

## How Much Do Visitors Value Scenic Quality? Results from the Blue Ridge Parkway Scenic Experience Project

**Leah Greden Mathews**, Department of Economics, C.P.O. 2110, University of North Carolina at Asheville, 1 University Heights, Asheville, North Carolina 28804; lmathews@bulldog.unca.edu

**Susan Kask**, Department of Business and Economics, Warren Wilson College, Asheville, North Carolina 28815-9000; skask@warren-wilson.edu

**Laura Rotegard**, Blue Ridge Parkway, 199 Hemphill Knob Road, Asheville, North Carolina 28803; laura\_rotegard@nps.gov

**Gary Johnson**, Blue Ridge Parkway, 199 Hemphill Knob Road, Asheville, North Carolina 28803; gary\_w\_johnson@nps.gov

**Steven Stewart**, Department of Hydrology and Water Resources, University of Arizona, P.O. Box 210011, Harshbarger 118C, Tucson, Arizona 85721-0011; sstewart@hwr.arizona.edu

### Introduction

National parks face difficult budget decisions. The reality of scarce budget resources implies that parks need to maximize the benefits of their expenditures. Contributing to this difficulty is the fact that the value of many national park resources and amenities are not priced in markets, yet their maintenance has costs that managers, policy makers, and taxpayers must incur. Nonmarket valuation is an economic tool that is used to estimate the value of goods and services that are not exchanged in the market, such as improved visibility, endangered species, scenic quality, or ecosystem services (Mathews et al. 2001). The Blue Ridge Parkway Scenic Experience Project uses nonmarket valuation to inform management decisions by helping parkway managers learn the value of their most important resource: the scenic quality views along the parkway.

### The Blue Ridge Parkway's Challenge

The Blue Ridge Parkway is a 469-mile scenic motor road, a linear park connecting Shenandoah National Park in Virginia and Great Smoky Mountains National Park in Tennessee. In fiscal year 2002, the Blue Ridge Parkway reported 21 million visitors. Previous research indicates that the primary reason people visit the parkway is to “see the views” (Brothers and Chen 1997). On average, the park is 800 ft wide, which implies that most of what visitors see from the Parkway isn't under the park's control. The scenic views along the parkway are changing. Since 1948, 75% of farmlands along the parkway have changed to alternative uses (USDA 1997); for example, some rural valleys have filled in with manufacturing, and private campgrounds now occupy what were formerly farm fields.

Blue Ridge Parkway managers know that visitors come to see the views, and that what

visitors see from the parkway is changing. They also know that scarce resources are required for view preservation (using techniques such as purchase of conservation easements and land) or for vista clearing. What the parkway did not know before this study was the benefit of view preservation, which views visitors might be willing to lose, or if visitors would be willing to give up trails and campsites in order to maintain or improve the scenic quality along the parkway. In addition, managers need to know how changes in scenic quality along the parkway will impact visitation to the park. The Blue Ridge Parkway Scenic Experience Project was designed to answer these questions for park managers.

### Results from the Scenic Experience Project

There are two phases to the project. Phase I was implemented in the southwest Virginia section of the parkway in 2000. This section of the parkway, in an agricultural plateau, is

particularly at risk for scenic quality change and thus was selected for research priority. Phase II was implemented in the northern North Carolina section during 2002; those results are pending.

The remainder of the paper outlines the results from Phase I of the study. A complete discussion of the specific methods used and the full set of results are available in the final report (Kask et al. 2002), which is available from a link to the parkway's website. The survey was implemented at Mabry Mill, the most visited activity area on the southwest Virginia section of the parkway, over several days during summer and fall 2000. To avoid overburdening each respondent, we used a split-sample design that accommodated three slightly different versions of the survey, which were randomly assigned to respondents. The survey was implemented using laptop computers with a paper version offered as a backup. Over 860 observations were collected.

Scenic Experience Project results generally correspond to two management questions; each provides a distinct opportunity for visitors to express the value of their experience. The first of these is, if the Blue Ridge Parkway changes, what is the value that visitors put on this change? We use the nonmarket valuation method of choice modeling to provide a vehicle for respondents to indicate the value of the satisfaction of their visit (Mathews et al. 2001). In other words, respondents directly indicate the value that they put on the deterioration (or improvement) of the Blue Ridge Parkway. The second management question that the study answers is, how will visits change if scenic quality changes? This allows visitors to indicate how they will behave if the views change (something economists call *contingent behavior analysis*); this allows us to estimate the potential economic impact of changing views, which is of interest to communities along the Parkway.

With respect to the first question—if the Blue Ridge Parkway changes, what is the value that visitors put on this change?—respondents indicated that a decrease in parkway amenities will imply significant losses in satisfaction. For example, on average visitors indicated that if

all overlook views degrade to low quality, they will lose \$359 in satisfaction from their visit. Similarly, if all roadside views degrade to low quality, \$240 is the value of the lost satisfaction that the average visitor will incur. If all amenities (including roadside and overlook views, number of overlooks, miles of hiking trails, and the number and condition of activity areas) degrade to the lowest feasible condition, the average visitor will incur a satisfaction loss of \$1,014. In other words, the value that the average visitor puts on this deterioration is \$1,014. Knowing that there are approximately 7.6 million visitors to this section of the Parkway each year, the total loss in satisfaction from a decrease in all amenities from current to low quality is \$7.7 billion. In particular, the lost satisfaction that would accrue to visitors in this section of the Parkway if overlook view quality degraded from current to low quality is approximately a third of this, or \$2.7 billion. The aggregate value of lost satisfaction when roadside view quality declines is \$1.8 billion.

How will satisfaction be improved if Parkway amenities improve? Our results indicate that the gain in satisfaction to the average visitor is equal to \$53 if overlook scenic quality increases from current to high quality, and \$116 if roadside scenic quality is increased. If the number and condition of activity areas increases to the highest feasible quality level, then respondents indicated their satisfaction increase will be valued at \$396. For an increase in all amenities, the average visitor incurs a satisfaction gain of \$584. Aggregating these numbers to reflect the total number of visitors implies that \$402 million is the gain in satisfaction that will occur from improving overlook scenic quality; and \$881 million is the gain in satisfaction that will occur if roadside scenic quality occurs. Overall, if all parkway amenities improve, visitors to this section would experience a \$4.4 billion increase in satisfaction.

These numbers have policy implications for the parkway. For example, let's say that we know the cost of preserving roadside view quality is \$1 billion. We can compare this with the benefits that visitors stated they would lose if this preservation does not occur, which

is \$1.8 billion. This yields a net benefit of \$0.8 billion, which from an economic perspective implies that this is a wise investment. On the other hand, if we know that the cost of increasing overlook view quality is \$1 billion, comparing this with the benefits that visitors are willing to pay to experience improvements in overlook scenic quality, \$402 million, yields a net cost of \$598 million. This would not be a wise investment of parkway funds.

The second general question addressed in this research is, how will visits change if scenic quality changes? On average, visitors report making 2.5 trips to this section of the Parkway per year, and indicated they would visit more in the following year (2001)—on average 4.7 trips per year—if there were no changes in scenic quality. A majority of respondents to this question (87%) indicated they would change the number of visits they make if scenic quality changes; however, less than half of all respondents will reduce their visits with scenic quality decline. With a small decline in scenic quality, 31% will visit less; with a larger decline in scenic quality, 41% will take fewer visits. If scenic quality increases, 34% of respondents stated they will visit more frequently. Interestingly, with some scenic quality decline, visitors stated they would still increase their visits next year compared with this year—3.1 trips up from 2.5—but this represents a decline from their stated increase in visits to 4.7 trips. In other words, the growth in visitation slows as a result of scenic quality decline. If more scenic quality decline occurs, there is a stated reduction in visits, from 2.5 trips to 1.3 trips. This implies that the decline in visitation is not directly proportional to a decline in scenic quality. With scenic quality increases, there is very little increase in visitation over the stated increase in visits expected for next year: 5.5 trips with significant scenic quality improvement compared with 4.7 stated trips in 2001. Of course, these trips yield spending in the communities adjacent to the Parkway, and expenditures will change as visitation changes (see Kask et al. 2002 for detailed estimates of these changes under various scenarios).

The overall study conclusions are that vis-

itors are very satisfied with the Parkway, and that a decline in Parkway amenities will lead to significant loss in visitor satisfaction. Visitors value improvements in Parkway amenities such as views and activity areas, but greater return on investments will occur if the Parkway spends its money on maintaining current quality rather than improving amenities. This makes sense given that respondents indicated they are currently very satisfied with the scenic quality along the Parkway. Visitors are very loyal to the Parkway, and they do not want to see scenic quality decline. However, they will continue to visit even if some scenic quality declines occur. Visitor expenditures in local communities may not actually decrease with small changes in view quality, but the growth in future expenditures will slow if view quality along the Parkway declines.

### How Are These Results Being Used by the Parkway?

The Blue Ridge Parkway is incorporating the results of the Scenic Experience Project into their management activities in several ways. In the first-ever parkway general management plan, results are used to calculate impacts of adding or deleting overlooks and to document public support for preservation of views identified in the scoping phase. In the park's business plan, results justify position management and operational funding system requests, and help to describe strategies and priorities for future protection. To report on the Government Performance and Results Act goal 1A ("natural and cultural resources and associated values are protected, restored, and maintained in good condition and managed within the broader ecosystem or cultural context"), economic values are used to describe the success of vista clearing contracts and park protection efforts to preserve views. To encourage the use of park monies to clear vistas and maintain overlooks in competition with maintenance and ranger division requests, Scenic Experience Project results are used to leverage support. The results have also led to project management information system statements for vista clearing. Comparing the Scenic Experience results on

visitor satisfaction with the 2000, 2001 and 2002 Visitor Satisfaction Survey Card results, concurrence suggests where to make improvements relative to other park assets. Within the park's land protection program, these research results add value to priority parcels, and strengthen justification for an increased budget for conservation easements and land acquisition. In addition, the parkway is evaluating an Adopt-an-Overlook Program to connect local residents who appreciate individual views and overlooks to join the park in their stewardship. The Scenic Experience Project results can help the parkway to identify which overlooks are particularly important to visitors. In sum, these research results add statistical weight to management plans—justification which was previously undocumented or absent.

### **How Are These Results Being Communicated to the Communities Adjacent to the Parkway?**

The parkway is creating a series of 44 one-page profile sheets on each county and municipal jurisdiction and will add information about the Scenic Experience Project. These profile sheets are posted to the park's electronic directory for the planners in adjacent communities to review. At regularly scheduled meetings of six of seventeen regional planning organizations along the parkway, park officials are presenting the results to elected officials and staff. These organizations include Planning District Councils 3, 4, 5, and 12 in Virginia and Councils of Government B and D in North Carolina.

A parkway press release was sent to 25 newspaper and media contacts, and 8 congressional offices. Follow-up articles were published in several newspapers, including those in Roanoke Virginia, and in Brevard, Blowing Rock, and North Wilkesboro, North Carolina. Park officials will present the results of the Scenic Experience Project at the 2003 American Planning Association Summer Institute in western North Carolina, a conference for elected officials, planners, and municipal and county staff. Results will be also shared with three associated land trusts to

promote greater understanding of the need for increased funding for conservation easements along the parkway, both through private donations and federal appropriations. In addition, results will be shared with 8 affiliated partners, in National Park Service seasonal training, with 5 park concessionaires, and with 15 state and federal partners in various forums during spring 2003.

### **Conclusions and Implications**

Economic studies using nonmarket valuation can be used to improve park management decisions (Turner 2000). In the case of the Blue Ridge Parkway Scenic Experience Project, this means the parkway should concentrate on maintaining scenic quality rather than improving conditions in the southwest Virginia section. Results for the northern North Carolina section, which is visually distinct from southwest Virginia, may have different implications; those results are anticipated by the end of 2003.

Each park faces different issues and thus it is likely that custom-designed nonmarket valuation studies will be most helpful to park managers. The nonmarket valuation methodology is flexible and can be modified to capture information about values and trade-offs that are relevant to each park. For example, if wilderness character is particularly important to visitors in your park, a nonmarket valuation study could be designed to estimate the value of wilderness character. However, since nonmarket valuation studies are expensive—in terms of both dollars and time it takes to design, conduct, and incorporate a study into a park's management plan—it may be that the most significant constraint to using nonmarket valuation studies to improve park management is finding the resources required to conduct the study in the first place. Recent work on the transfer of benefits conducted in one study to another study area may help (Smith et al. 2002), though for parks with unique resources there may not be sufficient substitutability for effective use of this transfer technique.

## References

- Brothers, G., and R.J.C. Chen. 1997. *1995-6 Economic Impact of Travel to the Blue Ridge Parkway: Virginia and North Carolina*. Asheville, N.C., and Roanoke, Va.: The Coalition for the Blue Ridge Parkway and the National Park Service.
- Kask, Susan, Leah Greden Mathews, Steven Stewart, and Laura Rotegard. 2002. Blue Ridge Parkway Scenic Experience Project final report. On-line at [www.nps.gov/blri](http://www.nps.gov/blri) > Facts/Docs > Experience Project Results.
- Mathews, Leah Greden, Susan Kask, Laura Rotegard, and Steven Stewart. 2001. Using economics to inform national park management decisions: a case study on the Blue Ridge Parkway. In *Crossing Boundaries in Park Management: Proceedings of the 11th Conference on Research and Resource Management in Parks and on Public Lands*. David Harmon, ed. Hancock, Mich.: The George Wright Society, 326-331.
- Turner, R.W. 2000. Managing multiple activities in a national park. *Land Economics* 76:3, 474-485.
- Smith, V. Kerry, George Van Houtven, and Subhrendu K. Pattanayak. 2002. Benefit transfer via preference calibration: "prudential algebra" for policy. *Land Economics* 78:1, 132-152.
- USDA [U.S. Department of Agriculture, National Agricultural Statistics Service]. 1997. *Census of Agriculture*. Washington, D.C.: USDA.

