

Predictive Validity of Stated Preferences: Application to Rocky Knob Park

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Abstract

We use revealed and stated preference data from users of a mountain bike park collected before and after an extension of the trails. The ex-ante stated preference data elicited before the change exhibits hypothetical bias, but the data provides useful information for visitor prediction.

Introduction

- Economists prefer revealed preference data because it is created from records of actual past behavior, but it may fail to provide the information desired about future behavior under different conditions.
- Stated preference data gathered with hypothetical survey questions can be used to forecast beyond historical variation but has uncertain accuracy because respondents may err in predicting their own future behavior.
- We consider the predictive validity of stated preference data obtained through surveys of visitors at the Rocky Knob Park in Boone, North Carolina.
- Rocky Knob opened in May 2011 with 2.6 miles of trail and expanded to almost 8 miles over the next two years.
- We use ex-ante and ex-post surveys to collect revealed and stated preference data.
- By comparing the ex-ante revealed preference and ex-ante stated preference data before trail expansion with the ex-post revealed preference data after trail expansion, we evaluate the predictive validity of the stated preference data.



Ex-ante Survey

Survey Mode	Sample Size
Online survey: link from RKP website	n = 223
On-site email address collection with an online survey (41% response rate)	n = 153

Revealed and Stated Preferences

Survey Question	Mean
About how many mountain biking trips have you taken to Rocky Knob Park during the past 12 months?	16
About how many mountain biking trips do you think you will take to Rocky Knob Park during a typical year with the current \bar{X} miles of trail?	23
After completion of the total 8 miles of trail at Rocky Knob Park, about how many mountain biking trips do you think you will take to Rocky Knob Park during a typical year?	59

Ex-ante Economic Impact Analysis

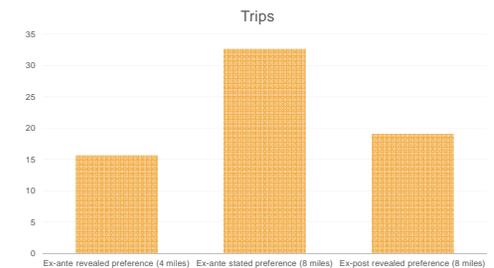
	Low Estimate	High Estimate
Visitors	27,000	68,000
40% out-of-town visitors	11,000	27,000
63% primary purpose visitors	7,000	17,000
Spending per visitor	\$276	\$276
Total Spending	\$1.9 million	\$4.7 million
Economic Impact (RIMS II multiplier)	\$2.7 million	\$6.6 million

Ex-ante Benefit Cost Analysis

	Cost	Benefit (Low)	Benefit (High)
Construction	\$2,000,000		
Labor	\$32,500		
Consumer surplus		\$432,000	\$1,088,000
Present value ($r=.07$)	\$2,032,500	\$4.1 million	\$13.5 million

Ex-post Survey

- Rocky Knob Park was completed in 2012 with 7.8 miles of trail.
- The ex-post survey was emailed in November 2013 to 145 ex-ante survey respondents who had indicated a willingness to participate in a follow-up survey.
- The response rate was 70%.
- A sample size of n=55 met of the conditions for a valid comparison.



Predictive Validity Results

Predictive validity of stated preference data

Table 2. Determinants of ex-post revealed preference trips

	Linear		Double log		Double log	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Constant	7.43	3.38	2.54	3.57	0.65	0.18
Ex-ante revealed preference trips	0.75	0.13			0.80	0.08
Ex-ante stated preference trips			0.51	0.08		0.81
R ²		0.40		0.40		0.67
F-Value		47.14		44.58		109.21
Cases		55		55		55

Source: Atkinson, K., & Whitehead, J. C. (2015). Predictive validity of stated preference data: evidence from mountain bike park visits before and after trail system expansion. *Applied Economics Letters*, 22(9), 730-733.

Conclusion

- We find that stated preference data has limitations when predicting future behavior.
- We find a hypothetical bias ratio of about 23% in our preferred double log model.
- Adjusting for the hypothetical bias the economic impacts and net present value are more accurately estimated by the low ex-ante visitor estimates.