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A Comparison of State and Local Welcome Center Visitors: Issues Regarding Sampling Frame Generalizability

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Abstract

Tourism is an important industry in the United States and for more regional economies, motivating research exploring characteristics of tourist consumers and their travel behavior. This paper deals with the issue of sampling frame generalizability for tourism research. Visitors to state and local welcome centers were compared in terms of their area awareness, respondent and travel party demographics, and expenditures. Significant differences were found between the groups, questioning the generalizability of data collected at state welcome centers.

Keywords: Discriminant Analysis, Generalizability, Sampling Frame, Tourism

Relevance to Marketing Educators, Researchers and/or Practitioners: The research reported herein found differences between tourists visiting state and local welcome centers. The results suggest that conclusions drawn from data collected from visitors to state welcome centers do not generalize to visitors at local visitor centers and that data collection venue can impact the results from tourism-related studies.

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Introduction

The travel and tourism industry in the United States has a tremendous economic impact. For example, as of 2009, direct travel and tourism spending (adjusted for inflation) was estimated to be $666 billion and direct employment attributed to the industry was 5.54 million (Zemanek and Rzeznik, 2010). North Carolina tourists spent an estimated $15.6 billion in 2009, a 36.5% increase since 2000, generating $1.4 billion in tax revenues and over 362,000 jobs (Tourism Economics & U.S. Travel Association, 2010).

The magnitude and growth of the tourism industry has motivated tourism organizations and researchers to obtain a better understanding of tourist consumers and their travel behaviors. In this light many research studies have been conducted using the sampling frame of tourists stopping at state welcome centers. The motivation to use state welcome centers as a sampling frame seems clear: a high volume of travelers, relatively low cost to obtain a large sample of travelers, and convenience. Of course, the implicit assumption of using state welcome center visitors as a sampling frame is that they are representative of visitors in other contexts such as visitors to local welcome centers or area attractions, but are they?

As the next section shows, much work has been conducted examining the generalizability of results obtained from travelers to welcome centers versus travelers in other contexts. The results from this work are mixed; some of the research supports welcome center data generalizability while other research does not. This paper explores the issue of welcome center sampling frame generalizability. First, the literature in the area is presented. This is followed by an explanation of the research method and presentation of results. The paper concludes with a discussion of the results.

Literature Review

In travel and tourism research, questions are often raised about whether data collected from visitors to state welcome centers are representative of visitors in other contexts, such as visitors to local welcome centers or those going to attractions (i.e., whether the results are generalizable). Results of previous studies are mixed. Some of the work addressing this question seems to suggest

that surveys collected at state welcome centers are an accepted research practice and simply represent a larger sampling frame than sampling those stopping at rest areas. For example, Gitelson and Crompton (1983) reported collecting data for their study from two Texas Highway Visitor Centers. In their limitations section they noted that the generalizability of their findings was "...not determinable (p. 7)", suggesting that the results may or may not be generalizable to all pleasure vacationers. Evidence supporting the reliance on data collected at welcome centers as representative of visitors in general was provided by Howard and Gitelson (1989). Their study compared survey results from eight port-of-entry (state line) welcome centers to three of the state's major attractions. No differences between the two groups were found for age, income, travel party size, number of nights planned, lodging, first trip to the state or whether the state was the primary destination, thus suggesting that state welcome center data can be generalized.

Fodness and Murray (1997, 1999) published two articles purporting to match Florida Department of Commerce Division of Tourism data with data that they collected using a sampling frame of visitors to official Florida Welcome Centers. Although no statistics of the match were reported in either paper, the authors concluded that the match was "...quite good in terms of demographic and behavioral characteristics...(p. 509)." Citing Howard and Gitelson's (1989) work the authors closed the issue by stating that "Previous research from other states has documented the lack of significant differences between out-of-state tourists who use welcome centers and those who do not (Fodness and Murray 1997, p. 509)."

Several studies have reported the opposite results, indicating the need for caution in assuming state welcome center data is generalizable. Muha (1977) compared welcome center visitors (first-time welcome center visitors and repeat welcome center visitors) to non-welcome center visitors on age, travel party size, family income, and trip purpose, among others. He found that welcome center visitors tended to be older, had larger travel party sizes, higher incomes, and were more likely to be traveling for pleasure or to visit friends and relatives than non-welcome center visitors.

Using license plate information obtained from interstate travelers in Texas, Stewart et al. (1993) found significant differences between stoppers (at two state

welcome centers) and non-stoppers with respect to point of origin, age, miles driven, trip planning horizon, purpose of the trip, and trip expenditures. Finally, in a study exploring differences between state welcome center users and local visitor center users in Louisiana, Dimanche and Taylor (2006) found significant differences in trip duration, lodging (campgrounds and B & B's but not hotels and motels), trip activities other than shopping, attending a sporting event or visiting an art gallery, and information source use.

Based on the aforementioned research it appears that the jury is still out regarding the question of the generalizability of data obtained from welcome centers. The current study is intended to contribute to the existing literature by examining the generalizability of data collected at state and local welcome centers in the Blue Ridge National Heritage Area (Western North Carolina). Comparisons are made with respect to respondent area awareness, travel party demographics and spending. The major proposition being tested in this research is that there is no multivariate difference between data collected at state versus local welcome centers.

The following section describes the research method employed to test the proposition. This is followed by the results from the data analysis and a discussion of those results.

Research Method

The data were collected as part of a larger project commissioned by the Blue Ridge National Heritage Area. A survey was developed to capture visitor awareness of the area, motivation to visit the area and primary activity while visiting. Awareness was measured using a 5 point scale anchored by "Not Aware" and "Very Aware." Motivation for the visit was a categorical scale including "Meeting/Convention," "Education," "Outdoor Adventure," Relaxation/Escape," "Spending Time with Family/Friends," and "Other." Primary activity was also a categorical scale including "Visiting Historic Sites," "Music Activities," "Cherokee Activities," "Agricultural Activities," "Craft Activities," "Outdoor Recreation," Scenic Drive/Parkway," and "Other."

Additional measures included travel party size and number of children in the travel party, as well as the number of nights the travel party planned to stay in the area. Each was an open response question. Travel party spending was

measured in several spending categories including food, transportation, accommodations, arts & crafts, music activities, admissions, outdoor activities, clothing and other spending. Each was an open response question providing ratio data.

Finally, respondent demographics were measured. Gender was a categorical scale as was educational attainment and income level. Education categories included "High School," "Some College," "Bachelor's Degree," and "Graduate Degree." There were 8 income categories beginning with "Less than $24,999", moving up in increments of $24,999 to a top category of "$175,000 and over." The final measure was respondent's ZIP code.

The data were collected from eight venues, four state and four local welcome centers (Figure 1). Of the 1,819 surveys collected, 73% were from state and 23% from local welcome centers.

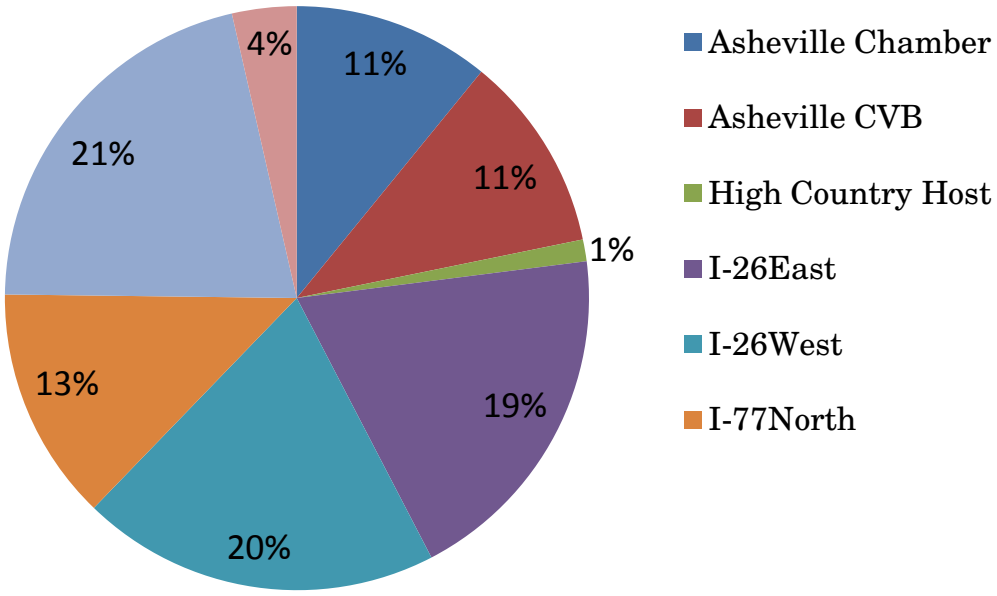

Figure 1. Proportion of Data Collected at Data Collection Venues in North Carolina, N = 1819

Results

Overall Sample Statistics

Demographics

The average age of respondents was 53.69. Sixty-four percent of respondents were female. Respondent education level was high with roughly forty-five percent reporting either having attained a Bachelor's degree or graduate degree. Income level was also high with the median income falling in the range of $50,000 - $74,999. Across the sample the average travel party size was just under three (2.78) with an average of 0.36 children. Travel parties reported staying an average of 2.4 nights in the region.

Visitor ZIP codes were also analyzed to ascertain whether visitors to the welcome centers were from in-state North Carolina or from the bordering states of South Carolina, Virginia, Tennessee and Georgia. Cumulatively, this group of visitors comprised 47.5% of the sample. Of these visitors, 25.1% were in-state North Carolina residents, 26.7% were from South Carolina, 16.7% from Virginia, 19.2% from Tennessee and 12.3% from Georgia.

Awareness and Behavior

On average respondents reported being moderately aware that they were in a federally designated National Heritage Area (= 2.9, σ = 1.62, n = 1667). The most frequently reported motivation to visit the area was relaxation/escape followed by spending time with friends/family and other (concerts, weddings, *dining, museums and passing through). The most frequently reported primary* activity was scenic driving followed by other (visiting wineries, dining, festivals and museums), outdoor recreation and visiting historic sites.

Spending

Mean spending by category is reported in Table 1. As expected, the largest expense category was for accommodations followed by food & drinks, transportation and arts & crafts.

State Versus Local Welcome Centers

A discriminant analysis was conducted to test for multivariate differences between the state and local welcome centers. The discriminating variables included only variables that were measured using interval or ratio scales (e.g., Hairet al., 1987). Fourteen variables were included in the analysis (Table 2). As Table 2 shows, the multivariate hypothesis of no mean differences between responses gathered at state versus local welcome centers was rejected.

Examination of the univariate F-ratios suggests that the main discriminating variables include awareness of the area, number of nights spent in the area, spending on food/drinks, and spending on accommodations. Since the univariate F-ratios ignore the interrelationships between the predictor variables, the relative influence of the variables were examined using the discriminant function loadings (Perreault et al., 1979, Hsu 1989) (Table 3). The results of Table 3 comport with those of Table 2 and suggest that the main variables that discriminate between visitors to state versus local welcome centers include spending on food/drinks, spending on accommodations, number of nights staying in the area, and awareness of the area. For this sample, those visitors to local welcome centers were less aware of the area, stayed more nights, and spent more money on food & drinks and accommodations than those visitors stopping at state welcome centers.

Although profiling rather than model classification was the main thrust of this research, the degree to which the model correctly classified subjects into groups can be thought of as an indicator of how well the model reflects the data (i.e., validity) (Crask and Perreault, 1977). The model correctly classified 80.5% of the original group cases. Cross validation was accomplished using the leave one out technique (i.e., the jackknife approach) (e.g., Efron and Gong, 1983). This technique resulted in 71.1% of the cross-validated grouped cases correctly classified. To ascertain whether the 71.1% of cross-validated cases correctly classified by the discriminant model was superior to chance, a z-test of proportions was performed, with the null hypothesis set at 50% (i.e., a 50% - 50% chance of being classified into either group). Therefore, the test was a one tailed test to determine whether model classification was greater than chance. The results suggest that the model was a significant improvement in classification accuracy over chance alone ($z = 6.39$, $p < .001$) (e.g., Stevens, 1986).

Results from the discriminant analysis suggest differences between those who stop at state welcome centers and those that stop at local welcome centers (at least on four variables). Due to the nature of the discriminant procedure, observations that had at least one missing value on one of the discriminating variables were deleted from the analysis thus reducing the power of the test. In addition, the discriminant analysis only allowed for the inclusion of metric variables. As a result, a second set of analyses were conducted to further examine differences between state and local welcome center visitors.

Table 4 displays the results from the independent samples t tests. Comparisons between Tables 2 and 4 show significant differences between state and local welcome center visitors that were not identified in the discriminant analysis. These differences include number of people in the travel party under 18 years of age and spending on admissions. Visitors to state welcome centers reported having more children in their travel party than visitors to local welcome centers, and visitors to local welcome centers reported spending more on admissions than visitors to state welcome centers. There were also marginally significant differences (i.e., $p < .10$) between state and local welcome center visitors on number of people in the travel party, spending on arts and crafts and spending on music. Visitors to state welcome centers reported marginally larger travel parties and spending marginally more on music activities than visitors to local welcome centers. Also, visitors to local welcome centers reported spending marginally more on arts and crafts than visitors to state welcome centers.

Chi-square tests of independence were conducted on the categorical variables including primary motivation for the trip, primary activity on the trip, respondent gender, respondent education level, respondents' income level and visitor origin. Differences between state and local welcome center visitors were found for primary motivation for the trip (Table 5a), primary activity on the trip (Table 5b), income level (Table 6) and visitor origin (Table 7). With respect to respondents primary motivation for the trip, a higher than expected number of local welcome center visitors reported relaxation/escape (56.28%) and outdoor adventure (8.52%) compared to state welcome center visitors (43.20% and 5.63% respectively). In addition, a higher than expected number of state welcome center visitors reported that their primary motivation for visiting the area was spending time with family (31.70%) than local welcome center visitors (18.39%). Regarding respondents primary trip activity, a higher than expected number of

local welcome center visitors reported visiting historic sites (21.99%) than state welcome center visitors (14.50%). With respect to household income, 73.13% of local welcome center respondents reported household income above $50,000 compared to 60.85% of state welcome center visitors. Finally, as Table 10 shows, a higher than expected number of border state visitors were sampled at the state welcome centers and a higher number of in-state visitors were sampled at local welcome centers.

Discussion

Across visitor type (state versus local welcome centers) differences were found in crucial respondent demographic and psychographic was well as travel party demographic and spending measures. Visitors to state welcome centers reported being more aware that they were in a federally designated national heritage area, had more children in their travel party, spent fewer nights in the region, spent less on food & drinks, accommodations, and admissions than visitors to local welcome centers.

In addition, a higher than expected number of local welcome area visitors reported relaxation/escape and outdoor adventure as their primary motivation for the trip compared to state welcome center visitors. Furthermore, relatively more state welcome center visitors reported their primary motivation as spending time with family compared to local welcome center visitors.

Regarding primary activity while on the trip, a higher than expected number of local welcome center visitors reported visiting historic sites than state welcome center visitors. Also, a larger than expected number of visitors to local welcome centers reported income above $50,000 compared to state welcome centers. Finally, border state visitors tended to visit state welcome centers more frequently than expected and in-state tourists visited local welcome centers more frequently than expected.

Overall, the differences found in this research suggest that conclusions drawn from data collected from visitors to state welcome centers do not generalize to visitors to local visitor centers. This point is not mundane. Consider a researcher attempting to quantify the economic impact of tourism to an area using a survey to elicit visitor spending. Results of this study suggest that the venue of data collection may very well have an effect on the results

obtained. Unfortunately, as with many other research endeavors, convenience has to be sacrificed for validity. Insuring sampling frame compatibility and therefore generalizability of results is paramount to obtaining a better understanding of tourist consumers and their travel behaviors.

The results of this research comport with those of Muha (1977), Stewart et al. (1993), and Dimanche and Taylor (2006) and directly contradict those of Howard and Gitelson (1989). Further work needs to be conducted comparing results obtained at welcome centers (both state and local) to data collected on site at area attractions to better assess the representativeness of welcome center data.

Conclusion

The purpose of this research was to explore the issue of sampling frame generalizability by comparing visitor data collected from state and local welcome centers. Significant differences between the two groups of visitors were found for visitor psychographics and demographics as well as travel party demographics, behaviors and spending. Caution should be exercised when interpreting the results presented herein since the data were collected mainly during one season (the summer) and in a relatively rural setting. However, this work adds to the growing body of knowledge addressing the issue of sampling frame generalizability in tourism research.

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Table 1. Mean Spending by Category

Category	N	Minimum	Maximum	Mean	Std. Deviation
Food & Drinks	1467	$0	$1,000.00	$154.516	$161.0043
Transportation	1373	$0	$1,300.00	$93.56373	$114.9818
Accommodations	1218	$0	$2,000.00	$259.2833	$294.2388
Arts &Crafts	987	$0	$1,000.00	$89.19048	$127.0833
Music	786	$0	$500.00	$34.74173	$64.44456
Admissions	1007	$0	$500.00	$72.55412	$73.32387
Outdoor Activities	755	$0	$500.00	$28.85298	$59.86307
Clothing	795	$0	$500.00	$56.06667	$83.46662
Other	504	$0	$1,000	$43.40675	$108.8352

Table 2. Means, Standard Deviations and Significance Tests for Predictor Variables[a]

Predictors		State WC	Local WC	F	Sig[b]
Awareness of Area	Mean	3.162	2.592	4.793	.030
	SD	1.623	1.635		
Number in Travel Party	Mean	2.664	2.423	4.793	.197
	SD	1.271	1.191		
Number Under 18	Mean	.286	.141	2.547	.112
	SD	.665	.487		
Number Nights	Mean	3.025	3.845	6.054	.015
	SD	2.203	2.252		
Spending on Food/Drinks	Mean	148.471	241.155	17.864	.000
	SD	124.437	176.998		
Spending on Transportation	Mean	91.101	85.831	.200	.655
	SD	75.507	83.413		
Spending on Accommodations	Mean	233.681	350.606	10.185	.002
	SD	223.577	275.767		
Spending on Arts & Crafts	Mean	93.445	69.085	1.487	.224
	SD	149.586	99.743		
Spending on Music	Mean	33.151	17.465	3.388	.067
	SD	65.142	38.995		
Spending on Admissions	Mean	59.546	66.394	.490	.485
	SD	65.812	64.226		
Spending on Outdoor Activities	Mean	22.387	12.239	2.495	.116
	SD	50.799	24.034		
Spending on Clothing	Mean	34.664	26.409	.671	.414
	SD	74.255	53.266		
Spending on Other Items	Mean	39.622	30.718	.349	.555
	SD	102.592	96.678		
Age	Mean	52.546	50.620	.756	.386
	SD	(14.271)	(15.591)		

[a]Multivariate Test for Significance: Wilkes λ = .765, p = .000, Eigenvalue = .307, Canonical Correlation = .485

[b]The degrees of freedom are 1and 188.

Table 3. Pooled Within Groups Correlations Between the Discriminating Variables and the Standardized Canonical Discriminant Function

Variables	Correlation
Spending on Food/Drinks	-.556
Spending on Accommodations	-.420
Number of Nights Staying in the Area	-.324
Awareness of the Area	.288
Spending on Music	.242
Number in the Travel Party Under 18	.210
Spending on Outdoor Activities	.208
Number in the Travel Party	.170
Spending on Arts & Crafts	.160
Age	.114
Spending on Clothing	.108
Spending on Admissions	-.092
Other Spending	.078
Spending on Transportation	.059

Table 4. Independent Samples t-tests

Variable	Welcome Center	N	Mean	t	DF	Sig. (2-tailed)
Awareness of the BRNHA	State Local	1228 439	3.03 2.51	5.801[a]	1665	.000
Number in Travel Party	State Local	1311 480	2.65 2.52	1.897[b]	908.72	.066
Number Under 18 Yrs.	State Local	1261 448	.4132 .2054	5.113 [b]	998.79	.000
Number of Nights	State Local	874 383	3.344 3.385	-3.195 [a]	1255	.001
Spending on Food & Drinks	State Local	1069 398	$133.63 $210.62	-7.441 [b]	585.09	.000
Spending on Transportation	State Local	1010 363	$93.53 $93.66	-.019 [a]	1371	.985
Spending on Accommodations	State Local	858 360	$228.20 $333.38	-5.415 [b]	590.58	.000
Spending on Arts & Crafts	State Local	709 278	$84.90 $100.14	-1.697 [a]	985	.090
Spending on Music	State Local	554 232	$37.39 $28.41	1.830 [b]	457.23	.068
Spending on Admissions	State Local	698 309	$65.88 $87.64	-4.383 [a]	1005	.000
Spending on Outdoor Activities	State Local	534 221	$30.35 $25.23	1.137 [a]	475.80	.256
Spending on Clothing	State Local	563 232	$52.31 $65.18	-1.913 [b]	400.80	.056
Spending on Other Items	State Local	364 140	$44.33 $40.99	0.309 [a]	502	.758
Age	State Local	1068 382	53.81 53.38	.500 [a]	1448	.617

[a] Equal variance t-test.

[b] Unequal variance t-test.

Table 5a. Primary Motivation for Visiting

Center Type	Trip Motivation							
		Meeting/ Convention	Education	Outdoor Adventure	Relax/ Escape	Time With Friends & Family	Other	Total
State	Observed	48	18	70	537	394	176	1243
	Expected	43.4	15.5	79.5	579.9	350.3	174.4	
Local	Observed	11	3	38	251	82	61	446
	Expected	15.6	5.5	28.5	208.1	125.7	62.6	

$\chi^2 = 40.42$, df = 5, p = .000

Table 5b. Primary Activity on the Trip

Center Type	Primary Activity								
		Historic Sites	Music Activities	Cherokee Activities	Agricultural Activities	Craft Activities	Outdoor Rec	Scenic Drive/ Pwky	Other	Total
State	Observed	161	32	36	10	46	199	373	253	1110
	Expected	182.7	28.8	28.8	8.9	44.4	197.4	372.7	246.3	
Local	Observed	86	7	3	2	14	68	131	80	391
	Expected	64.3	10.2	10.2	3.1	15.6	69.6	131.3	86.7	

$\chi^2 = 19.54$, df = 7, p = .007

Table 6. Respondent Income Level

Center Type	Income									
		Less than $25.000	$25,000-$49,999	$50,000-$74,999	$75,000-$99,999	$100,00-$124,999	$125,000-$149,999	$150,000-$174,999	$175,000+	Total
State	Observed	94	348	327	192	86	39	16	27	1129
	Expected	84.3	321.6	335.7	193.0	96.9	44.4	20.7	32.5	
Local	Observed	20	87	127	69	45	21	12	17	398
	Expected	29.7	113.4	118.3	68.0	34.1	15.6	7.3	11.5	

$X^2 = 28.33$, df = 7, p = .000

Table 7. Visitor Origin, North Carolina or Border States Only

Center Type		Visitor Origin					
		North Carolina	South Carolina	Virginia	Tennessee	Georgia	Total
State	Observed	158	194	104	145	70	671
	Expected	168.2	179.4	112.1	128.9	82.5	
Local	Observed	52	30	36	16	33	167
	Expected	41.48	44.6	27.9	32.1	20.5	

$X^2 = 31.55$, df = 4, p = .000

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