



REGIONAL ECONOMIC CONTRIBUTIONS OF BEAR LAKE

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EXECUTIVE SUMMARY

Bear Lake is a natural amenity that attracts visitors and seasonal residents, provides numerous recreational opportunities, and provides for water-based ecosystem services. The economic demand for Bear Lake recreation spurs abundant regional economic contributions in terms of employment and income. Understanding the regional economic contributions of Bear Lake can inform the development of policies that ensure a sustainable economic future for the Bear Lake region. This future for the Bear Lake region is dependent on maintaining water quantity and healthy water quality, attributes that are at risk given current drought conditions and ever-increasing pressures on water demand in the arid Inter-Mountain West.

Conservation Economics Institute was commissioned by the Bear River Association of Governments to measure the regional economic contributions from Bear Lake visitation and to investigate other economic development in the region. An economic survey of Bear Lake visitors was conducted in the summer of 2021 to determine regional contributions. Full details on data collection and economic methods used are included in the report and in appendices. Primary findings of this economics research are presented below.

BEAR LAKE VISITOR ECONOMIC CONTRIBUTIONS:

- An estimated 1,115,000 visits were made to Bear Lake in 2021. Visits are not unique visitors, but rather represent one person spending one day or night in the Bear Lake region.
- Expenditure data from 2021 surveys were extrapolated to 880,000 visits after removing resident, non-primary, and off-season visits.
- Over the summer of 2021, Bear Lake visitors spent approximately \$48 million in the region associated with their trips. These regional expenditures were entered into 16 IMPLAN industry

sectors as final demand to initiate the regional economic contribution analysis.

- Bear Lake visitation was directly responsible for 450 full and part-time jobs in the surrounding gateway communities. Including indirect and induced effects, 575 full and part-time jobs were generated by Bear Lake tourism. Converting employment to full-time equivalents (FTEs) to account for the seasonal nature of Bear Lake visitation reveals that Bear Lake tourism contributed approximately 500 FTEs when including indirect and induced effects.
- Bear Lake visitation generated \$38 million in direct regional output, and \$54 million in total regional output (includes indirect and induced output). Total effects are shown below in Table E1.
- Bear Lake tourism generated the collection of over \$6 million in total taxes at the sub-county, county, state, and federal levels.
- Multiplier effects, or the measure of recirculated regional contributions, ranged from 1.29 for employment to 1.42 for output. These multipliers are indicative of very rural economies and show that new stores (e.g., Mike's Market in 2021) and services in the region can help reduce the leakage of visitor expenditures to other areas.
- Visitors come from across the U.S. to visit Bear Lake, with the majority (80%) coming from Idaho and Utah. Numerous Bear Lake visitors come from the greater Salt Lake City area.

Table E1: Total Effects and Multipliers for Bear Lake Visitor Expenditures (\$2021)

Impact	Employment	Labor Income (Millions)	Value Added (Millions)	Output (Millions)
Direct Effect	447.1	\$8.97	\$17.55	\$37.66
Indirect Effect	100.4	\$1.77	\$3.38	\$12.40
Induced Effect	28.4	\$0.55	\$1.67	\$3.57
Total Effect	575.9	\$11.29	\$22.60	\$53.63
Multiplier Effect	1.29	1.26	1.29	1.42

Source: IMPLAN, Bear Lake and Rich Counties 2019, Type SAM Multipliers



Credit: Utah DNR

BEAR LAKE AMENITY-BASED DEVELOPMENT CONTRIBUTIONS

- Despite a lack of growing populations from 1990-2010, Bear Lake County and Rich County housing stocks increased by 40% and 80% respectively during this time indicating that Bear Lake is a seasonal destination.
- From 2014-2019, seasonal/vacation homes increased approximately 16% from 3,100 to 3,600 in Bear Lake and Rich Counties. The percent of all residences that were vacation homes was 34% for Bear Lake County and 73% for Rich County in 2019.
- The majority of seasonal homes occur adjacent to Bear Lake in Garden City, Utah (2000 seasonal homes) and Fish Haven, Idaho (800 seasonal homes). In both communities, seasonal homes comprise more than 80% of all residences.
- In Garden City alone, residential market values have more than doubled from 2016 to 2021, leading to a total market value of \$677 million.
- From 1980-2010, Bear Lake and Rich Counties both experienced long-term out-migration, ranking in the bottom 15% for migration to rural Western counties.
- The lack of amenity migration and primary residences in the region stems from harsh winters (Rich County is typically the coldest county in Utah) and remoteness and is in direct contrast with the booming seasonal visitation and secondary residences.

• In terms of being a seasonal destination, Rich County ranked in the top 12% of rural Western counties.

ADDITIONAL ECONOMIC CONTRIBUTIONS OF BEAR LAKE:

- Historically, downstream uses of Bear Lake water included substantial levels of hydropower generation. Currently, dams downstream of Bear Lake produce an average of about 15,000 megawatt hours (MWh) per month, though hydropower is now considered "incidental" to other water release purposes.
- Each year, up to 245,000 acre-feet of Bear Lake storage water is allocated to irrigation contractors serving approximately 150,000 acres. An estimated three-quarters of irrigated acreage is used for agriculture.
- Bear Lake volume does not equate directly to usability of deliverable water. Downstream flood mitigation can also dictate the timing of water releases.
- Agriculture and livestock grazing upstream from Bear Lake pose a risk to water quality due to contributing sediment and nutrient loads into the Bear River and associated tributaries.
- Bear Lake provides primarily aquatic and wetland habitat that sustains a complex web of flora and fauna, including four endemic fish species and critical migratory bird habitat. Bear Lake biodiversity and natural areas generate substantial non-market values that include existence and bequest values.
- Using benefits transfer of previous research, it is estimated that Idaho and Utah households would have a societal willingness-to-pay of \$440 million annually to protect and sustain the current qualities of Bear Lake.

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1. INTRODUCTION

Bear Lake is an outdoor recreation destination located in northeastern Utah and southeastern Idaho. Split almost equally between Idaho and Utah, Bear Lake attracts numerous vacationers that bring attention to the region and stimulate the local economy. The turquoise-colored waters of Bear Lake also attract residents from Salt Lake City and other nearby communities as a place to own a second home or seasonal housing, enhancing regional tax revenues and increasing the number of stakeholders that are concerned about the sustainability of Bear Lake.

Bear Lake is a water body of many uses that all depend on the quality and quantity of water passing through the Lake. In addition to supporting many forms of non-consumptive, water-based recreation like boating, jet skiing, fishing, and camping, the water from Bear Lake is also used for irrigation for agriculture crops and for cattle ranching. Other non-consumptive uses of Bear Lake water include habitat for fish and wildlife, including four types of endemic fish species.

Communities adjacent to Bear Lake, including Garden City and Laketown in Utah and Fish Haven and St. Charles in Idaho, are economically dependent on Bear Lake visitors and family vacationers. Summer vacationers flock to Bear Lake, especially for community gatherings like the Raspberry Days Festival. While winter is the slow season, snowmobiling and annual traditions like Winterfest and the Cisco Disco ensure some level of year-round usage. With families and visitors repeatedly coming back to Bear Lake, the adjacent gateway communities are dependent upon an ecologically healthy and full Bear Lake.

Conservation and smart policies are needed to keep clean and abundant water in Bear Lake to sustain the regional economic contributions and benefits afforded by Bear Lake. A prerequisite for developing long-term, sustainable policies for Bear Lake is to fully understand the current economic and ecosystem benefits flowing from Bear Lake. However, there currently is little information and few monitoring baselines. While anecdotal information about Bear Lake trends and changes are helpful, a rigorous study of regional economic contributions of Bear Lake can better help to inform future land use planning and policy decisions.

To measure the economic contributions of Bear Lake, we conducted a regional economic contribution analysis of visitor expenditures to understand the number of jobs and the amount of income and output sustained by Bear Lake visitation. Separately, we assessed second home ownership rates and amenity-based development near Bear Lake and assessed water use and environmental impacts to understand the competing uses of Bear Lake water and the sustainability of annual visitation. By collectively examining the economic importance of visitors, regional development, and other industrial uses of Bear Lake, this report can provide critical economic information for future development planning for Bear Lake.



Credit: Evan Hjerpe

1.1 BEAR LAKE SOCIOECONOMIC AND ENVIRONMENTAL BACKGROUND

The economic context for Bear Lake tourism is helpful for understanding why economic contributions can be useful for informing regional policy. Bear Lake and its surrounding watersheds host a vast mix of land ownership, management, and jurisdictions, including private lands, municipalities, two counties, two states, and federal lands.¹ Bear Lake tourism and recreation are catching up in importance with traditional rural industries for that area such as cattle ranching and agriculture, but are more difficult to isolate as economic activities due to multiple service sectors that comprise tourism and recreation (requiring survey methods).

Envision Utah conducted a public visioning study that showed protecting Bear Lake water quality and quantity to be very important local values and that the community is committed to preserving views, wildlife, and the scenic beauty of Bear Lake. The community is interested in providing more recreation access and supporting the recreation economy but would also like to maintain its agriculture heritage.² The recent Final Bear Lake Comprehensive Management Plan for Utah has detailed descriptions for current resource conditions for the Bear Lake region.³

As the Bear River is the greatest tributary of the Great Salt Lake, economic studies assessing the values of the Great Salt Lake are relevant for framing Bear Lake economic contributions. The Great Salt Lake Advisory Council commissioned a comprehensive valuation of the Great Salt Lake in 2012, that included similar components to our Bear Lake economic analysis.⁴ Overall, the report illustrated high use values for the Great Salt Lake, including recreation, but primarily in mineral extraction. In 2019, another economic valuation was commissioned by the Great Salt Lake Advisory Council to assess the economic impacts of declining water levels in the Great Salt Lake, showing potentially large decreases in economic values.⁵

Suggested Reading for Bear Lake Socioeconomics and Environmental Context:

- Envision Utah (2011)-- Bear Lake Valley Blueprint and Toolkit: Building a Legacy Together. (https://static1.squarespace.com/static/5c059ead36099b1445c1d246/t/5d0286d654deaf0001 bf40a9/1560446705687/BearlLakeFinal 1406152098.pdf)
- Utah Department of Forestry, Fire and State Lands (FFSL). (2022). Final Bear Lake Comprehensive Management Plan. (https://ffsl.utah.gov/state-lands/bear-lake/bear-lake/plans/)
- Idaho Department of Environmental Quality (2008)-- Bear Lake Subbasin TMDL Implementation Plan for Agriculture. (https://www2.deq.idaho.gov/admin/LEIA/api/document/download/11664)
- Bioeconomics. (2012). Economic Significance of the Great Salt Lake to the State of Utah. Prepared for Great Salt Lake Advisory Council. (<u>https://documents.deq.utah.gov/water-quality/standards-techni-</u> cal-services/great-salt-lake-advisory-council/Activities/DWQ-2012-006864.pdf)
- ECONorthwest. (2019). Assessment of Potential Costs of Declining Water Levels in Great Salt Lake. Prepared for Great Salt Lake Advisory Council. (<u>https://documents.deq.utah.gov/water-quality/</u>standards-technical-services/great-salt-lake-advisory-council/activities/DWQ-2019-012913.pdf)

¹ For a detailed listing of jurisdictions and management authorities please see Utah Department of Forestry, Fire and State Lands (FFSL). (2022). Final Bear Lake Comprehensive Management Plan. Available at: https:// ffsl.utah.gov/state-lands/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear-lake/bear

² Envision Utah. (2011) Bear Lake Valley Blueprint and Toolkit: Building a Legacy Together. Available online: https://static1.squarespace.com/static/5c059ead36099b1445c1d246/t/5d0286d654deaf0001 bf40a9/1560446705687/BearLakeFinal_1406152098.pdf.

³ Utah Department of Forestry, Fire and State Lands (FFSL). (2022). Final Bear Loke Comprehensive Management Plan. Available at: https://ffsl.utah.gov/state-lands/bear-lake/bear-lake-plans/.

⁴ Bioeconomics. (2012). Economic Significance of the Great Salt Lake to the State of Utah. Prepared for Great Salt Lake Advisory Council. Available at: https://documents.deq.utah.gov/water-quality/standards-tech-nical-services/great-salt-lake-advisory-council/Activities/DWQ-2012-006864.pdf.

⁵ ECONorthwest. (2019). Assessment of Potential Costs of Declining Water Levels in Great Salt Lake. Prepared for Great Salt Lake Advisory Council. Available at: https://documents.deq.utah.gov/water-quality/standards-technical-services/great-salt-lake-advisory-council/activities/DWQ-2019-012913.pdf.

2. BEAR LAKE REGIONAL ECONOMIC CONTRIBUTION METHODS

Gateway communities to Bear Lake include numerous businesses that provide goods and services to visitors that come for a weekend or for a week-long family vacation. These visitors bring outside money into Rich County, Utah and Bear Lake County, Idaho. Regional economic contribution analysis is the appropriate economic method used to estimate changes in output and employment associated with Bear Lake visitation and can provide important baseline monitoring and understanding of values that currently are unknown.¹ Because Bear Lake visitors spend money in multiple industry sectors, survey methods are necessary to estimate visitor spending in various economic categories.

Economic contribution analysis, and the closely related method of economic impact analysis, is a formal economic method that utilizes collected regional expenditures to estimate regional jobs and taxes spurred by a specific activity such as Bear Lake visitation. Economic contribution analysis incorporates a regional accounting matrix (known as input-output models) and impact analysis software, such as IMPLAN, to measure multiplier effects of visitor expenditures. That is, initial expenditures in Bear Lake communities generate indirect and induced effects as well, where the purchase of food, lodging, and fuel spur backward linkages of spending for materials and services required to provide the final service (indirect effects) and regional spending of wages (induced effects). A full description of regional economic contribution analysis methods and assumptions used for Bear Lake tourism are presented in Appendix A.

1 Regional economic contribution analysis is closely related to regional economic impact analysis. In general, impact analysis is appropriate for assessing changes in the regional economy due to the gain or loss of a new economic activity. Contribution analysis is more appropriate for measuring total industry sectors or recurring economic activity such as annual Bear Lake visitor expenditures. For more information see Watson, P., Wilson, J., Thilmany, D., & Winter, S. 2007. Determining economic contributions and impacts: What is the difference and why do we care. *Journal of Regional Analysis and Policy*, 37(2), 140-146.



Credit: Edgar Zuniga Jr.

2.1 BEAR LAKE STUDY AREA

The Bear Lake regional economic zone was defined to be just the two counties that contain Bear Lake and its associated gateway communities---Bear Lake County, Idaho and Rich County, Utah. Figure 1 shows the largest communities closest to Bear Lake within these two counties.

Figure 1: Gateway Communities in the Bear Lake Regional Economic Zone (Bear Lake and Rich Counties)



Delineating the regional economic zone for tourist expenditures is a subjective process. For regional economic contribution analyses, it is recommended to focus on the most economically affected areas, variously interpreted as 30-100 miles from the destination, with an average use of a 50-mile radius.² Analysts matching the regional economy to the tourism economic activity in regional contribution analyses should also take into consideration the range of infrastructure and emergency services most affected by the tourism activity.³

Regional contribution and impact analyses, and their underlying input-output methodology, are predicated on the export base theory that illustrates how rural regions initially develop by exporting products, typically resources such as timber or minerals, and then continue to develop with infilling services to support the employment from the exporting industries. The exports bring outside money into the region, leading to a regional wealth advantage that creates additional jobs in medical, financial, and entertainment service sectors. Nature tourism and outdoor recreation at destinations are treated as export industries by economists because, despite not shipping out a commodity, natural destinations attract out-of-region visitors and expenditures. Thus, outdoor recreation is equivalent to a natural resource export in terms of being responsible for much of a rural region's economic development, though the sustainability of outdoor recreation is far greater than traditional resource extraction.⁴

Using different scales of regional economies can lead to drastically different economic impacts and contributions. The bigger the regional economy where contributions are being modeled, the greater the resulting direct, indirect, and induced effects (or multiplier effects) due to greater re-circulation of initial expenditures. ⁵ However, as the defined regional economy becomes greater, the impacts of tourism expenditures decrease,

2 Stynes, D. J. (2009). National Park visitor spending and payroll impacts. Michigan State University, Department of Community, Agriculture, Recreation and Resource Studies. Available at: <u>http://citeseerx.</u> <u>ist.psu.edu/viewdoc/download?doi=10.11.182.86&rep=rep1&type=pdf;</u> English, D. B., White, E. M., Bowker, J. M., & Winter, S. A. (2020). A Review of the Forest Service's National Visitor Use Monitoring (NVUM) Program. Agricultural and Resource Economics Review, 49(1), 64-90.

3 Hjerpe, E. E., & Kim, Y. S. 2007. Regional economic impacts of Grand Canyon river runners. Journal of Environmental Management, 85(1), 137-149.

4Hjerpe, E. E. (2018). Outdoor recreation as a sustainable export industry: A case study of the boundary waters wilderness. Ecological Economics, 146, 60-68.

5 Watson, P., Wilson, J., Thilmany, D., & Winter, S. 2007. Determining economic contributions and impacts: What is the difference and why do we care. Journal of Regional Analysis and Policy, 37(2), 140-146. or become watered down, as an overall percentage of the economy. For example, Bear Lake tourism is only a small component of total recreational activities throughout Idaho and Utah, and an even smaller component of total state domestic product for both states. Furthermore, the majority of Bear Lake visitors are from Idaho and Utah, representing a recirculation of tourism expenditures from Idaho and Utah residents within their own states.⁶ Given the previous discussion, we feel that the most appropriate regional economic zone to use for Bear Lake visitor expenditures is the two counties that contain Bear Lake and the majority of associated Bear Lake activities: Bear Lake County in Idaho and Rich County in Utah.

Bear Lake County and Rich County, and the surrounding parts of southeast Idaho and northeast Utah are extremely rural. Aside from nature tourism and outdoor recreation, the most prominent economic activities in the region include beef cattle ranching and crop farming. Alfalfa, wild hay, oats, and barley are prominent crops grown in the region. Phosphate mining, primarily in Bear Lake County, is a major resource industry as well. A description of socio-economic indicators for the two counties combined are presented in Table 1.

Table 1: Description of Bear Lake Regional Economy (Bear Lake and Rich Counties)

Gross Regional Product	\$289,000,000
Total Personal Income	\$365,000,000
Total Employment	5,100
Number of Industries (IMPLAN 546)	182
Land Area (sq. miles)	2,000
Population	8,600
Total Households	3,190
Average Household Income	\$114,500

Source: IMPLAN, Bear Lake County, Idaho and Rich County, Utah Region 2019

⁶ Approximately 80% of survey respondents were from Idaho and Utah.

2.2 BEAR LAKE VISITATION

Visitation to Bear Lake state parks is the only tracked information about visitation to Bear Lake. We suspect that the large majority of Bear Lake tourists access Bear Lake through state park facilities and marinas. In 2021, approximately 892,000 visits (including repeat visitors for multiple days) were made to a Bear Lake state park in Utah and Idaho.⁷ Based on Utah monthly state park visitation estimates, 90% of Bear Lake visitation occurred from June through September in 2021. As illustrated in Figure 2, the Utah Bear Lake state parks receive about twice as many visits as Idaho Bear Lake state parks.

Bear Lake has experienced exponential visitation growth over the last few years, with visitation more than doubling since 2016. Figure 2 shows dramatic increases in visitation during the COVID-19 pandemic; visitation increased 40% from 2019 to 2020. While visitation slightly declined in 2021, the yearly totals were still one-third higher than 2019 visitation.



Sources: Utah: <u>https://stateparks.utah.gov/resources/park-visitation-data/;</u> Idaho: Personal communication with Andrew Stokes, Idaho Bear Lake State Park Ranger.

*Data for Idaho in 2013 is missing and have been estimated as the average of 2012 and 2014. Utah Fiscal Year monthly data for 2014-2021 have been converted to calendar year data.

To extrapolate our expenditure survey data and conduct a full regional economic contribution analysis,

7 The 892,000 "visits" to a Bear Lake state park in Utah and Idaho in 2021 represent an individual paying an entrance fee for day-use or camping. Overnight visits, such as people staying in a tent or RV, are estimated on a per-night basis, with each subsequent night camping representing a unique visit. These visits include repeat visitors that make multiple summer trips to Bear Lake and repeat day-use visits for visitors that are staying multiple days in the region but not camping in a state park (i.e., staying in a rented house). we apply our average expenditure estimates to the total number of Bear Lake visitors. Because detailed tracking of visitors is done only at state parks, we need to estimate the number of visitors to Bear Lake who do not access the Lake via a state park.

Resorts around the Lake have private beaches, and several day use beaches with few amenities are free for public use along the Lake shore. Likewise, there are some private residences with Lake access.⁸ We assume that resort visitors and some visitors with personal cabins are unlikely to pay a fee to use public beaches, marinas, or campgrounds. To account for these visitors, we use the results from our survey for visitors that stayed in resorts (8%) or used personal cabins (23%). For personal cabin users, we assume half of them, or 12% of visitors, have private access to Bear Lake. Combining visitors staying in resorts and half of the visitors staying at personal cabins leads to a presumption that about 20% of all Bear Lake visitors are not as likely to utilize a Utah or Idaho state park.

We also know there are some visitors who do not go to the Lake at all (e.g., a day trip to play golf)—but we presume this is a very small portion of total visits. Thus, we assume the visitation numbers at state parks capture about 80% of total visits, which is roughly in line with estimates of access flow to the Lake by size and traffic of private marinas, docks, and beaches collectively, as compared to the size and traffic of state parks surrounding Bear Lake. Imposing the assumption that 80% of total visits equaled 892,000 yields total visits to Bear Lake of 1,115,000 for 2021. In accordance with economic theory for regional contribution analysis, we removed visits associated with residents, off-season use, and non-primary trips, leaving 880,000 visits for the contribution analysis (for the full details on how expenditure data were extrapolated to total Bear Lake visits, please see Appendix A, section A2).

⁸ Bear Lake Watch estimates that approximately 1,100 residences have private Lake access, or approximately 25% of all residences in the four primary (and adjacent) gateway towns. See section 4.1 for details on Bear Lake housing.



Credit: Kevin

2.3 BEAR LAKE SURVEY DATA COLLECTION

A survey was conducted to obtain estimates of regional expenditures from Bear Lake visitors. The survey was designed and pre-tested with input from a steering committee comprised of local officials, managers, and businesses. The final survey instrument contained ten questions on visit and visitor characteristics and 14 expenditure questions related to lodging, dining, groceries, boat rentals, and retail consumption. Participants were asked to only record expenditures that were transacted within the defined Bear Lake regional economic zone (Bear Lake and Rich Counties). While substantial money is spent on Bear Lake trips outside of the two-county regional economic zone, such as purchasing groceries, gas, and recreational equipment in Salt Lake City or Pocatello, these trip-related expenditures are not directly realized by the gateway communities surrounding Bear Lake and need to be excluded from the regional economic contribution analysis.

Surveys were strategically placed in Bear Lake state parks, marinas, and local businesses around the Lake in Idaho and Utah. Paper surveys, placed in self-addressed stamped envelopes, were distributed at entrance locations at Idaho and Utah Bear Lake state parks and at businesses (primarily ones located in Garden City, Utah and Fish Haven, Idaho). Additionally, online completion of surveys was offered in the form of QR codes placed on paper surveys and on kiosks at multiple local businesses. Surveys were distributed throughout the summer of 2021, from June through September and captured a range of overnight and day users. To increase response rate, respondents were offered a cash incentive of \$100 to be randomly awarded to five participants. When possible, Dillman survey methods were employed.⁹

Average regional expenditures were applied to the type and amount of Bear Lake annual visits using recent Bear Lake visitation trend analysis from Idaho and Utah Bear Lake state parks. These Bear Lake tourist expenditures were entered as final demand into the IMPLAN sectors for our two-county regional economic zone.

3. BEAR LAKE VISITOR CONTRIBUTIONS

Survey data were used to initiate the regional contribution analysis. After removing incomplete and unusable returned surveys, 257 final surveys were deemed usable. Of these, 144 were paper surveys and 113 were completed online. A true response rate is not possible to ascertain, due to the mixed delivery methods for survey distribution. But in terms of paper surveys, 800 total surveys were distributed in the region for a completion response rate of 18%. Non-response bias was considered, but without contact information for other Bear Lake visitors, there is no specific information concerning non-respondents. To account for the potential of non-respondents to have fewer expenditures than respondents, we made conservative estimates when extrapolating our sample expenditures to the total number of Bear Lake visits. See Appendix B for the descriptive statistics from the 2021 Bear Lake economic survey.

⁹ Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). Internet, phone, mail, and mixed-mode surveys: the tailored design method. John Wiley & Sons.

Estimated 2021 annual Bear Lake visitor expenditures were allocated to 16 industry sectors and entered into IMPLAN's impact analysis for the two-county region surrounding Bear Lake in Idaho and Utah (see **Appendix A, section A1** for methods for bridging survey expenditure categories to IMPLAN sectors). Per-visit expenditures were applied to an estimated 880,000 Bear Lake visits in 2021. In total, approximately \$48 million was spent in the region by out-ofregion visitors on their trip to Bear Lake. Table 2 illustrates the expenditure amounts and types and their correlating IMPLAN sectors that were used to initiate the contribution analysis.



Credit: Edgar Zuniga Jr.

Expenditure Type (IMPLAN Sector #)	Estimated 2021 Expenditures
Other real estate (447)	\$12,100,547
Retail - Food and beverage stores (406)	\$6,293,614
Hotels and motels, including casino hotels (507)	\$4,840,219
Retail - Gasoline stores (408)	\$3,933,457
Tenant-occupied housing (448)	\$3,630,164
Employment and payroll of state govt, other services (541)	\$3,198,821
Other accommodations (508)	\$2,420,109
Full-service restaurants (509)	\$2,187,834
Limited-service restaurants (510)	\$2,187,834
Retail - Motor vehicles and parts dealers (402)	\$1,845,921
Retail - Sporting goods, hobby, musical instrument and book stores (410)	\$1,721,112
Retail - Miscellaneous store retailers (412)	\$1,461,085
Other amusement and recreation industries (504)	\$1,092,706
Automotive repair and maintenance, except car washes (512)	\$600,506
Performing arts companies (496)	\$367,661
Amusement parks and arcades (502)	\$367,661
Total	\$48,249,251

Table 2: Bear Lake Visitor Expenditures by Spending Category*

Bear Lake visitor expenditures from Table 2 were entered as final demand in the two-county region in IMPLAN's impact analysis. A portion of the final demand is immediately leaked from the region, primarily for the margined commodities that tourist purchase including retail goods and gasoline. Leakage of tourist expenditures occurs when purchased retail goods are produced outside of the region, as is the case in most rural areas (e.g., a stand-up paddleboard purchased in

*Spending is only within Bear Lake County, Idaho and Rich County, Utah. All out-of-region expenditures for Bear Lake visits are excluded. Resident, off-season, and non-primary visits are also excluded.

Garden City was purchased at wholesale/producer prices by the Bear Lake retail vendor). In total, about \$10 million was initially leaked from the region due to the purchase of commodities manufactured outside of the region, resulting in a regional effect of \$38 million in direct output and almost \$54 million in regional output when including indirect and induced effects of Bear Lake visitation.

Expenditure Description	Total Employment**	FTE Employment***	Total Value Added****	Total Output
Other real estate	122.0	111.9	\$2,732,449	\$17,378,265
Hotels and motels, including casino hotels	57.5	52.7	\$2,522,287	\$4,840,232
Employment and payroll of state govt.	49.9	43.0	\$3,198,821	\$3,198,821
Full-service restaurants	45.8	36.9	\$1,271,060	\$2,571,853
Other accommodations	40.7	37.3	\$1,585,135	\$2,420,111
Limited-service restaurants	36.4	29.2	\$958,138	\$2,508,527
Retail - Food and beverage stores	34.7	30.2	\$1,175,808	\$2,191,573
Retail - Miscellaneous store retailers	25.7	22.4	\$340,738	\$866,134
Other amusement and recreation industries	23.6	19.5	\$468,744	\$1,108,526
Retail - Sporting goods, hobby, music	20.8	18.1	\$331,476	\$825,279
Total*	575.9	498.6	\$22,601,868	\$53,633,753

Table 3: Top Ten Affected Sectors by Employment for Bear Lake Visitor Expenditures (\$2021)

Source: IMPLAN, Bear Lake and Rich Counties 2019, Type SAM Multipliers

***Total employment converted to full-time equivalents (FTEs) based on industry-specific IMPLAN conversation rates.

*Includes all sectors, not just the 10 listed, and indirect and induced effects. **Includes full and part-time jobs.

**** Value added is the difference between an industry's total output and its intermediate inputs. It includes employee compensation, taxes, and surplus.

In addition to regional output, we calculated direct, indirect, and induced effects for employment, total labor income, and value added. Table 3 presents total effects for the most affected industry sectors in terms of employment. Bear Lake visitor expenditures generated approximately 450 direct full and part time jobs in the region across 16 industry sectors. When including indirect and induced effects, 575 full and part time jobs were generated across 121 different regional industries. Because industries supplying services in Bear Lake are seasonal, the full-time equivalent (FTE) number of jobs is also presented (see Table 3), representing approximately 500 FTE annual jobs in the Bear Lake region.

Total effects for four categories are presented below (Table 4). The ratio of total to direct effects is known as the multiplier effect. For the Bear Lake gateway communities, each dollar spent by tourists generates another 42 cents of regional output by associated suppliers and services and by recirculated wages—an output multiplier of 1.42. For every \$1,000 of income generated by Bear Lake tourist expenditures, another \$260 of income is spurred in industries associated with lodging, restaurants, and stores—an income multiplier effect of 1.26. In terms of employment, each 100 jobs related to Bear Lake visitation generate another 29 support jobs through indirect and induced effects—an employment multiplier of 1.29.

Table 4: Total Effects and Multipliers for Bear Lake Visitor Expenditures (\$2021)

Impact	Employment	Labor Income (Millions)	Value Added (Millions)	Output (Millions)
Direct Effect	447.1	\$8.97	\$17.55	\$37.66
Indirect Effect	100.4	\$1.77	\$3.38	\$12.40
Induced Effect	28.4	\$0.55	\$1.67	\$3.57
Total Effect	575.9	\$11.29	\$22.60	\$53.63
Multiplier Effect	1.29	1.26	1.29	1.42

Source: IMPLAN, Bear Lake and Rich Counties 2019, Type SAM Multipliers

*Value added is the difference between an industry's total output and its intermediate inputs. It includes employee compensation, taxes, and surplus.

Bear Lake visitor expenditures also spur significant tax receipts for local and state administrations and for federal management. Taxes are needed to help maintain roads, provide emergency services, and help manage Bear Lake recreation. Table 5 shows total regional and federal taxes spurred by Bear Lake tourists.

Table 5: Total Taxes Generated	by Bear Lake Visitor	Expenditures (\$2021)
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Tax Impact	Sub-County	County	State	Federal	Total
Direct Effect	\$744,133	\$417,848	\$1,328,827	\$2,302,679	\$4,793,488
Indirect Effect	\$120,006	\$67,392	\$225,879	\$412,878	\$826,155
Induced Effect	\$82,779	\$46,472	\$138,723	\$156,453	\$424,428
Total Effect	\$946,919	\$531,712	\$1,693,429	\$2,872,010	\$6,044,070

Source: IMPLAN, Bear Lake and Rich Counties 2019, Type SAM Multipliers

4. NATURAL AMENITY-BASED DEVELOPMENT AND BEAR LAKE

Some of the Bear Lake visitors enjoy recreating on and around the Lake so much that they purchase recreational, or second homes, near the Lake. This type of development is known as natural amenity-based development and leads to a high number of houses and cabins that are used as time-shares, short-term rentals such as those available on Airbnb or Vrbo, and personal vacation residences. Amenity development can be a positive economic influence for rural areas, leading to regional increases in tax revenues, per capita income, and employment.



Credit: Evan Hjerpe

However, too much amenity development can also create equity and cultural issues as the cost of living, particularly housing prices, can rapidly rise and new residents often have conflicting wants and needs as compared to long-term residents. Balancing amenity development in rural regions with "smart growth" is paramount to maximizing economic benefits while minimizing cultural and equity issues. Measuring the current amount of amenity development in the Bear Lake region, along with understanding past trends, provides the initial information needed to construct smart amenity development policy.

4.1 BEAR LAKE HOUSING

A report published by Envision Utah¹⁰ found that although the populations of Bear Lake and Rich Counties held relatively constant between 1990 and 2010, during the same twenty-year period the housing stocks in these Counties increased by 40 and 80 percent, respectively. Additionally, homes built more recently have been constructed on larger lots, meaning that land consumption is occurring faster than the increase in housing stock. These trends illustrate the need for additional information and better understanding of patterns and trends in second home ownership and amenity development.

We used data from the Census Bureau's American Community Survey (ACS), first conducted in 2005, to assess county-level housing trends in the Bear Lake area. Although the ACS is conducted annually, the small population of the Bear Lake area means

¹⁰ Envision Utah. Bear Lake Valley Blueprint and Toolkit: Building a Legacy Together. Available online: https://static1.squarespace.com/static/5c059ead36099b1445c1d246/t/5d0286d654deaf0001 bf40a9/1560446705687/BearlLakeFinal_1406152098.pdf.

that ACS data is only available as 5-year estimates.¹¹ Five-year estimates were first published at the zip-code level in 2010 and are most recently available for 2019. We therefore use the 2010-2014 and 2015-2019 5-year estimates to examine recent trends in seasonal housing within Bear Lake and Rich Counties and within each of the four lakeside towns – Fish Haven, Garden City, Laketown, and St. Charles.

In 2010-2014 there were a total of approximately 3,100 seasonal/vacation homes in Bear Lake and Rich Counties. The number of seasonal homes has grown in both counties since then, although growth has been statistically significant only in Rich County (asterisks in the following figures in this section indicate a statistically significant change). By 2015-2019 there were approximately 3,600 seasonal homes located in the area (a 16% increase) – roughly 1,400 and 2,200 in Bear Lake County and Rich County, respectively (Figure 3).



In addition to a greater *number* of seasonal homes, the *percent* of homes used seasonally is also higher in Rich County relative to Bear Lake County (Figure 4). In 2015-2019, 73% of the approximately 3,000 housing units in Rich County were used seasonally, while less than 30% of Rich County homes were used as primary residences. These figures are reversed for Bear Lake County; only 34% of Bear Lake County's approximately 4,100 housing units were used seasonally in 2015-2019, with the remaining 66% serving as primary residences. This suggests that although there are more housing units in Bear Lake County, the County is not subject to the same intensity of amenity development that is present in Rich County. This difference between the

11 The ACS provides 1-year estimates for areas with populations of at least 65,000, 3-year estimates for areas with populations of at least 20,000, and 5-year estimates for all areas.

Idaho and Utah sides of the Lake is becoming more pronounced, as evidenced by a statistically significant increase in the percent homes used seasonally in Rich County (but not Bear Lake County) between 2010-2014 and 2015-2019.



Figure 5 clearly illustrates that the majority of the area's seasonal homes are located in Garden City; during 2015-2019 more than 1,800 (50%) of the area's approximately 3,600 seasonal homes were located in Garden City. Additionally, although the number of vacation homes increased in most lakeside towns (St. Charles is an exception) between 2010-2014 and 2015-2019, the increase was statistically significant only in Garden City. The portion of homes occupied only seasonally is roughly equivalent in Fish Haven and Garden City – approximately 80% are seasonal (Figure 6). Laketown and St. Charles also have similar housing compositions – approximately 60% of homes in these communities are used seasonally.





Figures 7 and 8 portray the number and percent of seasonal homes within Bear Lake and Rich Counties and Bear Lake towns. A comparison of these two overlapping geographic areas indicates the spread of vacation homes beyond lakeside towns. Between 2010-2014 and 2015-2019 the number of seasonal homes increased more in Bear Lake and Rich Counties than in Bear Lake towns: seasonal homes grew by 531 (17%) in Bear Lake and Rich Counties collectively, but by only 310 (11%) in Bear Lake towns. Additionally, the increase in the percent seasonal homes was statistically significant only in Bear Lake and Rich Counties. Faster amenity development within Counties (relative to lakeside towns) suggests construction of seasonal homes is extending beyond Fish Haven, Garden City, Laketown, and St. Charles into other areas farther from the Lake.





4.2 NATURAL AMENITY-BASED DEVELOPMENT IN THE BEAR LAKE REGION

As is clear from the preceding section, the Bear Lake region is experiencing rapid amenity-based development in the form of second homes. But the development is coming primarily from seasonal, or part-time, residents and not from amenity migrants, or people who permanently relocate to the Bear Lake region for its natural amenities. Although both Counties had relatively steady populations from 1990-2010, during the 1980s both experienced very high rates of out-migration. For example, out of 356 rural counties in the contiguous Western U.S., Bear Lake County and Rich Lake County ranked in the bottom 15% for migration from 1980-2010, as both counties experienced cumulative out-migration over that period.¹²

The thirty-year period from 1980-2010 corresponded with an annual average of -10% (out-migration) migration for Bear Lake County and -8% (out-migration) annual migration for Rich County, with substantial out-migration occurring in the 1980s for both counties and again in the 2000s for Bear Lake County.¹³ While Garden City has experienced modest population growth, the two-county region surrounding Bear Lake has been struggling to

12 Hjerpe, E., Hussain, A., & Holmes, T. (2020). Amenity migration and public lands: Rise of the protected areas. Environmental Management, 66(1), 56-71.

¹³ Winkler, Richelle, Kenneth M. Johnson, Cheng Cheng, Jim Beaudoin, Paul R. Voss, and Katherine J. Curtis. Age-Specific Net Migration Estimates for US Counties, 1950-2010. Applied Population Laboratory, University of Wisconsin - Madison, 2013. <u>https://netmigration.wisc.edu/</u>. This estimate of migration excludes births and deaths and focuses on in and out going migrations.

retain permanent residents and struggling to attract new amenity migrants.

The seasonal nature of Bear Lake as such a summer destination, and thus the lack of long-term in-migration, is related in part to climate variables and the remote landscape of the region. Rich County, for example, is typically the coldest county in all of Utah with comparatively harsh winters.¹⁴ Coupled with very few total county residents, the remoteness and lack of access and infrastructure as compared to metropolitan areas, leads to less amenity migration and greater seasonal destination development.¹⁵ In a recent study of Western destinations and natural amenities, the presence of water in the generally arid West, along with relatively high housing values and large percentages of second homes, helped Rich County rank in the top 12% of rural Western counties for being a "destination" and exhibiting advanced natural amenity-based development (Bear Lake County ranked in the top 40%).¹⁶ Thus, despite not seeing year-round growth, the Bear Lake region has become a seasonal destination.

The rapid expansion of seasonal housing has also resulted in rapidly increasing house values. Total residential market value for Garden City alone more than doubled from 2016-2021 (see Figure 9), leading to a market value of \$677 million (and an assessed tax value of \$645 million) on Garden City residences in 2021.¹⁷ Figure 9 also illustrates that secondary residences in Garden City account for almost ten times the collective market value of primary residences. Figure 10 portrays the average market value for primary and secondary residences in Garden City.

15 Hjerpe, E., Hussain, A., & Holmes, T. (2020). Amenity migration and public lands: Rise of the protected areas. Environmental Management, 66(1), 56-71.

16 Hjerpe, E., Armatas, C., & Haefele, M. (2022). Amenity-based development and protected areas in the American West. Land Use Policy, 116, 106064.

17 Personal communication with Rich County Assessor Kim Wilson in December 2021. We were unable to obtain similar data for Bear Lake County towns.







Source: Rich County, UT Assessor.

*Primary and secondary residences include residential buildings, residential condos, and residential house trailers.

If Bear Lake becomes diminished or degraded in the future, it is likely that the strong economic demand for Bear Lake housing would be reduced, leading to slowing development of new houses and subsequent slowing in the collection of local lodging and property taxes. Given the strong indirect and induced effects shown in the contribution analysis, other economic activity associated with lodging and seasonal visitors in these communities would also be at risk if Bear Lake water levels are substantially reduced or its quality degraded. Amenity-based development that markets and brands the Bear Lake region as a world-class family destination can further economic development in the region.

While the Bear Lake region is primed to continue amenity-based development, there are some downsides of being a destination for numerous visitors and seasonal residents including overuse, crowding, run-away housing costs, and associated

¹⁴ McGranahan, D. A. (1999). Natural amenities drive rural population change (No. 1473-2016-120765).

ecological degradation.¹⁸ But given the mechanizations of amenity migration and development in the rural West, Bear Lake seasonal visitation and seasonal housing (along with expanding recreational/tourism services), represent the primary form of economic development available to the region. Increasing full-time residents and migration substantially to Bear Lake communities, which would expand *high-wage* infilling service sectors, is unlikely to occur soon given the significant variables that the region does not have in its favor (e.g., warm winters, good infrastructure/access, protected areas like national park, monument, or Wilderness, or a retirement destination).¹⁹

5. ADDITIONAL ECONOMIC CONTRIBUTIONS AND VALUES OF BEAR LAKE

Natural amenities such as Bear Lake provide numerous high-quality ecosystem services²⁰ both onsite and offsite that result in both market and non-market values. Documenting the non-monetary contributions of Bear Lake ecosystem services, along with some of the marketed ecosystem services, can provide valuable information when determining trade-offs among various Bear Lake water uses. In this section, we start with a synopsis of Bear Lake hydrology and water management and then look at other direct uses and passive uses of Bear Lake water, aside from the previously covered recreational market contributions.

19 Ibid.

20 Ecosystem services are the benefits that nature provide to humans and are a result of how Bear Lake's natural capital, or wealth, is utilized by society. Ecosystem services are typically categorized as provisioning, cultural, regulating, or supporting services. Provisioning services include the production of food, drinking water, and materials for buildings, while cultural services include opportunities for outdoor exploration and existence and bequest values of just knowing that Bear Lake will continue to have ample water of high-quality. Regulating and supporting services are the biophysical processes that help regulate regional climate and provide the building blocks for biodiversity and natural goods and services. For more information see Braat, L. C., & De Groot, R. (2012). The ecosystem services agenda: bridging the worlds of natural science and economics, conservation and development, and public and private policy. Ecosystem services, 1(1), 4-15.



Credit: Andrew Kalat

5.1 BEAR LAKE HYDROLOGY AND WATER MANAGEMENT

Regarded as one of the oldest lakes in North America, Bear Lake has persisted through wet and dry cycles for at least 200 thousand years, and likely much longer. Recurring fault movements and resultant earthquakes over possibly millions of years created the Lake, pushing the Bear Lake Plateau and Preuss Range on the eastern shore of the Lake upwards. The plunging slope of the eastern shore is a product of movement of the major Bear Lake Fault, contrasting with the relatively gentle slope of the western shore inclining to the Bear River Range.²¹ Its unique history makes the Lake a valuable ancient record for paleontologists studying the past climate for the entire Upper Colorado River Basin.²²

Along with snowmelt runoff, underground faults and fractures and karst drainages in the Bear River Range are primary sources of water inflow to Bear Lake when the Lake isn't connected to the Bear River.²³ Streams contributing to Bear Lake include perennial streams located primarily on the western shore: Big Spring Creek, Swan Creek, Fish Haven Creek, and St. Charles Creek. Seasonal or snowmeltdriven streams are located on the east shore: North Eden and South Eden Creeks. During drought cycles and low precipitation years, all streams except Swan

23 Ibid.

¹⁸ For a full review of tradeoffs associated with natural amenity-based development in the rural West, please see Hjerpe, E., Armatas, C., & Haefele, M. (2022). Amenity-based development and protected areas in the American West. Land Use Policy, 116, 106064.

²¹ Davis, J., & Milligan, M. (2011). Why is Bear Lake So Blue?: And Other Commonly Asked Questions (Vol. 96). Utah Geological Survey.

²² Rosenbaum, J. G., & Kaufman, D. S. (2009). Introduction to paleoenvironments of Bear Lake, Utah and Idaho, and its catchment. Geol. Soc. Am, 450.

Creek dry up or are dewatered for irrigation purposes. Swan Creek is protected as a culinary water supply and is rarely dewatered.²⁴

Most of Bear Lake is fed by adjacent sources, but the Bear River is the largest outside tributary into Bear Lake, both in length and volume, contributing about 30% of total inflows into Bear Lake.²⁵ Originating on the north slope of the Uinta Mountains, the Bear River crosses the borders of Utah, Wyoming, and Idaho 5 times before terminating in the Great Salt Lake. Over the past 200 thousand years, the Bear River has naturally connected to Bear Lake multiple times, but not in recent history. However, to maximize the use of Bear Lake as storage for irrigation and power generation, between 1909 and 1918 the Bear River was diverted into Bear Lake. Since 1918 the Bear River has been diverted through Stewart Dam into the Rainbow Canal into Mud Lake, where it flows through an earthen causeway into Bear Lake. Storage water from Bear Lake is pumped through the Lifton Pumping Station into the Outlet Canal to downstream users of Bear River water.²⁶

The portion of Bear Lake that can operate as a water storage reservoir for irrigation and flood control purposes is from 5,902 to 5,923.65 feet,²⁷ or the top 1.4 million acre-feet of Bear Lake's 6.5 million acre-feet of storage volume. Human controlled management of the lake level results in fluctuations beyond those caused by natural weather and climatic conditions, giving rise to specific concerns on the part of multiple stakeholders with interests that benefit from different lake levels.²⁸

Since 1958, allocation of the highly prized waters of the Bear River has been governed by the Bear River Compact. The agreement between Utah, Idaho, and Wyoming (and ratified by Congress) is carried out by the Bear River Commission, composed of nine gubernatorial-appointed commissioners and one federal commissioner. The compact was updated in 1980 and is reviewed periodically, most recently in 2017. Its stated purpose is "to remove the causes of present and future controversy over the distribution and use of the waters of the Bear River; to provide for efficient use of water for multiple purposes; to permit additional development of the water resources of Bear River; to promote interstate comity; and to accomplish an equitable apportionment of the waters."²⁹

PacifiCorp manages the flow of the Bear River itself in the Bear River Basin's "Lower Division," which is the portion of the Bear River and its tributaries between Stewart Dam and the Great Salt Lake. including Bear Lake and its tributary drainage. PacifiCorp is a leading utility in the West serving about 1.7 million customers across 136,000 square miles in six Western states.³⁰ Over time, PacifiCorp and its predecessors developed facilities and perfected water rights on Bear Lake which enable the company to regulate the reservoir portion. Operation of Stewart Diversion Dam, Rainbow Inlet Canal, the Outlet Canal and the Lifton Pumping Plant provides PacifiCorp with controlled storage in Bear Lake through a maximum range of 21.65 feet (elevations 5902.00 feet to 5923.65 feet), which represents 1,452,000 acre-feet of storage.³¹

Bear Lake ultimately serves different purposes for different uses, described in the following paragraphs. There is not one lake level that is optimal for all users.³² Since modern water development began in the region in the 1800s, water users with an interest in Bear Lake have worked to minimize contention over the waters and optimize their use for many, sometimes conflicting, demands. Over the years, these negotiations have resulted in legally-binding agreements (Table 6), which have been amended periodically as new concerns arise. Key Bear Lake water levels include those indicated in Figure 11.

32 Utah Department of Forestry, Fire and State Lands. P. A-3.

²⁴ Lamarra, V., Liff, C., & Carter, J. (1986). Hydrology of Bear Lake basin and its impact on the trophic state of Bear Lake, Utah-Idaho. The Great Basin Naturalist, 690-705.

²⁵ Ibid

²⁶ Palacios, P., Luecke, C., & Robinson, J. (2007). Bear Lake basin: history, geology, biology, people. Natural Resources and Environmental Issues, 14(1), 1.

²⁷ All elevations are given in the Utah Power & Light Bear Lake datum.

²⁸ Utah Department of Forestry, Fire and State Lands (FFSL). (2022). Final Bear Lake Comprehensive Management Plan. P. A-2. Available at: <u>https://ffsl.utah.gov/state-lands/bear-lake/bear-lake-plans/.</u>

²⁹ Bear River Commission. (1958). Bear River Commission Web site home page. Accessed November 2021. Available at: <u>https://bearrivercommission.org/.</u>

³⁰ PacifiCorp. (2021). PacifiCorp Just the Facts. Accessed February 15, 2022. Available at: <u>https://www.brkenergy.com/our-businesses/pacificorp.</u>

³¹ Bear River Commission. (1997). Findings Concerning the Need for Compact Revision. Available at: <u>https://waterrights.utah.gov/techinfo/bearrivc/bear20.html</u>.

Table 6: Legally-Binding Agreements Regarding Bear Lake Water Distribution

Document	Date	Legal Scope
Dietrich Decree	1920	Bear River Water Rights in Idaho
Kimball Decree	1922	Bear River Water Rights in Utah
Bear River Compact (Amended)	1958 (1980, 1997)	Distribution and development of Bear River in UT, ID, and WY
Operations Agreement for PacifiCorp's Bear River System	2000	Confirms PacifiCorp's historic use of water rights for irrigation
Bear Lake Settlement Agreement (Amended)	1995 (2004)	Reduces allocations to irrigators based on annual projected lake levels



Source: USGS Surface-Water Monthly Statistics for Utah. Accessed December 2021. Available at: <u>https://</u>nwis.waterdata.usgs.gov/ut/nwis/monthly/.

5.2 DOWNSTREAM MARKETED USES OF BEAR LAKE WATER-POWER GENERATION AND IRRIGATION

Historically, the Lake was used during the non-irrigation season for the sole purpose of power generation, which led to low lake levels for many years. Since the late 1950s, power production on the Bear River system has become a minor part of the total generation facilities of PacifiCorp. Under the Bear River Compact, when Bear Lake is drawn down to its established "irrigation reserve" level, 5,914.7 feet, water can only be released for irrigation purposes, although power can be generated during those releases.³³ A 1999 agreement between the states, PacifiCorp, and ScottishPower specifies that "the use of water for hydropower generation [is] incidental to



Source: US Energy Information Administration. Monthly power generation at Cutler, Grace, Last Chance, Oneida, and Soda Power Generation Facilities. Accessed December 2021. https://www.eia.gov/beta/electricity/data/browser/#/plant.

the other purposes for which the water is being released."³⁴ Figure 12 illustrates recent power generation from dams downstream from Bear Lake.

33 Bear River Commission. (1980). Bear River Compact As Amended.34 Operations Agreement for PacifiCorp's Bear River System. (2000)

Entities that are contracted with PacifiCorp to use the water for irrigation in Idaho include: Last Chance Canal Company, West Cache Canal Company, Cub River Canal Company, and many small individual pumping contracts. For Utah the entities include Cub River Canal Company, Bear River Canal Company, and many small individual pumping contracts.

Each year, PacifiCorp allocates up to a total of 245,000 acre-feet of Bear Lake storage water to irrigation contractors serving approximately 150,000 acres. PacifiCorp presents an estimate of the Lake's high elevation at an annual stakeholder meeting in April and indicates the allowable allocation of storage for irrigation for the year, known as the PacifiCorp March 31 Target Elevation of Bear Lake. The allocation decreases incrementally when the estimated high elevation is below the full irrigation level of 5,914.7 feet, until an allocation of zero when the estimated high elevation is 5,904 feet or lower. Table 7 shows the acre-feet of water that will be available for irrigators and available for Lake recovery in a year, given the estimated lake elevation.

Estimated Lake Elevation (feet)	Calculated Storage Content (acre feet)	Estimated Annual Allocation to Irrigators (acre feet)	Estimated Percent of Full Annual Allocation to Irrigators	Estimated Balance for Lake Recovery (acre feet)
5923.65 (Full)	1,421,00	245,000		
5914.7	801,000	230,000	100%	429,000
5914	754,000	225,000	98%	387,000
5913	688,000	220,000	96%	326,000
5912	622,000	215,000	93%	264,000
5911	557,000	210,000	91%	205,000
5910	492,000	205,000	89%	150,000
5909	428,000	181,000	79%	105,000
5908	365,000	168,000	73%	55,000
5907	303,000	141,000	61%	19,000
5906	241,000	104,000	45%	(6,000)
5905	180,000	55,000	24%	(17,000)
5904	119,000	0	0%	0
5903	59,000	0	0%	0
5902	-	0	0%	0

Table 7: Bear Lake Irrigation Water Allocation and Recovery

Source: Amended Bear Lake Settlement Agreement, 2004.

The proportion of each canal company's water distributions that is diverted from Bear Lake storage varies greatly year to year, ranging from 100% to none at all (see Figure 13). In years with abundant precipitation, natural flows are sufficient for irrigation and less Lake water is used.



Source: Geisler, E. (2022). Hydrologist, Idaho Division of Water Rights. Personal communication, Jan. 7, 2022.

Atkin, William (2022). Engineer, Utah Division of Water Rights. Personal communication, Jan. 12, 2022.

An estimated three quarters of irrigated acreage is used for agriculture, and alfalfa and other hay make up 40% of all irrigated crops. Figure 14 shows the uses of land irrigated with water rights from Bear Lake.



Source: Utah Geospatial Resource Center, Department of Natural Resources. (2020). Utah Water Related Land Use. Shapefile accessed June 17, 2021. Available at: https://gis.utah.gov/data/planning/water-related-land/.

It is difficult to accurately estimate the economic contribution of Bear Lake water used for agricultural irrigation because of the variability of crops grown, field rotations, and resulting water use from Bear Lake. However, three points should be noted when considering tradeoffs between agricultural use and other uses of Bear Lake.

First, natural water sources commonly stop flowing before harvest time in regions receiving irrigation water from Bear Lake. Without reliable distribution of stored water, these regions would typically not have

access to necessary quantities of irrigation water before harvest, making any large-scale commercial farming infeasible.

Second, Bear Lake volume does not equate directly to usable or deliverable water for agricultural irrigation. Outcomes for which the lake level is managed include downstream flood mitigation, which sometimes necessitate careful timing of water releases outside of irrigation season and before actual annual runoff amounts can be known. A recently developed model simulating operations of the Lower Bear River system was used to determine whether more water could have been stored in Bear Lake between 1980 and 2018 using different management methods. The study found that while it is technically possible to increase the PacifiCorp March 31 Target Elevation of Bear Lake, doing so would create follow-on risks for downstream flooding that would require periodic inundation of downstream agricultural land.³⁵

Third, agriculture upstream from Bear Lake and in the surrounding watershed poses risks to water quality in Bear River and consequently in Bear Lake. Agricultural activity, including livestock grazing in the Central Bear River region upstream from Bear Lake, is contributing to sediment and nutrient loads in the Bear River and many tributaries that exceed Total Maximum Daily Load (TMDL) levels. TMDL levels are levels of water pollution determined acceptable by the states for ensuring water quality doesn't impede a water body's beneficial uses in compliance with federal Clean Water Act standards. Agricultural irrigation water runoff and leaching into groundwater carries both erosion sediments and fertilizer nutrients, including phosphorous. Private landowners, non-profit entities, and federal and state agencies work on projects to mitigate the effects of agriculture on the Bear River system, and cost estimates for implementation are in the millions of dollars.³⁶

35 Serago, J.M., Connely, B.K., Hoekema, D.J., Geisler, E.T., Burton, C., Neumann, D.W. (2020). Impacts on Bear Lake Storage under Alternative High-Runoff Management Operations. Available at: <u>https://water.utah.gov/water-reports/</u>

5.3 NON-MARKET VALUES FOR BEAR LAKE CONSERVATION AND RECREATION

The non-market values of retaining water in Bear Lake, as opposed to using it for another service, are opportunity costs that are typically not fully considered when utilizing a quasi-public good like Bear Lake. Non-market valuation is typically assessed by conducting or transferring stated preference studies such as choice experiments or contingent valuations of the resource. The mechanism for most stated preference studies is ascertaining an individual's willingness-to-pay for conservation and recreation.³⁷

Much of the willingness to pay for protecting and maintaining landscapes comes from wanting to protect plant and animals that comprise an ecosystem. Bear Lake provides primarily aquatic and wetland habitat that sustains a complex web of fish, birds, and land-based wildlife. Few are federally listed species, but many are considered species of greatest conservation need (SGCN) by Idaho and Utah. The Bear Lake valley is primarily sagebrush shrubland leading to conifer forests at higher elevations and is home to land-based animals that include big game attractive to hunters.³⁸ Thorough inventories of flora and fauna supported by Bear Lake can be found in cited sources. Wildlife habitat is significantly impacted by both lake levels themselves and conditions created by fluctuating lake levels.³⁹

The Lake provides habitat for a variety of fish species, including four endemic species which are found nowhere else. Habitat supporting the food web for fish in Bear Lake is vulnerable to lake level fluctuations, and there is a relatively low population of key feed species available in the Lake because of the low nutrient content of the mineral water that makes up a majority of Bear Lake water. Lower lake levels significantly reduce habitat that endemic species rely on for survival.

39 FFSL. (2022) p. 45-94.

³⁶ Smith, S., Banks, C. (2008). Bear Lake Subbasin TMDL Implementation Plan for Agriculture. Available at: https://www.deq.idaho.gov/water-quality/surface-water/total-maximum-daily-loads/.

³⁷ Loomis, J. B., & Walsh, R. G. (1997). Recreation economic decisions: comparing benefits and costs. Venture Publishing, Incorporated.

³⁸ Palacios, Patsy; Luecke, Chris; and Robinson, Justin (2007) "Biological resources of the Bear Lake basin, Utah," Natural Resources and Environmental Issues: Vol. 14, Article 14. Available at: <u>https://digitalcommons.</u> <u>usu.edu/nrei/vol14/iss1/14</u>.



Credit: Brent Lawrence

Abutting the north shore of the Lake is the Bear Lake National Wildlife Refuge, an 18,169-acre area encompassing Mud Lake and surrounding public and privately-owned wetlands, designated as a Refuge in 1968 to protect habitat for migratory birds and other waterfowl. The Refuge is significant in the path of migratory birds because wetland is scarce in the Intermountain West, making up just 1 percent of total surface area.⁴⁰ Approximately 100 species of migratory birds nest at Bear Lake National Wildlife Refuge,⁴¹ and more than 150 bird species can be found across the Lake itself.⁴² While none of these species are threatened or endangered, many birds are of special interest to hunting groups and conservation groups, and management plans for the region reflect population targets and habitat restoration and management goals. The sagebrush steppe east of Bear Lake hosts one of the three strongest sage grouse populations in Utah. More than 12 thousand people visited the Bear Lake NWR in 2021, mostly for wildlife viewing, hiking, and photography.⁴³

We offer a rough estimate for the prominent non-market values associated with Bear Lake, including the public's willingness-to-pay for direct recreational use of Bear Lake and the passive uses of existence, option, and bequest values. The first direct recreational use value is known as consumer surplus and is the willingness to pay, above and

40 US Fish & Wildlife Service. (2013). Bear Lake National Wildlife Refuge and Oxford Slough Waterfowl Production Area Comprehensive Conservation Plan. Available at: <u>https://www.fws.gov/program/</u> <u>national-wildlife-refuge-system/library.</u>

41 Bear Lake National Wildlife Refuge, US Fish and Wildlife Service. (2013).

42 FFSL. (2022) p. 83-89

43 Jirak, J. (2022). Refuge Manager, Bear Lake National Wildlife Refuge. Personal communication.

beyond, the amount paid by Bear Lake tourists for their vacation. That is, many Bear Lake visitors value Bear Lake recreation so much that they would gladly pay more than the amount required to access Bear Lake. In addition to consumer surplus for recreation, numerous people would pay to protect Bear Lake from diminished and degraded water levels, even if they do not visit Bear Lake, for simply knowing that Bear Lake exists and for bequeathing the Bear Lake experience to future generations.

Contingent valuations and choice experiments, utilizing willingness-to-pay measures, are the appropriate method for estimating the non-market values associated with Bear Lake conservation and recreation. With no previous study of Bear Lake conservation values, we conduct a simple benefit transfer of a previous study that measured the willingness-to-pay for protecting Mono Lake in California from having much of its water diverted to the city of Los Angeles.⁴⁴ While Mono Lake is a hypersaline lake, akin to the Great Salt Lake, Mono Lake is highly valued for its migratory bird habitat and preservation values in similar manners as Bear Lake.

Due to differences in Mono and Bear Lakes, we use the most conservative estimates from the Loomis study⁴⁵ for willingness-to-pay, which indicates a monthly household willingness-to-pay of \$22 (or \$264 per year) when inflated to 2021 dollars. Extrapolation to households of Idaho and Utah (1.68 million) indicates a potential societal willingness to pay

45 Ibid.

⁴⁴ Loomis, J. B. (1987). Balancing public trust resources of Mono Lake and Los Angeles' water right: An economic approach. Water Resources Research, 23(8), 1449-1456.

of \$440 million annually. The willingness-to-pay value derived using this benefits transfer method is bound to be quite different than the real conservation value held for Bear Lake. As such, this estimate should be taken to have a wide range of confidence intervals. The main point is that society is likely willing to pay hundreds of million dollars to preserve water quantities and qualities in Bear Lake.

6. TYING IT ALL TOGETHER: CONSERVATION ECONOMICS IN THE BEAR LAKE REGION

In this report, the regional economic contributions of Bear Lake have been quantified and evaluated in terms of visitor expenditures, amenity-based development of seasonal housing, and market and non-market values of Bear Lake water. Outdoor recreation and tourism in gateway communities adjacent to Bear Lake are extremely important economic engines for the area. The natural appeal of Bear Lake is increasingly attracting investments in second homes and vacation rentals. The tourism and amenity-based development in the Bear Lake Valley is surrounded by traditional rural communities that ranch and farm and are also dependent on Bear River water. All Bear Lake users (consumers) have an interest in preserving the economic and cultural opportunities afforded by Bear Lake.

We have detailed the regional economic contributions of Bear Lake visitors to Bear Lake and Rich Counties, finding an annual injection of \$54 million that supports almost 600 full and part-time jobs when including multiplier effects. These regional contributions from Bear Lake tourist expenditures are also absorbed by the Idaho and Utah state economies. There are also additional purchases, not captured in our regional survey of Bear Lake visitors, made by visitors outside of the Bear Lake regional economy that make further state contributions to outdoor recreation sales. The economic contributions of Bear Lake visitors are a substantial part of the regional economy but play a more supporting role in total outdoor recreation contributions for the states of Idaho and Utah. Both Idaho and Utah have extensive public lands and natural amenities that draw millions of annual visitors to enjoy outdoor recreation in these states. The Bureau of Economic Analysis (BEA) estimates that outdoor recreation industries, in 2020, generated 30,000 jobs and \$2.24 billion of value-added in Idaho and 62,000 jobs and \$4.92 billion of value-added in Utah.⁴⁶ Illustrating the values associated with Bear Lake visitation can help shine a light on the importance of all outdoor recreation and state park visitation throughout Idaho and Utah.



Credit: Ricketyus

6.1 LOOKING TO THE FUTURE

According to the U.S. Drought Monitor,⁴⁷ the entire Bear River watershed is currently in severe drought conditions and at the terminus, the Great Salt Lake and other parts of Utah are experiencing extreme drought conditions. The pressures on water supply from the Bear River system and other waters in Utah and Idaho are only increasing, as evidenced by water diversion plans stemming from the 1991 Bear River Water Development Act in Utah⁴⁸ and crippling water decreases in Lake Powell and other

⁴⁶ Available at: <u>https://www.bea.gov/sites/default/files/2021-11/orsa1121.pdf</u>. Value-added includes employee compensation, taxes, and surplus.

⁴⁷ Available at: https://droughtmonitor.unl.edu/. Last accessed on April 5th, 2022.

⁴⁸ https://water.utah.gov/wp-content/uploads/2019/11/Bear-River-Development-Executive-Summary-Final. pdf.

regions such as Cedar City.⁴⁹ While Bear Lake may be better suited to withstanding drought conditions than other lakes and reservoirs in Idaho and Utah, decreasing water supplies throughout the Inter-Mountain West should put all Bear Lake stakeholders on notice. Additionally, pesticide, fertilizer, septic systems, and other chemical treatments within the Bear Lake watershed can damage the quality of the water. This in turn diminishes ecosystem services produced by Bear Lake.

The regional economic contributions, the amenity-based development, and the ecosystem services are all dependent on sufficient water quality and quantities in Bear Lake. How could these values be affected by changes in Bear Lake water and management? While we do not know exactly how changing water levels would affect recreational or housing demand, we can categorize it as a threat to the regional economy dependent on Bear Lake. The Utah Forestry, Fire and State Lands Comprehensive Management Plan (CMP)⁵⁰ for Bear Lake includes a matrix of effects on recreation and fish and wildlife that correspond to various Bear Lake water levels. Reduced Bear Lake water levels would have different effects across all industries and activities, but greatly reduced levels are generally correlated with adverse resource effects. Likewise. lower levels in the Bear Lake system translate to reduced water available to irrigators and reduced levels of willingness-to-pay for non-market values.

A triple bottom line of considering the environmental, economic, and social factors for future development is a good perspective to encapsulate conservation economics and the sustainability of Bear Lake economic contributions.⁵¹ Sustainability requires a balancing of these bottom lines but must start with data collection and monitoring to understand current impacts and effects. Limiting environmental impacts in the Bear Lake region will allow for current and future economic development opportunities. Continuing transparent and inclusive

49 https://www.thespectrum.com/story/news/2021/12/08/ debate-pine-valley-water-pipeline-cedar-city-iron-county/6435497001/. 50 FFSL. (2022) p. A-3. Lake level resource matrix.

51 Elkington, J. (1998). Accounting for the triple bottom line. Measuring business excellence.

planning for the region will boost social participation and can help to retain rural lifestyles, while embracing the seasonal destination that has become Bear Lake.



Credit: Kimberly Felix

APPENDIX A: INPUT-OUTPUT METHOD, IMPLAN, AND BEAR LAKE REGIONAL ECONOMIC CONTRIBUTION ANALYSIS

IMPLAN modeling software incorporates an inputoutput (I-O) framework that balances industry inputs and outputs to follow the relative influence of each sector.⁵² I-O frameworks are premised on economic base theories where a region's exports are the main source of outside money to enter the region. The exporting industries, or basic sectors of the economy, are responsible for the infilling of trade and service businesses in regional communities. Outdoor recreation and nature tourism have been treated similarly to export industries as they bring outside money into the region for the consumption of a local product, Bear Lake recreation.53 IMPLAN incorporates Social Accounting Matrices (SAMs) that have internalized regional economy sectors of institutions (e.g., government payments) and households to better model regional activity.54

IMPLAN is widely used for assessing economic impacts and contributions but comes with a number of theoretical assumptions that need to be understood for appropriate contribution descriptions. It is important to remember that regional contribution and IMPLAN analyses represent only a partial view of overall economic values. Economic contribution and impact analyses are used to estimate market impacts such as employment numbers and output. These market contributions are different from the values associated with the societal economic benefits and costs of land use decisions that are used to examine economic efficiency with Benefit-Cost Analysis (BCA). Costs and benefits address the changes in use and passive use values of land management, whereas regional economic contribution analysis traces

52 https://www.implan.com/resources/.

53 Hjerpe, E.E. 2018. Outdoor recreation as a sustainable export industry: A case study of the boundary waters wilderness. Ecological Economics, 146, 60-68.

54 Miller, R. E., & Blair, P. D. 2009. Input-output analysis: foundations and extensions. Cambridge University Press. the movement of new wealth through a regional economy under the perspective of jobs, taxes, output, and income. Importantly, contribution analysis does not suggest which projects yield the greatest benefit to society. Rather, contribution analysis illustrates the level of connectivity among industry sectors and net changes in market indicators. As such, regional contribution analysis of Bear Lake visitor expenditures does not capture many other values held by tourists and the public for natural areas and should ultimately be combined with a number of economic modeling approaches.⁵⁵

There are rigorous methodological assumptions incorporated into IMPLAN that have implications for the presentation of results. IMPLAN's impact analyses only present a snapshot in time and do not dynamically adjust forward in anticipation of subsequent economic changes as done in computable general equilibrium (CGE) models. IMPLAN allows the researcher to trace the backward linkages associated with a particular economic activity. Other assumptions, such as fixed technology, constant return to scales, and a lack of supply constraints, lead to a linear and slightly simplified model of total regional economic activity. Despite rigid economic assumptions, IMPLAN has been shown to be highly credible for contribution analysis of outdoor recreation in rural areas in comparison to other models,⁵⁶ and is often preferred for its affordability and straightforward approach.

A1: VISITOR EXPENDITURES BY CATEGORY AND BRIDGING TO IMPLAN SECTORS

To conduct regional economic contribution analysis, we converted our data to be similar to the total number of visits estimated by Utah and Idaho Bear Lake state parks (per-person per day/night). We convert our average expenditure data from our survey sample to per-person averages by dividing average expenditures by the reported average group

⁵⁵ Driml, S. M. 1997. Bringing ecological economics out of the wilderness. Ecological Economics, 23(2), 145-153.

⁵⁶ Bergstrom, J. C., Cordell, H. K., Ashley, G. A., & Watson, A. E. 1990. Economic impacts of recreational spending on rural areas: a case study. Economic Development Quarterly, 4(1), 29-39; Crihfield, J. B., & Campbell Jr, H. S. (1991). Evaluating alternative regional planning models. Growth and Change, 22(2), 1-16.

size (10.14 people per visiting group). Then, average per-person expenditures for each spending category are further divided by the average number of nights stayed in the region (3.25 nights per visiting group). Table A1 illustrates the per-person, per-night average expenditures for sampled Bear Lake visits. The 12% of visits to Bear Lake for day-use only are included on a per person, per day basis.

Expenditure Category	Sample Group Mean	Sample Group Min	Sample Group Max	Per Visit*** Average Expenditures
Lodging*	\$ 906.30	0	12000	\$ 27.50
Rental Boats/ATVs	\$ 163.68	0	2500	\$ 4.97
Groceries	\$ 235.69	0	5000	\$ 7.15
Restaurants	\$ 163.86	0	2000	\$ 4.97
Gas oil	\$ 147.30	0	2000	\$ 4.47
Vehicle Repair	\$ 22.49	0	1000	\$ 0.68
Entertainment	\$ 27.54	0	500	\$ 0.84
Boating Equipment	\$ 28.21	0	5400	\$ 0.86
Recreational Equipment	\$ 21.96	0	500	\$ 0.67
Fishing Gear	\$ 1.58	0	200	\$ 0.05
Firewood	\$ 1.54	0	100	\$ 0.05
Clothing	\$ 35.95	0	1600	\$ 1.09
Fish License	\$ 3.12	0	200	\$ 0.09
State Park Fee**	\$ 30.44	0	300	\$ 0.92
Misc.	\$ 17.23	0	500	\$ 0.52

Table A1: Average Bear Lake Visitor Expenditures for 2021 (n = 257)

*Lodging includes camping fees at state parks.

**State park fees represent day-use entrance fees and were estimated by group activities, survey distribution location, and reported total revenue for Idaho and Utah Bear Lake state parks.

***Visits represent one individual staying in the region for one night, or one individual visiting for one day. Per visit expenditures are the sample group mean divided by the average group size and average nights stayed.

Visitor expenditures categories from the survey must be bridged to the appropriate IMPLAN sector when conducting contribution analysis. IMPLAN provides a bridge from more detailed individual NAICS industry sectors to IMPLAN's 546 sector scheme.⁵⁷ The following table (A2) illustrates the bridge from survey expenditure categories to IMPLAN sectors used for the Bear Lake regional contribution analysis. Commodities such as retail goods (e.g., gasoline and recreational equipment) were margined in order to convert purchaser prices into producer prices contained in the social accounting matrix (SAM).

Expenditure Category	Percent Allocated	IMPLAN Sector#	IMPLAN Sector Description
Lodging	50%	447	Other real estate
	15%	448	Tenant-occupied housing
	20%	507	Hotels and motels, including casino hotels
	10%	508	Other accommodations
	5%	541	Employment and payroll of state govt, other services
Rental Boats/ATVs	25%	541	Employment and payroll of state govt, other services
	25%	504	Other amusement and recreation industries
	25%	402	Retail - Motor vehicles and parts dealers
	25%	410	Retail - Sporting goods, hobby, musical instrument and book stores
Groceries	100%	406	Retail - Food and beverage stores
Restaurants	50%	509	Full-service restaurants
	50%	510	Limited-service restaurants
Gasoil	100%	408	Retail - Gasoline stores
Vehicle Repair	100%	512	Automotive repair and maintenance, except car washes
Entertainment	50%	502	Amusement parks and arcades
	50%	496	Performing arts companies
Boating Equipment	100%	402	Retail - Motor vehicles and parts dealers
Recreational Equipment	100%	410	Retail - Sporting goods, hobby, musical instrument and book stores
Fishing Gear	100%	410	Retail - Sporting goods, hobby, musical instrument and book stores
Firewood	100%	412	Retail - Miscellaneous store retailers
Clothing	100%	412	Retail - Miscellaneous store retailers
Fish License	100%	541	Employment and payroll of state govt, other services
State Park Fee	100%	541	Employment and payroll of state govt, other services
Misc. Retail	100%	412	Retail - Miscellaneous store retailers

Table A2: Bridge for Survey Expenditure Categories to IMPLAN Sectors

A2: EXTRAPOLATING SURVEY EXPENDITURES TO TOTAL BEAR LAKE VISITATION

For extrapolating our expenditure averages to the total number of assumed Bear Lake visitors, we need to compare apples to apples. State park visitation data are recorded as the entrance of one visitor to facilities. These visitors can be campers or day-use visitors, and thus include repeat visitors. The expenditure data from our survey represent total expenditures for an entire group, often over multiple days. Summarizing our expenditure data on a per-person, per-day/night basis allows us to apply these average expenditures to our estimated total visitation.

Per standard economic theory on conducting regional contribution analysis, we only apply our expenditure averages to the percent of our sample that lived outside of the region (96%).⁵⁸ Of those residing outside of the regional economic zone, we also limit our extrapolation to those for whom visiting Bear Lake was the primary purpose of their trip (93%).⁵⁹ Thus, we reduce the total amount of visits that our expenditure averages are extrapolated to by 11% so as not to appropriate in-region, recirculated dollars or non-primary visits to the regional contribution analysis.

To be conservative, we also do not include off-season visitation in our contribution analysis. Because 90% of Bear Lake visitation occurs from June through September, we reduce the total number of visits to be used for regional contribution analysis by 10% so as not to include off-season visitors (October-May). While these off-season visitors do further contribute to regional visitor expenditures, applying expenditure averages for summer use (June-September) to off-season visitors would not be accurate. To account for in-region residents, non-primary trip takers, and off-season visitors, we reduce our total estimated visits for extrapolation by 21%. Our final average expenditures are applied to an estimated 880,000 total visits to Bear Lake in the summer season of 2021.



Credit: Kevin

APPENDIX B: BEAR LAKE VISITOR DESCRIPTIVE STATISTICS

The overall sample size for the Bear Lake economic survey was 257 survey respondents. The average group size of for respondents was 10.14 people, with a minimum of one person and a maximum of 75 people. This indicates that Bear Lake visitation is characterized by large groups, often used as a destination for family vacations.

The average trip length was 3.25 nights, with a minimum of zero nights (i.e., day trips) and a maximum of 11 nights. Over 6% of survey respondents resided in the region year-round, while 14% either had a second home in the region or access to a seasonal house. For all respondents, 2% resided in the region year-round and had a second home in the region. For 7% of survey respondents, visiting Bear Lake was not the primary reason for their trip (e.g., passing through to Yellowstone or on business). Figure B1 shows the location of visitor origins from our survey respondents and illustrates the export nature of Bear Lake tourism. However, the majority (80%) of the sample resided within the states of Idaho and Utah.

⁵⁸ Stynes, D. J., E. M. White, and L. A. Leefers. 2002. Spending profiles of national forest visitors: years 2000 and 2001. Technical Report to the US Forest Service; White, E. M., D. B. Gooding, and D. J. Stynes. 2013. Estimation of national forest visitor spending averages from National visitor use monitoring: Round 2. PNW-GTR-883. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station.



*Visitor origins pictured represent only a fraction of total estimated Bear Lake annual visitors (n = 255). Additional visitor origins from Alaska and S. Korea not pictured.

Figure B2 presents the activities in which Bear Lake visitors participate. Beach lounging and associated water activities were pursued by almost every group that visits Bear Lake.



Bear Lake visitors have a range of lodging types from which to choose. Figure B3 shows the various lodging types and visitor dispersion.



Finally, Bear Lake visitors were asked about the number of trips they typically take each season. Figure B4 illustrates that the total number of visits to Bear Lake include a number of repeat visitors. As expected, summer is the most popular time to visit Bear Lake.

