
Economic Performance of National Monument Communities

Methods and Data Sources

Headwaters Economics analyzed economic trends before and after national monument designation to provide economic context for the role national monuments play in adjacent communities. Results are published at <https://headwaterseconomics.org/public-lands/economic-performance-national-monuments>. This work builds on previous research conducted by Headwaters Economics.¹

This document summarizes the data sources and technical methods used to summarize socioeconomic data and—for monuments designated in 2023 or later—project expected future conditions.

Selection of National Monuments

We identified 35 national monuments that met each of the following criteria:

- **Located in the 11 western states.** We limit the analysis to national monuments in the contiguous western states, which have comparable geographies and economies. Large national monuments in Alaska and Hawaii are more geographically isolated and have different economic circumstances.
- **Greater than 10,000 acres.** We include only large national monuments to create a cohort of similarly sized places with sufficient public lands to play a prominent economic role in the local economy.
- **Designated after 1982.** The publicly available economic data we use in this analysis begins in 1970. We included monuments designated after 1982 to allow for sufficient economic data prior to monument designation.

Identification of County Associations

For each monument, we then identified associated counties that both:

- **Intersected the monument boundary prior to 2018;** and
- **Contained at least 5% of the monument's total land area.**

Some national monuments have had boundary changes, but this did not affect their associated counties.

Economic Analysis

We compiled economic indicators for all qualifying counties to assess the trends associated with monument designation. We draw from the following sources:

- Private travel and tourism, mining, and timber employment data are from the U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.² We use data from 2001-2022.
- Travel and tourism gross domestic product comes from the U.S. Department of Commerce, Bureau of Economic Analysis, Outdoor Recreation Satellite Account.³ We use data from 2023.

- All other economic data come from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts.⁴ We use data from 1970-2022, the most recent year for which we have total employment data.

We report GDP and income in 2024 dollars.

Modeling economic performance

For monuments designated in 2023 or later, we projected values of economic indicators using a panel model approach. This model specification allows us to account for temporal trends that affect all monuments and unobserved heterogeneity between monument regions, as well as identify any effects, positive or negative, of monument designation on economic performance. The model specification follows:

$$Growth(I)_{i,t} = \beta_0 + \beta_1 post_designation_{i,t} + \beta_2 year_t + u_i + \varepsilon_{i,t}$$

We specify growth for each economic indicator as a five-year moving average, as follows:

$$Growth(I)_{i,t} = \frac{1}{5} \sum_{t-4}^t \frac{I_{i,t} - I_{i,t-1}}{I_{i,t-1}}$$

We specify the variables as follows:

I = Individual economic indicators: population, total employment, earnings per job, labor earnings, non-labor income, per capita income, earnings per job, non-services employment, services employment, farming employment, mining employment, and timber employment

post_designation = An indicator equal to 0 if the data is prior to monument designation, 1 if the data are after monument designation

year = Year of the data

i = Index for each monument region

t = Index for each year, 1970-2022

u = Unique fixed effect for each monument region

ε = Error term for each monument and year

Results

Table 1 summarizes the parameter estimates and within-monument model accuracy for each of the economic indicators. Coefficients are interpreted as the change in the average growth rate for the economic indicator. For example, the model finds that after monument designation, non-labor income in communities near monuments grows 1% faster than before the monument was designated. Coefficients on year are interpreted as follows: every additional year, non-labor income grows 0.08% more slowly than the year before, on average.

We find that monument designation is associated with an increased growth rate in employment in non-services, non-labor income, timber employment, and per capita income. Monument designation is not associated with changes in employment, population, employment in services, labor earnings, farming employment, or mining employment.

Table 1: Parameter estimates and model performance for economic forecasting model.

<i>Growth in...</i>	Coefficient on monument designation	Coefficient on year	Model fit (within-monument R ²)
Employment	0.0047	-0.0009***	0.2978
Population	0.0010	-0.0007***	0.3800
Employment in non-services	0.0096*	-0.0011***	0.1116
Employment in services	0.0038	-0.0011***	0.3281
Labor earnings	0.0039	-0.0005***	0.0483
Non-labor income	0.0102***	-0.0008***	0.1963
Farming employment	0.0007	-0.0001	0.0011
Mining employment	0.0895	-0.0096	0.0072
Timber employment	0.0559**	0.0007	0.0068
Per capita income	0.0054***	0.0002***	0.0654
Earnings per job	-0.0004	0.0004***	0.1210

***: significant at ≤ 0.01 ; **: significant at ≤ 0.05 ; *: significant at ≤ 0.10

We find that the temporal trend, measured by the coefficient on year, is statistically significant and negative across all but farming, mining, and timber employment, which saw no time trend. Per capita income and earnings per job have both been growing more quickly over time.

Forecasting economic conditions

To estimate the values of the economic indicators from 2023 through 2030 for more recently designated national monuments, we use the parameter estimates in Table 1 to calculate growth from the previous year, incorporating whether the monument was designated during that year.

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About Headwaters Economics

Headwaters Economics is an independent, nonprofit research group whose mission is to improve community development and land management decisions. <https://headwaterseconomics.org/>

References

¹Headwaters Economics. (2017). The Economic Importance of National Monuments to Communities. Retrieved from <https://headwaterseconomics.org/public-lands/protected-lands/national-monuments/>

² U.S. Department of Labor, Bureau of Labor Statistics. (2023). Quarterly Census of Employment and Wages. Washington, DC: U.S. Department of Labor. Retrieved from <https://www.bls.gov/cew/>

³ U.S. Department of Commerce, Bureau of Economic Analysis. (2024). Outdoor Recreation Satellite Account. Washington, DC: U.S. Department of Commerce. Retrieved from <https://www.bea.gov/data/special-topics/outdoor-recreation>

⁴ U.S. Department of Commerce, Bureau of Economic Analysis. (2023). Regional Economic Accounts. Washington, DC: U.S. Department of Commerce. Retrieved from <https://www.bea.gov/data/economic-accounts/regional>