

ECONOMIC IMPACT AND MARKET ANALYSIS OF A SPECIAL EVENT: THE GREAT NEW ENGLAND AIR SHOW

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Abstract.—We conducted a post-event evaluation for the Great New England Air Show to assess its general economic impact and to refine economic estimates where possible. In addition to the standard economic impact variables, we examined travel distance, purchase decision involvement, event satisfaction, and frequency of attendance. Graphic mapping of event visitors' home ZIP codes using Google Earth™ provides a visual analysis of the markets for the event.

1.0 INTRODUCTION

In the last 15 years, special events throughout the United States have proliferated, drawing consumers from various local and regional markets and also seeking to create community cohesion and pride (Besculides et al. 2002). These events can create opportunities for exchange, revitalize traditions, enhance the quality of life for local residents, and improve the image of the host community (Clements et al. 1993, Weikert and Kerstetter 1996, Besculides et al. 2002).

Special event sponsors usually aim to create a successful event using a concentrated and refined marketing effort and to demonstrate positive economic gains to the host community. While some activities or special events may be staged simply to generate goodwill toward the sponsoring agency, most must be financially successful in order to continue. For example, nonprofit organizations may hold annual events to raise money for their operations and view these events as major

fundraisers; however, they may also depend on a host community to cover or support a portion of the costs. With the increase in the number of special events comes increased competition among events. Organizers for each event need to identify and target their respective markets segments and market areas.

1.1 Purpose of the Study

The purpose of this study was twofold: 1) to evaluate the Great New England Air Show after the event to assess its general economic impact in the local region; and 2) to conduct a rudimentary market analysis of the event by examining attendees' travel distances, attendance frequency, satisfaction with the event, and purchase decision involvement. Other organizations can use this study's methodology to examine special event market areas, to more fully understand the market behavior of special event attendees, and to more accurately determine the economic significance and impact of special events.

2.0 LITERATURE REVIEW

2.1 Economic Impacts of Special Events

Special events generate economic activity and jobs for the host communities (Frey 1994, Dwyer et al. 2005). It is important for event organizers to have accurate information on the event's past (if applicable) and projected economic impacts to garner community support and justify the allocation of resources for producing the event. Uysal and Gitelson (1994), Walo et al. (1996), Crompton and McKay (1997) Kim et al. (1998), Thrane (2002), Daniels and Norman (2003), and Koh and Jackson (2007) have examined the impact of special events on local economies.

However, travel researchers have debated about the best method(s) for obtaining accurate economic impact figures and making reliable forecasts (Crompton et al. 2001, Tyrell and Johnston 2001, Dwyer et al. 2005, Tyrell and Ismail 2005, Crompton 2006, Styne and White 2006). The August 2006 issue of the *Journal of Travel Research* (Vol. 45, issue 1) focused on measuring

the economic impact of travel, and many critical issues were addressed in articles by Tyrell and Johnston, Stynes and White, Wilton and Nickerson, Frechtling, Cai et al., Smith, Dwyer et al., Crompton, Libreros et al., Smeral, and Bonham et al. Crompton (1995) criticized many of the most common assumptions, methods, and findings of economic impact studies (EIS) and in 2006 asserted that EIS outcomes and findings are often manipulated for political reasons.

The original EIS approach was to apply an Input-Output model like those used in typical tourism studies. More recently, the standard approach has been to implement the Computable General Equilibrium model (Adams and Parmenter 1995, Dwyer et al. 2006) and the recommendations of Crompton (2006). Jackson et al. (2005) have also provided a review of the economic impact literature for events and a “Do-It-Yourself” kit for conducting economic impact studies. Finally, Carlsen et al. (2001) suggested using the Delphi technique with event experts to supplement the standard impact analysis. Information about economic impacts can be combined with marketing concepts to document spending behavior and visitor origin and to provide additional insights into event economics.

2.2 Air Show Research

Special events come in many varieties, but air shows are special multiple-day events that have grown in popularity in the United States and worldwide. An air show is in essence a “sporting event” where flying performances are showcased with thrilling aerobatics, competitions, and displays of aerial feats that participants and spectators do not easily see in any other setting. Typically, an air show also includes a wide assortment of static aircraft and aviation-related exhibits for spectators. Air shows may be commercial in nature, seeking income from patrons and corporate sponsors. However, air shows held at military bases are generally free and serve as public relations and community events as part of the base’s community outreach and involvement. Air shows at civilian airports typically charge visitors an admission or parking fee.

Air shows are held on large exhibition grounds, such as local or regional airfields or military installations, and

they are well positioned to draw very large crowds. A recent *Los Angeles Times* article reported that recession-weary families looking for affordable entertainment are increasingly turning to air shows (Zimmerman 2009). The article also mentioned that the International Council of Air Shows expects air show attendance to reach 15 million people in the U.S. in 2009, up from the typical 10-12 million in previous years; this increase follows attendance patterns after recessions in the 1980s and 1990s. Because of their “draw” and “reach” potential, air shows are attractive to corporate sponsors hoping to reach a motivated or targeted population.

Westover Air Reserve Base in Chicopee, MA, is the staging location of the Great New England Air Show (GNEAS). The GNEAS has been held at this location approximately 20 times over the past four decades, about once every 2 to 3 years. During its long history, there has been no previous study of the air show’s economic contributions to the region or any detailed market analysis of attendees. Other air shows are held periodically in Rhode Island, Maine, and nearby New York state. Next to the Boston Marathon and First Night Events in the major New England metropolitan areas, this 2-day event is one of the largest special events in New England, attracting 300,000 to 400,000 visitors over one weekend, usually in the early fall.

Little academic research has been done on air shows. A comparative study in the *Journal of Vacation Marketing* by Nicholson and Pearce (2000) studied attendance and attendees at four special events on New Zealand’s South Island: two food/beverage shows, a music festival, and an air show. They found that the four events attracted significantly different types of visitors and that the air show visitors were predominantly male (63 percent); were evenly distributed across occupation types; had higher average household incomes than attendees at the other events; tended to have children; were evenly split between first-time and repeat visitors; and were mostly tourists from outside the immediate area (90 percent), not local residents. Nicholson and Pearce emphasized that characterizing event participants needs to go beyond the typical socio-demographic variables to examine other means of market segmentation.

The International Council of Air Shows (ICAS) (International Council of Air Shows 2009) collects data on demographic and travel characteristics of spectators at air shows throughout North America. ICAS's most recent data indicate that 75 percent of all air show attendees travel 49 or fewer miles to these events, 22 percent travel 21 to 49 miles, and 53 percent travel less than 20 miles. Such travel characteristics are often used to establish the extent of visitor spending impacts at air shows and other special aviation events.

3.0 OBJECTIVES AND METHODS

This was the first attempt to measure the baseline economic impact of the Great New England Air Show, to conduct a geographic market analysis, and to apply market techniques in a structured research analysis. We developed a comprehensive survey instrument based on the framework of an EIS of other special events and divided it into six parts, plus space for open-ended comments on selected items. The sections were: 1) interest in the GNEAS and previous experience with air show events; 2) motivation to visit the GNEAS and Pioneer Valley of Massachusetts; 3) purchase decision involvement in air shows and GNEAS; 4) travel behavior related to GNEAS and the Pioneer Valley Region; 5) economic impact expenditures and analysis; 6) demographic profile of visitors; and 7) visitors' open-ended comments. The resulting data provide the basis for estimating the GNEAS's economic impact and help to measure other important parameters crucial to understanding the overall market and visitor dynamics by geographic or trade market areas.

The GNEAS was held at the Westover Air Base on the weekend of September 6-7, 2008. The gates to the airbase opened at 8:00 a.m. each day. The show started at 9:00 a.m., and the event ended both days with the Thunderbird fighter jets' performance at 5:00 p.m. The event had no admission fee and was open to the public.

Outside researchers did not review the survey instrument, but the survey included standard EIS statements as recommended by Crompton (1995), Stynes (1998), Crompton et al. (2001), and Tyrell and Johnston (2001). The survey also included three standard market analysis

questions on purchase decision involvement developed by Mital (1983) that have proven to have high validity and reliability in previous research. Sixty pilot-study participants were intercepted and interviewed at random locations on the airbase during both days of the event. The pilot study served as the basis for improving the survey instrument. Pilot-study participants also were asked to provide an email address if they wanted to take the complete survey online after the show.

Before the event, GNEAS attendees could register for the event itself at the official GNEAS Website to obtain important event information, coupons, and special incentives, including a free air show poster. From the online registration process, the Galaxy Community Council, the organization sponsoring the event, provided the research team with a list of registrants' email addresses. This list was combined with the email address list from pilot-study participants for a total of 3,078 individuals in the survey population.

After the GNEAS event, a revised version of the survey was posted online utilizing Qualtrics™ (Qualtrics, Inc., Provo, UT) survey software. The 3,078 individuals were contacted by email about completing the survey in two waves within 2 weeks of the event and data collection was conducted over 4 weeks, concluding on October 20, 2008. A modified Dillman (2007) reminder technique was utilized to ensure higher response rates. Promotion coupons were included as an incentive to boost the response rate. Reminder emails were sent on October 5-6 and October 14, 2008. The system automatically sent "Thank You" notes when surveys were completed.

The response rate was 33.9 percent and 1,109 surveys were filled out completely. Six surveys were not deliverable due to incorrect email addresses and 89 incomplete surveys were discarded.

4.0 SURVEY RESULTS

4.1 Demographic and Attendance Information

The visitors to the GNEAS were very interested in aircraft in general, and approximately 57 percent stated that this interest was their primary reason for attending

the air show. The second most popular reason for attending was “entertainment for the family” (32 percent of respondents). The sample survey population was 68 percent male. The average age of the respondents was 44.8 years; 6 percent were under age 24, 18.6 percent were 25-36 years, 38.5 percent were 37-48 years, 26 percent were 49-60 years, and 11.3 percent were 61 years or older. About 51 percent of respondents had a gross household income of less than \$75,000 a year, and 72 percent earned less than \$100,000.

About 48 percent of respondents had a college or post-graduate degree. Sixty-three percent were repeat visitors to the GNEAS with an average of four previous visits. Slightly more than two-thirds (68 percent) of survey respondents were highly involved in the decision to attend the event. More than 93 percent of the sample reported that that were interested to extremely interested in air shows; 38 percent indicated extreme interest. Approximately 85 percent indicated that the Great New England Air Show in particular was important to extremely important to them, and 29 percent indicated that it was extremely important.

On a 7-point scale, average overall satisfaction with the GNEAS experience was 5.5. Almost 85 percent of the respondents indicated that they would like to attend the event again. Only 3.7 percent indicated that they would not return. However, a comparison between first-time visitors and repeat visitors revealed that approximately 25 percent of the first-time visitors said that they were unlikely to return to the GNEAS in the next 2 years. These respondents gave a rating of 4 or less on the 7-point scale when asked about likelihood to return.

Westover Air Force base personnel used aerial views and on-the-ground counts to estimate total 2-day attendance at 345,000 with 28 percent attending on the first day. Only 11 percent of the survey sample attended both days. The average length of time respondents spent at the show was 5.6 hours and 60 percent of the sample indicated that they would not have come to visit the Pioneer Valley Region those days if there had been no air show. The average group size was 2.5 adults and 1.3 children or dependents for an overall average group



Figure 1.—Map of GNEAS Markets. Note: Each circle symbol represents a ZIP code that had attendees at the GNEAS. The yellow pin, slightly left of center, is the GNEAS location.

size of 3.8. The average distance traveled one-way by the visitors to the show was 45.14 miles (measured by straight-line, not travel, distances between the event and primary residence ZIP codes). Approximately 77 percent of the respondents had traveled less than 65 miles and almost every visitor in the sample had traveled less than 200 miles.

4.2 Visual Analysis of Geographic Trade Market Area

Survey takers were asked to put in their primary residence ZIP code or put ‘N/A’ if they resided in the immediate area of the GNEAS. Approximately 39 percent used ‘N/A’ to indicate that they were residents of the area while 61 percent were visitors. The primary residence ZIP codes of the survey subjects were put into a Microsoft™ Excel spreadsheet file and uploaded to Google Earth™ to create a map of the event’s market area. Figure 1 is a view of the whole region with the GNEAS venue marked with a yellow pin. The map includes Massachusetts, Connecticut, Rhode Island, southern portions of Vermont and New Hampshire, northeastern Pennsylvania, northern New Jersey, and eastern sections of New York state. The white points represent primary residence ZIP codes provided by participants but do not indicate the intensity of participation (number of participants) from each ZIP code. The visual analysis here shows that the majority of the GNEAS market is east and south of the venue. Only a few visitors traveled from Vermont and almost none came from Maine.

Table 1.—Attendees’ Direct Expenditure Estimates by Category for GNEAS

Category	Direct Impact
Refreshments at the event	$345,000 \times (\$20.53/3.77) = \$1,878,740$
Food/drinks before or after the event	$345,000 \times (\$17.51/3.77) = \$1,602,374$
Souvenirs or gifts	$345,000 \times (\$14.80/3.77) = \$1,354,377$
Clothing or accessories	$345,000 \times (\$3.93/3.77) = \$359,641$
Transportation	$345,000 \times (\$24.47/3.77) = \$2,239,297$
Local attractions	$345,000 \times (\$2.10/3.77) = \$192,175$
Overnight accommodations	$345,000 \times (\$12.26/3.77) = \$1,121,936$
Other	$345,000 \times (\$2.40/3.77) = \$219,628$
Total	$345,000 \times (\$98.00/3.77) = \$8,968,169$

4.3 Economic Impact Findings of GNEAS

One of the objectives of this project was to understand and gauge the economic significance and impact of the air show on the region. Among survey respondents, the average spending per group was \$98. Expenditures were divided into the following main categories as suggested by economic impact researchers Styne (1998), Stevens (2008), and Bojanic (2008): 1) refreshments; 2) food/drinks before or after the event; 3) souvenirs and/or gifts; 4) clothing or accessories; 5) transportation costs; 6) local attractions; 7) overnight accommodations; and 8) “other” expenditures. The largest average expense was transportation (\$24.47 per group) followed by refreshments at the event (\$20.53 per group) and then food/drinks before and after the event (\$17.51 per group). The lowest expenditure category was local attractions (\$2.10 average per group).

4.4 Direct Economic Significance

As mentioned previously, an event’s direct economic impact includes spending by visitors at local businesses and at the event itself. This total involves the expenditures each person made specifically for this trip. Therefore, the direct economic significance is:

$$\begin{aligned}
 &345,000 \text{ (Estimated total population at the show)} \\
 &\times \$98/3.77 \text{ people (Average spending per group} \\
 &\text{divided by group size = average spending per person)} \\
 &= \$8,968,169.
 \end{aligned}$$

A more detailed overall direct estimate of spending by visitors for each category is in Table 1.

However, Crompton (2006) notes that one of the more significant shortcomings of economic impact studies is the inclusion of local residents in the spending analysis since it is impossible to know how much they might have spent in the area during the event even if they had not attended. Of the estimated 345,000 attendees at the show, an estimated 60.87 percent or 210,002 (based on survey results) were visitors from outside the immediate area. Their direct economic impact is estimated to be:

$$\begin{aligned}
 &210,002 \text{ (Total visitors at the show, excluding local} \\
 &\text{population)} \times \$98/3.77 \text{ (Average spending per} \\
 &\text{person)} = \$5,457,952.
 \end{aligned}$$

4.5 Direct, Indirect, and Induced Economic Impact—The Multiplier Effect

Officials at the Massachusetts Office of Travel and Tourism suggested using an economic impact multiplier of 1.5 for the Pioneer Valley of Massachusetts (D’Agostino 2009). Based on the above numbers, the overall economic significance estimate for all attendees, including direct, indirect, and induced effects would be:

$$\begin{aligned}
 &\text{Overall Economic Significance of GNEAS:} \\
 &345,000 \text{ (estimated attendance at the GNEAS)} \times \\
 &\$98/3.77 \text{ (Average spending per visitor)} \times 1.5 = \\
 &\$13,452,255.
 \end{aligned}$$

The shortcoming of this estimate is that it is not based on “new money” being spent in the host community by visitors from outside the community (Crompton 2006). Some may suggest that this estimate is acceptable anyway since this rare and special event probably does

not displace other local spending. This estimate may also actually represent money that stays in the community instead of leaking out as families, particularly during the recessionary period of 2008-2009, elected to stay closer to home, rather than traveling to other destinations or event locations. If the event attendees and impact were adjusted to exclude local residents, the overall economic impact with the estimated multiplier would be:

210,002 (*Total visitors from outside the area at the show*) x \$98/3.77 (*Average spending per visitor*) x 1.5 = \$8,188,255.

While these are estimates, they are a very conservative look at the dollars generated by the GNEAS. This research did not, for example, include show vendors, civilian volunteers, military personnel who staffed the Website and assisted with event coordination on the base, or air show participants even though all of these people probably spent some money at the air show and/or in the local area.

5.0 DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

5.1 Air Show Impacts—Substantial and Adjusted

This analysis of Great New England Air Show visitors demonstrates that a range of estimates can be generated by examining attendees' spending behaviors and making different assumptions. When overall direct expenditures by all air show attendees are calculated, the results can be overstated and misleading, as suggested by Crompton (1995 and 2006). In the case of the GNEAS, when all visitors are counted and an economic multiplier is applied, the overall economic impact is estimated to be nearly \$13.5 million for the 2-day event. When local residents are removed from the analysis, the economic impact estimate with the multiplier applied was only \$8.2 million.

5.2 Graphic and Qualitative Analysis of Visitor Markets

In this analysis, the map of survey respondents' ZIP codes is a coarse but nonetheless informative depiction of the event's markets. This application has additional benefits and can be extended. For example, more detailed

maps of first-time visitors' residential ZIP codes could be highlighted or separated. Highly involved, loyal visitors' geographic distribution might also be of interest. When the maps and other survey data were presented to event organizers, they noticed immediately that the show was popular among residents of Worcester and Boston, MA, and Hartford, CT, and concluded that the event might benefit from additional promotion in those markets. Furthermore, it was clear that there were few attendees from Albany, NY; Providence, RI; and the state of Maine, possibly because there are competing air shows or other events in those regions.

From the perspective of logistics and operational management, it is helpful to have a clearer idea of how many attendees to expect each day and which direction they will come from in order to plan traffic and crowd management. In this case, the mapping showed that the majority of arriving groups came from south and east of the event site. Although not presented here, open-ended responses on the survey included a large number of complaints about traffic to and from the event, parking problems, and the distance from the venue to the parking areas. Isolated complaints also came from visitors who were unable to get to the event because of excessive traffic congestion.

5.3 Profile of Air Show Visitors

The profile of GNEAS attendees is similar to national findings and published information about other air shows. For example, the most recent ICAS report indicates that air show visitors reported gross household incomes in excess of \$50,000 while the GNEAS indicated that nearly 50 percent had gross household incomes in excess of \$75,000. ICAS reports that about 75 percent of air show visitors travel less than 50 miles one-way and the GNEAS survey respondents traveled an average of 45 miles one-way to the event. The Zimmerman (2009) *Los Angeles Times* article reported that a family of four can attend an air show for far less than the \$256 it would cost them to visit Disneyland. For the GNEAS, the average expenditures for a group of about four people were \$98. The visit to the GNEAS was a day trip for most family groups in the survey.

5.4 Limitations, Implications, and Importance of Trade Market Analysis

Analysis of the trade market and geographic context of a special event yields additional insights into how special event market behavior varies and how EIS can be adjusted. While both visual and identified markets were presented here, it is important to know whether special events have real and substantial impacts. Behavioral information such as distance traveled, purchase decision involvement, likelihood to return, and repeated visitation helps to further qualify and improve estimates of economic impacts.

Economic impact studies are estimates calculated using sample data. It is important to have accurate counts of attendance and data from a truly representative sample of attendees, although accuracy is not always possible. One limitation of this research is that the researchers themselves did not attempt to estimate attendance, instead using the official attendance estimate compiled by U.S. military personnel who staffed the entry points, took entrance counts, made flyovers of the area during peak periods, and monitored parking lot accommodation accounts. These estimates could and probably do vary from the real number of visitors. In addition, attempts to obtain a true, random sample are difficult even in the most ideal conditions. Random intercepts and event registration at an online site helped to yield a large sample population (more than 3,000 individuals), but there is no way to know how truly representative the sample is. This study more than likely under-represented lower-income attendees, older people, and others who do not have access to the Internet or email accounts. Hispanics and international visitors are not well represented in the sample and may have been missed. No Spanish version of the survey was made available online and it is recommended that future research be conducted in both English and Spanish. The survey used a post-event assessment within 4 weeks of the event and accurate recall could be an additional concern in expenditure estimates. Finally, this free event occurred when gas prices in the Northeast were at or near \$4 per gallon, so it may have attracted more local and regional visitors than in other years when gas prices were lower.

Crompton's (1995 and 2006) recommendations for adjusting and more honestly portraying the real economic impacts of special events are particularly relevant here. Expenditures noted in this survey cannot all be fully or accurately defined as "new money" (expenditures linked directly to the event that would not have occurred without the event) coming into the local economy. For example, the most expensive category of expenditures was transportation, and the cost of gas probably dominated and inflated those figures. However, it would be incorrect to assume that all of the gas was purchased locally. In fact, it is likely that many or most visitors fueled up at home and drove to Westover Air Base and returned home without refueling. Likewise, not all food consumed at the event was purchased on-site. Researchers observed that many attendees brought (presumably full) coolers from off-site to the GNEAS and many survey respondents also complained about the high cost of food at the vendor tents in their open-ended responses on the survey.

This research included a fully online survey that was pre-tested during intercept interviews at the event itself. For many types of events, online surveys have numerous advantages. First, the response rates are generally higher than for traditional mail-in surveys and responses rates can be enhanced by offering incentives, as in this study. A response rate higher than 30 percent is very good for this type of event.

Recommendations for future research include working with private vendors and corporate sponsors to collect email addresses, offering more or varying incentives for survey participation, and making available on-site response kiosks to help gather email addresses. In this study, 400 surveys were completed within the first week of distribution by email. Using online software such as Qualtrics™ or Survey Monkey™ (Survey Monkey Co., Menlo Park, CA) greatly simplifies the survey process for researchers and respondents. The online survey process also reduces survey administration costs, reduces data entry problems, and increases survey response rates and the accuracy and readability of written responses. Furthermore, online survey software facilitates tracking of respondents and nonrespondents.

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The content of this paper reflects the views of the authors(s), who are responsible for the facts and accuracy of the information presented herein.