Lake Pend Oreille Water Management

An Economic Analysis of Lake Level Impacts to Local Revenue

Main Report
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University of Idaho

LAKES COMMISSION

Lake Pend Oreille Water Management:
An Economic Analysis of lake level impact on local revenue

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Executive Summary

The economy in Bonner County, Idaho is centered around its lakes and rivers. Because Lake Pend Oreille and the Pend Oreille River (the Lake) undergo substantial lake level fluctuations by Albeni Falls Dam, the economy is impacted in ways other lakes in North Idaho are not. The extensive water-based infrastructure around the lake, intrinsic to the economy; marinas, launches, mooring, public docks, private docks, boat lifts, commercial business, become mostly inaccessible or inoperable when the lake drops below normal summer pool (full pool), often by just a foot in elevation. Water based recreation/tourism on the Lake is only fully achieved for 3 months of the year; mid-June through mid-September.

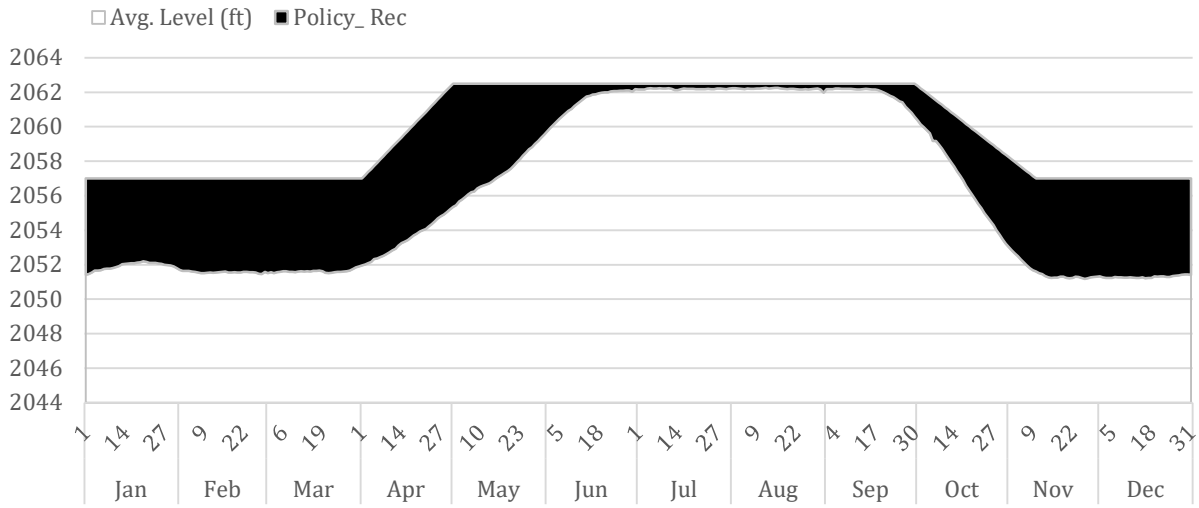
In 2025, the State of Idaho, led by Idaho Legislative Representatives from District 1, the Lakes Commission, and with the support of the University of Idaho President's Office, began efforts to conduct an Economic Impact Study to determine how the short recreation season on Lake Pend Oreille and the Pend Oreille River were impacting the local economy in and around Bonner County, ID. Since the Lake is controlled by Albeni Falls Dam (AFD), which is part of the Federal Columbia River Power System (FCRPS), the economics are very complex. Due to funding and capacity restraints, this study is limited to the tourist economy and only as it relates to the water-based recreation season between May and October.

Since the construction of AFD in 1955, there have been many variations to lake levels and operations due to downstream concerns, local fish management, BPA power directives, mitigation agreements, lawsuits, Federal Columbia River Systems Operational changes, and as of recent, spillway gate integrity concerns. All of this has led to decades long disputes regarding how to achieve congressionally mandated operations of the dam for flooding, power, recreation, navigation, and fish and wildlife. While the State of Idaho and local stakeholders prioritize recreation, navigation, and fish and wildlife, the United States Army Corps of Engineers (USACE) prioritize mitigating flood risk, with a secondary focus on power production, recreation, and fish and wildlife. Congressional mandates outline that the Lake will be at normal summer pool of 2,062.5 feet above sea level from May to October, in non-flood years. It also outlines that operations will improve these beneficial purposes for the interests of Idaho. In addition, a recent US Energy and Water Appropriations Bill asks the USACE to look at alternatives to the current operation of drafting the Lake the full 11.5' in the Fall. During our interviews with stakeholders, we learned that a winter elevation of 2,057', in the off season, significantly increases accessibility to necessary launching and mooring infrastructure and would benefit non-motorized winter recreation activities like ice fishing and ice hockey.

This study utilizes the proposed lake management strategy above wherein the Lake is stabilized at 2,062.5' from May 1st through September 30th. Fall drawdown will begin October 1st and be stabilized for the winter at 2,057' by November 15th. This management

strategy would allow lake access for approximately 171 days, 60 more than under the current management plan. Figure ES.1 shows the current and proposed management strategies.

Figure ES.1: Lake Pend Oreille Levels Under Current and Proposed Management Plans



Source: https://www.nwd-wc.usUSACE.army.mil/dd/common/dataquery/www/ and Lakes Commission

This increase in both duration and consistency is estimated to result in additional tourism and increased seasonal occupancy of second homes. This increased attendance is correlated with increased spending within the county and results in local supply chain effects, expected to improve the Bonner County Economy.

Currently the tourism segment of the Bonner County economy accounts for $410.6 million annually in transactions and $233.7 million in Gross Regional Product, roughly 11% of the economy and 18% of regional employment.

Table ES. 1: Economic Contributions of the Bonner County Tourism Cluster

Impact	Output	GRP	Income	Employment
Direct	$283,672,623	$167,570,518	$94,178,476	2,789
Indirect	$75,081,202	$35,496,802	$22,712,548	444
Induced	$51,852,688	$30,678,958	$13,547,317	336
Total	***$410,606,513***	***$233,746,279***	***$130,438,341***	***3,569***

Source: IMPLAN and Authors' Calculations

Based on estimates of economic activity associated with lake levels, and accounting for various other seasonal factors we estimate that each additional week of full summer pool will result in $3.3 million dollars of additional spending. This implies that the current management strategy of the lake costs Bonner County roughly $29.7 million in direct economic activity, ultimately costing the local supply chains and businesses a total of $43.9 million in lost transactions. Those transactions translate into $25.2 million in lost gross regional product, and households lost $14.3 million in wages and salaries, ultimately

reducing the economy by the equivalent of 435 full time jobs. Table ES.2 summarizes the economic costs of the current management strategy.

Table ES.2: Economic Impact of the Current Watter Management Plan on Bonner County

	Sales	GRP	Income	Jobs
Direct	$29,664,284	$17,835,580	$10,274,140	352
Indirect	$8,562,502	$4,013,132	$2,545,665	47
Induced	$5,680,539	$3,364,181	$1,470,256	35
Total	**$43,907,325**	**$25,212,893**	**$14,290,061**	**435**
Total Bonner County Tourism Economy	**$410,606,513**	**$233,746,279**	**$143,438,341**	**3,569**
Percentage shortfall	10.7%	10.8%	10.0%	12.2%

Source: IMPLAN and Authors' Calculations

Based on these findings, Bonner County's tourism sector is roughly 10%-11% smaller than it would be under this proposed operation plan.

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Acknowledgements

We would like to thank the Lakes Commission, an advisory board to the State of Idaho for water related issues in the Pend Oreille Basin that was authorized by Idaho Statute 39-8501. They supported this project financially, through data collection, project management services, and critical evaluation of the research and writing. Special thanks go to Molly McCahon, Lakes Commission Executive Director, Senator Jim Woodward, and Congressman Mark Sauter, all of whom provided direct onsite knowledge, insights, and data not to mention spearheading the funding efforts. We are also indebted to the University of Idaho President's Office for sponsoring this research.

We are extremely grateful to the Army Corp of Engineers, particularly Taylor Johnson, Natural Resources Chief; Leon Basdekas, Upper Columbia Senior Water Manager; and Tony Fergert, Dam Operations and Maintenance Manager. The Staff at Albeni Dam provided data, hydrological understanding, descriptions of their models and their risk assessment framework. There is no substitute for the applied knowledge they shared with us.

1. Introduction and Background

Beginning in early 2025, Idaho Legislative District 1 Representatives and the Lakes Commission sought an economic assessment surrounding the water management of Lake Pend Oreille and the Pend Oreille River (the Lake) in Bonner County, Idaho. The concern from Idaho's perspective was that the late stabilization of normal pool and early draw-down were shortening the recreation season in the county. The shorter season meant less revenue coming into the county to support local businesses, limited year-round recreation opportunities, and reduced fall and winter access for EMS.

Since the lake level is managed through the operations at Albeni Falls Dam (AFD), run by the United States Army Corp of Engineers (USACE) and in partnership with Bonneville Power Administration (BPA), the federal government has direct control over the lake level. The State of Idaho holds the water right for the Lake under Idaho Code § 67-4304. AFD was Congressionally authorized under multiple purposes, flood control, power, recreation, navigation, and fish and wildlife conservation. As a result, the USACE is also required to manage and maintain recreation sites and implement fish and wildlife habitat restoration. The agency operates several parks, campgrounds and launches around the Lake.

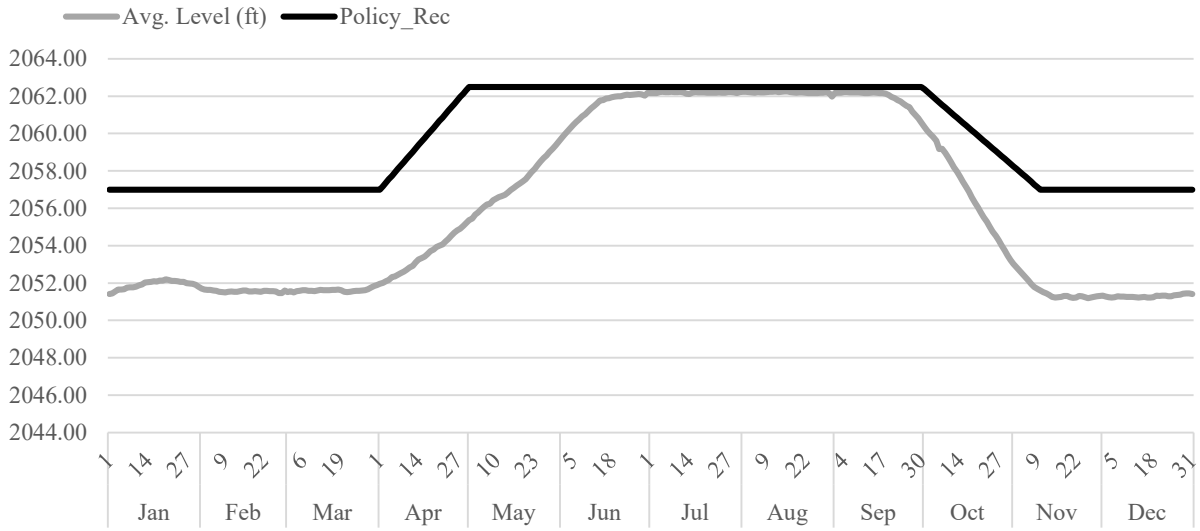
The complicated relationship between the state and federal operations exists because the state maintains the water rights, but management of the lake level is governed by the federal government via the USACE. Many people have looked at this as a transfer of value from the state of Idaho (losses in state business activity and state taxes) to the federal government, since the money lost to the state generates revenue for the U.S. Treasury from energy sales to BPA. The economics related to hydropower generation both at AFD and throughout the Columbia River Power System is complex and those complexities are not explored in this study. In addition, this study and the proposed operation plan assume that this operation would not take place in the rare flood event and does not account for the cost of flood damages during those events.

What is clear is that in the absence of the dam, the lake level would be less predictable and likely much lower, since the dam enables 11ft of elevation variation. Even so, natural river constrictions prevent the dam from governing lake level completely. The flood control elevation on the Lake is 2,056' and the dam reduced flooding by just over 1 foot. As a result, the Lake does still flood in a flood event. In 2018, several marinas in Sandpoint flooded during the spring runoff, even though the dam was on free flow.

There are a plethora of issues surrounding lake level management and timing, some of which will be discussed throughout this report. For instance, several residents and

environmental advocates have voiced concern about fishing habitat and ecological damage from raising and lowering the lake, shore erosion from wake boats, safety concerns during winter pool since rescue boats cannot launch from the north end of the lake, etc. Figure 1.1 shows the average lake level by day from January 2018 through August 2025. It also shows the proposed management strategy being advocated by the Lakes Commission and the State of Idaho.

Figure 1.1: Lake Pend Oreille Levels Under Current and Proposed Management Plans



Source: https://www.nwd-wc.usUSACE.army.mil/dd/common/dataquery/www/ and Lakes Commission

The goal of this report is to understand what economic activity would have occurred had the proposed management strategy been operating in 2025, rather than the current management strategy employed by the USACE and BPA. It is important to note that the research design was to assess transactions in the economy that did not occur in 2025, that would have occurred had the active management strategy comported with the recommended strategy. It is reasonable to assume the magnitude of these opportunity costs might also be realized in the future if the management strategy were altered to the recommended strategy. Two caveats must be made for that assumption to hold 1) the proposed operation will not take place if a flood event is forecasted 2) energy production that benefit the residents and region will not be adversely affected moving forward. In short, if the risks associated with the proposed management strategy are not realized, then the economic activity moving forward will increase in roughly the same magnitude as the losses that were incurred in 2025 under the current management structure.[1]

It is also reasonable to assume that the longer the lake level is held at full summer pool, more tourists and tourism spending is likely to occur in Bonner County. However, being at full summer pool in the non-tourism months, October through April for example, is unlikely

[1] It is not clear that the USACE would be able to divert flood risk as effectively under the proposed management strategy. It is equally clear that the economic activity being forgone justifies review if not revision of the current management strategy.

to appreciably increase total tourism dollars, as few additional individuals will venture to the Lake during that time. It is possible that ice fishing, hockey, etc. will draw in some additional funding, but we disregard those potential revenues in order to not overstate our results.

It should be noted that the Lake is several times larger by surface area and volume than is Lake Coeur d'Alene to the south, but because lake Coeur d'Alene is not subject to the same fluctuations in lake level, development has been more robust and infrastructure in and out of Kootenai County is several times larger than the investments into Sandpoint and Bonner County. There is an ongoing concern that tourism and revenues that might otherwise be accruing in and to Bonner County are being diverted to Kootenai County do simply to the stability of the tourism experience.

2. State & Regional Economic Profile

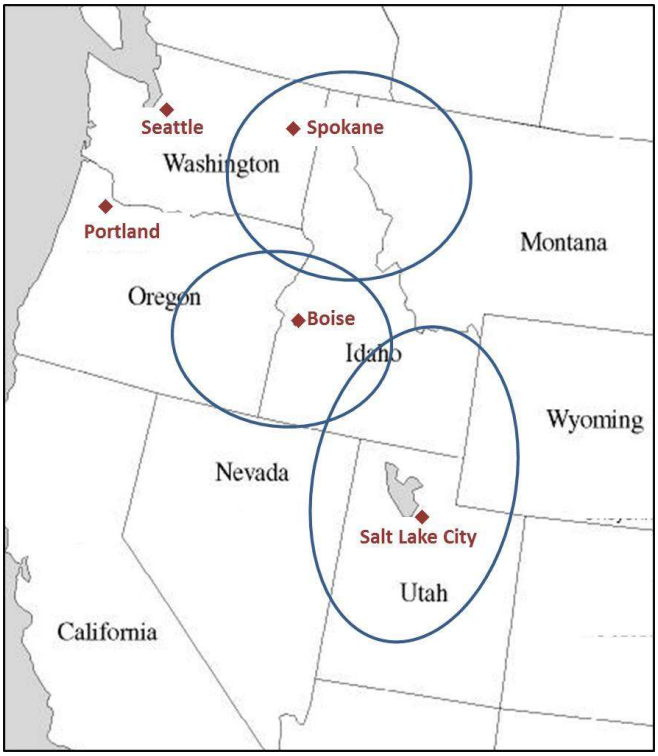
We provide this economic profile so that the results in subsequent chapters may be understood in context. Seeing dollar figures outside of the overall economic context may give the impression of being minor in some cases where the context makes it clear that those figures are significant or the reverse may be true. At the end of this chapter we discuss the current Bonner County tourism and recreation economy. It is in light of those dollars that the economic consequences of changing the lake level management strategy must be understood.

Idaho Economy

Economic Boundaries of the Regional Economy

In terms of political boundaries, Idaho is a single state. Economically, Idaho has three distinct economies. The U.S. Bureau of Economic Analysis divides the state of Idaho into 1) The Boise economy, which includes eastern Oregon, southwest Idaho, and central Idaho; 2) The Spokane economy, comprised of eastern Washington, northern Idaho, the southwestern region of Canada, and part of western Montana; and 3) The Salt Lake City economy, which includes most of Utah, a portion of northwestern Nevada, and southeast Idaho. Political boundaries rarely coincide with the integrated economic regions focused on these market centers (see Figure 2.1).

Figure 2.1: Economic Regions of Idaho



Idaho: A Contrast of Urban Versus Rural

Idaho is a state with a mix of urban and rural regions, each with a distinct economy. The rural economy is based primarily on agriculture and natural resource industries. Employment in production agriculture has been a historic bedrock of Idaho's economy. Still, job growth has been slower than in other emerging industries due to productivity increases over time and limited ability to increase output in production agriculture. Agricultural processing, particularly dairy, has been a significant job creator in manufacturing over the last twenty years.

The urban economy is based on a fast-growing service industry, tourism, high technology manufacturing, and trade. These industries are fueled by a rapidly growing population,

particularly in the state's urban areas. Ada and Canyon counties are in Idaho's Southwest region, home to the state's largest urban population.

While population and economic growth have been substantial in urban counties, rural counties have experienced more variable growth. Poverty levels can be higher in rural locations, along with lower median household incomes, as compared to those in large population centers.

Idaho's economic performance over the last decade has made it one of the fastest-growing states in the nation, and this trend will likely continue into the next decade. From 2010 to 2020, Idaho's population increased by 271,525. During these 10 years, Idaho was the 2nd-fastest-growing state in the U.S., with a population growth rate of 17.3%. Only Utah had a more rapid population growth rate of 18.4%.

Idaho ranked 2nd in population growth from 2021 to 2022 (1.8%), behind only Florida (1.9%). From 2020 to 2021, Idaho was first in the nation (2.9%). Idaho's population has been growing rapidly since 1990, ranking among the five fastest-growing states each year, interrupted only occasionally by recessions.

From 2023 to 2024, Idaho's population grew by 1.5%, ranking 7th in the U.S., and there are indications that growth rates are slowing. By 2024, Idaho's population stood at 2,001,619.

Overall, Idaho had the fastest cumulative population growth from 2014 to 2024 (Table 2.1), which increased housing demand and led to sharply rising prices. Many cities and towns are struggling to accommodate population growth, which has strained housing availability.[2]

Table 2.1: Cumulative Population Growth 2014-2024

Rank	State	%
1	Idaho	22%
2	Utah	19%
3	Florida	18%
4	Nevada	16%
5	Texas	16%
6	South Carolina	14%
7	Arizona	14%
8	Washington	13%
9	Delaware	12%
10	North Carolina	12%

Source: U.S. Census Bureau and the BEA

[2] U.S. Census Bureau. (2025, January). ***State population totals: 2020–2024***. Bureau of Economic Analysis (BEA). BEA Interactive Data Application. Retrieved from https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html & https://apps.bea.gov/itable/?ReqID=70&step=1&_gl=1*x1pk6m*_ga*Mjk4MzMzOTQyLjE3MjU4NTEyMzU.*_ga_J4698JNNFT*MTczOTE5OTY2Ny4yNC4xLjE3MzkxOTk2ODguMzkuMC4w

Idaho's historic population is shown in Table 2.2. Idaho grew by 27.4% from 2010 to 2024, Washington State by 18.0%, and the U.S. by 9.9%.

Table 2.2: Cumulative Population Growth 2014-2024

Year	United States	%	Washington state	%	Idaho state	%
1980	226,545,805	-	4,132,156	-	943,935	-
1990	248,709,873	9.8%	4,866,692	17.8%	1,006,749	6.7%
2000	282,192,162	13.5%	5,911,043	21.5%	1,299,610	29.1%
2010	309,378,227	9.6%	6,743,680	14.1%	1,571,339	20.9%
2020	331,526,933	7.2%	7,724,566	14.5%	1,849,339	17.7%
2024	340,110,988	2.6%	7,958,180	3.0%	2,001,619	8.2%
2010-2024		9.9%		18.0%		27.4%

Source: U.S. Census Bureau

Idaho Industry Rankings

Table 2.3 presents the two-digit level of aggregation of Idaho industries based on the North American Industrial Classification System (NAICS). The job metrics are based on the Bureau of Economic Analysis (BEA) metric, which includes covered jobs (i.e., those reported to the government by employers) and an estimate of self-employed workers. Average earnings per job include both salary and benefits. Construction ranked 4th and manufacturing ranked 6th among total Idaho jobs.

Table 2.3: Idaho Industry Ranking by 2024 Jobs (Two-Digit NAICS)

Rank	Description	2014 Jobs	2024 Jobs	2014 - 2024 Change	% Change	Avg. Earnings Per Job
1	Government	126,407	137,293	10,886	9%	$71,508
2	Health Care/Social Assist.	89,452	122,985	33,533	37%	$67,967
3	Retail Trade	84,095	98,560	14,465	17%	$47,125
4	Construction	43,364	84,701	41,337	95%	$71,658
5	Accommodation/Food Ser.	57,288	80,140	22,852	40%	$26,399
6	Manufacturing	63,225	78,034	14,809	23%	$87,949
7	Prof./ Scientific/Tech. Ser.	38,815	59,857	21,042	54%	$101,721
8	Waste Management	46,127	54,894	8,766	19%	$58,238
9	Other Services	35,408	43,346	7,938	22%	$39,707
10	Wholesale Trade	29,458	36,148	6,690	23%	$100,323
11	Agriculture/Forestry	33,382	35,366	1,983	6%	$57,460
12	Transportation/Warehousing	22,167	34,122	11,955	54%	$65,415
13	Finance and Insurance	23,614	32,227	8,613	36%	$103,589
14	Educational Services	15,054	24,000	8,946	59%	$36,001
15	Arts/Entertain/Rec.	11,575	18,773	7,198	62%	$33,321
16	Real Estate	10,824	16,221	5,397	50%	$65,289
17	Information	9,720	10,336	616	6%	$105,940
18	Management of Companies	5,480	8,464	2,984	54%	$156,503
19	Utilities	2,913	3,462	549	19%	$111,793
20	Mining	2,582	3,027	445	17%	$107,263
	Total	750,973	982,071	231,099	31%	$66,994

Source: Lightcast

Table 2.4 presents the two-digit level of aggregation of Idaho industries based on the NICAS system, ranked by the job change from 2014 to 2024 and average earnings per job. Average earnings per job includes benefits. Construction was ranked first with an increase of 41,337 jobs, a 95% increase. Manufacturing ranked 5th in job growth over the previous decade, adding 14,809 jobs. Manufacturing ranked 8th place in overall earnings per worker behind management of companies, utilities, mining, information technology, finance and insurance, professional and scientific services, and wholesale trade.

Table 2.4: Idaho Industry Ranking by Jobs Change and Earnings Per Worker (2014-2024)

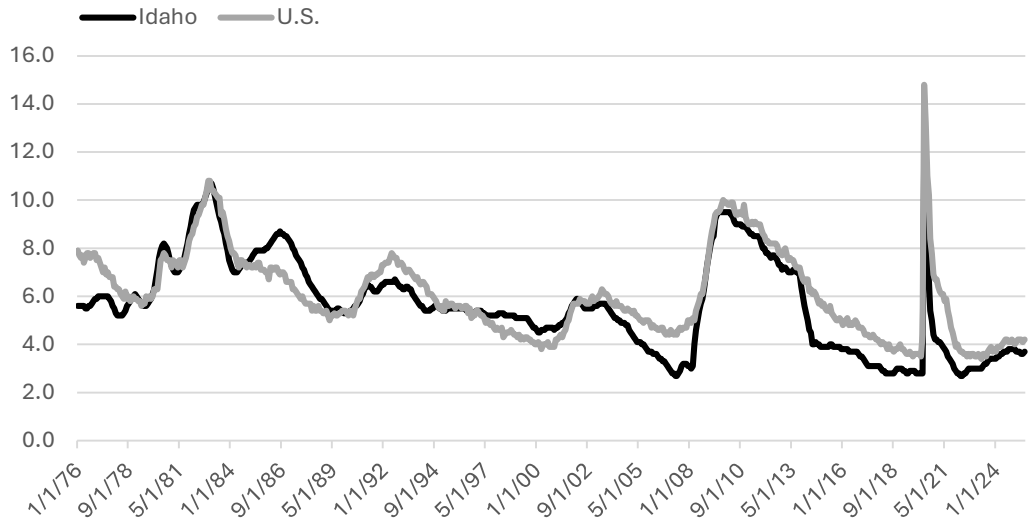
Rk	Industry	2014 - 2024 Change	% Change	Rk	Industry	Avg. Earnings Per Job
1	Construction	41,337	95%	1	Management/Companies	$156,503
2	Health Care/Social Assist.	33,533	37%	2	Utilities	$111,793
3	Accommodation/Food Ser.	22,852	40%	3	Mining	$107,263
4	Prof./ Scientific/Tech. Ser.	21,042	54%	4	Information	$105,940
5	Manufacturing	14,809	23%	5	Finance and Insurance	$103,589
6	Retail Trade	14,465	17%	6	Prof./ Scientific/Tech. Ser.	$101,721
7	Transportation/Ware.	11,955	54%	7	Wholesale Trade	$100,323
8	Government	10,886	9%	8	Manufacturing	$87,949
9	Educational Services	8,946	59%	9	Construction	$71,658
10	Waste Management	8,766	19%	10	Government	$71,508
11	Finance and Insurance	8,613	36%	11	Health Care/Social Assist.	$67,967
12	Other Services	7,938	22%	12	Transportation/Ware.	$65,415
13	Arts/Entertain/Rec.	7,198	62%	13	Real Estate	$65,289
14	Wholesale Trade	6,690	23%	14	Waste Management	$58,238
15	Real Estate	5,397	50%	15	Agriculture/Forestry	$57,460
16	Management/Companies	2,984	54%	16	Retail Trade	$47,125
17	Agriculture/Forestry	1,983	6%	17	Other Services	$39,707
18	Information	616	6%	18	Educational Services	$36,001
19	Utilities	549	19%	19	Arts/Entertain/Rec.	$33,321
20	Mining	445	17%	20	Accommodation/Food Ser.	$26,399
		231,099	31%			$66,994

Source: Lightcast

Idaho Employment Metrics

Idaho's unemployment rate was 3.7% in July 2025, compared to the U.S. rate of 4.2%. Idaho was tied for 20th 20th-lowest rate. The lowest-ranking state was Iowa, at 1.9%, and the highest was the District of Columbia, at 6%. The demand for jobs has far outpaced the state's rapid population growth (Figure 2.5).

Figure 2.2: Idaho and U.S. Unemployment Rates (January 1976 — July 2024)



Source: FRED (Bureau of Labor Statistics)

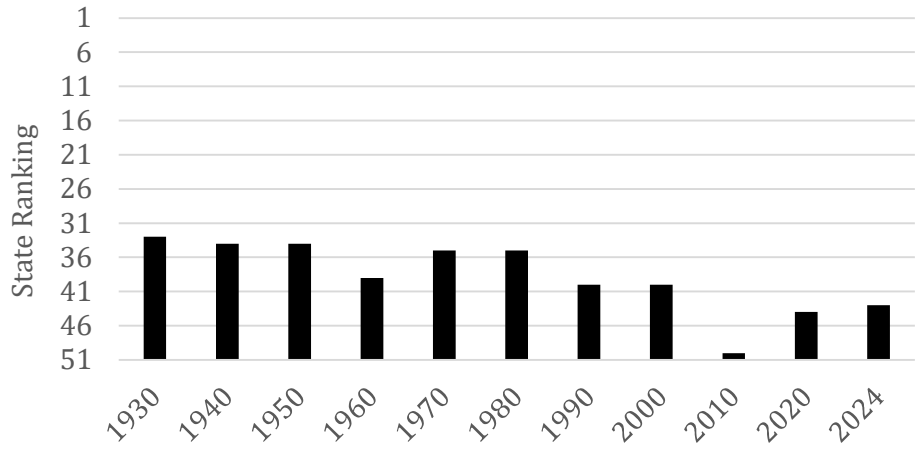
Idaho: An Economy in Transition

In 2010, Idaho ranked 50th out of 51 states in per capita personal income, indicating an economy in change. Median household income fared better, ranking 41st in 2011 (Figure 2.3).

One theory at that time was that Idaho was in a low-wage trap. Steven Cooke and co-author Bharathkumar Kulandaismy argued that Idaho had above-average growth in low-wage jobs and was losing high-wage jobs: "I think Idaho is in that trap, and once you get on the low-wage road, it's hard to get on the high-wage road.[3]"

[3] Source: **Economist Says Idaho Is in a "Low-Skill, Low-Wage Trap,"** Economist Says Idaho Is in a "Low-Skill, Low-Wage Trap" | StateImpact Idaho

Figure 2.3: Idaho Per Capita Income Rankings by Decade and 2024



Source: Bureau of Economic Analysis (BEA)

The low wage trap hypothesis was premature, as Idaho's median and per capita incomes have been increasing sharply in recent years. By 2024, Idaho had the fastest-growing median household income in the U.S., as measured by the current 5-year American Community Survey (ACS) census, compared to the previous 2019-2023 ACS (Table 2.5).[4]

Table 2.5: Idaho Median Household Income Ranking Change Between ACS Censuses[5]

States	2019-2023 estimates	2014-2018 estimates	% change	# change	Rank % change
Idaho	$74,636	$64,625	15.50%	$10,011	1
Washington	$94,952	$85,351	11.20%	$9,601	4
Utah	$91,750	$83,230	10.20%	$8,520	9
Oregon	$80,426	$72,298	11.20%	$8,128	5
Nevada	$75,561	$70,113	7.80%	$5,448	14
Wyoming	$74,815	$75,798	-1.30%	($983)	49
Montana	$69,922	$63,980	9.30%	$5,942	12

Source: U.S. Census Bureau

Idaho: Fastest Growing Housing Prices in the Nation 2014-2025

Idaho transformed from a low-cost-of-living state to a high-cost-of-living state within a decade, with housing prices increasing 166% (Table 2.6).

Table 2.6: Ten Highest and Lowest Median House Price Increases (Jan 2014—Sep 2025)

[4] Jan Roeser | Labor Economist, Communications & Research, Idaho Department of Labor.317 West Main Street | BOISE, ID 83735.

[5] U.S. Census Bureau, U.S. Department of Commerce. "Comparative Economic Characteristics." American Community Survey, ACS 5-Year Estimates Comparison Profiles, Table CP03, 2023, https://data.census.gov/table/ACSCP5Y2023.CP03?q=cp03&g=010XX00US,$0400000. Accessed on December 12, 2024.

Highest			Lowest		
Rank.	**State**	**%**	**Rank**	**State**	**%**
1	**Idaho**	**166%**	42	Alabama	75%
2	Nevada	141%	43	Virginia	74%
3	Utah	138%	44	Vermont	73%
4	Washington	137%	45	Wyoming	72%
5	Florida	136%	46	West Virginia	67%
6	Georgia	134%	47	Mississippi	63%
7	Montana	132%	48	Maryland	62%
8	New Hampshire	130%	49	Alaska	43%
9	Tennessee	130%	50	North Dakota	37%
10	Arizona	124%	51	District of Columbia	32%

Source: Zillow

State Rankings of Median Housing Prices, September 2025

As of September 30, 2025, Idaho ranked 13th in the nation in terms of the highest "typical "single-family housing price ($468,436). This is significant because Idaho has historically been known for its affordable housing prices (Table 2.7). The interruption of construction (due to supply constraints) and surging housing demand drove prices up dramatically. If another supply chain event were to occur due to the loss of foreign-born workers, it could exacerbate housing affordability issues and hinder long-term economic growth.

Table 2.7: Top 30 State Median Housing Price Rankings (Sep 30th, 2025)

Rank	**State**	**Price**	**Rank**	**State**	**Price**
1	Hawaii	$826,575	16	Connecticut	$430,086
2	California	$763,288	17	Maryland	$427,629
3	Massachusetts	$649,116	18	Arizona	$422,479
4	Washington	$595,738	19	Maine	$410,916
5	District of Columbia	$583,447	20	Virginia	$404,963
6	New Jersey	$564,432	21	Vermont	$400,247
7	Colorado	$540,183	22	Delaware	$398,669
8	Utah	$530,804	23	Alaska	$378,991
9	New York	$508,764	24	Florida	$377,066
10	New Hampshire	$501,650	25	Wyoming	$360,352
11	Oregon	$496,180	26	Minnesota	$344,484
12	Rhode Island	$490,356	27	North Carolina	$332,681
13	**Idaho**	**$468,436**	28	Georgia	$332,047
14	Montana	$460,051	29	Tennessee	$330,598
15	Nevada	$445,669	30	Wisconsin	$328,216

Source: Zillow https://www.zillow.com/research/data

As of September 2025, Idaho ranked 9th in the nation in terms of being *the least affordable*. The metric is calculated by taking the median housing price and dividing it by the mean household income (Table 2.8). Idaho's index was 5.77, which means it would take

5.77 years of income if 100% of it were spent on housing to purchase a home. Idaho's 2024 median household income is $81,166, ranking 22nd in the nation. [ii] The median housing price was $468,436 as of September 2025 (Zillow).

Table 2.8: Unaffordability Index Rankings by State

Rank	State	Index	Rank	State	Index
1	Hawaii	8.20	16	Arizona	5.18
2	California	7.62	17	New Hampshire	5.03
3	Massachusetts	6.19	18	Florida	4.85
4	Montana	6.11	19	Vermont	4.84
5	Washington	5.99	20	Wyoming	4.77
6	New York	5.93	21	New Mexico	4.60
7	Rhode Island	5.87	22	Tennessee	4.59
8	Oregon	5.82	23	Delaware	4.55
9	**Idaho**	**5.77**	24	North Carolina	4.50
10	Colorado	5.56	25	Connecticut	4.48
11	Nevada	5.49	26	Virginia	4.40
12	Utah	5.49	27	Wisconsin	4.24
13	New Jersey	5.41	28	South Carolina	4.18
14	Maine	5.38	29	Maryland	4.16
15	District of Columbia	5.32	30	Georgia	4.15

Source: Zillow. https://www.zillow.com/research/data, and the Author's Calculations

Bonner County Economy

Bonner County is situated in Northern Idaho and within the Spokane economic orbit. The following counties surround Bonner (Figure 2.4):

- Boundary County – north
- Kootenai County – south
- Shoshone County – southeast
- Pend Oreille County, Washington– northwest
- Spokane County, Washington – southwest
- Lincoln County, Montana – east
- Sanders County, Montana – southeast

Figure 2.4: Bonner County

Bonner County has seen significant population growth over the last couple of decades. It grew 15.9% cumulatively from 2010 to 2020 and 13.8% from 2020 to 2024. From 2010 to 2024, Bonner County grew by 31.9%, Kootenai County by 35.6%, Spokane County by 17.8%, and the region by 22.5%.

Table 2.9 presents the population growth by city. Sandpoint, the region's largest city, grew 41.85% cumulatively from 2010 to 2024. Dover doubled its population over the same

period. The regional towns are experiencing relatively rapid growth, putting upward pressure on housing prices.

Table 2.9: Bonner County City Population Growth by Decade and 2024

City	1990	2000	2010	2024	% Change
Bonner County	*26,622*	*36,835*	*40,877*	*53,955*	31.99%
Clark Fork	448	530	536	576	7.46%
Dover	294	342	556	1,137	104.50%
East Hope	215	200	210	250	19.05%
Hope	99	79	86	107	24.42%
Kootenai	327	441	678	1,083	59.73%
Oldtown	151	190	184	260	41.30%
Ponderay	449	638	1,137	2,011	76.87%
Priest River	1,560	1,754	1,751	1,847	5.48%
Sandpoint	5,203	6,835	7,365	10,444	41.81%

Source: U.S. Census Bureau

Table 2.10 presents the two-digit NAICS data for Bonner County from 2014 to 2024, along with average earnings per job.

Table 2.10: Bonner County 2024 Industry Employment (Two-Digit NAICS)

Description	2014 Jobs	2024 Jobs	2014 - 2024 Change	% Change	Avg. Earnings Per Job
Agriculture/Forestry	334	335	1	0%	$72,009
Mining	149	199	50	33%	$104,585
Utilities	121	136	14	12%	$145,882
Construction	1,057	2,015	958	91%	$63,917
Manufacturing	2,351	2,108	(243)	(10%)	$79,665
Wholesale Trade	190	276	86	45%	$78,168
Retail Trade	2,385	2,588	202	8%	$42,859
Transportation/Warehousing	321	487	166	52%	$84,284
Information	154	334	180	117%	$103,367
Finance and Insurance	316	429	113	36%	$98,767
Real Estate	261	486	225	86%	$54,115
Prof./ Scientific/Tech. Ser.	665	1,007	342	52%	$82,024
Management of Companies	83	132	49	58%	$180,558
Waste Management	361	599	238	66%	$46,093
Educational Services	169	241	72	42%	$33,588
Health Care/Social Assist.	1,360	1,661	301	22%	$51,535
Arts/Entertain/Rec.	469	580	111	24%	$35,164
Accommodation/Food Ser.	1,389	1,992	603	43%	$28,330
Other Services	987	1,278	291	29%	$34,771
Government	2,495	2,577	83	3%	$76,406
Total	15,618	19,460	3,841	25%	$60,849

Source: Lightcast

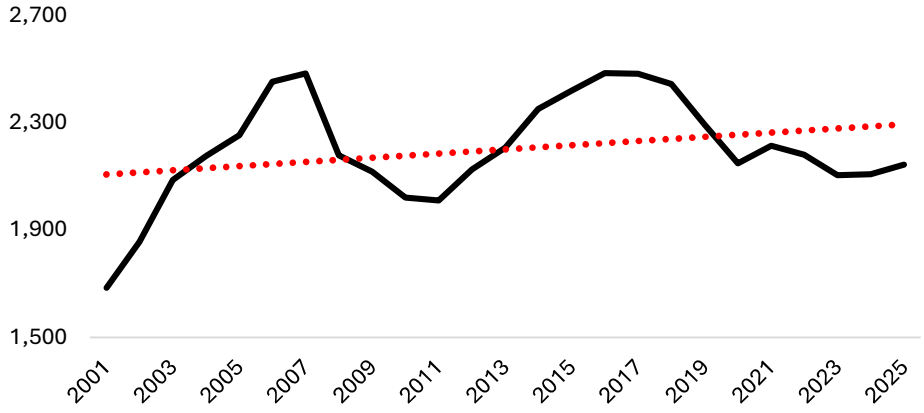
Table 2.11 presents the change in job percentages from 2014 to 2024 and the percentage of total jobs by industry. Information was the fastest-growing industry at 117% from 2014 to 2024, followed by construction (91%), real estate (86%), waste management (66%), and management of companies (58%). The largest industry was retail trade at 13.3%, followed by government (federal, state, and local, including education) at 13.2%, manufacturing (10.8%), construction (10.4%), and accommodation and food service (10.2%).

Manufacturing

Manufacturing is an essential regional industry that includes firms such as Litehouse, Kodiak Aircraft Manufacturing, and the Idaho Forest Group sawmill in Laclede. The sector lost 243 jobs from 2014 to 2024, leaving it at 2,108 jobs in 2024. Manufacturing employment has ranged from 1,685 in 2001 to 2,486 in 2016 (Figure 2.5). Manufacturing employment has been uneven and volatile. The biggest negative shock was the closure of

the Coldwater Creek clothing manufacturer in 2014, which laid off 339 workers and eliminated $33 million in annual payroll.[6]

Figure 2.5: Bonner County Manufacturing Employment (2001—2025)



Source: Lightcast

[6] Drinkard, S., & Drinkard, S. (2015). *Aftermath of Coldwater Creek*. Sandpoint Magazine, Winter 2015. https://sandpointmagazine.com

Table 2.11: Bonner County Industry Ranking by Job Change and Percentage of Total 2024 Jobs

Rk	Industry	2014-24 Change	% Job Change
1	Information	180	117%
2	Construction	958	91%
3	Real Estate	225	86%
4	Waste Management	238	66%
5	Management	49	58%
6	Transportation/Ware.	166	52%
7	Prof./ Scientific/Tech. Ser.	342	52%
8	Wholesale Trade	86	45%
9	Accommodation/Food Ser.	603	43%
10	Educational Services	72	42%
11	Finance and Insurance	113	36%
12	Mining	50	33%
13	Other Services	291	29%
14	Arts/Entertain/Rec.	111	24%
15	Health Care/Social Assist.	301	22%
16	Utilities	14	12%
17	Retail Trade	202	8%
18	Government	83	3%
19	Agriculture/Forestry	1	0%
20	Manufacturing	(243)	(10%)
	Total	3,841	25%

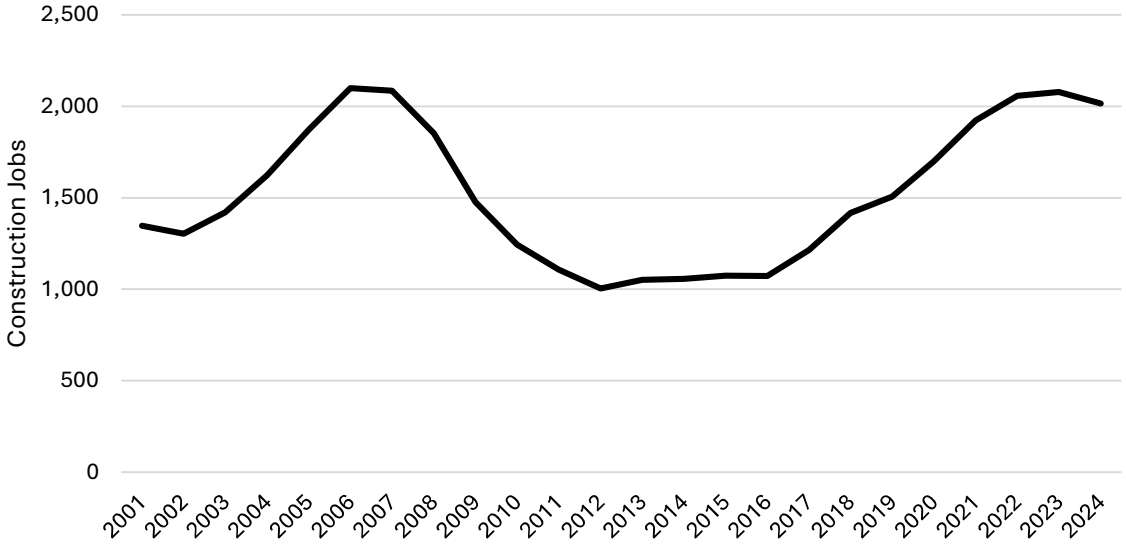
Rk	Industry	% Total Jobs
1	Retail Trade	13.3%
2	Government	13.2%
3	Manufacturing	10.8%
4	Construction	10.4%
5	Accommodation/Food Ser.	10.2%
6	Health Care/Social Assist.	8.5%
7	Other Services	6.6%
8	Prof./ Scientific/Tech. Ser.	5.2%
9	Waste Management	3.1%
10	Arts/Entertain/Rec.	3.0%
11	Transportation/Ware.	2.5%
12	Real Estate	2.5%
13	Finance and Insurance	2.2%
14	Agriculture/Forestry	1.7%
15	Information	1.7%
16	Wholesale Trade	1.4%
17	Educational Services	1.2%
18	Mining	1.0%
19	Utilities	0.7%
20	Management	0.7%

Source: Lightcast

Housing Prices and Affordability

The construction industry suffered a significant decline during the Great Recession (2007-2009) and the subsequent subprime housing crisis. Housing employment fell 52% from 2006 to 2012. This contributed significantly to the recent housing price increases and lack of affordability. The supply of housing cratered. Housing employment strongly rebounded by 98% from 2013 to 2023, increasing to 1,026 jobs. A sustained recovery in the construction industry is needed to make housing more affordable (Figure 2.6).

Figure 2.6: Bonner County Construction Employment (2001 to 2024)



Source: Lightcast

Bonner County ranked 4th in the state for the highest median (typical) housing price in September 2025, at $643,336, behind only Blaine County, Teton County, and Valley Counties, all of which are resort communities (Table 2.12) and Figure (2.7).[7]

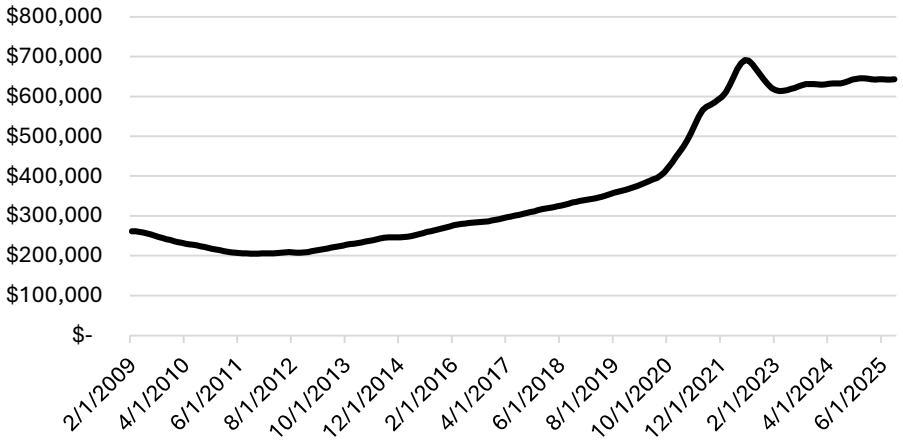
Table 2.12: Top 10 Idaho County Median Housing Price Rankings (9/25)

Rank	County	Median Price
1	Blaine County	$1,010,097
2	Teton County	$848,233
3	Valley County	$678,442
4	**Bonner County**	**$643,336**
5	Kootenai County	$579,541
6	Ada County	$517,944
7	Adams County	$505,322
8	Gem County	$471,873
9	Boise County	$465,483
10	Latah County	$462,301

Source: Zillow. https://www.zillow.com/research/data,

[7] Zillow. (2025). *Zillow Home Value Index (ZHVI)* [Time-series housing price data]. Zillow Research. https://www.zillow.com/research/data/

Figure 2.7: Medium (Typical) Bonner County Housing Prices (Feb. 2009 to Sept. 2025)



Source: Zillow. https://www.zillow.com/research/data,

Vacancy Rates and Second (Vacation) Homes

Bonner County has a sizable number of vacation homes. According to the U.S. Census, Bonner County had approximately 7,024 vacant dwellings, of which about 86.26%, or 6,059 units, were seasonal or second homes (Table 2.13 and Figure 2.8). Bonner County ranks 11th in Idaho in the percentage of vacant units,[8]Second homes, and vacation homes are a large part of the tourism-related industry in Bonner County, but they also add stress to the overall housing market. They provide both a stream of benefits to the community and a stream of costs.

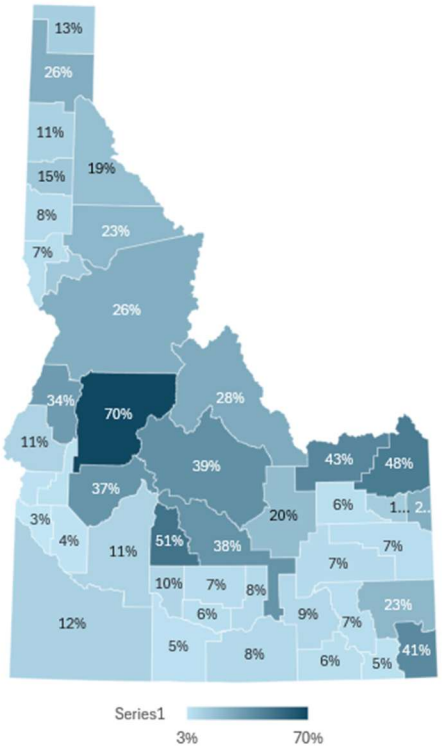
Table 2.13: 2023 Top Vacancy Rates by County

Rank	County	Vacancy
1	Valley	70.0%
2	Camas	51.2%
3	Fremont	48.0%
4	Clark	43.0%
5	Bear Lake	41.5%
6	Custer	38.9%
7	Blaine	37.7%
8	Boise	37.0%
9	Adams	34.3%
10	Lemhi	27.7%
11	Bonner	26.4%

Source: ACS 5-Year Census

[8] Bonner County Planning Department. (2023, July 26). *Bonner County comprehensive plan component: Housing — Adopted update*. Bonner County, ID.

Figure 2.8: 2023 Vacancy Rates by County



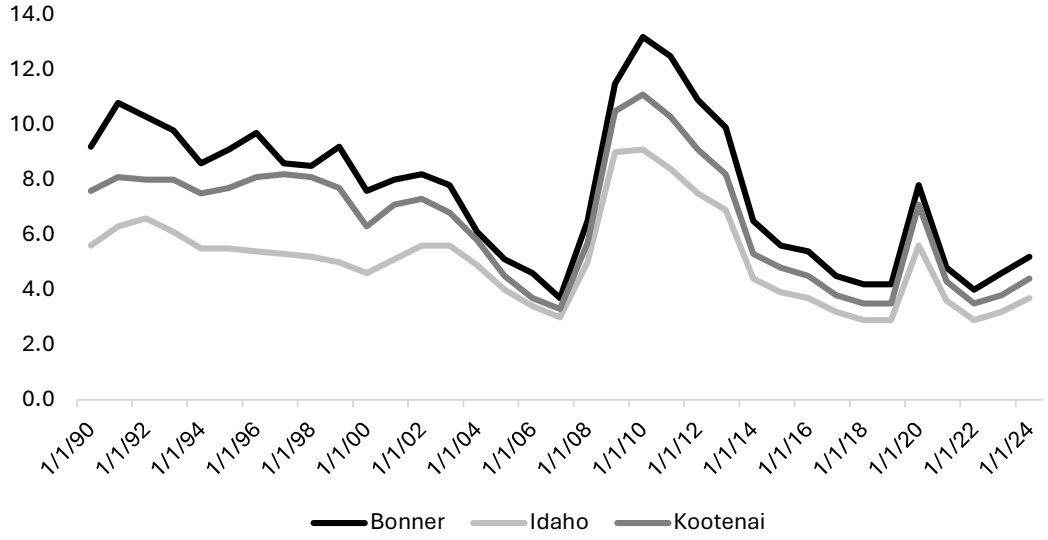
Source: ACS 5 Year Census 2023

Labor Force Dynamics

Bonner County is an economy in transition, shifting from a natural resource-based economy focused on forest products to a more modern economy centered on tourism, high-technology manufacturing, and the service economy. As of August 2025, its unemployment rate has been higher than Idaho's and Kootenai County's. Bonner County's unemployment rate was 4.5%, Kootenai County's 4.2%, and Idaho's 3.7% (Figure 2.9). Bonner County unemployment reached 15.3% in January 2010, a near-depression level during the Great Recession and its aftermath.[9]

[9] U.S. Bureau of Labor Statistics. (n.d.). *Unemployment rate in Bonner County, ID [IDBONN7URN]*. In *Unemployment in States and Local Areas (all other areas)* (Percent, not seasonally adjusted; Monthly). Retrieved [Month Day, Year], from Federal Reserve Bank of St. Louis (FRED) database: https://fred.stlouisfed.org/series/IDBONN7URN

Figure 2.9: Unemployment Rate, Bonner, Idaho, and Kootenai County (1990-2024)



Source: FRED and BLS

Tourism

Two estimates of the overall contributions of tourism, visitor spending, and recreation in the Bonner County economy were employed in the study. The first, representing a lower-bound estimate, came from the Idaho Department of Commerce study by Dean Runyan and Associates (DRA) on visitor spending in Idaho.[10] They estimate Bonner County visitor spending at $215.8 million in 2023, employing 2,130 direct jobs, creating a direct payroll of $65.2 million, and supporting $18 million in direct state and local taxes (Table 2.14). The DRA approach estimated the number of visitors and the spending from those visits.

The second approach, representing a high-end estimate and the "base case" for this study, estimated visitor spending contributions by examining the directly impacted industry and service sectors (Table 2.15). The direct jobs associated with the industry and service sectors catering to visitors totaled 2,289 in 2024, up from 1,811 in 2001. Two adjustments were made to the sector's employment and related direct economic metrics: 1) Subtracting employment related to residents, and 2) Adjustments to account for visitor spending occurring in other sectors not listed. Given Bonner County's high tourism footprint and visitor flow, nearly every industry is at least somewhat affected. Adjusted, the total direct employment in the sectors identified in Table 2.15 was 2,789 jobs, or 77% of the total jobs in those sectors. Direct tourism employment accounted for about 14% of Bonner County's total jobs in 2024 (18,460). Table 2.17 shows the direct labor income (payroll) is $94.2 million, the gross regional product ($167.6 million), and the output (sales) is $283.7 million.

[10] *Visit Idaho.* ***The Economic Impact of Travel in Idaho: 2023 Preliminary State, Regional, & County Impacts***, primary research conducted by Dean Runyan Associates, 13 Nov. 2024.2023p_ID_Travel-Impact-Report_11.13.24.pdf.

Table 2.14: DRI Direct Visitor Spending and Employment 2023

Direct Travel Spending ($Millions Except Jobs)	YR. 2023
Visitor	$206.6
Other travel	$9.2
Total	$215.8
Visitor Spending by Trip Type	
Day	$11.1
Overnight	$195.5
Total	$206.6
Direct Travel	
Earnings (Payroll)	$65.2
Employment (Jobs)	2,130
Tax Revenue	$18
Local Taxes	$3
State Taxes	$15

Source: DRA, Idaho Department of Commerce

Table 2.15: Adjusted[11] Direct Tourism and Visitor Employment 2001 and 2024

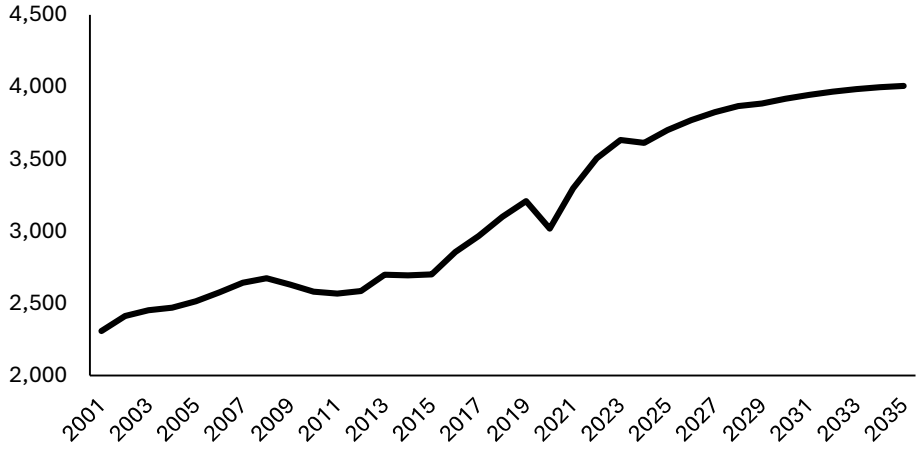
Industry / Service	2001 Jobs	2024 Jobs	Change	% Change
Grocery Stores	180	287	107	60%
Specialty Food Stores	59	50	(9)	-15%
Gasoline Stations	108	138	30	27%
Sporting Goods, Hobby, and Musical Instrument Retailers	73	163	89	122%
Nonscheduled Air Transportation	NA	55	NA	NA
Performing Arts Companies	NA	15	NA	NA
Independent Artists, Writers, and Performers	19	54	35	191%
Other Amusement and Recreation Industries	471	504	33	7%
Traveler Accommodation	255	358	103	40%
RV (Recreational Vehicle) Parks and Recreational Camps	15	35	20	127%
Special Food Services	19	45	27	143%
Drinking PlUSACEs (Alcoholic Beverages)	65	47	(18)	-28%
Restaurants and Other Eating PlUSACEs	546	1,038	491	90%
Total	1,811	2,789	908	50%

Source: Lightcast and Authors' Calculations

Figure 2.10 presents the *unadjusted* tourism sector employment from 2001 to 2024, and a forecast from 2025 to 2035. The sector shows steady growth over an extended period. Total unadjusted jobs was 2,310 in 2001 and increased to 4,008 in 2035.

[11] For the adjusted estimate, the jobs dependent on resident spending are netted out of direct employment. They reflect only direct tourism-related jobs. The unadjusted jobs represent total employment in sectors that are heavily tourism-dependent but also include some resident-dependent jobs.

Figure 2.10: Unadjusted Tourism Employment 2001—2024, and Forecast 2025—2035



Source: Lightcast and Authors' Calculations

Tourism (adjusted) contributes about 9.3% of output, 11.2% of gross regional product, 11% of total earnings (payroll), and 18.3% of total jobs (Table 2.16). It also contributes $14.3 million in property taxes, $16.1 million in sales/excise taxes, $3.7 million in income taxes, for a total of $34.1 million annually.

Table 2.16: Economic Contributions & Percent of Bonner County Total (with Multipliers)

Metric	Bonner County	Tourism	% Tourism
Output	$4,391,889,336	$410,606,513	9.3%
Gross Regional Product	$2,089,757,233	$233,746,279	11.2%
Earnings (Payroll)	$ 1,188,472,428	$130,438,341	11.0%
Jobs	19,460	3,569	18.3%

Source: IMPLAN, Lightcast (Jobs), and Authors' Calculations

Table 2.17: Economic Contributions of Tourism in Bonner County (with Multipliers)

Impact	Output	GRP	Income	Employment
Direct	$283,672,623	$167,570,518	$94,178,476	2,789
Indirect	$75,081,202	$35,496,802	$22,712,548	444
Induced	$51,852,688	$30,678,958	$13,547,317	336
Total	***$410,606,513***	***$233,746,279***	***$130,438,341***	***3,569***

Source: IMPLAN and Authors' Calculations

Table: 2.18: Tax Contributions of Bonner County Tourism

Type of Tax	Contribution
Local (Property)	$14,303,453
Sales/Excise	16,126,286
Income	$3,657,696
Total	$34,087,434

Source: IMPLAN and Authors' Calculations

3. Public Survey Results

This chapter of the report outlines public feedback and perceptions regarding the lake, tourism, and water management. The key here is the spending associated with tourism and the dependence on the lake. There are several tourism and outdoor recreation opportunities in the Pacific Northwest. So, one purpose of the survey was to isolate how the presence of the lake and expenditures were related. Many of the findings of this survey were designed to understand the public's perceptions.

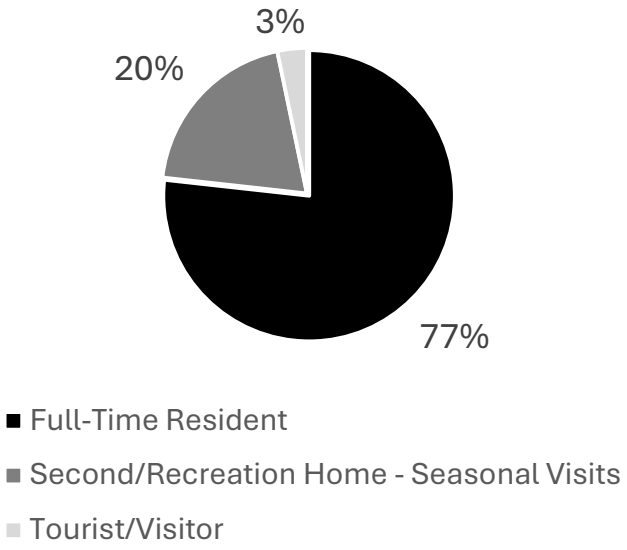
Because such a large portion of the respondents were from Bonner County, this provides a clear articulation of the lake's importance to local reliance on and preference for lake life, as opposed to the many other natural resource-rich areas that are lower-cost but do not offer water-based amenities. The key takeaway from this chapter is that while our focus is on the additional dollars attracted to Bonner County from an extended lake season, our analysis does not capture the possibility that some additional local spending may occur if an extended lake season is offered. That is because some residential and second-home owners in Bonner County are likely substituting other lake tourism areas for Lake Pend Oreille, which means our results are likely conservative.

Survey Results

A maximum of 1,519 responses were received to the online survey, which was heavily promoted through the Lakes Commission and several organizations in Bonner County in July and August 2025. The number of respondents exceeded expectations.

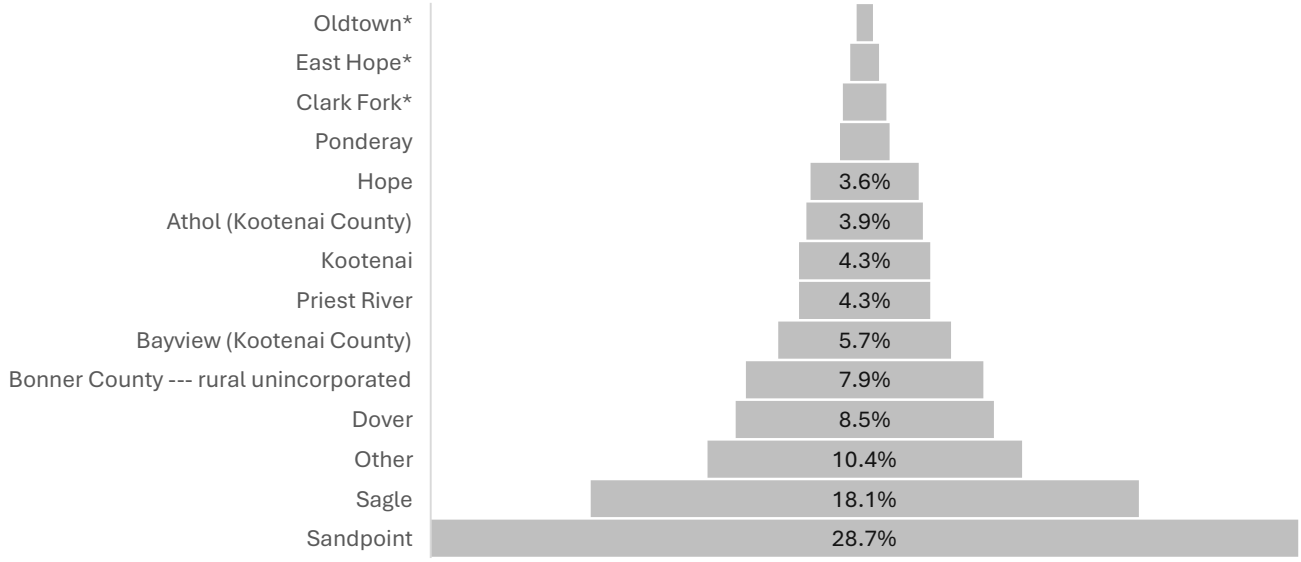
Approximately 77% of the respondents were residents, 20% represented second homeowners, and 3% were visitors. The relatively high proportion of second homeowners was revealing as to their importance to the tourist economy (Figure 3.1).

Figure 3.1: Q1. *Describe your relationship with the region (1,519 Respondents)*



Nearly 29% of the respondents in Bonner and Kootenai Counties resided in Sandpoint, about 18% in Sagle, and 10% in other areas (Figure 3.2).

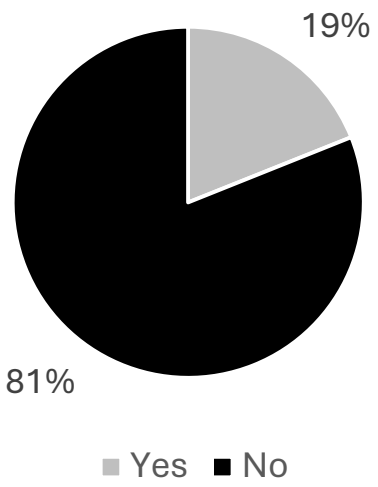
Figure 3.2: Q2. *Where do you live? (1,452 Respondents)*



** Less than 2%*

Nearly 20% of respondents indicated that they had moved to the region within the last five years. This is consistent with the region's rapid population growth (Figure 3.3).

Figure 3.3: Q3. *Have you moved to the region recently, within the last five years? 1,452 Respondents)*



A sample of the respondents' comments is listed below. Access to the lake and outdoor recreation are key determinants for staying in the region (Table X).

Table 3.1: Q4 *What is the primary motivation for staying in the region?* (1,126 *Respondents) Sampling of Respondents*

- Access and usability of the lake is the main draw
- Access and use of the lake and river, scenic beauty, and public land access
- Access to bountiful natural resources
- Access to natural beauty, lake, and mountain lifestyles
- Access to open space and recreation - hiking, biking, boating, skiing
- Access to outdoor activities in a small community
- Access to public lands - lakes and mountains
- Access to public lands and waters.
- access to recreational activities: most importantly, boating and skiing
- Access to recreational resources and natural beauty
- Access to the lake and the beauty of the area
- Access to the outdoors
- Access to the outdoors, lower(er) cost of living, slower pace

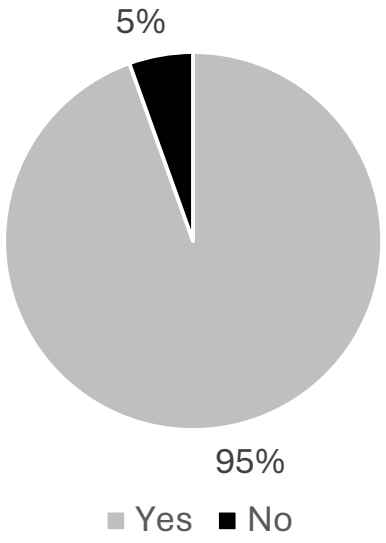
Question 5 was an open-ended question of where non-resident visitors originate and was presented in summary form in Table 3.2.

Table 3.2: Q5. What Country, State/Province, and Locality do you live in (Outside Bonner and Kootenai Counties)?

Region	Respondents
Ada County, ID	2
Calgary, AB, Canada	1
Coeur d'Alene, ID	3
Gallatin County, MT	1
Grangeville, ID	1
Las Vegas, NV	1
Latah County Moscow, ID	7
Lemhi County, ID	1
Lewiston, ID	1
California	2
North Carolina	1
Other	9
Portland, OR	1
Pullman, WA	2
Seattle, / Other WA	4
South Carolina	1
Spokane, WA	10
Whitefish, MT	1

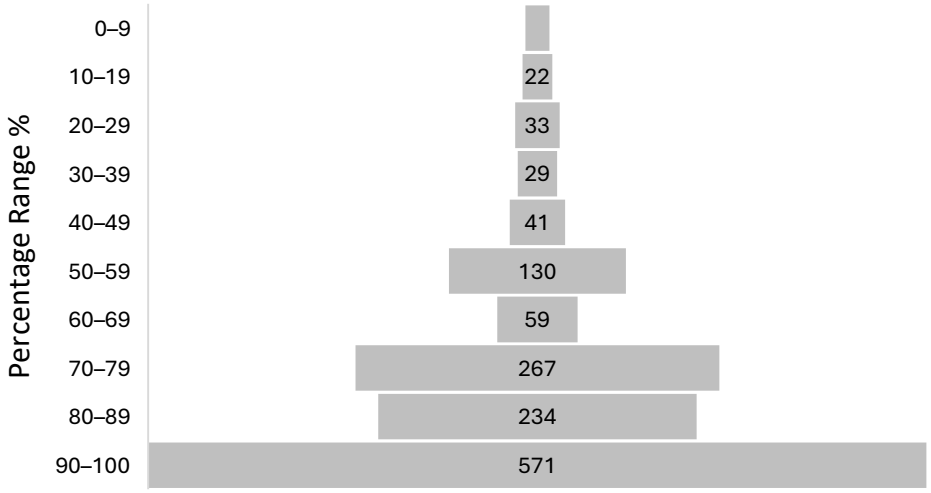
Nearly 95% of the respondents indicate that the lake and waterways are instrumental for remaining in the region.

Figure 3.4: Q6. Is access to the lake and waterways instrumental in your decision to live in the region? (1,401 respondents)



Approximately 571 respondents indicated that 90% to 100% of their recreational spending was done in Bonner County (or Kootenai County along the lake). It illustrates the lake's importance to the regional quality of life and the residents of the region (Figure 3.5).

Figure 3.5: Q7. How much of your recreation spending occurs in Bonner County (Percentage)? (1,404 respondents)



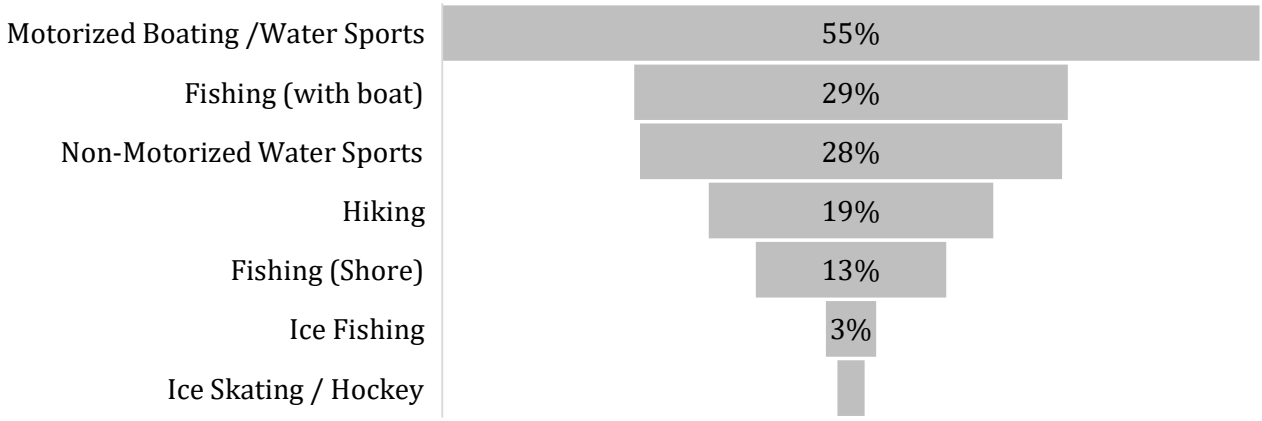
Hiking was the most frequent outdoor recreation activity, followed by motorized boating, fishing, and non-motorized water sports (Table 3.3).

Table 3.3: Q8. What lake-related recreational activities are you engaged in? (Respondents 1,391)

Activity	Very Frequently	Often	Sometimes	Rarely	Never
Hiking	19%	31%	36%	10%	4%
Motorized Boating/Water Sports	55%	24%	12%	7%	3%
Fishing (boat)	29%	19%	20%	18%	15%
Non-Motorized Water Sports	28%	32%	27%	9%	4%
Fishing (Shore)	13%	15%	29%	22%	21%
Ice Skating / Hockey	2%	3%	12%	22%	61%
Ice Fishing	3%	3%	11%	21%	62%

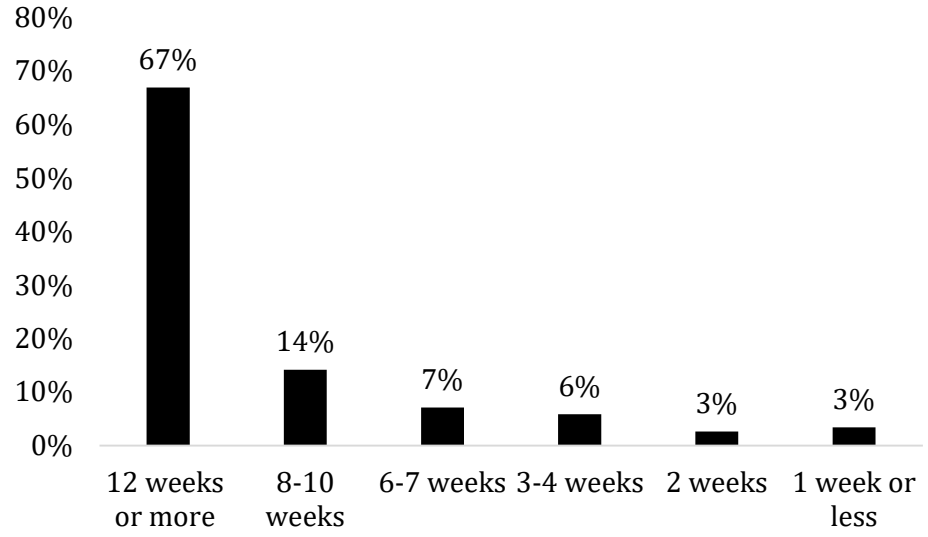
Among the lake's recreational activities, motorized boating is the most important and a major driver of the regional economy (Figure 3.6).

Figure 3.6: Q8. *Answered Very Frequently*: What lake-related recreational activities are you engaged in? (Respondents 1,391)



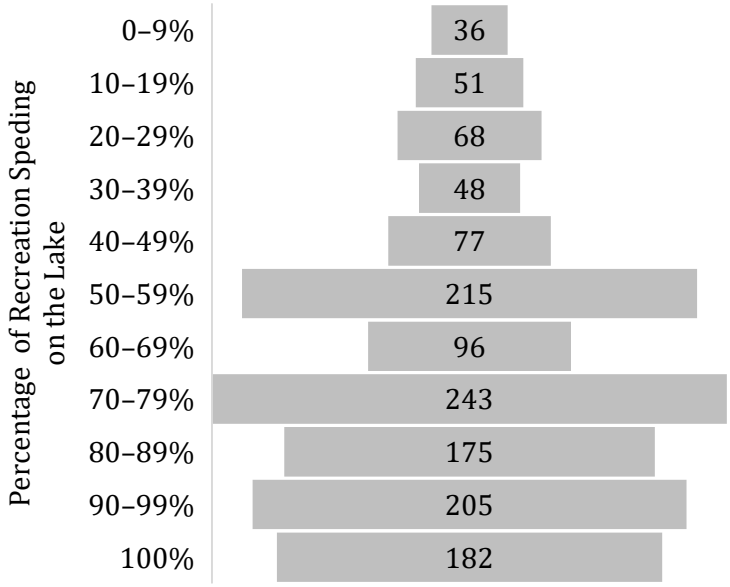
Over 67% spend 12 weeks or more on the lake, which is clearly a major contributor to local residents (Figure 3.7).

Figure 3.7: Q9. In a typical year, how many weeks do you spend recreating on Lake Pend Oreille? (Respondents 1,399)



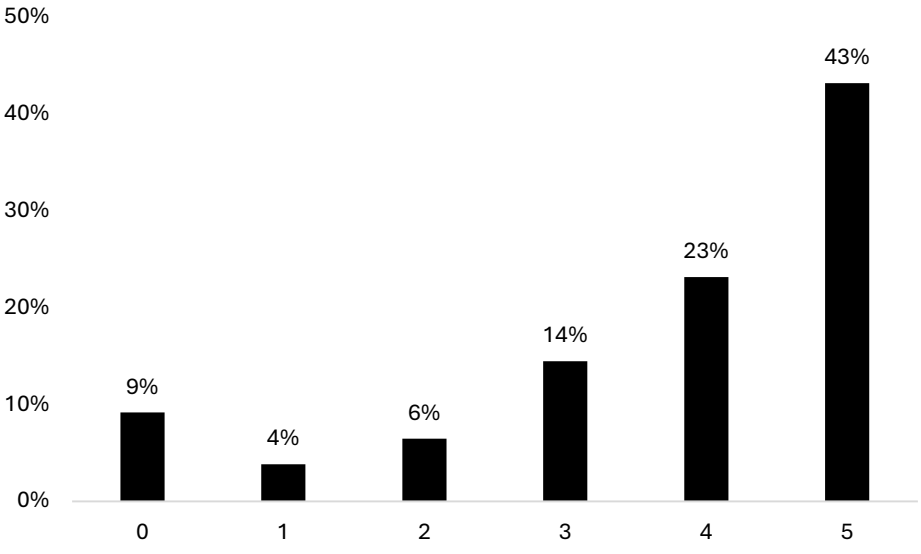
A significant portion of the region's recreation spending is on the lake. On average, 68% of the respondents recreational spending is on the lake (Figure 3.8).

Figure3.8: Q10. What percentage of your recreation spending occurs on Lake Pend Oreille? (Respondents 1,396)



Approximately 43% of the respondents indicated the drawdowns have affected recreational activities (Figure 3.9).

Figure 3.9: Q11. How have the lake level drawdowns affected your recreation in Bonner County (On a scale 0 to 5, 0 = not at all and 5 = greatly) (Respondents 1,399)



Recreation was the respondents' most important Albeni Falls Dam attributes (Figure 3.10).

Table 3.4: Q12. Albeni Falls Dam provides several services. Please rank by dragging the icon (left) to your desired order (Respondents 1,340)

Rank Choice	Electricity	Flood	Recreation	Local Employment
1	23%	27%	48%	2%
2	28%	34%	25%	13%
3	32%	28%	19%	21%
4	18%	11%	7%	64%
Total	100%	100%	100%	100%

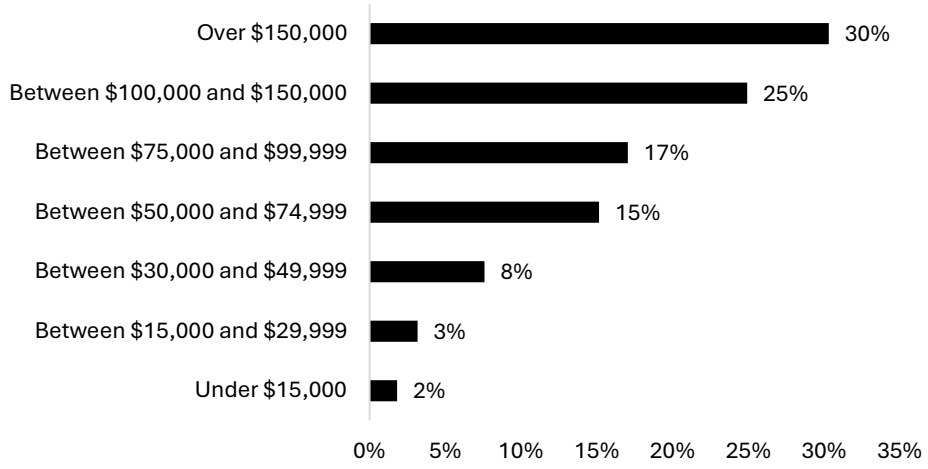
The survey respondents came from a wide range of backgrounds (Table 3.5).

Table 3.5: Q13. What is your Occupation? (Respondents 1,327)

Occupation	Respondents	%
Retired / Semi-Retired	444	33%
Other	294	22%
Business / Management	121	9%
Engineering / Technology	97	7%
Construction / Trades	82	6%
Healthcare	73	6%
Sales / Finance / Marketing	67	5%
Real Estate / Property	48	4%
Education	44	3%
Government / Public Service	25	2%
Homemaking / Caregiving	14	1%
Unemployed / No Answer	10	1%
Student	8	1%
Total	1327	100%

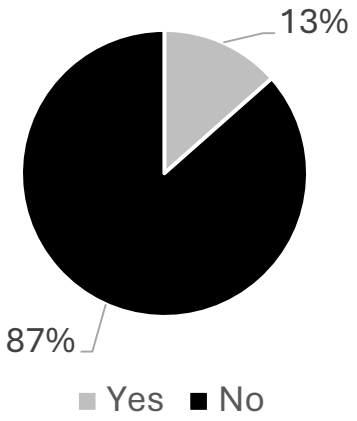
Interestingly, over 30% of the respondents had household incomes above $150,000, but there was a considerable range of incomes.

Figure 3.10: Q14. What is your income range? (Respondents 1,320)



Approximately 13% of occupations were directly dependent on the lake. Many other occupations, however, are likely indirectly reliant on the lake, which was not included in the questions.

Figure 3.11: Q15. Is your occupation seasonally dependent on the lake? (Respondents 1,368)



4. Lake Data and Management Policies

The goal of this chapter is to walk through this historic, current, and proposed water management strategies for Lake Pend Oreille. While the USACE does have some autonomy in the day-to-day and management operations, they are tasked with staying within the boundaries set by the Water Control Manual, though the guidelines within the manual are subject to change over time. Much of the activity at the dam regarding lake level management is oriented by the USACE district (Seattle, WA) and regional offices (Portland, OR). It should also be noted that while 2025 is our base year of analysis, the USACE nationwide was under a hiring freeze and was operating on an "essential personnel only" bases while the government was shut down. These hiring freezes adversely affected recreation spending in 2025 because of limited USACE personnel.

All data shown is based on the USGS gage at Hope. Measurements for the same day are averaged together.

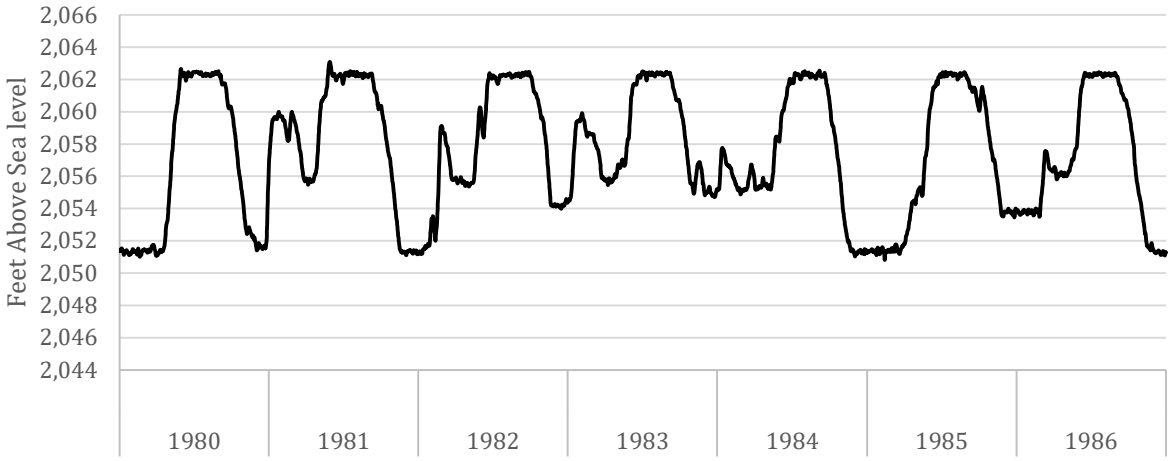
Historic Lake Levels and Dam Operations

While the lake level has always had a stabilized summer pool elevation of 2062.5 ft above sea level, what has fluctuated is the duration of summer and winter pool and the elevation of the winter pool. The data going back to 1980 only show three periods of flooding 1997, 2011, and 2018. We divide up the historic data into three time periods acknowledging that these are not necessarily the periods defined by each iteration of the water control manual. These are simply based on trends we see in the data. In 1984 there were only 83 days of full summer pool while in 1982 there were 103 days of full summer pool. Winter pool was unstable sometimes hovering at 2051 and often fluctuating between October and June.

1980-1986: Instability

This period is categorized by fluctuations in winter pool elevations and summer pool durations. We suspect that there was a great deal of uncertainty in how the water management at this time was influencing fish habitat and spawning though the lake was not as well known at this time and recreation was not as critical as it has become. Figure X shows the raw daily average data from 1980-1986. As can be seen, there was considerable fluctuation in the rate of draw down, the level and stability of the winter pool, and the duration of the summer pool.

Figure 4.1: Lake Level at Hope (1980-1986)



Source: USGS and USACE

Table 4.1: Duration of Summer Pool (1980-1986)

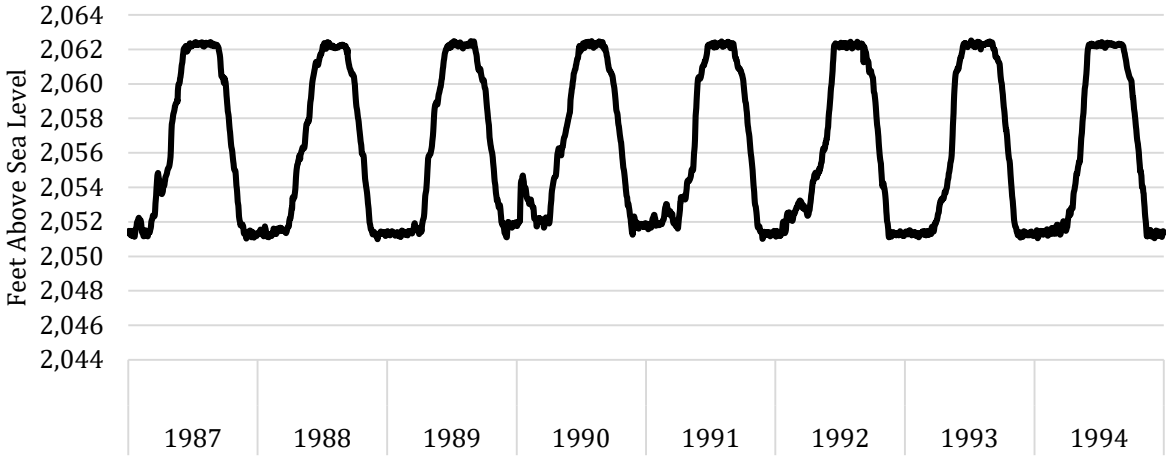
Year	Days At or Above 2,062'
1980	100
1981	105
1982	100
1983	83
1984	81
1985	73
1986	86
Average	90

Source: USGS and USACE and Author's Calculations

1987-1994: Normalization

Between 1986 and 1994 lake level operated under a fairly stable regime, though the duration of summer pool fluctuated, the winter pool fluctuations were stabilized and winter lake levels were consistently brought down to 2051 with what appears to be some degree of flexible winter power operations in the early 90's. 1987 only had about 61 days of full summer pool while 1994 saw 100 days. While this period is still not as ordered as the proposed management strategy recommends, it shows a significant move towards a stabilized regime marking a sharp distinction between this management strategy and that from the early to mid-80's.

Figure 4.2: Duration of Summer Pool (1987-1994)



Source: USGS and USACE

Table 4.2: Duration of Summer Pool (1987-1994)

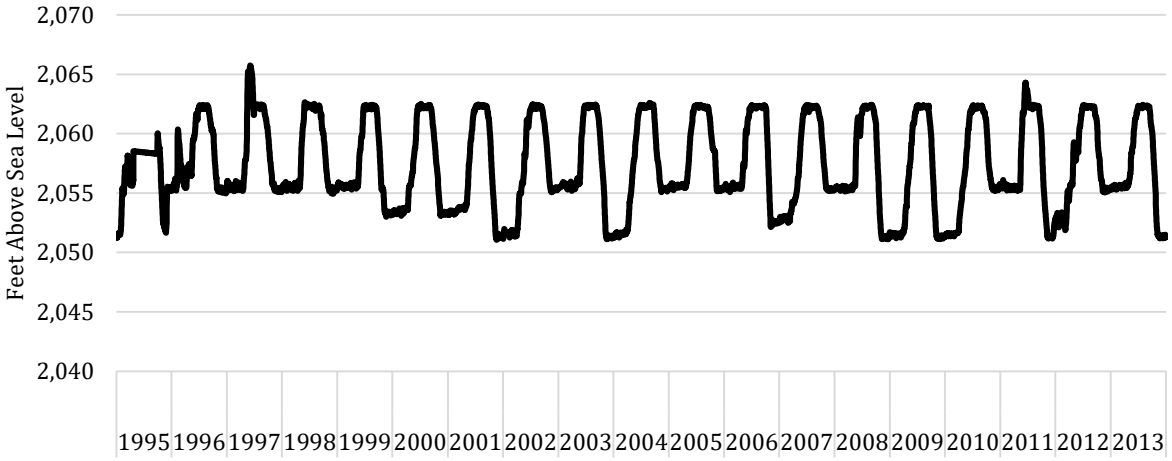
Year	Days At or Above 2,062
1987	93
1988	68
1989	84
1990	73
1991	76
1992	86
1993	88
1994	102
Average	84

Source: USGS and USACE and Author's Calculations

1995-2013: Low Winter Pool and Uncertainty

This time period sees several policy fluctuations. In many years a high winter pool is maintained at 2,055', other years it is brought down to 2,051'. Summer pools during this period were similar to other periods, with the exception of 1995 when the lake was never brought up to full summer pool. This fluctuation in winter pool policy appears to have had implications in summer pool duration, but may have also contributed to the two flood years in 97' and 2011. The uncertainty so often mentioned in our discussions is typified by the 1996 and 1997 years when we went from the shortest summer pool of 69 day to one of the longest summer pools of 110 days.

Figure 4.3: Duration of Summer Pool (1995-2013)



Source: USGS and USACE

Table 4.3: Duration of Summer Pool (1995-2013)

Year	Days At or Above 2,062
1995	0
1996	69
1997	110
1998	104
1999	89
2000	91
2001	82
2002	77
2003	88
2004	98
2005	98
2006	109
2007	92
2008	74
2009	82
2010	75
2011	99
2012	82
2013	79
Average	84

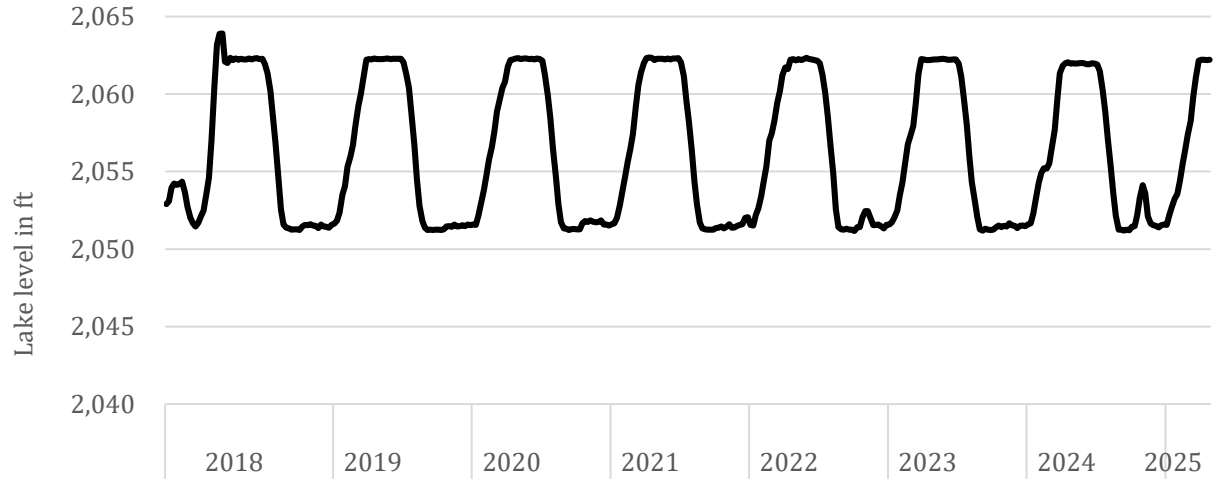
Source: USGS and USACE and Author's Calculations

Current Management Operations (2018-2025)

During the 2018-2025 time period the annual management of the lake level has been one of the most stable times from a data perspective. The flood in 2018 was the smallest of the three on record. Winter pool operations have stabilized at 2,051' and there are minimal flexible winter power operations (FWPO) during the winter. The average summer pool was

96 days. As can be seen by figure X the operation are far less volatile than the previous years. Table X was developed by going in by hand and identifying when the raising of the lake was achieved and then when the drawdown began. It also shows the number of days of full summer pool. The final row of the table shows the range of days for each metric. Full summer pool started between May 11th at the earliest, in 2018,[12] and at the latest by June 30th, in 2022. That is a 50-day difference and contributes significantly to the uncertainty and increased likelihood that tourists will come later in the season, stressing businesses during that shoulder period. The initial drawdown date is very consistent, starting the second or beginning of the third week in September. The longest summer pool was in 2018 at 126 days, and the shortest was in 2022 at only 78 days, leading to a range of 48 days. The average duration of summer pool from 2018 to 2025 was 96 days, slightly higher than the previous time periods.

Figure 4.3: Duration of Summer Pool (2018-June 2025)



Source: USGS and USACE

Table 4.4: Dates of Summer Pool and Duration

Year	Date of Full Summer Pool	Date Of Initial Draw Down	Days of Full Summer Pool
2018	11-May	14-Sep	126
2019	10-Jun	12-Sep	94
2020	20-Jun	16-Sep	88
2021	11-Jun	14-Sep	95
2022	30-Jun	16-Sep	78
2023	8-Jun	14-Sep	98
2024	18-Jun	16-Sep	90
2025	9-Jun	19-Sep	102
Range:	**50 Days**	**7 Days**	**48 Days**

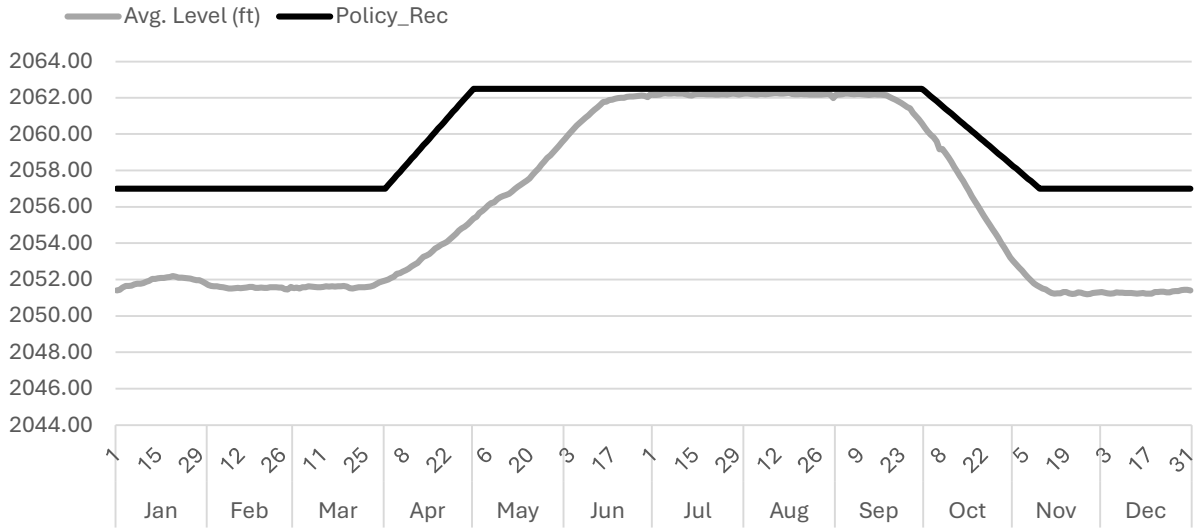
Source: USGS and USACE and Author's Calculations

[12] While full summer pool was achieved early in 2018, it was not stabilized until June.

Proposed Management Strategy

The proposed management strategy assessed in our analysis calls for revising the USACE's management from its current baseline to one wherein the Lake is kept at **1) 2,062.5 feet from May 1st through September 30th, 2) Beginning October 1st and through November 15th the lake would be drawn down to 2,057 feet and held there until April 1st when it is dropped to 2056' ,the flood control elevation required ahead of spring runoff , and 3) On April 1st the State and USACE would review snow pack and assess whether lake levels can be stabilized at Normal Pool (2,062.5 feet) by May 1st**. Figure X shows the average daily lake level from 2018-2025 with the proposed policy layered on top. Under the proposed policy there would be 171 days where the lake is above 2,061, while over the 2018-2025 period there were on average 111 days where the lake was above 2,061. Our analysis is based on the additional 60 days of additional lake access.

Figure 4.4: Current Average and Proposed Management Timing and Levels



5. Economic Methodology

The economic methodology is broken into two stages. **Stage One** estimates the initial or direct losses in tourism, and tourism expenditures, due to the shortened summer season under the current management strategy. Again, we broadly define tourism to include owners of second homes, day trip visitors, and overnight visitors that may be staying at campgrounds etc. Once the volume of visitors is estimated, their expenditures are calculated based on known expenditure patterns from previous research published by the Idaho department of commerce. Readers should understand that the authors are assuming historic expenditure profiles persisted during the 2025 tourism season.

Stage Two uses the stage one dollar estimates as inputs to the impact model. The input-output model traces the flow of lost tourism dollars in the Bonner county economy by looking at the supply chains of the industries that provide goods and services to tourists. This supply chain analysis allows us to see how often the dollars turn over in the county before exiting for the purchase of imports. A simple example of this might be a tourist that purchases fuel at their marina. The marina will use that revenue to pay employees, purchase electricity and other supplies, and of course purchase the fuel from a non-local distributor. Any non-local purchase represents dollars exiting the economy to purchase imports.

The output of the second stage represents the total economic activity that was forgone by Bonner County as a result of the current management strategy. That lost economic activity is measured and presented in terms of not only expenditures (i.e., sales), but also value added (gross regional product), income (payroll and benefits), and jobs. The total loss in economic activity during the 2025 tourism season resulting from the current management strategy is not necessarily the same as what it would be in any given year. Changes in management strategy may result in more flood years in the future. The lost economic activity from increased flood risk is not part of our analysis. If 1) flood risk is assumed to remain constant under the new management structure, 2) visitor numbers increase proportional to the increased days summer tourism, 3) the marginal number of tourists during the shoulder seasons remains stable, then the economic activity in future years will be similar to what is estimated for the 2025 season.

Econometric Estimation

To find the effect of the water level at Lake Pend Oreille on lodging sales tax data, we use a multivariate regression. As our dependent variable, we use monthly lodging sales tax data. Various independent variables are used to isolate the effect of the water level. First, we use a binary variable for the water level to see if the lake is at an optimal level. We define this as being from 2061 to 2063 feet. We also use variables such as the maximum temperature for the week and the amount of precipitation over the week. We also use a binary variable for covid, where the variable equals 1 for 2020 from week 12 to week 19. Finally, year and

week fixed effects are implemented to capture independent year or week effects, which should control for seasonality, droughts, etc. Table 5.1 gives summary statistics for each variable. The raw data can be found in the previous chapter or in the appendices.

Table 5.1: Summary Statistics

	Min	Max	Mean	Standard Errors
Lodging	$495,380	$9,793,446	$4,031,009	$2148194
Year	2018	2025	2021.3	2.2
Week	1	52	25.6	15.0
Water Level	2051.17	2063.91	2056.2	4.6
Full	0	1	0.31	0.46
Max Temp	14.43	96.86	52.23	19.91
Rain	0	6	0.57	0.86
Covid	0	1	0.0205	0.1419

Since lodging sales tax data is monthly, and other variables are weekly, standard errors were clustered by month. This is done because error terms will be correlated in the data creating autocorrelation. Clustering the error terms by month will correct this violation and ensure valid estimates and t-statistics. There were 390 weeks of data. The results of the estimation are given in Table 5.2.

Table 5.2: Regression Results ($1,000)

	Estimate	Standard Errors	t-statistics
Constant	$1,542.29	203.09	7.59
Full	$660.07	258.91	2.55
Max Temp	$12.06	3.31	3.64
Rain	-$12.22	30.94	-0.39
Covid	-$897.80	295.56	-3.04
Week fixed effects	Yes	*N 390*	
Year fixed effects	Yes	*R^2 0.96*	

The key variable here is "Full." The results give an estimate of the effect of the lake being full on monthly lodging sales tax data of $660,070. Since the lodging sales tax data is by month, this implies that an extra week of the lake being full results in an extra $165,020 in Bonner County lodging expenditures. The t-stat indicates that this result is statistically significant.

Other results give the expected results that lodging sales tax increases when the weather is nice, decreases with more precipitation, (although this result is not statistically significant), and lodging tax revenue decreased during covid. The R squared shows that 96% of the variation was explained by the model.

Economic Impact Models

Methodology

The system of accounts known as Input-Output (I-O) represent an economist's version of double-entry bookkeeping for industries. Figure 3.1 below shows a simplified version of an I-O matrix with just a hand full of industries. Each cell in this table of accounts is populated by dollar transactions.

Figure 3.1: *Example System of Input-Output Accounts*

		Producers as Consumers						Final Demand			
		Agric.	Min.	Const.	Manuf.	Services	Other	Households	Investment	Government	Net exports
Producers	Agric.										
	Min.										
	Const.										
	Manuf.										
	Services										
	Other										
Value Added	Labor							Gross Domestic Product			
	Returns to Capital										
	Taxes										

Reading down a column of this table shows what inputs an industry is buying in order to produce their output. The agriculture column, for example, may buy seed from themselves, fertilizer and farm equipment from the manufacturing sector, and legal and accounting services from the service sector. Payments to agricultural employees are captured in the "Labor" row. Payments must be made to owners of capital, and the industry pays taxes to the government. Reading across a row tells us where an industry's income originates. Sticking with agriculture, they sell seed to others in the agricultural sector; they sell raw product to food manufacturers, and of course they sell to exporters and consumers. A portion of a households expenditures will go to buying agricultural goods, and even the government may purchase agricultural goods. Lastly, the agricultural industry will sell its output out-of-state, via the "Net exports" column. Tourism services are also sold to out of region visitors, bringing money into the region through "exports."

Adding up all the labor, capital, and tax payments for all industries gives the sum of all value added and will equal the Gross Regional Product (GRP) of the region.[13] Similarly summing all of the expenditures of households, government, investment, and net exports yields the GRP of the region. These two methods of calculating GRP are known as the Income and Expenditure approaches, respectively, and they represent a check for ensuring all accounts balance. It is through the I-O system that we are able to trace the dollars through the economy and calculate multiplier effects.

[13] In our case the region is Idaho.

However, it is only through selling products outside of the region that an economy is able to attract new dollars. Economists distinguish between industries that are export-oriented and those that serve the local economy, recirculating the dollars once they are in the economy. We call export-oriented industries "basic" and resident serving industries "non-basic." The tourism sector, as with most agricultural and natural resource industries, is considered basic. Even though tourism in Idaho sell a large portion of their product to residents in state, historically the majority of tourism is exported out of Idaho. The basic industries that bring dollars into the economy support the non-basic industries, which could not exist locally without the income from exports. As such, the employment contributions of basic industries support more than the employment directly within the industry.

Basic vs. Non-Basic Impacts: Which Industries Support the Economy?
A small agricultural town may seem to have a large medical industry in terms of employment, while the number of farm employment is fairly low, and often seasonal. However, the farms are exporting their product and bringing money into the economy. The doctor's offices are predominantly serving the residents. In this story, it is the farmers that are supporting the economy and the doctors are retaining the money within the economy. However, it should be clear that the farms would continue to exist in the absence of the doctor's offices, while the doctor's offices would not be likely to stay in the absence of the farms. In this setting, the non-basic medical jobs rely on the basic agricultural jobs. The employment impacts, including many of the doctors and nurses, would be attributed to the non-basic agricultural industries.
This story gets more complex in the case of barley, potatoes, etc. where processing occurs near the primary commodity input. We structure these models to show the interdependency of the grower and processor and assume the grow operation is the dominate basic force. This is similar to coal mining or fishing operations where processing is forced to locate where the source of the commodity is located.

Model and Sector Modifications

One of the primary concerns when doing economic contribution studies is the potential for double counting. If we were to claim all the backward links from the tourism industries, we would be claiming supply chain effects from resident services as well. This is why only the export portion of the tourism industries are used in our calculations.

The other important component in avoiding double counting is to report value added—also known as gross state product—rather than sales. Though the model is built on producer prices and sales transactions, summing up sales receipts will overstate the actual productivity of a region. If a dairy produces milk, milk is sold to a processor, the processor sells cheese to a commercial pizzeria, and the pizzeria sells pizzas to a retailer; thus, the value of the milk is being incorporated and captured in each round of transactions. To prevent this double, triple, and quadruple counting, we report contributions on a value-added basis

Impact and contribution results are broken down into three categories: **direct** – the primary change in final demand for an industry under analysis; **indirect** – the business-to-business transactions that stem from the direct effects; and **induced** – the household-to-business transactions that stem from the owners and employees of the primary industries under analysis.

Sales vs. Value-added
A way to explain why sales overstates impacts is to imagine individuals spending money in a regional economy. Suppose an individual spends $40,000 on a new truck. Another individual spends the same amount on an appendectomy at the regional hospital. From a sales perspective, the impacts are the same, $40,000. However, from a value-added perspective the purchase of the truck provides less to the regional economy. Perhaps $30,000 of the truck purchase had to immediately go to the manufacturer back in Detroit or Japan. Conversely, the appendectomy at the hospital probably saw most of the spending stay local as income to the doctors, nurses and hospital staff. Perhaps only $10,000 leaves the region for importing of capital assets like the hospital bed, scalpels, etc. From a value-added perspective, the hospital is more valuable than the auto dealership even though they are equivalent from a sales perspective.

The direct effects are those related to the exports of the tourism industry to visitors. The indirect effects are driven primarily from the spending of the industries on their vendors (i.e., hotels spending on cleaning products, electricity, etc.. This includes purchases from themselves. So intra-industry purchases are captured within the indirect effects. But this also captures the spending of the vendors on their vendors etc. until the money leaks out of the state for the purchase of imports. The induced effects stem from the wages and salaries of the growers and their farm hands when they spend money at local restaurants, retailers, grocery stores, etc. As the income of the growers and their employees shrinks, so do their expenditures and the induced effects that stem from those losses in income.
A caveat must be noted regarding the job figures in the impact analysis. Job impacts are calculated by taking the income level and dividing those income levels by the average income per employee for each industry. Often those impacts are accurate in terms of the total number of jobs at risk. However, they may be thought of as full-time equivalent jobs and are not necessarily actual numbers of employees.

Direct Economic Effects
The econometric estimation showed an increase in overnight visitor lodging expenditures of $165,020 for each week of additional full summer pool. Because lodging only represents 18% of the overnight visitor expenditure (see Table 3) the total value of lost revenue can be inferred from the above regression and the spending profile of overnight and day-trip visitors. The spending profiles are derived from Idaho Department of Commerce reports for Bonner County. And the regression results are multiplied by the 60 additional day of full summer pool estimated from the difference in the proposed and operating policies regarding the lake level management. Table 3 shows an estimated $28.6 million in additional annual tourism cluster expenditures that would likely have occurred in Bonner

County directly had the lake been managed under the proposed rather than current management strategy.

Table 5.3: Expenditures Patterns and Inferred Visitor Expenditures

Expenditure patterns	Shares	Overnight	Shares	Day Trip
Lodging	18%	$403,061	0%	-
Transportation (at destination)	10%	$219,152	24%	$264,302
Restaurants/food	32%	$708,265	33%	$363,416
Retail	10%	$223,446	29%	$319,365
Recreation/entertainment	28%	$624,539	14%	$154,176
Other (conference and events)	3%	$57,427	0%	-
Total weekly	100%	$2,235,891	100%	$1,101,260
2025 Lost Revenue		***$19,164,776***		***$9,439,367***
2025 Direct Losses				**$28,604,144**

Sources: Idaho Department of Commerce Visitor Expenditure Patterns and Author's Calculations

Again, we note that this assumes no increase in flood occurrence, an increase in visitor attendance rather than just a shift in dates of visitation, and assuming the expenditure patterns hold.

Total Economic Impacts from Water Management Strategy

The Losses calculated above were adjusted 1) to account for the fact that the volume of visitors in the early and late-season tails of the summer tourism and recreation season will not be as robust as during the heart of summer; and 2) the consistency of lake levels will allow tourists and second home owners to plan more dependably and, as can be seen at other lakes with stable levels, allow for more investment and increased duration of attendance. These two adjustments account for a small net increase in our overall estimates of direct losses. The raw estimate of $28.6 million from Table 5.3 then increases to $29.7 million. Table 5.4 summarizes how the direct $29.7 million in sales translates to Gross Regional Product (GRP), household incomes, and employment within Bonner County. These results are then compared with the current Bonner County Tourism economy. The percentage at the bottom of the table illustrate how much larger we estimate the Bonner County tourism based economy would be if the proposed management strategy were in effect during 2025.

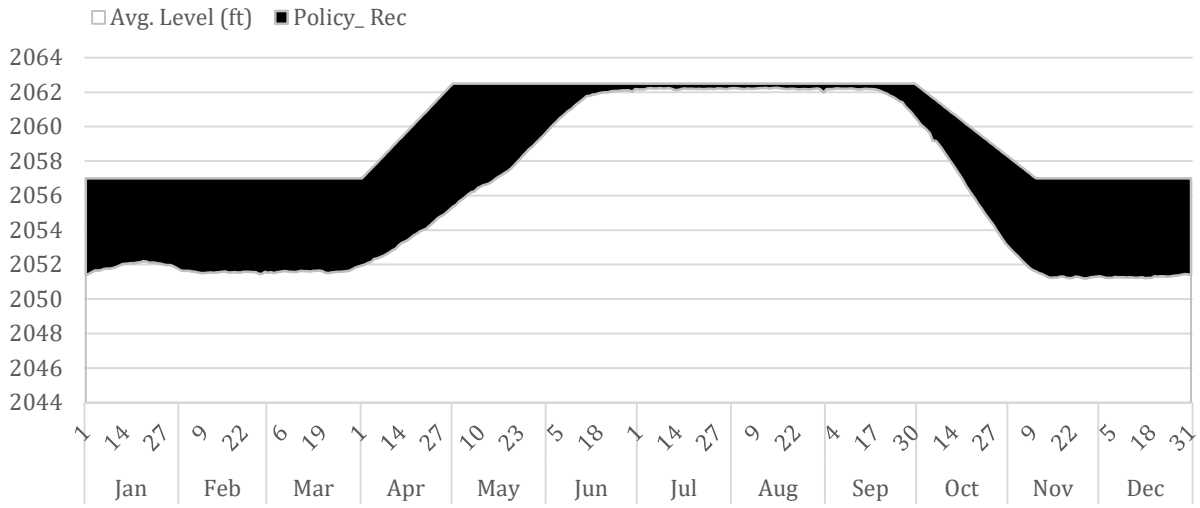
Table 5.4: Total Economic Impacts Forgon (with multipliers) Due to Lake Management Policy

	Sales	GRP	Income	Jobs
Direct	$29,664,284	$17,835,580	$10,274,140	352
Indirect	$8,562,502	$4,013,132	$2,545,665	47
Induced	$5,680,539	$3,364,181	$1,470,256	35
Total	**$43,907,325**	**$25,212,893**	**$14,290,061**	**435**
Total Bonner County Tourism Economy	**$410,606,513**	**$233,746,279**	**$143,438,341**	**3,569**
Percentage shortfall	10.7%	10.8%	10.0%	12.2%

6. Conclusions

The proposed plan for the Lake would allow northern lake access for approximately 171 days, 60 more than under the current management plan. Figure 6.1 shows the current and proposed management strategies. This increase in both duration and consistency is estimated to result in additional tourism and seasonal occupancy of second homeowners. This increased attendance is correlated with increased spending within the county and results in supply chain effects expected to improve the Bonner County Economy.

Figure 6.1: Lake Pend Oreille Levels Under Current and Proposed Management Plans



Source: https://www.nwd-wc.usUSACE.army.mil/dd/common/dataquery/www/ and Lakes Commission

Currently the tourism segment of the Bonner County economy accounts for $410.6 million in transactions and $233.7 million in Gross Regional Product, roughly 11% of the economy and 18% of regional employment (see Table 6.1).

Table 6. 1: Economic Contributions of the Bonner County Tourism Cluster

Impact	Output	GRP	Income	Employment
Direct	$283,672,623	$167,570,518	$94,178,476	2,789
Indirect	$75,081,202	$35,496,802	$22,712,548	444
Induced	$51,852,688	$30,678,958	$13,547,317	336
Total	***$410,606,513***	***$233,746,279***	***$130,438,341***	***3,569***

Source: IMPLAN and Authors' Calculations

Based on estimates of economic activity associated with lake levels, and accounting for various other seasonal factors we estimate that each additional week of full summer pool will result in $3.3 million dollars of additional spending. This implies that the current

management strategy of the lake costs Bonner County between $28.6 million and $29.7 million in direct economic activity, ultimately costing the local supply chains and businesses a total of $43.9 million in lost transactions. Those transactions translate into $25.2 million in lost gross regional product, and households lost $14.3 million in wages and salaries, ultimately reducing the economy by the equivalent of 435 full time jobs. Table 6.2 summarizes the economic effects of the current management strategy.

Table 6.2: Economic Impact of the Current Watter Management Plan on Bonner County

	Sales	GRP	Income	Jobs
Direct	$29,664,284	$17,835,580	$10,274,140	352
Indirect	$8,562,502	$4,013,132	$2,545,665	47
Induced	$5,680,539	$3,364,181	$1,470,256	35
Total	**$43,907,325**	**$25,212,893**	**$14,290,061**	**435**
Total Bonner County Tourism Economy	**$410,606,513**	**$233,746,279**	**$143,438,341**	**3,569**
Percentage shortfall	10.7%	10.8%	10.0%	12.2%

Source: IMPLAN and Authors' Calculations

These opportunity costs are a result of the risk averse strategy employed by the USACE at AFD. This risk averse strategy is reasonable if flood prevention is the primary operating concern. However, based on the cost findings of this study, Bonner County's tourism sector is roughly 10%-11% smaller than it would be under the proposed plan, implying that the current strategy is carrying a substantial unseen economic cost to local residents and businesses, as well as to the Idaho tax base.

Appendix 1: References

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Appendix 2: Data Tables

Table A2.1: Data for regression analysis

Year	Week	Visitors (Cell Phone Data)	Monthly Lodging Sales	Plane Arrival seats	Avg. Lake Level	Avg. daily Max Temp	Avg daily Precip (in)
2018	1	20,411	$1,858,519	15	2,053	28.17	0.32
2018	2	19,738	$1,858,519	18	2,053	37.00	2.12
2018	3	19,868	$1,858,519	31	2,054	38.14	1.08
2018	4	20,334	$1,858,519	58	2,054	36.43	1.24
2018	5	23,207	$1,631,240	0	2,054	41.00	1.40
2018	6	22,723	$1,403,961	26	2,054	41.83	0.78
2018	7	22,594	$1,403,961	41	2,054	33.67	1.50
2018	8	22,348	$1,403,961	61	2,054	24.67	0.22
2018	9	21,951	$1,607,696	18	2,053	36.71	0.91
2018	10	33,352	$1,811,432	48	2,052	40.33	0.77
2018	11	32,303	$1,811,432	46	2,052	47.71	0.10
2018	12	32,735	$1,811,432	15	2,051	48.43	1.15
2018	13	33,026	$1,793,976	30	2,052	47.83	0.36
2018	14	28,805	$1,776,520	13	2,052	43.86	0.38
2018	15	29,658	$1,776,520	8	2,052	45.33	2.04
2018	16	31,304	$1,776,520	32	2,054	57.83	0.02
2018	17	32,837	$1,776,520	40	2,055	70.29	0.00
2018	18	33,008	$1,388,106	69	2,057	67.86	0.19
2018	19	34,637	$999,691	114	2,060	67.43	0.41
2018	20	42,986	$999,691	84	2,063	74.14	0.41
2018	21	41,558	$999,691	91	2,064	78.29	0.04
2018	22	39,492	$1,306,690	79	2,064	70.71	0.10
2018	23	39,874	$1,613,689	26	2,062	72.29	0.65
2018	24	41,415	$1,613,689	79	2,062	68.57	0.04
2018	25	43,395	$1,613,689	137	2,062	77.57	0.23
2018	26	48,682	$2,489,967	141	2,062	72.71	0.00
2018	27	62,525	$3,366,244	168	2,062	76.43	0.24
2018	28	56,127	$3,366,244	136	2,062	85.57	0.00
2018	29	60,183	$3,366,244	179	2,062	87.40	0.00
2018	30	57,505	$3,366,244	138	2,062	88.57	0.00
2018	31	61,956	$4,213,959	238	2,062	88.43	0.00
2018	32	62,472	$5,061,674	258	2,062	91.71	0.00
2018	33	56,628	$5,061,674	172	2,062	86.00	0.00
2018	34	50,382	$5,061,674	219	2,062	77.29	0.00

2018	35	57,519	$4,987,132	218	2,062	72.43	0.39
2018	36	53,012	$4,912,590	88	2,062	77.20	0.01
2018	37	42,591	$4,912,590	82	2,062	65.50	0.12
2018	38	43,781	$4,912,590	63	2,062	65.17	0.28
2018	39	44,040	$4,912,590	135	2,061	65.86	0.00
2018	40	42,823	$3,529,167	86	2,060	54.71	0.44
2018	41	42,096	$3,529,167	57	2,059	56.00	0.01
2018	42	42,914	$3,529,167	60	2,057	59.83	0.00
2018	43	38,470	$3,529,167	42	2,055	57.57	0.49
2018	44	39,670	$2,413,196	92	2,053	49.43	0.94
2018	45	40,092	$1,297,224	103	2,052	42.86	0.15
2018	46	40,337	$1,297,224	55	2,051	41.43	0.02
2018	47	43,732	$1,297,224	50	2,051	40.00	0.34
2018	48	41,267	$1,186,904	64	2,051	39.14	0.87
2018	49	43,861	$1,076,583	59	2,051	32.33	0.09
2018	50	45,967	$1,076,583	52	2,051	36.86	2.30
2018	51	53,752	$1,076,583	28	2,051	39.57	0.75
2018	52	50,958	$1,076,583	55	2,051	33.14	1.21
2019	1	41,421	$2,052,839	70	2,052	37.67	0.13
2019	2	43,346	$2,052,839	20	2,052	35.43	0.81
2019	3	42,962	$2,052,839	59	2,052	33.71	0.20
2019	4	42,486	$2,052,839	30	2,052	35.50	0.50
2019	5	39,140	$2,069,100	34	2,052	35.57	0.24
2019	6	46,750	$2,085,361	26	2,051	22.43	0.03
2019	7	43,638	$2,085,361	35	2,052	25.57	1.10
2019	8	42,955	$2,085,361	21	2,051	27.14	0.61
2019	9	43,719	$1,990,465	53	2,051	28.80	0.11
2019	10	44,211	$1,895,568	18	2,051	37.29	0.10
2019	11	46,602	$1,895,568	72	2,052	44.57	0.30
2019	12	45,837	$1,895,568	52	2,052	58.29	0.01
2019	13	44,255	$1,822,607	65	2,052	52.33	0.01
2019	14	42,756	$1,749,646	23	2,052	52.43	0.57
2019	15	45,528	$1,749,646	39	2,054	49.57	0.97
2019	16	46,330	$1,749,646	42	2,054	59.83	0.20
2019	17	47,674	$1,749,646	66	2,055	60.00	0.45
2019	18	49,515	$1,693,529	49	2,056	59.86	0.00
2019	19	53,781	$1,637,413	36	2,057	73.14	0.00
2019	20	55,451	$1,637,413	75	2,058	63.86	0.62
2019	21	52,103	$1,637,413	121	2,059	66.14	0.60
2019	22	55,361	$1,610,447	80	2,060	79.86	0.00
2019	23	57,291	$1,583,481	86	2,061	66.86	0.40
2019	24	59,347	$1,583,481	120	2,062	82.00	0.00
2019	25	62,586	$1,583,481	154	2,062	68.57	0.04

2019	26	81,604	$2,627,654	206	2,062	73.86	0.10
2019	27	68,966	$3,671,826	303	2,062	77.00	0.05
2019	28	67,485	$3,671,826	206	2,062	80.57	0.00
2019	29	70,859	$3,671,826	203	2,062	74.86	0.41
2019	30	69,157	$3,671,826	178	2,062	84.14	0.05
2019	31	70,984	$4,544,613	281	2,062	86.00	0.00
2019	32	65,895	$5,417,400	248	2,062	87.00	0.20
2019	33	62,602	$5,417,400	219	2,062	79.57	0.20
2019	34	67,357	$5,417,400	162	2,062	82.14	0.10
2019	35	61,337	$5,068,756	158	2,062	80.86	0.00
2019	36	56,614	$4,720,112	84	2,062	76.14	0.21
2019	37	53,416	$4,720,112	100	2,062	69.86	0.30
2019	38	49,675	$4,720,112	99	2,062	63.86	0.12
2019	39	48,390	$4,720,112	52	2,061	53.57	1.07
2019	40	46,898	$4,017,565	102	2,060	38.29	0.90
2019	41	46,180	$4,017,565	45	2,059	37.71	0.20
2019	42	44,038	$4,017,565	47	2,057	38.14	1.60
2019	43	44,596	$4,017,565	90	2,054	35.00	0.90
2019	44	43,131	$3,111,081	60	2,053	31.43	0.00
2019	45	43,329	$2,204,596	66	2,052	38.57	0.00
2019	46	41,520	$2,204,596	68	2,051	36.00	1.10
2019	47	41,760	$2,204,596	62	2,051	30.86	0.60
2019	48	45,036	$1,618,611	52	2,051	20.57	0.40
2019	49	48,533	$1,032,627	29	2,051	31.86	1.00
2019	50	50,220	$1,032,627	37	2,051	27.29	0.60
2019	51	48,559	$1,032,627	68	2,051	31.00	6.00
2019	52	47,244	$1,032,627	46	2,051	27.38	1.70
2020	1	41,593	$1,964,472	49	2,051	30.29	1.70
2020	2	43,332	$1,964,472	12	2,051	23.14	2.70
2020	3	43,717	$1,964,472	46	2,051	28.71	2.50
2020	4	42,140	$1,964,472	0	2,051	32.43	2.90
2020	5	43,826	$1,901,507	35	2,052	28.43	2.30
2020	6	48,678	$1,838,543	60	2,051	28.71	0.40
2020	7	45,584	$1,838,543	78	2,051	30.43	0.40
2020	8	44,829	$1,838,543	53	2,052	30.29	0.90
2020	9	42,801	$1,957,126	57	2,051	33.29	0.20
2020	10	43,047	$2,075,709	80	2,052	32.71	0.40
2020	11	35,302	$2,075,709	57	2,052	28.29	0.50
2020	12	26,903	$2,075,709	46	2,052	39.14	0.40
2020	13	24,676	$2,075,709	20	2,052	31.29	3.40
2020	14	26,821	$1,108,214	54	2,052	33.86	0.90
2020	15	28,396	$1,108,214	20	2,053	42.86	0.30
2020	16	30,640	$1,108,214	65	2,054	45.43	0.30

2020	17	32,367	$1,108,214	58	2,055	45.14	0.60
2020	18	37,188	$755,248	51	2,056	47.29	0.80
2020	19	35,557	$402,283	72	2,057	48.29	0.70
2020	20	43,477	$402,283	139	2,058	47.57	1.40
2020	21	43,613	$402,283	112	2,059	44.71	1.90
2020	22	46,169	$607,072	147	2,060	59.00	0.60
2020	23	45,259	$811,862	136	2,060	47.00	1.10
2020	24	50,724	$811,862	196	2,061	51.43	0.80
2020	25	52,472	$811,862	164	2,062	59.43	0.10
2020	26	57,431	$811,862	192	2,062	60.29	0.80
2020	27	54,878	$3,445,251	205	2,062	56.00	1.20
2020	28	54,637	$3,445,251	158	2,062	58.86	0.00
2020	29	54,542	$3,445,251	208	2,062	67.57	0.00
2020	30	55,804	$3,445,251	307	2,062	68.57	0.00
2020	31	58,545	$4,622,902	281	2,062	73.71	0.00
2020	32	57,078	$5,800,554	258	2,062	63.29	0.30
2020	33	56,896	$5,800,554	252	2,062	68.43	0.00
2020	34	56,532	$5,800,554	266	2,062	67.57	0.00
2020	35	60,994	$5,972,368	192	2,062	62.14	0.10
2020	36	60,783	$6,144,182	300	2,062	65.57	0.00
2020	37	52,478	$6,144,182	147	2,062	63.71	0.00
2020	38	51,501	$6,144,182	161	2,062	59.14	0.10
2020	39	52,262	$6,144,182	165	2,061	49.29	1.40
2020	40	50,549	$5,716,123	202	2,060	59.14	0.00
2020	41	49,229	$5,288,064	148	2,058	47.00	3.40
2020	42	45,637	$5,288,064	103	2,056	36.86	0.80
2020	43	45,566	$5,288,064	93	2,055	25.14	0.80
2020	44	41,018	$3,842,543	103	2,053	43.71	0.50
2020	45	36,911	$2,397,022	49	2,052	30.86	0.80
2020	46	37,472	$2,397,022	22	2,051	30.43	3.50
2020	47	36,946	$2,397,022	130	2,051	28.43	0.80
2020	48	39,576	$1,930,509	59	2,051	27.86	0.70
2020	49	39,121	$1,463,996	62	2,051	39.29	0.00
2020	50	40,563	$1,463,996	68	2,051	26.29	0.90
2020	51	38,224	$1,463,996	125	2,051	30.86	2.60
2020	52	37,635	$1,463,996	86	2,051	25.89	1.50
2021	1	36,835	$2,531,525	92	2,052	29.86	4.60
2021	2	36,044	$2,531,525	53	2,052	30.43	4.00
2021	3	35,093	$2,531,525	112	2,052	27.00	0.00
2021	4	34,751	$2,531,525	64	2,052	22.57	0.30
2021	5	33,005	$2,573,672	62	2,052	29.57	1.40
2021	6	36,017	$2,615,818	73	2,052	17.57	0.60
2021	7	36,250	$2,615,818	106	2,052	14.43	2.30

2021	8	37,267	$2,615,818	93	2,052	27.29	2.20
2021	9	35,556	$2,768,049	65	2,052	40.14	0.40
2021	10	36,178	$2,920,279	92	2,052	47.14	0.02
2021	11	35,440	$2,920,279	138	2,052	53.29	0.07
2021	12	33,388	$2,920,279	114	2,052	46.86	1.06
2021	13	33,664	$2,955,093	90	2,052	49.00	0.01
2021	14	33,461	$2,989,907	113	2,052	58.00	0.23
2021	15	32,948	$2,989,907	66	2,053	53.14	0.09
2021	16	32,984	$2,989,907	75	2,054	61.57	0.00
2021	17	33,631	$2,989,907	84	2,055	58.43	0.48
2021	18	35,553	$2,700,045	127	2,056	67.43	0.00
2021	19	34,979	$2,410,182	92	2,056	61.14	0.04
2021	20	34,461	$2,410,182	138	2,057	71.00	0.00
2021	21	39,817	$2,410,182	130	2,059	60.29	0.15
2021	22	39,831	$2,640,038	220	2,061	77.43	1.04
2021	23	41,134	$2,869,893	171	2,061	70.57	0.21
2021	24	42,441	$2,869,893	237	2,062	73.29	0.58
2021	25	44,560	$2,869,893	200	2,062	83.57	0.00
2021	26	50,029	$4,100,780	322	2,062	96.86	0.00
2021	27	47,864	$5,331,667	295	2,062	93.43	0.00
2021	28	47,128	$5,331,667	382	2,062	92.29	0.00
2021	29	49,740	$5,331,667	297	2,062	86.86	0.02
2021	30	48,154	$5,331,667	271	2,062	88.29	0.00
2021	31	48,824	$6,667,571	420	2,062	94.00	0.00
2021	32	46,287	$8,003,476	194	2,062	81.86	0.00
2021	33	43,316	$8,003,476	260	2,062	83.14	0.00
2021	34	43,332	$8,003,476	230	2,062	71.57	1.02
2021	35	43,935	$7,042,263	333	2,062	74.57	0.10
2021	36	39,004	$6,081,050	247	2,062	79.86	0.00
2021	37	37,866	$6,081,050	277	2,062	72.00	0.10
2021	38	38,412	$6,081,050	145	2,062	62.43	3.62
2021	39	38,580	$6,081,050	64	2,061	36.86	0.20
2021	40	36,956	$5,336,999	6	2,060	44.57	0.00
2021	41	36,970	$5,336,999	0	2,058	37.43	0.00
2021	42	36,173	$5,336,999	30	2,056	34.14	0.50
2021	43	35,872	$5,336,999	164	2,054	51.43	1.70
2021	44	35,127	$3,924,905	45	2,053	48.71	1.16
2021	45	35,644	$2,512,811	119	2,052	38.57	0.30
2021	46	35,877	$2,512,811	71	2,051	47.00	0.50
2021	47	34,858	$2,512,811	67	2,051	35.00	0.34
2021	48	36,017	$2,193,304	98	2,051	49.71	1.15
2021	49	35,251	$1,873,798	26	2,051	37.00	0.30
2021	50	39,848	$1,873,798	65	2,051	34.00	0.45

2021	51	39,438	$1,873,798	95	2,051	31.20	0.60
2021	52	38,950	$1,873,798	119	2,051	22.00	0.40
2022	1	33,868	$3,421,990	65	2,051	28.33	0.63
2022	2	35,334	$3,421,990	82	2,051	36.00	0.20
2022	3	35,261	$3,421,990	87	2,051	36.83	0.15
2022	4	34,964	$3,421,990	122	2,052	33.50	0.00
2022	5	36,975	$3,267,332	48	2,051	25.57	0.00
2022	6	38,707	$3,112,674	394	2,051	41.67	0.00
2022	7	39,934	$3,112,674	86	2,052	39.00	0.00
2022	8	37,109	$3,112,674	151	2,052	32.67	0.01
2022	9	36,891	$3,662,082	106	2,052	39.57	0.72
2022	10	40,051	$4,211,490	82	2,052	41.43	0.00
2022	11	43,279	$4,211,490	81	2,052	39.29	0.21
2022	12	43,369	$4,211,490	106	2,052	48.14	0.19
2022	13	41,434	$3,929,828	79	2,052	57.00	0.00
2022	14	41,418	$3,648,167	90	2,052	52.43	0.51
2022	15	41,819	$3,648,167	101	2,053	48.80	0.00
2022	16	41,309	$3,648,167	87	2,053	47.83	0.01
2022	17	42,785	$3,648,167	46	2,054	57.17	0.04
2022	18	46,166	$2,823,841	97	2,055	51.43	0.00
2022	19	43,478	$1,999,516	85	2,057	53.43	0.40
2022	20	51,950	$1,999,516	118	2,057	59.57	0.00
2022	21	49,596	$1,999,516	141	2,058	62.43	0.01
2022	22	47,356	$2,297,810	112	2,059	68.14	0.00
2022	23	50,868	$2,596,105	128	2,060	67.00	0.28
2022	24	50,503	$2,596,105	176	2,061	37.29	0.01
2022	25	50,582	$2,596,105	190	2,062	71.29	0.00
2022	26	55,724	$3,747,793	223	2,062	69.43	0.00
2022	27	58,205	$4,899,481	238	2,062	68.00	0.01
2022	28	57,628	$4,899,481	288	2,062	85.86	0.00
2022	29	54,793	$4,899,481	346	2,062	86.14	0.00
2022	30	60,809	$4,899,481	256	2,062	91.00	0.00
2022	31	61,022	$6,783,482	272	2,062	92.86	0.00
2022	32	57,570	$8,667,482	289	2,062	86.86	0.00
2022	33	55,030	$8,667,482	279	2,062	90.14	0.00
2022	34	54,566	$8,667,482	224	2,062	75.00	0.03
2022	35	57,747	$8,382,892	244	2,062	83.71	0.00
2022	36	53,202	$8,098,303	142	2,062	80.43	0.00
2022	37	49,804	$8,098,303	214	2,062	72.86	0.01
2022	38	47,936	$8,098,303	135	2,062	69.57	0.00
2022	39	49,187	$8,098,303	181	2,061	71.29	0.50
2022	40	50,737	$6,643,311	105	2,060	59.00	0.20
2022	41	49,382	$6,643,311	154	2,059	60.29	0.00

2022	42	48,351	$6,643,311	116	2,057	65.29	0.25
2022	43	47,548	$6,643,311	102	2,055	45.86	0.44
2022	44	47,922	$4,572,589	41	2,053	46.71	1.05
2022	45	45,742	$2,501,867	13	2,051	36.86	0.60
2022	46	49,979	$2,501,867	80	2,051	33.57	0.25
2022	47	44,419	$2,501,867	22	2,051	32.00	0.00
2022	48	47,203	$2,224,791	68	2,051	32.00	1.22
2022	49	49,257	$1,947,715	34	2,051	28.20	0.00
2022	50	54,425	$1,947,715	53	2,051	34.00	1.12
2022	51	48,344	$1,947,715	57	2,051	16.29	3.10
2022	52	53,351	$1,947,715	56	2,051	32.86	2.10
2023	1	61,681	$3,214,049	76	2,051	34.86	0.00
2023	2	56,925	$3,214,049	75	2,052	37.14	0.39
2023	3	58,969	$3,214,049	77	2,052	37.14	0.05
2023	4	57,629	$3,214,049	88	2,052	35.86	0.00
2023	5	56,061	$3,510,374	117	2,052	28.29	0.00
2023	6	56,513	$3,806,699	78	2,052	38.33	0.00
2023	7	57,626	$3,806,699	83	2,052	41.14	0.00
2023	8	58,623	$3,806,699	69	2,052	29.14	0.10
2023	9	58,886	$3,954,668	51	2,051	33.83	5.40
2023	10	56,068	$4,102,637	71	2,051	35.57	1.70
2023	11	56,216	$4,102,637	78	2,052	42.57	0.10
2023	12	56,575	$4,102,637	145	2,052	49.57	0.00
2023	13	58,976	$3,641,675	68	2,052	48.86	0.42
2023	14	58,700	$3,180,714	86	2,052	47.86	0.35
2023	15	55,367	$3,180,714	104	2,052	45.43	0.97
2023	16	55,290	$3,180,714	76	2,053	43.71	0.35
2023	17	60,940	$3,180,714	53	2,054	51.29	0.35
2023	18	54,631	$2,536,038	54	2,056	77.57	0.89
2023	19	60,248	$1,891,361	107	2,057	63.86	0.35
2023	20	59,113	$1,891,361	113	2,057	81.14	0.29
2023	21	54,309	$1,891,361	165	2,058	61.86	0.15
2023	22	58,543	$2,202,952	125	2,059	76.29	0.21
2023	23	59,791	$2,514,543	120	2,061	84.29	1.47
2023	24	63,386	$2,514,543	115	2,062	76.29	0.10
2023	25	64,002	$2,514,543	197	2,062	68.43	0.14
2023	26	66,476	$3,947,011	255	2,062	85.71	0.08
2023	27	66,215	$5,379,479	254	2,062	85.00	0.00
2023	28	68,108	$5,379,479	264	2,062	83.57	0.09
2023	29	65,375	$5,379,479	286	2,062	75.71	0.00
2023	30	66,811	$5,379,479	252	2,062	75.71	0.00
2023	31	67,501	$6,969,160	209	2,062	90.29	0.00
2023	32	69,512	$8,558,842	245	2,062	58.71	0.31

2023	33	65,354	$8,558,842	302	2,062	94.43	0.00
2023	34	63,659	$8,558,842	192	2,062	74.71	0.69
2023	35	64,568	$8,107,091	271	2,062	80.43	1.09
2023	36	63,034	$7,655,340	174	2,062	72.71	0.06
2023	37	58,660	$7,655,340	141	2,062	78.71	0.00
2023	38	55,926	$7,655,340	130	2,062	61.86	0.00
2023	39	52,479	$7,655,340	145	2,061	54.29	1.28
2023	40	50,085	$5,739,402	52	2,060	64.00	0.02
2023	41	49,484	$5,739,402	67	2,058	56.06	0.13
2023	42	48,320	$5,739,402	92	2,056	65.43	0.34
2023	43	54,473	$5,739,402	86	2,054	45.86	0.02
2023	44	47,930	$4,110,755	105	2,053	42.71	1.52
2023	45	48,356	$2,482,109	28	2,052	44.57	2.73
2023	46	50,001	$2,482,109	75	2,051	36.43	0.75
2023	47	48,936	$2,482,109	33	2,051	35.00	0.34
2023	48	48,699	$2,348,281	74	2,051	31.14	0.11
2023	49	49,323	$2,214,453	33	2,051	40.43	4.88
2023	50	50,730	$2,214,453	30	2,051	34.33	0.28
2023	51	50,664	$2,214,453	52	2,051	36.14	1.07
2023	52	46,557	$2,214,453	142	2,051	26.88	0.18
2024	1	50,824	$3,182,962	69	2,052	35.86	0.65
2024	2	56,453	$3,182,962	29	2,051	21.83	0.99
2024	3	52,434	$3,182,962	52	2,052	15.57	0.67
2024	4	51,305	$3,182,962	17	2,051	37.67	1.77
2024	5	47,560	$3,403,217	19	2,052	40.14	0.98
2024	6	49,580	$3,623,472	72	2,052	39.14	0.92
2024	7	48,356	$3,623,472	101	2,052	29.71	0.50
2024	8	45,838	$3,623,472	85	2,051	41.29	1.09
2024	9	50,244	$3,764,424	14	2,052	40.86	1.45
2024	10	50,423	$3,905,375	97	2,052	39.43	0.49
2024	11	50,048	$3,905,375	67	2,051	48.00	1.02
2024	12	50,211	$3,905,375	50	2,052	56.71	0.34
2024	13	49,672	$3,905,375	66	2,052	40.14	1.18
2024	14	51,901	$3,524,780	50	2,052	53.71	0.56
2024	15	51,789	$3,524,780	71	2,053	39.86	0.53
2024	16	51,345	$3,524,780	110	2,054	56.29	0.19
2024	17	52,023	$3,524,780	68	2,055	42.29	0.09
2024	18	56,281	$2,804,866	65	2,055	32.57	0.35
2024	19	58,935	$2,084,952	141	2,055	66.86	0.76
2024	20	61,272	$2,084,952	84	2,056	60.29	0.08
2024	21	61,472	$2,084,952	148	2,057	59.71	2.31
2024	22	61,848	$2,569,312	185	2,058	38.14	0.09
2024	23	59,461	$3,053,673	157	2,060	70.14	0.79

2024	24	57,221	$3,053,673	154	2,061	22.14	0.00
2024	25	61,532	$3,053,673	226	2,062	52.71	0.70
2024	26	63,024	$3,053,673	267	2,062	54.14	0.76
2024	27	63,017	$6,193,787	313	2,062	80.50	0.71
2024	28	59,555	$6,193,787	152	2,062	95.75	0.00
2024	29	62,708	$6,193,787	305	2,062	93.75	0.00
2024	30	61,112	$6,193,787	350	2,062	90.67	0.00
2024	31	66,233	$7,345,485	315	2,062	87.80	0.12
2024	32	61,018	$8,497,182	329	2,062	84.25	0.33
2024	33	57,934	$8,497,182	229	2,062	82.80	0.23
2024	34	54,009	$8,497,182	277	2,062	81.50	0.18
2024	35	59,811	$8,143,933	341	2,062	80.25	0.05
2024	36	54,497	$7,790,684	133	2,062	49.14	0.00
2024	37	55,214	$7,790,684	155	2,062	38.14	0.68
2024	38	52,503	$7,790,684	85	2,062	61.43	0.00
2024	39	61,860	$7,790,684	161	2,061	53.86	0.48
2024	40	52,575	$6,965,206	73	2,060	54.14	0.00
2024	41	54,485	$6,139,728	92	2,059	45.86	0.00
2024	42	46,917	$6,139,728	78	2,057	43.71	0.95
2024	43	45,787	$6,139,728	87	2,055	25.43	0.71
2024	44	50,275	$4,412,334	57	2,054	38.86	1.69
2024	45	50,496	$2,684,939	80	2,052	44.14	0.89
2024	46	46,740	$2,684,939	22	2,051	42.71	1.58
2024	47	46,755	$2,684,939	58	2,051	36.50	2.71
2024	48	43,419	$2,537,652	68	2,051	32.71	0.65
2024	49	43,708	$2,390,366	59	2,051	32.33	0.00
2024	50	44,774	$2,390,366	65	2,051	34.17	0.00
2024	51	44,760	$2,390,366	88	2,051	38.60	0.90
2024	52	45,385	$2,390,366	83	2,051	40.50	0.00
2025	1	44,275	$3,446,722	47	2,052	35.50	0.50
2025	2	42,442	$3,446,722	52	2,053	35.50	0.10
2025	3	42,134	$3,446,722	97	2,054	33.75	0.00
2025	4	40,106	$3,446,722	101	2,054	31.00	0.00