

October 2020

Economic Analysis of

Whale Watching Tourism in Alaska

PREPARED FOR



PREPARED BY

McDowell
GROUP

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Executive Summary

The National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) contracted with McDowell Group, an Alaska research and consulting firm, to assess the economic impacts of the state's whale watching industry, which has been experiencing unprecedented growth in recent years. This report estimates economic impacts for the year 2019, specifically from commercial whale watching by non-residents in coastal waters between Ketchikan and Unalaska.



Source: Suzie Teerlink; NOAA Fisheries Permit # 14296.

The study team relied on a wide variety of information sources, primarily interviews with 58 whale watching businesses, marine-based wildlife tour operators, and charter sportfishing businesses in 14 coastal Alaska communities. The study also drew on visitor industry reports and data including the *Alaska Visitor Statistics Program* and associated traffic reports. Economic impact modeling was conducted with IMPLAN, a commonly used econometric modeling tool. Following are key findings of the study.

Whale Watching Tour Volume and Revenue

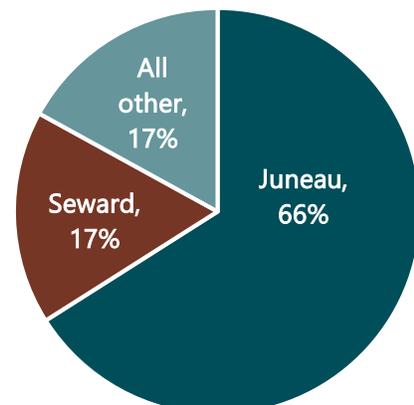
Whale watching is one of the most popular activities among summer out-of-state visitors to Alaska. Total statewide, paid whale watching tour volume is estimated at 553,000 visitors in 2019, or one-quarter of Alaska's 2.2 million summer visitors. Whale watch tour participants spent an average of \$156 on their tour, representing \$86 million in total spending in 2019. A significant portion of this spending (\$22 million) was paid in commissions to cruise lines, travel agents, and dock vendors.



Whale watching occurs throughout coastal Alaska. The top whale watch destination is Juneau, with two-thirds (66%) of 2019 market share, followed by Seward with 17%, and all other areas of the state combined with 17%. In terms of tour spending, Juneau represented \$60 million (70%) of statewide spending; Seward represented \$16 million (18%), and other communities represented \$10 million (12%).

It is estimated that in addition to the 553,000 paid whale watch tour participants in 2019, around 1 million visitors had the opportunity to view whales from cruise ships, ferries, and charter

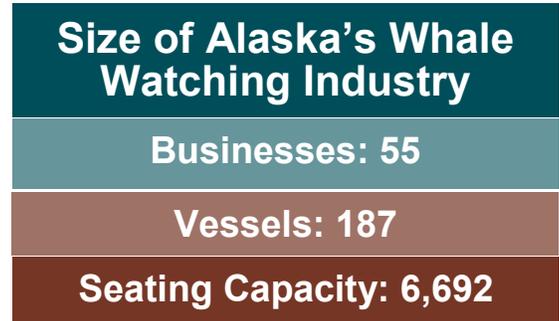
Whale Watching Tour Volume, 2019, By Location



fishing vessels. No spending is attributed to these visitors, although those that viewed whales likely perceived an enhanced value from their experience.

Size of the Whale Watch Industry

A total of 55 business that engage in whale watching tours were identified for this study. These businesses operated 137 boats and 50 kayaks in 2019 for a total of 187 vessels with 6,692 seats. Most of these vessels are dedicated solely to whale watching tours, while some provide “wildlife tours” with a significant whale watching component, and a few also operate other services such as sportfishing charters or transporter services for remote drop-offs, freight hauling, and other activities, but focus on whale watching for at least a portion of their business.



Economic Impacts of Whale Watching

The impacts of Alaska's whale watching industry reach far beyond the dollars spent by visitors on tours. Whale watching businesses employ (and pay wages to) hundreds of Alaska residents, in addition to making local purchases in support of their operations. This study measures the industry's impact at three levels: direct, indirect, and induced. Induced and indirect impacts are typically referred to as “multiplier effects.” Impacts are presented in terms of employment, labor income, and economic output, a measure of total economic activity.

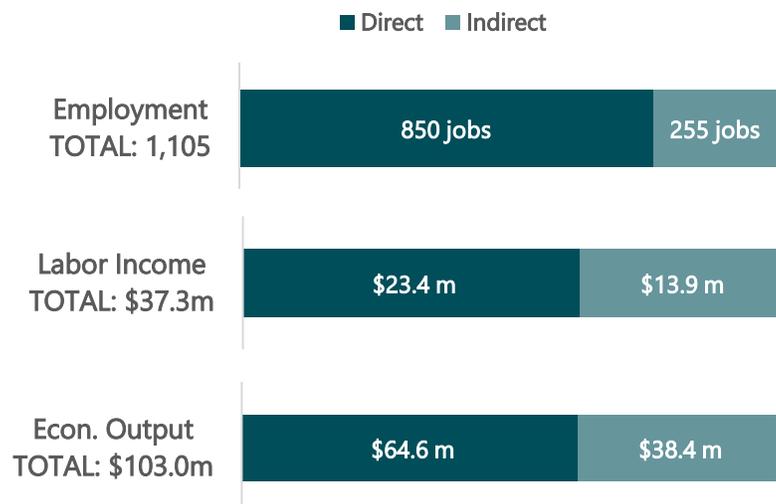
DIRECT IMPACTS	INDIRECT IMPACTS	INDUCED IMPACTS
Employment, payroll, and economic activity directly resulting from tour companies' expenditures	Employment, payroll, and economic activity resulting from whale watching companies purchasing goods or services from other businesses in Alaska	Employment, payroll, and economic activity resulting from employees spending their payroll dollars in local economies

Alaska's whale watching industry accounted for 850 direct, peak season jobs in 2019, and 255 indirect/induced jobs, for a total employment impact of 1,105.

The industry accounted for \$23.4 million in direct labor income in 2019, and \$13.9 million in indirect/induced labor income, for a total labor income impact of \$37.3 million.

Finally, direct industry spending in Alaska totaled \$64.6 million in 2019. Combined with indirect/induced impacts of \$38.4 million, total economic output resulting from the industry is estimated at \$103.0 million.

Alaska Whale Watching Economic Impacts, 2019



A little over half of the industry's impact was in Juneau, with \$57.8 million in economic output (56% of statewide total). Seward accounted for \$24.3 million in output (24%); and other communities represented \$20.9 million (20%).

Beyond the impacts measured in this study, visitors that participate in whale watching also spend money on whale-related souvenirs and food/beverages while on their tours. Additionally, some small portion of the \$22 million in commissions collected on whale watching tours finds its way into the Alaska economy through cruise line, travel agent, and dock vendor spending. Because the exact nature of this spending is unknown, these impacts are not accounted for in this study.

Introduction and Methodology

Introduction

Whale watching has long been a popular activity for visitors coming to Alaska. Humpback and killer whales provide reliable viewing opportunities with other marine wildlife species occasionally observed. Over the last two decades, Alaska has developed into a premier global whale watching destination. As Alaska’s summer visitation has grown over the last two decades (by 80% between 2000 and 2019),¹ so has whale watching activity – including operators, vessels, workers, and payroll. NOAA Fisheries contracted with McDowell Group, an Alaska research and consulting firm, to assess the role of whale watching in Alaska’s economy. This analysis includes estimates of employment, labor income, and economic output related to the industry, including both direct and indirect impacts. Impacts are estimated for the year 2019, specifically from commercial whale watching by non-residents in coastal waters between Ketchikan and Unalaska.

Methodology

Business Interviews

A primary source of information for this study was a series of interviews conducted with 58 whale watching businesses, marine-based wildlife tour operators, and charter sportfishing businesses in 15 coastal Alaska communities. The list of target businesses was developed through internet searches, community visitor guides, and study team knowledge of the industry. The study team attempted to contact all major whale watching and wildlife viewing companies in the state and a sample of smaller operators and charter sportfishing operators. A list of businesses interviewed is included in Appendix B.

The interviews identified 44 businesses that met the criteria of engaging primarily in whale watching or as one among other activities. Operators were assured that individual responses would be kept confidential and only reported in aggregate. Operators were generally cooperative in providing information for this study, while level of detail in responses varied.

Table 1. Interviews by Community

	Interviews
Juneau	16
Seward	12
Hoonah	6
Ketchikan	5
Sitka	5
Gustavus	2
Homer	2
Whittier	2
Yakutat	2
Glacier Bay	1
Haines	1
Kodiak	1
Unalaska	1
Valdez	1
Petersburg	1
Total Interviews	58

¹ McDowell Group internal visitor tracking database.

A database was developed that included business name, location, number of boats, years of operation, passenger capacity, whale watching passenger volume (non-residents only), average pricing, commissions paid, seasons, staffing, and estimated in-state expenditures, by category. Additionally, passenger volume and revenue were estimated for 11 whale watching businesses not interviewed. In total, 55 businesses are represented in the database used to model economic impacts.

Table 2. Total Interviews and Businesses Included in Analysis

	Businesses
Number of whale watching businesses interviewed	44
Additional businesses not interviewed but included	11
Total # of businesses included in the analysis	55

Passenger volume estimates for visitors that took a paid tour for the primary purpose of whale watching were derived from the database. The following adjustments were made to conservatively estimate whale watching passenger volume:

- Many businesses provide multiple services for visitors. For example, some charter fishing businesses also advertise whale watching tours and provide water taxi services. Operators providing multiple activities were asked to estimate the number of visitors that booked their services for the express purpose of whale watching.
- Operators of glacier and wildlife viewing tours where whales might be present but not heavily advertised were asked to estimate what portion of their 2019 non-resident passengers would not have taken the tour if there was not an opportunity to view whales. The estimated volume of passengers seeking a whale watching experience was included in the model.
- Six operators providing wildlife or glacier tours did not estimate whale watching intent. In consultation with NOAA Fisheries, the project team reviewed tour advertising, location, and likelihood of seeing whales to determine if whale watching was a significant component of a tour; a conservative estimate of this volume was included in the model.
- Passenger volume and revenue was estimated for the 11 whale watching businesses not interviewed. These businesses represented 13 vessels with seating capacity of about 200. Based on a review of their online advertising and data collected from operators of similar-sized local businesses, proxy estimates of tour volume and revenue were conservatively estimated.

Although not included in the economic impact analysis, this report includes a discussion of visitors that had opportunities to view whales, but it was not a primary motivator for their experience. This group, termed “opportunistic” whale watchers for purposes of this report, includes passengers on cruise ships (both large and small), charter sportfishing participants, glacier and wildlife tours (not otherwise accounted for), and ferry passengers that did not purchase a whale watching tour.

Additional Data Sources

- **Alaska Visitor Statistics Program 7 (AVSP)** provided data on non-resident visitors to Alaska (based on surveys of 5,926 Alaska visitors in Summer 2016). AVSP data was used for estimating the number of visitors to each community, transportation mode (cruise, air, highway/AMHS), activities (including a

category of “day cruises/whale watching”), and average spending by category. AVSP 7 was conducted by McDowell Group for the Alaska Department of Commerce, Community, and Economic Development.

- **Juneau Air and Ferry Visitor Survey** provided details on Juneau air and ferry visitors. It was conducted in summer 2018 for Travel Juneau and included surveys of 728 visitors using air and ferry travel modes.
- **McDowell Group Cruise Passenger Tracking Database** includes nearly two-decades of detailed large and small cruise ship and passenger arrivals data by port.
- **Alaska Department of Fish and Game** excerpts from the guide to *Marine Mammal Viewing* were adapted to provide information regarding whales that are key to the whale watching industry.
- **NOAA Fisheries** Online species directory. www.fisheries.noaa.gov/whales#by-species Accessed: October 2020
- **IMPLAN** a widely used input/output economic modeling application was used to calculate economic impacts.

Visitor Industry Overview

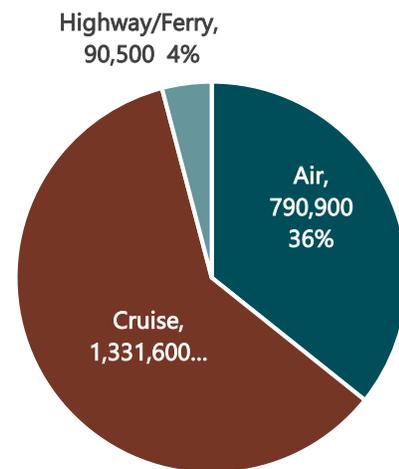
This report addresses the economic impacts of non-resident whale-watching activity. To provide context for the analysis, this section presents the most recent data available for Alaska's non-resident visitor volume, activities, and spending.

Volume by Transportation Market

An estimated 2,213,000 out-of-state visitors traveled to Alaska between May and September 2019.² By transportation market, 1,331,600 traveled by cruise ship, 790,900 were air visitors (entered *and* exited the state by air), and 90,500 were highway/ferry visitors (entered *or* exited the state by highway *or* ferry).

AVSP methodology counts visitors as they exit the state, by transportation mode (airport, highway, ferry, and cruise ship). However, measuring traffic by transportation market is useful because many cruise ship passengers exit the state via air; in addition, the highway and ferry markets overlap, making it practical to group them together.

Chart 1. Alaska Visitor Volume by Transportation Market, Summer 2019

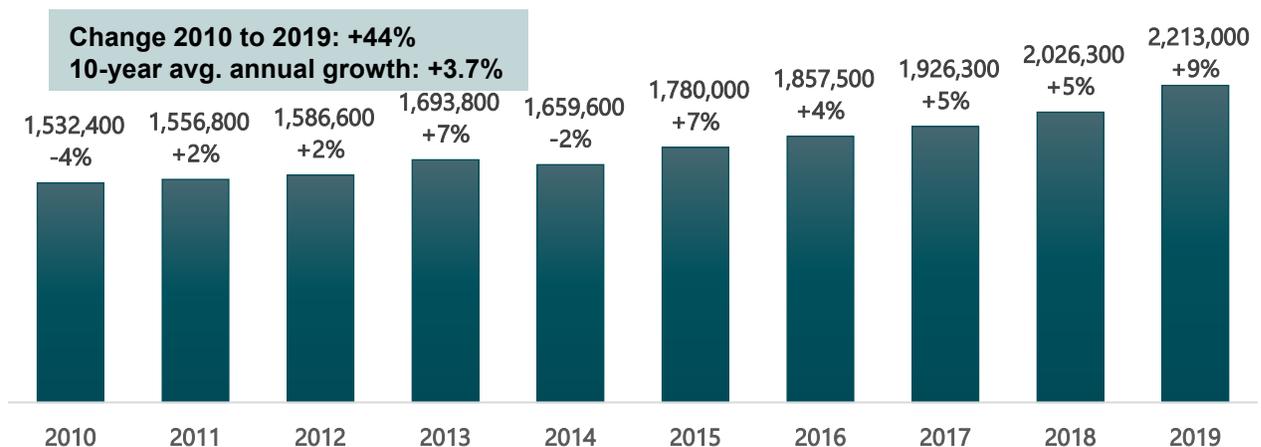


Trends in Total Volume

Total Visitor Volume: 2,213,000

The summer 2019 visitor volume of 2,213,000 is the fifth consecutive summer of growth, and the largest single-year growth in the last decade. Last summer's volume was 44% more than the volume a decade earlier (2010).

Chart 2. Alaska Visitor Volume, Summers 2010-2019



² This section was adapted from *Alaska Visitor Volume Report, Winter 2018-19 and Summer 2019*, prepared by McDowell Group for Alaska Travel Industry Association.

Trends by Transportation

The chart and table below show how visitor volume to Alaska has fluctuated over the last decade, segmented by air, cruise, and highway/ferry transportation markets.

Chart 3. Trends in Summer Visitor Volume, By Transportation Market, 2010-2019

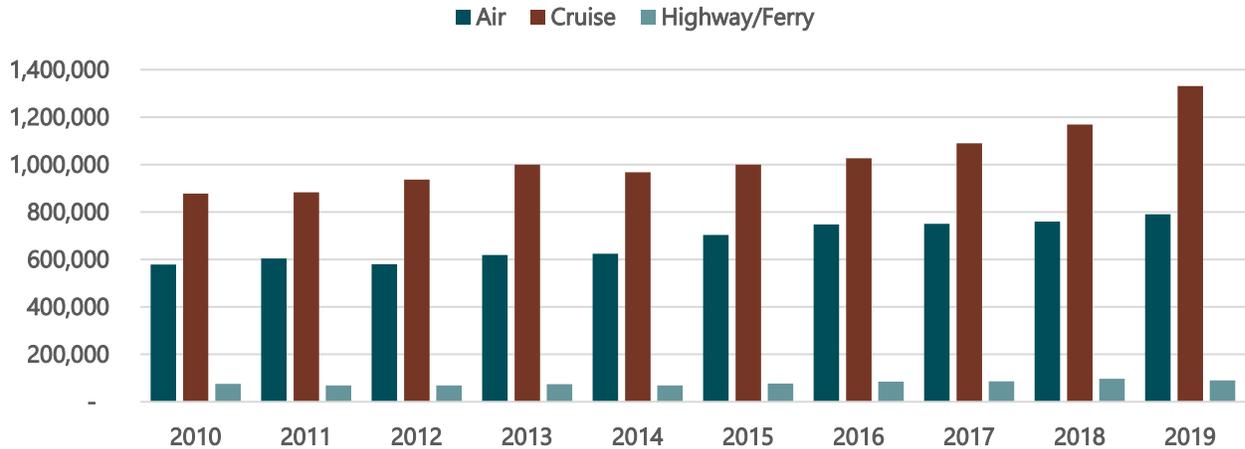


Table 3. Trends in Summer Visitor Volume, By Transportation Market, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Air	578,400	604,500	580,500	619,400	623,600	703,400	747,100	750,500	760,100	790,900
Cruise ship	878,000	883,000	937,000	999,600	967,500	999,600	1,025,900	1,089,700	1,169,000	1,331,600
Highway/ Ferry	76,000	69,300	69,100	74,800	68,500	77,000	84,500	86,100	97,200	90,500
Total	1,532,400	1,556,800	1,586,600	1,693,800	1,659,600	1,780,000	1,857,500	1,926,300	2,026,300	2,213,000
% change	-4.3%	+1.6%	+1.9%	+6.8%	-2.0%	+7.3%	+4.4%	+3.7%	+5.2%	+9.2%

Sources: AVSP 6 and 7.

Visitor Volume by Community

Cruise Volume by Community

Table 3 shows the number of cruise passengers by location for ports visited by at least 10,000 passengers. Juneau, Ketchikan, and Skagway are the top three ports, capturing between 78% and 98% of statewide volume. Secondary ports including Hoonah/Icy Strait Point, Seward, Sitka, and Whittier receive between 15% and 20% of statewide volume. The remaining ports are visited by 5% or less of total passengers statewide.

Non-Cruise Visitor Volume by Community

Non-cruise visitor volume to coastal Alaska communities was last measured in summer 2016, with the exception of Juneau, which was measured in summer 2018. In summer 2016 Anchorage received by far the largest volume of out-of-state visitors at 595,000, followed by Seward at 249,000. Hoonah receives very few non-cruise visitors at 4,000.³

**Table 4. Alaska Cruise Volume by Port, 2019
(>10,000 passengers)**

	Passengers	% of Total
Juneau	1,305,700	98%
Ketchikan	1,186,400	89%
Skagway	1,035,800	78%
Hoonah/ISP	267,200	20%
Seward	237,900	18%
Sitka	218,600	16%
Whittier	193,800	15%
Haines	63,400	5%
Kodiak	26,300	2%
Wrangell	17,300	1%
Homer	14,800	1%
Anchorage	13,700	1%
Valdez	12,400	1%

Source: Cruise Line Agencies of Alaska and small cruise lines.

**Table 5. Alaska Non-Cruise Visitor Volume for
Selected Communities, Summer 2016**

	Visitors
Anchorage	595,000
Seward	249,000
Juneau	78,000*
Valdez	66,000
Sitka	32,000
Kodiak	28,000
Hoonah/ISP	4,000

Source: Alaska Visitor Statistics Program 7.

*Juneau's non-cruise visitation was measured in Summer 2018.

³ Alaska Visitor Statistics Program 7, prepared by McDowell Group for the Alaska Department of Commerce, Community and Economic Development. Juneau volume from *Juneau Air and Ferry Visitor Survey, Summer 2018*, prepared by McDowell Group for Travel Juneau.

Visitor Activities

In summer 2016, four out of ten out-of-state visitors (39%) reported participating in a day cruise, making it the third-most popular activity in the state, after shopping and wildlife viewing.

The definition of day cruise includes all non-fishing, non-overnight boating excursions other than self-propelled activities such as rafting, kayaking, and canoeing. The day cruise category includes a significant volume of whale watch tours. Day cruises that do not focus on whale-watching include glacier-viewing, wildlife cruises, and jet-boat/river tours.

Table 6. Top 10 Visitor Activities in Alaska, Summer 2016

	% of Total
Shopping	75
Wildlife viewing	45
Day cruise	39
Cultural activities	39
Hiking/nature walk	34
Train	32
City/sightseeing tours	31
Fishing	16
Flightseeing	13
Tramway/gondola	13

Source: AVSP 7.



Source: Suzie Teerlink; NOAA Fisheries Permit # 14296.

Visitor Spending

The last time Alaska visitor activities and spending were measured was in summer 2016, when McDowell Group conducted the *Alaska Visitor Statistics Program 7* for the Alaska Department of Commerce, Community, and Economic Development.

Visitor Spending

Out-of-state visitors to Alaska reported spending an average of \$1,057 per person on their Alaska trip in summer 2016. This excludes spending on cruise and cruise/tour packages, as well as airline and ferry tickets to enter/exit the state.

Spending on whale watching excursions falls into the tours/activities/entertainment category, which represented \$200 per person in spending in summer 2016, or \$372 million. This figure reflects what visitors reported spending on tours, and includes commissions that accrued to cruise lines, travel agents and dock vendors.

Table 7. Average Per-Person Visitor Spending in Alaska, Summer 2016

Not including cruise/cruise tour or transportation to enter/exit Alaska

	Average
Lodging	\$126
Tours/activities/entertainment	\$200
Gifts/souvenirs/clothing	\$137
Food/beverage	\$133
Cars/fuel/transportation	\$81
Package not including cruise	\$182
Other	\$198
Total	\$1,057

Source: AVSP 7.

Whale Watching Industry Overview

As noted in the previous chapter, whale watching is one of the most popular visitor activities in Alaska. Southeast is the most common whale watching region, with Juneau as its epicenter. Elsewhere in the state, whale watching tours are offered from Seward, Kodiak, Homer, Valdez, and Whittier. Whale watching tours based out of Southcentral Alaska tend to follow scheduled routes, while vessels in Southeast typically maintain a flexible route based on where whales are active. Some operators offer day long tours, however, most operators offer multiple shorter, two to four hour, tours daily.



Source: Dave Wrightson.

The most common species of whales observed are humpback whales and killer whales (orcas), however, gray, and minke whales may be observed. Whale watching cruises typically feature other marine wildlife, such as sea lions, sea otters, harbor seals, Dall's and harbor porpoises, and bald eagles, as well as shoreside wildlife such as bears and deer.

Tour Volume and Revenue

Total statewide whale watching tour volume is estimated at 553,000 visitors in 2019. This equates to one-quarter of Alaska's 2.2 million 2019 summer visitors. The top whale watching destination is Juneau, with two-thirds of market share, followed by Seward with 17%, and all other areas of the state combined with 17%. Cruise visitors represent around 80% of statewide whale watching tour volume.

Visitors spent an estimated \$86 million on tickets for whale watching tours in Alaska in 2019. Average expenditure per passenger was \$156. Whale watching tour spending represented 18% of statewide visitor spending in the tours/ activities/entertainment sector in summer 2019, or 4% of all Alaska visitor spending.⁴ A significant portion of this spending (an estimated \$22 million) was in paid in commissions to cruise lines, travel agents, and dock vendors.

See table, next page.

⁴ AVSP 7 estimated that visitors spent an average of \$200 on tours/activities/entertainment statewide in summer 2016. Adjusted for inflation (using Anchorage CPI) would result in per visitor spending of \$210 in 2019. Applying average spending to statewide visitor volume of 2,213,000 equates to total expenditures of \$464.6 million for the tour/activities/entertainment category in summer 2019. The same methodology was used to calculate total visitor spending in Alaska. Average per visitor expenditures of \$1,110 for 2,213,000 visitors in summer 2019 equates to \$2.5 billion in total spending.

Table 8. Estimated Paid Whale Watching Tour Volume and Revenue, by Location, 2019

Location	Passenger Volume	% of Statewide Total	Industry Revenue (millions)	% of Total
Juneau	367,000	66%	\$60.0	70%
Seward	93,400	17%	\$15.9	18%
All other communities	92,600	17%	\$10.2	12%
Statewide	553,000	100%	\$86.1	100%

Source: Whale watching business interviews and McDowell Group estimates. Figures have been rounded.

Businesses, Vessels, and Capacity

A total of 55 businesses that engage in whale watching tours were identified for this study. These businesses operated 137 vessels and 50 kayaks in 2019. Most of these vessels are dedicated to whale watching tours, while some provide more general “wildlife tours” with a significant whale watching component, and a few primarily operate sportfishing charters or transporter services for remote drop-offs, freight hauling, and other activities, but participate in whale watching on occasion. All businesses engaged in some level of commercial (paid) whale watching tours.

The maximum seating capacity of the 187 vessels and kayaks is 6,692 at a given point in time. Many of the vessels engage in multiple tours daily with some making as many as four tours daily. Juneau has the most vessels engaged in whale watching at 68 with passenger capacity of 2,898, followed by Seward at 28 vessels and capacity for 2,478. There are approximately 50 kayaks available for whale watching tours with total passenger capacity of 100, statewide.

Table 9. Whale Watching Vessels and Maximum Capacity

	Vessels	Passenger Capacity
Vessels	137	6,592
Juneau*	68	2,898
Seward	28	2,478
All other communities	41	1,216
Kayaks	50	100
Total	187	6,692

Source: Whale watching business interviews.

*Note: Several Juneau-based vessels provide regular whale watching tours for Icy Strait Point in Hoonah.

Whale watching tours are provided on a variety of vessel types. Vessels range from about 20' to 90', with many in the smaller 20' to 28' range. Most of these smaller vessels are licensed to carry a maximum of six passengers. Vessels in this range often also provide charter sportfishing. Mid-range vessels include those in the 30' to 40' range and typically seat 12 to 24 passengers. Common size and capacity for larger vessels include 48'-24 seats, 65'-46 seats, and 78'-145 seats. Most vessels 30' feet and longer feature large windows that allow viewing while traveling and on days when the weather is poor. Larger vessels allow passengers to gather around the vessel on a lower deck and an upper observation deck.

Vessels can be mono-hull or catamaran. Propulsion includes outboard and inboard gas or diesel engines. Most vessels are propeller driven, although some operators use jet drives. Most whale watching boats are built to cruise at speeds of 20-25 knots. This allows the vessels to cover a wide area in a short time in search of whales.

Several companies offer kayak tours for whale watching utilizing double kayaks. Some kayak tours depart directly from a port, while others are transported by motorized vessels to whale watching locations (in these instances, whale watching is often occurring from the water taxi platform as well as by kayak).

Business Tenure and Vessels Owned

Number of years in the whale watching industry was identified for 39 of the 55 whale watching businesses interviewed. About half had been in business 10 years or less, 13 had been in business between 11 and 25 years, and eight had been operating for more than 25 years. In terms of vessel ownership, newer and older businesses represented about the same proportion of vessels (42% and 39%, respectively).

Table 10. Whale Watching Businesses, Tenure and Vessels Owned

Years of Operation	# of Businesses	% of Vessels Owned
10 or fewer years	17	42%
11 to 25 years	14	20%
More than 25 years	8	39%
	39	100%

Source: Business interviews.

Key Whale Watching Locations in Alaska

Juneau

Juneau is a popular whale watching port as there is a high success rate in seeing whales relatively close to the harbor. Further, Juneau waters are a common place to see humpback whales bubble net feeding, when groups of 5-15 humpback whales cooperate to corral prey with bubbles. This behavior results in an impressive display of feeding, visible from the surface of the water. An opportunity to view this behavior is highly sought after, however, bubble net feeding is only observed in a few areas around Southeast and Southcentral Alaska, and groups are generally limited to only certain individual humpback whales that participate in this behavior year after year. However, bubble net feeding is not unusual in the Juneau area, in fact, Juneau is likely to be the port where whale watchers most often encounter this exciting spectacle.⁵

The most popular Juneau areas for whale watching include the southern Lynn Canal (e.g. Shelter Island, Point Retreat, North Pass, Benjamin Island, and Portland Island), and northern Stephens Passage. The range of areas covered on individual tours depends largely on tour duration and the abundance and distribution of

⁵ Sharpe 2001, S. Teerlink, unpublished data.

whales. Most tours occur within 10-15 miles of Auke Bay, where vessels are based. The primary whale species observed are humpback whales and occasionally killer whales.

Tours primarily operate during the cruise season from late April to early October, although a few tours may occur before or after the cruise season.

TOUR VOLUME

The highest volume of whale watching tours in the state depart from Juneau. An estimated 367,000 visitors purchased a whale watching tour in Juneau in 2019, representing two-thirds of statewide whale watching tour volume and 17% of all Alaska visitors. Cruise passengers represented 95% of Juneau tour volume. An estimated 346,000 (26%) of all Juneau cruise visitors participated in a whale watching tour.⁶

Visitors spent an estimated \$60 million on whale watching tours in Juneau in 2019. The average expenditure per passenger was \$164. Included in the \$60 million is an estimated \$19 million in commissions.

In summer 2016, cruise visitors to Juneau cited day cruises (which include primarily whale watching) as their most popular activity, at 31%. A summer 2018 survey of non-cruise visitors showed that 17% of air visitors and 18% of ferry visitors participated in a day cruise.

Table 11. Top 10 Visitor Activities in Juneau, by Market (%)

	Cruise 2016		Air 2018	Ferry 2018
Day cruise	31	Mendenhall Glacier	63	80
City/sightseeing tours	19	Shopping	61	57
Tramway	15	Hiking/nature walk	45	61
Hiking/nature walk	14	Tramway	44	35
Wildlife viewing	13	Wildlife viewing	30	39
Salmon bake	8	Museums	29	32
Museums	8	Visiting friends/relatives	27	13
Flightseeing	6	Brewery/distillery	22	26
Dogsledding	4	Day cruise	17	18
Historical/cultural attractions	3	Sealaska/Soboleff Bldg	15	11

Sources: Cruise passenger participation from AVSP 7; air and ferry participation from *Juneau Air and Ferry Visitor Survey Summer 2018*.

WHALE ABUNDANCE

In most years, there are about 100 individual humpback whales that may be present in Juneau area waters, with some spending more time in the area than others. Each year, about 25 individual whales are sighted reliably (these are considered "regulars"), and another 25 individual whales are seen periodically. The remaining 50 individual whales are transient and stay in the area only briefly.

Humpback whales are highly mobile throughout the feeding season, which can lead to times where whale numbers in the Juneau area are quite low. Over the last five years, there have been several times when the entire whale-watching fleet in Juneau is reliant on just two to three whales that happen to be in the area at that time.⁷

⁶ Based on tour operator estimates of cruise passenger tour volume.

⁷ Personal communication with Suzie Teerlink, Marine Mammal Specialist, NOAA Fisheries, July 2020.

INDUSTRY GROWTH

Juneau's whale watching industry began in the early 1990s and has grown steadily since that time, along with cruise traffic. The percentage of Juneau visitors participating in a day cruise (with whale watching the primary component) increased by 19% between 2006 and 2016. Concurrently, cruise visitor volume increased by 35%.

Several operators interviewed for this study reported purchasing new vessels in recent years. For small businesses operating with six passengers or less, barriers to entry in the whale watching industry are modest. Operators need a boat and a licensed captain. Capital investment for these "six pack" operation is modest, but significantly higher for larger vessels. Operators can enter the market by working directly with cruise lines, selling through dock vendors, and/or direct-to-consumer marketing. Competing directly for a market share requires dedicated resources and related staffing.

Four operators were not asked about crowding associated with the growth in whale watching; however, two tour operators provided comments regarding crowding on the water, one stating that crowding was an issue, one stating it was not.

Juneau's volume of whale watching tours has grown a lot in recent years. One thing we see is that with increased crowding, guest satisfaction has gone down. The whale watching grounds are crowded.

We don't hear complaints about crowding on the water. People are happy to see whales, it's a bonus if there are no other boats but not necessary to have a good day.

Seward

The city of Seward is located on the Kenai Peninsula at the head of Resurrection Bay. The Bay is roughly 20 miles long, and whales can be observed throughout the area. Other areas include waters outside Resurrection Bay southeast along the outer coast, the bays and inlets of Kenai Fjords National Park, and northwest along the shores of Resurrection Peninsula. Whales observed most frequently are humpback, killer, and gray whales. At least one operator offers dedicated spring gray whale watching tours. The primary tour season is mid-May through September, with gray whale tours offered from mid-March through mid-May.

Tours are usually advertised as glacier and wildlife tours, or Resurrection Bay tours, or Kenai Fjords tours, although whales are generally featured in advertising. Two large Seward tour companies are responsible for the vast majority of tour volume. Numerous six-pack boats and at least two kayak companies are also based in Seward.

TOUR VOLUME

Seward whale watching volume is estimated at 93,400 passengers in 2019, representing 17% of statewide tour volume and 4% of all Alaska visitors. Visitors spent an estimated \$16 million on Seward whale watching tours, an average of \$154 per tour. Tour operators paid commissions of \$1.4 million. An estimated 22,300 (9%) of all Seward cruise visitors participated in a whale watching tour.⁸

Seward is the most popular place to whale-watch in Southcentral Alaska. In summer 2016, it was the number one activity for both air and highway/ferry visitors, with 51% and 42% of those markets reporting participation,

⁸ Based on tour operator estimates of cruise passenger tour volume.

respectively. It was less popular among cruise visitors at 8%; cruise visitors have limited time in Seward as they are either at the beginning or end of their Cross-Gulf cruise.

Table 12. Top 10 Visitor Activities in Seward, by Market, Summer 2016

	Cruise	Air	Highway/Ferry
Wildlife viewing	16	48	19
Day cruises/whale watch	8	51	42
Hiking/nature walk	7	33	19
Fishing	<1	15	15
Cultural/historical activities	8	8	3
Dog sledding/kennel tour	2	6	<1
Camping	<1	5	15
City/sightseeing tours	2	3	11
Kayaking/canoeing	<1	4	1
Biking	-	1	1

Source: AVSP 7.

Icy Strait

Following Juneau and Seward, Icy Strait has the next highest volume of paid whale watching tours. The eastern portion of Icy Strait is located 20 air miles (30 by water) west of Juneau’s Auke Bay. Icy Strait is roughly 50 miles long east to west.

Visitors primarily access Icy Strait from the community of Hoonah, Icy Strait Point (a cruise ship port in Hoonah), and Gustavus. Whale watching tours are one of the most popular activities among cruise passengers visiting Icy Strait Point. A few operators travel from Juneau to Icy Strait on full-day or overnight tours. While whales can be observed at any location in Icy Strait, the premier location for observing a high volume of whales is Point Adolphus, located about 20 miles west of Hoonah and 10 miles southeast of Glacier Bay National Park and Preserve.

Tours from Hoonah are provided by several six-pack vessels, and two mid-size vessels of 32’ and 42’. Tours from Icy Strait Point are provided on 41’, 48’, 65’, and 78’ vessels. The three larger vessels are based in Juneau. Tours from Gustavus include one kayak company and a 50’ vessel.

Advertising for Hoonah and Gustavus businesses and Icy Strait Point prominently feature whales.

Other Locations

GLACIER BAY NATIONAL PARK & PRESERVE

Visitors to the National Park in 2019 included 630,000 cruise passengers⁹ and about 18,000 independent visitors that take a day boat cruise to the upper reach of the bay. Passengers view the Park’s glaciers and spectacular scenery and have the opportunity to view whales, sea lions, seals, sea otters, birds, and bears.

⁹ Cruise Line Agencies of Alaska.

While still lower than the peak numbers observed in 2013, 2019 Glacier Bay National Park and Preserve unique humpback whale observations were 167% higher than in 2018 (120 whales and 45 whales respectively). The number of whales visiting the Park had declined by 72% from 161 in 2013 to 45 in 2018. This dramatic decline was attributed to a significant decline in prey in the Gulf of Alaska believed to be a result of a marine heatwave. The whale population survey area also includes the portion of Icy Strait Point from Pleasant Island to Inian Islands. Observations in this area increased slightly from 72 in 2018 to 76 in 2019.¹⁰

While the Park Service website does not feature whales prominently on its main web pages, there is a webpage for humpback whale monitoring and research. The webpage featuring the day boat tour makes no mention of whale watching.

SITKA

Sitka Sound is approximately 15 miles long and 10 miles wide, featuring numerous bays and islands. Most tours occur in the Sound where whales are frequently observed, often within 10-15 minutes of leaving the harbor. Vessels occasionally venture outside the Sound, but rough water and longer distances limit these trips. The Sound is also home to a host of other marine wildlife, including sea otters and a diversity of seabirds. Sea otter viewing is the most heavily advertised aspect of most Sitka boat tours although whales are also prominently featured. Humpback whales are the most observed species with killer, minke, and gray whales occasionally observed. An estimated 90%-95% of Sitka tour volume are cruise passengers.

PRINCE WILLIAM SOUND

Tours departing Valdez and Whittier cruise the numerous bays and inlets of Prince William Sound. Tours are primarily marketed as glacier and wildlife viewing tours, although one Whittier tour operator does advertise whale watching.

Humpback whales are the primary species observed. In 2019, researchers observed more whales than in the two previous years; however, populations remain lower than the 2008 to 2014 period.¹¹

The majority of tour passengers (90%) are independent visitors, while the remaining 10% are cruise visitors.

HOMER/KACHEMAK BAY

Homer-based wildlife viewing tours occur in the waters of Kachemak Bay, Jakolof Bay, Kasitsna Bay, and Seldovia Bay. The primary species observed are humpback and killer whales. Operators report very few cruise passengers purchasing tours from Homer. Some, but not all, operators feature whales in their advertising.

OTHER AREAS OF ALASKA

While whales can be viewed from virtually any coastal community or remote lodge in Southeast and Southcentral Alaska, whale watching is not the primary visitor attraction or activity in locations other than those mentioned above.

¹⁰ Glacier Bay & Icy Strait Humpback Whale Population Monitoring 2018 and 2019 Updates.

¹¹ *Ecosystem Status Report 2019*, Gulf of Alaska, North Pacific Fisheries Management Council.

Whale Sense Program

Whale SENSE is a voluntary education and recognition program offered to commercial whale watching companies in the U.S. Atlantic and Alaska Regions. The program is sponsored by NOAA Fisheries and Whale and Dolphin Conservation, and developed in collaboration with the whale watching industry, Whale SENSE recognizes whale watching companies committed to responsible practices.¹²

The purpose of the program is to encourage best practices in the whale watching industry that can reduce impacts to whales while increasing education and conservation messaging on tours. The program encourages operators to:

- **Stick** to whale watching guidelines
- **Educate** passengers and crew
- **Notify** officials of whales in trouble
- **Set** an example for other boaters
- **Encourage** ocean stewardship

Participating businesses provide annual staff training, complete annual stewardship projects, ensure advertising reflects responsible viewing practices, and adhere to program criteria. Businesses that participate are provided with Whale SENSE logos for use on vessels and websites. NOAA Fisheries encourages potential whale watchers to consider taking a tour with a Whale SENSE operator (www.whalesense.org).

Eighteen businesses in five Alaska communities participated in the Whale SENSE program in 2019.

Table 13. Whale SENSE Program Participants by Community, 2019

Community	Businesses
Juneau	8
Sitka	4
Seward	4
Ketchikan	1
Valdez	1
Total Participants	18

Source: NOAA Fisheries.

¹² www.whalesense.org

The Importance of Whales in Marketing Alaska

One of the most important reasons visitors come to Alaska is to see wildlife, including whales. Whales feature prominently in marketing materials aimed at attracting visitor to Alaska. Images of whales are used by individual businesses, in marketing by many visitors' bureaus in Southeast and Southcentral, as well as in statewide marketing by the Alaska Travel Industry Association and by Alaska.org. Most cruise lines also use images of whales in their national and international advertising materials. Web sites for Princess Cruises, Holland America Line, Celebrity



Source: Suzie Teerlink; NOAA Fisheries Permit # 14296.

Cruises, and Royal Caribbean, among others, all have images of whales on web site landing pages providing information about Alaska cruises. While glaciers are the most widely featured images used in on-line cruise marketing, images of breaching whales or groups of bubble net feeding humpback whales are common and clearly what marketers believe helps attract visitors to Alaska. Examples of cruise line use of whales in marketing include Norwegian Cruise Line describing the “Mendenhall Glacier and Whale Quest” tour as a “Best Alaska Excursion.”¹³ The “Whale and Mammals Cruise” is noted as a “Top Excursion” at Icy Strait Point.

Tour operators interviewed for this study were asked about the importance of whales as a component of their tours and the prominence of whale images in the marketing. The reported importance of whale watching varies by tour type and geography. Understandably, businesses that only provide whale watching tours place a high level of importance on whale observations and feature whales heavily in marketing materials.

Many businesses in Southeast and Southcentral Alaska advertise wildlife and/or glacier tours with a possibility of seeing whales. The prominence of whales in marketing materials for these tours varies greatly by region and business; however, nearly all tour operators where whale observations are possible have at least one whale image included in marketing materials.

The following comments were provided by operators regarding the importance of whales and prominence in their marketing materials.

Juneau

Whales are a key part of why people come to Alaska. In Juneau it is whales, Mendenhall Glacier, and fishing. I have been doing this for 15 years and those are the top three. Wildlife is also big; people want to see bears.

¹³ <https://www.ncl.com/cruise-destinations/alaska-cruises>

Even though we advertise as whale watch/boating trips, realistically boating is the focus and whales are a bonus. We added specific whale tours last year after clients told me I should. We were seeing so many whales.

Juneau is really becoming a world-class, branded whale watching destination and for good reason. Our clients come away happy. We see whales regularly because they are feeding on the surface and easy to find and observe, unlike Hawaii.

Early on we did not guarantee whales, but there has been pressure to do so. We almost always see whales and have only refunded one day of tours to a ship. We highlight whales in our advertising now as Juneau is more known for whale watching and people expect it.

Social media has increased demand for whale watching – that’s an under-appreciated point. Everyone wants to post a picture of themselves with a whale in the background.

On our whale watching/glacier tour, the whale watching is key, that’s why clients book the tour.

Juneau has long had a reputation as the place to do whale watching, but we are seeing other places now doing more, i.e. Icy Strait and some in Ketchikan now. If other ports also have whale watching, people can choose to do other things while in Juneau, and then get their whale watch tour in another port.

Whale watching has always been a big part of my business. We originally started the business with different avenues like water taxi and general wildlife tours, but there was demand for whale watching. Whales have been our focus for the past decade or so.

Seward

We do multi-day custom tours with no specific “whale watching” tour. Wildlife is just one part of the package people are seeking, they want time together as a family or friends, adventure, and Alaska mystique.

Whale sightings are of major importance to clients and it is disappointing when they don’t see them. However, I can’t remember a time we got skunked on whales.

Whale watching is not prominent in our marketing. There is a whale photo and mention of whales on the website, which is our main marketing tool, but we don’t push whales. We do an interest survey with our clients and most people say they are interested in wildlife, but don’t specifically name whales.

We pride ourselves on an overall wildlife and sightseeing experience, and the tour is not advertised as specifically a whale watching tour, but we do mention whales on our website. While it hasn’t been a huge piece of our advertising, whales are at the top of the list of what clients want to see.

We tend to under-promise and over-deliver with whale advertising. We are in a unique and lucky position where we don’t have to over-market whales since there is so much other wildlife and scenery that’s sure to please our clients. However, whales are a very important component of the business.

We do use whales in our advertising, but there are so many other things to see that it isn't the focus of the tour, but an important part. We do not guarantee whale sightings. We do have a dedicated gray whale watching tour mid-March to May when that species is migrating through the area. We also see orcas and humpbacks in the spring and more humpbacks in the summer and fall.

Whale watching has remained a stable draw since I started my business. Whales are a very important component of my wildlife tours. Whales are also very important in my advertising. If I did not include whales, it would be detrimental to sales.

Whale watching has always been a central piece of our marketing. It has become very important with social media where people can see what is happening from posts made by clients. The expectation is that they will see whales. There are more whales in the area now.

Whale watching is a somewhat important component of our kayaking tours and maybe 10-20% of our clients wouldn't take the tour if there were not the possibility of seeing whales.

Our marketing is a bit vague on what might be seen on a trip: glaciers, birds, wildlife, whales, scenery. The whales are "eye candy" in the pictures on our website and marketing materials. Overall, whale watching is not that big of a marketing component, it's in line with everything else. I don't like the whale guarantee and try to manage visitors' expectations.

Whales are prominently featured in our marketing and descriptions on the website, but we don't make guarantees. We highlight orcas as our chance of seeing them in May and June is about 100%. A majority of our clients wouldn't go if there was not the opportunity to see whales – whales and glaciers are what they want to see.

Sitka

Whale watching has been very important for our business, and clients expect to see whales when they are booking. We spend a lot of time looking for whales when on tours. We used to think folks were more interested in general wildlife, but we found that whales were helping our bookings when added them to our advertising. Now, whales are very important and prominent in our advertising and website.

Whales are very important in our advertising.

Otters and other wildlife are very important for our tours, however, whales have always been a significant tour component.

Homer

Few clients come specifically for whales, but if there were no whales there would be a decrease in interest. Maybe 20% of our tours include whale sightings. It's not common to see whales in Kachemak Bay, so we don't actively advertise whales.

Ketchikan

We have an "under-promise and over-deliver sentiment" about seeing whales.

If whale watching is your focus, I am not the best choice and I make that clear to folks when they book. People that come to Alaska do want to see bears and whales, so there is that to consider.

Whittier

We see whales on wildlife tours about 75% of the time. Whales are essential to our advertising for wildlife tours. Most of our clients are aware that there is a possibility of whales during a wildlife tour, but that it's not guaranteed.

Economic Impacts of Whale Watching

The whale watching industry creates economic impacts beyond direct employment and expenditures. This study measures the industry's impact at three levels:

- **Direct impacts** include employment, payroll, and economic activity that are a direct result of tour companies' expenditures.
- **Indirect impacts** occur as whale watching companies purchase goods or services from other businesses in Alaska.
- **Induced impacts** are generated as employees spend their payroll dollars in local economies.

Indirect and induced impacts together are commonly referred to as "multiplier effects" and measure additional impacts as direct spending flows through the economy.

Impacts are presented in terms of employment, labor income (wages, salaries, and benefits), and economic output, a measure of total economic activity. Direct employment and spending estimates are derived from tour operator interviews and correlate with the volume of passengers who have taken a paid whale watching tour. Total impacts were calculated using IMPLAN, a widely used input/output economic modeling application.¹⁴

Multiplier effect

Employment and Income

The whale watching industry requires a workforce of captains, deckhands, mechanics, naturalists, bus and van drivers, dock representatives, sales staff, administrative professionals, and others. Most industry jobs are seasonal positions; tour operators report that an average of 85% of their employees are seasonal and 15% employed year-round.

Direct Employment and Labor Income

Statewide direct peak employment in the whale watching sector is estimated at 850 jobs for 2019, including 460 jobs in Juneau, 220 jobs in Seward, and 170 jobs elsewhere in the state. Direct labor income is estimated at \$23.4 million, including \$13.1 million in Juneau, \$5.9 million in Seward, and \$4.4 million in other communities. (Labor income includes employee payroll, tips, and proprietor's income, but excludes owners' retained earnings.)

Table 14. Whale Watching Industry Direct Employment and Labor Income, 2019

	Juneau	Seward	Other Communities	Total Statewide
Peak employment	460	220	170	850
Labor income (\$millions)	\$13.1	\$5.9	\$4.4	\$23.4

Source: McDowell Group estimates.

¹⁴ Economic Impact Analysis for Planning (IMPLAN), Huntersville, NC. <https://implan.com>

Tour Operator Local Expenditures

Fuel purchases, boat repair and maintenance, ground transportation, harbor fees, permits, and food service are all significant components of local expenditures in support of whale watching tours. Total statewide visitor spending for whale watching tours is estimated at \$86.1 million in 2019. Commissions paid to cruise lines, travel agents, and dock vendors are estimated at \$21.6 million, leaving \$64.6 million in direct revenue to tour operators. Local non-personnel expenditures are calculated by subtracting estimated payroll, retained earnings by owners, and non-local expenditures. On a statewide basis, tour operators reported that an average of 71% of their non-personnel expenditures were local. Total in-state direct expenditures are estimated at \$24.3 million, including \$15.9 million in Juneau, \$5.3 million in Seward, and \$3.1 million in other communities.

Table 15. Estimated Whale Watching Industry Direct Non-Payroll Local Expenditures, 2019

	Juneau	Seward	Other Communities	Total Statewide
Local expenditures (\$millions)	\$15.9	\$5.3	\$3.1	\$24.3

Source: Whale watching business interviews and McDowell Group estimates. Figures have been rounded.

While not measured in this study, there are additional economic impacts generated from the construction of whale watching vessels, particularly in Sitka and Homer.

Total Economic Impacts

Non-personnel spending by whale watching operators and spending by tour employees in the local economy supported about 255 additional jobs and \$13.9 million in labor income in Alaska in 2019. The Juneau whale watching industry supported 130 additional jobs and \$7.2 million in labor income, while the industry in Seward supported about 70 additional jobs and \$3.6 million in labor income. About 55 additional jobs and \$3.1 million in labor income in other Alaska communities were supported by the industry. Industry direct expenditures supported an additional \$38.4 million in indirect and induced economic output. This represents the multiplier effect.

Including direct, indirect, and induced impacts, the whale watching industry supported about 1,105 jobs in Alaska in 2019, including 590 in Juneau, 290 in Seward, and another 225 in other communities.¹⁵

Total labor income supported by the industry is estimated at \$37.3 million in 2019, including \$20.3 million in Juneau, \$9.5 million in Seward, and \$7.5 million in other communities. Total statewide economic activity supported by the whale watching industry is estimated at \$103.0 million annually.

(See table next page)

¹⁵ Note: Direct impacts are based on peak seasonal employment and correspond to annual average statewide employment of 425. Indirect and induced employment is measured in terms of annual averages.

Table 16. Alaska Whale Watching Industry Economic Impacts, 2019

	Juneau	Seward	Other Communities	Total
Direct Impacts				
Peak employment	460	220	170	850
Labor income (\$millions)	\$13.1	\$5.9	\$4.4	\$23.4
Output (\$millions)	\$37.7	\$14.5	\$12.4	\$64.6
Indirect & Induced Impacts				
Employment	130	70	55	255
Labor income (\$millions)	\$7.2	\$3.6	\$3.1	\$13.9
Output (\$millions)	\$20.1	\$9.8	\$8.5	\$38.4
Total Impacts				
Peak employment	590	290	225	1,105
Labor income (\$millions)	\$20.3	\$9.5	\$7.5	\$37.3
Output (\$millions)	\$57.8	\$24.3	\$20.9	\$103.0

Source: Whale watching business interviews and McDowell Group estimates. Figures have been rounded.

Sales Tax

Included in the total impacts are sales tax collection at the community level. Nearly all communities in Alaska with whale watching operations levy a sales tax on all or part of tour sales. The City and Borough of Juneau (CBJ) levies a 5% sales tax rate, exempting commissions paid to third-party tour sellers. CBJ sales tax collection from whale watching tours is estimated at \$1.9 million in 2019. Whale watching tour sales in Seward are subject to a 4% sales tax levied by the City of Seward; associated sales tax revenues are estimated at \$636,000 in 2019. All other local governments considered for this study collected an estimated \$1,153,000 in sales tax from whale watching tours.

Table 17. Sales Tax Rates and Collection by Local Government, 2019

Local Government	Sales Tax Rate	Sales Tax Collection
City and Borough of Juneau	5.0%	\$1,883,000
City of Seward*	4.0%	\$636,000
Other local governments	various	\$1,153,000
Total	-	\$3,672,000

Source: Alaska Department of Commerce, Community, and Economic Development, tour operator interviews, and McDowell Group calculations.

*The Kenai Peninsula Borough also taxes Seward tours at a rate of 3%. Kenai Peninsula Borough tax collection is included in the *other local governments* category.

Opportunistic Whale Watching

Many visitors to Alaska that do not purchase a whale-watching tour may have the opportunity to see whales while engaging in other activities, called “opportunistic” whale watching for purposes of this report. While this economic analysis does not ascribe spending and economic impact to these activities, seeing whales is likely a memorable and enjoyable experience for the participants, and perceived as an added value. Visitor segments that have the greatest possibility of viewing whales in this way include sportfishermen, cruise ship passengers, glacier and fjord sightseeing, and ferry passengers.



Source: Dave Wrightson.

Sportfishing

Sportfishing participants often experience whale watching while fishing, although the frequency of observations is unknown. According to data from the Alaska Department of Fish and Game, 148,306 non-residents participated in guided saltwater sportfishing in Alaska’s coastal communities in 2018.¹⁶ This figure includes 33,039 non-residents in Sitka, 26,104 in Seward, and 13,139 in Juneau. Alaska’s coastal charter fishing industry represented nearly 500 businesses and 700 vessels in 2018.

Table 18. Non-Resident Guided Saltwater Sportfishing in Alaska Coastal Communities, 2018

	Indicator
Number of businesses	495
Number of vessels	694
Number of non-residents	148,306
Sitka	33,039
Seward	26,104
Juneau	13,139

Source: Alaska Department of Fish & Game saltwater sportfishing logbook data.

¹⁶ Alaska Department of Fish and Game. Communities include Sitka, Ketchikan, Auke Bay, Gustavus, Petersburg, Juneau, Hoonah, Homer, Seward, Kodiak, Valdez, and Whittier.

Guided Fishing Operator Comments

The following comments regarding the role of whale watching were provided by operators of guided saltwater sportfishing businesses interviewed for this study.

Clients that are fishing are very much interested in whales as well. The topic of whales definitely comes up regularly during trip planning and sales. I would characterize seeing whales as a bonus, with fishing still the driver of the booking for charter fishing trips.

We probably spend an average of 20 minutes whale watching during an average charter fishing trip. This varies widely, but at least some time on nearly every trip. Often, it's just done while trolling or running to fishing spots. We might change directions a bit but we don't take time out from fishing. People appreciate seeing the whales for sure.

Whale watching has always been an important part of my business. Our captains love whale watching, and it is good to be interchangeable between fishing and whale watching so they get variety.

On our wildlife/fishing combo tour whale watching is a very important component. Half our clients wouldn't take the tour if whale watching was not a possibility. For example, the husband might want to fish and if there was no whale watch possibility, the wife might not go.

On our fishing charters the importance of whale watching depends on the demographics of the boat. If it is a family or a group of mixed gender, then the whale watching component is more important. If it is a group of guys all going fishing, they may care less about seeing any whales. However, the whales end up playing a part in most people's experience. Whale watching on our dedicated fishing trips are incidental and don't play a role in booking. Our website has no mention of the possibility of seeing whales.

Cruise Ships

Large Cruise Ships

Large cruise ships are defined as those with capacities of more than 250 passengers, plus crew. In 2019, 1,310,200 passengers on large cruise ships sailed in Alaska (98% of total traffic).¹⁷ While it is not known how often passengers see whales from their vessel, a cruise executive observed that it is a fairly common occurrence.

NOAA Fisheries runs a "Whale Alert" program that digitally reports and maps whale sightings to large ships in Southeast Alaska. These data are not available to the public, but rather they are summarized for the purposes of whale avoidance and to reduce instances of ship strike. In 2019, 131 users reported 2,193 sightings in

¹⁷ McDowell Group calculations based on data from Cruise Line Agencies of Alaska and small cruise lines.

Southeast Alaska.¹⁸ Participating groups include eight cruise lines representing 14 large ships; almost half of the total 2019 sightings were from cruise ships.

Small Cruise Ships

Small cruise ships are those with capacities of 250 passengers or less. In 2019, an estimated 21,400 non-residents participated in overnight small ship cruises in Alaska. Nearly all vessels stay in Southeast waters, with a few voyages sailing as far as Nome.

Small cruise ships have a much heavier emphasis on wildlife viewing compared to large cruise ships, and whale watching is featured in promotional materials as a major component of the cruise experience. These vessels can easily take detours and adjust their schedule when whales are spotted in the area. They can also anchor and allow passengers to kayak and/or ride Zodiacs from the vessel, allowing for even more intimate whale watching experiences.

Passengers on small cruise ships are much less likely than large ship passengers to purchase whale watching excursions, since they get whale watching opportunities from their vessel as well as from kayaks and zodiac-style boats, experiences that are included in their cruise package.

Ferries

Like cruise ship passengers, Alaska Marine Highway System passengers have the opportunity to see whales, and vessels have been known to slow down or stop for whale sightings while underway. Approximately 100,000 non-residents use the Alaska Marine Highway annually.¹⁹

In addition to the Alaska Marine Highway System, there are a number of other ferry services in Alaska, such as Alaska Fjordlines (Juneau-Haines-Skagway), Inter-Island Ferry Authority (Prince of Wales Island-Ketchikan), Seldovia Bay Ferry (Homer-Seldovia), and the Haines-Skagway Fast Ferry. It can be presumed that non-residents occasionally experience whale watching aboard these vessels as well.

Shoreside Observations

While not as prominent as marine-based whale watching, there are numerous opportunities for visitors to see humpbacks and killer whales from Alaska's road system and harbors. The majority of Beluga whale viewing occurs along Turnagain Arm from the Seward Highway.

¹⁸ *2019 Whale Alert Alaska Summary*, prepared by NOAA Fisheries, Alaska Region.

¹⁹ *The Economic Impacts of the Alaska Marine Highway System*, prepared by McDowell Group for the Alaska Marine Highway System.

Summary of Opportunistic Whale Watching

Estimating the number of visitors who had the opportunity to whale watch, but did not purchase a whale-watching experience, is complex. These populations overlap – for example, some cruise passengers that did not go whale watching went charter fishing.

- **Cruise passengers:** Out of 1.3 million total cruise passengers in 2019, an estimated 440,000 participated in paid whale watching, leaving 870,000 potentially opportunistic whale watchers.
- **Ferry passengers:** About 100,000 non-residents ride the AMHS annually. (The number of non-resident passengers on other ferry services is unknown.) Survey responses for AVSP 7 show that over one-third of ferry passengers (36%) in summer 2016 reported participating in day cruises. Applying that ratio to 100,000 passengers results in about 34,000 ferry passengers that took a day cruise (the majority on whale watching tours), leaving about 66,000 passengers that did not take a paid whale watching tour but had the opportunity to view whales while on the ferry.
- **Sportfishing:** About 150,000 non-residents participated in guided saltwater fishing in Alaska in 2019. There is some overlap between the sportfishing and whale watching populations. In the 2016 AVSP survey of visitors to Alaska, 30% of visitors who participated in guided sportfishing also reported taking a day cruise (the majority on whale watching tours). For example, cruise passengers that purchase a sportfishing experience in one port may also purchase a whale-watching cruise in another port. A rough estimate is that 100,000 visitors that participated in guided fishing and did not participate in a paid whale watching tour, had an opportunity to see whales while sportfishing.

While it is unlikely that all of visitors described above observed whales, between the three groups, the best estimate is that roughly 1 million Alaska visitors had the potential to view whales in 2019 (in addition to those that paid for a whale watching experience). While this economic analysis does not consider spending and economic impact to those who opportunistically observed whales, it was likely a memorable and enjoyable experience that added value to their Alaska visit.

Appendix A: Key Whale Species

Key Whale Watching Species

In Alaska, the most viewed whales are humpback and killer whales. To a lesser extent, gray whales are also viewed seasonally in specific areas. The following section provides brief descriptions of species characteristics and status. This section is excerpted and adapted from the NOAA Fisheries online species descriptions and the Alaska Department of Fish and Game's guide to Marine Mammal Viewing^{20, 21}, among other sources.

Humpback Whales

DESCRIPTION

Humpback whales live in oceans around the world. They travel significant distances every year and have one of the longest migrations of any mammal on the planet. Some populations swim 5,000 miles from tropical breeding grounds to colder, productive feeding grounds.

Humpback whales can grow up to 60 feet in length and weigh up to 40 tons. They are primarily black in color, and have varying amounts of white on their pectoral fins, throats, bellies, and undersides of their flukes (tails). They are named for the characteristic “humped back” visible as they arch their back and take a sounding dive. Humpback whales generally raise their flukes from the water as they sound, helping to orient their head downward as they embark on a deeper dive. Humpback whale flukes can be up to 18 feet wide—they are serrated along the trailing edge, and pointed at the tips. Fluke patterns, in combination with varying shapes and sizes of the dorsal fin and/or prominent scars, are unique to each animal and are distinctive enough to be used as “fingerprints” to identify individuals. When photographed, scientists can catalog individuals and track them over time, a process called photo-identification. Whale identification information is available at:

Southeast Alaska catalog: www.alaskahumpbacks.org

Juneau, Alaska catalog: www.juneauflukes.org

Prince William Sound, Alaska catalog: www.wingedwhaleresearch.org

Worldwide catalog with computer matching: www.happywhale.com

Their long pectoral fins inspired their scientific name, *Megaptera*, which means “big-winged.” Humpback whales are a favorite of whale watchers, as they can be found close to shore at certain times of year and are commonly active at the surface, for example breaching or slapping the surface with their pectoral fins and tails.

During the summer months, humpback whales spend most of their time feeding and building up fat stores to sustain them throughout the winter. Humpback whales filter-feed on small crustaceans (mostly krill) and small

²⁰ The Alaska Department of Fish and Game's guide to Marine Mammal Viewing is available at https://www.adfg.alaska.gov/index.cfm?adfg=viewing_marinemammals

²¹ NOAA Fisheries online species directory: www.fisheries.noaa.gov/whales#by-species Accessed: October 2020

fish, consuming up to 3,000 pounds of food per day. They do this by engulfing large amounts of water in their mouth and expandable throat cavity, then expelling the water through their baleen to sieve and retain the prey. Humpback whales use various techniques to help them herd, corral, and disorient their prey, which can involve the use of bubbles, sounds, and even their pectoral fins. One feeding method seen in Alaska waters, called "bubble net feeding," involves a group of whales coordinating and using curtains of air bubbles to condense prey. Once the fish are corralled and pushed toward the surface, the whales lunge upward through the bubble net with open mouths engulfing their prey. Different groups of humpback whales use other bubble structures in similar ways and there appears to be some regional specialization in terms of feeding techniques employed by whales in different feeding areas.

SPECIES STATUS

Commercial whaling in the 1800s and early 1900s significantly reduced the global humpback whale population. The International Whaling Commission ended commercial whaling of humpbacks in 1966. In 1970, the humpback whale was listed as endangered under the Endangered Species Conservation Act, the predecessor of the Endangered Species Act (ESA). When the ESA was passed in 1973, the humpback whale was listed as endangered throughout its range. Before conservation measure went into place to manage commercial whaling, all populations of humpback whales were greatly reduced, some by more than 95%. Humpback whales are now increasing in abundance in much of their range, but continue to face threats from entanglement in fishing gear, vessel strikes, vessel-based harassment, underwater noise, and habitat impacts.

NOAA Fisheries continues to manage humpback whales under the ESA and the Marine Mammal Protection Act (MMPA). Following a range-wide species status review, in 2016 NOAA Fisheries designated 14 Distinct Population Segments (DPSs) of humpback whales under the ESA.

Three humpback whale DPSs occur in the Alaska:

- The Mexican population, which breeds along the Pacific coast of Mexico and the Revillagigedo Islands, transits the Baja California Peninsula, and feeds across a broad range from California to the Alaskan Aleutian Islands. (Listed as threatened on the ESA)
- The Hawaii population, which breeds in the main Hawaiian Islands and feeds in most of the known feeding grounds in the North Pacific, particularly Southeast Alaska and northern British Columbia. (Recovered, not ESA-listed)
- The Western North Pacific population, which breeds in the areas of Okinawa, Japan, and the Philippines, and feeds in the northern Pacific, primarily in the West Bering Sea and off the Russian coast and the Aleutian Islands. (Listed as endangered on the ESA)

Killer Whales

DESCRIPTION

Killer whales, also known as orca, are one of the top marine predators. It is the largest member of the Delphinidae family, or oceanic dolphins. They are 25 to 30 feet in length and one of the most recognizable marine mammals with distinctive black and white patterns. They also have a gray or white saddle patch behind the dorsal fin. These markings vary widely between individuals and populations and help to identify individuals. Adult males develop disproportionately larger pectoral flippers, dorsal fins, flukes (tail), and girths than females.

Killer whales are highly social, and most live in social groups called pods (defined as groups of related individuals seen together more than half the time). Individual whales tend to stay in their original pods. Pods typically consist of a few to 20 or more animals. Larger groups sometimes form for temporary social interactions, mating, or around seasonal concentrations of prey.

Found in every ocean in the world, killer whales are the most widely distributed of all cetaceans (whales and dolphins). Scientific studies have revealed many different populations with several distinct ecotypes (or forms) of killer whales worldwide.

Killer whales rely on underwater sound to feed, communicate, and navigate. Pod members communicate with each other through clicks, whistles, and pulsed calls. Each pod in the eastern North Pacific possesses a unique set of calls that are learned and culturally transmitted among individuals. Like other dolphins and porpoises, killer whales are capable of navigating and hunting underwater in complete darkness using sound and echolocation, much like sonar. They emit a series of clicking sounds, which they direct forward in a focused beam, then listen for the echoes of their sounds bouncing off nearby objects. They can judge the size, distance, and speed of swimming prey through this technique.

Killer whales often use a coordinated hunting strategy and work as a team to catch prey. They are considered an apex predator, eating at the top of the food chain. Although the diet of killer whales depends to some extent on what is available where they live, it is primarily determined by the culture (i.e., learned hunting tactics) for each ecotype of killer whale. For example, one ecotype of killer whales in the U.S. Pacific Northwest (called residents) exclusively eats fish, mainly salmon, and another ecotype in the same area (transients, or Bigg's killer whales) primarily eats marine mammals and squid.

SPECIES STATUS

Hunters and fishermen once targeted killer whales. As a result, historical threats to killer whales included commercial hunting and culling to protect fisheries. Although live capture of killer whales for aquarium display and marine parks no longer occurs in the United States, it continues to remain a threat globally. Today, some killer whale populations face other threats, including food limitations, chemical contaminants, and disturbances from vessel traffic and sound.

All killer whale populations are protected under the MMPA. Only two populations are designated for special protections under federal laws:

- The Southern Resident population is found in the Pacific Northwest, predominantly in the inland waterways of Washington State. Though, they have been spotted as far south as central California and as far north as Southeast Alaska. (listed as endangered under the ESA)
- The AT1 Transient population is found in the central Gulf of Alaska. (listed as depleted under the MMPA).

Gray Whales

Gray whales can grow to about 50 feet long and weigh approximately 90,000 pounds. Females are slightly larger than males. Gray whales have a mottled gray body with small eyes located just above the corners of the mouth. Their pectoral flippers are broad, paddle-shaped, and pointed at the tips.

Gray whales are frequently observed traveling alone or in small, unstable groups, although large aggregations may be seen in feeding and breeding grounds. Like other baleen whales, long-term bonds between individuals are thought to be rare.

They are primarily bottom feeders that consume a wide range of benthic (sea floor) and epibenthic (above the sea floor) invertebrates, such as amphipods. Gray whales suck sediment and food from the sea floor by rolling on their sides and swimming slowly along, filtering their food through coarse baleen plates on each side of their upper jaw. In doing so, they often leave long trails of mud behind them and "feeding pits" in the sea floor.

Gray whales are known for their curiosity toward boats and are the focus of whale watching along the west coast of North America. Thus, they face threats from vessel strikes and disturbance on their migration route. Gray whales make one of the longest annual migrations of any mammal, traveling about 10,000 miles round-trip. Whales seen in Alaska typically migrate from Baja California along the Pacific Northwest and en route to Alaska's arctic waters. Whales are observed along the Alaska coast from Sitka to Kodiak from mid-March through May. At least one tour operator provides dedicated spring gray whale tours out of Seward.

SPECIES STATUS

Once common throughout the Northern Hemisphere, gray whales are now only found in the North Pacific Ocean where there are two populations, one in the eastern and one in the western North Pacific. Commercial whaling rapidly brought both Pacific populations to near extinction. Gray whales are now extinct in the Atlantic Ocean. International conservation measures were enacted in the 1930s and 1940s to protect whales from over-exploitation, and in the mid-1980s the International Whaling Commission instituted a moratorium on commercial whaling.

The eastern North Pacific population was once listed as endangered under the ESA but has successfully recovered and was delisted in 1994. The western population remains very low and is listed as endangered under the ESA and depleted under the MMPA.

Appendix B: List of Businesses Interviewed

Interviews were conducted with the following businesses.

Juneau

- Adventures in Alaska
- Alaska Galore
- Alaska Travel Adventures
- Allen Marine Tours
- Dolphin Tours
- Gastineau Guiding
- Harv and Marv's
- Jayleen's Alaska
- Juneau Sport Fishing
- Juneau Whale Watch
- Juneau Whale Watch
- Local Guy Charters
- Lost In Alaska Adventures
- Moore Charters
- Rum Runner Charters

Seward

- 60 Degrees Adventure Charters
- Alaska Dream Charters
- Alaska Saltwater Lodging
- Kayak Adventures Worldwide
- Kenai Fjord Tours
- Liquid Adventures
- Major Marine Tours
- Northern Latitude Adventures
- Seward Charters
- Seward Ocean Excursions
- Seward Water Taxi
- Seward Wildlife Tours/Gray Light

Hoonah

- Hoonah Travel Adventures
- Hoonah Whale Tours
- Icy Strait Point
- Icy Strait Whale Adventures

- Misty Bay Tours
- Wooshketaan Tours

Sitka

- A Whale Song Expeditions
- Allen Marine Tours
- Gallant Adventures
- Sitka Sound Tours
- Sitka Wildlife Tours

Ketchikan

- Allen Marine Tours
- Ketchikan Adventures
- Ketchikan Kayak Co.
- Ketchikan Shore Tours
- Southeast Sea Kayaks

Whittier

- Lazy Otter Charters
- Phillips Cruises & Tours LLC

Homer

- Alaska Marine Services
- Alaska Coastal Marine

Ketchikan

- Allen Marine Tours
- Ketchikan Adventures
- Ketchikan Kayak Co.
- Ketchikan Shore Tours
- Southeast Sea Kayaks

Gustavus

- TAZ Whale Watching Tours
- Spirit Walker Expeditions

Yakutat

- Yakutat Charter Boat Company
- Allen Marine Tours

Haines

- Alaska Fjordlines, Inc.

Glacier Bay

- Allen Marine Tours

Petersburg

- Alaska Sea Adventures

Kodiak

- Adventures in Kodiak

Unalaska

- Miss Alyssa Bering Sea Excursions

Valdez

- Stan Stephens Cruises