

An Economic Analysis of Protected Areas and Grand Canyon

River Rafting

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Abstract

Public lands, specifically protected areas are embedded in the identity of the American West. The last one hundred years has seen a growth in protected areas managed by the federal government. These areas represent opportunities for economic growth and expansion in industries such as tourism and recreation services. Caution and quantitative analysis should be made in gauging the efficacy of protected areas contribution to stimulating local economies. Two reviews were conducted to explore the economic impacts of protected areas. The first examined the general economic impact that the presence or establishment of protected areas has on local economies. The second examined river rafting specifically in the Grand Canyon National Park (GCNP) and how it impacted the surrounding communities. Both reviews found both positive and negative impacts associated with tourism developments. Though, river rafting in GCNP, while creating jobs, did not perform well in enhancing employment or retaining rafting revenues in comparison to other river recreation studies.

Regional Economic Impacts of Parks

Public lands¹, which include wilderness, wetlands, lakes and mountain ranges, have been argued to be dynamic drivers of local and regional economies for some time (Riebsame 1998). This argument makes sense when one realizes that the federal government owns and operates approximately 46% of the landholdings in the western United States. Public lands offer vast resources for possible economic income; outdoor activities such as fishing, camping, hunting and skiing (Riebsame 1998).

However, there is not a strong consensus as to whether public lands offer any significant contribution to the local economies they surround. Questions have been raised as to whether there is a net drain on public goods due to the transient nature of parks and wilderness areas (Eagles et al. 2002).

The 'Footloose' Economy

Historically, the economic role of public lands as drivers of economic dynamism was somewhat moot. The classical economic mantra was 'jobs first, then migration' meaning, that people would migrate to where the best opportunity to make a living presented itself; mining and other extractive services in the west come to mind (Rasker et al. 2013). This did not typically involve public lands, where recreation services, though valued, were seen as luxury. Likewise, those looking for employment would traditionally look to stable, non-seasonal industries for their employment.

This line of thinking has been shifting since the mid-20th century towards a 'migration first, then jobs' line of thinking (Decker and Crompton 1993, Ulman 1954). Within this framework people make decisions of where to live first based mostly on quality of life considerations. After the decision of residence has been made jobs or self-

¹ Throughout this analysis, when referring to public lands we are referring to areas of recreation that are owned and operated by the federal government such as national parks, national monuments and wilderness areas.

employment are sought after. Arguments suggest that the globalizing effects of technological advances, and the jobs that have come with it have given people the freedom to decouple their employment from centralized industrial centers and instead the freedom to live in rural, areas.

As a result of this shift, many businesses have become 'footloose' where owners and operators are able to live where they want and not depend on urban hubs for commerce and communication services (Decker and Crompton 1993). This shift toward a footloose business environment has led many to suggest that this is not only beneficial for owners and operators who can now freely move their business where they like but also for the rural communities they come to inhabit (Chi and Marcoullier 2012). Arguments have been made that the movement of these industries to rural areas is having a positive economic impact on the communities they inhabit.

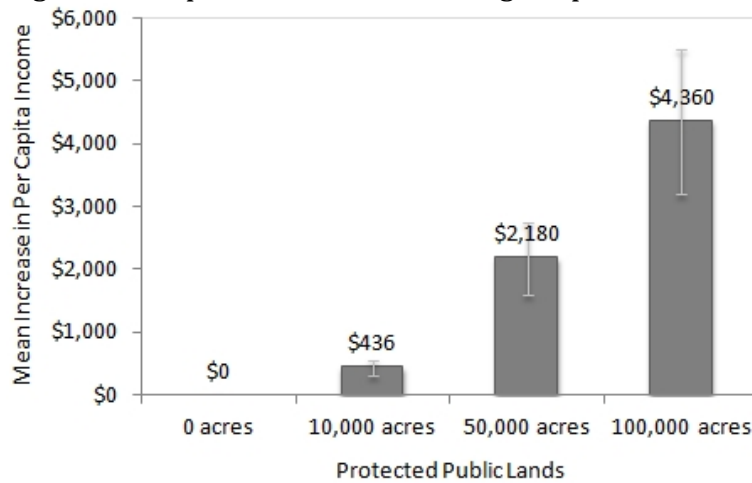
Economic Benefits of Federal Protected Areas

Starting in the early 1990's researchers began to report the positive impacts that these shifts were having on rural areas in the west. For example, in Ruditz and Johansen documented that counties in the west with federally-designated wilderness areas grew at a quicker rate than those without designated wilderness areas (1991, 1992). Similarly, research has shown that there is a positive relationship between the presence of protected lands and the local counties' economic performance (Lorah and Southwick 2003). In their study, Lorah and Southwick demonstrated that from 1969-1999 population, employment and income growth were greater for rural areas near protected areas than those not near wilderness areas (2003).

Relatedly, Holmes and Hecox found that the more protection an area had correlated positively with the rate of growth of the surrounding region (2002). Holmes and Hecox noted that not only did the growth of the lower paying service sector outpace their non-wilderness neighboring counties but that professional services such as legal services and the banking industry outpaced their non-wilderness neighbors. Similarly, Rasker demonstrated that federal lands, used for conservation and recreation rather than commodity production or extraction, had faster rates of economic growth (2006).

Most recently, an analysis conducted by Rasker et al. (2013) sought to understand if public lands in the west were associated with increased or decreased economic performance. They found that per capita income was higher by \$435 for every 10,000 acres of land in protected area between the years 1990-2010.

Figure 1 – Impact of increased acreage of protected land on mean per capita income (\$).



Source: Rasker et al. 2013

Drawbacks

As is the case in many economic analyses there is no consensus whether protected areas have a positive economic effect on their surroundings. Researchers have found that while inward migration to areas near protected lands was robust this does not equate to an increase in the employment rate (Lewis et al. 2002). A survey of 250 counties in the Rocky Mountains was unable to detect a direct or indirect association with population growth or employment (Duffy-Deno 1998). Further criticism has suggested that there is no difference in wage growth between rural areas near protected areas and those focused on extractive industries (Lewis et al. 2003).

One example of this, the Northwest Forest Plan (NFP) that allocated 11 million acres of federal timber harvesting land to protecting old-growth forest species, found *negative* effects on employment and an *increase* in net outward migration (Eichman et al. 2010). This example corroborates further economic analysis on the NFP that a shift from extractive industries does not always produce economic benefits (Eichman et al. 2010).

Economics of River Rafting in Grand Canyon National Park

National Parks have the potential to have significant socioeconomic impacts on their surrounding communities. Numerous visitors and financial transactions foster potential beneficial spillover effects to the communities surrounding parks. Many surrounding communities of parks are rural and depend highly on tourism as an auxiliary or major component of their local economies (Neher and Duffield 2000). River recreation in parks may significantly impact and drive parts of these surrounding rural economies. While there may be the potential for positive economic impacts, there remains uncertainty as to whether expenditures on river recreation impact the local community in a positive way or are repatriated out of the focus area (Eagles et al. 2002).

This section will examine the economic impacts of river recreation in the Grand Canyon National Park (GNCP) and whether these impacts remain in the GCNP area and potential gaps to be filled in further analyses.

As discussed in the prior section; national parks may positively impact the adjacent communities but there are also numerous opportunities for risks and costs. The costs most commonly associated with tourism are financial, cultural and environmental (Eagles et al. 2002). Financial costs come typically in the form of increased tax burden for local communities as the demand for public good such as policing, infrastructure and health services increase in proportion to visitors to a park (Loomis and Walsh 1997). Cultural costs can take the form of congestion, a loss of cultural identity and economic exploitation (Hohl and Tisdell 1993). Environmental costs such as pollution, wildlife disturbance and erosion are examples of how tourism and recreation can negatively impact surrounding communities (Hjerpe and Kim 2003).

At the same time, parks and tourism may open up opportunities for employment and training where there may have been high levels of unemployment or stagnation. As well, parks can encourage policy makers to invest in needed infrastructure that benefit both park visitors and locals. Parks can also assist in revamping and protecting cultural heritage and draw attention for change to peoples or places that are not well represented in society. Lastly, parks and recreation can reverse environmental problems such as the aforementioned by bringing awareness to visitors and the surrounding community of the intrinsic and economic value of wilderness. Thereby, protecting and rehabilitating fragile, polluted or degraded lands.

Economic analyses are not uncommon for parks but their focus may be too broad and the impacts measured are not necessarily scaled to how surrounding communities may be impacted. Likewise, impact studies may not address adequately the costs that may be incurred (Stynes, 1997).

Socioeconomic Landscape of the Region Surrounding Grand Canyon National Park

The region surrounding the GCNP is demographically diverse; including a strong Hispanic presence while being primarily Caucasian. There are five sovereign Native American nations represented; the Navajo, Hopi, Paiute, Havasupi and the Hualapai. Landholding surrounding GCNP is diverse as well, where the sovereign Nations own around 40% of the land surrounding GNCP, the federal government holds 47% of the land with the remaining being in private hands (Hjerpe and Kim 2003). The unemployment rate is higher than the state average, 6.4% and 5.4%, respectively (Arizona Department of Commerce 2012).

The economy of the local region is dominated by the tourism and recreation industries where approximately 35% of local employment is represented (Arizona Department of Commerce 2012). Within the GCNP, river recreation attracts approximately 22,000 rafters/year, drawing in \$21 million/year in gross expenditures for both commercial and non-commercial rafting venture and supports approximately 400 full time jobs (Hjerpe and Kim 2003) (Figures 2 and 3).

Figures 2-3: Regional commercial and non-commercial rafting expenditures

Affected industrial sector	Regional commercial rafting expenditures	Average regional expenditure per commercial rafter	Affected industrial sector	Regional non-commercial rafting expenditures	Average regional expenditure per non-commercial rafter
Amusement and recreation services	\$7,716,000	\$414	Eating and drinking and food stores	\$795,000	\$221
Federal, non-military (NPS Franchise/Park fees)	\$2,542,000	\$137	Recreational equipment	\$619,000	\$171
Eating and drinking and food stores	\$1,826,000	\$98	Federal, non-military (Park fees)	\$373,000	\$103
Passenger transportation	\$1,654,000	\$89	Arrangement of passenger transportation	\$194,000	\$54
Miscellaneous retail	\$1,621,000	\$87	Lodging	\$133,000	\$37
Other	\$3,281,000	\$176	Other	\$346,000	\$94
Total for all sectors	\$18,640,000	\$1001	Total for all sectors	\$2,460,000	\$680

^aThe Grand Canyon regional economy is defined as Coconino County, AZ and the border towns of Kanab, UT and Peach Springs, AZ.

Source: Hjerpe and Kim 2003

Hjerpe and Kim (2003) used these and other data to conduct a detailed analysis of the gross inputs and outputs to the Grand Canyon region. In their analysis they were interested in the total expenditures as well as metrics such as multipliers and leakage effects. Economic multipliers, in the context of Hjerpe and Kim’s research are concerned with understanding how many jobs are created per dollar of expenditure on rafting services. A multiplier allows job creation comparisons between different systems in different places (Machlis 2000). Leakage effects in this context are those expenditures that may be made while in the canyon but are then repatriated outside of the study area (Machlis 2000).

Hjerpe and Kim (2003) discovered that the average multiplier effect was 1.31 (averaged between commercial and non-commercial rafting). That for every dollar spent on rafting activities, 1.31 jobs were created. This multiplier is lower than other reported employment multipliers within river recreation studies (see figure 3).

Figure 3 – Employment multipliers from various studies compared to GNCP rafting

River/(Type of use)	Total gross output	Total income	Employment
Delaware Water Gap River, PA (All uses) ¹	2.00	2.25	1.58
Upper Delaware River, PA and NY (All uses) ¹	2.03	2.16	1.57
New River Gorge River, WV (All uses) ¹	2.10	2.36	1.84
Chattooga River, GA and SC (Rafting only) ²	2.18	2.08	1.70
Gauley River, WV (Rafting only) ²	2.42	2.38	1.90
Kennebec River, ME (Rafting only) ²	2.49	2.43	1.82
Middlefork River, ID (Rafting only) ²	2.28	2.34	1.90
Nantahala River, NC (Rafting only) ²	2.39	2.25	1.73
Colorado River, AZ (Rafting and angling) ³	—	—	1.31

Source: Hjerpe and Kim 2003

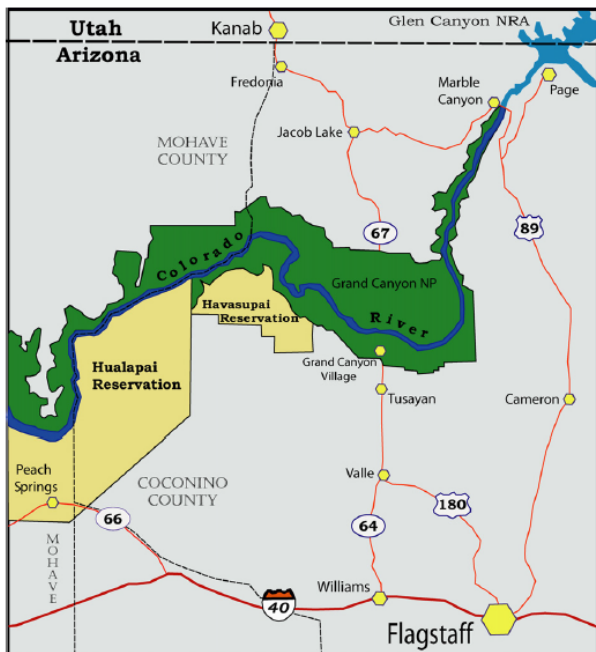
They also revealed that there is a 57% leakage rate from expenditures on rafting in the GCNP. This is much higher than the average leakage rate of 34% from similar recreation studies. This high leakage rate reflects the import cost of equipment that is

manufactured outside of the study area as well as taxes and revenues being captured elsewhere. The leakage rate also feeds into the low multiplier effect that is being realized in the GCNP as well (Loomis and Walsh 1997). Expenditures are not kept within the region and thus jobs that would be created, per dollar spent, are not realized. It has been suggested that the larger than average leakage rate is due to boating outfitters being located outside of the study area; California, Utah and Nevada (Hjerpe and Kim 2003).

This is not the first instance where neutral or negative impacts of tourism have been observed. Roberts and Hall (2001) noted that the tourism industry is generally seasonal and limits the amount of fulltime employment available. They also noted that while the tourism industry can be a leg up for a stagnant economy, the jobs are typically lower wage and lower skill (Roberts and Hall 2001). The seasonality of rafting employment in the GCNP is at likely true, where over 90% of the rafting and boating activities in the GCNP are during the summer months of May-September (Grand Canyon National Park 2002).

This analysis is an example of how protected areas, specifically an area devoted to rafting and tourism, can have benign or even adverse economic impacts. There are undoubtedly drawbacks and considerations to be made with this particular analysis. Namely, the area of study did not encompass any major towns such as Flagstaff that may have contributed to leakage rates or repatriation of expenditures (See figure 4 for map of study area).

Figure 4 – GCNP Economic Analysis Study Area



Source: Hjerpe and Kim 2002

Conclusion

This paper conducted two separate but related reviews of protected area economic impacts. The first was a broad review of how protected areas in general have been demonstrated to impact local economies surrounding them. There has been a shift toward an employment culture where amenities (such as protected areas) play a larger role in how owners and operators value where their businesses are established. The footloose economy as it was referred to, where businesses are no longer saddled to metropolitan industrial hubs.

Numerous benefits and drawbacks were discussed as it relates to the footloose economy and relocation of businesses to regions near protected areas. There was no clear consensus as to whether protected areas had a net benefit or drain on a local economy. In numerous instances the local per capital income, employment rate and immigration were decidedly positive. A striking example of negative effects was seen in the reporting of the impact of the NFP that saw a dramatic outward movement in terms of migration and a negative impact on regional employment.

The second section of this paper examined a case study that looked at the economic impact of rafting in the GCNP. To date, this has been the only study that has attempted to quantify the inputs and outputs of rafting the GCNP and the related impacts it has on employment multipliers and associated leakages of expenditures. The area surrounding the GCNP is demographically heterogeneous but representative the general rural western states. Low employment and low population densities that are typically lower than the state or federal average. Thus, while rafting may bring jobs to the region, they are typically seasonal and low-wage and the industry in this region does not seem to capture expenditures well.

Drawing from both studies lessons can be gleaned that future developments aiming to use tourism and rafting as economic drivers. Namely, that detailed analysis of inputs and outputs to a system, where expenditures would likely flow and how much revenue would be captured in a region should be conducted. A greater depth and understanding of these parameters would inform policy makers of where tourism should fit in their development plans. Likewise, the federal and local governments might work in cooperation to foster local business development that would encourage the creation of fulltime employment in areas surrounding protected areas.

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