

## The Impact of College Athletics on Employment in the Restaurant and Accommodations Industries

Bernard F. Lentz<sup>†</sup> and David N. Laband<sup>††</sup>

June 2008

### Abstract

In this paper, we analyze Metropolitan and Micropolitan Statistical Area (MSA)-level data in the U.S. to examine the economic impact of college athletics. Specifically, we examine the relationship between total athletics revenues (aggregated across all colleges in an MSA) and MSA-level employment in the accommodations and food services industries. Controlling for a variety of other factors that might influence hotel/restaurant employment within an MSA, we find that below \$40 million (in 2005) in college athletics revenues there is no evidence that college athletics affects MSA employment in the food services and accommodations industries. However, above \$40 million we find highly significant impacts on employment in the food services and accommodations industries that climb with college sports revenue generation.

**JEL Classification Codes:** L83

**Keywords:** college athletics, economic impact, food services and accommodations

Not for quotation without permission

---

<sup>†</sup>Executive Director of the Office for Institutional Research at Drexel University, 3141-51 Chestnut Street, Room 318, Philadelphia, PA. 19104, Tel. 215-895-4971, e-mail: [Bernard.Lentz@Drexel.edu](mailto:Bernard.Lentz@Drexel.edu)

<sup>††</sup>Professor of Economics and Policy, School of Forestry and Wildlife Sciences, Auburn University, 602 Duncan Drive, 3301 Forestry Building, Auburn, AL 36849, Tel. 334-844-1074, e-mail: [labandn@auburn.edu](mailto:labandn@auburn.edu)

# The Impact of College Athletics on Employment in the Restaurant and Accommodations Industries

“The important question is primarily the extent to which colleges and universities attract new money into an area....This depends on both the origin of their students and what the students would do if the college were not there.” (emphasis added)

Siegfried et al. (2008)

## Introduction

There is a well-established literature that focuses on the economic impact of professional sports teams (e.g., Lavioe and Rodriguez, 2005; Coates and Humphreys, 2003; Baade and Matheson, 2001; Hudson, 1999). In general, these researchers have failed to find strong evidence of a significant economic impact of sports teams/stadiums on their respective local communities. A possible explanation of this non-finding is that the marginal impacts that researchers are looking for are swamped by the relatively high average level of economic activity that typically is associated with cities that have a large enough population base to host professional sports teams. Some are state capitols, which are characterized by significant political and convention activity; others are characterized by a sizable amount of entertainment and/or recreation-based activity. Consequently, the resulting hotel/restaurant/retail sales infrastructure is sufficiently developed that the marginal impact of a 70,000 seat football stadium filled 8 times per year simply is hard to detect. Another possibility is that previous researchers have not adequately controlled for other factors that influence the measures of economic impact they analyze.

However, to our knowledge, there have been no empirical estimates of the economic impact of college athletics on local communities. This lacuna strikes us as surprising indeed, because the seating capacity of the football stadiums at a number of major universities is significantly larger than the typical professional football stadium.<sup>1</sup> Even relatively minor sporting events at small colleges located in small towns arguably may have a sizable *marginal* impact on their respective local economies.

---

<sup>1</sup> We are aware of 9 college football stadiums with official seating capacities in excess of 90,000 - - UCLA (91,136), LSU (91,644), USC (92,000), University of Florida (92,000), University of Alabama (92,138), University of Georgia (92,746), Ohio State (101,568), Penn State (107,282), University of Michigan (107,501).

Casual observation suggests that, generally speaking, significant events in the annual calendar of college activity present sizable economic opportunity for local businesses. For example, hotels within a considerable radius around Auburn University tend to be completely booked for the 2-3 days coinciding with spring graduation. More specifically in a sports context, significant athletic events also may present economic opportunity for local businesses. Auburn University's football stadium has an official seating capacity of 87,451. With a total county-wide population (2006 est.) of 125,000, each of the (typically) seven home football games played each year is accompanied by a relatively massive, if short-lived, infusion of non-residents who patronize local restaurants, grocery stores, apparel and souvenir shops, gasoline stations, and hotels. It seems highly likely that there is a significant economic impact on the local community.

In this paper, we attempt to estimate at least part of the economic impact of college athletics on local communities by linking Metropolitan and Micropolitan Statistical Area-level employment in the hotel and restaurant industries to total athletics revenues of colleges and universities located in the same MSAs.<sup>2</sup> Basing our empirical analysis on a sample of 915 MSAs in the U.S. and controlling for a variety of other factors that might influence hotel/restaurant employment within an MSA, we find that below \$40 million (in 2005) in college athletics revenues there is no evidence that college athletics affects MSA employment in the food services and accommodations industries. However, above \$40 million we find highly significant impacts on employment in the food services and accommodations industries that climb with college sports revenue generation.

### Preliminaries

Siegfried et al. (2008) argue that the economic impact analyses developed by most colleges and universities are nothing more than puff-pieces that suffer typically from both sins of omission and sins of commission. As indicated in the quotation from their paper that leads off ours, Siegfried et al. recognize that a defining aspect of this nebulous thing called 'economic

---

<sup>2</sup> An MSA is a geographic entity defined by the federal Office of Management and Budget for use by federal statistical agencies, based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration with that core. Qualification of an MSA requires the presence of a city with 50,000 or more inhabitants, or the presence of an Urbanized Area (UA) and a total population of at least 100,000 (75,000 in New England). The county or counties containing the largest city and surrounding densely settled territory are central counties of the MSA. Additional outlying counties qualify to be included in the MSA by meeting certain other criteria of metropolitan character, such as a specified minimum population density or percentage of the population that is urban. MSAs in New England are defined in terms of minor civil divisions, following rules concerning commuting and population density. A micro area contains an urban core of at least 10,000 (but less than 50,000) population. Each metro or micro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core. For more information, we refer readers to: <http://www.census.gov/population/www/estimates/metroarea.html>.

impact' is that it must reflect 'new' money spent in the locality (see also Siegfried and Zimbalist, 2002). This necessarily complicates the empirical estimation of such impacts, because it is (perhaps highly) unrealistic to assume that all students contribute equally to generation of new money in a community in which one or more colleges is located.

For example, the net impact of a graduate of Auburn High School who attends Auburn University (AU) will be very different - - much less - - than the net impact of a new student whose family lives in Philadelphia. Prior to enrolling at Auburn University, the Auburn resident (and his family) spent money in Auburn and it is not clear that his (and their) local expenditure behavior will change very much merely by virtue of his now being a college student in Auburn. When his family attends his graduation ceremony or other university-specific events, they do not pay for any hotel rooms; they may not patronize any local restaurants. They make the relatively short trip from their home to the university, participate in the event of relevance, then return home. In sum, the fact that an Auburn resident enrolls in Auburn University has relatively little impact on the economy of the city of Auburn.

By contrast, the Philadelphia-based AU student brings, and spends, much new money in the city of Auburn either directly or indirectly (by virtue of visits from his parents who stay in local hotels and patronize local restaurants and other retail establishments).<sup>3</sup> It is highly likely that this money would not have been brought to, and spent in, the city of Auburn if not for the presence of Auburn University. This implies that estimation of the impact of a college/university on the local community may be quite complicated and sensitive to the type of impact considered as well as characteristics of the students. In particular, one should control for the origins of the students enrolled.

The application of this general line of reasoning to analysis of the impact of college athletics on local economies is straightforward. Indeed, the inability of previous researchers to find a significant local economic impact for professional sports teams readily may be explained by the fact that the attending fans are overwhelmingly 'hometown' residents who would have spent their money in a similar manner had the MSA not had a professional sports team.

## Methods

Our general analytical approach follows that of several previous researchers who looked for possible impacts of professional sports teams on employment/earnings in specific sectors of local economies. Baade (1996) failed to find a significant impact of professional sports

---

<sup>3</sup> As a (perhaps extreme) case-in-point, consider foreign students attending Auburn University. In our experience, foreign students rarely return home during their college matriculation period, as the travel costs to their home countries typically is prohibitive. When family members come to visit, they necessarily stay for several days, if not weeks, providing a short-term infusion of money into the local economy. If Auburn University did not exist, foreign students most definitely would not be spending money in Auburn; neither would their relatives.

franchises, or stadiums/arenas on employment shares in the Amusement and Recreation industry (SIC 79) or the Commercial Sports industry (SIC 794). Using the same employment share metric, Baade and Sanderson (1997) identified 4 cities that were positively impacted by the presence of sports teams/stadiums but another 5 cities that were characterized by decreases in employment shares. Coates and Humphries (2001) examined the effect of professional sports teams and stadiums on employment and earnings in several sectors: eating and drinking establishments, hotels and other lodgings, amusements and recreation, and, more broadly, service and retail sectors. Lavoie and Rodriguez (2005) estimated an economic impact of professional sports teams in Canadian cities by examining hotel occupancy rates.

In theory, the relationship between college athletics and local economies should be quite similar to the suspected linkage between professional sports teams/events and local economies. That said, there is at least one clear difference - - professional sports teams produce a single, rather narrowly-defined product whereas the presence of one or more colleges/universities may influence a local economy for a variety of reasons, including athletics, that performance must be controlled for. Moreover, colleges rarely support only a single sports program. Rather, they typically have athletic events scheduled throughout the entire academic year, if not longer, when you account for pre-season play in football and post-season play in baseball.

We focus the lens of our empirical microscope on total employment in the restaurant and accommodations industries. These products/services often are jointly-produced and/or jointly consumed. Even if not jointly consumed, visitors attracted to a specific location from 'out-of-town' typically consume from both industry groups. Our empirical analysis is conducted at the MSA-level to account for the fact that the impact of significant college events may be felt well beyond the immediate community that a college or university is located in. Total employment provides a better indicator of the supply-side response to demand conditions than does the total number of establishments, though it may understate such impact due to the family basis of many restaurants and bed-and-breakfasts. We model MSA-level total employment in the restaurant and accommodations industries as a function of a number of non-college variables such as total resident population, average family income, and the presence/significance of other 'magnet' recreation-oriented industries (e.g., professional sports teams, casinos, entertainment). In addition, drawing from the insights provided by Siegfried et al (2008) and Siegfried and Zimbalist (2002), we include several college-specific factors in our model (aggregated across the colleges located in each MSA): the total number of college students, the number of foreign students, the number of students whose family residence falls within various categories of travel distance from their institution, and total athletics revenues.

The specific model we estimated is:

$$\begin{aligned}
\text{FAJOBS}_i &= \alpha_0 + \alpha_1 2005\text{POP}_i + \alpha_2 \text{AVGFAMINC}_i + \alpha_3 \text{SPORTSJOB}_i + \\
&\alpha_4 \text{CASINOJOB}_i + \alpha_5 \text{ENTERTAINJOB}_i + \alpha_6 \text{CONVENTIONJOB}_i \\
&+ \alpha_7 \text{STUDENTS}<60_i + \alpha_8 \text{STUDENTS}60\text{-}119_i + \alpha_9 \text{STUDENTS}120\text{-}179_i \\
&+ \alpha_{10} \text{STUDENTS}180\text{-}239_i + \alpha_{11} \text{STUDENTS}240\text{-}299_i + \\
&\alpha_{12} \text{STUDENTS}>300_i + \alpha_{13} \text{FOREIGNSTUDENTS}_i + \\
&\alpha_{14} \text{SPORTSREVS}<\$1\text{million}_i + \alpha_{15} \text{SPORTSREVS}\$1\text{-}5\text{million}_i + \\
&\alpha_{16} \text{SPORTSREVS}\$5\text{-}10\text{million}_i + \alpha_{17} \text{SPORTSREVS}\$10\text{-}20\text{million}_i + \\
&\alpha_{18} \text{SPORTSREVS}\$20\text{-}40\text{million}_i + \alpha_{19} \text{SPORTSREVS}\$40\text{-}60\text{million}_i + \\
&\alpha_{20} \text{SPORTSREVS}\$60\text{-}80\text{million}_i + \alpha_{21} \text{SPORTSREVS}\$80\text{-}100\text{million}_i + \\
&\alpha_{22} \text{SPORTSREVS}\$100\text{-}150\text{million}_i + \alpha_{23} \text{SPORTSREVS}\$200\text{-}230\text{million}_i \\
&+ \alpha_{24} \text{FORSTUDENTS}_i \times \text{SPORTSREVS}_i + \varepsilon_i,
\end{aligned}$$

where FAJOBS<sub>i</sub> refers to employment in the food services and non-casino accommodations industries in MSA i in 2005<sup>4</sup>; 2005POP<sub>i</sub> is total population of MSA i in 2005; AVGFAMINC<sub>i</sub> is average family income in MSA i in 2000<sup>5</sup>; SPORTSJOB<sub>i</sub> is professional sports teams employment in MSA i in 2005<sup>6</sup>; CASINOJOB<sub>i</sub> is casino/gaming employment in MSA i in 2005<sup>7</sup>; ENTERTAINJOB<sub>i</sub> refers to employment in the Arts, Entertainment, and Recreation

---

<sup>4</sup> The Accommodation and Food Services sector comprises establishments providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption. The sector includes both accommodation and food services establishments because the two activities are often combined at the same establishment. Excluded from this sector are civic and social organizations; amusement and recreation parks; theaters; and other recreation or entertainment facilities providing food and beverage services.

<sup>5</sup> We use income from the 2000 Census because 2005 MEAN income estimates are not made at the county level due to small sample size. Thus, in order to aggregate to the MSA, we could not use the median incomes, but attempts to use 2005 median income weighted by county populations proved to explain less of the variation in accommodation and food industry employment than population-weighted means drawn from the 2000 Census.

<sup>6</sup> This industry comprises (1) sports teams or clubs primarily participating in live sporting events before a paying audience; (2) establishments primarily engaged in operating racetracks; (3) independent athletes engaged in participating in live sporting or racing events before a paying audience; (4) owners of racing participants, such as cars, dogs, and horses, primarily engaged in entering them in racing events or other spectator sports events; and (5) establishments, such as sports trainers, primarily engaged in providing specialized services to support participants in sports events or competitions. The sports teams and clubs included in this industry may or may not operate their own arena, stadium, or other facility for presenting their games or other spectator sports events.

<sup>7</sup> Casino Hotels are establishments primarily engaged in providing short-term lodging in hotel facilities with a casino on the premises. The casino on premises includes table wagering games and may include other gambling activities,

sectors in 2005<sup>8</sup>; CONVENTIONJOBS<sub>i</sub> is employment by convention/event planners and organizers in MSA *i* in 2005<sup>9</sup>; STUDENTS<60<sub>i</sub> is the number of students in MSA *i* in 2005 that lived less than 60 miles from the college they attended (we assume these individuals are commuter students or that if they live on campus their consumption patterns would not be significantly different than if they had lived at home); the other student mileage variables identify the number of students in MSA *i* whose permanent residence was located within the specified distance from the college they attended; FOREIGNSTUDENTS<sub>i</sub> refers to the number of foreign students enrolled in the colleges/universities in MSA *i* in 2005; SPORTSREVS<\$1million<sub>i</sub> was assigned a value of 1 if the aggregate amount of athletics revenues generated by the colleges/universities in MSA *i* in 2005 was less than \$1 million, 0 otherwise<sup>10</sup>; likewise, the other 0-1 dummy variables indicate whether or not the total athletics

---

such as slot machines and sports betting. These establishments generally offer a range of services and amenities, such as food and beverage services, entertainment, valet parking, swimming pools, and conference and convention facilities. Casinos are establishments primarily engaged in operating gambling facilities that offer table wagering games along with other gambling activities, such as slot machines and sports betting. These establishments often provide food and beverage services. Included in this industry are floating casinos (i.e., gambling cruises, riverboat casinos).

<sup>8</sup> The Arts, Entertainment, and Recreation sector includes a wide range of establishments that operate facilities or provide services to meet varied cultural, entertainment, and recreational interests of their patrons. This sector comprises (1) establishments that are involved in producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and (3) establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure time interests. Some establishments that provide cultural, entertainment, or recreational facilities and services are classified in other sectors. Excluded from this sector are: (1) establishments that provide both accommodations and recreational facilities, such as hunting and fishing camps and resort and casino hotels are classified in Subsector 721, Accommodation; (2) restaurants and night clubs that provide live entertainment in addition to the sale of food and beverages are classified in Subsector 722, Food Services and Drinking Places; (3) motion picture theaters, libraries and archives, and publishers of newspapers, magazines, books, periodicals, and computer software are classified in Sector 51, Information; and (4) establishments using transportation equipment to provide recreational and entertainment services, such as those operating sightseeing buses, dinner cruises, or helicopter rides are classified in Subsector 487, Scenic and Sightseeing Transportation.

<sup>9</sup> This industry comprises establishments primarily engaged in organizing, promoting, and/or managing events, such as business and trade shows, conventions, conferences, and meetings (whether or not they manage and provide the staff to operate the facilities in which these events take place).

<sup>10</sup> Revenues attributable to intercollegiate athletic activities include revenues from appearance guarantees and options, an athletic conference, tournament or bowl games, concessions, contributions from alumni and others, institutional support, program advertising and sales, radio and television, royalties, signage and other sponsorships, sports camps, State or other government support, student activity fees, ticket and luxury box sales, and any other revenues attributable to intercollegiate athletic activities.

revenues generated by the colleges/universities in each MSA fell within the specified range<sup>11</sup>; and  $\varepsilon_i$  is the error term, assumed to be normally distributed.

We expect total employment in the restaurant and accommodations industries in any given MSA to be positively correlated with each of the first six explanatory variables as well as the number of foreign students. Collegiate sporting events draw some fans from within the relevant surrounding MSA; the sporting event-related spending by these individuals merely replaces spending they would otherwise have engaged in within the MSA. Thus, we expect there to be no significant relationship between our dependent variable and the number of students living within a 60 miles radius of their college. As the average distance between the students' home towns and the academic institutions they are matriculating at increases, so does the likelihood that friends/family who visit those students will patronize local restaurants and/or come for extended periods of time that require overnight accommodations. Our measure of student economic impact is predicated on the idea that only if students travel from outside the MSA will they have an impact on the hospitality industry that exceeds their impact as part of the resident population, a variable for which we control. Thus, we have estimated the numbers of students attending each college or university who came from a home that was at varying distances measured in 60 mile intervals up to 300 miles. Those students who were estimated to have traveled 300 miles and over were assumed to have a common economic impact insofar as a 300 mile one-way trip by them or their parents or visitors from home would be prohibitive without an overnight stay.

In general, we expect total revenues generated from college athletics within an MSA to be positively related to employment in the food services and accommodations industries in that MSA, *ceteris paribus*. However, we interpret the fact that the college (or professional) athletics in an MSA generate relatively little revenue as an indicator of commensurately little fan interest. If there is little fan interest generally speaking, it seems highly unlikely that there will be much interest from big-spending fans coming from outside of the MSA. That is, we suspect that it is precisely the high-profile, big money-generating college athletics programs that attract big-spending fans from outside the surrounding MSA's. In this context, we expect to observe positive and significant impacts of college athletics revenues on MSA-level employment in the food services and accommodations industries at relatively high levels of revenues, although we have no prior expectation regarding a possible the threshold level of revenues at which these significant impacts are apparent.

## Data

---

<sup>11</sup> None of the MSA's in our sample had aggregate college athletics revenues in the \$150-200 million range. The highest total in this regard was \$223 million, which is why the top category is listed as \$200-230 million.



We estimated the home-to-campus travel distance traveled of students using data gathered by the U.S. Department of Education which surveys post-secondary institutions each year on the home state of their incoming full-time undergraduate students (see <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007154>). Thus, we calculated the distance between the latitude and longitude of the zip code for each institution and the distance to the latitude and longitude of the centroid of each state as determined using weights of the number of 12<sup>th</sup> grade students reported by public high school students in each state and the zip code of each high school throughout the U.S. (see <http://nces.ed.gov/ccd/>). All part-time students were assumed to live within the 60 mile radius of each campus, and graduate/professional students were assumed to come travel distances that mirrored those of the full-time undergraduate students.<sup>12</sup>

Data on athletics revenues were obtained from reports filed with the Secretary of Education, in compliance with the *Equity in Athletics Act (EADA)*.<sup>13</sup> Information on population and income was taken from relevant Census publications. Employment data for the various industries we included in our analysis came from County Business Patterns (2005). Sample statistics for the 915 MSA's included in our analysis are reported in Table 1.

Table 1 about here

Our average MSA had a population of a little over 300,000 in 2005; average family income (in 2000) was \$53,772. Employment in the food service and accommodations industries averaged 11,484. Note that over 50 percent of the students in the average MSA traveled less than 60 miles to their respective colleges. This suggests that a number of colleges draw heavily from quite localized populations. In addition, a sizable percentage (nearly 32 percent) of the MSA's was characterized by zero college athletics revenues, which is the omitted control group in our regression analysis.

---

<sup>12</sup> With this assumption we almost certainly are understating the travel distances of full-time graduate students, who are more likely than part-time graduate students to go to graduate school farther from their home town and town of their undergraduate institution. However, in our experience, there is not nearly as much travel by the families of graduate students generally to see their sons/daughters as occurs with undergraduate students. Of course there is some such travel, but arguably not enough to suggest that our assumption leads to dramatically biased estimates by virtue of a significant omitted variable problem. Moreover, controlling separately for the origins of graduate students seems unlikely to dramatically increase the already-high explanatory power of our model.

<sup>13</sup> EADA was included in the *Improving America's School Act of 1994 (IASA)*, Public Law 103-382, enacted on October 20, 1994. Any coeducational institution of higher education that participates in Title IV, the federal student aid program, and has an intercollegiate athletic program, must comply with the *EADA* by preparing an annual report, officially called *The Report on Athletic Program Participation Rates and Financial Support Data*; more commonly known as the EADA Report. [Report cite 34 CFR 668.47] The sole mechanism for submitting the report is via the EADA web-based data collection. Data submitted online are migrated to the Office of Postsecondary Education's (OPE's) public website at <http://ope.ed.gov/athletics/>.

Our estimation procedure was ordinary least squares (OLS) regression. Estimation results are presented in Table 2 and discussed below.

Table 2 about here

### Empirical Findings

As expected, total employment in the food services and accommodations industries in an MSA is affected positively by the total population of the MSA - - each additional 10,000 population is associated with an estimated employment increase of nearly 264 in the food and accommodations industries. Also as expected, we observe that hotel and restaurant employment is affected positively by increases in average family income. We estimate that for each \$1,000 increase in average family income, total employment in the hotel and restaurant industries rises by an estimated 52 workers. The estimated impact of various types of entertainment that draws visitors to the MSA (proxied by casino hotel employment, entertainment employment, non-college athletics employment) differs by type of entertainment. For every 10 worker increase in casino employment and the entertainment industry, we estimate corresponding increases in employment in the hotel and food services industries of 7.5 and 6.6, respectively. However, the estimated impact of a 10-worker growth in employment by convention organizers is much larger - - 62. This is believable, because people coming into a city for a convention are highly likely to both eat out at restaurants and stay in the local-area hotels, whereas this arguably is less frequently the case with respect to casinos and entertainment. Contrary to several earlier studies of the impacts of professional sports, we also find a sizable impact of non-college (professional) sports teams. Every 10-worker increase in this industry within an MSA is associated with an estimated 39-worker increase in employment in the food and accommodations industries in that MSA. This finding offers some general evidence in support of the claim that professional athletics has a positive and significant impact on local economies.

Turning to the impact of colleges generally, we report a positive and statistically significant impact of students who live within 60 miles of the college they attend. This is not what we expected to find. However, upon reflection this impact may have a quite plausible explanation - - students may commute less than 60 miles to their college yet still cross MSA boundaries. Again, Auburn University provides a useful example. Some students commute to Auburn University from Montgomery, AL. - - a distance of 50 miles or so. They surely do not rent hotel rooms in the City of Auburn, but they do spend some money eating at restaurants. We report clear evidence, as expected, that as the number of students from relatively far away increases, the impact on local economies (in terms of employment in the food services and accommodations industries) increases. Every 1,000 additional students in an MSA who travel 240 miles or more to their college is associated with an estimated 100 (98 for 240-300 miles and 100 for 300-plus miles) additional jobs in the food services and accommodations industries.

Also as expected, we find a similar and very large estimated impact of foreign students, although a negative impact of foreign students when interacted with college athletics revenues.

Finally, with regard to our motivation for this research, we report that below \$40 million we fail to find an impact of college athletic revenues on MSA employment in the food services and accommodations industries that differs significantly from MSA's that report zero college athletics revenues. However, above \$40 million we find highly significant impacts on employment in the food services and accommodations industries that climb with revenue generation. We estimate that in each of the two largest MSA's (in terms of population, our college athletics revenue measure, and food service-accommodations employment), New York and Los Angeles, college athletics generated well over 80,000 jobs (or about 17.5% of the total) in the food service and accommodations industries alone in 2005.

## Discussion

Siegfried et al. (2008) provide a critical insight relative to estimating the economic impact of professional sports teams/events, of colleges and universities generally, and of college athletics specifically: the impact must reflect net new money/expenditures brought into the local economy, the impact is not reflected in mere redistributions of money/expenditures that would have been made in that locality anyway. With this in mind, it is not surprising that previous researchers have failed to find evidence of significant economic impacts associated with professional sports teams, as their fan base tends to be highly localized. In our analysis of the impact of college athletics on local communities, we control explicitly for the distance between students' homes and their respective colleges. This at least partially captures the likelihood and extent to which student-specific expenditures (including expenditures made by visiting friends and family) are exported to the college attended and the surrounding community.

Obviously, colleges and universities have impacts that extend well beyond athletics. Academic research conferences, special lectures, concerts, graduations, and the like bring in visitors who would have spent their money elsewhere in the absence of these college-related events. Moreover, the impacts may extend beyond the food services and accommodations industries. Thus, we view our current contribution as a first step, as there obviously is much additional work to do in order to develop a comprehensive understanding of the economic impact of colleges and universities. However, our methodology is sufficiently flexible to be applied in this broader context. It is worth noting that to the extent colleges/universities have their own independent operations that substitute for private sector hospitality or retail (dorms, dining facilities, etc.), our methodology under-estimates the true effects.

Finally, we conclude by noting that our finding of a positive impact of college athletics on the restaurant and hotel industries at the MSA-level of analysis does not mean that these impacts reflect pure contributions to GSP or GDP. While there may be some addition to GSP/GDP, in large measure the impacts we estimate are redistributions from other MSA's.

Table 1. Sample Statistics for 915 MSA's in 2005

Variable	Mean	Std. error
Food services/Accommodations employment	11484	35745
Total Population	301598	1026580
Average Family Income (\$1,000)	53.772	91.680
Employment by non-college sports teams/clubs	52.286	268.765
Casino hotel employment	379.289	5625.729
Entertainment employment	2028.722	7852.312
Convention organizers employment	93.898	583.543
# Students traveling less than 60 miles	10023	32770
# Students traveling 60 - 119 miles	3370	14680
# Students traveling 120 - 179 miles	2126	10137
# Students traveling 180 – 239 miles	1403	12983
# Students traveling 240 - 299 miles	385	3876
# Students traveling 300 or more miles	1662	7804
# Foreign students	640	2920
Total college athletics spending under \$1 million	0.195	0.396
Total college athletics revenues \$1-5 million	0.251	0.434
Total college athletics revenues \$5-10 million	0.080	0.271
Total college athletics revenues \$10-20 million	0.058	0.234
Total college athletics revenues \$20-40 million	0.054	0.225
Total college athletics revenues \$40-60 million	0.024	0.153
Total college athletics revenues \$60-80 million	0.027	0.163
Total college athletics revenues \$80-100 million	0.005	0.074
Total college athletics revenues \$100-150 million	0.005	0.074
Total college athletics revenues \$200-230 million	0.002	0.047

Table 2. OLS Regression Estimation Results: non-casino accommodations and food employment (2005)

Explanatory Variable	Coefficient Estimate	Standard Error	t-statistic
Intercept	-2420.8355	632.6823	-3.83***
Total Population	0.0264	0.0007	37.87***
Average Family Income (\$1,000)	51.6789	12.0235	4.30***
Employment by non-college sports teams/clubs	3.8663	0.8960	4.31***
Casino hotel employment	0.7530	0.0236	31.89***
Entertainment employment	0.6653	0.0846	7.86***
Convention organizers employment	6.1998	0.3876	15.99***
# Students traveling less than 60 miles	0.0323	0.0165	1.95**
# Students traveling 60 - 119 miles	-0.0282	0.0173	-1.63
# Students traveling 120 - 179 miles	0.0519	0.0182	2.85***
# Students traveling 180 – 239 miles	0.0396	0.0133	2.98***
# Students traveling 240 - 299 miles	0.0980	0.0278	3.53***
# Students traveling 300 or more miles	0.1001	0.0236	4.25***
# Foreign students	1.0296	0.2478	4.15***
Total college athletics spending under \$1 million	-193.8041	279.5714	-0.69
Total college athletics revenues \$1-5 million	64.3690	265.3831	0.24
Total college athletics revenues \$5-10 million	620.0855	398.1023	1.56
Total college athletics revenues \$10-20 million	-6.5061	470.4655	-0.01
Total college athletics revenues \$20-40 million	1379.4272	559.5646	2.47***
Total college athletics revenues \$40-60 million	2188.8187	805.6760	2.72***
Total college athletics revenues \$60-80 million	4656.2394	808.5005	5.76***
Total college athletics revenues \$80-100 million	10300.0000	1561.4232	6.60***
Total college athletics revenues \$100-150 million	15872.0000	2243.5665	7.16***
Total college athletics revenues \$200-230 million	83165.0000	10894.0000	7.63***
# Foreign students X athletics revenues	-0.0212	0.0016	-13.02***

---

Adjusted R-Square = 0.9935      Regression F value = 5830.18\*\*\*      N = 915

---

\*\*\* significant at 0.01 level; \*\* significant at 0.05 level.

## References

- Baade, R.A. Baumann, R. and V.A Matheson (2007a). "Down, Set, Hike: The Economic Impact of College Football Games on Local Economies," International Association of Sports Economists Working Paper Series, Paper No. 07-01.
- Baade, R. A., Baumann, R. and V. A. Matheson (2007b). "Big Men on Campus: Estimating the Impact of College Sports on Local Economies", Holy Cross Economics and Accounting Faculty Research Series #07-02.
- Baade, R.A. and V.A Matheson (2001). "Home Run or Wild Pitch?: Assessing the Economic Impact of Major League Baseball's All-Star Game," *Journal of Sports Economics*, 2(4): 307-327.
- Bremmer, D.S. and R.G. Kesselring (1993). "The Advertising Effect of University Athletic Success: A Reappraisal of the Evidence," *The Quarterly Review of Economics and Finance*, 33(4): 409-421.
- Coates, D. and B.R. Humphries (2003). "The Effect of Professional Sports on Earnings and Employment in the Services and Retail Sectors in U.S. Cities," *Regional Science and Urban Economics*, 33(2): 175-198.
- Hudson, I. (1999). "Bright Lights, Big City: Do Professional Sports Teams Increase Employment?" *Journal of Urban Affairs*, 21(4): 397-407.
- Lavoie, M. and G. Rodriguez (2005). "The Economic Impact of Professional Teams on Monthly Hotel Occupancy Rates of Canadian Cities," *Journal of Sports Economics*, 6(3): 314-324.
- McCormick, R.E. and M. Tinsley (1987). "Athletics versus Academics?: Evidence from SAT Scores," *Journal of Political Economy*, 95(5): 1103-1116.
- Mixon, F. and R. Ressler (1995). "An Empirical Note on the Impact of College Athletics on Tuition Revenues," *Applied Economics Letters*, 2: 383-387.
- Siegfried, J.J., Sanderson, A.R. and P. McHenry (2008). "The Economic Impact of Colleges and Universities," *Change*, March/April.
- Siegfried, J.J. and A. Zimbalist (2002). "A Note on the Local Economic Impact of Sports Expenditures," *Journal of Sports Economics*, 3(4): 361-366.