

Regular Paper

Declining National Park Visitation

An Economic Analysis

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Abstract

Visitation to the major nature-based national parks has been declining. This paper specifies an econometric model that estimates the relative impact of consumer incomes, travel costs, entry fees and other factors on per capita attendance from 1993 to 2010. Results suggest that entrance fees have had a statistically significant but small impact on per capita attendance. Increasing fuel prices (travel costs) relative to income has had a more significant effect suggesting that park policies reducing the cost of attendance may be desirable.

Keywords: *national parks; demand analysis; attendance; entrance fees*

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Introduction

National park visitation is in flux. While recreational visits to the system as a whole have remained fairly stable, visitation to the 58 major nature-based national parks—the “crown jewels” such as Yellowstone, Yosemite, and the Grand Canyon—actually peaked in 1997 at 69.4 million visits, and has since declined nearly 7% to 64.6 million visits in 2010 (Table 1). Per capita visitation (the visitation “rate”) has declined even more dramatically, off about 19% over the same period. Two frequently cited reasons for these declines are our new fascination with video (“videophilia” [Pergams & Zaradic 2006, 2008]) and changing childhood socialization that includes less nature play (Louv 2005). Yet economic factors also may be at work. The growing wealth of the middle class was a prime factor that drove the increasing demand for park visitation during the 1950’s and 60’s. Today, however, middle class incomes have stagnated or declined, while trip costs have grown substantially. The direct price of visiting also has increased with the implementation of user fee programs begun in 1997 (the year of peak visitation), under the Recreation Fee Demonstration Program.

Table 1

NP Attendance Data (1993–2010)

Year	US Population (millions)	NP Visits (millions, n=58) ^a	NP Visits/Capita (n=58) ^a	NP Visits (millions, n=30) ^b	NP Visits/Capita (n=30) ^b
1993	259.92	65.8	.25	43.4	.17
1994	263.13	66.8	.25	44.2	.17
1995	266.28	68.6	.26	45.0	.17
1996	269.39	67.1	.25	44.0	.16
1997	272.65	69.4	.26	44.7	.16
1998	275.85	68.5	.25	44.2	.16
1999	279.04	68.2	.24	44.4	.16
2000	282.16	66.4	.24	42.8	.15
2001	284.97	62.4	.22	41.4	.15
2002	287.63	64.8	.23	41.6	.14
2003	290.11	63.7	.22	40.6	.14
2004	292.81	63.8	.22	40.8	.14
2005	295.52	63.5	.22	41.6	.14
2006	298.38	60.4	.20	39.9	.13
2007	301.23	62.3	.21	41.8	.14
2008	304.09	62.3	.21	41.0	.13
2009	306.77	63.0	.21	42.6	.14
2010	309.35	64.6	.21	44.1	.14

^a All 58 National Parks

^b Our sample of 30 National Parks with complete data

Consequently, our objective in this paper is to specify an econometric model that estimates the relative impact of entrance fees, fuel prices, income and other factors on per capita nature-based national park attendance between 1993 and 2010. We begin with a brief historical overview of national park visitation and policy before developing our economic model. The results suggest that entrance fees have had a statistically significant, but small, impact on nature based national park visitation per capita over the 1993–2010 period. Increasing fuel price (and associ-

ated travel costs) relative to income has had a more significant effect. We close with a speculative discussion of the societal context of these factors and suggest some policy implications for consideration.

Background

In 1916, the newly constituted National Park Service (NPS) was charged with the dual mandates of preserving the parks for future generations while enhancing current visitor use and enjoyment. Early Directors like Steven Mather and Horace Albright saw no conflict between these goals: preservation was to be attained by building a constituency for the parks by increasing visitation; they believed that if people could just see the parks, the need to preserve them would be obvious. In the early 20th century, however, travel was expensive and difficult, so national park visitation was limited primarily to the affluent. But after WWII, Americans experienced a new prosperity and a growing middle class was ready to travel. Their inclination was supported by major transportation advances (e.g., the advent of inexpensive air travel, the interstate highway system) and greatly enhanced leisure time that included the paid two-week vacation. The result was rapidly growing demand for national park visits for which the National Park Service (NPS) was unprepared (Carr, 2007); the parks had been badly neglected during the 1940s as resources shifted to the war effort; some were used for troop encampments; others closed altogether. To dramatize their plight, the NPS explicitly coined the fundraising slogan: “The parks are being loved to death!” in 1958. This slogan proved so successful that it grew into an unquestioned assumption, an assumed truism that became part of the culture of national park management.

In the 1970s, after the advent of the environmental movement, thinking about ecology changed, and the preservation mandate of the NPS came into sharper focus (Shultis & More, 2011). The parks were not just places for visitors, they were unique, fragile ecosystems that sheltered endangered species, contributed to “ecosystem services,” and generally served as models for protected area management worldwide. The wilderness movement of that era also saw excessive visitation as a threat: people had become a problem; they clogged congested park roads, overran trails and other facilities, and stressed wildlife, threatening rare and endangered species. Visitors littered and were noisy as well, degrading the park experience for other users. Rather than trying to attract visitation (a major goal of national park policy through the 1960s), resource management agencies came to believe that people needed regulating. Much of the national park and wilderness research of the 1970s, '80s and '90s focused on the need to limit visitation to protect both the fragile parks and the quality of the visitor's experiences, and many parks adopted use limits during the 1980s. Controlling capacity had become a focus in park design (Carr, 2007).

In the middle of the last decade, the dialogue between visitation and protection changed yet again. In 2005, Richard Louv argued that a fundamental shift in the relationship between people and nature was taking place because children were less engaged in nature-based play (Louv, 2005). He cited factors such as the loss of urban open space, increasing parental fears, and the attractions of video. Then, in 2006, Pergams and Zaradic published findings that suggested that the demand for national park visitation was not steadily increasing as most people thought, but had actually peaked in the late 1980s and then entered a period of extended decline (Pergams & Zaradic, 2006). They found the decline in per capita visitation correlated with increased use of electronic media (video game playing, watching television, internet usage, etc.) among other factors. The social culture had changed to include a new emphasis on video in multiple formats. With the advent of digital technology, television sound and picture quality increased enormously, video game culture developed, and the Internet became a dominant force in the way

information was gathered and absorbed. Pergams and Zaradic (2006) suggested that this new-found fascination with all things video (“videophilia”) could be associated with a cultural shift away from visiting national parks.¹ It is very important to note, however, that several potential statistical problems such as multicollinearity, nonstationarity and the potential for spurious correlation appear to be associated with Pergams & Zaradic’s (2006) analysis.

Meanwhile, relatively little attention has focused on economic factors like entrance fees, income and travel costs on park attendance. Fuel costs increased sharply, and, especially after 9/11, air travel grew significantly more difficult and expensive. For most Americans, the past two decades brought stagnating or declining income (in constant dollars), while wealth concentrated at the upper end of the spectrum. By the late 1980s, the political environment in which the parks operated had altered as well; neoliberalism—the view that optimal resource allocation is most efficiently accomplished through the unrestricted operation of the free market—replaced progressivism as a political philosophy, leading to a new emphasis on entrance fees to regulate use and generate agency revenue. Everyone was pleased; those on the left thought that fees meant better park funding; those on the right felt fees would lead to less government; and to agency people, retaining fee revenues meant supplemented budgets and some freedom from the vagaries of the appropriations processes (Crompton, 1998).

While entrance fees were charged at some national parks throughout the 20th century, reliance on fee revenues increased significantly in the 1990s (Solop et al., 2003). From 1994 to 1997, NPS-wide, park fee revenues averaged \$78 million per year (U.S. DOI, 2004). But in 1996, Congress authorized the Recreational Fee Demonstration Program (RFDP) that allowed four federal land management agencies (National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and U.S. Forest Service) to charge new or increased fees at agency sites (U.S. DOI, 2002). In 1996, 47 national park system units were part of the first phase of the RFDP, by 1998, 52 additional national park units were part of the RFDP, by 2000 approximately 100 units were part of the program (Solop et al., 2003). NPS fee revenue averaged \$131.2 million per year from FY 1998 through FY 2003, while non-fee demonstration revenues dropped to \$7.5 million in FY 1998 and to \$1.3 million in FY 2003 (U.S. DOI, 2004). In 2004, the Federal Lands Recreation Enhancement Act (REA) replaced the RFDP (DOI, 2009). Under REA, in 2009, the National Park Service charged fees at 196 of its park units (DOI, 2009). In FY 2008, NPS collected \$172 million in REA-related revenue and \$0.5 million for non-REA fee revenue (DOI, 2009).

Economic factors usually play critical roles in consumer decision-making and we believe they shape park visitation as well. Consequently, our goal in this paper is to create an econometric model of nature-based national park visitation that allows us to explore the relative contribution of economic factors including price, income and travel costs.

Methods

Economic theory indicates that the demand for any commodity including national park visits depends on its price (entrance fee, in this case), the incomes of consumers, the price of substitutes or alternatives (e.g., other recreational pursuits available to consumers), the cost of complementary goods and services (e.g., the price of gasoline), and the tastes and preferences of individual consumers. Theory also holds that an increase in price (entrance fees) is expected to result in reduced visitation, all else held constant. Currently, we are not aware of studies that incorporate entrance fees into a *behavioral* model of national park visitation.

¹The National Park System currently consists of 392 diverse areas, some with little relationship to nature (e.g., National Historic Sites such as Edison’s Laboratory). Pergams and Zaradic (2006) recognized this diversity but did not adjust for it in their analysis.

In this analysis, we examined per capita visitation to the major nature-based national parks from 1993 to 2010. While the NPS has maintained visitation records since 1917, a national database on fees was not instituted until 1993, and, since we wanted an explicitly economic model, 1993 became the initial year for our time series. We chose per capita visitation rather than actual visitation as our dependent variable because there is relatively less variability over time in total attendance (see Table 1). We hypothesized that consumer income (see Solop et al., 2003), travel costs (represented in our model by retail gasoline prices), and the price of entry would all impact annual park visitation. While some events (e.g., wildfires, hurricanes, etc.) can affect visitation to specific parks, the September 11, 2001 terrorist bombings created a pervasive fear of travel throughout the country, and NPS visitation dropped sharply (National Park Service Press Release, 09 March 2005, <http://home.nps.gov/news/release.htm?id=574>). Consequently we expected visitation to drop for at least one to three years after 2001, and adjusted our analysis to control for this effect.

The resulting model, based upon our expected hypotheses, is:

$$(1) \text{ Attendance}_{it} = fn(\text{Vehicle price}_{it} / \text{Median Income}_t, \text{Fuel price}_t / \text{Median Income}_t, \text{Post 9/11/2001 dummy}_t)$$

where Attendance_{it} is total per capita annual recreation visits to national park i in time period t , and $\text{Vehicle price}_{it}$ is per-vehicle entrance fee to national park i in time period t . Fuel price has the same value for all parks at time period t so there is no subscript i on the variable itself. The same applies to median income and the dummy variable indicating whether the time period is post 9/11/2001 (i.e., from 2002 to 2004)².

Data Sources

The dependent variable in our analysis is per capita visitation by park per year obtained from the NPS Public Use Statistics Office; entry fee data were obtained from the NPS National Fee Program. The time series ranged from 1993 to 2010 and included only nature-based national parks; the NPS currently manages 392 areas, of which only 58 are the major nature-based “national parks.” Of these, 30 met our requirement for complete data series for both visitation and fees; consequently, we based our subsequent analysis on these 30 parks (Table 2). These 30 parks mirror the attendance trends at all 58 national parks, however (see Table 1). Entry price was the actual cost of a vehicle entry to each particular park in any given year. Annual fuel prices were obtained as June estimates for national retail regular gasoline prices from the U.S. Energy Information Administration (EIA) (see http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=p&s=emm_epmr_pte_nus_dpg&f=m). Median income was obtained from the U.S. Census Bureau. All monetary independent variables are in real (2011) dollars (see Table 3).

In recent years, many consumers have experienced stable or declining real incomes coupled with increasing energy (travel) costs and entrance fees. Figure 1 shows the relationship between gasoline prices, for example, and income over the 1993–2010 period while Figure 2 depicts the time trend of entrance fees relative to income. To capture the potential effect of increasing travel costs relative to income our econometric attendance model uses fuel price divided by income as one of the independent variables. We also divide entrance fee by income.

²The dummy variable for 9/11/2001 equals 1 for 2002, 2003 and 2004; it is zero otherwise.

Table 2

National Parks Used in Analysis

Acadia	Haleakala
Arches	Hawaii Volcanoes
Badlands	Joshua Tree
Big Bend	Kings Canyon
Black Canyon of the Gunnison	Lassen Volcanic
Bryce Canyon	Mesa Verde
Canyonlands	Mount Rainier
Capitol Reef	Olympic
Carlsbad Caverns	Petrified Forest
Crater Lakes	Rocky Mountain
Death Valley	Saguaro
Everglades	Theodore Roosevelt
Glacier	Yellowstone
Grand Canyon	Yosemite
Grand Teton	Zion

Table 3

Independent Variables

Variable	N	Mean Value	Expected Sign
Entrance price per vehicle (2011 dollars)	540	\$12.77	-
Fuel price per gallon (retail, regular, June estimates, 2011 dollars)	540	\$2.19	-
U.S. household median income (2011 dollars)	540	\$50,959	+
Post 9/11/2001 (2002 - 2004 = 1, all else = 0)	540	-	-

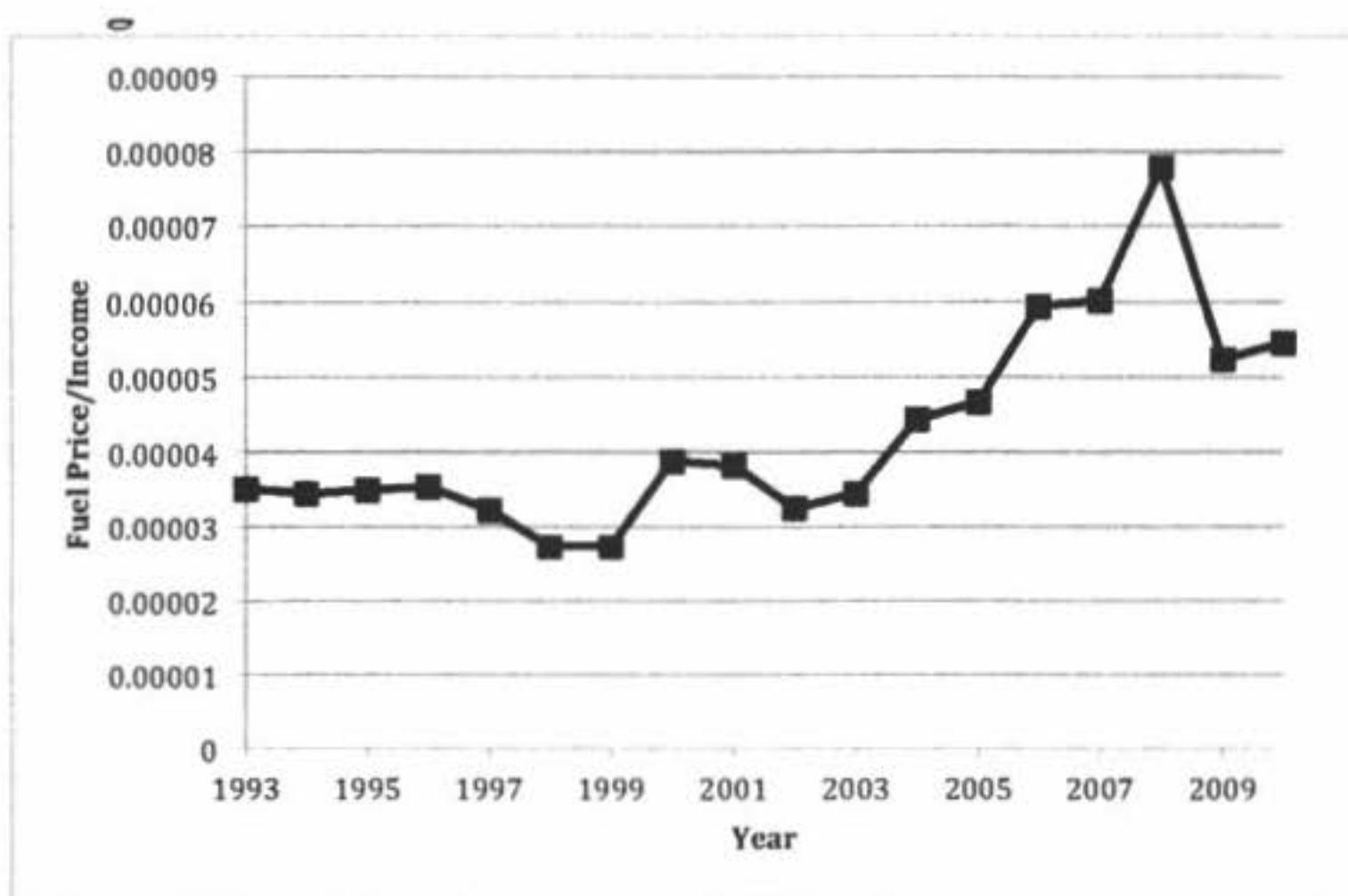


Figure 1. Real Fuel Price/Real U.S. Income Over Time

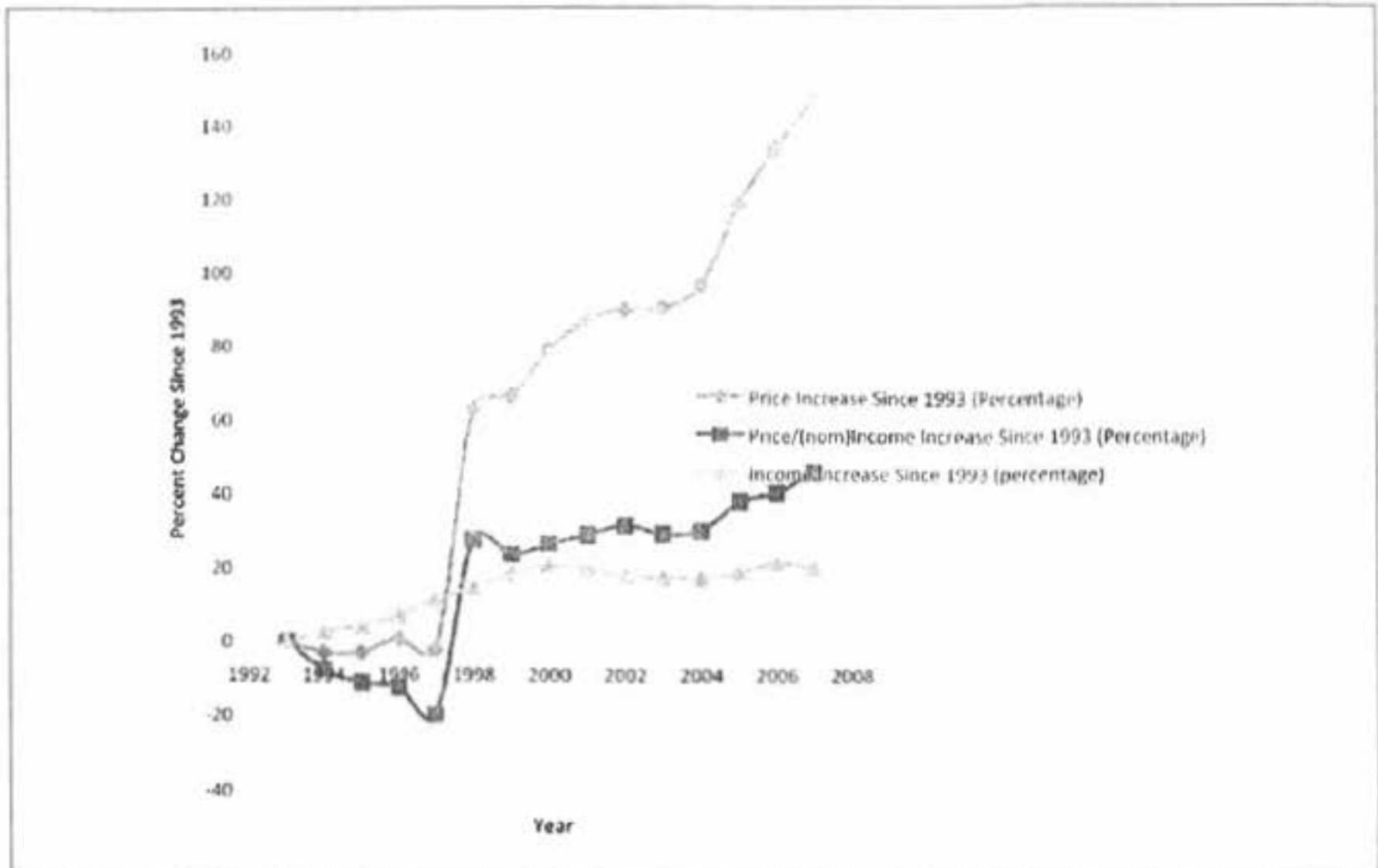


Figure 2. Price, Income, and Price/Income Over Time

Since our model pools cross section (parks) with time series data we use Stata's xtreg estimating procedure, specifying for fixed effects which uses a within regression estimator. We specify robust standard errors clustered on park. The robust component specifies the Huber/White/Sandwich estimator of variance, and when combined with the cluster option this allows observations that are not independent within cluster (in our case, serial correlation is the reason for non-independence). The estimator also assumes that observations are independent between clusters, a reasonable assumption with the national park data. We cluster on the panel variable (i.e., park), which produces a variance component estimation that is robust to cross-sectional heteroskedasticity and within-panel (serial) correlation (StataCorp, 2009, 2011). The robust cluster variance estimator is also robust to misspecification.³

We tested for multicollinearity in this model by estimating partial correlation coefficients between each of the independent variables. Correlations between entry fee/income, post 9/11 and fuel price/income were less than .38. The correlation between post 9/11 and fuel price/income was .67 suggesting moderate multicollinearity. However, the alternative would be to leave out one of these variables thereby producing potential omitted variable bias.

Another possible statistical problem is nonstationarity of the time series data which can lead to spurious correlation. We tested for nonstationarity using LLC and HT tests, rejecting the null hypothesis of nonstationarity.

³It is important to note that Feasible GLS is not appropriate because of data limitations. With FGLS, the number of time periods must be greater than the number of parks. Our data reflects a short panel, i.e., data with more parks than time periods, having 30 parks and 18 time periods. In addition, the random effects model also is not appropriate because that model presumes that there is no correlation between the error and the independent variables. With our data, this situation is unlikely. For example, we are unable to fully specify substitutes and complements.

Results

Visitation trends

From 1993 to 2010, total visitation to the entire park system ($n=362$) actually continued to grow after the 1987 per capita peak, reaching a high of 287.1 million visits in 1999, then declining to a low of 272.6 million in 2006 before rebounding to 281.3 million in 2010. In this sense, total visitation to the park system as a whole looks relatively stable, declining only 3.1% from its peak. The entire park system contains many more facilities than nature-based parks, however, and system-wide visitation over the past decade may have been buoyed by the addition of popular memorials like the Korean Veterans Memorial and the World War II Memorial, as well as by events such as President Obama's first inauguration that brought over a million visitors to the National Mall.

A very different picture emerges when only the national parks—the 58 so-called “crown jewels”—are isolated (Table 1). These are the primarily nature-based parks; if there has been a significant decline in interest in nature, it should be more evident in these parks. Total actual visitation to the 58 major national parks peaked in 1997 at 69.4 million (Table 1, column 3), while the visitation rate reached peaks of 0.26 in both 1995 and 1997 (Table 1, column 4); both total visitation and the rate of visitation have declined steadily since. For 2011, the figures were 62.6 million, a decline in total visitation of nearly 10% from the 1997 high, and 0.20, a 23% decline from peak. Our sample parks followed a generally similar pattern with minor variations (Table 1, columns 5 and 6).

Factors Affecting Visitation

The results from the fixed effects regression model are shown in Table 4. Visitor entry fee/income was statistically significant, but its influence on overall attendance was small. The average entry fee per vehicle in our study was \$12.77 (see Table 3) and demand was very price inelastic. This result is in line with several other recreation fee studies. For example, Walsh et al. (1989) found the visitation impacts of fees to be small because, for most people, the entry price is small relative to overall total cost.

In addition to fees, we also found statistically significant negative relationships between visitation to major nature-based national parks and fuel costs/income, and the 9/11/2001 terrorist attacks. Each significant relationship conformed to expectations (see Tables 3 and 4). Using the P_E test provided in Greene (2007), we found no difference between a linear and log-linear specification of our model. Both models had a within- R^2 of about 0.40.

Discussion

Visitation to the total National Park System has remained relatively stable, but visits to the 58 major national parks had, in 2010, declined about 7% from their high point in 1997. Per capita visitation—the rate of visitation across the population—looks much worse, off 19% from its 1997 peak. If this trend is simply projected, we estimate that actual visitation to the major national parks could fall to less than 60 million visits/year before 2020, and the visitation rate could fall to levels not seen since the mid-1970s.

Our analysis suggests that one likely explanation of the downward trend in national park visitation lies in the combination of rising visitation costs coupled with stagnate or declining consumer income (see Figures 1 and 2). Park visitation can be expensive. In 2010, for example, the average spending for national park visitors who stayed in a motel outside the park was \$262

Table 3*Independent Variables*

Variable	N	Mean Value	Expected Sign
Entrance price per vehicle (2011 dollars)	540	\$12.77	-
Fuel price per gallon (retail, regular, June estimates, 2011 dollars)	540	\$2.19	-
U.S. household median income (2011 dollars)	540	\$50,959	+
Post 9/11/2001 (2002 - 2004 = 1, all else = 0)	540	-	-

Table 4*Model Results*

Fuel price/income model^a			
Variable	Estimated Coefficient (Std. Error)	T value	Pr > +
Intercept	0.005983***	25.37	0.00
Entrance price per vehicle/ Income	-0.00004***	2.89	0.01
Fuel price/income	-4.906868*	1.85	0.08
Post 9/11/2001	-0.000411***	6.01	0.00

^a 30 cross-sections, 18 time periods. Within $R^2 = 0.37$. $F(3,29) = 14.64$. Prob > F = 0.00.

***significant at .01 level

**significant at .05 level

*significant at .10 level

per day, while the average day user spent about \$40 per day (NPS, 2011). Crudely estimated, then, a 10-day family trip to visit a major national park might cost over \$2,620, a price that, in the face of stagnant incomes, many middle class families must balance against the price of competing goods and services like education or healthcare. Facing these kinds of prices, and considering the general level of family debt in the U.S., national park visitation may be growing less affordable for an increasing number of American families. This is entirely consistent with our data: both price/income and fuel cost/income are measures of affordability that rose rapidly over the period we studied (Figures 1 and 2). Of these two, travel costs were the most important. While the long term may offer developments like an electric car and/or the development of high speed rail, absent these, we expect that travel costs will continue to increase, with a corresponding impact on park visitation.

User fees deserve consideration, in part because they are the factor most directly influenced by policy. Our data show that the demand for national park visits is inelastic, so that, if simple revenue generation is a goal, the national parks probably could increase entry fees without having major impacts on visitation. Fees probably have their greatest negative impact on people living within the region close to the park. For example, the average entry fee in our study was \$12.77—only 4.6 percent of total daily cost for overnight visitors, but 32 percent of a trip cost for day users. Those in communities immediately adjacent to the park may buy annual passes, but pricing could influence visitation decisions for people who live further away and who might want to visit only once or twice a year. This could explain the significant, but small, “fee effect” we found in our analysis.

Policy Considerations

Our results suggest several speculative policy implications. First, we believe that the persistent, long term downward trend in per capita visitation may mean that the time has come for policymakers to rethink the relationship between visitation and preservation. Both are mandated and have always been important, but the relative emphasis placed upon them has shifted over the years, and it may be time for it to shift again. Early NPS directors sought protection for the parks *through* visitation. But the huge growth in demand that occurred in the 1950s and 1960s, and for which the NPS was entirely unprepared, paved the way for the protectionist policies that remain in force today. Reduced visitation has its positive points; it might bolster the quality of individual experiences and enhance habitat, biological diversity, and the preservation of endangered species (Shultis & More, 2011). On the other hand, fewer people means a restriction of the recreational and aesthetic benefits of the parks to the public at large, with, perhaps, a corresponding shift to the wealthy—those who can afford high prices. Whatever the case, in the 21st century, the national parks will be locked in a highly competitive struggle for people’s attention, time, and budget.

How might the NPS rebuild visitation? Clearly, since they face a public that is cost conscious, one way to begin is to consider how to make visiting the parks more affordable and easier to visit. Reduced entry fees are one possibility. While it might be politically impossible to eliminate them, it should be possible to sell a daily pass (as opposed to a weekly one) at a low rate; Parks Canada does this with their parks. This could increase visitation from within the local region for those too far away to make an annual pass effective. In the long term, it might also be desirable to lower or eliminate tent camping fees while, at the same time, developing greater peak season camping capacity. This would effectively subsidize young people and families and represents an investment in future visitation. Other fees for additional services like particular interpretive walks should also be reviewed: at Arches National Park, for example, access to the Fiery Furnace adds from \$4 to \$10 per adult in addition to the general park fee. Moreover, many parks have “grand” hotels or lodges, and while the NPS already regulates prices, perhaps greater attention should be given to developing more modest accommodations where appropriate.

Transportation networks are critical both within and outside the park. Ideally, efficient public transit should link the parks with airports and other transportation hubs. At present, access really depends on driving, especially for uses like camping that require equipment. Transportation systems (including foot traffic) should also be linked within the park, making visitation easy, efficient and cost effective. Some parks like Acadia and Zion already have such systems; others need them. Both visitors and park ecosystems may benefit. And, where equipment is required, it might be desirable to develop within park concessions that rent and maintain camping, hiking, biking, and other gear.

Lastly, increased advertising may be desirable. If coupled with a few “free weekends” this may be a particularly effective policy option.

Limitations

The current study has some important limitations. First, economic theory specifies that people make decisions from sets of alternatives that partly substitute for one another. Unfortunately, there is no information on the full range of potential substitutes for the types of national parks examined in this paper. Major recreation participation surveys such as the National Survey of Recreation and the Environment (NSRE) and the Outdoor Foundation’s annual participation survey continue to show increasing participation levels in many activities, but they give no indication where these activities are occurring. It may be that people are foregoing longer trips to national parks, substituting areas and activities that are closer to home (and, therefore, less expensive). This kind of substitution might well leave them with more time to engage in a greater number of activities—in place of a two-week national park vacation, they might, for example, visit two state parks. Unfortunately, we have no data to be able to confirm this. On the other hand, the major nature based national parks are very unique; as such, there are few, if any, substitutes for many people.

We also had to exclude several potentially important variables because of lack of data or very high multicollinearity. These include Pergams and Zaradic’s (2006) “videophilia” variables, changes in demographics, and changes in the socioeconomic structure of the population. For example, the idea of national parks evolved in the latter half of the 19th century when the U.S. was a culture dominated by northern Europeans. Today, the country is evolving to include far more Hispanics and Asians, groups that may not share the cultural tradition of interest in the parks and the recreational activities associated with them. We are also a more urban/suburban nation today than we have been in the past, and that very urbanization could have been responsible for gradually changing outdoor recreation preferences that have begun to show up in participation patterns. Moreover, available leisure time may have declined for some people and schedules for both adults and children have become more complex—but, there is no data on how these factors have changed.

The great increase in demand for national parks that occurred in the mid-20th century was the result of the growth of a strong middle class. Today’s decline in per capita national park visitation parallels the decline of the middle class. Could the restoration of the middle class also restore national park visitation rates? Or, has there been a relatively permanent change in tastes and preferences so that we are entering a new era where the national parks will be less important to an increasingly urbanized public?

Conclusion

In this paper, we have examined the decline in per capita visits from an explicitly economic perspective. Economic theory suggests that prices, costs, and income provide important contexts for people’s decision making. While the current decline in national park visitation might be linked to many factors, these are clearly important. Both travel costs, represented in our study by fuel price, and park access fees have grown more rapidly than consumer incomes; the national parks may be slipping beyond the reach of many Americans. If current visitation trends continue the parks may be at risk of losing their relevance in modern society. If they do, will we have the political will to sustain them? That is unanswerable through scientific research, but it is a question that deserves to be raised.

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