Beech Mountain Economic Impact Trail Study

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The 2021 Beech Mountain Economic Impact Trail Study was conducted between June 1, 2021 and September 6, 2021. A team of four students from the Walker College of Business at Appalachian State University served as survey enumerators. The students would travel to the EMO trails, wearing specially designed identifying t-shirts, and distribute cards to trail users (see Figures 1 and 2). While there, the students planted a yard sign to welcome participation (see Figure 3). The cards contained the URL and QR code to an online questionnaire that contained questions about trail usage, overnight stays and spending while on Beech Mountain. The enumerators made 40 trips to Beech Mountain spending 2-3 hours at the Emerald Outback (EMO) trailhead. They distributed over 500 survey cards over the summer. Following their time at EMO, enumerators visited other trailheads following a predetermined pattern. In addition, signs were posted at EMO and two other trails that directed trail users to the questionnaire (see Figure 4). Four hundred and seven trail users responded to the survey. Sixty-seven percent accessed the survey with the QR code and the remainder used the URL. Three hundred seventy-four trail users provided useable responses. Most of these responses were collected in July (62%) with 20% collected in June and 17% collected in August and early September.

Most survey respondents had heard about Beech Mountain trails via friends and relatives (41%), Town of Beech Mountain website (17%) or something else (24%).[1] Most of the survey respondents were from out of town (52%). Thirty-nine percent were seasonal or

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[1] A tabular data summary for many of the survey questions can be found in the data appendix (available upon request).

part-time residents and 9% were full-time residents. The typical respondent is between 45 and 64 years old with an average income of between $125 thousand and $150 thousand. Fifty-five percent of respondents were female. The average distance from the trail users home to Beech Mountain is 241 miles with a range of 0 to 2000.

Ninety-percent of the respondents had visited the trails since Memorial Day weekend. Twenty-eight percent of these respondents had visited the trails once, 16% had visited twice, 15% had visited three times and 18% had visited the trails 10 or more times since Memorial Day. Eighty-percent of the 297 respondents who continued on with the survey stated that they planned to take more visits to the trails through Labor Day. Of these, 11% planned to take one more visit, 13% planned to take two more visits, 12% planned to take 3 more visits and 35% planned to take 10 or more visits. Eighty-eight percent of the trail users were very satisfied with the trails during their most recent visit and 11% were somewhat satisfied. Almost all of the trail users had hiked or biked EMO and 65% of these users had hiked or biked other Beech Mountain trails. Most of the trail users in this sample are hikers.

For those respondents who are from out of town, most travel parties include 3 or more people (92%) and 73% of the trips are overnight. Of the overnight respondents, 79% stayed in the Town of Beech Mountain. Eighty-one percent stayed in a rental house, cabin or condo, 4% in a hotel or motel, and 15% had other accommodations. Of those who stayed overnight in 2021, 31% say that they will definitely stay overnight on a trip to Beech Mountain in 2022, 26% say that they probably will, 24% are not sure and 19% probably or definitely will not stay overnight. Each out of town respondent was asked to provide an estimate of the amount of money that they spent in various categories in the Town of Beech Mountain. The overnight visitors who stayed in the Town of Beech Mountain spent an average of $1007 on lodging, $209 at restaurants, $130 on groceries, $112 on entertainment, $69 on retail and other items.

Out of town visitors spend an average of $1527 per trip in total. Combined with our best estimate of the number of trips associated with the Town of Beech Mountain trails of 358, the annual direct expenditures by visitors to the Town of Beech Mountain is $546,000 (90% confidence interval of $216,000, $941,000).[2] Direct spending circulates through the regional economy and generates additional spending through the "multiplier effect." Applying RIMS II multipliers obtained from the U.S. Bureau of Economic Analysis yields a central estimate of the annual economic impact of the Town of Beech Mountain trails of $800,000 ($316,000, $1,295,000).

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[2] See the technical appendix for more detail on these calculations.

Appendix. Estimating the Economic Impact

In this appendix we estimate the economic impact of the Beech Mountain trails to the local economy of Watauga and Avery Counties. The economic contribution of Beech Mountain trails is equal to the product of spending per trip, the number of travel parties and the multiplier:

$$EC = spending \times parties \times multiplier$$

We estimate that the average spending on a Beech Mountain trip is $1526 per travel party. Multipliers for the Avery, Ashe and Watauga region are obtained from the Bureau of Economic Analysis RIMS II model.

The number of travel parties to Beech Mountain is the most uncertain value in the above equation. We estimate the number of travel parties as a fraction of the number of EMO trail users. For example, suppose there are 100 trail visitors on any given weekend. If each travel party visits the trails twice during their stay and the travel party includes 4 people, then we assume that 12.5 travel parties visited Beech Mountain that weekend (12.5=100/(2 $\times$ 4)). In summary, the number of travel parties is estimated as

$$parties = trail\,visits \div (party\,size \times visit\,days)$$

The number of trail visitors to EMO during June, July and August of 2021 is 22,991. This number is obtained from an electronic trail counter at the EMO trailhead. If each trail visitor enters and exits at the trail counter then a low estimate of the number of people who access the trails is 11,495.5 (22,991 divided by 2). Anecdotal evidence suggests that as many as 50% of the trail visitors enter or exit the trail at another location. In this case a higher estimate of people who access the trails is 15,327.33 (22,991 divided by 1.5).

For the low end of the party size range, we assume that the trails are visited by each person in the average travel party size (4.45) each day of the average visit (4.16 days). With these assumptions, each time a travel party visits Beech Mountain 19 trail visits result. For the high end of the travel party range, we assume that the trails are visited by one half of the people in the average travel party size on every other day of the visit. With this assumption, 5 trail visits result each time a travel party visits Beech Mountain.

We scale these estimates down further to account for the fact that non-locals account for 23% of all trail visits and 79% of out of town visitors spend the night in the Town of Beech Mountain. With these assumptions an estimate of the number of non-local summer overnight trail visits to the Town of Beech Mountain ranges from a low of 113 travel parties to a high of 602 travel parties.[3] Given that it is not clear where along the range of travel parties is the most accurate number, we choose the midpoint, 358, as our best

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[3] The calculations are (11,495.5 x 0.79 x 0.23)/(4.45 x 4.16) = 113 and (15,327.33 x 0.79 x 0.23)/(2.25 x 2.08).

estimate.

The 90% confidence intervals are constructed by Monte Carlo simulation. We take 1 million draws from normal distributions of travel spending (mean = 1526, standard deviation = 1526/6 according to the empirical rule) and overnight visits (mean = 358, standard deviation = 82). We find the product of spending and travel parties, sort these from lowest to highest and trim the upper and lower 5% of the distribution.

The economic impact estimates are not without caveats. For example, the economic impact of the Town of Beech Mountain trails is underestimated because it only includes three summer months and not the other months of the outdoor recreation season. Also, the economic impact is overestimated to the extent that the trails are not the primary purpose of the visit and to the extent that lodging expenses are not received by residents of Ashe, Avery or Watauga Counties.
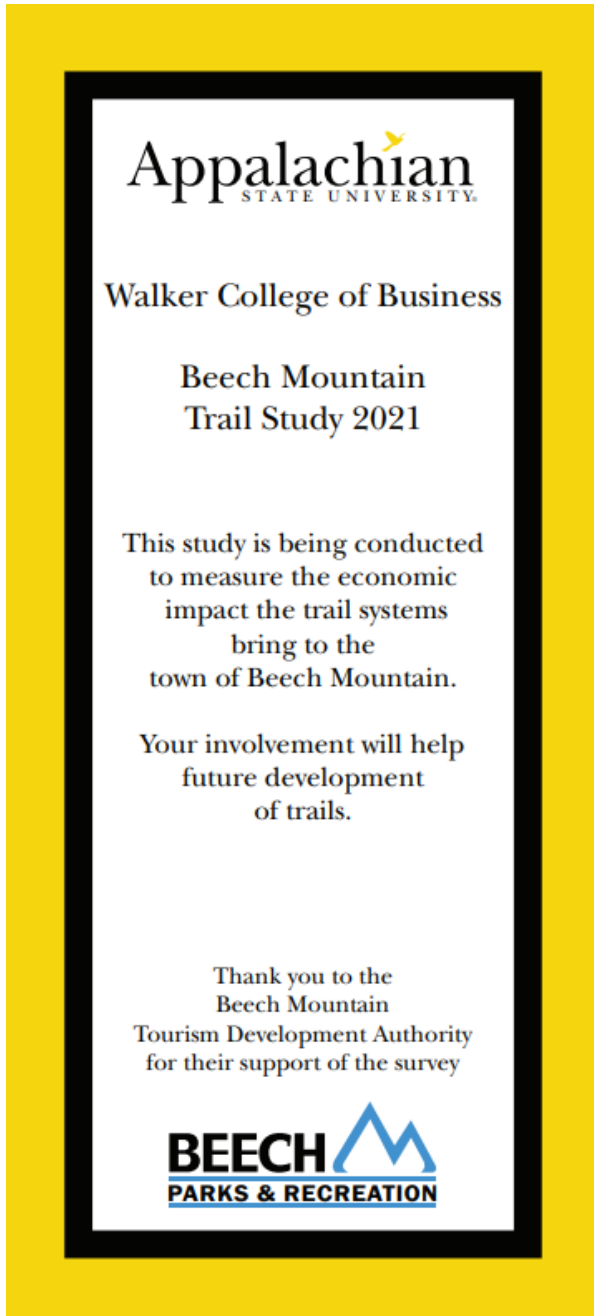
Figure 1. Survey enumerator t-shirt design

Figure 2. Survey card

Figure 3. Yard sign

Figure 4. Metal sign posted at EMO and other trails throughout the summer