Dynamic Economic Effects of National Park Establishment

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Introduction

This paper studies the impact of the National Park System (NPS) on local economic variables and externalities. This topic is important because the NPS is the largest conservation entity in the world, responsible for protecting millions of acres of land both in and outside of the continental United States. As a highly visible and well-funded agency, the NPS plays a crucial role not only in preserving natural resources but also in benefiting the economies of the surrounding communities.

The economic benefits of the NPS have often been underappreciated and overlooked. In recent years, there has been growing government interest in rolling back protected land areas and reducing staffing of the NPS. Understanding how much the NPS contributes to local economies through job generation, visitor spending, and associated economic activity is especially relevant in today's political climate.

This paper uses an event-study analysis on various NPS designation types to examine the economic effects on counties containing and surrounding an NPS area. To do this, a detailed dataset was constructed that combined park-level data with county-level data. A key finding is that when an NPS area is established, both containing and surrounding counties experience increases in income and employment. Secondary results show that NPS establishment introduces both positive and negative externalities. Together, these findings offer important evidence for policymakers, suggesting that the NPS generates not only environmental value but also significant economic benefits.

Literature Review

The primary literature used in the initial replication was *National Parks and Economic Development* by Andrea Szabó and Gergely Ujhelyi (2024). This paper stands out because it addresses the impact of a new NPS area on employment and income, key economic indicators. The authors find that employment and income both increase in the years following an NPS designation.

Other existing literature on the economic impact of the NPS is limited, but several key studies provide useful insights. The first is *Total Economic Valuation of the National Park Service Lands and Programs: Results of a Survey of the American Public* by Michelle Haefele, John B. Loomis, and Linda Bilmes (2016). This study was a willingness-to-pay survey on whether United States households would pay an increase in taxes to retain and improve NPS programs and parks. Conducted through a large-scale survey, the study finds that American households hold a high value for the NPS, suggesting that the public sees value in these areas.

Another source of economic analysis comes from the NPS itself. Each year, the agency publishes the *National Park Visitor Spending Effects: Economic Contributions of National Park Visitor Spending* (2022), which summarizes the economic contributions of park units on the national economy. These reports quantify the effects of tourism on local economies, including job creation and income generation. For example, the 2022 report found that NPS visitor spending contributed $23.9 billion to the United States economy and supported over 378,400 jobs.

The following additional studies contribute to the broader understanding of how

the NPS influences social behavior, though they do not focus directly on economic development. *A Park by Any Other Name: National Park Designation as a Natural Experiment in Signaling* by Stephan Weiler (2006) investigates whether changing a site's designation to a National Park affects visitation rates. Weiler finds that gaining National Park status significantly increases visitation, suggesting that designation type carries informational value that can alter public behavior.

Another related work, *Crowding In with Impure Altruism: Theory and Evidence from Volunteerism in National Parks* by Matthew J. Kotchen and Katherine R. H. Wagner (2023), explores how park funding affects volunteer behavior. Their empirical evidence shows that larger park budgets increase volunteer activity, which is interpreted as evidence of public good contributions and personal satisfaction.

Together, these studies provide motivation for examining how NPS designation influences local economic conditions and externalities, which this paper investigates using an event-study framework.

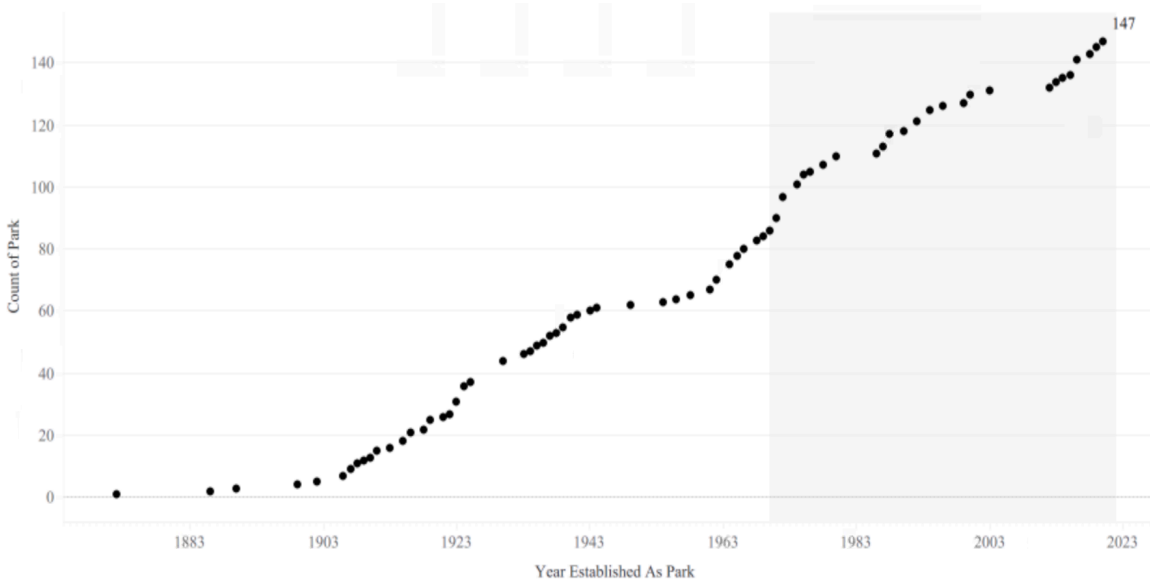
Data Methodology

The dataset used has two main panels, an NPS park-level panel and a United States county-level panel. The NPS park-level panel includes park acreage (1997-2024), number of visitors (1904-2023), and park administrative data (year of park opening, park name, park designation, county associated with the park, etc.). The United States county-level panel includes income (1969-2022), employment (1969-2022), population

demographic data (sex, age, population, and population density) (1969-2022), property values (2000-2022), and car crash rates (2000-2022).

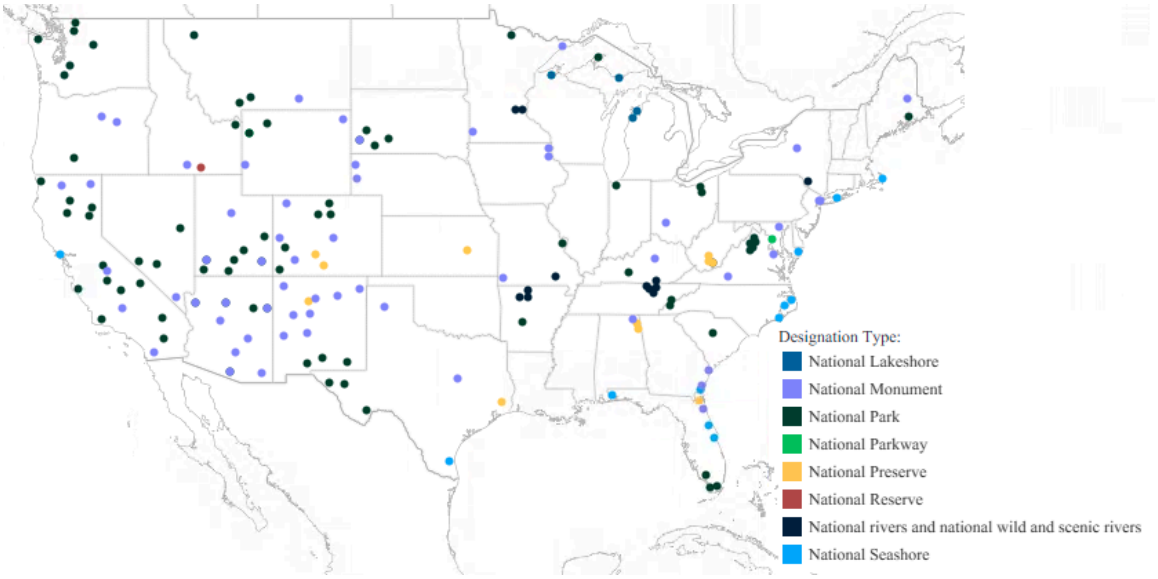
The dataset recognizes 147 NPS areas. These are shown in *Figure 1* based on the year they were established in the NPS system. Further included in the sample are all counties that have an NPS area open from 1969 to 2022, as highlighted by grey.

Figure 1: NPS Area Count by Year Established



The sampled areas include a variety of designations, including National Lakeshore, National Monument, National Park, National Parkway, National Preserve, National Reserve, National Rivers, and National Seashores. These designations range from popular destination sites, such as National Parks, to those that are less popular to tourists, such as National Preserves. *Figure 2* shows these NPS areas on a map of the United States grouped by NPS designation type.

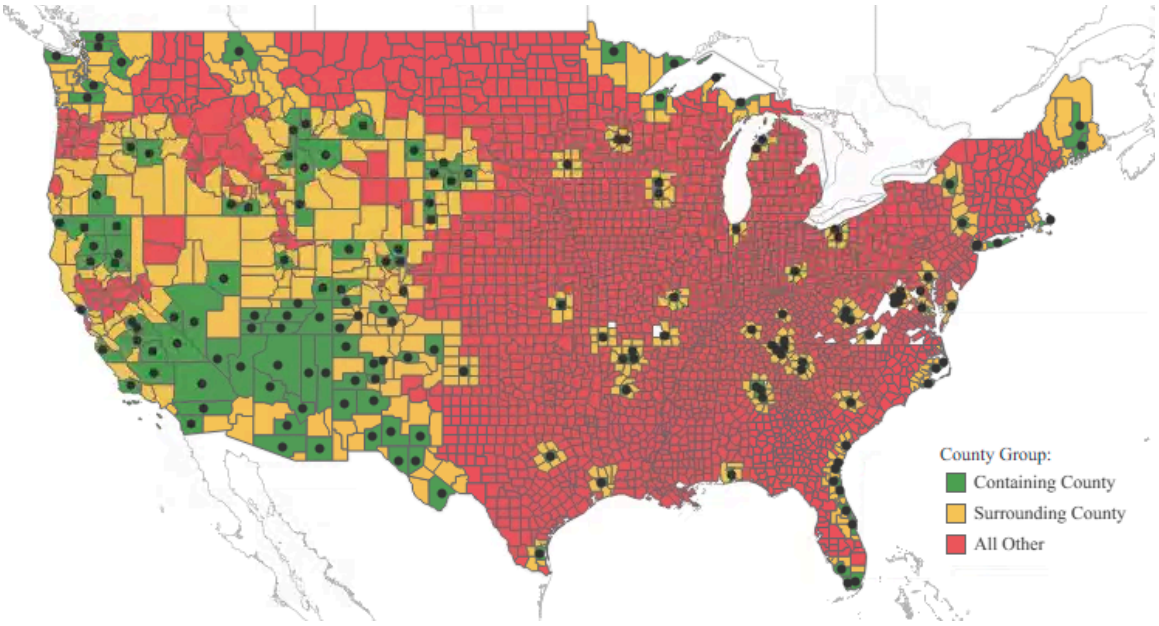
Figure 2: US Map with NPS Area Designation Type



The data is further split into three groups to study the impact of the NPS on the local and surrounding economies. These groups include the county containing the NPS area (containing county), the counties that border the containing county (surrounding county), and all other counties (all other). Within the event-study analysis, the containing county is assigned the year the park was established, which is defined as the minimum establishment year if multiple NPS areas fall within a single county. All surrounding counties are also assigned the established year of the park based on the containing county they directly border. When a surrounding county borders more than one containing county, it is assigned the earliest establishment year among those counties.

All county groups are represented by colors in *Figure 3*. The sample includes all United States counties except for a limited number, which are excluded due to data availability constraints. These excluded counties are shown in white in *Figure 3*.

Figure 3: US Map with NPS Area and County Group



To give further understanding to the data, the following summary statistics were generated, as shown in *Table 1*. The number of visitors is represented annually and measured in thousands of people, acreage is measured in thousands of acres, and park age is calculated by subtracting the year of park opening from 2025. Employment and income metrics are calculated on a place-of-work basis and are both represented in natural logs, while income is adjusted to real 2022-2023 dollars.

Table 1: Summary Statistics

	Mean	Std. dev.	10%	50%	90%	N
Park Visitors	906.88	1437.27	32.91	365.64	2517.98	6,775
Park Acreage	202.21	455.77	0.31	44.25	522.43	2,701
Park Age	77.30	33.06	31	85	117	6,775
Counties with Park						
Employment	4.14	0.84	3.11	4.10	5.35	8,717
Income	13.76	2.03	11.25	13.64	16.69	8,885
Counties Surrounding Park						
Employment	3.99	0.73	3.16	3.93	5.00	25,063
Income	13.42	1.75	11.41	13.25	15.85	25,539
All Other Counties						
Employment	3.91	0.64	3.15	3.85	4.77	129,587
Income	13.22	1.53	11.58	13.04	15.26	131,987

Notes: Park Visitors is measured in thousands of people. Park Acreage is measured in thousands of acres. Employment and Income are represented by natural logs.

The effect of NPS area designation on the natural log of income and employment is estimated using an event-study analysis. The estimating equation gives the economic outcomes as a function of county (c) in time period (t), represented by years. The summarized mean effect of counties in the time-event coefficient is given, where j represents the county's year established as a park, subtracted from the year of the economic outcome. The year of park establishment is represented by $j = 0$, and the study is relative to the data when $j = -1$.

These outcomes are relative to fixed effects for county, characterized by α_c, and time fixed effects are by λ_t. Time-varying controls are illustrated by γX_{ct}. This is then added with the error term, which accounts for any unexplained variation in the dependent variable that cannot be captured by the independent variables in this model.

Equation 1: Estimating Equation

$$Y_{ct} = \sum_{j \neq -1} \beta_j \cdot 1(j_{ct}) + \alpha_c + \lambda_t + \gamma X_{ct} + \varepsilon_{ct}$$

Presentation of Results

The primary results of the analysis are presented in *Figure 4* and *Figure 5*. *Figure 4* shows the average log of income relative to the time since park opening. Pre-treatment trends are relatively flat, while post-treatment trends exponentially increase. This result supports the hypothesis that an NPS area establishment has a positive effect on the income of the local economy. These results are primarily driven by an influx of tourist spending and federal investment.

These results also illustrate that counties with a park have a higher average log income than counties surrounding the park. Meaning, economic stimulation is geographically concentrated, therefore the counties containing a park benefit most.

Figure 4: Average Log Income Over Time

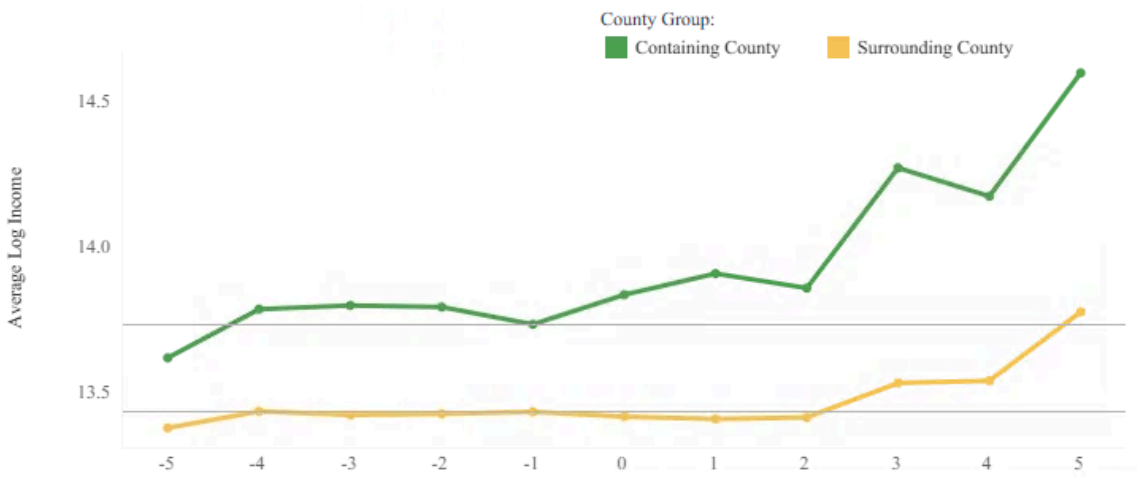
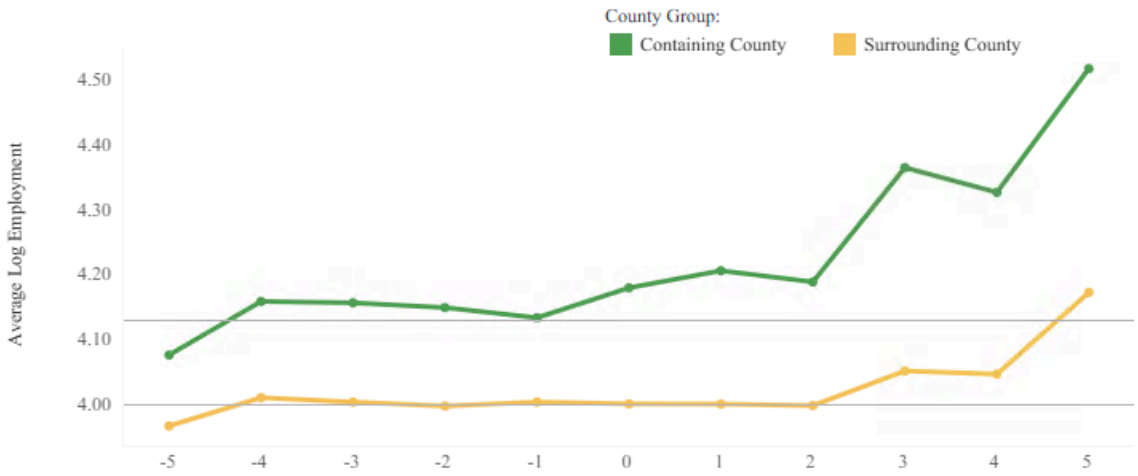


Figure 5 shows the average log of employment relative to the time since park opening. Pre-treatment trends are relatively flat, while post-treatment trends exponentially increase. This result supports the hypothesis that NPS area establishment has a positive effect on the employment of the local economy. Results are primarily driven by an increased labor demand. The low skill labor is primarily demanded for service workers as well as seasonal and part-time jobs. The high skill labor demand is primarily full time work that includes management and government funds directors who may relocate to the area.

These results also illustrate that counties with a park have a higher average log employment than counties surrounding the park. This reinforces the argument that counties with the NPS area capture the largest share of economic benefits.

Figure 5: Average Log Employment Over Time

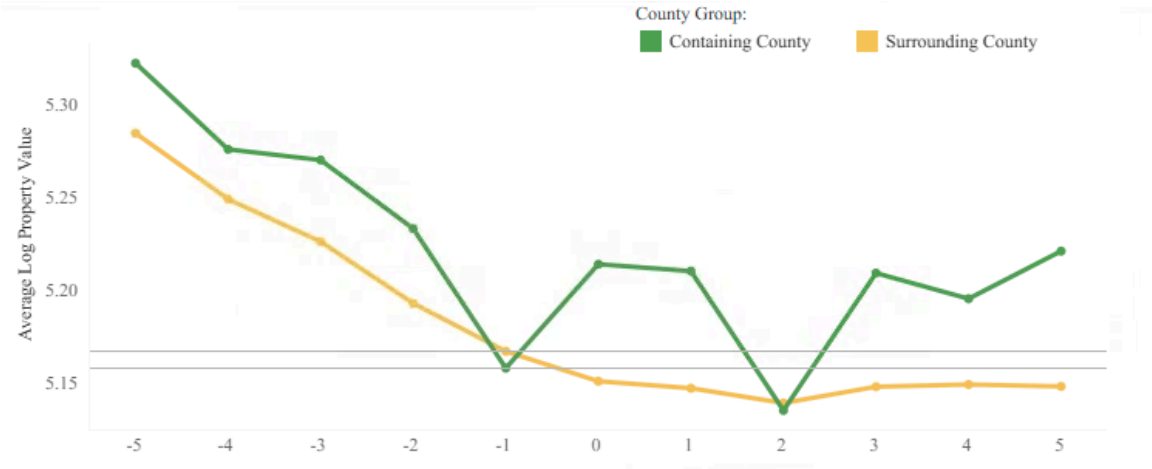


The secondary results showcase the effects of NPS areas on externalities. The first externality examined is property values. This is estimated as a positive externality since we hypothesize that NPS areas would have a positive effect on local property values. This is because NPS areas ultimately add value to the area.

Figure 6 shows the average log of property values relative to the time since park opening. Pre-treatment trends are strongly negative, while post-treatment trends stay fairly flat, with some negative spikes. Pre-treatment trends are negative due to these areas typically being designated in rural areas where property values were previously declining. The post-treatment non-negative trends support the hypothesis that NPS area establishment has a positive effect on the local property values. Results are primarily driven by the value of protected land, land use, and lifestyle.

Although there are a few dips, counties with a park have a higher average log property value than counties surrounding the park. This indicates that the value is geographically concentrated, with containing counties benefiting most.

Figure 6: Average Log Property Value Over Time

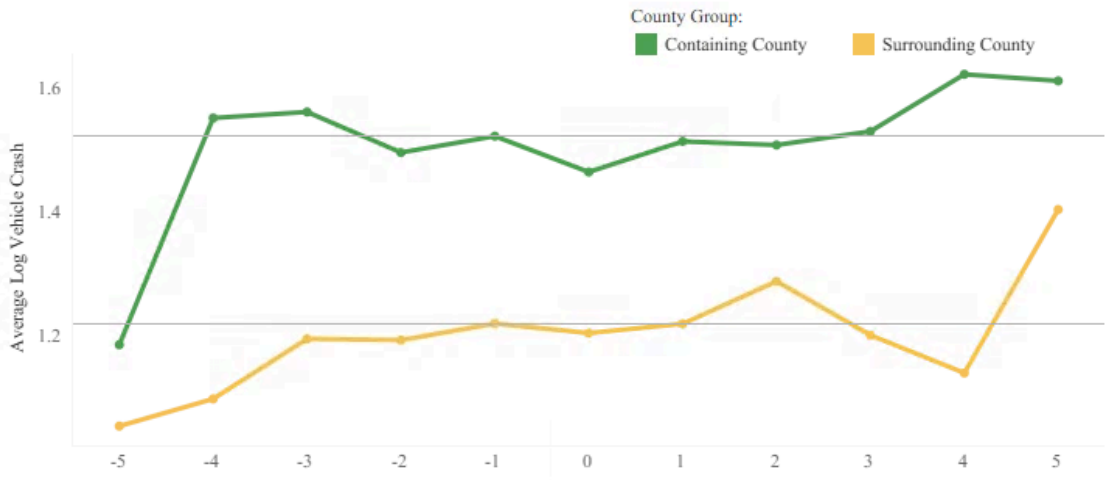


Although property values are seen as a positive externality, other factors come with this. With higher property values, more people will shift to these areas. This will ultimately cause more noise, pollution, and congestion, and will offset the positive impact of being proximate to NPS areas. To analyze negative externalities, vehicle crash data is used.

Figure 7 shows the average log of vehicle crashes relative to the time since park opening. Both pre-treatment and post-treatment trends are primarily flat, but also trend slightly upward overall. Both these results support the hypothesis that park establishment creates a negative externality, with more car crashes in the local area. This is assumed due to the influx of park visitors, which would increase traffic congestion. These tourist drivers are facing unfamiliar routes, rural roads, wildlife crossings, and seasonal traffic spikes, which could all lead to an increase of car crashes.

Although there are a few dips, counties with a park have a higher average log vehicle crashes than counties surrounding the park. This pattern indicates that the economic effects are geographically concentrated within containing counties.

Figure 7: Average Log Vehicle Crash Over Time



Conclusion

This paper evaluates the local economic impact of the NPS, as well as the positive and negative externalities that stem from park establishment. The results reveal consistent evidence that counties containing an NPS area experience stronger growth in both income and employment over time compared to other counties. These findings indicate that NPS designation plays an important role in supporting local economic growth, particularly in areas where new NPS areas are established.

Beyond central economic outcomes, the results also show that NPS areas generate externalities. Property values tend to be higher in counties with a park, suggesting that households place value on the natural beauty, recreational access, and environmental protections that come with an NPS designation. However, these benefits are accompanied by negative externalities, as represented by vehicle crashes. This effect is likely driven by higher visitation, traffic congestion, and the presence of unfamiliar drivers in scenic or rural areas. Together, these findings highlight the different ways in which NPS areas shape the communities that surround them.

Overall, this research demonstrates that the NPS contributes more than environmental preservation alone. Understanding these effects is essential for policymakers as they consider creating, expanding, or reducing protected lands and NPS funding. Continued evaluation of the NPS's economic footprint can help inform balanced policy decisions that support both conservation goals and long-term prosperity.

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