

Inexpensively Estimating the Economic Impact of Sports Tourism Programs in Small American Cities

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In America, and increasingly across the globe, sports tourism commonly serves as a tool to spur local economic development. Some studies have shown that amateur sporting events can return significant economic benefits to host communities.

Because of the perceived positive impacts such programs can have on local economies, sports tourism bundled as a multi-event annual program is thought by some to be an effective tool for economic stimulation in small cities. Yet, how do we measure to see whether this assumption is true?

Because community sports tourism programs commonly span numerous events and event types each year, estimating the annual economic impact using traditional event-specific surveying and local economic multiplier modeling is expensive—particularly for small communities. This article outlines an alternative method communities can use to estimate the economic impact of annual sports tourism programs using existing event studies alongside relevant free economic data that is readily available.

Measuring the economic impact of a single event is quite different from measuring the annual economic impact of a comprehensive sports tourism program spanning numerous event types located at various places and times throughout the year, the latter being considerably more complex and challenging. Traditionally, visitor spending patterns are calculated event-by-event, using surveys of event attendees. Thus, estimating the total economic impact of an entire annual sports tourism program with dozens

of sporting events using surveys would become expensive. Beyond that, the need for an economic multiplier model arises. In fact, for small communities, conducting event surveys and hiring economists is often financially infeasible.

Absent costly event-specific data and an economic model, community planners currently have no clear method of estimating the economic impact of an annual multi-event sports tourism program. Currently, the literature on economic impact studies focuses on survey approaches for specific events, rather than on estimating the economic impact of annual sports tourism programs, which community leaders need.

Here, we offer a procedure for estimating economic impact which differs from the traditional, relatively labor-intensive models in two ways:

1. Our procedure allows community leaders to estimate the economic impact of an annual sports tourism program comprising dozens of events and several event types, rather than an individual event.
2. Our procedure requires neither event-specific surveys nor economic models, providing community leaders a relatively cost-effective way to determine the impact of their entire annual program.

Economic Impact 101

Economic impact analyses attempt to answer the questions of how many external dollars enter a host community for a given event, and how much the new money benefits members of the host community.¹ The general formula for calculating economic impact is given by the product of number of tourists,

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average spending per tourist, and appropriate multipliers.²

In the inevitable absence of perfect information, economic impact analyses are complicated by the process of estimating the required inputs where facts are unknown. This study simplifies the process by detailing a procedure using specific economic data, whereby users can effectively deal with imperfect information yet produce reasonable estimates of economic impact.

Required Inputs

The first required input is the *number of tourists*. Estimating the number of tourists requires finding or calculating not only estimates of total event attendees, but also an estimate of the percentage of nonlocals attending the event. Including only attendees from outlying regions is critical because local spending cannot be considered new spending in the community. For this procedure, prior surveys of similar events also held in small or mid-sized cities will reflect a reasonable estimation of the percentage of nonlocals in attendance.

The second formula input is *average spending per visitor*. This,

too, is estimated by relying on prior surveys, which have outlined expenditures by type, generally including lodging, dining, shopping/retail, entertainment, transportation and number of days spent in the region.

Finally, the appropriate *multiplier and capture rate* are needed to translate total spending to the measure of final demand. Afterward, the result is local final demand, the net monetary infusion to the local economy as a result of the initial tourist direct spending over a specified period of time. We refer to this as “economic cash flow.”

Applying the Method to the Columbus, Indiana, Sports Tourism Program

We applied our method to estimate the economic impact of the Columbus, Indiana, sports tourism program for 2012, 2013 and 2014. This article walks through the details of the 2012 analysis, while results are presented for all three years.

To calculate the economic impact, total nonlocal attendance, average daily spending, multipliers, and capture rate were needed. Starting with primary data from the events, we estimated the required inputs using methods described in the economic impact literature, as follows:

- *Gibson et al.’s (2012) “Small-scale event sport tourism: A case study in sustainable tourism.”* This study addressed the direct spending impacts of six sporting events in Gainesville, Florida, including three adult tournaments and three youth tournaments. Among other findings, the study calculated the average party size and daily spending per party for each event, segmenting attendees by overnight visitors or “day-trippers.” This study particularly suits the sports tourism situation of Columbus because it examines a cross-section of amateur sporting events for both youth and adults—a mix similar to the Columbus sports tourism program.
- *Crompton and Lee’s (2000) “The Economic Impact of 30 Sports Tournaments, Festivals, and Spectator Events in Seven U.S. Cities.”* The authors of this study conducted surveys at 30 sports and festival events in seven different cities to estimate their economic impacts. Sixteen of these events were similar to those held in Columbus in 2012. The nonlocal percentages at these 16 games were used to estimate the nonlocal attendance

percentage at the Columbus program’s events.

- *Cobb and Olberding’s (2007) “The Importance of Import Substitution in Marathon Economic Impact Analysis.”* The authors of this study analyzed the economic impacts of the 2006 “Flying Pig” marathon in Cincinnati, Ohio. This study reported the proportions of nonlocals and locals participating in the marathon. These proportions were used to estimate the number of nonlocals attending the marathon events in our study.

Event Segmentation

The Gibson et al. (2012) study reported average spending levels and median party size for both overnight visitors and day-trippers for three youth and three adult amateur sporting events in Gainesville, Florida (see **Table 1**).

Each of the 82 events in the Columbus study was segmented first by participant age (adult or youth), then by event type. Those events not matching one of the event types from the Gibson et al. study were assigned as either an “adult average” or “youth average” event, which represented the average expenditures per party for the three events in that age group.

TABLE 1: Spending per Party Results from Gainesville, Florida

Event Type	Overnight Visitors				Day-Trippers			
	Total Spending per Party	Days	Daily Spending per Party	Party Size	Total Spending per Party	Days	Daily Spending per Party	Party Size
Adult Marathon	\$316.57	2	\$158.29	2	\$95.64	1	\$95.64	2
Senior Games	\$275.66	2	\$137.83	2	\$169.76	1	\$169.76	2
Adult Archery	\$560.43	3	\$186.81	3	\$123.13	1	\$123.13	2
Adult Average	-	-	\$160.98	-	-	-	\$129.51	-
Youth Soccer	\$649.87	3	\$216.62	2	\$206.45	1	\$206.45	2
Youth Softball	\$828.94	4	\$207.24	4	\$199.95	1	\$199.95	3
Youth Swimming	\$586.64	3	\$195.55	3	\$147.63	1	\$147.63	3
Youth Average	-	-	\$206.47	3	-	-	\$184.68	-

Note: Days and party size are median values for each event.
Source: Gibson et al. 2012

TABLE 2: Segmentation of Columbus Sports Tourism Events

Event Type	Overnight Parties		Day-Tripper Parties	
	Events	Participants	Events	Participants
Adult Marathon	-	-	13	1,720
Senior Games	1	1,080	-	-
Adult Archery	-	-	-	-
Adult Average	13	3,440	10	3,094
Youth Soccer	-	1,050	-	-
Youth Softball	26	10,566	1	180
Youth Swimming	6	2,406	-	-
Youth Average	7	1,110	4	440
Totals	54	19,652	28	5,434

Source: Authors' calculations

TABLE 3: Estimating the Number of Nonlocal Parties

Event Type	Overnight Parties				Day-Tripper Parties			
	Events	Travel Parties (estimate)	Percent Nonlocal	Nonlocal Parties	Events	Travel Parties (estimate)	Percent Nonlocal	Nonlocal Parties
Adult Marathon	-	-	52.55%	-	13	1,720	52.55%	904
Senior Games	1	1,080	88.31%	954	-	-	88.31%	-
Adult Archery	-	-	88.31%	-	-	-	88.31%	-
Adult Average	13	3,440	88.31%	3,038	10	3,094	88.31%	2,732
Youth Soccer	-	1,050	89.48%	939	-	-	89.48%	-
Youth Softball	26	10,566	89.15%	9,420	1	180	89.15%	160
Youth Swimming	6	2,406	91.70%	2,206	-	-	91.70%	-
Youth Average	7	1,110	84.82%	942	4	440	84.82%	373
Totals	53	19,652	-	17,498	28	5,434	-	4,170

Source: Authors' calculations

Next, events were denoted as either overnight or day-tripper events, based on the duration of the event: those events taking place in one day were labeled day-tripper events, while those events with a duration of two or more days were labeled overnight events.

Table 2 shows the segmentation of the Columbus events. We used the number of participants, which was known precisely for each event, as a proxy for the total number of parties; in other words, we assumed one party per athlete. There were an estimated 25,086 parties attending the 82 study events over the entire 2012 Columbus, Indiana, sports tourism program.

Excluding Local Attendees

Crompton and Lee (2000) and Cobb and Olberding (2007) offer empirical evidence of the percentage of nonlocals at the various events types. We applied the overall proportion of nonlocals participating in races—approximately 53 percent—to the 13 running events in Columbus, while about 80-90 percent of other sports participants were nonlocal.

Table 3 shows the resulting total *visiting parties* attending the Columbus events.

Adjusting the total number of parties to exclude local attendees resulted in an estimated 21,668 sports tourist parties visiting Columbus in 2012.

Direct Spending Calculation

Before applying average spending per party to estimate the total direct spending effects of the nonlocal parties, we adjusted the original Gibson et al. (2012) daily spending averages for variances in the costs of living between Columbus, Indiana, and Gainesville, Florida.

To adjust for cost of living, we utilized a living wage calculator developed by the Massachusetts Institute of Technology (MIT), which measures household price variations for all counties across the country.³ We formed a proportion from the after-tax required living wage for a household of two adults and two children for Bartholomew County, Indiana, and Alachua County, Florida. The living wage was

TABLE 4: Adjusting Daily Spending per Party Estimates for Cost of Living

Event Type	Overnight Visitors		Day-Trippers	
	Gibson et al. (2012) Original Averages	Adjusted Daily Spending per Party	Gibson et al. (2012) Original Averages	Adjusted Daily Spending per Party
Adult Marathon	\$158.29	\$147.74	\$95.64	\$89.27
Senior Games	\$137.83	\$128.64	\$169.76	\$158.45
Adult Archery	\$186.81	\$174.36	\$123.13	\$114.92
Adult Average	\$160.98	\$150.25	\$129.51	\$120.88
Youth Soccer	\$216.62	\$202.19	\$206.45	\$192.69
Youth Softball	\$207.24	\$193.42	\$199.95	\$186.62
Youth Swimming	\$195.55	\$182.51	\$147.63	\$137.79
Youth Average	\$206.47	\$192.71	\$184.68	\$172.37

Note: The cost of living adjustment figure was 0.9334 based on MIT’s living wage calculator.
Source: Authors’ calculations

TABLE 5: Calculating Total Direct Spending

Event Type	Overnight Parties			Day-Tripper Parties		
	Travel-Party Days	Cost Per Party/Day	Total Direct Spending	Travel-Party Days	Cost Per Party/Day	Total Direct Spending
Adult Marathon	-	\$147.74	-	904	\$89.27	\$80,684
Senior Games	3,815	\$128.64	\$490,768	-	\$158.45	-
Adult Archery	-	\$174.36	-	-	\$114.92	-
Adult Average	7,608	\$150.25	\$1,143,043	2,732	\$120.88	\$330,273
Youth Soccer	2,818	\$202.19	\$569,856	-	\$192.69	-
Youth Softball	27,884	\$193.42	\$5,393,500	160	\$186.62	\$29,948
Youth Swimming	7,545	\$182.51	\$1,377,087	-	\$137.79	-
Youth Average	2,495	\$192.71	\$480,722	373	\$172.37	\$64,330
Totals	52,165		\$9,454,976	4,170		\$505,234

Source: Authors’ calculations

\$33,108 for Bartholomew County and \$35,472 for Alachua County—making the living wage in Columbus 93.34 percent of the living wage in Gainesville. For Columbus, adjusting the daily expenditures per party by this ratio resulted in **Table 4**.

After the number of parties and adjusted average daily spending figures were calculated for each event type, total direct spending was calculated. To do this, we used a “travel-party days” figure for each category of event, calculated by multiplying the number of travel parties at each event by the event duration, in days, then summing the results within each event category. The adjusted daily spending per

party captured variations in both spending patterns and party size per event type (thus spending per party rather than spending per person). Multiplying the travel-party days figure and adjusted daily spending per party for each event type yielded the results shown in **Table 5**.

These calculations yielded a total *direct visitor* spending of **\$9,960,210** for all 82 events in 2012.

Estimating the Multipliers

To estimate the revenue multiplier, we utilized Chang’s (2001) model for prediction using region population and population density. Specifically, this model shows that a region’s tourism sales multiplier is given by:

$$1.566 + 0.053 \times \ln(\text{POP}) - 0.009 \times \text{POPDEN}$$

where $\ln(\text{POP})$ is the natural logarithm of the region’s population, in millions, and POPDEN is population density, in thousands of persons per square mile.

In the Columbus metro (Bartholomew County), total population was 79,587 and population density was 195.6 persons per square mile.⁴ Therefore, the sales multiplier computation was given by:

$$1.566 + 0.053 \times \ln(0.079587) - 0.009 \times 0.1956 = \mathbf{1.4301}$$

TABLE 6: Economic Impact of Amateur Sports Tourism in Columbus, Indiana

Year	Number of Events	Direct Spending	Economic Impact: Lower Bound	Economic Impact: Upper Bound	Estimated Economic Impact
2012	82	\$9,960,210	\$8,546,468	\$9,970,879	\$9,259,000
2013	49	\$10,581,024	\$9,079,164	\$10,592,358	\$9,836,000
FY 2014*	74	\$11,703,137	\$10,042,005	\$11,715,673	\$10,879,000

Note: 2014 calculation represents August 2013 to September 2014.
Source: Authors' calculations

Stynes (1997) notes that capture rates are typically between 60-70 percent. Therefore, the final demand multiplier (total spending multiplier x capture rate) is estimated to fall between:

$$0.6 \times 1.4301 < \text{Final Demand Multiplier} < 0.7 \times 1.4301 \text{ or} \\ 0.8581 < \text{Final Demand Multiplier} < 1.0011$$

Applying this range of multipliers to the direct spending estimate yields the following:

$$0.8581 \times \$9,960,210 < \text{Total Economic Impact} < 1.0011 \\ \times \$9,960,210 \\ \text{or } \$8,546,468 < \text{Total Economic Impact} < \$9,970,879$$

Therefore, we concluded that the Columbus, Indiana, 2012 amateur sports tourism program generated about \$9,259,000 of total economic impact in 2012, which reflects the net cash flow Columbus experienced that year arising from the annual sports tourism program.

Table 6 shows results for the 2012 and 2013 calendar years and the 2014 fiscal year.

Summary

Using the Columbus, Indiana, amateur sports program as a case study, we have presented a process of estimating economic impact requiring only a few basic primary inputs—event type, event duration and number of participants. From these, we estimated economic impact by extrapolating spending and attendance averages from existing economic impact studies, adjusting the figures as necessary using published economic data.

The nine-step process (see sidebar) provides a systematic means of estimating total attendance, average daily spending and net direct spending effects. Estimating a total sales multiplier and applying a likely range of capture rates yields a range for the estimated annualized economic impact of the amateur sports program, which can be useful for city officials when considering whether or not to invest resources into a multi-sport type, multi-event annual sports tourism program.

In choosing sources from which to extract spending and attendance figures, two key issues arise: First, in order for the extrapolated figures to even be reasonably considered for calculating economic impact, the secondary study should be comparable to the situation at hand. Second, the

Nine-Step Process for Estimating Economic Impact

- Gather primary data:** Gather data on event type, event duration and number of participants.
- Identify key secondary study:** From available literature, identify a study (or studies) of similar events with segmentation categories resembling those of the sports program being analyzed. The study should provide average party size, direct spending figures and nonlocal percentages.
- Segment events:** Using the segmentation from the study chosen in stage 2, assign each of the program's events to an event category.
- Calculate travel-party days:** For each event, multiply the number of parties by the event duration using number of participants as a proxy for number of parties.
- Estimate total nonlocal parties:** From a key secondary study or a similar source, retrieve estimated nonlocal attendance percentages. Multiply the total travel-party days in step 4 by this percentage for nonlocal travel-party days.
- Apply cost of living adjustment:** Using MIT's living wage calculator (or a similar source), calculate the ratio of the host community's living wage to the living wage of the key study's location. Apply the resulting proportion to the direct spending averages.
- Estimate total direct spending:** For each event, take the product of nonlocal travel-party days (step 5) and the adjusted average daily spending for that event (step 6).
- Estimate total spending multiplier:** Calculate the estimated spending multiplier with the following formula: $1.566 + 0.053 \times \ln(\text{POP}) - 0.009 \times \text{POPDEN}$, where $\ln(\text{POP})$ is the natural logarithm of the region's population, in millions, and POPDEN is population density, in thousands of persons per square mile.
- Calculate estimated range of final demand economic impact:** Multiply direct spending by the estimated total spending multiplier. Create an economic impact range by multiplying this result by the capture rate range of 0.6 and 0.7.

level of segmentation available within the study is important. Different categories of events have significantly different spending patterns, and differentiating among age groups, event type and overnight visitors versus day-trippers allows for more accurate results.

Economic impact analysis represents an attempt to measure cash flow experienced by the host community. It is certainly in the best interest of the home communities to arrive at estimates of such community cash flow in order to approximate a return on investment for any new sport project under consideration. Using this procedure, planners should take care to select studies and data best reflecting the subject city and its sports tourism profile, which likely means keeping the comparative analysis to relatively recent studies and data from similar sporting events located in small American cities.

In describing a process for utilizing secondary information to form conclusions for the situation at hand, we do not discount the need for primary information. In fact, crucial to the process explained in this report is key information about the actual number of participants, event type and participant age group. For amateur sporting events, the type of event and event duration should be

apparent; the number of participants is typically known from registration or planning data as well. While using some extent of primary data is necessary, these data typically require no special effort outside of ordinary event planning requirements.

With an emphasis on both accuracy and practicality, the process outlined in this article provides a systematic method of estimating economic impact when money is not available to spend on surveys and economic models. The nine-step process details a specific protocol for estimating economic impact using secondary studies and available data. The key contribution of this study is relieving city planners of their reliance upon event surveys and city input-output models. □

Notes

1. Examples include: Michael J. Mondello and Patrick Rishe, "Comparative Economic Impact Analyses: Differences across Cities, Events, and Demographics," *Economic Development Quarterly* 18, no. 4 (2004): 331-342; and Margaret J. Daniels, "Central Place Theory and Sport Tourism Impacts," *Annals of Tourism Research* 34, no. 2 (2006): 332-347.
2. D. J. Stynes, *Economic Impacts of Tourism: A Handbook for Tourism Professionals* (Urbana, IL: University of Illinois, Tourism Research Laboratory, 1997), 1-32.
3. Amy K. Glasmeier, "Living Wage Calculator," Massachusetts Institute of Technology, <http://livingwage.mit.edu/>.
4. Data retrieved from STATS Indiana (www.stats.indiana.edu/).

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