

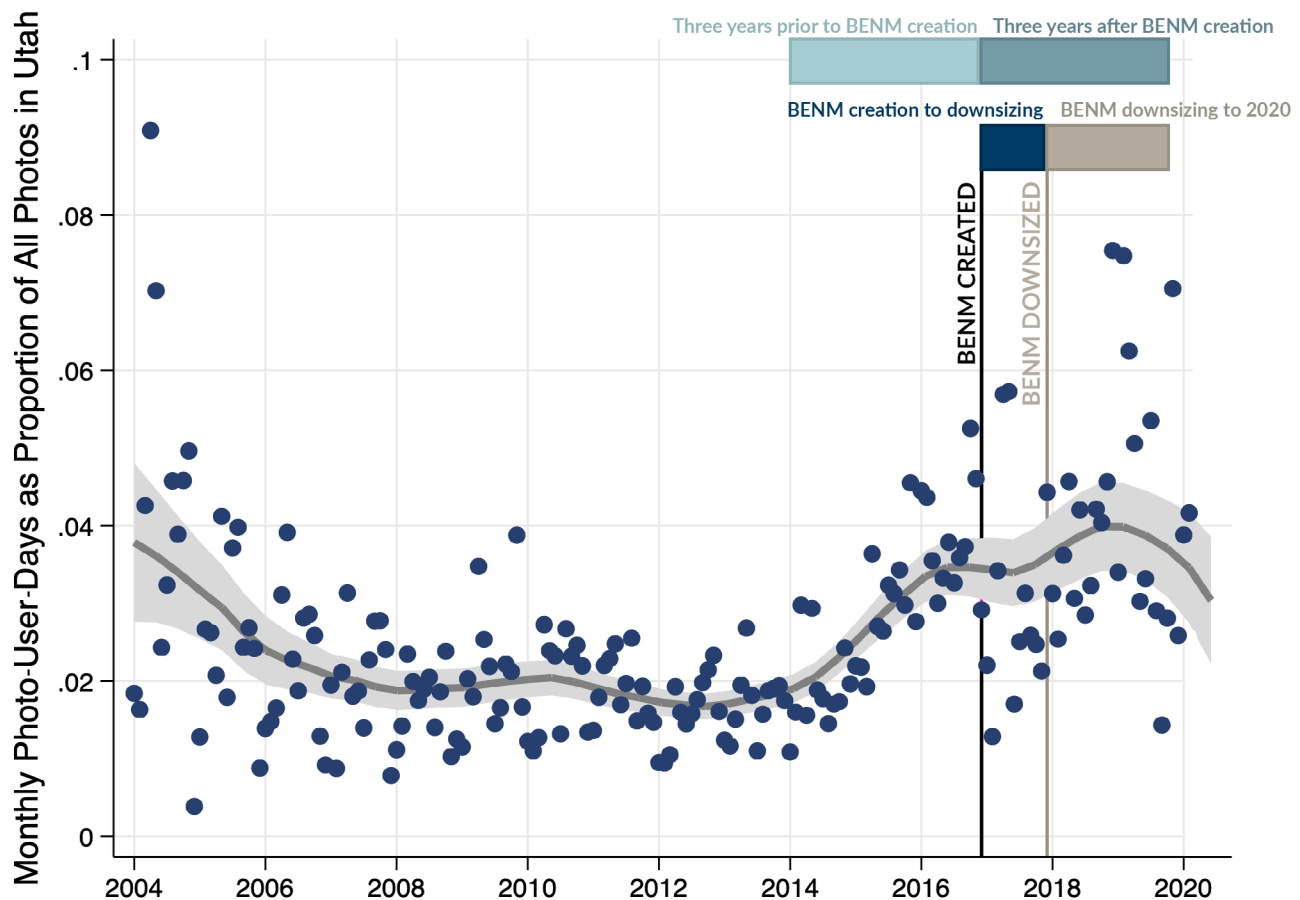
INSTITUTE OF OUTDOOR RECREATION AND TOURISM

BEARS EARS AND OUTDOOR RECREATION IN SAN JUAN COUNTY, UTAH

The sandstone hoodoos and shaded canyons of Bears Ears National Monument are high on the bucket list for many hikers, climbers, birders, bikers and camping families—and communities in Utah’s San Juan County are coming to economically depend on these visitors. With the creation of the monument in late 2016, and its subsequent downsizing less than one year later, managers wondered if, and to what extent, these designation changes would impact outdoor recreation and recreation-related industries existing in these communities. Now, more than three years after the monument was created, there are sufficient data to take a retrospective look at the influence of the monument designation on outdoor recreation and its related industries in San Juan County, Utah.

Using geotagged photos from social media sites, and county-level economic indicators, analysis conducted by the Institute of Outdoor Recreation and Tourism at Utah State University found:

- 1. The creation of Bears Ears National Monument coincided with a long-term increase in the number of people participating in outdoor recreation in the county.** Data shows that recreation volume was increasing in the area even before the monument designation. Compared to a ten-year baseline period between 2004 to 2013, there was a 32.9% increase in outdoor recreation participation within the county in the three years before the monument was created. In the three years after designation, visitation continued to rise, up 72.7% relative to the baseline.



2. The creation of the Monument led to an increase in outdoor recreation and tourism within the county. A comparison of the three years before and after the creation of the monument shows a 29.7% increase in the total volume of outdoor recreation occurring within the county; this suggests visitation continued to climb, even after the size of the monument was reduced in late 2017.

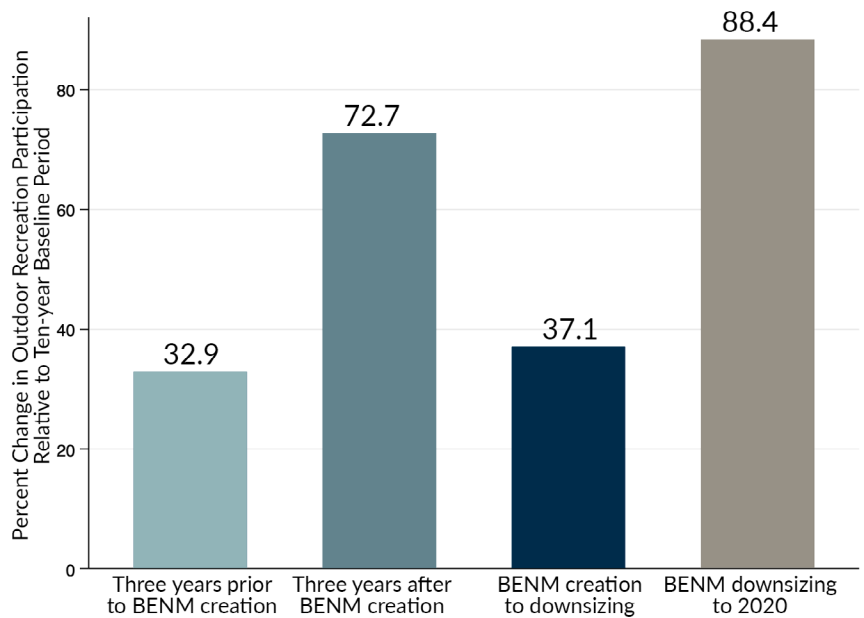
3. Several types of outdoor recreation-related industries have expanded in the area since Bears Ears National Monument was created. The following industries all experienced significant and positive economic expansion in the three years after the monument was created:

- Retail trade (e.g., hardware and drug stores)
- Professional, scientific, and technical services (e.g., accounting, engineering, and law firms)
- Food services (e.g., restaurants)

This growth may be attributable to business owners responding to either a perceived increase in the number of visitors, or an actual increase in recreationists willing to spend more money during their visit. This finding should be received as good news for local leaders who are actively working to expand and advocate for businesses that support outdoor recreation within the county.

4. Many outdoor recreation-related industries have maintained levels of economic activity matching the three-year period before the monument was created; these include:

- General and building construction (e.g., contractors)
- Food and beverage stores (e.g., grocery stores)



- Gas stations
- Real estate, rental, and leasing (e.g., realtors)

Collectively, the analysis suggests that, despite an existing upward trend, the creation of Bears Ears National Monument led to a substantial and persistent shift in the volume of outdoor recreation occurring within San Juan County. The results also suggest the creation of the monument has positively influenced several, but not all, of the county’s outdoor recreation-related industries. Local efforts to increase the amount of outdoor recreation occurring within the county should be paired with economic programs that allow outdoor recreation-related industries within the county to capitalize on ongoing increases in visitation.

REFERENCE

Smith, J. W., Wilkins, E. J., & Miller, A. B. (2020). *Bears Ears and Outdoor Recreation in San Juan County, Utah: The Impact of Bears Ears National Monument on Outdoor Recreation and Industries Related to Outdoor Recreation in San Juan County, Utah*. Logan, UT: Institute of Outdoor Recreation and Tourism, Utah State University.



Contact:
Jordan W. Smith, Ph.D.
jordan.smith@usu.edu

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Jordan W. Smith, Ph.D.
Emily J. Wilkins, Ph.D.
Anna B. Miller, Ph.D.

ABOUT THE INSTITUTE

The Institute of Outdoor Recreation and Tourism at Utah State University does research, outreach, and teaching focused on outdoor recreation and tourism management — inside Utah and beyond its borders. Our work focuses on the social and economic trade-offs associated with providing outdoor recreation opportunities on public lands.

Jordan W. Smith, Ph.D. is the Director of the Institute of Outdoor Recreation and Tourism and an Associate Professor in the Department of Environment and Society at Utah State University.

Emily J. Wilkins, Ph.D. is a Post-doctoral Research Associate in the Department of Environment and Society at Utah State University.

Anna B. Miller, Ph.D. is the Assistant Director of Research and Operations in the Institute of Outdoor Recreation and Tourism at Utah State University.



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Jordan W. Smith, Ph.D.¹

Emily J. Wilkins, Ph.D.

Anna B. Miller, Ph.D.

Institute of Outdoor Recreation and Tourism
Department of Environment and Society
Utah State University

The report was prepared for:
Utah Outdoor Partners

¹Address all correspondence to jordan.smith@usu.edu

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EXECUTIVE SUMMARY

The creation and subsequent downsizing of Bears Ears National Monument has been one of the most publicized and politicized land management decisions within the state over the past decade. However, relatively little research has been conducted to determine if, and to what extent, the creation of the monument impacted outdoor recreation and recreation-related industries. Now, more than three years after the monument was created, there are sufficient data to take a retrospective look at the influence of the monument. The purpose of this research is to evaluate the influence of Bears Ears National Monument on outdoor recreation and its related industries in San Juan County, Utah. The data and analysis reported here suggest:

- 1. The creation of Bears Ears National Monument has coincided with a long-term increase in the volume of outdoor recreation occurring within the county.** Relative to the ten-year baseline period between 2004 to 2013, there was a 32.9% increase in outdoor recreation participation within the county in the three years before the Monument was created. In the 3-years after designation, visitation has continued to rise, up 72.7% relative to the baseline period.
- 2. The creation of the Monument has led to an increase in outdoor recreation and tourism within the county.** A comparison of the three years before and after the creation of the monument shows a 29.7% increase in the total volume of outdoor recreation occurring within the county; this suggests visitation to the county has continued to climb, even after the size of the monument was reduced in late 2017.

- 3. Several outdoor recreation-related industries have grown since Bears Ears National Monument was created.** The following industries all experienced significant and positive economic expansion in the three years after the monument was created: Retail trade; Professional, scientific, and technical services; and Food services.
- 4. Many outdoor recreation-related industries have maintained levels of economic activity that are consistent with the three-year period before the monument was created.** These industries include: General and building construction; Food and beverage stores; Gas stations; Real estate, rental, and leasing.

Collectively, the analysis suggests the creation of Bears Ears National Monument has led to a substantial and persistent shift in the volume of outdoor recreation occurring within San Juan County. The results also suggest the creation of the monument has positively influenced several, but not all, of the county's outdoor recreation-related industries. Local efforts to increase the amount of outdoor recreation occurring within the county should be paired with economic programs that allow outdoor recreation-related industries within the county to capitalize on subsequent increases in visitation. The industries which have grown with the increase in visitation (i.e., retail trade, professional, scientific, and technical services, and food services and drinking places) are well poised to grow if tourism development efforts are successful in attracting more visitors.



PURPOSE

The purpose of this research is to evaluate the influence of Bears Ears National Monument (BENM) on outdoor recreation and industries related to outdoor recreation in San Juan County, Utah. The creation and subsequent downsizing of the monument has been one of the most publicized and politicized land management decisions within the state over the past decade. However, relatively little research has been conducted to determine if, and to what extent, the creation of the monument impacted outdoor recreation and recreation-related industries within the county. Now, more than three years after the monument was created, there are sufficient data to take a retrospective look at the influence of the monument. Specifically, this report utilizes 16-years of data from social media to quantify the volume of

outdoor recreation within the county. The report also uses six years of quarterly economic data to evaluate the influence the creation of the monument has had on industries related to outdoor recreation within the county. The specific objectives of the analysis were to:

1. Determine the extent to which the volume of outdoor recreation changed after the creation of Bears Ears National Monument;
2. Determine the extent to which industries related to outdoor recreation have changed after the creation of the monument; and
3. Determine if the volume of outdoor recreation occurring within San Juan County affects industries related to outdoor recreation within the county.

METHODS

Data Collection

Social Media

Social media are quickly becoming an acceptable method of quantifying the volume of outdoor recreation use in parks, protected areas, and public lands (Teles da Mota & Pickering, 2020). *Flickr*, a photo-sharing platform preferred by landscape and nature photographers, is the most common platform used for investigations into visitation patterns in and around parks, protected areas, and public lands (Wilkins et al., in press). Recent research within Utah found social media from the *Flickr* platform capture approximately three-fourths of the variation in annual visitation to federally-managed lands (Zhang et al., in press). Social media have also been validated against reported visitation to parks, protected areas, public lands and private recreation destinations in numerous studies across the globe (see Teles da Mota and Pickering (2020) and Wilkins et al. (in press) for comprehensive reviews).

All geotagged social media shared on the *Flickr* platform from within San Juan County was acquired using the platform's API. In addition to being

geotagged, these data are timestamped with the exact time the photograph was taken. Data were aggregated to the month and averaged across all months within each period of analysis (described below). Prior to analysis, all social media were reduced to only include one photo, per user, per day (i.e., a photo-user-day [PUD]). This metric is used to reduce the possibility of measurement error originating from any one individual, or a group of individuals, posting substantially more photographs than other users on the platform. The PUD metric is well-established in research using social media to quantify the volume and spatial patterns of outdoor recreation use (Wilkins et al., in press).

Periods of Analysis. All photographs taken during the 10-year period spanning January 1, 2004 – December 31, 2013 serve as a baseline against which subsequent shifts in photo sharing (i.e., outdoor recreation use) were assessed. Photographs taken in two, three-year windows before (January 1, 2014 – December 28, 2016) and after (December 29, 2016 – December 31, 2019) the creation of the monument serve as equal points of comparison against the baseline period.

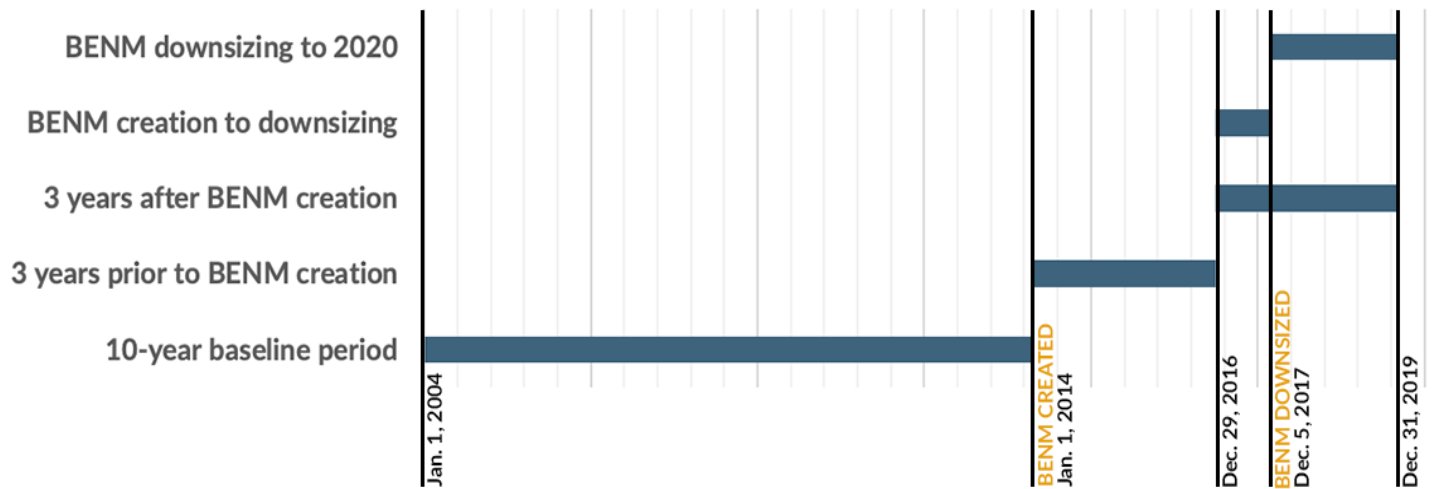


Figure 1. Periods of analysis used in the investigation.

Two other periods of analysis were created to address secondary research questions, including:

- December 29, 2016 – December 4, 2017, the period between the creation of the monument and its downsizing; and
- December 29, 2016 – December 31, 2019, the period between the monument’s downsizing and 2020.

All periods of analysis are detailed in Figure 1. Maps of the location and size of both the original, and revised, boundaries for Bears Ears National Monument are provided in Appendix A.

Economic Indicators

Data from the U.S. Bureau of Labor Statistics’ Quarterly Census of Employment and Wages were used to quantify economic activity within San Juan County. These data include:

1. The average number of employees in each establishment;
2. The total number of establishments;
3. Total payroll; and
4. The average monthly wage for employees.

Each of these four indicators are collected and reported by the Bureau of Labor Statistics following the North American Industry Classification System

(NAICS). Quarterly data were collected between 2014-Q1 and 2019-Q4 for all industries for which data were available. The full listing of these industries is provided in Appendix B. The following industries are characterized as recreation-related:

1. Construction (NAICS 23);
2. Construction of Buildings (NAICS 236);
3. Retail Trade (NAICS 44);
4. Food and Beverage Stores (NAICS 445);
5. Gas Stations (NAICS 447);
6. Real Estate and Rental and Leasing (NAICS 53);
7. Professional, Scientific, and Technical Services (NAICS 54); and
8. Food Services and Drinking Places (NAICS 722).

Data Analysis

Shifts in the Volume of Outdoor Recreation

Mean monthly PUDs were normalized as a proportion of all photos shared within Utah to control for the popularity of the *Flickr* platform over the study period. We compared normalized mean monthly PUDs for each period of analysis with the baseline period (January 1, 2004 – December 31, 2013) to determine the extent to which the volume of outdoor recreation changed after the creation of Bears Ears National Monument. The comparison of the period between the creation of the monument and its downsizing

(December 29, 2016 – December 4, 2017) and the baseline period is a test on whether or not the creation of the monument at its original size influenced the volume of outdoor recreation occurring within the county. A subsequent comparison of the period between the monument’s downsizing and early 2020 and the baseline period is a test on whether or not reducing the size of the monument influenced the volume of outdoor recreation within the county.

Changes in Recreation-related Industries

Mean quarterly values for each of the four economic indicators were compared before (2014-Q1–2016-Q4) and after the monument was created (2014-Q1–2016-Q4). Unpaired two-sample t-tests were used to determine statistically significant differences.

The Volume of Outdoor Recreation and Economic Activity in Recreation-Related Industries

The volume of outdoor recreation occurring within any county results in indirect economic effects to a variety of industries, most often those industries which specifically cater to outdoor recreationists (e.g., gas stations, food services, etc.). A series of AutoRegressive Moving-Average with Exogenous inputs (ARMAX) statistical models were used to test the significance of these economic effects. These models examine the relationship between an exogenous input (the volume of outdoor recreation use in our case) and a dependent variable (an economic indicator) while accounting for the past values of the dependent variable and observed or systematic error (Box-Steffensmeier et al., 2014).



RESULTS

Shifts in the Volume of Outdoor Recreation

The summary statistics characterizing the volume of outdoor recreation in San Juan County throughout the study period are shown in Table 1 and Figure 2. The spatial distribution of outdoor recreation activity within the county is shown in Figure 3. The mean monthly PUDs for the baseline period (January 1, 2004 - December 31, 2013) was 86.0, just over 2% of all the photos shared within the state. In the three years leading up to the creation of the monument, this proportion increased by 32.9%. The three years subsequent to the formation of the monument saw outdoor recreation activity increase by 72.7%. The data also show a 37.1% increase in outdoor recreation participation in the period of time between when the monument was created (December 28, 2016) and when its size was reduced less than one year later (December 4, 2017). In the time between when the size of the monument was reduced to early 2020, the data show an 88.4% increase in visitation relative to the baseline period.

These findings suggest the formation of the monument does appear to have resulted in a substantial shift in the total volume of outdoor recreation occurring within the county, an increase of 72.7% relative to the baseline period. A comparison of the three years before and after the creation of the monument shows a 29.7% increase in the total volume of outdoor recreation occurring within the county. Importantly, the findings also suggest that the monument did generate a temporary increase in outdoor recreation activity in the months following its creation (Figure 3).

Changes in Recreation-related Industries

Economic indicators for the outdoor recreation-related industries in the county that may have been impacted by the creation of the monument are summarized in Table 2. Differences between the three-year window before and after the creation of the monument for each indicator are also presented in Table 2; only significant differences are discussed here.

Table 1. Summary statistics characterizing the volume of photosharing activity in San Juan County (January 1, 2004 – June 30, 2020)

Period of Analysis	PUD count	Mean Monthly PUDs	% Change	Mean Monthly PUDs As Proportion of All Posts in Utah	% Change
Ten-year baseline period (1/1/04 to 12/31/13)	10,315	86.0		2.18%	
Three years prior to BENM creation (1/1/14 to 12/28/16)	5,425	151.0	76%	2.90%	32.9%
Three years after BENM creation (12/29/16 to 12/31/19)	3,196	88.5	3%	3.76%	72.7%
BENM creation to downsizing (12/29/16 to 12/4/17)	1,347	120.8	41%	2.99%	37.1%
BENM downsizing to 2020 (12/5/17 to 12/31/19)	1,849	74.2	-14%	4.11%	88.4%

Note. % Change is relative to the ten-year baseline period.

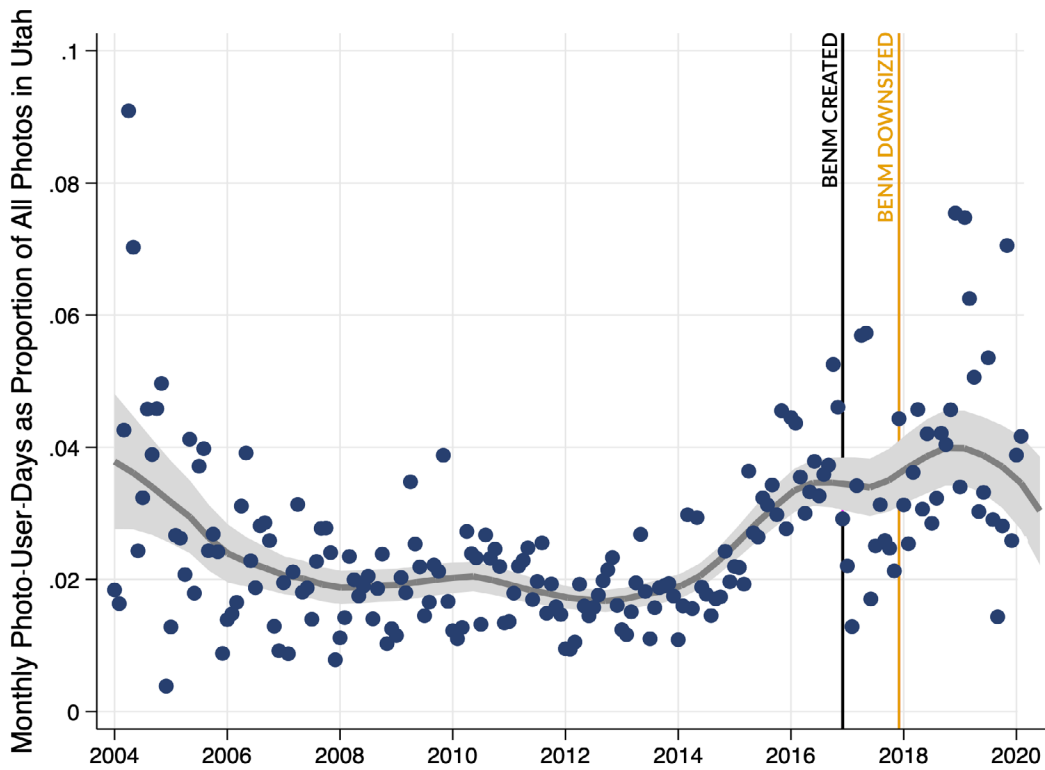
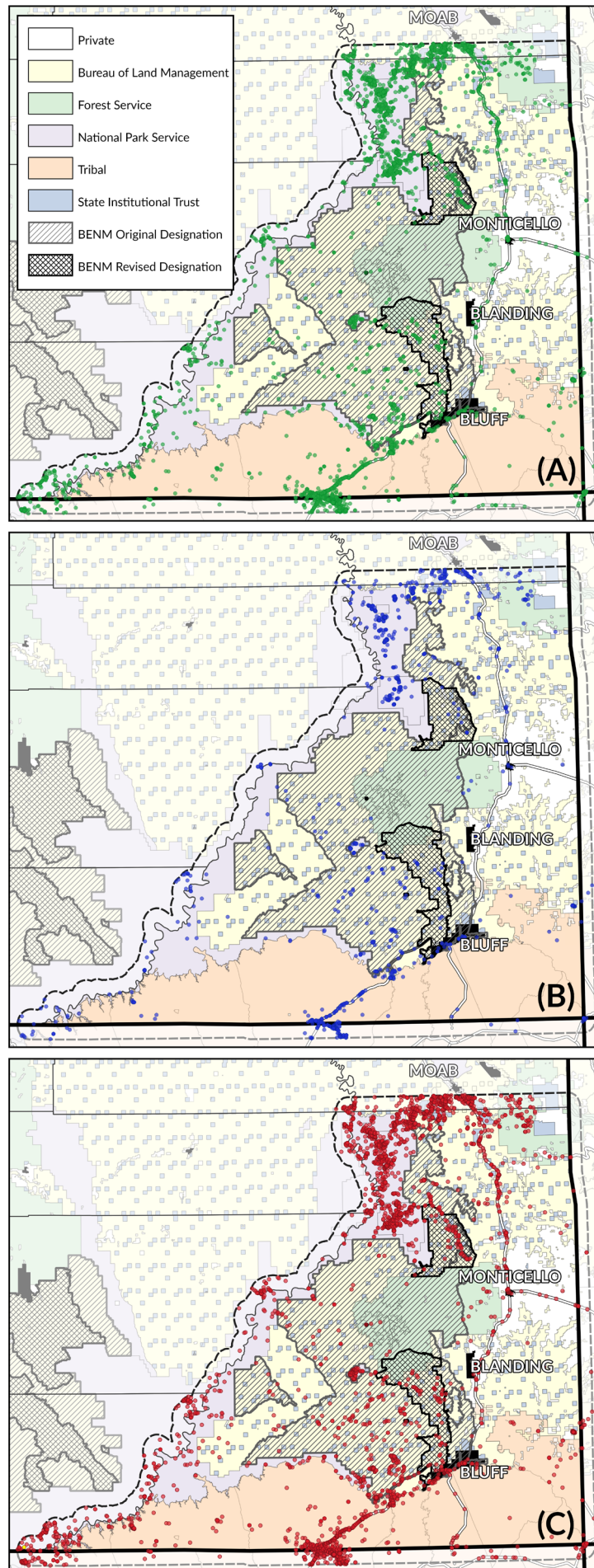


Figure 2. Monthly photo-user-days in San Juan County as a proportion of all photos shared within Utah (January 1, 2004 - June 30, 2020).

Figure 3. Spatial distribution of photo-user-days in San Juan County (January 1, 2004 - June 17, 2020). The three panels show the spatial distribution of photo-user-days: (A) before the creation of the monument (January 1, 2004 - December 28, 2016); (B) after the creation of the monument (December 29, 2016 - June 17, 2020); and (C) all data combined (January 1, 2004 - June 17, 2020).



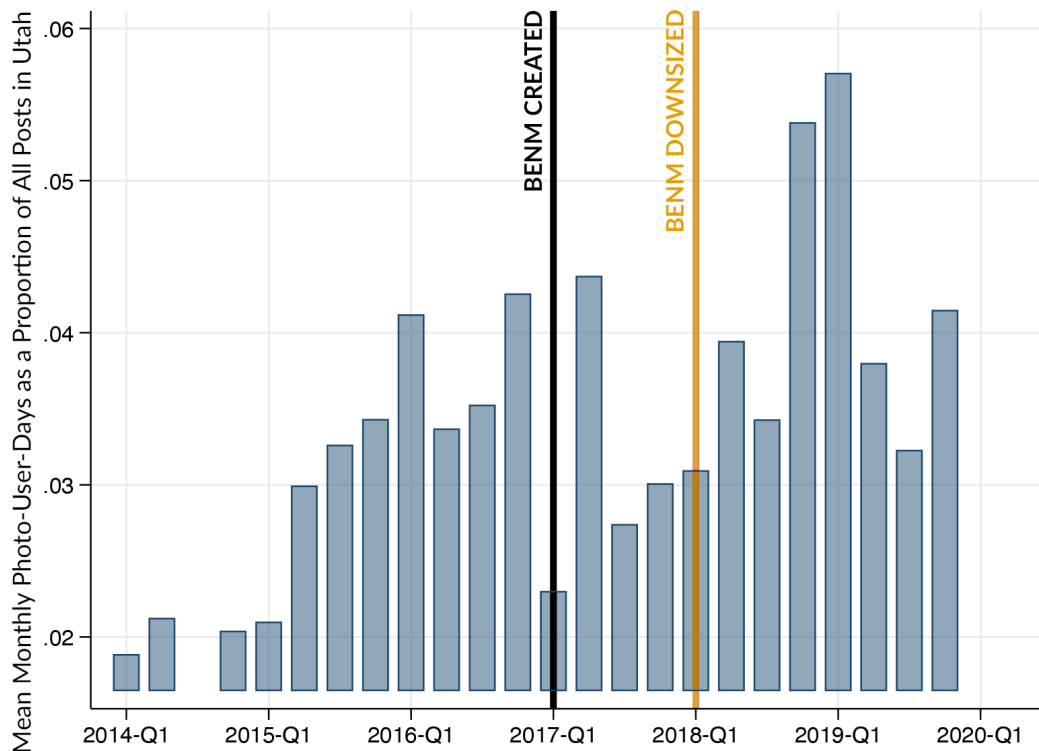


Figure 4. Quarterly photo-user-days in San Juan County as a proportion of all photos shared within Utah (January 1, 2014 - Dec 31, 2019).

The number of general construction and building construction businesses decreased significantly after the creation of the monument (Figures 5 and 6). While there was a significant difference in the number of construction establishments after the monument was created, this difference does not appear to be economically meaningful as neither the county's total payroll nor its mean monthly wages in construction declined significantly over the same period of time.

The retail trade industry of San Juan County has grown since the creation of the monument (Figure 7). The total number of retail trade businesses increased from 29.6 to 33.1, total payroll increased by just over \$125,000, and mean monthly wages increased to nearly \$1,500; all of these increases were statistically significant.

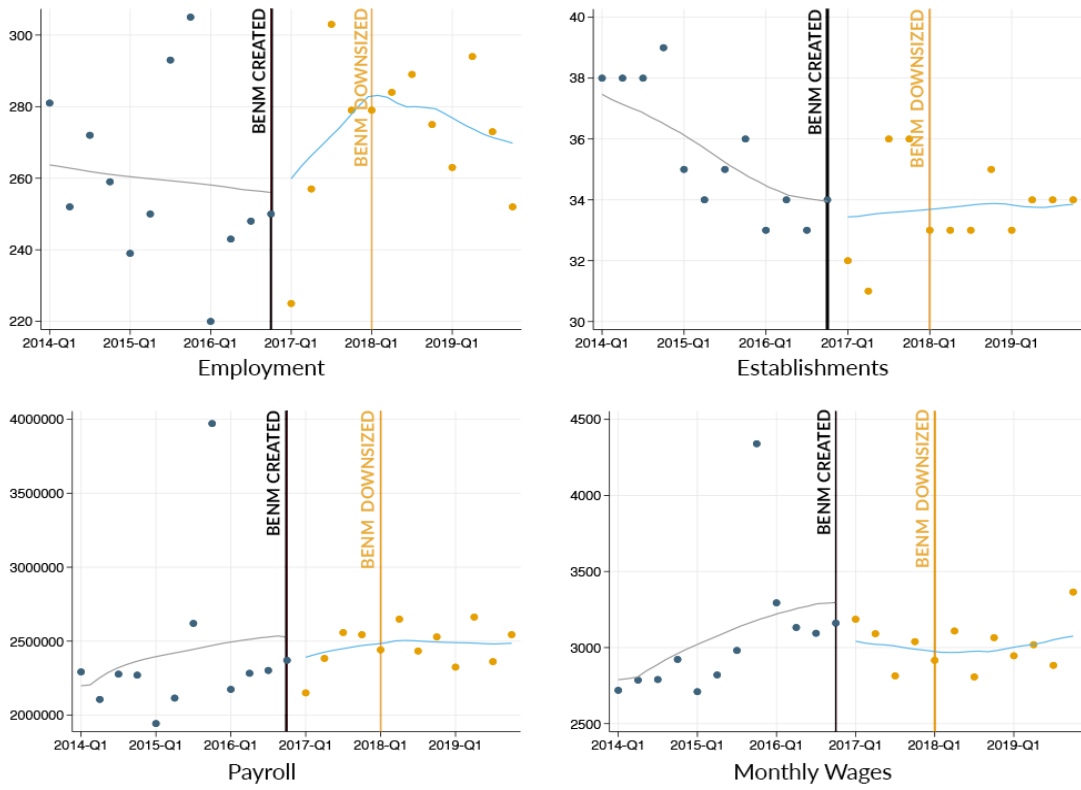


Figure 5. Quarterly indicators for the construction industry in San Juan County (2014 - 2019).

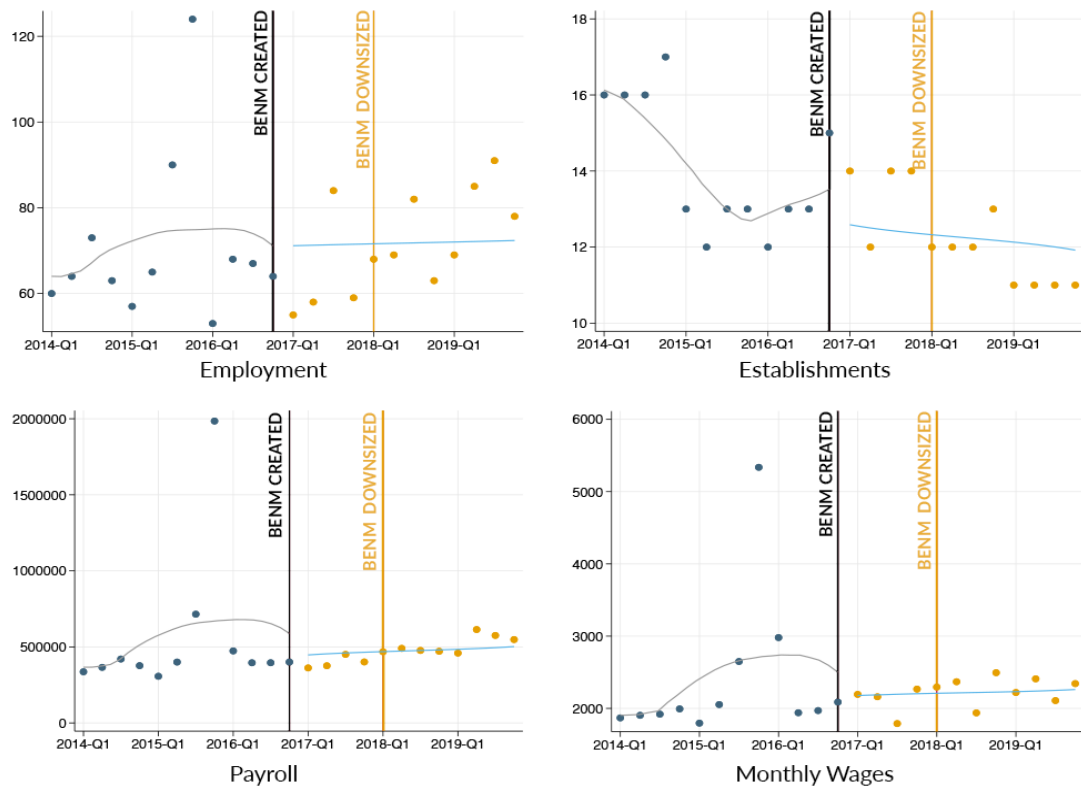


Figure 6. Quarterly indicators for the building construction industry in San Juan County (2014 - 2019).

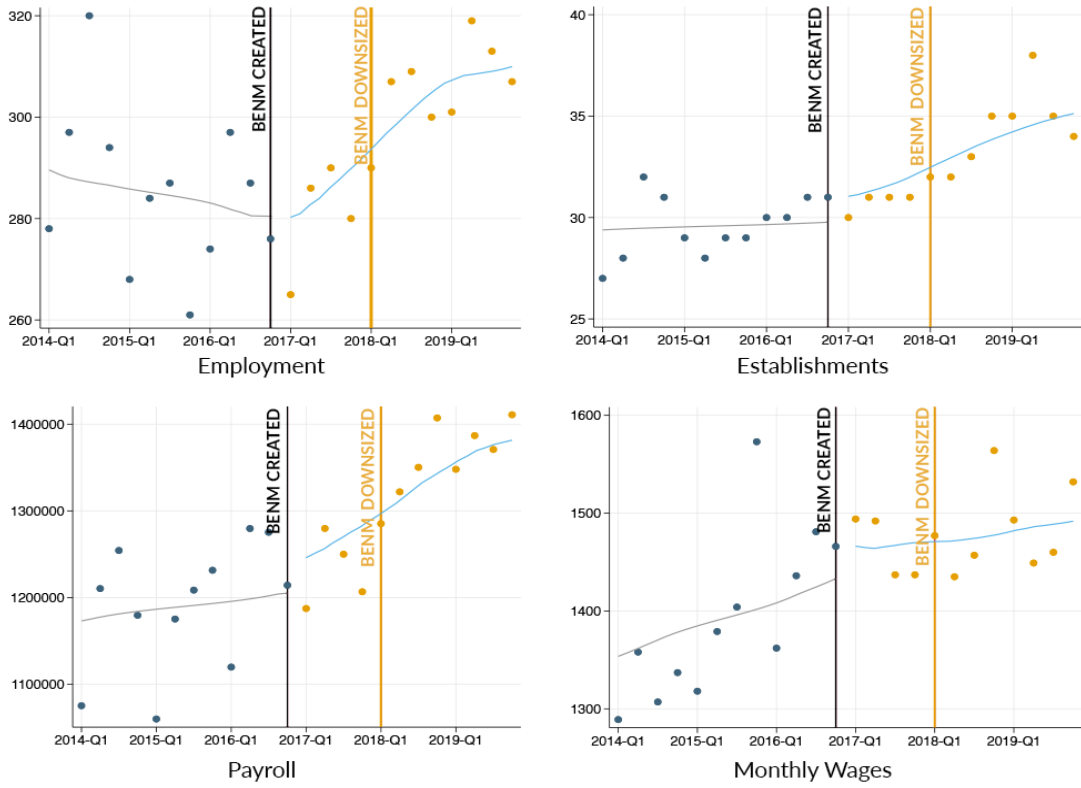


Figure 7. Quarterly indicators for the retail trade industry in San Juan County (2014 – 2019).

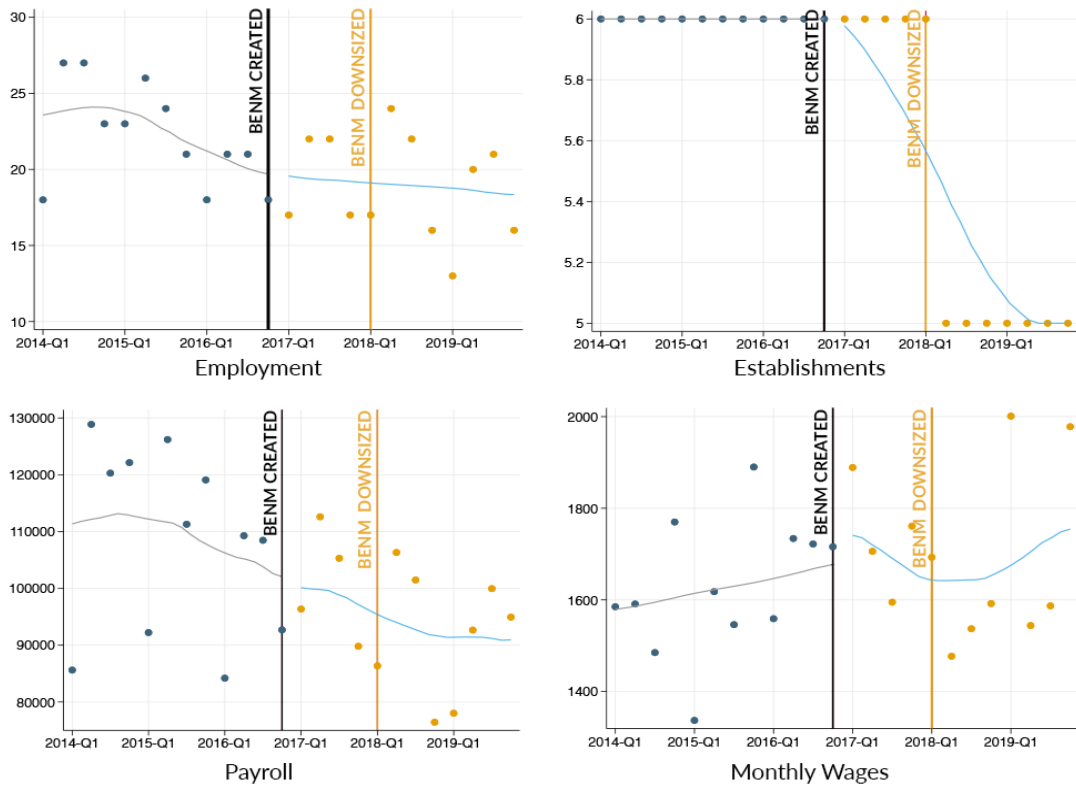


Figure 8. Quarterly indicators for the real estate industry in San Juan County (2014 – 2019).

The number of food and beverage stores within the county has increased from 5.0 to 5.9 since the creation of the monument. However, this increase does not appear to be economically meaningful as neither total payroll or mean wages increased significantly (Table 2). Similarly, there has been a significant increase in wage earnings at gas stations within the county since the creation of the monument. However, neither total payroll nor the total number of gas stations has increased (Table 2).

The county's real estate, rental, and leasing industries has become smaller since the creation of the monument, with the number of businesses declining from 22.3 to 18.9, mean employment per business declining by 0.5, and total payroll decreasing by \$13,342 (Table 2, Figure 8).

The professional, scientific, and technical services industries have grown since early 2017 with the total number of businesses increasing by 4.0, total payroll increasing by nearly \$250,000, and mean monthly wages increasing by \$2,287 to over \$6,221 (Table 2, Figure 9).

Of all the outdoor recreation-related industries evaluated, food services and drinking places have grown the most since the monument was created. The mean number of employees per business in this industry has increased by 88.0, the total number of businesses has grown by 1.8, monthly payroll has more than doubled to nearly \$1.3 million, and mean monthly wages have increased by nearly \$500 to \$1,581 (Table 2, Figure 10).



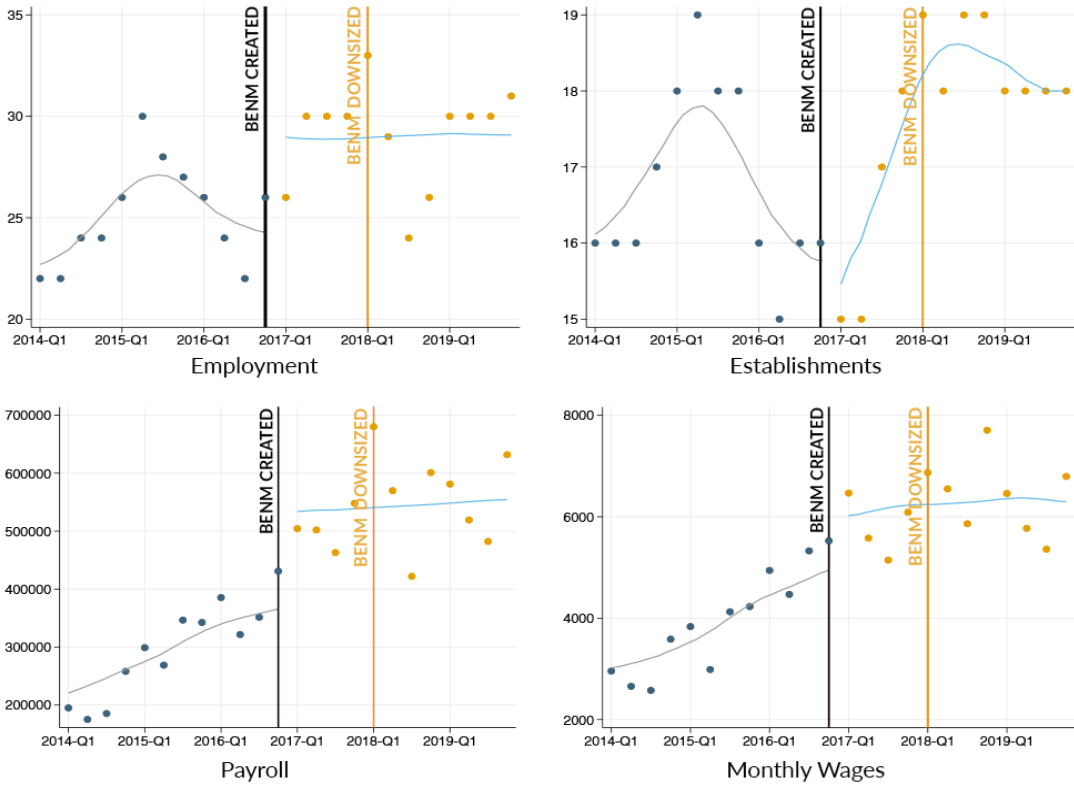


Figure 9. Quarterly indicators for the professional, scientific, and technical services industries in San Juan County (2014 – 2019).

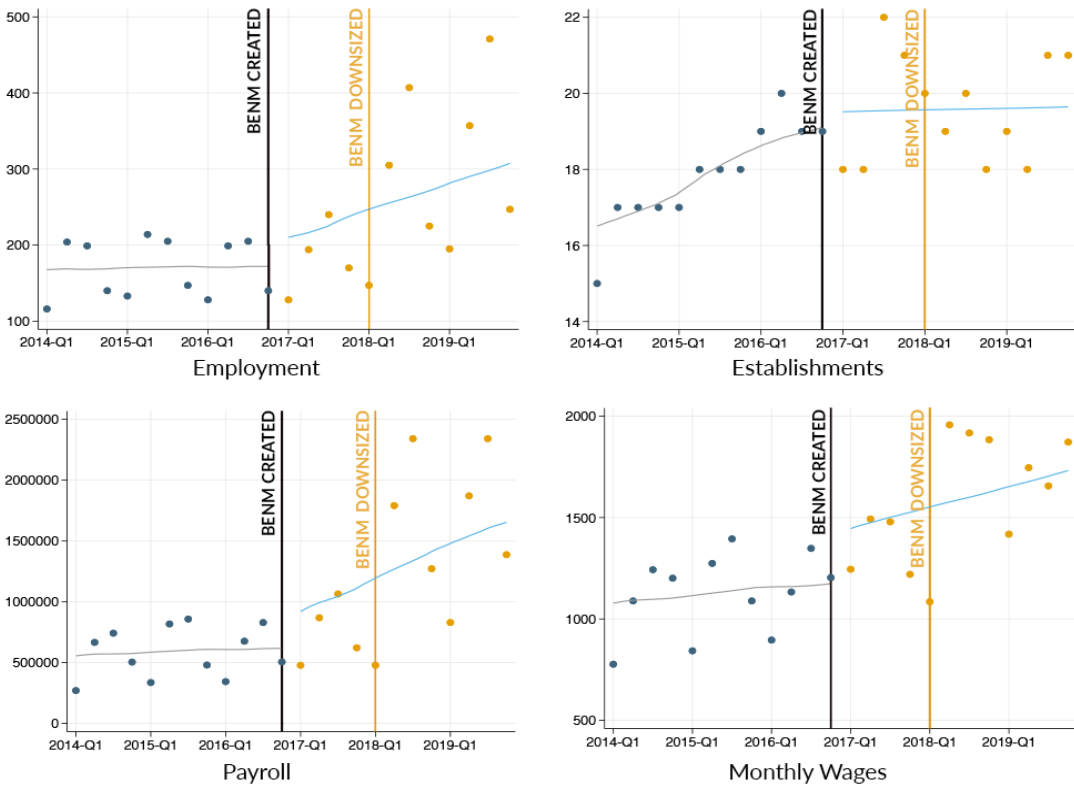


Figure 10. Quarterly indicators for the food services and drinking places industries in San Juan County (2014 – 2019).

Table 2. Economic indicators of outdoor recreation-related industries three years before and after the creation of Bears Ears National Monument

Industry	Time Period	Mean Employment per Establishment		Total Number of Establishments		Total Payroll		Mean Monthly Wage	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Construction	Pre-BENM	259.3	24.2	35.6	2.2	\$ 2,393,713.00	\$ 523,230.80	\$ 3,062.42	\$ 445.10
	Post-BENM	272.8	21.1	33.7	1.5	\$ 2,465,032.00	\$ 146,384.30	\$ 3,020.00	\$ 160.91
	Difference	13.4		-1.9*		\$ 71,319.00		(42.42)	
Construction of Buildings	Pre-BENM	70.7	19.2	14.1	1.8	\$ 547,751.90	\$ 464,111.20	\$ 2,374.75	\$ 996.11
	Post-BENM	71.8	12.0	12.3	1.2	\$ 474,547.00	\$ 76,247.04	\$ 2,215.67	\$ 199.29
	Difference	1.1		-1.8*		\$ (73,204.90)		(159.08)	
Retail Trade	Pre-BENM	285.3	15.7	29.6	1.5	\$ 1,190,333.00	\$ 72,520.76	\$ 1,392.50	\$ 83.55
	Post-BENM	297.3	15.5	33.1	2.4	\$ 1,317,103.00	\$ 75,482.20	\$ 1,477.25	\$ 40.23
	Difference	12.0		3.5*		\$ 126,770.00*		84.75*	
Food and Beverage Stores	Pre-BENM	87.2	4.5	5.0	0.0	\$ 363,521.70	\$ 22,188.79	\$ 1,392.67	\$ 103.15
	Post-BENM	89.3	3.5	5.9	0.3	\$ 356,053.50	\$ 16,720.74	\$ 1,329.67	\$ 67.67
	Difference	2.2		0.9*		\$ (7,468.20)		(63.00)	
Gas Stations	Pre-BENM	98.5	12.7	8.7	1.2	\$ 339,678.60	\$ 49,543.80	\$ 1,151.00	\$ 114.67
	Post-BENM	89.5	9.6	8.3	0.5	\$ 371,292.10	\$ 45,585.34	\$ 1,384.58	\$ 109.96
	Difference	-9.0		-0.3		\$ 31,613.50		233.58*	
Real Estate and Rental and Leasing	Pre-BENM	22.3	3.3	6.0	0.0	\$ 108,360.30	\$ 15,964.15	\$ 1,629.42	\$ 146.64
	Post-BENM	18.9	3.3	5.4	0.5	\$ 95,018.50	\$ 11,088.05	\$ 1,696.67	\$ 176.68
	Difference	-3.3*		-0.6*		\$ (13,341.80)*		67.25	
Professional, Scientific, and Technical Services	Pre-BENM	25.1	2.5	16.8	1.2	\$ 296,701.00	\$ 81,930.79	\$ 3,934.00	\$ 1,016.26
	Post-BENM	29.1	2.5	17.7	1.4	\$ 542,081.60	\$ 74,289.21	\$ 6,220.50	\$ 728.97
	Difference	4.0*		0.9		\$ 245,380.60*		2,286.50*	
Food Services and Drinking Places	Pre-BENM	169.2	37.7	17.8	1.3	\$ 585,961.80	\$ 206,832.40	\$ 1,124.33	\$ 196.91
	Post-BENM	257.2	107.1	19.6	1.4	\$ 1,278,505.00	\$ 674,563.60	\$ 1,581.00	\$ 301.14
	Difference	88.0*		1.8*		\$ 692,543.20*		456.67*	

Note. Asterisks indicate statistically significant differences at $p < 0.05$.

The Volume of Outdoor Recreation and Economic Activity in Recreation-related Industries

The final piece of analysis looks to determine which of the significant shifts in San Juan County's outdoor recreation economy (Table 2) are associated with the volume of outdoor recreation occurring within the county's borders. Table 3 presents the results of 17 time-series regression models in which the monthly value of an economic indicator is predicted by the monthly volume of outdoor recreation occurring within the county on that month. The models also control for economic momentum by including the trailing values (i.e., the previous months) of an indicator as additional predictors of a current month's value. Only 7 of the 17 models suggest a significant relationship between the volume of outdoor recreation occurring within the county and the economic activity in outdoor recreation-related industry.

The number of general construction establishments was positively and significantly correlated with the volume of outdoor recreation occurring within the county (Table 3). This is most likely not a causal relationship, but a byproduct of the fact both construction businesses and outdoor recreation follow a similar seasonal pattern.

Average monthly wages in both the county's retail trade businesses and the county's gas stations were positively and significantly correlated with the volume of outdoor recreation occurring within the county (Table 3). These relationships may be causal as more outdoor recreationists demand more services from retail shops and fuel for their vehicles, causing those businesses to require their employees to work more hours.

The number of food and beverage stores within the county was positively and significantly related to the volume of outdoor recreation occurring within the county. The demand for these types of establishments by outdoor recreationists does appear to be positively affecting growth within the industry.

Average monthly employment and total monthly payroll in the real estate industries were negatively and significantly correlated with the volume of outdoor recreation occurring within the county (Table 3). Realtors do not seem to be experiencing an increased demand from out-of-county visitors who are also participating in outdoor recreation during their visit to the county.



Table 3. Relationships between the monthly volume of outdoor recreation within San Juan County and economic indicators since the creation of Bears Ears National Monument

Industry and Economic Indicator	Coef.	Std. Err.	z	P > z	95% Conf. Int.	
					U.B.	L.B.
<i>Construction - Establishments</i>	<i>-88.05</i>	<i>41.80</i>	<i>-2.11</i>	<i>0.04</i>	<i>-169.98</i>	<i>-6.11</i>
Construction of Buildings - Establishments	-55.74	31.46	-1.77	0.08	-117.40	5.92
Retail Trade - Establishments	12.81	37.44	0.34	0.73	-60.58	86.20
Retail Trade - Payroll	2,236,842.00	2,435,284.00	0.92	0.36	-2,536,228.00	7,009,912.00
<i>Retail Trade - Average Monthly Wage</i>	<i>6,061.03</i>	<i>1,360.82</i>	<i>4.45</i>	<i>0.00</i>	<i>3,393.86</i>	<i>8,728.19</i>
Food and Beverage Stores - Establishments	13.25	1.00	13.23	0.00	11.29	15.22
<i>Gas Stations - Average Monthly Wage</i>	<i>5,282.65</i>	<i>2,619.21</i>	<i>2.02</i>	<i>0.04</i>	<i>149.09</i>	<i>10,416.22</i>
Real Estate and Rental and Leasing - Average Employment	-267.84	61.55	-4.35	0.00	-388.48	-147.20
Real Estate and Rental and Leasing - Establishments	-4.29	14.93	-0.29	0.77	-33.54	24.97
Real Estate and Rental and Leasing - Payroll	-958,729.40	419,282.10	-2.29	0.02	-1,780,507.00	-136,951.60
<i>Professional, Scientific, and Technical Services - Average Employment</i>	<i>92.36</i>	<i>47.58</i>	<i>1.94</i>	<i>0.05</i>	<i>-0.89</i>	<i>185.60</i>
Professional, Scientific, and Technical Services - Payroll	3,404,219.00	1,809,763.00	1.88	0.06	-142,851.70	6,951,289.00
Professional, Scientific, and Technical Services - Average Monthly Wage	32,936.18	18,672.19	1.76	0.08	-3,660.63	69,532.99
Food Services and Drinking Places - Average Employment	-603.85	2,327.70	-0.26	0.80	-5,166.06	3,958.37
Food Services and Drinking Places - Establishments	-27.53	37.77	-0.73	0.47	-101.56	46.49
Food Services and Drinking Places - Payroll	2,745,448.00	6,445,136.00	0.43	0.67	-9,886,786.00	15,400,000.00
Food Services and Drinking Places - Average Monthly Wage	11,257.99	6,968.86	1.62	0.11	-2,400.73	24,916.71

Note. Monthly volume of outdoor recreation within San Juan County calculated as monthly Flickr PUDs as proportion of all Flickr posts in Utah for that month. Italicized industries and economic indicators are significantly related to the monthly volume of outdoor recreation within San Juan County at $p < 0.05$.

Finally, average employment per establishment that offers professional, scientific, and technical services was positively and significantly correlated with the volume of outdoor recreation occurring within the county (Table 3). This finding offers support for the argument that outdoor recreationists employed in this industry are choosing to relocate to San Juan County. The professional, scientific, and technical services industries are often associated with younger employees who can work remotely (Florida, 2005).

DISCUSSION

The creation and subsequent downsizing of Bears Ears National Monument have been some of the most significant, if not the most significant, land use decisions in Utah over the past decade. These decisions have been met with both jubilant support and criticism. They were made, by and large, without any information or research into how they might affect the quality of outdoor recreation opportunities offered within San Juan County or the area's outdoor recreation-related industries. Now, with more than three years of economic data, there is a sufficient amount of information to take a retrospective look at the formation of the monument and its influence on outdoor recreation and the outdoor recreation-related industries of San Juan County. The data and analysis reported here suggest:

- 1. The creation of Bears Ears National Monument has coincided with a long-term increase in the volume of outdoor recreation occurring within the county.** Relative to the ten-year baseline period between 2004 to 2013, there was a 32.9% increase in outdoor recreation participation within the county in the three years before the Monument was created. In the 3-years after designation, visitation has continued to rise, up 72.7% relative to the baseline period.
- 2. The creation of the Monument has led to an increase in outdoor recreation and tourism within the county.** A comparison of the three years before and after the creation of the monument shows a 29.7% increase in the total volume of outdoor recreation occurring within the county; this suggests visitation has continued to climb, even after the size of the monument was reduced.
- 3. Several outdoor recreation-related industries have grown since Bears Ears National Monument was created.** Retail trade, professional, scientific, and technical services, and the food services industries have all experienced significant and positive economic expansion in the three years after the monument was created. This growth may be attributable to business owners responding to either a perceived increase in the number of outdoor recreationists visiting the county, or the observed increase in outdoor recreationists willing to spend more money during their visits to the county. This finding should be received as good news for local leaders who are actively working to expand, and advocate for, businesses that support outdoor recreation within the county.
- 4. Several outdoor recreation-related industries have grown since Bears Ears National Monument was created.** Many outdoor recreation-related industries (general and building construction, food and beverage stores, gas stations, and real estate, rental, and leasing) have maintained levels of economic activity that are consistent with the three-year period before the monument was created. Future growth in these industries within San Juan County would likely require an influx in the number on amenity migrants to the county. Amenity migration to gateway and natural amenity regions has led to economic growth in other regions throughout the West (Green et al., 2005). However, San Juan County has experienced persistent out-migration in recent decades so this may not be a likely scenario in the near future (Hjerpe et al., 2020).

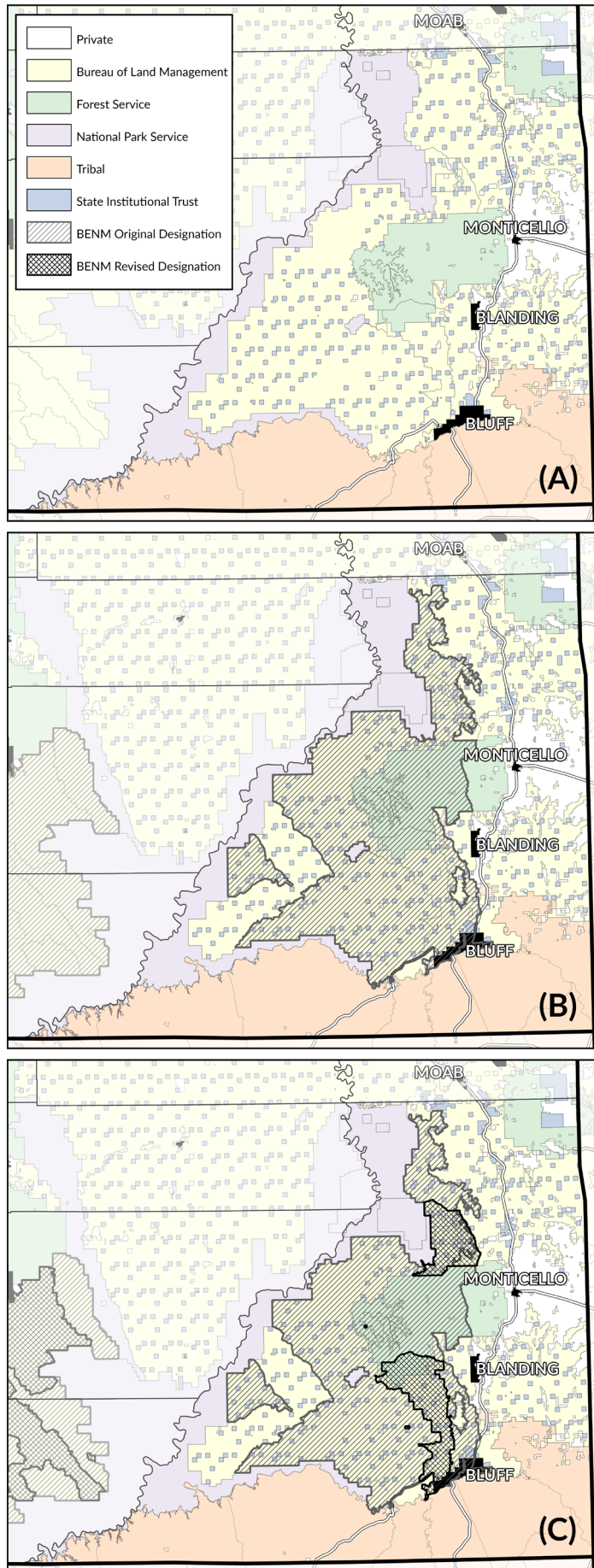
Collectively, the analysis presented here suggests the creation of Bears Ears National Monument has led to a notable increase in the volume of outdoor recreation occurring within San Juan County. The results also suggest the creation of the monument has positively influenced several, but not all, of the county's outdoor recreation-related industries. This latter finding is consistent with previous research on the economic consequences of other landscape-scale national monuments (Jakus & Akhundjanov, 2019; Walls et al., 2020). Municipal and county leaders can take some solace from the finding that several of the county's outdoor recreation-related industries have grown. Local efforts to increase the amount of outdoor recreation occurring within the county should be paired with economic programs that allow outdoor recreation-related industries within the county to capitalize on subsequent increases in visitation.

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APPENDIX A

Map of land ownership in San Juan County (A) with the original (B) and reduced (C) boundaries for Bears Ears National Monument.



APPENDIX B

List of all industries for which a complete time-series of quarterly data are available for San Juan County, Utah (2014-2019).

<u>Industry</u>
Accommodation
Accommodation and Food Services
Admin., Support, Waste Mgmt., Remediation
Administration of Economic Programs
Administration of Environmental Programs
Administrative and Support Services
Agriculture, Forestry, Fishing & Hunting
Ambulatory Health Care Services
Construction
Construction of Buildings
Credit Intermediation & Related Activity
Education Services
Executive, Legislative, & Gen Government
Finance and Insurance
Food and Beverage Stores
Food Services and Drinking Places
Gasoline Stations
Health Care and Social Assistance
Heavy and Civil Engineering Construction
Justice, Public Order, and Safety Activities
Manufacturing (31-33)
Merchant Wholesalers, Nondurable Goods
Mining
Mining (except Oil and Gas)
Other Services (except Public Admin.)
Postal Service
Professional Scientific & Technical Svc
Professional and Technical Services
Public Administration
Real Estate and Rental and Leasing
Repair and Maintenance
Retail Trade (44 & 45)
Social Assistance
Specialty Trade Contractors
Support Activities for Mining
Transportation and Warehousing (48 & 49)
Truck Transportation
Utilities
Wholesale Trade

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