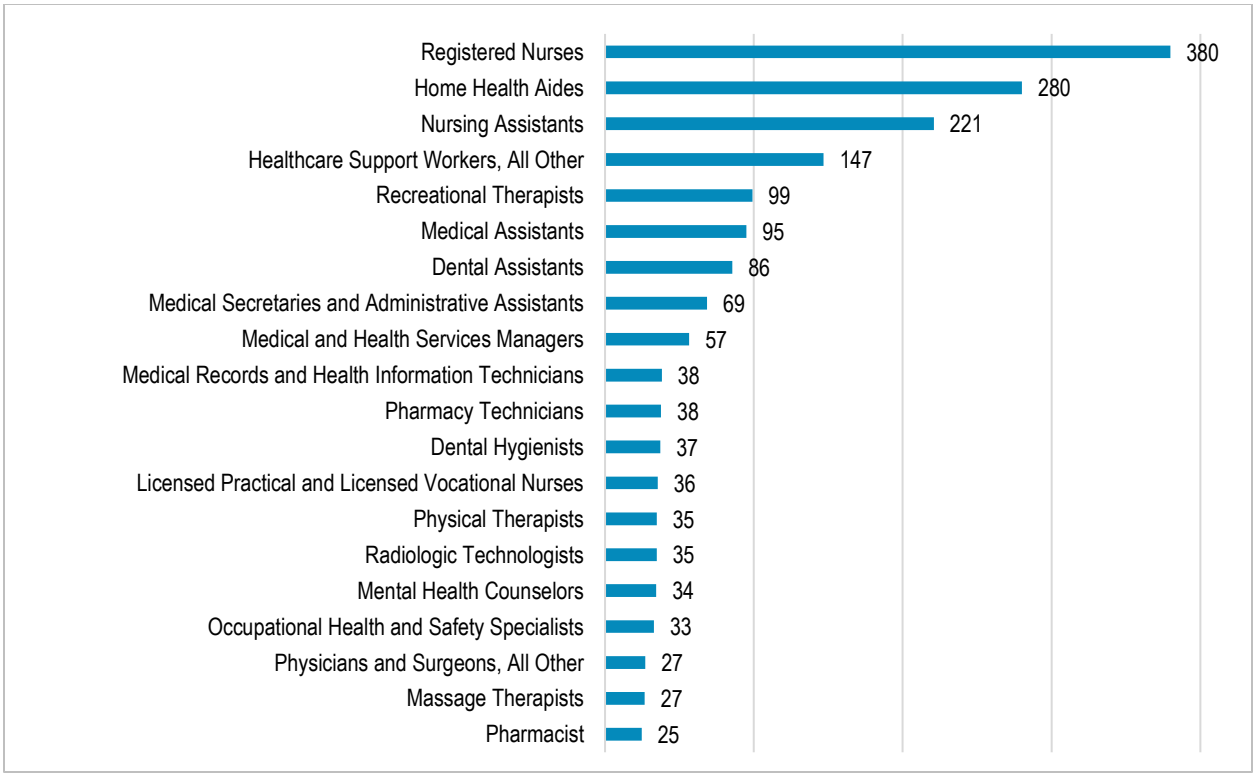


Figure 9-18. Health Care and Social Assistance Service Industry Employment in the Kenai Peninsula Borough by Occupation, 2008–2019 Average

Source: Robinson (2021b)

9.3 Transportation and Warehousing Industry

The transportation industry in the KPB is diverse. It encompasses the air and water transportation sectors, trucking and warehousing, and local ground transportation; pipelines are also part of the transportation grid, as well as transportation niches that are considered support activities such as freight forwarders and travel agencies.

Economic data available for the transportation and warehousing industry in the KPB include the following sub-sectors:

- Air Transportation
- Water Transportation
- Truck Transportation
- Transit and Ground Passenger
- Pipeline
- Scenic and Sightseeing
- Support Activities
- Postal Service
- Couriers and Messengers
- Warehousing and Storage

Data on employment and wages for this industry only include the private sector. Employees of the Alaska Railroad, the Alaska Marine Highway System, the Alaska Department of Transportation and Public Facilities, and city and borough governments that work in the various transportation facilities in the KPB are part of state and local government employment.

9.3.1 Overview

The transportation and warehousing industry primarily deals with the transportation of people and goods throughout the KPB and is an indicator of general economic activity in the Borough. The KPB is accessible by water, railway, road, and from several airports. The major transportation infrastructure in the Borough was described by the University of Alaska Center for Economic Development (2021). Excerpts from this report are provided below.

9.3.1.1 Roads

The Kenai Peninsula Borough Road Service Area includes more than 645 miles of roads. The Seward and Sterling Highways are the primary arteries on the Kenai Peninsula that provide ground access to the rest of Alaska, Canada, and the Lower 48. The Kenai Spur Highway connects the large population centers of the Central Peninsula—Kenai, Nikiski, Ridgeway, and Salamatof—to the Sterling Highway. At opposite ends of the Peninsula, the Seward and Sterling Highways connect Seward to Homer and enable the development of numerous communities like Moose Pass, Cooper Landing, and Anchor Point, which lie between. The diversified economy of the KPB owes much to this relatively well-developed highway infrastructure, enabling the flow of people (including tourists), consumer goods, and construction materials at lower cost than other regions in Alaska that are entirely dependent on air transportation.

There are a number of communities and villages in the Southern Peninsula that do not connect to the road system, including Seldovia, Nanwalek, and Port Graham. These communities are accessible by boat or air. On the western side of the Borough, the village of Tyonek is also only accessible by boat or air.

9.3.1.2 Airports

The Borough has both private and public airports, ranging from those that receive daily commercial service, such as Homer and Kenai to remote gravel airstrips (Table 9-1). Public airports include major hubs and airfields used for large carriers, jet liners, and international flights, as well as smaller public charter flights and personal aircraft. Private airports may require special permission, a private membership, or use of private charter flights. Most airports are private as there is a need to access many small, remote communities. “Flightseeing” tours are popular among tourists, especially in Homer, Soldotna, and Kenai.

The Kenai Municipal Airport is the largest of the airports in the KPB and serves as the primary collection and distribution center for scheduled passenger, cargo, and mail service. Regular commuter flights out of this airport link the Central Peninsula to Anchorage.

Table 9-1. Public and Private Airports in the Kenai Peninsula Borough

Airport	Location	Ownership
Anchor River Airpark Airport	Anchor Point	Private
Hackney Landing Seaplane Base	Clam Gulch	Private
Bear Cove Farm Airport	Homer	Private
Bradley Lake Hydroelectric Project Airstrip Airport	Homer	Private
Homer Airport	Homer	Public
Kasilof Airport	Kasilof	Public
Carty's Airport Strip	Kenai	Private
Doyle Estates Airport	Kenai	Private
Henley Airport	Kenai	Private
Island Lake Seaplane Base	Kenai	Public
Kenai Municipal Airport	Kenai	Public
Drift River Airport	Kenai	Public
McGahan Industrial Airpark	Nikiski	Private
Offshore Systems Kenai Heliport	Nikiski	Private
Bangerter Field Airport	Soldotna	Private
Soldotna Airport	Soldotna	Public
Mackeys Lake Seaplane Base	Soldotna	Public
Alaska Airpark Airport	Sterling	Private
Sterling Air Park Airport	Sterling	Private
Dutch Landing Strip Airport	Sterling	Private
Lakewood Airstrip Airport	Sterling	Private
Scooters Landing Strip Airport	Sterling	Private
Seward Airport	Seward	Public
Nanwalek Airport	Nanwalek	--
Dog Fish Bay Airport	Nanwalek	Private
Port Graham Airport	Port Graham	--
Seldovia Airport	Seldovia	Public
Seldovia Seaplane Base	Seldovia	Public
Tyonek Airport	Tyonek	Private

Source: University of Alaska Center for Economic Development (2021)

9.3.1.3 Railroad

The Alaska Railroad Corporation operates two trains between Seward and Anchorage. The Grandview Cruise Train is only available to cruise ship passengers beginning or ending a cruise in Seward. The Coastal Classic is open to the public and makes a daily round-trip from Anchorage to Seward with a stop in Girdwood. Seward is the only community in the KPB with rail access, and the train moves freight (including coal from the Interior for export) in addition to passengers.

9.3.1.4 Alaska Marine Highway System/Ferry

The Alaska Marine Highway System provides state-run ferry service to Homer and Seldovia as part of the Southcentral Alaska route. Ferry service is a vital link between the KPB's coastal communities and allows vehicles as well as passengers to access places not on the road system.

9.3.1.5 Ports and Harbors

The KPB has several ports and harbors including the City of Homer Port and Harbor, Seward Harbor, Seldovia Harbor, and Port of Kenai. In addition, there is a network of boat launches located across the rivers, lakes, and coastline of KPB that provide access points to recreation opportunities and subsistence resources.

Seward is the Borough's main port hub. Seward's strategic location on the Gulf of Alaska coupled with existing port, harbor, rail, and highway infrastructure make it an important regional maritime asset. In 2016, the Alaska Railroad upgraded the Seward freight dock to accommodate fishing vessels seeking to unload their catch in Seward. The ports in the cities of Seward and Kenai are two of the top U.S. ports for commercial fish volume and price.

Figure 9-19 shows the historical share of each of the transportation industry sub-sectors for various economic indicators, as well as the average monthly wages compared to the average wage for all industries in the KPB. As noted above, the transportation industry is quite diverse, and there is not one sub-sector that dominates the transportation and warehousing industry in the KPB. There has been a higher number of establishments in the scenic and sightseeing sub-sector, accounting for 30 percent of total number of employers in the Borough. Establishments in this sub-sector, however, are small businesses, and its share of total employment and total wages are 20 percent and 16 percent respectively. Air transportation contributes a higher share of total wages in the transportation industry (20 percent). The air transportation sub-sector includes firms that provide scheduled and nonscheduled passenger and cargo services, flightseeing, charters, and airport services such as repair and maintenance.

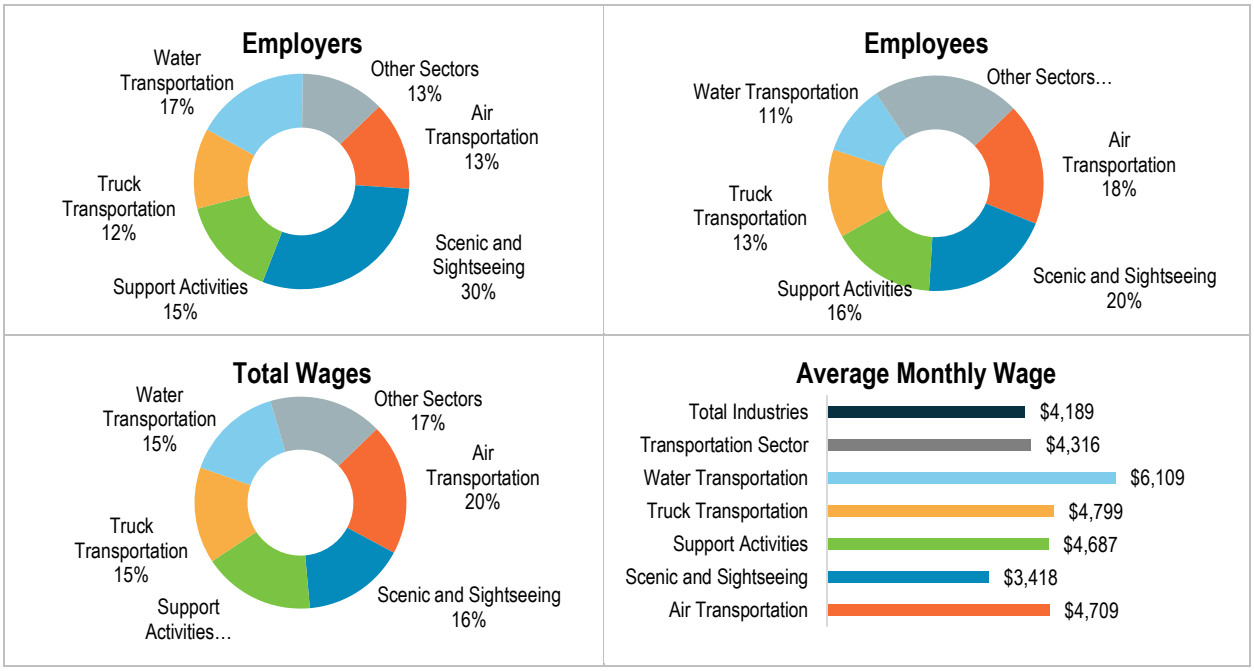


Figure 9-19. Transportation and Warehousing Industry Number of Employers, Jobs, Total Wages, and Average Monthly Wages in the Kenai Peninsula Borough, 2008–2020 Average

Source: ADOLWD (2021b)

Notes: Wages were adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

The "Other Sectors" in Figure 9-19 include the sub-sectors with significantly fewer employers and the sub-sectors with employment and wage data withheld by ADOLWD due to disclosure issues. This includes pipelines, transit and ground passengers, warehousing and storage, couriers and messengers, and postal service.

The water transportation sub-sector pays the highest wages, 42 percent higher than the average wage for the sector and 46 percent higher than the average for all industries in the KPB. Included in the water transportation sub-sector are stevedoring companies (firms that load and unload cargo and passengers from vessels), boat charters, barges, tugboat operators, shipyards, freighters, water taxis, lighterage and other services.

Note that employment and wages for transportation facilities that are publicly owned (state and local governments) are included in the government sector and not part of the economic data presented in Figure 9-19.

9.3.2 Trends in Employment, Wages, and Business Sales

Figure 9-20 shows the historical trends in employment and wages in the transportation and warehousing industry. Both total wages and employment levels were on an upward trend from 2008 to 2013, the peak year for the transportation and warehousing industry, then levels declined during the Alaska recession which started in 2014 and lasted until 2016. Employment and wage levels increased in 2019 but decreased again during the pandemic in 2020; employment levels decreased 10 percent and total wages dropped 5 percent. Most of the job losses were in the air transportation (28 percent decline) and scenic and sightseeing sub-sectors (32 percent decline).

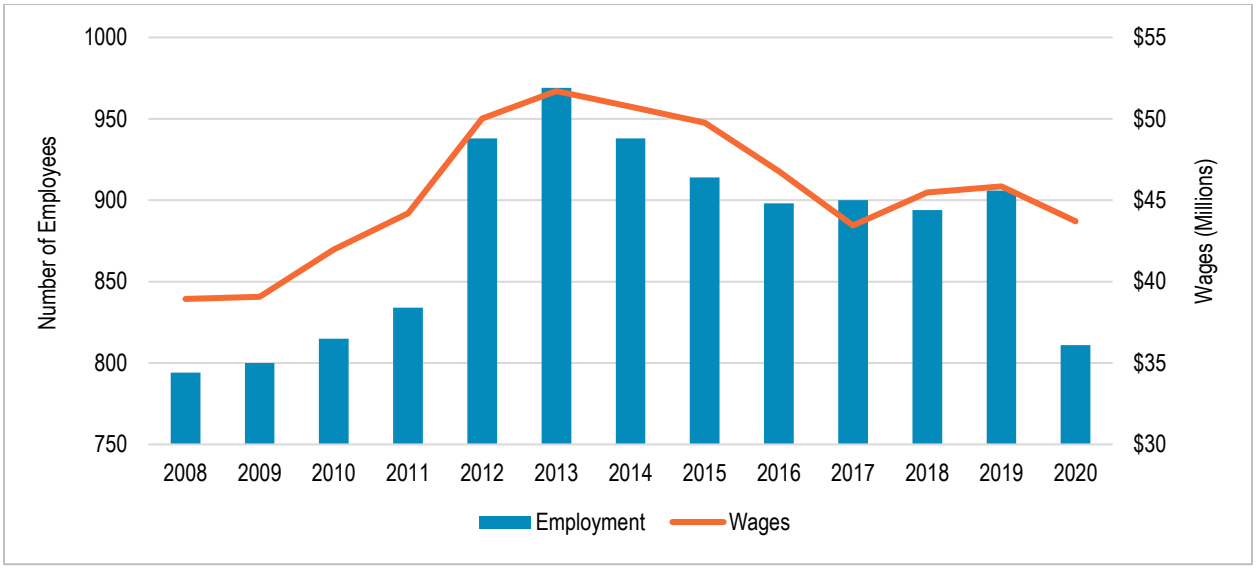


Figure 9-20. Transportation and Warehousing Industry Employment and Wages in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Figure 9-21 shows the number of self-employed proprietors and associated total earnings in the transportation and warehousing industry. From 2008 to 2018, the number of self-proprietors ranged between a low of 197 in 2013 to 258 in 2018. Over the ten-year timeframe, the increase in the number of self-employed proprietors and total earnings were minimal: about $160,000 increase in earnings and an increase of 23 self-employed proprietors. This segment of the workforce did not vary as much as the number of wage and salary employees shown in Figure 9-20.

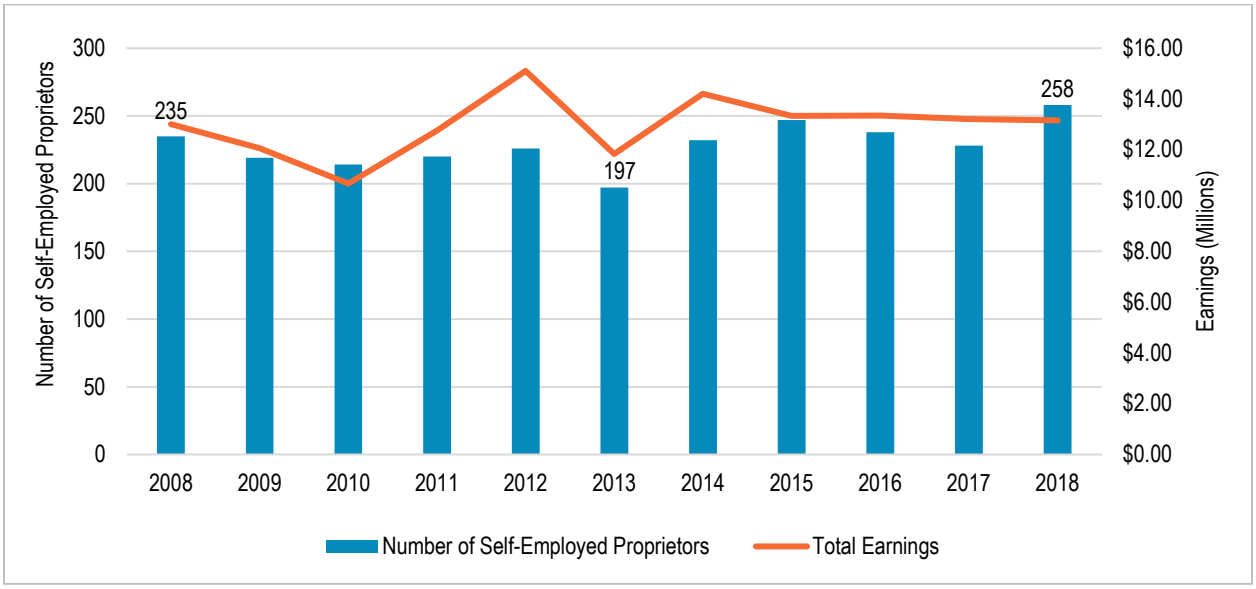


Figure 9-21. Transportation and Warehousing Industry Self-Employed Proprietors and Earnings in the Kenai Peninsula Borough, 2008–2018.

Source: U.S. Census Bureau (2022e)

Notes: U.S. Census NES data for 2019 and 2020 have not yet been released. Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Business sales in the transportation and warehousing industry account for 4 percent of the total gross business sales from all lines of business in the KPB. Figure 9-22 shows business sales for the transportation and warehousing industry. Historical business sales in the transportation and warehousing industry, which are driven by values of transactions associated with other industries, have been highly variable. For example, some of the recent increases in sales were partially due to newly registered oilfield-related businesses and several decreases can be attributed to businesses closing. Gross business sales were highest in 2008 at $269 million (2020$) and lowest the following year at $105 million; by 2020, sales were valued at just over $200 million.

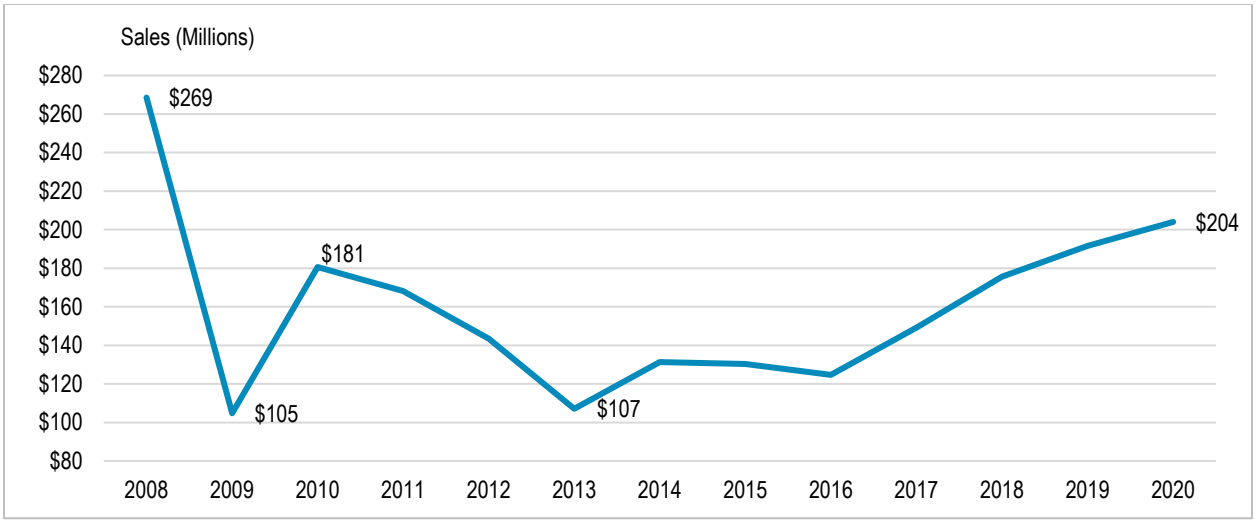


Figure 9-22. Transportation and Warehousing Industry Sales in the Kenai Peninsula Borough, 2008–2020

Source: Turner (2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

9.3.3 Workers Counts by Place of Residence and by Occupation

Figure 9-23 shows employment information for individuals who live in the KPB with occupations associated with the transportation and warehousing industry. This segment of the KPB labor force has been growing for several years. This upward trend is a result of the increasing number of employment opportunities in the transportation and warehousing industry but also could be due to migration of workers in the industry who work elsewhere and moved to live in the KPB.

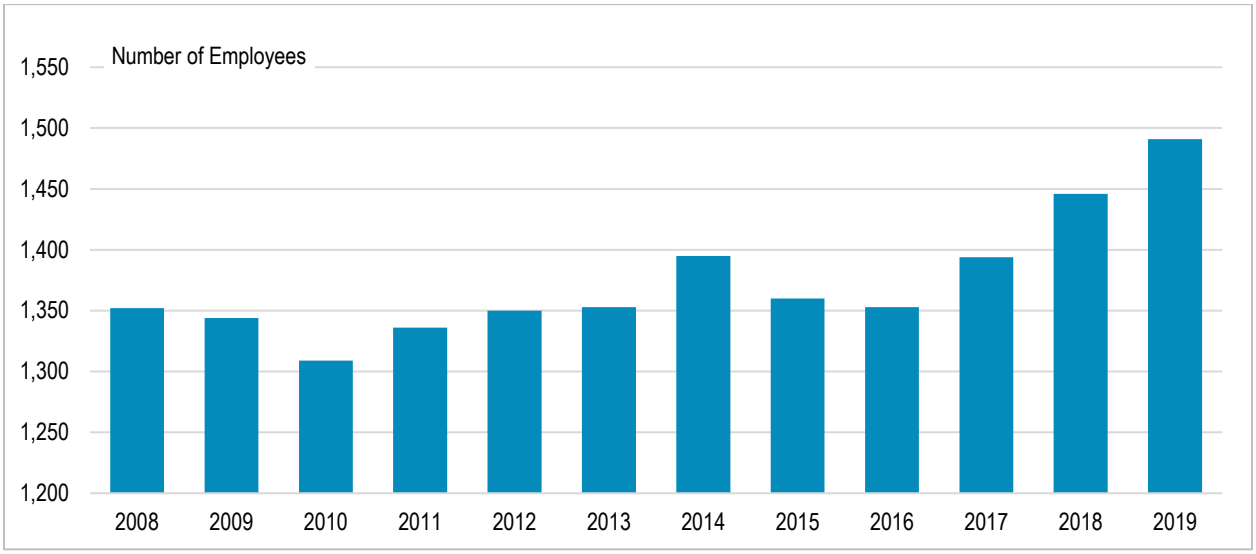


Figure 9-23. Transportation and Warehousing Industry Employment in the Kenai Peninsula Borough, 2008–2019

Source: Robinson (2021b)

Figure 9-24 shows the top 20 transportation and warehousing industry occupations held by workers who live in the KPB.

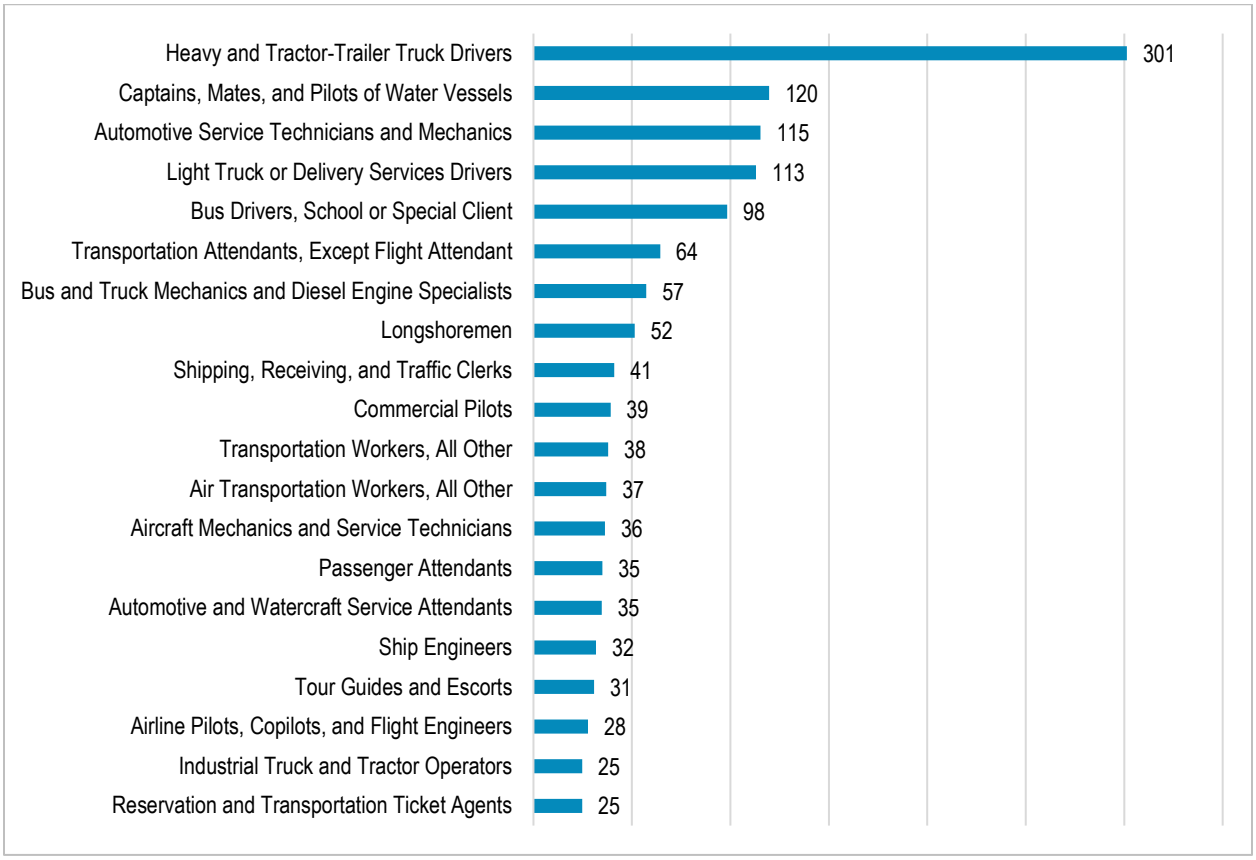


Figure 9-24. Transportation and Warehousing Industry Employment in the Kenai Peninsula Borough by Occupation, 2008–2019

Source: Robinson (2021b)

Note: A commercial pilot and an airline pilot have different occupational codes. An airline pilot is contracted to an airline. A commercial pilot can legally fly for hire but they do not work for a specific company. A commercial pilot can be hired for charter flights, rescue operations, firefighting, aerial photography and crop dusting, etc.

9.4 Trade, Utilities, and Services Industry

9.4.1 Overview

This section presents the trends in the trade, utilities, and services industry. This aggregated sector includes private sector establishments engaged in wholesale and retail trade, utilities, information, professional and business services, financial activities, and other services. Table 9-2 lists all the sectors and sub-sectors in the trade, utilities, and services industry.

Table 9-2. Sectors and Sub-sectors in the Trade, Utilities, and Services Industry

Sector	Sub-sectors
Wholesale Trade	
	Wholesale, Durable Goods
	Wholesale, Nondurable Goods
	Wholesale, Electronic Markets
Retail Trade	
	Motor Vehicle and Parts Dealers
	Furniture and Home Furnishings
	Electronics and Appliances
	Building Material and Garden
	Food and Beverages
	Health and Personal Care
	Gasoline Stations
	Clothing and Clothing Accessories
	Sporting Goods, Books, Music, etc.
	General Merchandise
	Miscellaneous
	Nonstore Retailers
Utilities	
	Utilities
Information	Publishing, except Internet
	Motion Picture and Sound Recording
	Broadcasting, except Internet
	Telecommunications
	ISPs, Data Processing
	Other Information Services
Finance and Insurance	
	Credit Intermediation, etc.
	Securities, Investments
	Insurance Carriers
	Funds, Trusts, etc.
Real Estate, Rental and Leasing	
	Real Estate
	Rental and Leasing Services
Professional, Scientific, and Technical Services	
	Professional, Scientific, Tech.
Management of Companies and Enterprises	
	Management of Companies and Enterprises
Administrative and Waste Services	
	Administrative and Support Services
	Waste Management/Remediation
Educational Services	
	Educational Services
Other Services	
	Repair and Maintenance
	Personal and Laundry
	Membership Organizations, etc.
	Private Households

Source: ADOLWD (2021b)

Figure 9-25 shows the historical share (2008 to 2020) of each segment of the trade, utilities, and services industry for various economic indicators, including the average monthly wages compared to the average wage for all industries in the KPB region. Between 2008 and 2020, total employment in this sector averaged about 5,500 jobs. A majority of these jobs are in the trade (2,813), professional and business services (708), and other services (827). While the utilities sector only account for 1 percent of the establishments and 5 percent of the total employment, it contributes 12 percent of the total wages in this industry. As shown in the figure, workers in the utilities sector are paid the highest average wage in this industry, making more than double the average wage for all industries in the region. Average wages in educational services, other services, and retail trade are lower than industry-wide wages.

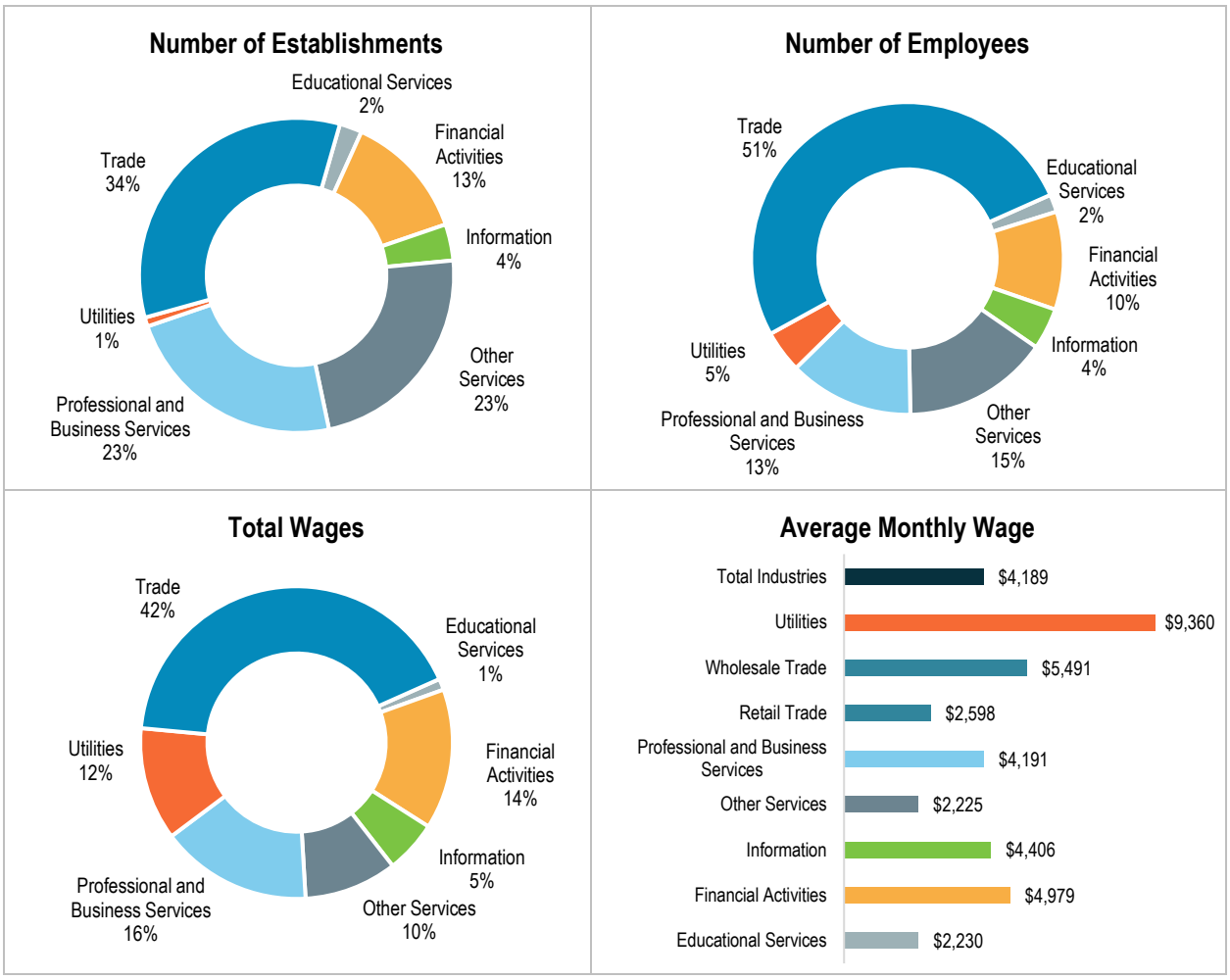


Figure 9-25. Trade, Utilities, and Services Industry Employers, Jobs, Total Wages, and Average Monthly Wages in the Kenai Peninsula Borough, 2008–2020 Average

Source: ADOLWD (2021b)

Note: Wages were adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

9.4.2 Trends in Employment, Wages, and Business Sales

Figure 9-26 presents the historical trends in employment and total wages for the industry from 2008 to 2020. Employment and total wages in this sector trended upward from 2008 to 2014. Employment levels trended downward since the peak in 2014 but total wages fluctuated and increased between 2017 and 2020. Except for educational services, all the other sub-sectors were negatively affected by the 2020 pandemic with decreases in employment levels.

Professional and business services, which is closely tied to construction and to oil and gas, also suffered during the Alaska recession that started in 2014.

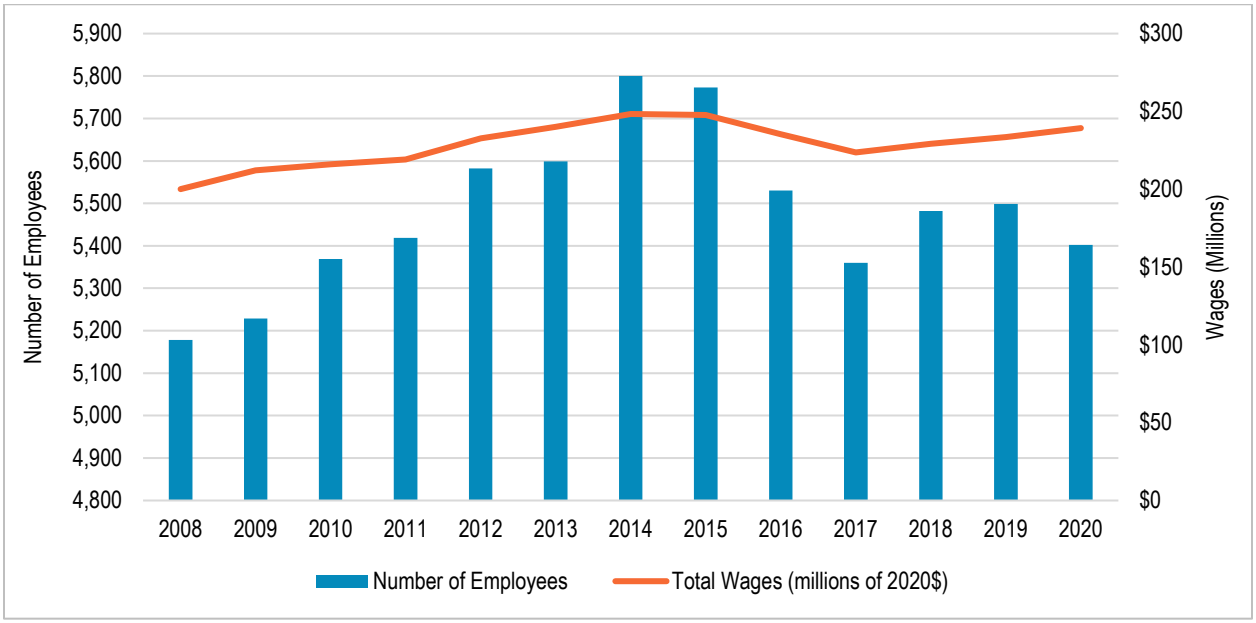


Figure 9-26. Trade, Utilities, and Services Industry Employment and Total Wages in the Kenai Peninsula Borough, 2008–2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Gross sales, the number of employees (average annual), and the total wages to those in trade and services industry professions in the KPB are all trending down over the last four years. Recent declines reflect a statewide trend linked to what ADOLWD is calling "second wave" losses in construction and professional services. These industries depend heavily on oil and gas and state government work, both in a recessionary mode (Kenai Peninsula Economic Development District 2018).

Substantial upstream losses eventually reached the industries, including the trade and services industry, that depend on local demand and expendable income. Job loss in a local or state economy means less spending, which affects employers such as retail trade, shopping centers, theaters, nonprofits that depend on donations, and bars and restaurants (Wiebold 2018).

Figure 9-27 shows the number of self-employed proprietors and associated total earnings in the industry. From 2008 to 2018, the number of self-proprietors ranged between a low of 2,430 in 2010 to 2,930 in 2018. Over the ten-year timeframe, the increase in the number of self-proprietors and total earnings

amounted to 464 self-employed proprietors and about $1.2 million increase in earnings. This segment of the workforce makeup almost half (48 percent) of the total workforce including wage and salary employees.

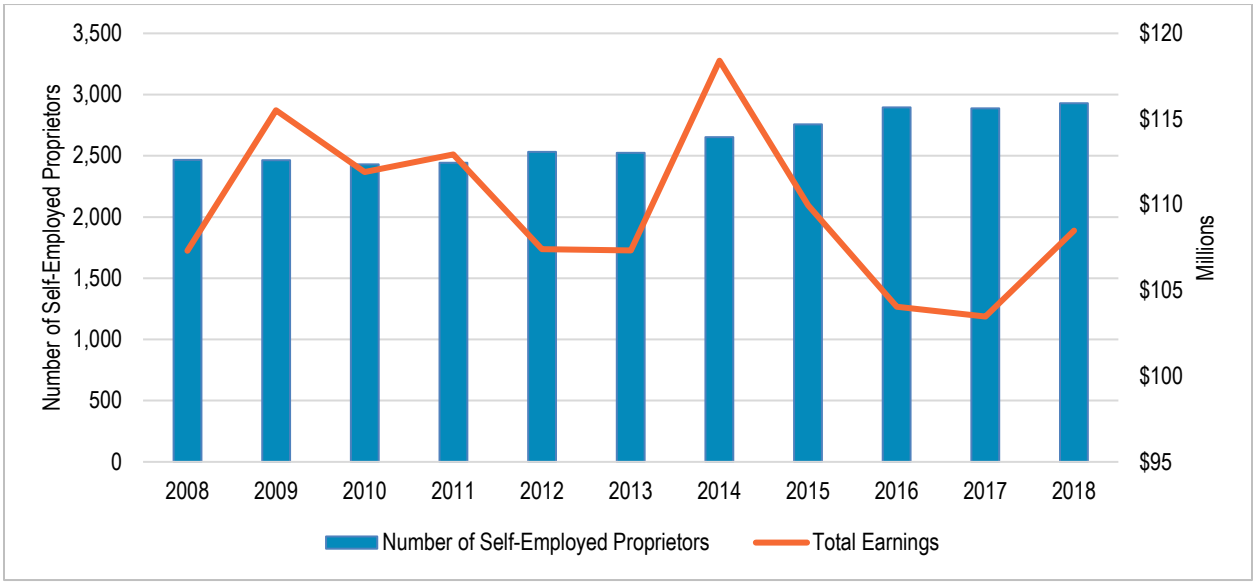


Figure 9-27. Trade, Utilities, and Services Industry Self-Employed Proprietors and Earnings in the Kenai Peninsula Borough, 2008–2018.

Source: U.S. Census Bureau (2022e)

Notes: U.S. Census Non-Employer Statistics data for 2019 and 2020 have not yet been released. Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Historical business sales generated by the various trade, utilities, and services lines of businesses are presented in Figure 9-28. Retail and wholesale trade and utilities account for the majority of the total gross business sales in the region. Retail trade accounts for half of the total gross business sales in the KPB. Wholesale trade accounts for 17 percent, and utilities contribute 8 percent of total sales in the KPB. Historical business sales decreased during the Alaska recession and also during the 2020 pandemic. Job losses and wage declines in the other major industries resulted in less spending, especially in sectors that depend on disposable income such as trade and services.

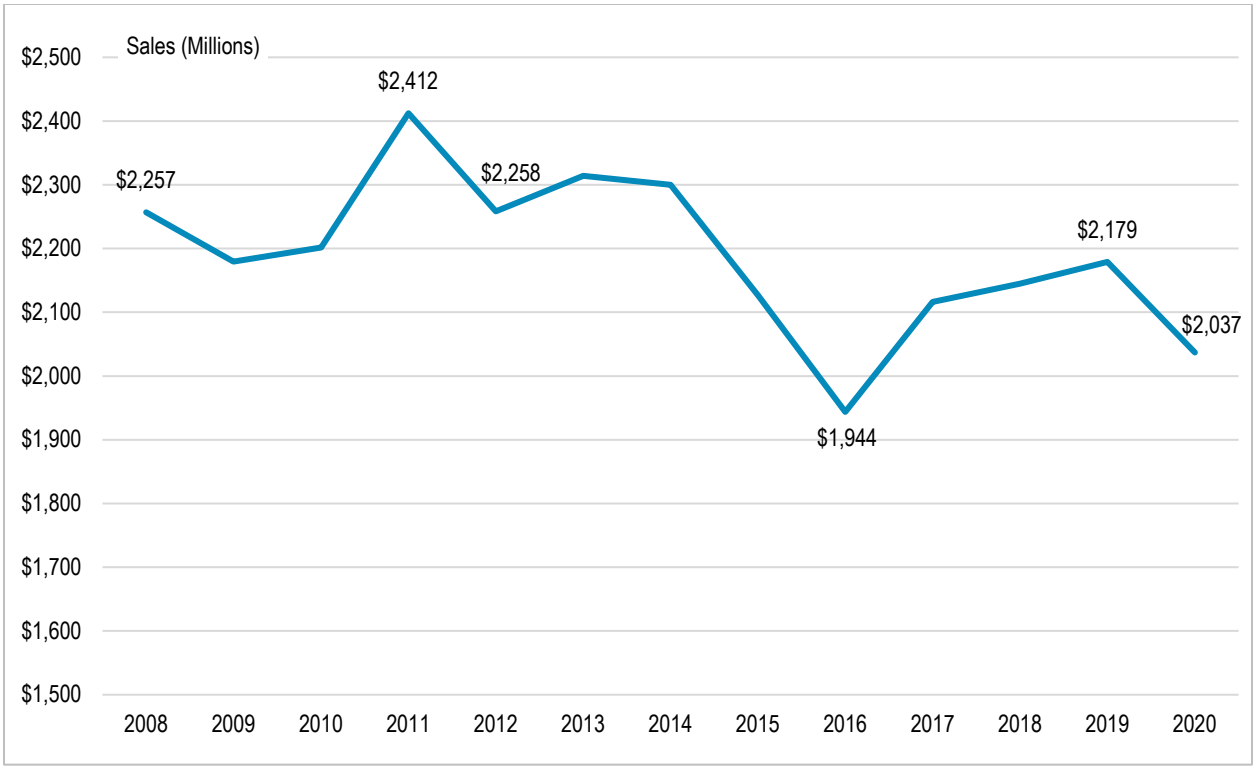


Figure 9-28. Trade, Utilities, and Services Industry Sales in the Kenai Peninsula Borough, 2008–2020
Source: Turner (2021)
Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

9.5 Agriculture, Forestry, Fishing, and Hunting Industry

9.5.1 Overview and Trends in Agricultural Activity

The most comprehensive source of information on agricultural activity at the regional level is the U.S. Census of Agriculture published by the U.S. Department of Agriculture. The reports are published every five years, and the most recent information available is for the year 2017. Highlights of the KPB area profiles from the 2007, 2012, and 2017 reports are presented in Figure 9-29.

The agricultural industry in the KPB has been growing. The number of farms in the region grew by 110 percent from 2007 to 2017. Revenues from agriculture production also increased. In 2017, crop production in the region generated $2.86 million in revenues, a 54 percent increase from 2012 revenues (2007 data were not reported due to disclosure rules).

Agriculture production in the KPB so far has been small scale. Of the 260 producing farms in 2017, 83 percent were smaller than 50 acres. Total acreage of the farms in the Borough decreased from 2007 levels. The average farm size in 2007 was 309 acres and by 2017, it had decreased to 121 acres. Availability of land in the Borough can limit future growth of the industry.

The KPB's agriculture market produces syrup, honey, animal products, hay, vegetables (produce), and peonies. In 2017, the top crops in terms of acreage were hay (1,746 acres), vegetables (67 acres), floriculture and bedding crops (40 acres), cut flowers/greens (38 acres), and potatoes (17 acres).

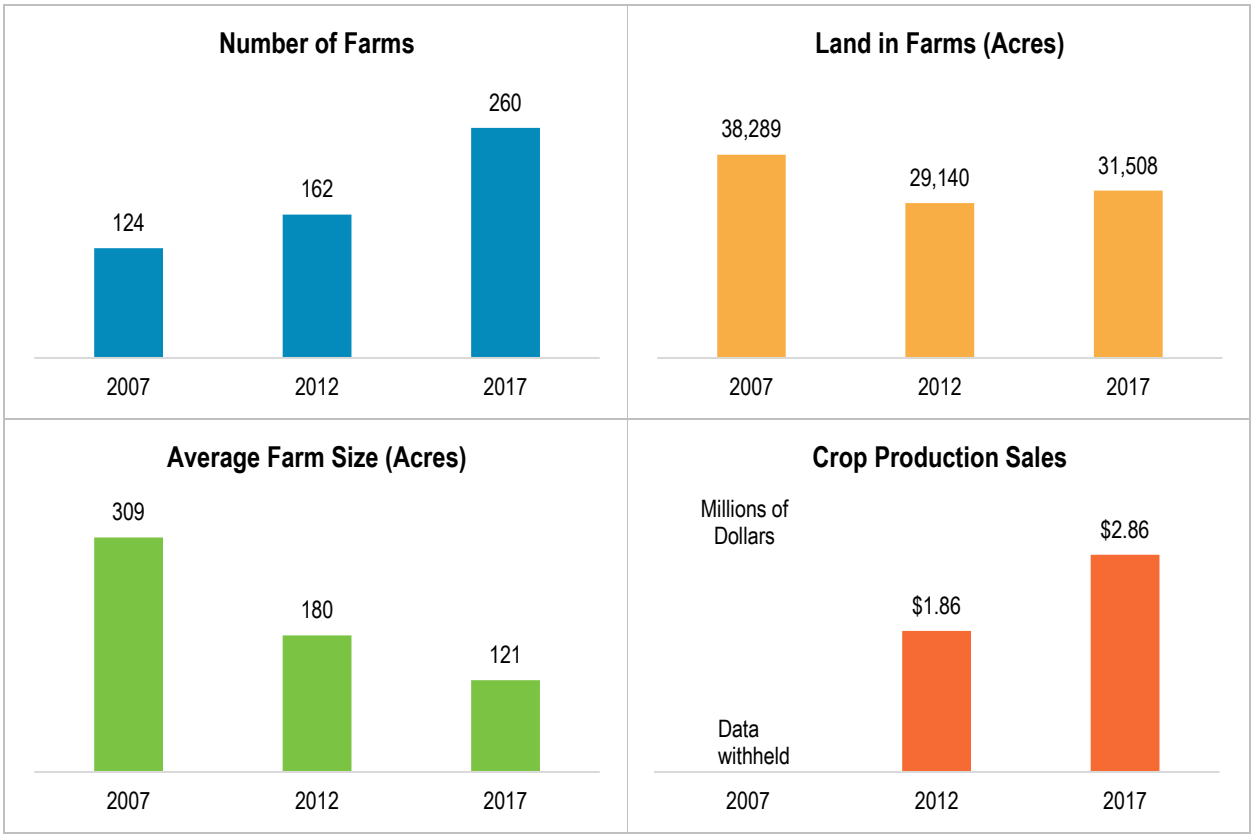


Figure 9-29. Number of Farms, Average Farm Size, Farm Acreage, and Crop Production Revenues in the Kenai Peninsula Borough, 2007, 2012, and 2017

Source: U.S. Department of Agriculture (2022)

Notes: Sales were adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

9.5.2 Trends in Employment, Wages, and Business Sales

Data on employment and wages specific to farming and agriculture are limited due to disclosure rules. At the regional level, ADOLWD data on crop production, animal production, forestry and logging, fishing, hunting and trapping, and agriculture and forestry support are aggregated into one sector: Agriculture, Forestry, Fishing, Hunting. The establishments in this sector are often described as farms, ranches, dairies, greenhouses, nurseries, orchards, or hatcheries. A farm may consist of a single tract of land or a number of separate tracts which may be held under different tenures. For example, one tract may be owned by the farm operator and another rented. It may be operated by the operator alone or with the assistance of members of the household or hired employees, or it may be operated by a partnership, corporation, or other type of organization. When a landowner has one or more tenants, renters, croppers, or managers, the land operated by each is considered a farm.

The KPB's agricultural industry is still growing and is not considered a major industry in the Borough. In 2020, there were only 47 establishments recorded in the ADOLWD QCEW data; this has grown from 20

establishments in 2008. Employment levels are also low but have been growing with only 27 jobs in 2008 and 130 in 2020. Total wages grew from just about $860,000 (2020$) in 2008 to $5.5 million in 2020 (Figure 9-30). The historical average monthly wage in this industry is $3,668 (2020$), lower than the historical average wage for all industries in the KPB ($4,189).

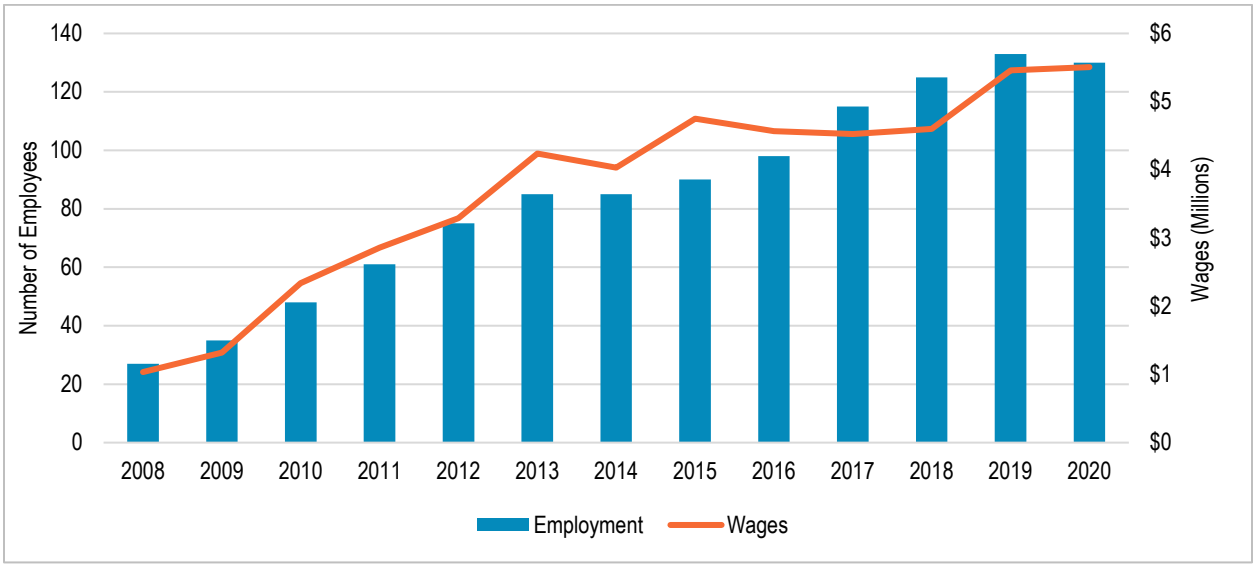


Figure 9-30. Agriculture, Forestry, Fishing, and Hunting Industry Employment and Wages in the Kenai Peninsula Borough, 2008-2020

Source: ADOLWD (2021b)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

The industry's workforce includes a significantly higher number of self-employed proprietors. Non-employer Statistics (NES) data are shown in Figure 9-31. Unlike the wage and salary employment data, the number of self-employed workers decreased every year from 2014 to 2018; prior to this period, the number of self-employed workers fluctuated. Total earnings of this segment of the workforce have also been on a declining trend since 2011.

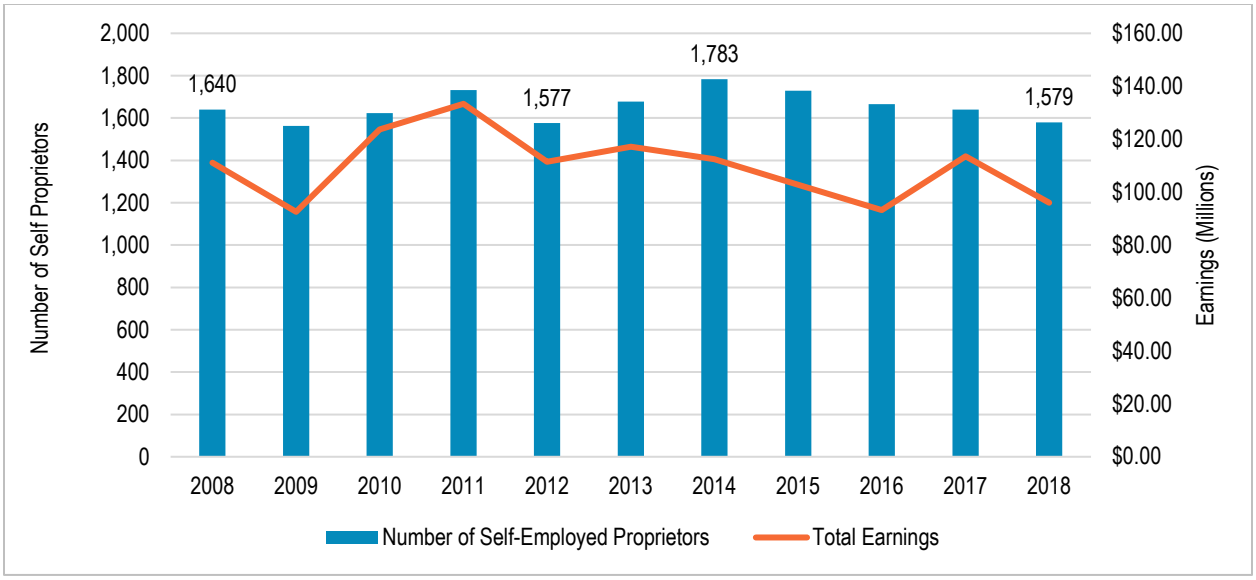


Figure 9-31. Agriculture, Forestry, Fishing, and Hunting Industry Self-Employed Proprietors and Earnings in the Kenai Peninsula Borough, 2008-2018.

Source: U.S. Census Bureau (2022e)

Notes: U.S. Census Non-Employer Statistics data for 2019 and 2020 have not yet been released. Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

Historical data on gross business sales are presented in Figure 9-32. Sales increased significantly since 2016 with the highest recorded sales in 2020 at $27.5 million. Prior to 2016, sales were under $5 million (2020$). The recent increases can be attributed to increased business in growing food, peonies, and marijuana. The KPB has been a key player in Alaska's cannabis industry since the State legalized recreational marijuana use in 2015 (Poux 2021b). By 2017, there were 28 marijuana cultivators in the Borough (Kenai Peninsula Economic Development District 2018).

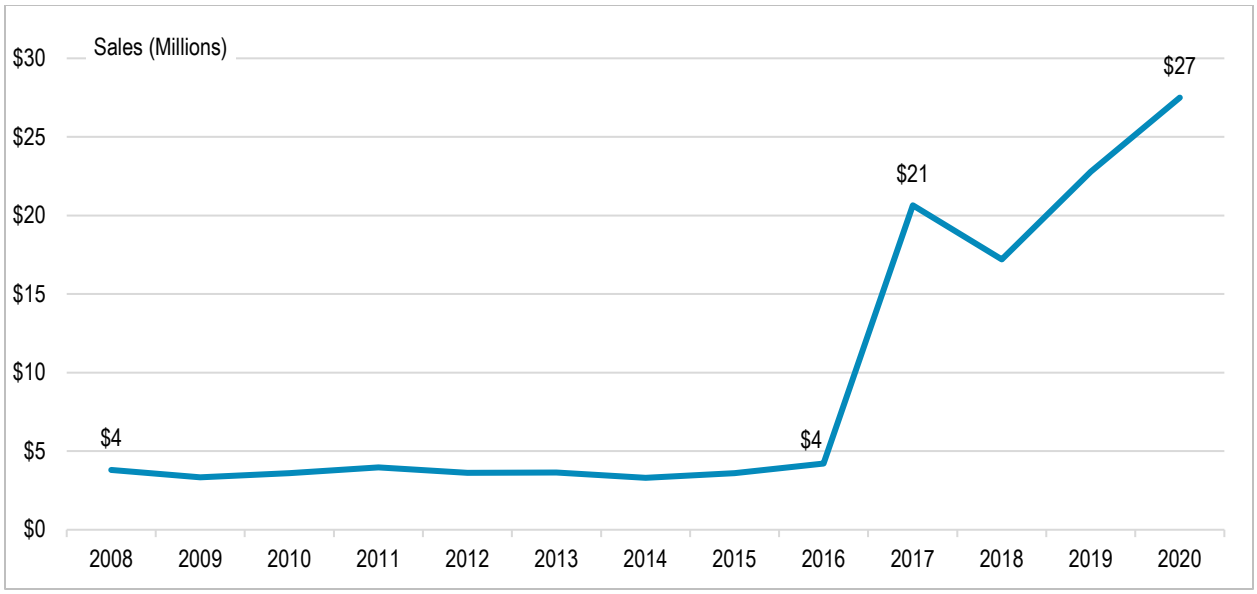


Figure 9-32. Agriculture, Forestry, Fishing, and Hunting Industry Gross Business Sales in the Kenai Peninsula Borough, 2008-2020

Source: Turner (2021)

Notes: Adjusted to 2020 dollars using the Consumer Price Index Research Series (CPI-U-RS).

10 Trends in Subsistence, Personal, and Educational Use of Wild Resources

This chapter assesses the role of subsistence, personal, and educational use of wild resources in the welfare and livelihoods of KPB residents and communities between 2008 and 2020. Subsistence, personal, and educational uses are defined as follows:

- Subsistence is defined in Alaska state law as the "noncommercial customary and traditional uses" of fish and wildlife. By this definition, subsistence uses of wild resources include harvesting for food, fuel (e.g., firewood), clothing, tools and building materials, handicrafts, and sharing. Subsistence activities are managed both at the Federal and state levels in Alaska (ADF&G 2022f)
- Personal use allows residents to harvest fish and game for individual or household consumption. Personal use activities are managed at the state level by ADF&G and participants often include residents of urban areas (ADF&G 2022g)
- Educational use fisheries are managed by ADF&G to educate future generations of Alaska residents regarding "historic, contemporary, or experimental methods for locating, harvesting, handling, or processing fishery resources" (Shields 2010). Alaska Native traditional councils and veteran organizations are common users of educational fishery resources.

Subsistence Harvesting in the KPB

In Southcentral Alaska in 2014:

- 55% of households harvested game under subsistence use
- 80% of households harvested fish under subsistence use

In a 2013 survey of KPB residents:

- 80% of residents had a household member with fishing skills
- 67% of this group depended upon personal/subsistence use to access local seafood

10.1 Overview

Kenai Peninsula Borough community members take part in non-commercial harvesting of wild resources by obtaining permits for subsistence, personal, or educational use. While sportfishing is accessible to all residents of and visitors to the State of Alaska depending on the type of gear used, participation in subsistence, personal, and educational use activities is more restrictive (ADF&G 2022f)

The data on subsistence and personal use of wild resources in the Borough presented in his section are synthesized from contacts at and resources developed by ADF&G. They encompass Borough-level and community-specific harvests of marine and terrestrial species. Limited data exist to inform a time trend for these activities in the Borough, either overall or at the community level. Some data are available for certain years and in certain communities. However, community-level data are not systematically collected at regular intervals, but rather collected opportunistically in support of analyses of potential impacts of a given project within the region (e.g., natural gas pipelines). Despite these data limitations, the data underscore the critical importance of access of rural communities in Alaska in general, and in the KPB, in particular, to subsistence resources, both for food security and to maintain customary and traditional connections across generations of Alaska Native communities.

10.2 Subsistence Harvesting

Subsistence harvest data are often collected through surveys implemented to evaluate the potential impacts of specific projects. While the available data underscore the importance of subsistence activities in KPB communities, they are limited both geographically and over time and, therefore, do not provide a complete picture of trends and key drivers of subsistence activities.

The subsistence way of life plays a key role in supporting rural Alaskan and Alaska Native communities. These communities depend upon subsistence harvesting both for food security and to pass down their cultural practices and traditions to younger generations. Subsistence practices foster a communal way of life in Alaska, as harvests are often shared across households, and communities depend on subsistence harvests to ensure they have available food sources year-round (ADF&G 2014). While subsistence activities occur across the state, Southcentral Alaska, and the KPB rely significantly on subsistence harvests of fish and wildlife.

At the state level in 2014, 17 percent of Alaskans lived in rural areas, where subsistence activities are permitted, while 83 percent of Alaska's population lived in "nonsubsistence areas." Most households in rural areas statewide depended upon subsistence use for daily life, with the majority using wild resources as a food source. Almost all subsistence use participants statewide in 2014 harvested fish, and the majority also harvested other wildlife. Salmon is a particularly important subsistence resource in Alaska and salmon subsistence areas in the KPB tend to be accessible by road (State of Alaska's Salmon and People 2019).

In Southcentral Alaska in 2014, 55 percent of households harvested game and 79 percent of households relied upon game from subsistence harvests as a food source. A greater percentage, 80 percent of households, harvested fish, with 94 percent indicating they relied upon fish from subsistence harvests (ADF&G 2014).

Within the KPB specifically, surveyed residents described that, without subsistence practices, limitations to accessing affordable locally caught seafood would be a major barrier to food security. Eighty percent of residents surveyed had a household member with fishing skills and two-thirds of that subgroup primarily depended upon personal or subsistence practices to access local seafood (Loring et al 2013). While KPB residents participate in subsistence harvest of both marine and terrestrial species, fish are a primary focus. Residents harvest salmon, as well as trout and rockfish; however, salmon hold special cultural significance. KPB residents describe the importance of fishing for and consuming salmon for their health and nutrition, in addition to having cultural value (Loring et al 2013). In Cook Inlet, sockeye and pink salmon are subsistence harvest targets, while Coho and Chinook salmon are less frequently harvested.

10.2.1 Management of Subsistence Activities

Subsistence activities in Alaska are managed at both the Federal and state levels.

Federal Subsistence Management	State Subsistence Management
Managing entity: Federal Subsistence Board includes representatives from multiple Federal agencies. *Permit eligibility:* Limited to residents of rural communities (excludes non-rural communities in the KPB in the Homer, Kenai, and Seward areas[1]) *Location:* On Federally managed lands and waters (Federal subsistence activities are not permitted in Anchorage-Matsu-Kenai Nonsubsistence Area *). *Customary and traditional use:* If Federal Subsistence Board makes a customary and traditional use determination in a community for a species, only residents of that community may obtain Federal subsistence priority to harvest the species in the area. In the absence of a customary and traditional use determination, all rural residents may harvest all species in a given area. (Source: U.S. DOI 2018/2020) * Includes Homer, Anchor Point, Fritz Creek and Kachemak City; Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch; Seward and Moose Pass	*Managing entities:* Alaska Board of Game, Alaska Board of Fisheries and the Joint Board of Fisheries and Game. *Permit eligibility:* All state residents, dependent on harvest areas and species. Some state subsistence areas do not require permits. *Location:* Communities outside of the Anchorage-Matsu-Kenai Nonsubsistence Area. *Customary and traditional use:* Alaska Joint Board of Fisheries and Game makes customary and traditional use determinations for fish and game species. The Board sets the amount reasonably necessary for subsistence uses of these species before commercial and recreational uses. Determinations are based on eight criteria.* (Source: ADF&G Subsistence in Alaska 2022; Program Manager at ADF&G) * Length and consistency of use; seasonality; methods and means of harvest; geographic areas; means of handling, preparing, preserving, and storing; intergenerational transmission of knowledge, skills, values, and lore; distribution and exchange; diversity of resources in an area and economic, cultural, social, and nutritional elements.

10.2.1.1 Federal Management of Subsistence Activities

In 1980, Congress passed the Alaska National Interest Lands Conservation Act (ANILCA), which prioritizes subsistence on Federal lands in Alaska. Owing both to the traditional importance of the activity as well as the relatively limited access of rural populations to developed areas to purchase food, Alaska is the only state in which subsistence use of fish and game is given the highest priority for consumptive use on Federal lands. Under Federal law, subsistence use is defined as follows:

> "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; and for the customary trade, barter or sharing for personal or family consumption" (U.S. DOI 2022).

In 1990, the Federal Subsistence Management Program undertook management of subsistence uses of wild resources on Federal lands. The Federal Subsistence Board in Alaska consists of members from the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Bureau of Indian Affairs, U.S. Forest Service, and two public members. Generally, all "rural residents" of Alaska can obtain Federal subsistence permits to harvest fish and game on Federal lands across the state. All communities in Alaska are considered rural with the exception of specific areas designated as "nonrural communities." Federal subsistence regulations in Alaska are subject to change over time in terms of the length of seasons, harvest limits, methods, and the community-specific customary and traditional use determinations for subsistence harvest of fish and wildlife.

Currently, within the KPB, only areas near Homer, Kenai, and Seward are nonrural communities and therefore are not permitted to subsistence hunt and fish on Federal lands. These nonrural areas are defined as follows:

- **Homer nonrural area:** includes Homer, Anchor Point, Fritz Creek, and Kachemak City
- **Kenai nonrural area:** includes Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch
- **Seward nonrural area:** Seward and Moose Pass

All other communities within the KPB are considered rural and residents are therefore permitted to subsistence hunt and fish on Federal lands (U.S. DOI 2018).

Federal subsistence harvest is permitted in the following locations (State of Alaska's Salmon and People 2019):

- On Federal public lands, including the Kenai and Kasilof Rivers within the Kenai National Wildlife Refuge and Chugach National Forest. Exceptions include Kenai Fjords National Park.
- Within Cooper Landing, Hope, and Ninilchik, for residents of these communities.

Generally, all rural residents of Alaska may harvest fish and wildlife on the available Federal lands. An exception is when the Federal Subsistence Board makes a "customary and traditional use" finding. These findings are based on a "long-established, consistent pattern of use, incorporating beliefs and customs which have been transmitted from generation to generation" for a given species to a specific community. In these cases, subsistence harvest of the species is only permitted for residents of the specific community in that location (U.S. DOI 2018). For example, in the KPB, residents of Ninilchik, Nanwalek, and Port Graham have customary and traditional use determinations for hunting black bear in their respective subsistence management units.[39]

Figure 10-1 identifies the Federal lands open for subsistence use, as well as the rural and nonrural communities. The map does not identify all Federal subsistence fisheries or participants, as all rural

[39] Federal Subsistence Wildlife Regulations provide a full list of customary and traditional use findings by species, community, and management unit. As of the writing of this report, regularly updated Federal subsistence regulations in Alaska are posted by the Department of the Interior here: https://www.doi.gov/subsistence.

Alaskans may participate in Federal subsistence use in the subsistence areas. Additionally, as previously noted, Federal subsistence regulations are subject to change over time.

While Federal subsistence permits pertain only to rural residents, non-rural residents may subsistence hunt on most Federal lands under State of Alaska hunting regulations, with the exception of some National Park Service parks and monuments.

10.2.1.2 State Management of Subsistence Activities

Alaska State law protects "customary and traditional" uses through its 1978 subsistence statute, which was expanded in 1989 to allow all Alaska residents to engage in subsistence use in specific subsistence areas. The ADF&G Joint Board of Fisheries and Game considers eight factors in determining whether a given fish stock or game population can be used for subsistence practices.[40] The Board prioritizes subsistence use of wild resources for the residents of Alaska, first ensuring availability of fish stocks and game populations for subsistence use before providing for commercial or recreational purposes (ADF&G 2022g).

Most of the Kenai Peninsula Borough is located in the Anchorage-Matsu-Kenai Nonsubsistence Area as established by the Alaska Joint Board of Fisheries and Game.[41] Within the KPB, state subsistence harvesting for all Alaska residents may take place outside of the Nonsubsistence Area within the following communities (as identified in Figure 10-1):

- Tyonek, Beluga, Seldovia, Port Graham, and Nanwalek
- Smaller state subsistence subdistricts including Koyuktolik Bay, Port Chatham, and Windy Bay (NOAA 2021b).

[40] The eight factors considered by the Joint Board of Fisheries and Game in defining customary and traditional uses are: 1) length and consistency of use; 2) seasonality; 3) methods and means of harvest; 4) geographic areas; 5) means of handling, preparing, preserving, and storing; 6) intergenerational transmission of knowledge, skills, values, and lore; 7) distribution and exchange; and 8) diversity of resources in an area and economic, cultural, social, and nutritional elements (ADF&G Subsistence in Alaska 2022).

[41] Nonsubsistence areas as designated by the Joint Board of Fisheries and Game are distinct from "nonrural" areas as designated for Federal subsistence activities. Although these areas likely frequently intersect, the designations are made by distinct bodies.

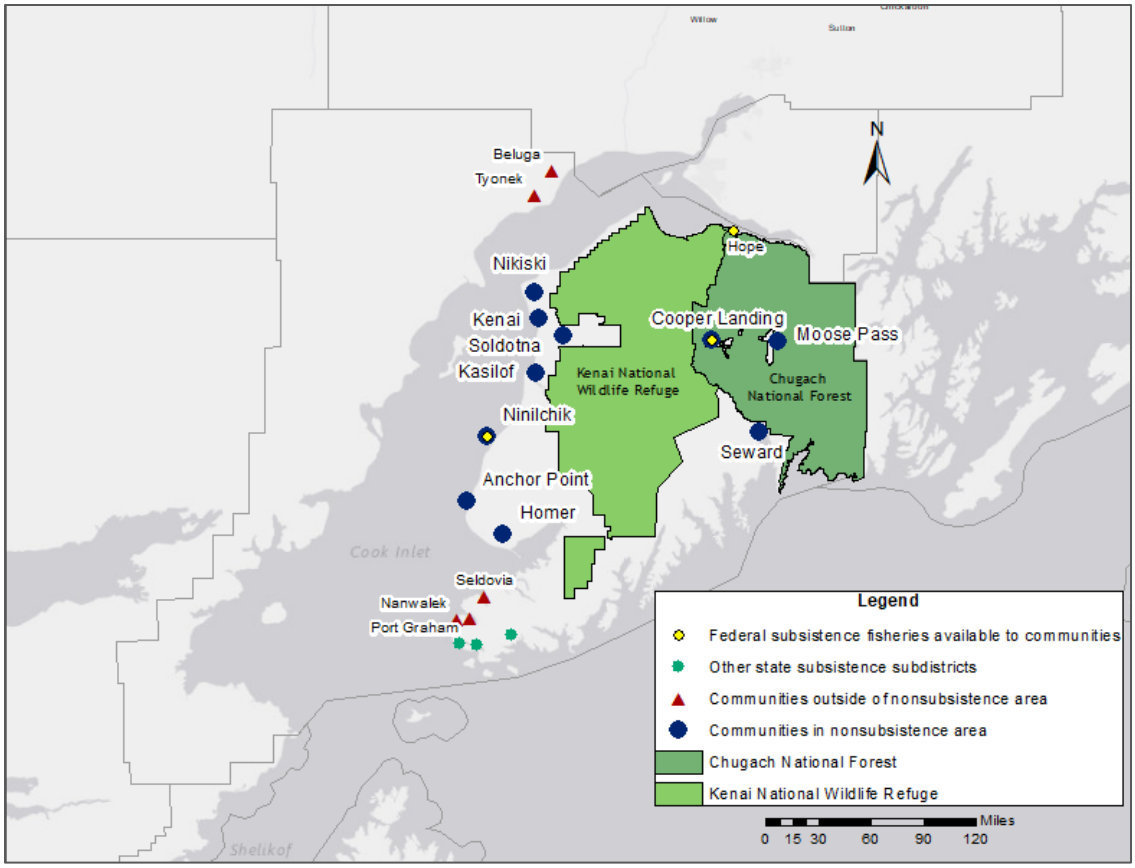


Figure 10-1. Kenai Peninsula Borough Subsistence Use Areas and Communities

Source: Adapted from NOAA (2021b).

10.2.2 Subsistence Harvesting of Marine and Terrestrial Animals (non-fish)

KPB residents harvest a variety of wildlife species, including moose, caribou, furbearers, birds, and plant species. Data for the subsistence harvesting of marine and terrestrial wildlife (excluding fish) are collected and managed by Game Management Unit and community. The Kenai Peninsula Borough is covered by Game Management Units 7 and 15, and portions of Units 16 and 9. Unit 15 covers the western portion of the Kenai Peninsula while Unit 7 encompasses the eastern side. Units 15, 16, and 9 are further divided into subunits. Both recreational and subsistence uses are managed at the subunit level, depending on whether ADF&G established a subsistence finding for a particular unit and species (ADF&G 2022h)

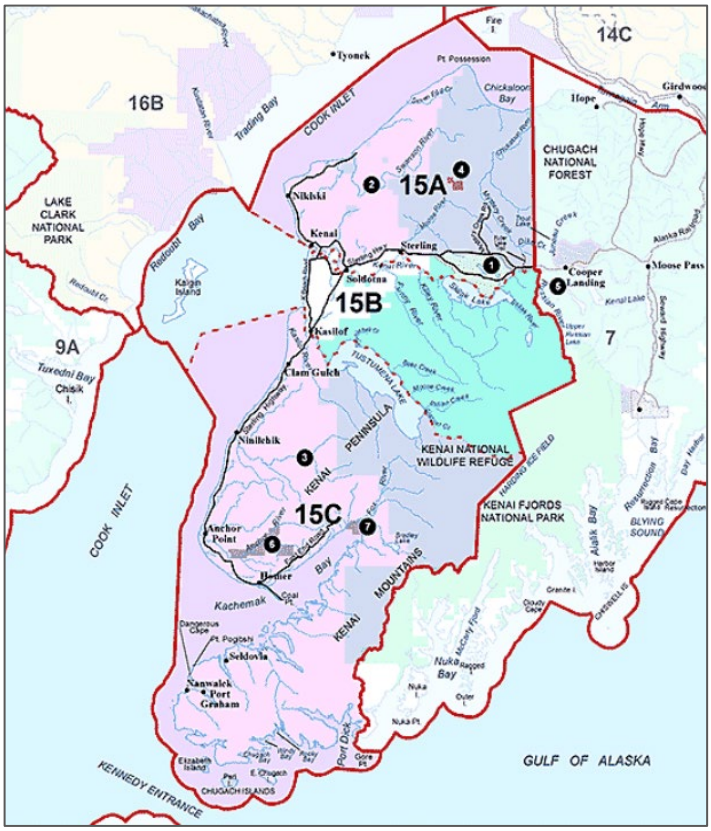


Figure 10-2. Map of Game Management Units 7 and 15 within the KPB

Source: ADF&G (2022h)

Units 7 and 15 have subsistence findings for moose and furbearers, including beavers, coyotes, foxes, lynx, squirrels, and wolverines. Figure 10-3 identifies successful moose hunters (i.e., the number of hunters reporting at least one moose kill) by residency in Unit 15C, which has the sole state designated subsistence finding for moose in the Borough. The data indicate that local residents make up the majority of moose hunters in the area. Harvests sharply declined between 2010 and 2011 but increased between 2012 and 2014, likely due to increased harvest restrictions in 2011 (Herreman 2018). Although these data include subsistence harvests, some recreational harvest data are likely included as Game Management Units are not exclusively used for subsistence hunting (Herreman 2018). Data for 2008–2009 and 2015–2020 are not available.

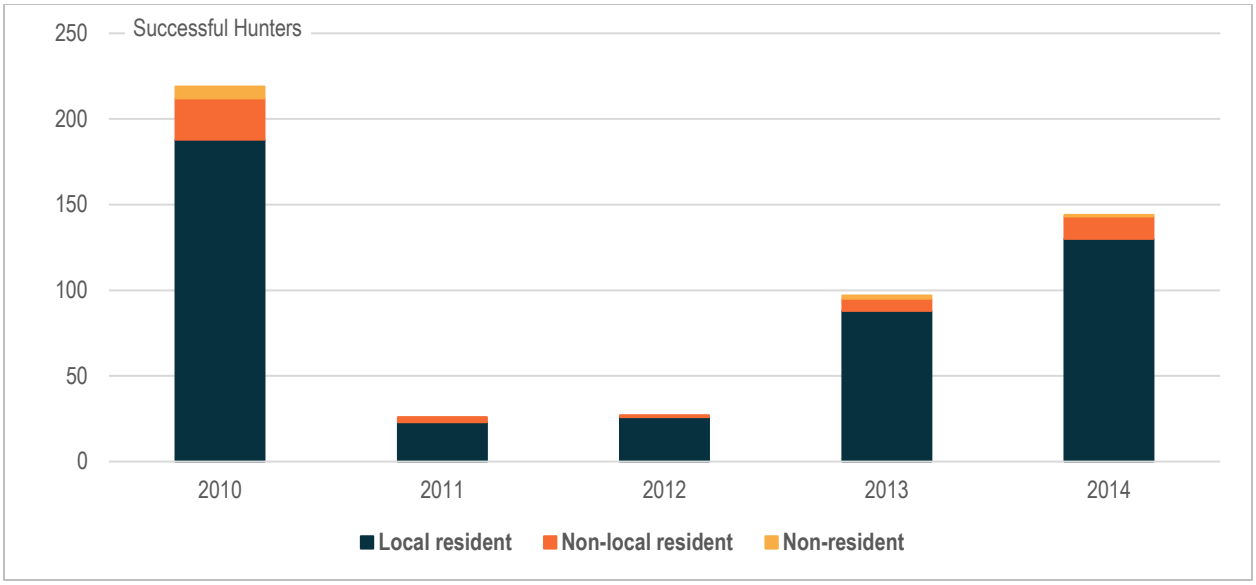


Figure 10-3. Game Management Unit Successful Moose Hunters, by Residency
Source: Herreman (2018).

Furbearers are a key subsistence resource in the Borough; 90 percent of furbearer harvests throughout Alaska are allocated specifically for subsistence use (Herreman 2020). Subsistence harvesting of furbearers declined dramatically after 2012, with a slight uptick in harvests in 2015 (Figure 10-4). The composition of furbearer harvests changed over the years with a significant decline in lynx harvests but relatively stable harvests of beavers, martens, river otters, and wolverines. The trends related to harvest numbers and composition over time can be attributed mainly to variations in snowfall and Game Management Unit accessibility, as trappers generally use snowmachines in the units to harvest furbearers (Herreman 2020).

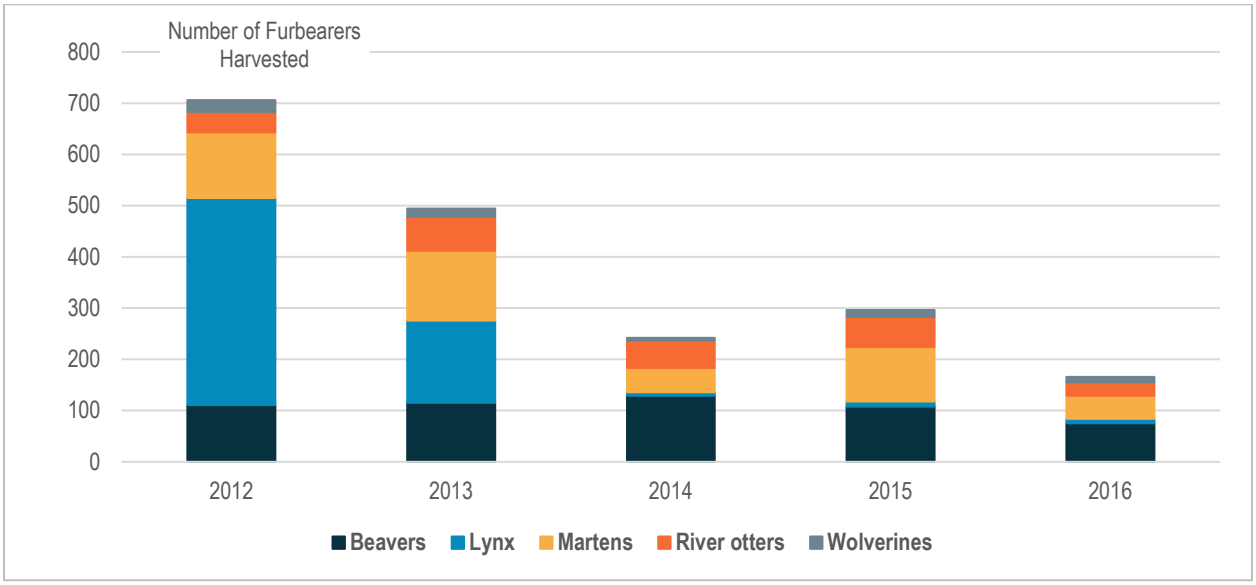


Figure 10-4. Game Management Unit Furbearer Harvests
Source: Herreman (2020).

Subsistence harvest data are collected by community in ADF&G's Community Subsistence Information System database. Community level data are generally collected through surveys undertaken in support of analyses for specific projects, such as National Environmental Policy Act impact analysis of proposed projects. Consequently, data collection did not occur regularly throughout the study period and the data presented in this report are limited. These data therefore provide insight regarding subsistence use in selected Borough communities at particular points in time, as opposed to a time-trend analysis. Subsistence harvest data for Port Graham, Seldovia, and Nanwalek are displayed below as these communities were the subject of subsistence surveys in 2014 due to a statewide natural gas project.

Large and small land mammals including black bears, moose, and porcupines were commonly harvested in 2014 across the three communities (Figure 10-5 Harvest levels and diversity of species harvested were highest in Seldovia during this period, with harvests of caribou, goats, foxes, and porcupines in addition to the species harvested across all three communities. Per capita harvests were also unequal, with a significantly lower per capita harvest in Nanwalek than in the other communities.[42] While high harvest levels in Seldovia may have been related to availability of species and more participation in subsistence harvesting, harvest levels were significantly lower in Nanwalek.

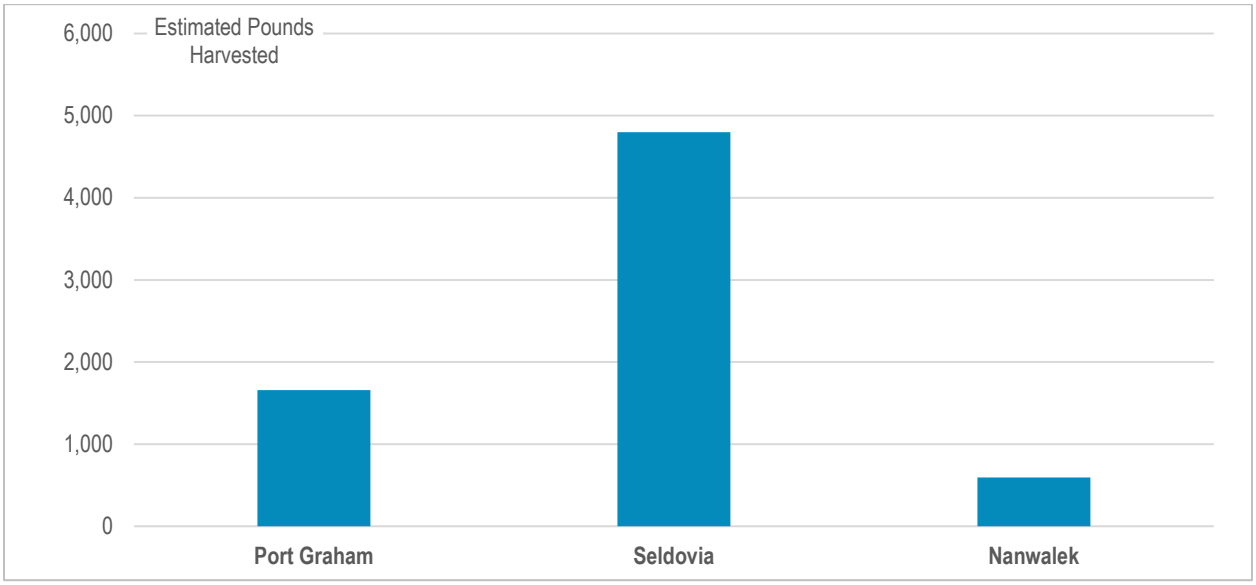


Figure 10-5. Subsistence Harvests of Land Mammals by Community, 2014
Source: ADF&G (2022i).

Bird and egg harvests in 2014 were highest in Nanwalek and Seldovia, with a lesser harvest in Port Graham (Figure 10-6). Harvest per capita in 2014 in each community are relatively equal. Commonly harvested birds include aquatic and game birds, including ducks.

[42] In 2015 the population of Port Graham was 166 residents, Seldovia had 264 residents, and 212 people resided in Nanwalek (United States Census Bureau 2022).

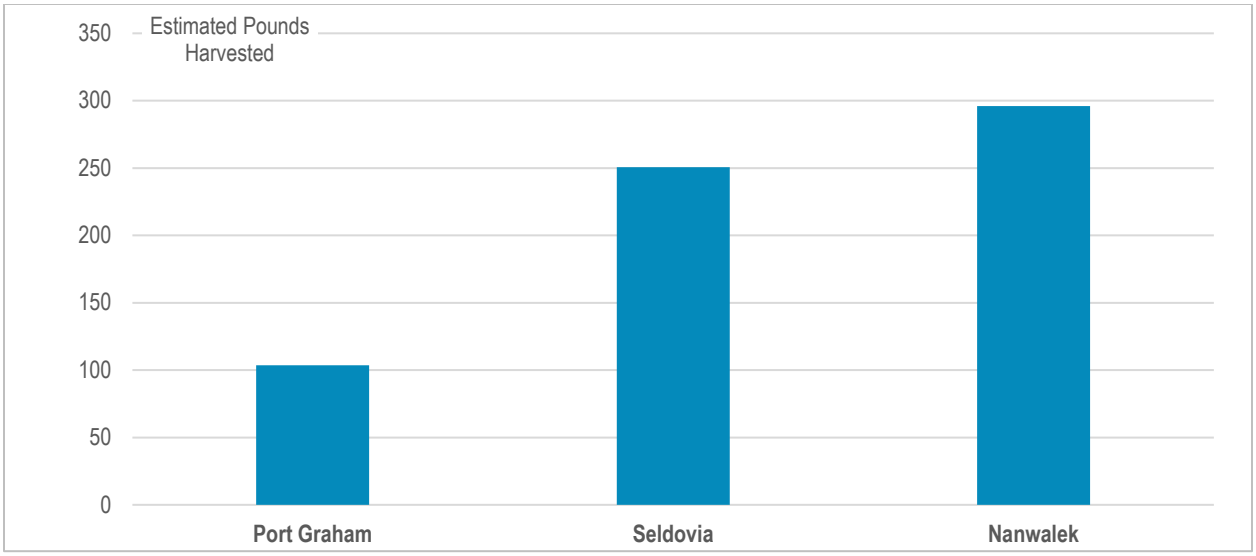


Figure 10-6. Subsistence Harvests of Birds and Eggs by Community, 2014
Source: ADF&G (2022i).

Subsistence vegetation harvests in the KPB communities accounted for the largest mass (in pounds) of wild resources harvested in 2014 (Figure 10-7). Vegetation encompasses a wide variety of natural resources, including wood, berries, mushrooms, seaweed, and other plant species. Harvests were significantly higher in Seldovia than in the other communities in 2014. Vegetation harvests were notably high in Seldovia in 2014, with 95 percent of households utilizing at least one type of vegetation that year and high harvest success rates. In Nanwalek and Port Graham, in contrast, vegetation harvests comprised smaller percentages of the total subsistence harvest efforts that year (Jones and Kostick 2016).

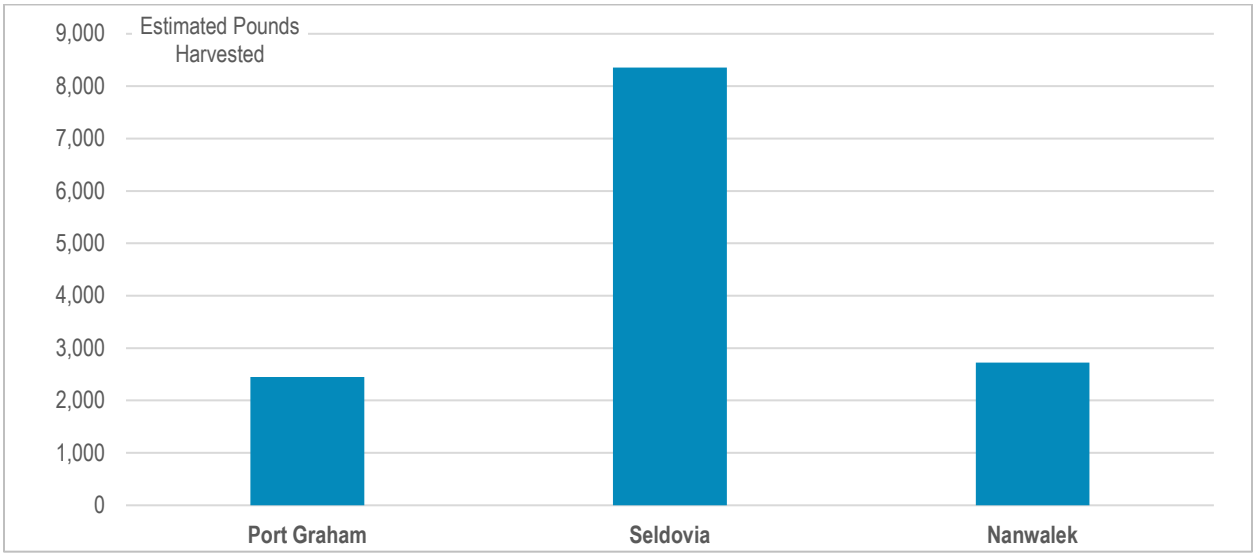


Figure 10-7. Vegetation Subsistence Harvests by Community, 2014
Source: ADF&G (2022i).

Figure 10-8 displays marine species harvests across the three communities broken down by mammals and invertebrates. Marine mammals include harbor seals and Steller sea lions and invertebrates include a variety of species such as chitons, clams, shrimp, octopi, and sea urchins. Harvest levels were highest in Nanwalek, with an almost even split between marine mammals and invertebrates. In Port Graham, pounds of marine mammals and marine invertebrates were also close to equal, while invertebrates dominated the harvests in Seldovia.

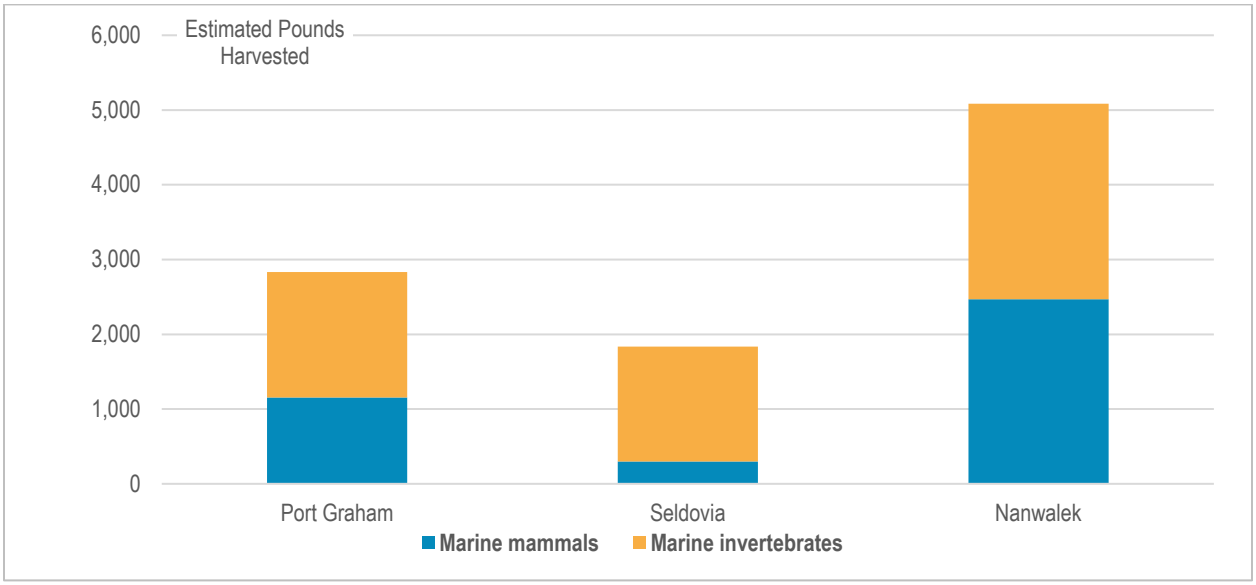


Figure 10-8. Marine Species Subsistence Harvests by Community, 2014
Source: ADF&G (2022i).

10.2.3 Federal and State Subsistence Use Fisheries

Subsistence fishing data are limited. The state-level data are available only for selected years and within specific communities and are generally combined with the personal use harvest data. The Federal subsistence harvest data for fish are collected more regularly. Although residents obtain subsistence permits for many types of wildlife, and important customary and traditional uses exist for specific species in particular communities, subsistence use in the KPB is most closely associated with salmon fishing due to strong local interest in salmon and easy access to salmon fisheries (State of Alaska's Salmon and People 2019).

Trends in salmon harvests in Cook Inlet highlight the difference in activity level between subsistence and personal use fisheries. Though Cook Inlet encompasses fisheries and areas beyond just the KPB, its resources border and benefit many KPB communities. In 2015, personal use fisheries in Cook Inlet and Kachemak Bay constituted 98.7 percent of salmon harvesting activity (measured in pounds harvested), while only 1.7 percent was subsistence fisheries harvests.[43] Species harvested across the selected fisheries

[43] The most recent year with complete data for each fishery tracked by the database is 2015. Subsistence fisheries included are Kenai/Kasilof River Federal Subsistence, Port Graham and Koyuktolik Subdistricts, and fisheries in

were largely sockeye, with higher Chinook and coho harvests at the Tyonek fishery and Kachemak Bay personal use fishery respectively (State of Alaska's Salmon and People 2019). In the Anchorage-Matsu-Kenai Nonsubsistence Area, subsistence harvests accounted for the smallest share of noncommercial salmon harvest (5 percent) from 2007 to 2011, while personal use fishing and sport fishing represented 49 percent and 46 percent of noncommercial salmon harvests, respectively (State of Alaska's Salmon and People 2019).

Figure 10-9 displays total salmon harvest in pounds across the subsistence and personal use fisheries located in the KPB for which data were available from 2008 to 2016. With the exception of the Kachemak Bay setnet personal use fishery, all of the fisheries included are used for subsistence harvesting activities. The data indicate a peak in pounds harvested in 2011 and no strong identifiable trends in the other years.

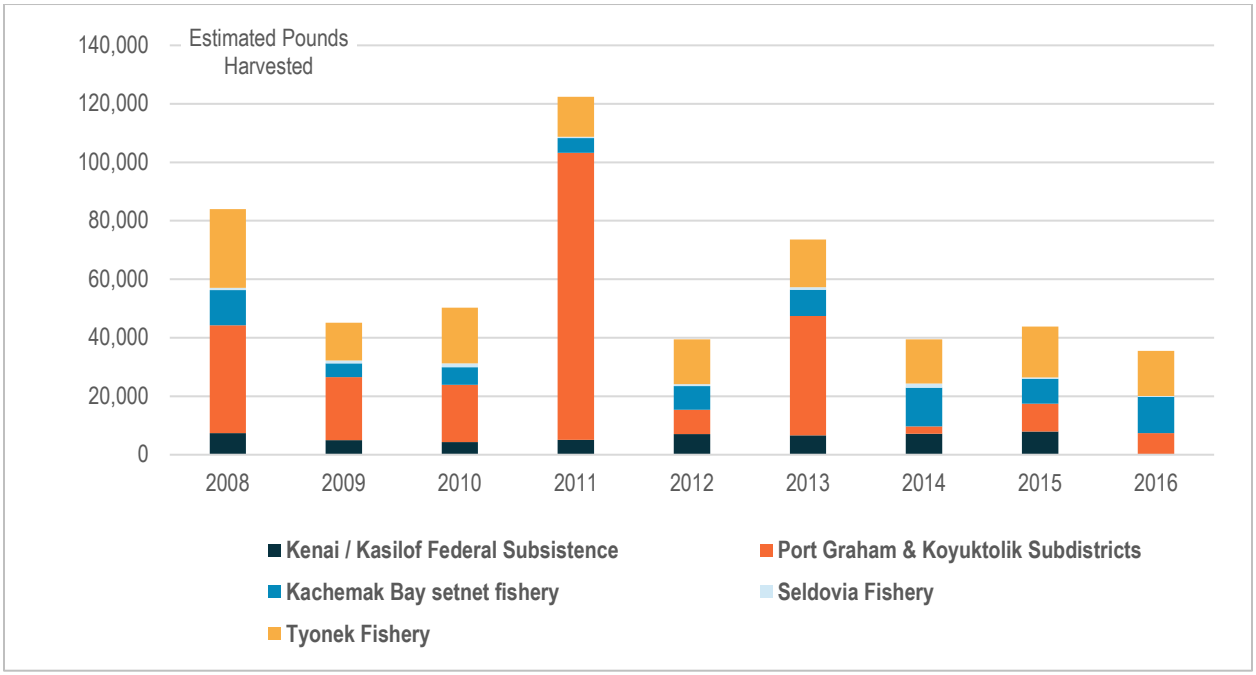


Figure 10-9. Subsistence and Personal Use Salmon Harvests by Fishery, 2008-2016
Source: ADF&G (2016).

Salmon are a key resource for residents relying on both state and Federal subsistence use activities. In rural communities of the broader Cook Inlet area outside of the nonsubsistence area, subsistence harvests in recent years consisted of 48 percent salmon; 19 percent land mammals; 18 percent other fish; 10 percent wild plants; 3 percent shellfish; 2 percent marine mammals; and 1 percent birds and eggs (State of Alaska's Salmon and People 2019).

Seldovia and Tyonek. (ADF&G, Division of Subsistence. Subsistence and personal use harvest of salmon in Alaska, 1960-2016. Knowledge Network for Biocomplexity. doi:10.5063/F18P5XTN.)

In communities eligible for subsistence use within the Anchorage-Matsu-Kenai Nonsubsistence Area, subsistence harvests in recent years consisted of 54 percent salmon; 28 percent land animals; 17 percent other fish; 1 percent other species; and <1 percent marine mammals (State of Alaska's Salmon and People 2019).

10.2.3.1 State Subsistence Fisheries Trends

Annual ADF&G subsistence and personal use data are generally limited to salmon harvests due to limited funding and reporting of data (Fall et al 2020). The data do not distinguish between subsistence and personal use. Figure 10-10 indicates an overall downward trend in aggregated state subsistence and personal use salmon harvests by Borough residents from the start to the end of the study period, with a peak in 2011. While the harvest levels rise and fall from year-to-year, the broader downward trend in salmon harvests is attributable to reduced abundance of Chinook salmon populations in parts of Cook Inlet over time (Fall et al 2020). Long-term statewide trends in subsistence and personal use harvests from 1994 to 2017 identified periods of decline, stability, and recovery that may explain some of the variation in salmon harvests in the KPB across the study period (Fall et al 2020).

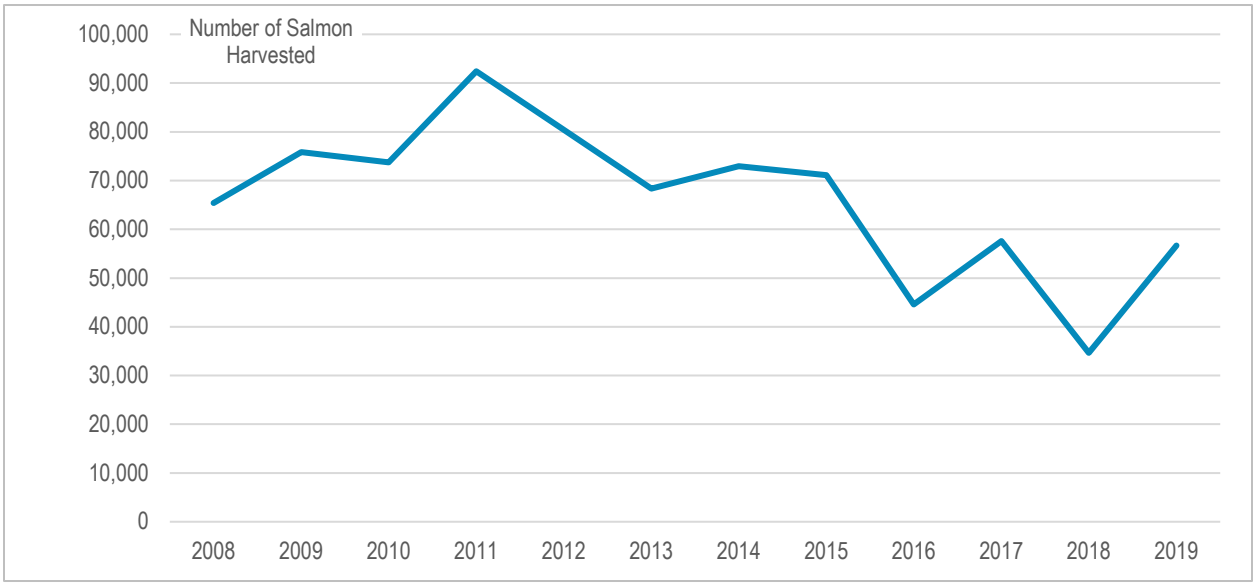


Figure 10-10. State Subsistence and Personal Use Salmon Harvests by Borough Residents

Source: Data provided by Research Analyst at ADF&G, Division of Subsistence (November 2021).

Figure 10-11 and Figure 10-12 provide additional detail on salmon subsistence and personal use harvests by species in Nanwalek and Port Graham in 2014, 2016, and 2017, while Figure 10-13 provides data for Tyonek in 2013, 2015, and 2016. These data identify the following differences and trends in salmon harvests for subsistence and personal use:

- Sockeye salmon was the primary target species in Nanwalek and Port Graham, whereas Chinook salmon was the primary target species in Tyonek.
- High sockeye harvests in the selected years are likely due to the strong return of the fish to waters in the area after poor runs from 1980 to the 2000s (Fall et al 2020).

- Subsistence salmon harvests in Port Graham were more consistent across salmon species, reflecting the generally consistent availability of sockeye, pink, and coho salmon in Port Graham (Fall et al 2020).
- Chinook salmon harvest levels were highest by far in Tyonek, consistent with general patterns of Chinook availability among the three communities (Fall et al 2020).
- Figure 10-13 highlights higher harvests of Chinook salmon in Tyonek in 2013 as compared to the following years; the subsequent decline in harvests can likely be attributed to overall statewide declines in Chinook salmon runs (Fall et al 2020).

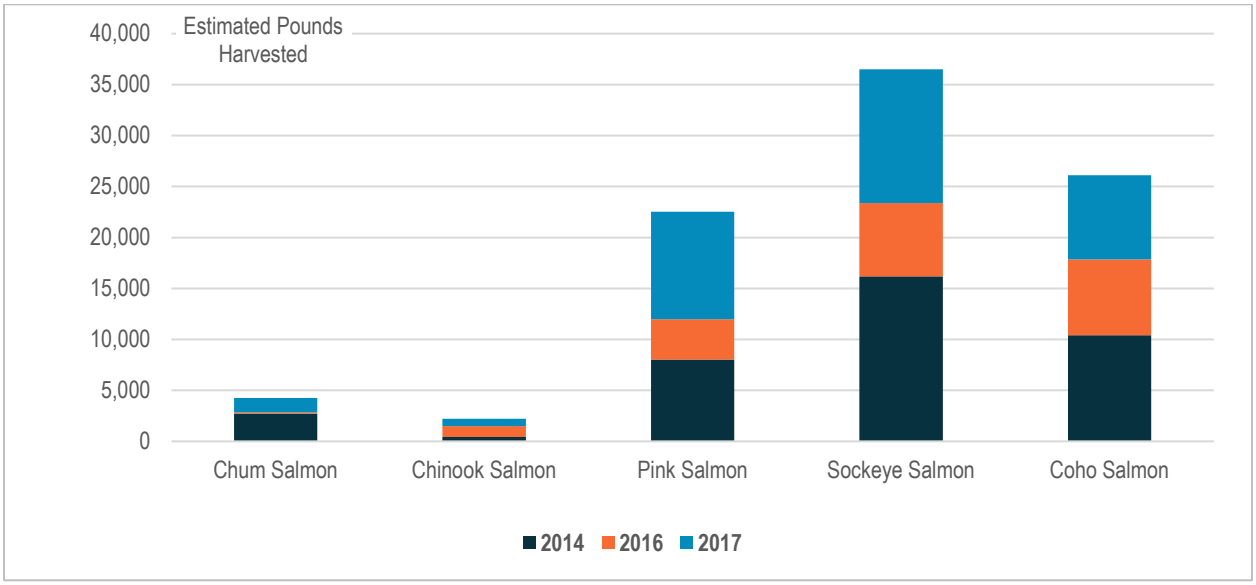


Figure 10-11. Nanwalek Subsistence Salmon Harvests

Source: ADF&G (2022i).

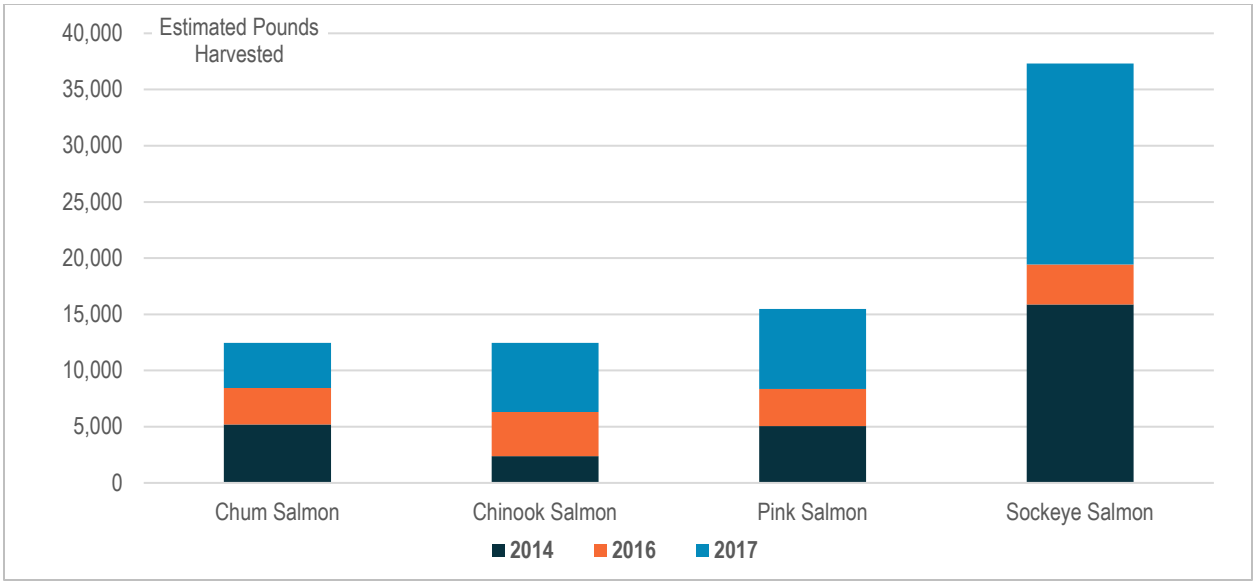


Figure 10-12. Port Graham Subsistence Salmon Harvests

Source: ADF&G (2022i).

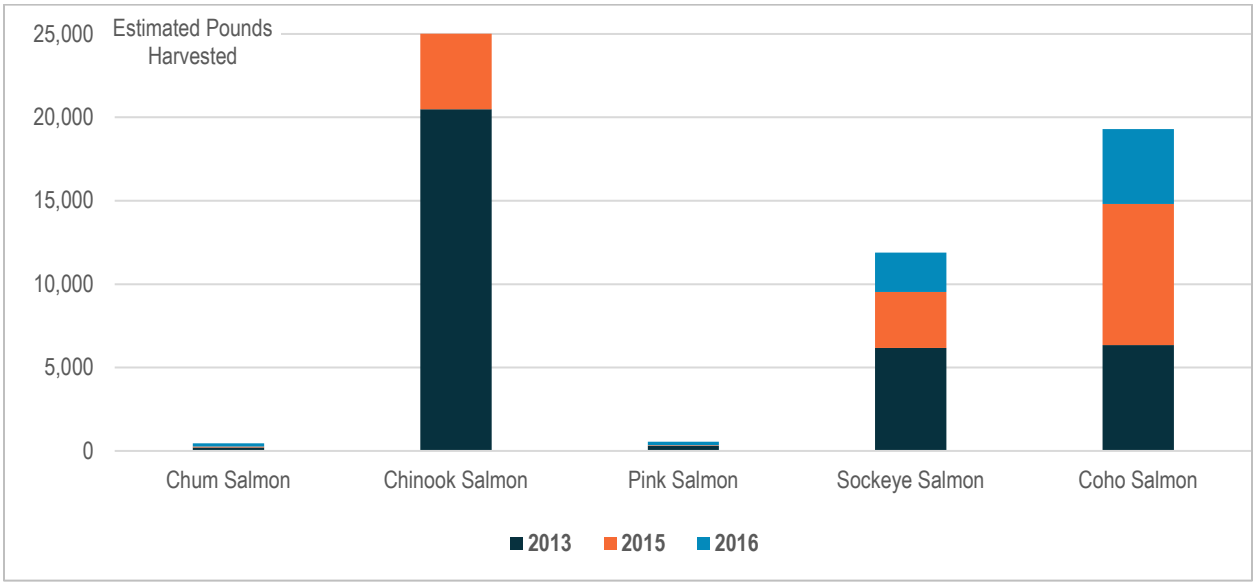


Figure 10-13. Tyonek Subsistence Salmon Harvests

Source: ADF&G (2022i).

Figure 10-14 displays participation in subsistence activities in 2014 across four communities based on a household survey conducted across Nikiski, Seldovia, Nanwalek, and Port Graham. Similar to the data presented above for non-fish subsistence harvests, the data collection efforts in 2014 were restricted to these communities and undertaken as part of an analysis for a liquefied natural gas pipeline proposal. The data represent users of both Federal and state subsistence permits. Examples of species harvested within each category include salmon, Pacific halibut, and Pacific cod for fish; caribou, moose, and black bears

for large land mammals; small game and furbearers for small land mammals; seals, sea lions, and whales for marine mammals; migratory waterfowl and upland birds for birds and eggs; and wild plants and berries for vegetation (Jones and Kostick 2016).

The data describing participation in subsistence activities include harvesting and processing of harvests. Therefore, this figure displays the number of people in each community who were involved in subsistence harvest and/or processing harvested resources in 2014 (Jones and Kostick 2016). Figure 10-14 highlights the subsistence harvest volume by species in each of the four communities. Participation was highest in Nikiski, the most populous of the communities, particularly in subsistence harvests of fish and vegetation. For perspective, the population of Nikiski in 2014 was approximately 4,500; thus, these data indicate that more than half of the population participated in subsistence harvests of fish and vegetation in that community in 2014. The data presented in Figure 10-14 represent all of the Kenai Peninsula Borough communities outside of the Anchorage-Matsu-Kenai Nonsubsistence Area with the exception of Tyonek and Beluga. These data have not been collected for Tyonek and Beluga in recent years.

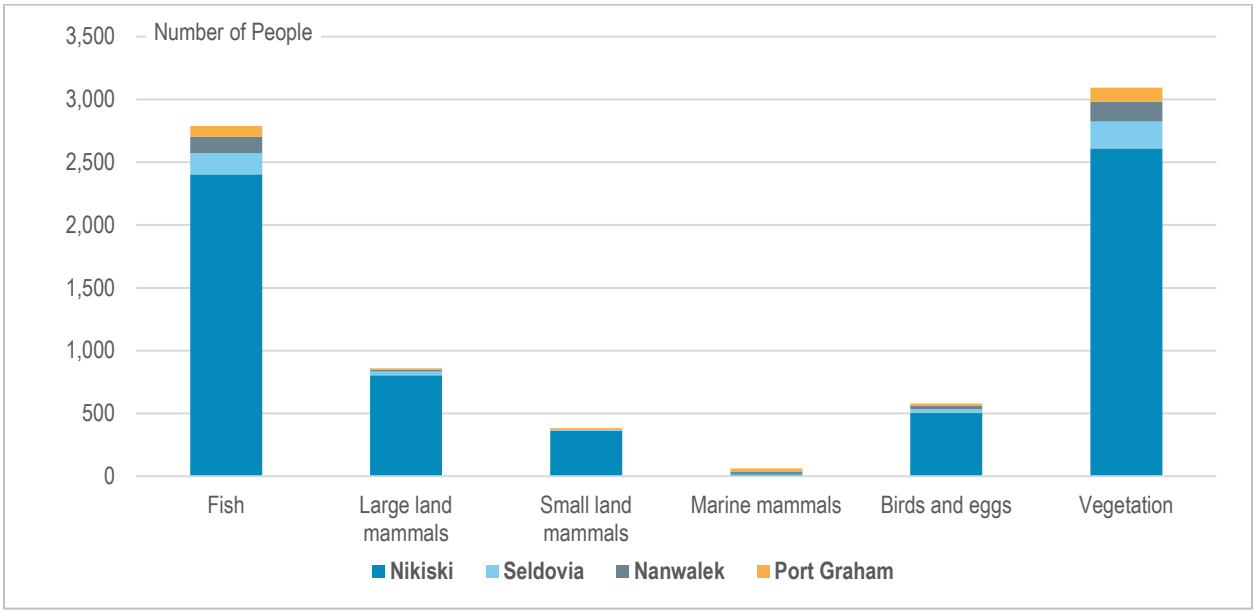


Figure 10-14. Subsistence Harvest Participation by Species, 2014

Source: Jones and Kostick 2016

10.2.3.2 Federal Subsistence Fisheries Trends

Federal subsistence fishing activity is permitted along various locations of the Kenai and Kasilof Rivers for rural residents. Federal subsistence use is also allowed in each of the National Parks on the Kenai Peninsula excluding Kenai Fjords National Park (Deur et al 2013). As displayed in Figure 10-15, Subsistence salmon harvests along the Kenai and Kasilof Rivers increased steadily from 2010 to 2017, with a significant uptick from 2016 to 2017 due to the opening of a new community gillnet fishery on the Kenai and Kasilof Rivers in 2016 to match rising demand for Federal subsistence harvesting opportunities (Personal communication with U.S. Fish and Wildlife Service Biologist 2022). The factors driving the overall increase in subsistence harvest levels throughout the study period are uncertain, although fisheries managers suggest it may be due to increasing awareness of Federal subsistence fishing opportunities over

time as well as renewed efforts in more recent years to harvest and consume traditional foods among Alaska Native communities (Personal communication with ADF&G Research Analyst 2022). Harvests were almost entirely made up of sockeye salmon, with a few Coho harvested each year and even fewer Chinook salmon harvested in select years. Kenai River sockeye salmon harvests significantly increased following the opening of the new gillnet fishery, but this has had little effect on overall sockeye populations in the area due to their large runs (Personal communication with U.S. Fish and Wildlife Service Biologist 2022).

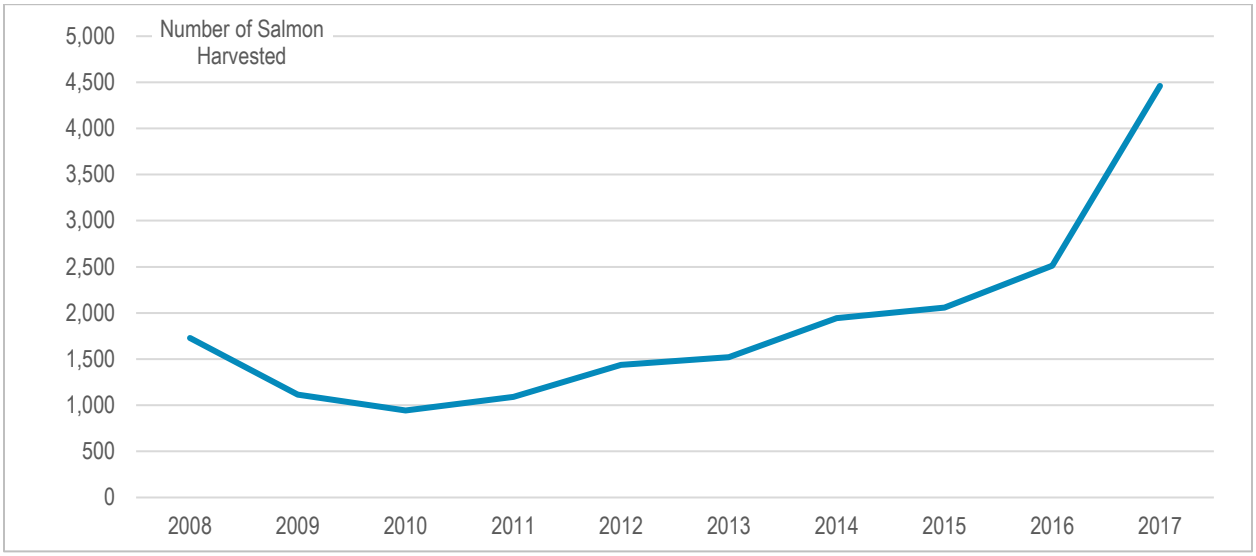


Figure 10-15. Federal Subsistence Salmon Harvests, Kenai and Kasilof Rivers
Source: Data provided by Research Analyst at ADF&G, Division of Subsistence (November 2021).

10.3 Personal and Educational Use Harvesting

Personal use fisheries are characterized by their location, permitted uses for harvests, and permitted harvest methods. Alaska's subsistence priority law in 1978 altered the definition of subsistence such that certain residents' subsistence activities would no longer be defined as "customary and traditional." In order to ensure that these individuals would still be able to feed their households with their harvests, the state established personal use harvesting. Personal use harvesting does not allow residents to sell, barter or trade their catch, and the use of sport fishing rods and reels is also not allowed under personal use regulations (ADF&G 2021e). The Borough's 11 personal use fishery areas are indicated in Figure 10-16 below.

Personal Use Fisheries in the KPB

- Kenai River Dip Net
- Kasilof River Dip Net and Set Net
- Beluga River Dip Net
- Kachemak Bay Set Net
- China Poot Dip Net
- Tyonek Subdistrict Set Net
- Seldovia Set Net
- Port Graham, Koyuktolik, Port Chatham, and Windy Bay Subdistricts Set Net fishery

(State of Alaska's Salmon and People 2019)

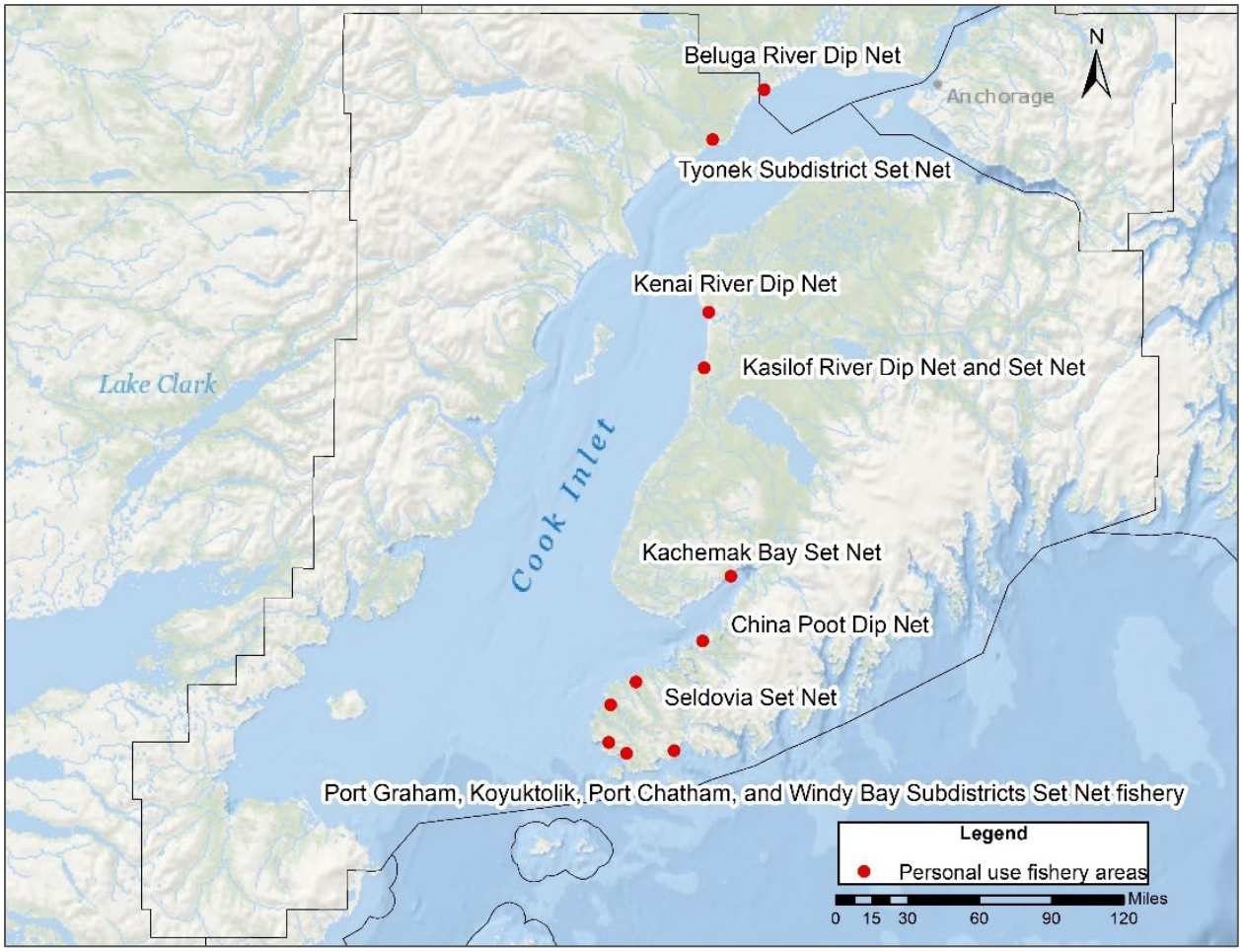


Figure 10-16. Kenai Peninsula Borough Personal Use Fishery Areas
Source: Adapted from ADF&G (2012).

Figure 10-17 and Figure 10-18 highlight trends in fishing effort and total salmon harvests at the Kenai River and Kasilof River personal use fisheries. Throughout the study period, participation in personal use fishing was highest at the Kenai River Dip Net fishery. Figure 10-17 identifies a peak in number of days fished in 2014 at the Kenai River Dip Net fishery followed by a steady decline until 2019. Figure 10-18 highlights random rises and declines in salmon harvested at the Kenai River Dip Net fishery with an overall decline after 2012. Fishing effort and salmon harvests are relatively stable within the other fisheries during the study period. The data identify an increase in annual harvest and participation in the Kenai River Dip Net fishery in the earlier years of the study period (Fall et al 2020).

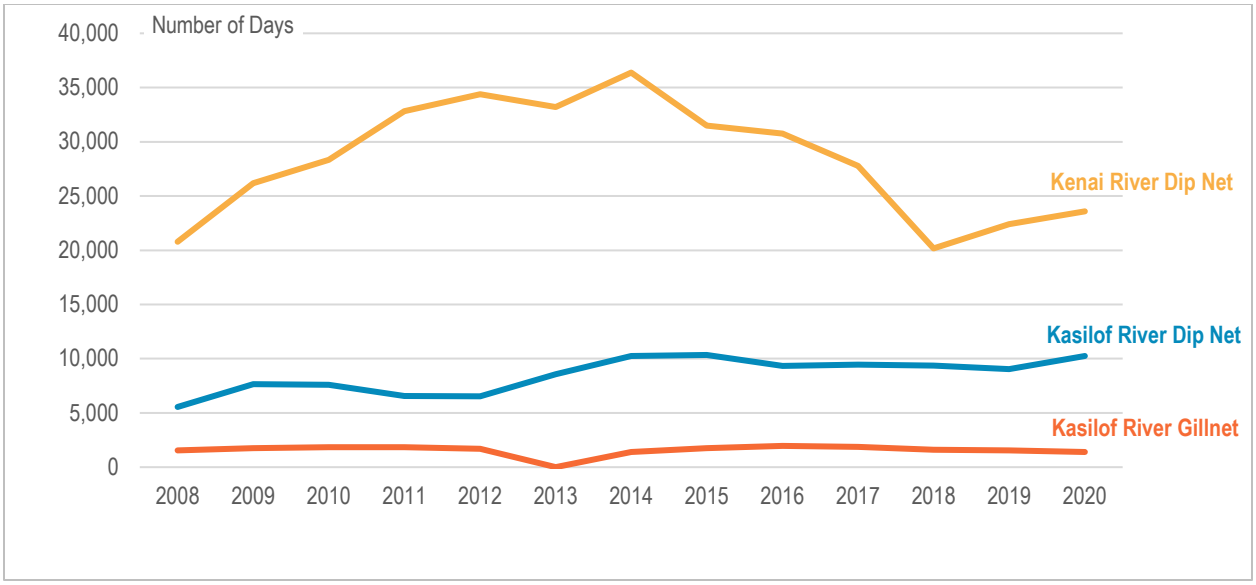


Figure 10-17. Days Fished for Salmon at Personal Use Fisheries

Source: ADF&G (2022j).

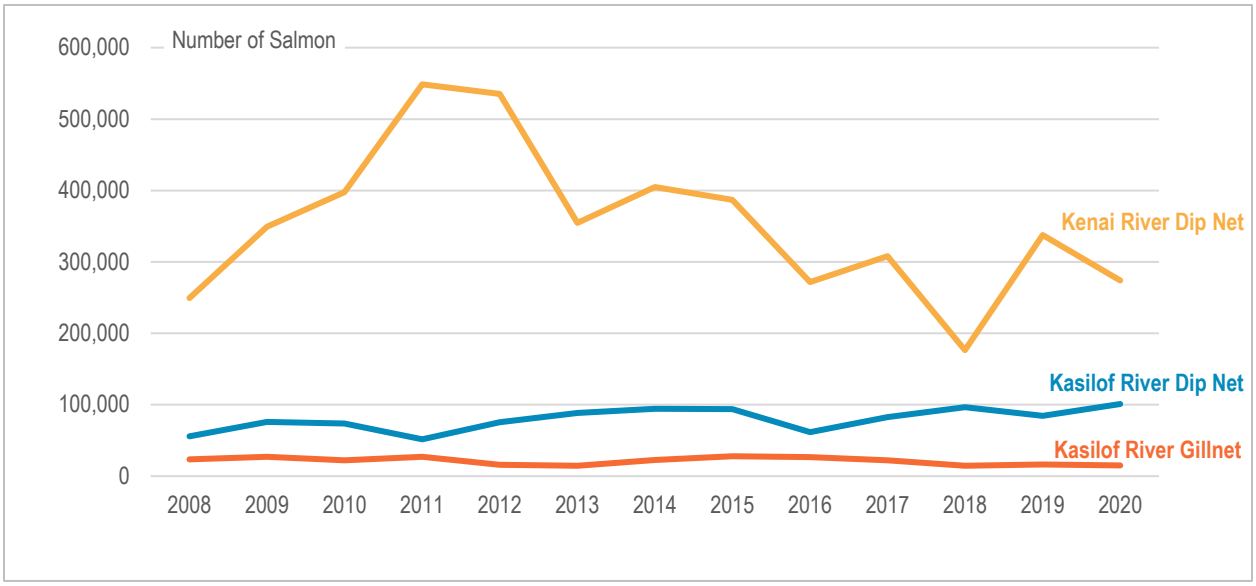


Figure 10-18. Total Salmon Harvests at Personal Use Fisheries

Source: ADF&G (2022j).

Organizations with Educational Use Fisheries in the KPB

- Kenaitze Tribal Group
- Ninilchik Traditional Council
- Ninilchik Native Descendants
- Ninilchik Emergency Services
- Anchor Point Veterans of Foreign Wars
- Homer Sons of the American Legion Post 16
- Kasilof Regional Historical Association
- Southcentral Foundation

(Marston and Frothingham 2019)

Eight educational fisheries exist in the Borough associated with Alaska Native tribes and local veterans' groups. Organizations must demonstrate intent to educate future generations about fishery resources and methods of harvesting in order to obtain educational use permits (Shields 2010).[44] Educational permits are evaluated and reissued contingent upon organizations regularly reporting their catch, harvesting within permit quotas, and continuing to use fisheries as educational tools (Kerkvliet et al 2016).

Educational salmon harvests generally declined from the beginning to the end of the study period among educational fisheries in the Lower Cook Inlet Management Area, with intermittent increases in harvests from 2012 to 2014, 2016 to 2017, and 2018 to 2019 for the Ninilchik Traditional Council and Ninilchik Native Descendants fisheries (Figure 10-19). Harvest levels for the Anchor Point Veterans of Foreign Wars, Southcentral Foundation, and Sons of the American Legion Post 16 fisheries remained relatively stable during the study period. Figure 10-20 and Figure 10-21 display specific harvest data by type of salmon at the fisheries associated with the Ninilchik educational fisheries. Sockeye and Coho salmon were subject to lower harvest rates. Salmon harvests at both the Ninilchik Traditional Council fishery (Figure 10-20) and the Ninilchik Native Descendants fishery (Figure 10-21) were primarily made up of sockeye salmon and Coho salmon in most years between 2008 and 2020.

The random fluctuations in salmon harvests at Cook Inlet educational fisheries during the study period are likely partially due to irregular fishing patterns, as some organizations reported minimal or no educational fishery catch during some years of the study period (Shields 2010). Some organizations, like the Southcentral Foundation and Sons of the American Legion Post 16, were granted educational use permits after 2008, as indicated in Figure 10-19 (Shields 2010).

[44] The requirements for educational fisheries are as follows: 1) instructors must be qualified to teach the subject matter; 2) there must be students enrolled in the fishery; 3) there are minimum attendance requirements; 4) procedures for testing a student's knowledge of the subject matter or the student's proficiency in performing learned tasks must be administered; and 5) standards for successful completion of the program must be set (Shields 2010).

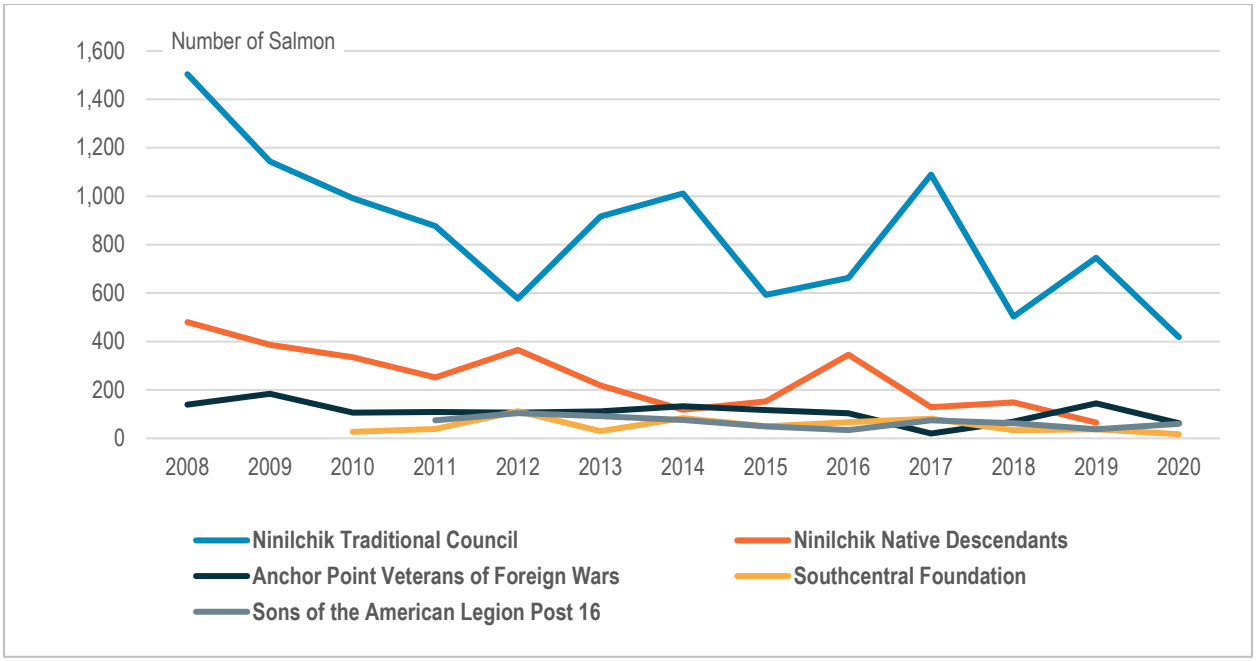


Figure 10-19. Total Salmon Harvests at Educational Fisheries

Source: Booz et al (2019); additional data provided by Area Manager at ADF&G (August 2021).

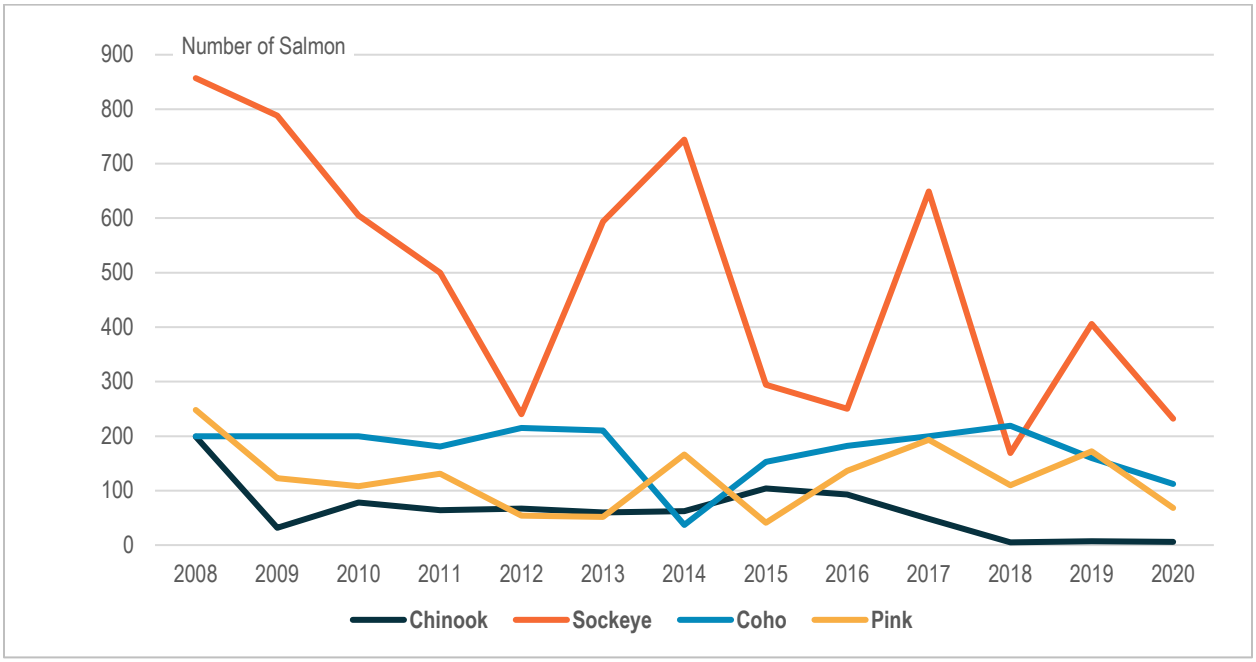


Figure 10-20. Salmon Harvests at Ninilchik Traditional Council Educational Fishery

Source: Booz et al (2019); additional data provided by Area Manager at ADF&G (August 2021).

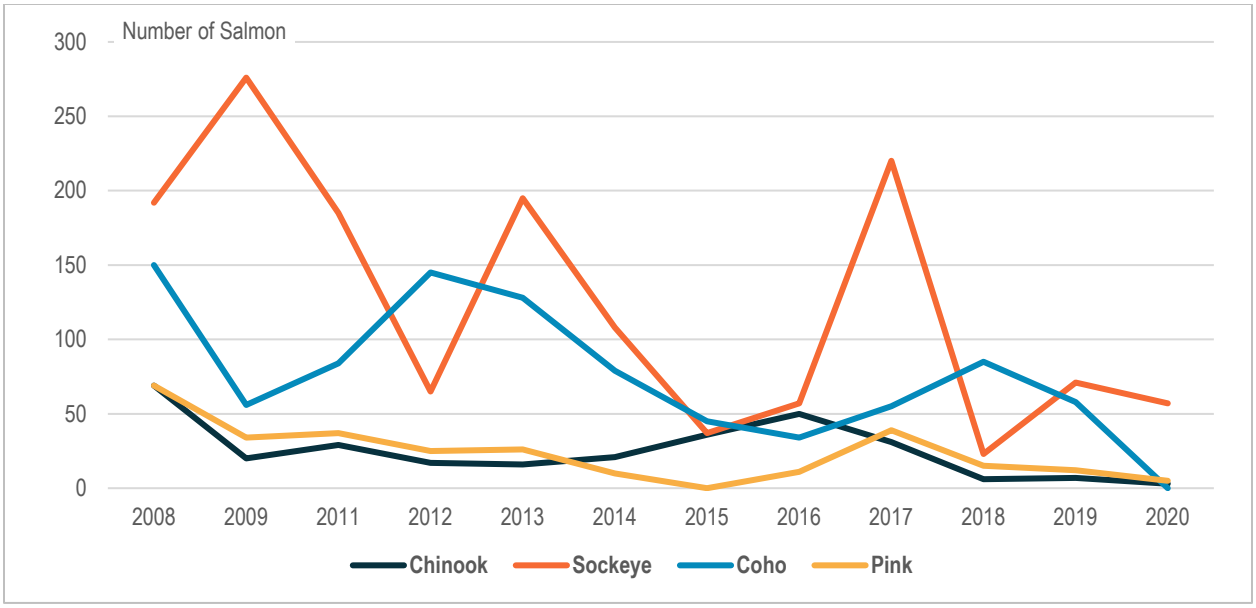


Figure 10-21. Salmon Harvests at Ninilchik Native Descendants Educational Fishery

Source: Booz et al (2019); additional data provided by Area Manager at ADF&G (August 2021).

Figure 10-22 indicates a different trend in salmon harvests at educational fisheries in the Northern Kenai Peninsula Management Area. The Kenaitze Indian Tribe educational fishery operates at the Kenai River and Kasilof River. The Kasilof Historical Association educational fishery also operates at the Kasilof River. Kasilof River harvests remained low throughout the study period, while Kenai River harvests fluctuated but had a general increasing trend between 2012 and 2017.

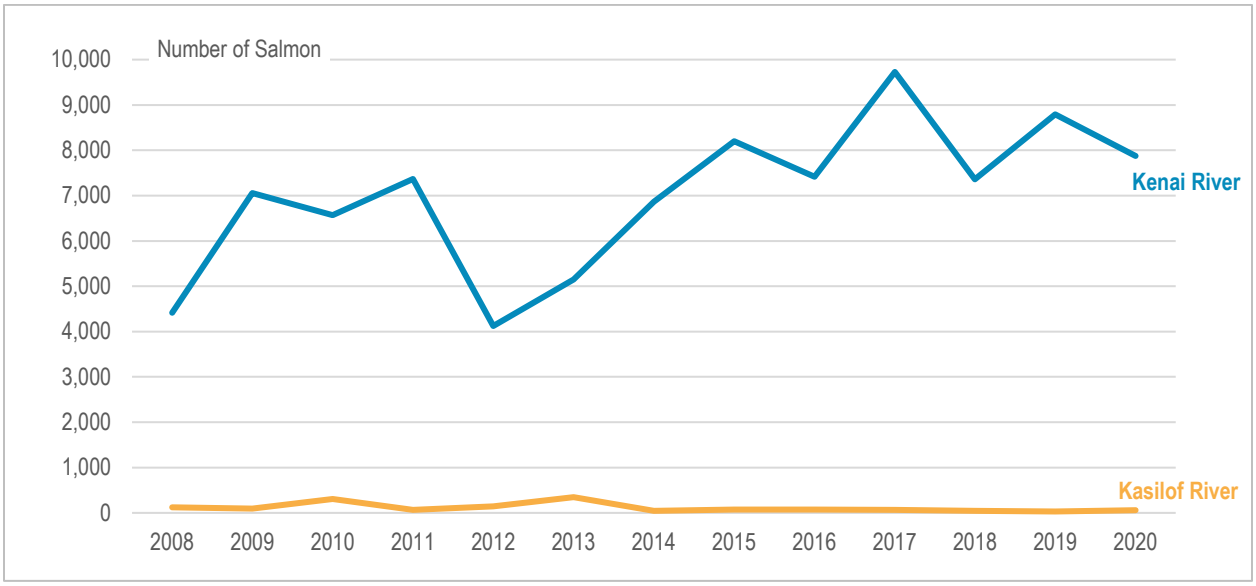


Figure 10-22. Total Salmon Harvests at Northern Kenai Peninsula Management Area Educational Fisheries

Source: Lipka et al (2019); additional data provided by Area Manager at ADF&G (August 2021).

10.4 Key Findings and Conclusions

The data synthesized in this chapter highlight the key role non-recreational and non-commercial harvesting of wild resources, including subsistence, personal, and educational uses, play in the lives of KPB residents. Together, these three uses allow a significant portion of Borough community members to access local fish and game to support the health, well-being, and cultural needs of their households. Key findings include:

- Federal subsistence harvesting of salmon has generally increased throughout the study period, highlighting the importance of subsistence activities for Borough residents living in rural areas.
- State-level subsistence trends for fish and game harvests are difficult to characterize and do not follow easily identified trends throughout the study period; external events like low salmon runs may contribute to these challenges.
- Subsistence harvesting of wild resources varies greatly by community in terms of species harvested and level of participation.

As highlighted throughout the chapter, subsistence data are relatively limited both in terms of temporal trends (with data available only for selected years across the study period) and geographic distribution (with data focusing only on specific communities subject to survey efforts). Key data gaps, including quantitative and qualitative information, include the following:

- Annual community-specific subsistence harvest data covering the full range of marine and terrestrial species harvested in the Borough
- Federal community-specific marine mammal take data from the National Marine Fisheries Service
- Descriptions of the primary groups participating in educational fishery use and explanations of key trends in educational harvest data
- Profiles of community demographics and characteristics that most depend most upon subsistence, personal, and educational use resources.

Future efforts to collect this information would allow for a more robust assessment of the relative importance of access to subsistence resources within the KPB.

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Appendix A. Historical Overview of Cook Inlet Oil and Gas Industry

A.1 Oil and Gas Development in Cook Inlet

The oil and gas industry has operated in the Kenai Peninsula region since the Richfield Oil Corporation discovered the first oil field at Swanson River in 1957. Subsequent exploration activities led to development of several onshore natural gas fields on the peninsula, and offshore fields (predominantly oil) in Cook Inlet. Oil production began in 1959, along with a small amount of natural gas as a by-product. Unocal discovered the first significant natural gas field at Kenai in 1959, and production began in 1961. Pan American Oil Corporation discovered the first offshore oil field at Middle Ground Shoal in 1962. Offshore oil production began in 1967. Amoco discovered the first offshore gas field at North Cook Inlet in 1962, and production began in 1969 (Bureau of Ocean Energy Management 2016).

After oil production began in Prudhoe Bay in the late 1970s, the major oil companies that had developed Cook Inlet fields shifted their resources to more profitable investments on the North Slope (Boettger 2018). Peaking in 1970 at more than 80 million barrels, annual oil production in Cook Inlet remained under 20 million barrels each year since 1985 and under 10 million barrels each year since 2004 (Figure A-1).

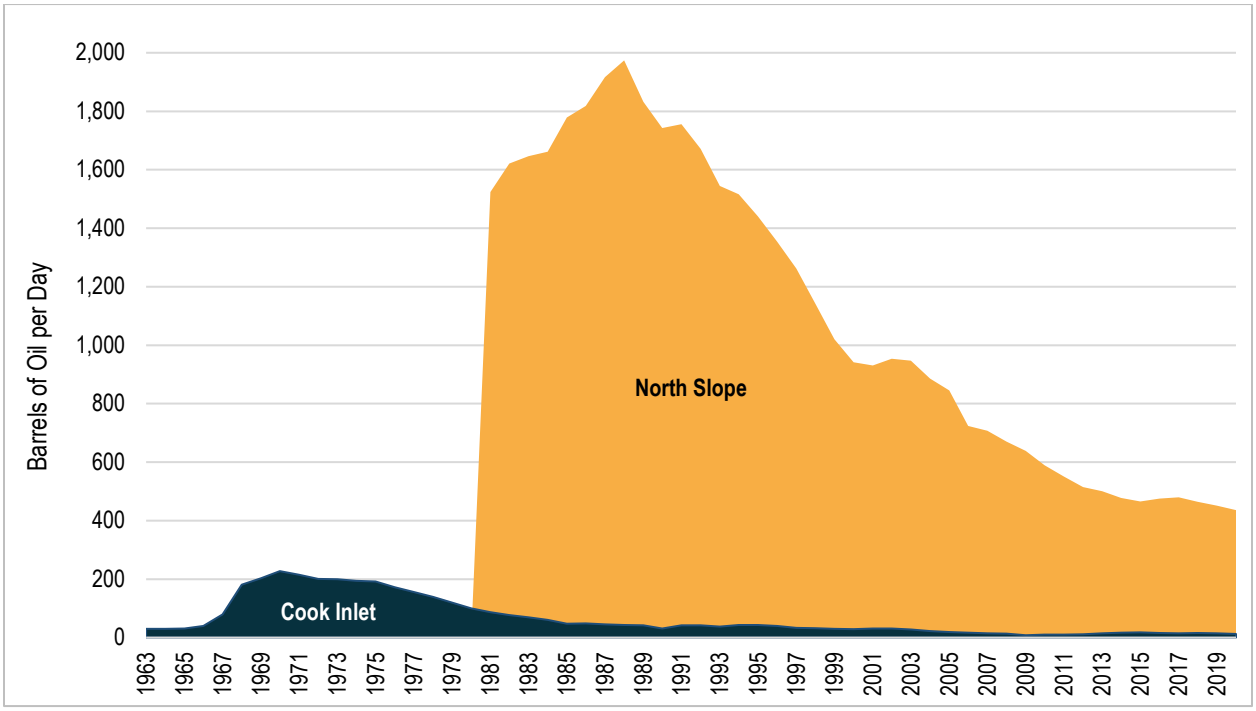

Figure A-1. North Slope and Cook Inlet *Oil Production on State Lands, 1963–2020*

Source: U.S. Energy Information Administration (2022); Alaska Oil and Gas Conservation Commission (2022)

Notes: Production data includes natural gas liquids.

Although Cook Inlet oil production declined, Cook Inlet natural gas continued to be valuable, especially with the growth in population in the Matanuska-Susitna Borough and Municipality of Anchorage. Total annual production remained above 200 Bcf from 1970 through 2005 (Figure A-2), providing Southcentral Alaska sufficient volumes not only to meet the majority of the region's space heating and power

generation needs, but also to export large amounts of liquefied natural gas (LNG) and to fuel substantial industrial operations on the Kenai Peninsula (Northern Economics 2014).

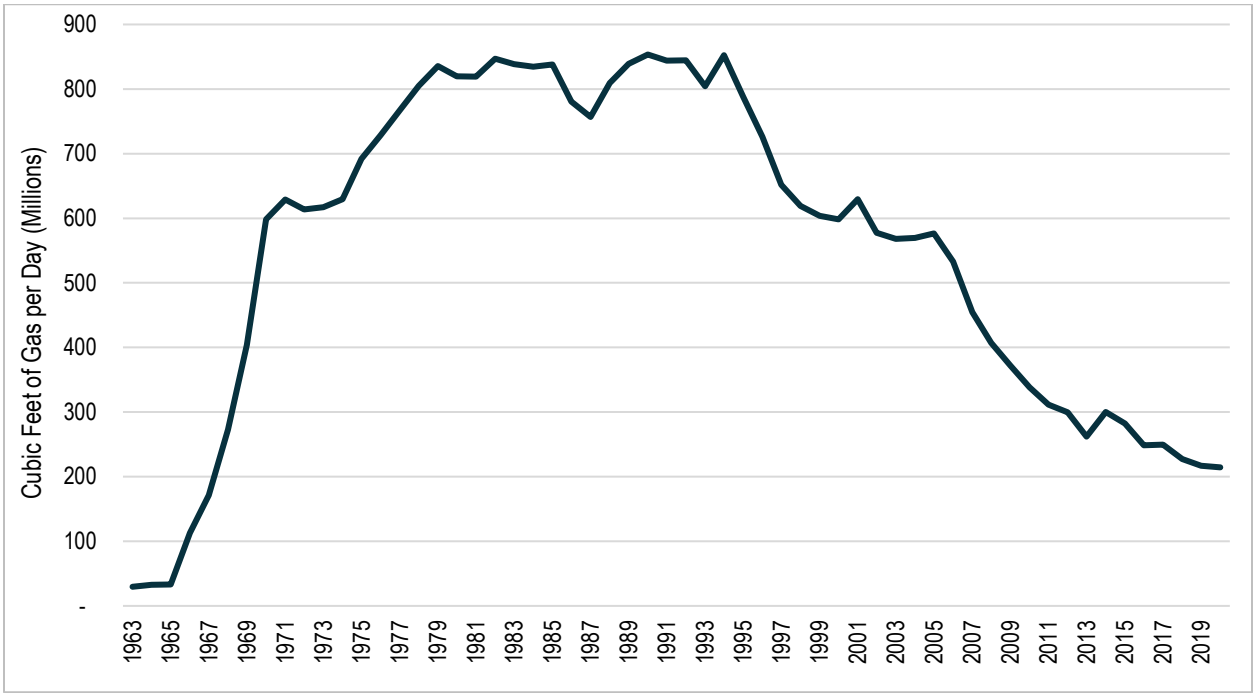

Figure A-2. *Cook Inlet Annual Natural Gas Production on State Lands, 1963–2020*
Source: Alaska Oil and Gas Conservation Commission (2022)

However, Cook Inlet natural gas production began a downward trend in 1995, and the consistently shrinking gap between the expanding natural gas needs of the Southcentral Alaska region and declining production levels raised concerns about the damaging consequences of a gas shortage on the Southcentral Alaska economy. By the late 2000's, a shortage of Cook Inlet natural gas had affected the industrial sector in Southcentral Alaska, with the closure of the Agrium fertilizer plant in Kenai in 2007 and cessation of LNG exports by the ConocoPhillips LNG export facility in Nikiski in 2015. The two plants had acted as anchor tenants for Cook Inlet natural gas sales (Alaska Senate Oil and Gas Tax Credit Working Group 2015).

Moreover, it was anticipated that the growing shortage of Cook Inlet gas would eventually lead to much higher heating and electricity costs for residential and commercial users, reflecting the substantially higher costs of alternative fuels (including imported LNG) to Cook Inlet gas. Cook Inlet natural gas supplies heat to just under half of all Alaskans and to the majority of residences and businesses in the Southcentral region, including more than 80 percent of Anchorage residents (Northern Economics 2014).

A U.S. Geological Survey study published in 2011 estimated that vast quantities of both oil and gas remained in the Cook Inlet basin (Stanley et al. 2011). However, most of this oil and gas is not readily available for production and distribution. There is a deficit of oil and gas industry infrastructure in much of the Cook Inlet, requiring large up-front cash commitments for oil and gas companies (Alaska Senate Oil and Gas Tax Credit Working Group 2015).

In 2010, the Alaska Legislature passed the Cook Inlet Recovery Act, which focused on increasing Cook Inlet natural gas production through a series of incentives, including providing tax credits for qualified expenditures, reducing the regulatory hurdles, and ramping up the timeline for leasing State lands (Alaska Senate Oil and Gas Tax Credit Working Group 2015). While Alaska had offered tax credits to oil and gas companies since 2003, the Alaska Tax Division's Director Ken Alper told the Alaska Legislature in 2018 that the credits created by Cook Inlet Recovery Act were of particular importance, noting that they were an economic stimulus aimed at "preservation of a livable lifestyle in South Central Alaska" (Boettger 2018).[45]

The Cook Inlet Recovery Act led to a sizeable increase in oil and gas exploration and development in the Cook Inlet basin. Prior to 2012, known Cook Inlet oil and gas supplies were operated by two major producers, Union Oil Company of California and Marathon Oil Corporation. With the decline in natural gas production, the two companies sold their lease interests and facilities in 2012 and 2013 to three smaller, independent oil and gas companies: XTO Energy, Cook Inlet Energy, and Hilcorp Alaska. Shortly after, other smaller independents, such as BlueCrest Energy and Furie Operating Alaska, began oil and gas exploration and development activities in Cook Inlet. These smaller incoming oil and gas operators utilized technologies for enhanced recovery of existing oil and gas reservoirs (Agnew::Beck Consulting 2019). In 2016, the Kitchen Lights Unit operated by Furie Operating Alaska started producing natural gas. This was the first offshore development in Cook Inlet since 2000 (Bureau of Ocean Energy Management 2016).

While a significant amount of the activity tied to the rebates portion of the tax credits was not tied to production (Alaska Department of Revenue 2015), natural gas production in Cook Inlet basin began to stabilize, halting the energy shortage that threatened Alaska's largest population centers (Alaska Senate Oil and Gas Tax Credit Working Group 2015). However, with the significant uptick in oil and gas exploration and development, the amount of public funds allocated to reimbursable tax credits increased commensurately (Alaska Senate Oil and Gas Tax Credit Working Group 2015). In addition, opening up the Cook Inlet basin to new entrants meant there would be a higher likelihood of less robust actors participating in a high cost, technically challenging oil and gas province (Alaska Senate Oil and Gas Tax Credit Working Group 2015).

In the mid to late 2010s, oil and gas companies operating in the Cook Inlet region were confronted with two interrelated events that threatened the economic sustainability of their operations: a precipitous drop in oil prices and the suspension of State tax credit refunds. The early 2000s saw a period of rising global

[45] The tax credits could be transferred between holders and exchanged for cash from the State (Alaska Department of Revenue 2021). The credits—which returned up to 40 percent of certain exploration costs—had two purposes: level the field of play between smaller, independent companies and the larger, integrated energy firms already established in the State by making exploration and drilling feasible for the newer, smaller companies; and 2) incentivize companies to invest in and develop the projects they were pursuing. By instituting a rebate system, the State was investing in exploration and development projects with the goal of having those projects reach production. Once in production, and after the operator accrued a tax liability, the state would begin to see a return on its investment (Alaska Senate Oil and Gas Tax Credit Working Group 2015). Oil and gas companies that produced more than 50,000 barrels of oil equivalent daily were not eligible for the tax credits, though they receive other benefits under the State's tax system (DeMarban 2017).

oil prices, with prices spiking well over $100 per barrel in mid-2008. As shown in Figure A-3, the price of Alaska North Slope oil dropped during the Great Recession, but rapidly rose again, with high prices returning for a sustained period. The sustained high prices helped make massive reserves of new types of oil and technology economic, directly leading to the shale oil boom. Eventually, rising U.S. shale production unbalanced world oil markets, and prices began falling in 2014 (Alaska Department of Revenue 2017). With the sharp drop in oil prices, annual oil industry spending on operations and capital projects dropped from $8.3 billion to $5.4 billion. Oil and gas industry jobs in Alaska fell from a peak of more than 15,000 in late 2014 to as low as 9,300 in mid-2018 (Robinson 2021).

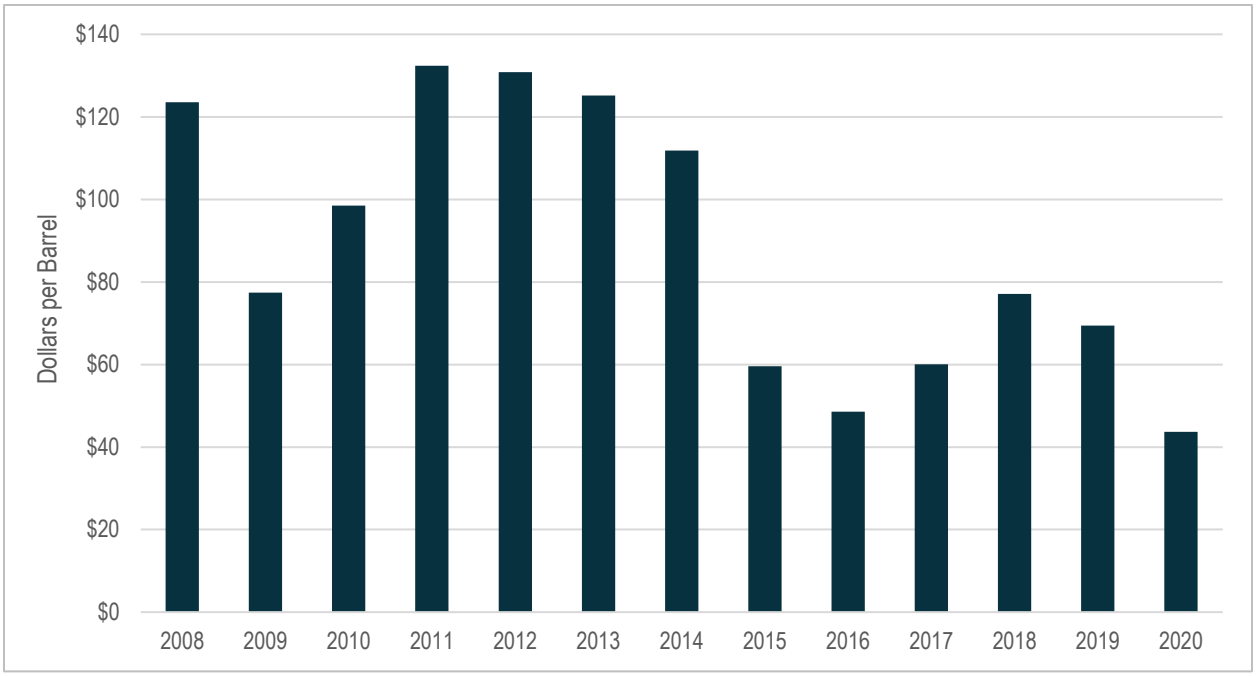

Figure A-3. Average Annual Alaska North Slope Crude Oil Price
Source: Herbert (2022)
Notes: Alaska North Slope, West Coast price in 2021 dollars using the Consumer Price Index Research Series (CPI-U-RS), not seasonally adjusted.

By 2018, the Cook Inlet basin tax credit system had been eliminated (Alaska Department of Revenue 2018). A 2016 Alaska Department of Revenue analysis found that between FY 2007 and 2014, non-North Slope oil and gas producers (the majority in Cook Inlet) used credits to cancel a total of $101 million in tax liability while cashing credits worth $504 million (Boettger 2018). These refundable credits became a significant cost to the State general fund (Alaska Department of Revenue 2015). For most of that time the State government had the funds to reimburse all the credits that holders cashed in each year. But as falling oil revenue after 2015 brought multibillion budget deficits, the State government appropriated credit payments at statutory minimums between $77 million and $72 million. This deferred a total of $630 million from the payments since 2015 and has left the state a $806 million debt to about 40 credit-holders (Boettger 2018). In 2018, Alaska Governor William Walker proposed that the State government borrow $1 billion to pay off the money owed to oil and gas companies in tax credits. In 2020, however, the

Alaska Supreme Court blocked the proposal, finding the State constitution bars taking on debt for that purpose (Iovino 2020).[46]

The depressed oil prices, together with the State's inability to fully pay the rebatable credits, put financial stress on the oil and gas explorers and producers in the Cook Inlet basin and seemed to signal an ebb in the flow of renewed oil and gas development activity in the basin (Iversen 2018; Agnew::Beck Consulting 2019). As of 2020, some oil and gas exploration and development projects in Cook Inlet had slowed dramatically or been postponed, and some companies had been forced to cease operations altogether (Iversen 2018; Brehmer 2020a; Brehmer 2020b; Brehmer 2020c; Lidji 2020).

The COVID-19 pandemic at the start of 2020 placed additional economic pressure on Alaska's oil and gas industry. The pandemic was the main reason for a world oil glut, as global shelter-in-place orders and other social restrictions spurred an unprecedented and sudden drop in demand for crude oil worldwide (Fried and Teel 2020). At the same time, the Saudi and Russian governments waged a price war over output and market share, resulting in Saudi Arabia flooding the market with crude oil. Toward the end of April, the price of oil dropped below $10 per barrel for four days, with one day registering a negative price (Fried and Teel 2020). Despite the economic disruptions resulting from the COVID-19 pandemic, the oil and natural gas output of Cook Inlet operators in 2020 was only slightly less than that in 2019 (Figure A-1 and Figure A-2).

A.2 Downstream Oil and Gas Facilities

Development of the oil and gas fields in the Cook Inlet basin during the late 1950s led to construction of the Chevron oil refinery at Nikiski in 1962, the first oil refinery in the State of Alaska, and construction of three other petroleum related plants at Nikiski in 1969. These latter facilities included the Tesoro Kenai Refinery, the ConocoPhillips Alaska's Kenai LNG Plant, and the Union Chemical ammonia-urea plant (Northern Economics 1990). As production from Cook Inlet oil fields declined substantially during late 1970s and early 1980s, the Chevron and Tesoro refineries modified their equipment to handle North Slope crude oil to maintain production levels. North Slope crude oil was shipped via tankers from Valdez to Nikiski to supply both refineries (Northern Economics 1990).

The Chevron refinery closed in 1991, citing costly State environmental protection requirements imposed after the *Exxon Valdez* spill in 1989 (Berliner 1991). In 2017, Tesoro changed its name to Andeavor and the name of its refinery to the Andeavor Kenai Refinery. In late 2018, Andeavor's assets were acquired

[46] As an alternative to the tax credit system, there is already some movement toward using the Alaska Industrial Development and Export Authority (AIDEA) as a development bank for drill rigs, processing, and other support facilities. This could be done to provide up-front financing, potentially saving start-up companies the high interest rates many of them are currently paying (Alaska Department of Revenue 2015). In 2020, for example, BlueCrest Energy utilized an AIDEA direct-financing loan for the procurement, transportation, initial outfitting, and commissioning of a new on-shore oil drilling rig, rig mancamp, and associated materials, tools, and equipment to support its on-going development of the Cosmopolitan oil and gas lease blocks in the southern portion of the Cook Inlet (Alaska Industrial Development and Export Authority 2020).

by Marathon Petroleum (Agnew::Beck Consulting 2019), and the refinery became the Marathon Kenai Refinery.

For more than 40 years ConocoPhillips Alaska's Kenai LNG Plant was the only LNG export plant in the U.S. (ConocoPhillips Alaska 2013). The facility's LNG was marketed to East Asia. However, spot prices for LNG cargos delivered to the East Asia countries fell below the wholesale price for Cook Inlet natural gas in local utility contracts, and the plant's last export was in 2015 (Brehmer 2017; Agnew::Beck Consulting 2019). ConocoPhillips Alaska's export license at the plant expired in early 2018. The plant was put on standby, meaning that ConocoPhillips Alaska would no longer keep the plant's storage tanks cold, a requirement for storing LNG (Agnew::Beck Consulting 2019).

In early 2018, ConocoPhillips sold the mothballed LNG plant to Andeavor (DeMarban 2018). As noted above, Andeavor's assets, including the LNG facility, were acquired by Marathon Petroleum in late 2018. In 2020, Marathon Petroleum received approval from the Federal Energy Regulatory Commission to reactivate the plant as a natural gas import facility (Keenan 2021). As of 2020, Marathon Petroleum had not yet determined its plans for the facilities going forward, but the plant provides an opportunity for the company to use the natural gas to power the crude oil heaters at its Marathon Petroleum (Poux 2020).

Using Cook Inlet natural gas feedstock for its production processes, the Union Chemical ammonia-urea plant had the capacity to annually produce 590,000 mt of ammonia and one million mt of urea. In 2000, the plant was acquired by Agrium Inc., a major North American producer and marketer of nitrogen, phosphate, potash, and sulfur fertilizer products. (Brown 2000). Agrium closed the plant in 2007 as a result of the high price and low supply of Cook Inlet natural gas. Prior to closing, the plant employed 200 workers and was the largest property taxpayer in the KPB. Agrium's annual property tax payments amounted to $2 million which accounted for 5 percent of the KPB's property tax revenues at that time. With increased supply of natural gas from Cook Inlet, or via a pipeline from the North Slope, plant operations could be feasible, but the plant's reopening has been hampered by lack of gas supply contracts (Agnew::Beck Consulting 2019). Moreover, it is estimated that the plant would take an estimated $275 million investment to reopen (Kenai Peninsula Economic Development District 2018).

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Appendix B. Data Compendium

This appendix summarizes the key data sources informing the analysis. A complete compendium that provides information on the data sources employed in this analysis of the KPB economy accompanies this report in the form of an Excel workbook. For each table and figure, the data compendium describes the nature of the data (i.e., the metric), relevant geographic area, years of data presented, the information sources (including specific report titles or database names), relevant agency and web URL, frequency of data collection, and notes regarding any issues with the data (e.g., missing years, estimation methodologies, etc.). Following are key data sources described in the compendium by topic:

Demographics and economics

- Population data including births, deaths, and migration published by the Alaska Department of Labor and Workforce Development. Historical population data from the U.S. Census Bureau's American Community Survey (ACS).
- Economic information from the Alaska Department of Workforce Development's (ADOLWD) Quarterly Census of Employment and Wages (QCEW) in addition to the ACS.

ANCSA Regional Corporations

- Data accessed via the Corporations' websites, personal communication with the Corporations, and literature review articles.

Oil and gas industry

- Production, sales, and employment and wage data for the oil and gas industry from the U.S. Department of the Interior and KPB agencies like the Borough Department of Finance.

Recreation and tourism

- Visitation data from a variety of sources including National Park visitation databases, reports published by ADF&G, and personal communications with regional agency employees.
- Tourism industry data including gross sales, employment and wages, and tax information from QCEW and DOR reports.

Commercial fishing

- Commercial fishing data accessed via the Commercial Fisheries Entry Commission and ADF&G sources.

Government sector

- Government sector data, including revenues and expenditures, obtained from the KPB Finance Office and ADCCED databases.

Other Industry data (construction, health care/social assistance, transportation/warehousing, trade/utilities/services, and agriculture/forestry/fishing/hunting)

- Sales, employment, and wage data across multiple industries from QCEW and data requests from ADOLWD.

Subsistence, personal, and educational use of wild resources

- Subsistence data from various ADF&G reports or databases, supplemented with personal communications with ADF&G agency employees.

Appendix C. Identified Data Gaps

Outreach and data gathering efforts to support the analysis of the Kenai Peninsula Borough economy identified some gaps in information that precluded a comprehensive trends analysis. This appendix summarizes the key data gaps. A complete list of data gaps accompanies this report in the form of an Excel workbook. The gap analysis is organized by chapter, with a list of existing information limitations for each relevant chapter. The gaps analysis table describes the data type, relevant geographic area or entity, years of data missing, potential source of information in the future, and accompanying notes on the specific information limitations.

Many of the information gaps highlighted in this analysis relate to a lack of local- or community-level data, or lack of data coverage over the entirety of the study period. Following is a summary of the key information gaps identified through the course of this research:

Demographics and economics

- Annual/updated demographic data with updates for 2020.
- Community-level employment and wage data.

ANCSA Regional Corporations

- Annual data regarding employment, wages, and dividends of ANCSA shareholders were not available. The role of ANCSA corporations was instead described qualitatively in the report using literature reviews.

Commercial fishing

- Data gaps include place-level revenue and participation levels.

Government sector

- Financial statements including revenues and expenditures from tribal entities were not accessible.

Agriculture, forestry, fishing, and hunting

- Gaps in this category relate to lack of availability of disaggregated agricultural sector data. Aggregated regional data were used in place of KPB-specific data.

Subsistence, personal, and educational use of wild resources

- Federal subsistence data for marine mammal harvests were not available at the community level.
- Place-based subsistence harvest data were not available for all KPB communities or for all years of study period as these data are not gathered by the agencies on a regular schedule.

U.S. Department of the Interior (DOI)
DOI protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)
BOEM's mission is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program
The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM's Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).