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# **Economic Impacts of Spillover Effects of Terrorism Countermeasures at Public Assembly Sites**

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# Economic Impacts of Spillover Effects of Terrorism Countermeasures at Public Assembly Sites

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## 1. Introduction

In recent years, there have been many high-profile attacks on large, relatively unprotected venues, including entertainment and shopping complexes in the U.S. and around the world. Such events often take the form of shootings, explosive detonations, or vehicle attacks, and they highlight the need for proprietors and owners to reduce the vulnerability of such targets to assault by terrorist and/or criminal actors.

Public and private decision-makers can choose from a wide array of terrorism countermeasures, such as metal detectors, bag checks, security personnel, and closed-circuit television (CCTV) cameras. While waiting in line to enter public venues such as a baseball stadium, basketball arena or convention center, it is not unusual to hear people complain about the delays, inconvenience, and invasion of privacy associated with these various screening processes. A question arises as to whether these complaints actually translate into decisions to attend fewer such events. This possibility may cause owners and managers of these venues to be less inclined to implement countermeasures, thereby increasing the terrorism risk. It is in policy-makers' and proprietors' best interests to understand how such security solutions might positively or negatively impact venue attendance.

This paper presents the bottom-line economic impacts of terrorism countermeasures on business revenue at three public assembly venues and on their surrounding regional economic activity. The analysis is based primarily on survey responses relating to changes in attendance that stem from the implementation of the various countermeasures.

The objective of implementing terrorism countermeasures is to reduce the potential of a terrorist event. However, we investigate the economic impacts of two sets of "spillover effects". Negative spillovers refer to the possibility that the countermeasures will decrease attendance as a result of delays and invasion of privacy. Positive spillovers stem from the fact that people feel safer, not only with regard to terrorism, but also to ordinary crime.

We build on previous literature in this area. Economic impact analysis of public assembly sites, such as stadiums and convention centers, has been prevalent in the literature for many years. However, the examination of counterterrorism spillover effects is rather new. We build primarily on the study by Rose et al. (2014), which estimated the economic impacts of both positive and negative spillover effects of terrorism countermeasures in mid-town Manhattan. However, that study was not based on results for any specific sites, nor did it include any public assembly venues, in contrast to the current study.

Note that our analysis involves some critical assumptions, and therefore we performed sensitivity tests. The main results presented first are for a lower-bound estimate in order to be on the conservative side. The outcome of the sensitivity tests, however, confirms that our results are robust.

## 2. Literature Review

Three previous studies asked respondents at sports venues about the impact of security on their enjoyment of events held there. Overall attitudes towards security were neutral, with a minority

(approximately 22-24%) saying security enhanced enjoyment and a smaller minority (2-6%) reporting security detracting from enjoyment. Taylor and Toohey (2006) surveyed attendees at the 2003 Rugby World Cup and found 74.3% of respondents said that security had a neutral impact on enjoyment, with 23.8% reporting a positive impact and 1.9% a negative impact. Toohey et al. (2003) performed a survey during the 2002 Soccer World Cup in Korea and had a similar result. Approximately 70% of respondents reported that their satisfaction of the event was unaffected by the event security, 22% of respondents felt that the security enhanced satisfaction, and 6% stated that event security detracted from enjoyment. Finally, in a survey of spectators during the 2004 Summer Olympic Games in Greece by Taylor and Toohey (2007), spectators rated security as having an overall neutral impact on enjoyment; the overall mean = 2.96 on a 1-5 point scale: negative impact =1 to positive impact = 5.

Feickert et al. (2006), using survey data, found that U.S. hotel guests were willing to pay an additional 10% for security features that they found acceptable. This survey also found that women, or those respondents in general who were more in favor of overt security measures (armed guards, metal detectors, law enforcement background checks), were more willing to pay for added security features. In comparison, respondents who traveled frequently or were older were less willing to pay for security features. Rittichainuwat and Chakraborty (2009) surveyed travelers in Thailand and reported that 63% of respondents would not compromise personal safety from terrorist or disease risks in exchange for low travel costs.

Rose et al. (2014) estimated spillover effects on business of two terrorism countermeasures, random vehicle inspections (RVI) and CCTV, using a survey of generalized countermeasures in Manhattan and a macroeconomic model. Results indicate that RVI could result in a 13.4% decrease in business activity due to a combination of delays and inconvenience, equating to an annual direct loss in business revenue of \$1.7 billion and total annual (direct plus indirect) GDP loss of \$2.9 billion across the greater New York City Metropolitan Area. CCTV was estimated to have a positive net impact, with improvements in the business environment through perceptions of improved safety against both terrorism and ordinary crime outweighing factors like invasion of privacy. For this countermeasure, the analysis projected a 4.16% increase in direct business activity, equating to an annual increase in direct business sales revenue of \$545 million and a total GDP increase of \$1.1 billion.

### **3. Site Selection and Survey**

#### **3.1. Site Selection**

The U.S. Department of Homeland Security has identified commercial facilities as one of 16 critical infrastructure sectors (DHS, 2020). DHS has further specified eight sub-sectors of the commercial facilities sector as critical infrastructure: entertainment and media, gaming, lodging, outdoor events, public assembly, real estate, retail, and sports leagues. Our study of countermeasures against terrorism focuses on one of those sub-sectors, public assembly (e.g., arenas, stadiums, aquariums, zoos, museums, convention centers).

We sought to identify a representative sample of venues spanning the public assembly sub-sector of commercial facilities and distributed geographically across the U.S. More than two dozen sites were chosen as preliminary candidates, but the list was narrowed for several reasons. For example, office buildings were eliminated at the outset because we believe that business transactions would not be influenced significantly by any positive or negative spillover effects. We also judged that hotels would not be affected, either positively or negatively. Other types of venues were not included because of

their inability to meet the criteria below and for lack of willing partners. With the help of DHS Protective Security Advisors (PSAs) and the Business Executives for National Security (BENS) organization, we partnered with three sites. Because of confidentiality concerns, however, we are not able to reveal venue identities but note that they represent:

- Stadium that hosts a Major League Baseball team
- Arena that hosts both National Basketball Association and National Hockey League teams
- Metropolitan Area Convention Center that hosts a broad range of events

We invoked the following criteria in our selection process to ensure that the venues utilized a variety of countermeasures and that they were installed or upgraded within recent years, so that they would likely be salient to customers of the venue:

- Sites with at least three distinct types of countermeasures or configurations of countermeasures in place, either visible or hidden, and preferably at least one of each
- Sites for which at least three countermeasures or configurations of countermeasures were newly installed or upgraded in the last three years
- Sites that are not too unique in terms of type of facility, vulnerability, geographic location, etc.
- Sites that represent a diversity of commercial categories, sizes, geographical locations, and racial/ethnic group patrons

Based on extensive structured interviews conducted with management personnel at the three selected venues, we identified four security measures currently used at all three venues:

1. Closed-circuit television (CCTV) cameras
2. Uniformed and undercover security patrols (with dogs)
3. Metal detectors at entry checkpoints
4. Bag inspection at entry checkpoints

### 3.2. Survey

Surveys were designed to assess knowledge, beliefs, attitudes, and behavioral intentions related to several public assembly countermeasures in three specific venues in urban areas. Each reference survey included various categories of questions aimed at understanding customers' awareness of the four identified security measures, their attitudes towards their effectiveness, and the potential impact of such security measures on customer attitudes and attendance. The items included in each survey can broadly be categorized under the following topics:

- Awareness of Countermeasures
- Perceived Effectiveness of Countermeasures
- Negative Attitudes Towards Countermeasures
- Effect of Countermeasures on Future Attendance
- Perceived Vulnerability of the Venue
- Value Placed on Security

Data were collected in three separate surveys targeting customers and potential customers at each venue. All data were collected using a Qualtrics Panel, a widely accepted source of online

participants for behavioral research. Respondents in all three surveys were compensated for their participation. In all surveys, respondents were eliminated for failing any one of four quality check questions. Respondents for each survey were screened to exclude those who in the recent past (approximately three years) had never attended an event at the venue, had never considered attending an event at the venue, and had no intention of possibly attending an event at the venue in the future. We specifically included those who had never attended an event at the venue, but who had considered attending an event at the venue in the past or would consider attending an event at the venue in the future. This inclusion criteria mitigate the problem of underestimating concerns about security due to selection bias resulting from sampling only customers who are willing to attend the venue with the current security measures in place. A quota sample of a little over 400 adult respondents was obtained for each venue, stratified by sex and age jointly. This stratification was used to obtain adequate representation of customers by age and sex and not to match the customer base for each venue, which was not available. For each survey, we obtained approximately equal size groups of men and women in each of six age categories: 18-25, 26-35, 36-45, 46-55, 56-65, and over 65 years of age.

The survey questions pertinent to the spillover effects of countermeasures ask respondents whether they would be more or less likely to attend events at the public gathering venue in light of specific terrorism countermeasures. Most of the questions ask for specificity in terms of percentage changes in attendance. For a detailed analysis of the surveys and responses, the reader is referred to John et al. (2020).

As an example, following are the questions related to patrons' attitudes toward video cameras in relation to their likelihood of attending the Metropolitan Area Convention Center.

Q1. Since the venue increased its use of **video cameras** for surveillance, has that affected your likelihood of attending the Metropolitan Area Convention Center?

- Decreased my likelihood of attending
- No change in my likelihood of attending
- Increased my likelihood of attending

For those who chose "Increased my likelihood of attending" in Q1, they were next asked:

Q2. Since the venue increased its use of **video cameras** for surveillance, how much has it increased your likelihood of attending the Metropolitan Area Convention Center?

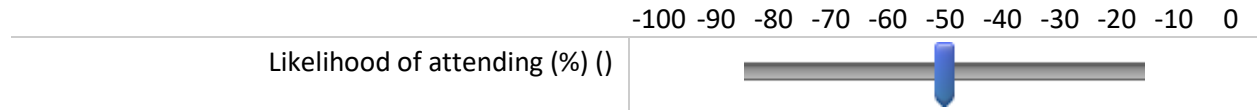
For example, if you would have attended 3 events but now you would attend 6 events, that is an increase of 100%.

- Increased my likelihood of attending by up to 100%
- Increased my likelihood of attending by more than 100%

For those who chose “Decreased my likelihood of attending” in Q1, they were next asked:

Q3. Since the venue increased their use of **video cameras** for surveillance, what percent has your likelihood of attending the Metropolitan Area Convention Center decreased by?

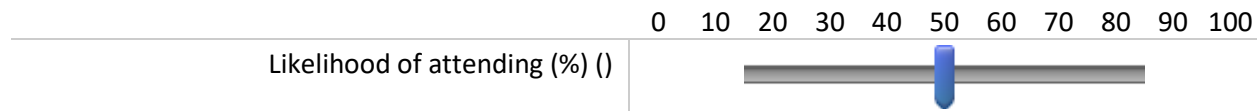
For example, if you would have attended 4 events but now you would only attend 2, that is a decrease of 50%.



For those who chose “Increased my likelihood of attending by up to 100%” in Q2, they were next asked:

Q4. Since the venue increased its use of **video cameras** for surveillance, what percent has your likelihood of attending Metropolitan Area Convention Center increased by?

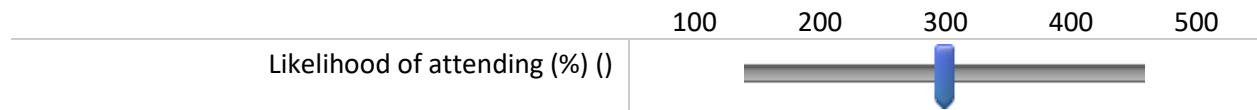
For example, if you would have attended 4 events but now you would attend 6, that is an increase of 50%.



For those who chose “Increased my likelihood of attending by more than 100%” in Q2, they were next asked:

Q5. Since the venue increased its use of **video cameras** for surveillance, what percent has your likelihood of attending Metropolitan Area Convention Center increased by?

For example, if you would have attended 4 events but now you would attend 12, that is an increase of 200%.



Note that, overall for the three public assembly venues sampled, 72% of the respondents stated that terrorism countermeasures had no effect on their attendance, 25% stated that the countermeasures increased their likelihood of attendance, and only 3% stated that the countermeasures decreased the likelihood.

#### 4. Survey and Other Data Related to Changes in Attendance

Table 1 presents the survey results on the changes in the likelihood of attending each venue after implementation of the four countermeasures for patrons of the four venue/event types. These data were obtained through the specific venue surveys described in John et al. (2020). The percentage changes in Table 1 represent lower-bound estimates. A detailed explanation of alternative key assumptions adopted (including the results of upper-bound estimates) is presented in Section 6.

For each respondent, there is a possibility of both positive (enhanced security) and negative effects (invasion of privacy and delay) of the increased use of countermeasures that influence their decision on attendance. For those who indicated an increased likelihood of attending, the positive effects exceed the negative ones. On the other hand, for those who indicated a decreased likelihood of attending, the negative effects exceed the positive effects. The survey results reveal the net effect of the positive and negative effects on customers' decisions. The survey results on a qualitative question about attendance indicate that for all four venue/event types, the "more likely attending" response overwhelmed the "less likely attending" response (i.e., the positive "net effect" overwhelmed the negative "net effect"), though a sizable majority for all four venue/event types indicated the presence of countermeasures had no effect on their attendance. The results are evenly split in terms of people residing within the metro area indicating a higher or lower percentage increase in likelihood of attending than visitors from outside of the metro area. Interestingly, note that the NBA and NHL games in the same venue fall on either side of this question. Also, we note that people visiting the Metropolitan Area Convention Center are more likely to increase their visits to the venues after the increased use of countermeasures because a higher proportion of convention center visitors typically reside elsewhere than for sporting events, and patrons are more concerned with security in a geographic area with which they are unfamiliar. Finally, the findings differ only slightly across countermeasures.<sup>1</sup>

**Table 1. Changes in Likelihood of Attendance  
at Four Venue/Event Types (Lower-Bound Estimates)**

Venue	Attendees from the MSA	Attendees from outside of the MSA
<b>MLB (193/93)</b>	23.8%	20.8%
<b>NBA (126/13)</b>	41.2%	45.8%
<b>NHL (130/23)</b>	11.7%	8.4%
<b>MACC (153/52)</b>	42.8%	60.0%

Note: Sample sizes for attendees inside and outside the Metro Area are presented in the parentheses following the venue titles (the first number is for within the Metro Area and the second number is for outside of the Metro Area).

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<sup>1</sup> Note that the survey questions and analysis in this report are prospective. Even though the counter measures are already in place, survey respondents were asked how these measures affect their future likelihood of attendance.

Table 2 presents a range of total number of annual attendees for the four selected venue/event types in the most recent year that data are available. We only provided a range for attendance so as not to divulge the identity of the venue. Table 3 presents the average ticket price based on the survey results. The ticket price for each venue represents an average price of the reported ticket prices from the survey (a combination of regular and possible premium tickets, with the latter including amenities such as parking, complimentary food, and other sales that come with the ticket).

## **5. Impacts on Business Sales Revenue**

Table 4 summarizes the lower-bound estimates based on the survey results on changes in the likelihood of attendance at the venues motivated by the implementation of the terrorism countermeasures. These results are multiplied by the survey results on average ticket prices to arrive at changes in ticket sales revenue for our best estimate, which we have designated as a “lower-bound”. The venue for which the existence of countermeasures has the likely greatest effect on ticket sales revenue is the Metro Area Convention Center (MACC), despite its low average ticket prices relative to the other venues. The major factor influencing this result is that this venue has the highest proportion of respondents indicating that countermeasures have had an increased effect on their attendance. At the other end of the range is the NHL team at the Sports Arena, despite having the highest ticket prices of any venue.

## **6. Regional Economic Impacts**

A number of regional economic impact analysis models were available to us, including state-of-the-art computable general equilibrium (CGE) analysis. This modeling approach was used in Rose et al. (2014) because that study included an examination of the benefits of the countermeasures in terms of reducing the economic consequences of major types of terrorist attacks, which potentially have huge impacts on economic activity. CGE is needed when economic impacts are large and are likely to strain the resource base, resulting in major types of substitutions and price increases (Rose, 1995). This is not the case for examining only the effects of attendance at sports complexes and convention centers. Therefore, we’ve chosen to adopt an input-output (I-O) analysis approach, the most commonly used tool of regional economic impact studies in general and a mainstay of most sports impact studies to date. In our case, the impacts examined will be even lower than the standard general operating impacts because we are simply measuring changes. Thus, I-O analysis is appropriate to the task and also more transparent than is CGE analysis.

The general literature on regional economic impacts of public assembly sites such as sports/entertainment/recreational facilities has gone through an important evolution, but it is still controversial. Much of the controversy stems from the general concerns in the benefit-cost analysis literature about new projects for expansion of existing ones, including that: expansion – when full employment is present – simply displaces other activities, consumer spending on one activity within the region in question simply displaces other spending there, much of the revenues are likely to go to “absentee” owners, and the multiplier general equilibrium effects are often exaggerated (see, e.g., OMB, 1992; Boardman et al., 2011). More recently, however, there have been analyses or guidelines that are more positive about the worthiness of the direct and indirect effects of such activities (see, e.g.,



**Table 2. Total Annual Attendance by Venue**

Venue	Data	Year
MLB	2 to 3 million	2019
NBA	0.5 to 1.0 million	2018-19
NHL	0.5 to 1.0 million	2018-19
MACC	2 to 3 million	2019

**Table 3. Average Typical Ticket Price by Venue 2016-2019**

Venue	Attendees Inside Metro	Attendees Outside Metro
MLB	\$51.61	\$51.45
NBA	\$76.71	\$91.92
NHL	\$89.46	\$94.13
MACC	\$48.59	\$58.08

Note: Sample sizes for attendees inside and outside the Metro are the same as in Table 1.

Farrow and Rose, 2018), calling attention to considerations such as the fact that full employment is often not present, and, even if it were, geographic labor mobility overcomes the obstacle.<sup>2</sup>

Earlier studies of the impacts of sports and entertainment facilities were biased toward showing large impacts to justify their construction or the offer of tax breaks to retain their tenants. The source of this bias was primarily inclusion of the spending by all attendees at these venues (area residents or otherwise) and other expenditures incurred in the host region as part of the regional economic impacts. However, those living within the host region are likely to apply some or all of their intended spending at the site in question elsewhere within the region if they do not attend the sports/entertainment events; hence, there is for the most part, only a substitution effect of economic activities within the region, rather than any direct stimulus (see, e.g., CEDR, 2018). The stimulus would arise from the attraction of fans from outside the region, who add to its economic base.

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<sup>2</sup> The geography of the issue comes into play in a couple of ways and is controversial as well. For example, should the well-being of the in-migrants taking the new positions count, should the well-being of those visiting the region to partake in activities count, and are not all of these effects simply a transfer within a broader region or the nation as a whole? In our assessment, implicitly the well-being of workers moving into the region would count, the well-being of visitors would not, and the region itself is a worthy area of analysis, separate from other regions and the nation as a whole.

**Table 4. Changes in Attendance and Ticket Sales due to the Implementation of Countermeasures – Lower-Bound Estimate**

Venue	Attendees from the MSA			Attendees from outside the MSA			Total Changes in Ticket Sales (10 <sup>6</sup> 2018\$)
	Change in Attendance		Change in Ticket Sales (10 <sup>6</sup> 2018\$)	Change in Attendance		Change in Ticket Sales (10 <sup>6</sup> 2018\$)	
	Percent	Amount (10 <sup>3</sup> )		Percent	Amount (10 <sup>3</sup> )		
<b>MLB</b>	23.8%	482	24.9	20.8%	201	10.3	35.2
<b>NBA</b>	41.2%	242	18.5	45.8%	41	3.8	22.3
<b>NHL</b>	11.7%	79	7.1	8.4%	9	0.8	7.9
<b>MACC</b>	42.8%	704	34.2	60.0%	434	25.2	59.4

Note: Sample sizes for attendees inside and outside the Metro Area are the same as in Table 1.

We have invoked a similar substitution effect assumption in our analysis.<sup>3</sup> Thus, a key aspect of the analysis is to distinguish the home location of spectators/customers. This is facilitated by the fact that one of the questions in the survey asks for ZIP Code information. For our purposes, we define the host region as the Metropolitan Area surrounding the site and consider anyone coming from outside it as providing a spending injection, and we use the I-O model of the Metro region to estimate the total (or multiplier) effects of the direct spending.<sup>4</sup> We have also decided to use the number of respondents to our Customer Survey that reside within the MSA vs. those with a place of residence outside of the MSA to approximate the percentage of attendees that are local vs. non-local for each venue. Using this approach, it is estimated that 32.4%, 13.3%, and 30.5% of the patrons to the MLB Stadium, NHL/NBA Arena, and MACC, respectively, reside outside of the MSA region.

### 6.1. Methodological Overview

Our analysis consists of the following steps:

<sup>3</sup> Note that this represents a conservative estimate, and moves us toward a lower-bound impact. For example, if a sports arena is not available within the region, rabid fans may travel outside the region to watch games, or they may save some of what they intended to spend. Other stimuli are also factored into more general sports venue impact studies, but are not likely to be affected by changes in attendance related to terrorism countermeasures in any significant way. This includes television/radio revenues, which stimulate the local economy to the extent that owners are in-region residents. This applies also to property value increases, including agglomeration effects such as entertainment zones, attributable to the facility. Changes in attendance also affect tax revenues from lodging, restaurants, and on-site concessions, but this is basically another example of the substitution effect of spending.

<sup>4</sup> The Metro region where each public assembly site is located is defined as the formal Metropolitan Statistical Area (MSA), delineated by the U.S. Office of Management and Budget.

1. Compile background data on venue attendance, ticket prices, concession sales, and spending vectors (distinguish between in-region and out-of-region visitors).
2. Compile data from the surveys on percentage changes in attendance relating to each countermeasure and each type of direct spillover effect. Translate the percentage changes into change levels, based on five-year average attendance (this is a smaller number of years for one of our sites due to its recent construction).
3. Match spending categories with I-O model sector classifications (at 3-digit NAICS level as presented in Appendix Table 1) , and inject the spending into the I-O model as a positive or negative direct change in Final Demand for each countermeasure/spillover effects/venue combination.
4. Run the I-O models.
5. Sum all of the positive and negative individual direct and spillover regional economic impact combinations in absolute and percentage terms to obtain the regional economic impacts.
6. Perform sensitivity tests.

## 6.2. Data on Spending Vectors

### 6.2.1. Professional Baseball

Our spending vector was adapted primarily from a survey of baseball spectators attending events in the Atlanta SunTrust Park (CEDR, 2018).<sup>5</sup> The expenditures are distributed into six aggregated spending categories (Accommodations, Restaurants, Retail, Entertainment/Recreation, Transportation and Other). The study assumes that, on average, the non-local visitors will spend one day of their trip visiting the SunTrust Park. One thing to note in the spending vectors is that transportation spending only pertains to local transportation because none of the relevant studies in the literature consider en-route spending, such as airfares, as a stimulus to the host region.

The average number of days the baseball game attendees spend per trip varies from one to four days:

- A study for the Atlanta Braves baseball stadium noted many out-of-town visitors are in the area primarily for other purposes, and they assume that one day of their trip is baseball-related (CEDR, 2018).
- Evans (2018) found that the median number of travel days for baseball Spring Training is four, but Spring Training trips may be longer than trips during the regular season.
- Dixon et al. (2013) found that out-of-town visitors at university baseball games tended to spend one day in the local area, while weekend visitors tended to spend three days.

In this study, we assume that, on average, attendees of the MLB games from outside of the MSA spend 1.67 days in the region (we have given more weight to the estimate reported in the CEDR study because it is the only study pertaining to MLB games in the regular season).

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<sup>5</sup> We note that Atlanta Sun Trust Park was not one of the venues surveyed in the study.

### 6.2.2. Professional Basketball/Hockey

Our spending vector was adapted from an economic impact study of the proposed Seattle Arena (Pro Forma Advisors LLC, 2013). Valuable information includes differentiation in the spending amounts by origin of the visitors (e.g., city or county resident, those from outside of the county, or those from outside of the state). We use the “Outside of County” spending vector for in-state visitors coming from outside of the metro area where the arena venue is located.

A survey of hockey fans (Mohan, 2007) asked them what kind of trip they would take to see their team in another city. Forty-six percent of the respondents indicated that they would do two- to three-day trips, and 25% of them indicated that they would do a one-day trip during the weekend with no overnight stay. Based on this survey, we assume that, on average, attendees of the NHL/NBA games from outside of the MSA region stay 1.8 days in the region.

### 6.2.3. Convention Centers

Our spending vector of convention center visitors was adapted from the literature (HVS, 2019; HVS, 2014; PCVB, 2019; Ortiz, 2018). The spending vectors in some of these studies pertain to expenditures per event or trip, in comparison to per-visitor day expenditures presented in other studies. Unfortunately, the former studies did not provide the data on the average number of days the visitors stayed; however, based on the HVS (2014) study, we estimated that average attendee days are 2.17. This estimate is used to convert all spending vectors to a per-visitor day basis and then to an average spending vector of the convention center.

## 6.3. Input-Output Modeling

Input-output (I-O) analysis is applied to evaluate the regional and state economic impacts of the spillover effects of terrorism countermeasures implemented at the three selected public assembly sites. I-O analysis, developed by Nobel laureate Wassily Leontief, is the most widely used tool of regional economic impact analysis in the U.S. and throughout the world. It is especially adept at estimating ripple, or multiplier, effects. I-O can be defined as a static, linear model of all purchases and sales between sectors of an economy, based on the technological relationships of production (Rose and Miernyk, 1989). An I-O model provides detailed information on the interrelationships between producing sectors in an economy. I-O models also include households as a “consuming” sector, and thus incorporate household spending effects into the multiplier calculation (Miller and Blair, 2009).

In an I-O analysis, it is important to distinguish between the two types of second-order effects. The first are “indirect” effects, which represent the interaction between producing sectors. The second type are “induced” effects, which represent the interaction between households and producing sectors; production generates income paid to households, which in turn spend a major portion of this income on produced goods and services, thereby generating additional multiplier effects.

For this study, we use the most widely applied source of regional I-O tables, the Impact Analysis for Planning (IMPLAN) System (IMPLAN, 2019). This system consists of three components: 1) a study region (state, county, or sub-county) data base, 2) a set of algorithms capable of generating I-O tables for any state, county, or sub-county group, and 3) a computational capability for calculating multipliers and performing impact analyses. The IMPLAN sectoring scheme is currently based on the North American Industrial Classification System (NAICS), and includes the details of 536 sectors (IMPLAN, 2016). In this study, we aggregate the 536 sectors into 86 sectors corresponding to the 3-digit NAICS

codes. The details of the 86 sectors, including their correspondence to the IMPLAN sectors, are presented in John et al. (2020).

I-O modeling has both demand-side and supply-side versions (Miller and Blair, 2009). The demand-side I-O model is the standard version, where a change in final demand affects the economy by causing product supply to respond through a multiplier process. The supply-side I-O model is a variant of the standard model in which the impacts to the economy take place through the production side of the economy. In this study, however, only the demand-side I-O model is applied to analyze how changes in attendance, and thus changes in expenditures by the spectators or convention attendees, result in impacts to successive rounds of supplying sectors in the upstream of the supply-chain. Since the expenditure changes pertain to spending on consumer goods and services, they do not generate any supply-side impacts further down a supply chain.

#### 6.4. Lower-Bound Results

For each of the four venue/event types, the associated patron expenditure vector developed in the previous section is injected into the relevant regional I-O model as a change in the Personal Consumption component of Final Demand.<sup>6</sup> Table 5 presents the lower-bound direct spending vectors we used as inputs in the I-O analysis. The I-O model then calculates the direct and indirect input requirements throughout the economy to deliver the additional consumer goods and services. We remind the reader that the direct expenditures by residents of the Metro Area are not included in this stimulus analysis because of the prevailing assumption that their expenditures on an entertainment event within their Metro Area simply substitute for a like amount of other spending within the Area. Of course, this means that any indirect effects of the spending by local patrons at these venues does not factor in as well.

The results for the three venues (four event types) are presented in Table 6 in terms of gross output (business sales revenue), regional GDP, personal income, and employment. The percentage impacts with respect to these macroeconomic indicators<sup>7</sup> are presented in parentheses in the table as well. For the MLB Stadium, the \$53 million additional direct spending translates into \$113 million of total additional economic activity in the Metro Area in terms of gross output, \$68 million of additional GDP, \$46 million of personal income, and 1,075 additional jobs.<sup>8</sup> The ratio of total additional gross output to direct spending is 2.11 (the size of the gross output multiplier).<sup>9</sup> This means every dollar of direct spending within the Metro Area generates an additional \$1.11 within its boundaries.

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<sup>6</sup> For all three venues, the patron expenditure needed to be further disaggregated to match the sectoring scheme of the regional I-O table. This required disaggregating some general categories of expenditure into disaggregated IMPLAN sectors. This was done by using the gross output of the relevant IMPLAN sectors as weights.

<sup>7</sup> Note that we are performing an economic consequence analysis, rather than a benefit-cost analysis (see Rose et al., 2014, for a discussion of the distinction). This means that we are using macroeconomic indicators, rather than what are termed “welfare measures” (measures of economic well-being), such as equivalent variation approximations to consumer surplus. However, it has become standard to use personal income as a proxy for such measures.

<sup>8</sup> All results in this and other tables in this paper expressed in dollar terms are in 2018 dollars.

<sup>9</sup> The multipliers for the three regions (MSAs) in this study are all around 2.0. This is a rather conservative multiplier for large metropolitan areas, in part because it factors out the leakage in the direct and indirect spending stream. In the model we use, income payments are limited, such that they would exclude returns to owners of capital who reside outside the region, and spending on imports of final goods by consumers or imports

**Table 5. Direct Spending Vectors Used as Inputs in the I-O Analysis – Lower-Bound Estimate  
(in millions of 2018\$)**

<b>Sector #</b>	<b>Description</b>	<b>MLB Stadium</b>	<b>NBA Arena</b>	<b>NHL Arena</b>	<b>MACC</b>
37	445 Food & Beverage Stores	1.7	0.2	0.0	5.0
38	446 Health & Personal Care Stores	0.8	0.1	0.0	3.0
39	447 Gasoline Stations	0.4	0.0	0.0	1.4
40	448 Clothing & Accessories Stores	1.1	0.1	0.0	4.2
41	451 Sporting Goods, Hobby, Book, & Music Stores	0.5	0.0	0.0	0.9
42	452 General Merchandise Stores	1.8	0.2	0.0	4.2
43	453 Miscellaneous Store Retailers	0.6	0.1	0.0	2.0
49	485 Transit & Ground Passengers	3.6	0.0	0.0	28.9
66	532 Rental & Leasing Services	0.0	0.5	0.1	0.0
77	711 Performing Arts & Spectator Sports	24.5	7.3	1.6	54.7
78	712 Museums & Similar	0.3	0.0	0.0	4.5
79	713 Amusement, Gambling & Recreation	3.3	0.3	0.1	68.8
80	721 Accommodations	5.8	0.5	0.1	169.0
81	722 Food Services & Drinking Places	9.0	0.9	0.2	31.9
	<b>Total</b>	<b>46.6</b>	<b>9.5</b>	<b>2.1</b>	<b>357.8</b>

**Table 6. Summary Economic Impacts of Increased Attendance at the Four Venue/Event Types on their MSA Regions – Lower-Bound Estimate**

	<b>Output (10<sup>6</sup> \$)</b>	<b>GDP (10<sup>6</sup> \$)</b>	<b>Income (10<sup>6</sup> \$)</b>	<b>Employment (# of jobs)</b>
<b>MLB Stadium</b>	112.7 0.033%	67.9 0.033%	45.6 0.034%	1,075 0.055%
<b>NBA Arena</b>	21.3 0.004%	13.0 0.005%	8.3 0.005%	202 0.008%
<b>NHL Arena</b>	4.6 0.001%	2.8 0.001%	1.8 0.001%	44 0.002%
<b>MACC</b>	735.4 0.046%	462.6 0.047%	286.8 0.050%	6,166 0.073%

Notes: Output, GDP, Income Impacts are in millions of 2018\$; Employment Impacts are in number of jobs; % impacts are with respect to regional baseline levels.

of intermediate goods by producers is excluded in calculation of indirect and induced effects. Moreover, only demand-side multipliers (upstream supply-chain linkages) are included, and supply-side multipliers (down-stream linkages) are not.

The results for the NBA and NHL Arena are presented next in Table 6 in terms of the four major macroeconomic indicators. For the NBA events, the \$10 million additional direct spending translates into \$21 million of total additional economic activity in the Metro Area, \$13 million of additional GDP, \$8 million of personal income, and 202 additional jobs. For the NHL events, the \$2.2 million additional direct spending translates into \$4.6 million of total additional economic activity in the Metro Area, \$2.8 million of additional GDP, \$1.8 million of personal income, and 44 additional jobs. The ratio of total additional economic activity to direct spending is 2.06 in both cases.

For MACC, the \$378 million additional direct spending translates into \$735 million of total additional economic activity in the Metro Area, \$463 million of additional GDP, \$287 million of personal income, and 6,166 additional jobs. The gross output multiplier is slightly less than 2.0.

The regional economic impacts for the Arena are the lowest among the three venues, primarily because the average daily spending is only \$47.90, compared to \$107.60 for the MLB Stadium and \$344.10 for the MACC. The Arena also has the smallest percentage of attendees (13.3%) who reside outside of its Metro Area (compared to 32.4% for the MLB Stadium and 30.5% for the MACC).

The sectoral results for MLB Stadium are presented in Appendix Table 1 as an example. Not surprisingly, the most impacted sectors are those associated with the direct tourism spending, such as Performing Arts & Spectator Sports, Retail Trade, Accommodations, Food Services & Drinking Places, and Transit & Ground Passengers Transportation. Other sectors that were most stimulated through intersectoral linkages (the supply-chain effect) include Real Estate, Professional, Scientific & Tech Services, Health Care, and Wholesale Trade.

## 7. Sensitivity Analysis

### 7.1. Basic Considerations

The sensitivity analysis was restricted to customers who attended Convention Center events and MLB games over the past four years (2016-2019) and to customers who attended NHL and NBA games over the past three years (2017-2019); customers who attended events before these dates but not after and potential customers who never attended an event were excluded. Sensitivity was assessed using different assumptions about survey responses to produce both upper- and lower-bound estimates of the change in intention to attend future events at the venue.

For each of the four venue/event types, the following three sensitivity checks are examined to produce the lower-bound and upper-bound estimates:

The first sensitivity check uses two different assumptions to represent the number of events attended for customers who selected “two or more events”:

- Lower-bound estimate: “Two or more” = three events
- Upper-bound estimate: “Two or more” = five events

The second sensitivity check uses two different methods of calculating the percentage change in attendance:

- Lower-bound estimate: Percentage change = the maximum percentage change value across all four countermeasures

- Upper-bound estimate: Percentage change = the maximum of either the lower-bound estimate or the sum of the changes across all four countermeasures divided by two<sup>10</sup>

The third sensitivity check uses two different methods for capping percentage change outliers (for customers who indicated that the likelihood of attending will increase by more than 100%):

- Lower-bound estimate: Percentage change is capped at 100%
- Upper-bound estimate: Percentage change is unaltered

For the lower-bound case, we used a combination of the three lower-bound estimates for the above three assumptions, while for the upper-bound case, the three upper-bound estimates were used.

### 7.2. Sensitivity Estimates of Changes in Attendance

Table 7 presents the results of the sensitivity test to establish both lower-bound and upper-bound estimates for the responses to the survey. The differences in estimates in Table 7 are due to the combined effects of all three variations in assumptions described above.

We use the percentage change in attendance to modify the direct input into the I-O model. The difference between the lower-bound and upper-bound estimates depends primarily on whether future attendance increases are capped at 100% or not, and to a smaller extent on whether attendance increases are aggregated over countermeasures by assuming the maximum increase or halving the sum of the increases across countermeasures. The assumption of whether “two or more” means three games or five games has no impact on this direct input to the I-O model. For example, for attendance from inside the metro to the MLB venue, there is a difference of nearly 40% between the upper-bound estimate (63.5%) and the lower-bound estimate (23.8%). About 80% of this difference is due to whether attendance increases are capped at 100% or not, and 20% is attributable to how attendance increase responses are aggregated over the four countermeasure enhancements.

### 7.3. Sensitivity Analysis Results

The effect of the sensitivity tests with respect to percentage changes in likely attendance for the four categories of venues/events are presented in Tables 8 to 10.

**Table 7. Lower-Bound and Upper-Bound Estimates of Changes in Attendance**

Venue	Attendees from the MSA		Attendees from outside of the MSA	
	Lower-Bound Estimate	Upper-Bound Estimate	Lower-Bound Estimate	Upper-Bound Estimate
MLB	23.8%	63.5%	20.8%	45.9%
NBA	41.2%	123.1%	45.8%	70.1%

<sup>10</sup> Logically, the customer changes in attendance are specific to each countermeasure; hence, changes are cumulative across the four countermeasures and should be summed. The upper-bound estimate captures this, but discounts the results based on considerations of marginally decreasing impact (diminishing returns or redundancy) and perceptions of overlapping multiple countermeasures.



<b>NHL</b>	11.7%	42.6%	8.4%	17.5%
<b>MACC</b>	42.8%	186.9%	60.0%	175.4%

Note: Sample sizes for attendees inside and outside the Metro Area are the same as in Table 1.

**Table 8. Changes in Attendance and Ticket Sales due to the Implementation of Countermeasures – Upper-Bound Estimate**

Venue	Attendees from the MSA			Attendees from outside the MSA			Total Changes in Ticket Sales (10 <sup>6</sup> 2018\$)
	Change in likelihood of Attendance		Change in Ticket Sales (10 <sup>6</sup> 2018\$)	Change in likelihood of Attendance		Change in Ticket Sales (10 <sup>6</sup> 2018\$)	
	Percent	Amount (10 <sup>3</sup> )		Percent	Amount (10 <sup>3</sup> )		
<b>MLB</b>	63.5%	1,285	66.3	45.9%	445	22.9	89.2
<b>NBA</b>	123.1%	722	55.4	70.1%	63	5.8	61.2
<b>NHL</b>	42.6%	290	25.9	17.5%	18	1.7	27.6
<b>MACC</b>	186.9%	3,072	149.3	175.4%	1,267	73.6	222.9

Note: Sample sizes for attendees inside and outside the Metro Area are the same as in Table 1.

**Table 9. Summary Economic Impacts of Increased Attendance at the Four Venue/Event Types on their MSA Regions – Upper-Bound Estimate**

	Output (10 <sup>6</sup> \$)	GDP (10 <sup>6</sup> \$)	Income (10 <sup>6</sup> \$)	Employment (# of jobs)
<b>MLB Stadium</b>	249.38	150.31	100.79	2,378
	0.0731%	0.0735%	0.0761%	0.1222%
<b>NBA Arena</b>	32.56	19.91	12.65	310
	0.0064%	0.0074%	0.0078%	0.0122%
<b>NHL Arena</b>	9.59	5.86	3.73	91
	0.0019%	0.0022%	0.0023%	0.0036%
<b>MACC</b>	2,149.18	1,351.84	838.12	18,019
	0.1348%	0.1366%	0.1457%	0.2125%

Notes: Output, GDP, and Income impacts are in millions of 2018\$; Employment impacts are in number of jobs; Percentage impacts are with respect to regional baseline levels.

**Table 10. Comparison of the Economic Impacts Lower-Bound and Upper-Bound Estimates**

	Lower-Bound		Upper-Bound	
	GDP (10 <sup>6</sup> \$)	Employment (# of Jobs)	GDP (10 <sup>6</sup> \$)	Employment (# of Jobs)
<b>MLB Stadium</b>	68	1,075	150	2,378
<b>NBA Arena</b>	13	202	20	310
<b>NHL Arena</b>	3	44	6	91
<b>MACC</b>	463	6,166	1,352	18,019

Comparing the upper-bound and lower-bound estimates in terms of likely increased attendance in Table 10, we note the following: The upper-bound estimates are about three times the size of the lower-bound estimates for the MLB Stadium and the NBA Arena activity, and about four times the size of the lower-bound results for the NHL Arena activity and the Metro Area Convention Center. In terms of the regional economic impacts on GDP, the upper-bound estimates are one-and-a-half times the size of the lower-bound for the NBA games, two times the lower bound for the MLB games and NHL games, and three times the lower bound for the Convention Center activities. The differences between the two sets of upper and lower bounds are due to the fact that spending, other than ticket sales, differs significantly by venue. Recall that people attending convention center events tend to stay for a longer duration than for the other events, for example. They are also likely to come from farther distances.

Note, however, that there are no qualitative changes in the results of the sensitivity analyses. This indicates that, while the estimates in this study have a broad range, they are otherwise generally robust.

## 8. Conclusion

This paper has estimated the impacts of terrorism countermeasures on business revenues and macroeconomic indicators for regions in which our three sample public assembly venues reside. The analysis is based on data obtained from the surveys targeting customers and potential customers at each selected venue. A major set of inputs into the analysis were the changes in attendance expressed by survey respondents in relation to the countermeasures, which were significantly positive for all three venues. We then applied these attendance changes to average ticket prices to estimate changes in direct business revenues, which ranged between \$30 million (for the NBA/NHL Arena) and \$59 million (for the MACC) for the lower-bound estimates. These results follow from the survey, which indicated that many more patrons were more likely to attend the venues because of the presence of countermeasures than those who are unlikely to attend, though the majority of patrons responded that the presence of countermeasures did not make a difference in their likelihood of attending. Note that these direct impacts on business revenues are only one aspect of our estimates because they do not

include revenues from concessions and parking; the data did not enable us to separate expenses for these categories at the venue from other spending associated with their visit to the broader venue area.

We then inserted the direct spending on tickets and other purchases associated with the venue activity into a separate regional economic model for each of the venues. These direct purchases ranged from \$13 million to \$378 million between the three venues for the lower-bound estimates. The differences in the results arise from the fact that ticket prices and length of stay associated with the trips are much greater for the Metropolitan Area Convention Center than they are for the two sports venues. Generally, the total regional economic impacts were approximately twice the size of the direct spending.

We performed sensitivity analyses on key assumptions underlying the calculations of the changes in intended attendance. Upper-bound estimates were typically three to four times those of lower-bound estimates with respect to ticket sales, and one and one-half to three times the size of lower-bound estimates with respect to regional economic impacts. The sensitivity analyses, however, did not change the results qualitatively, and thus, although our estimates cover a broad range, they are generally robust.

## References

- Boardman, A., D. Greenberg, A. Vining, and D. Weimer. 2011. *Cost-Benefit Analysis: Concepts and Practice*. Upper Saddle River: Pearson-Prentice Hall.
- Center for Economic Development Research (CEDR). 2018. *Fiscal Impact of SunTrust Park and The Battery Atlanta on Cobb County*. Atlanta, Georgia Tech.  
<https://www.cobbchamber.org/External/WCPages/WCWebContent/WebContentPage.aspx?ContentID=12245>
- Dixon, A., Henry, M., and J. Martinez. 2013. "Assessing the Economic Impact of Sport Tourists' Expenditures Related to a University's Baseball Season Attendance," *Journal of Issues in Intercollegiate Athletics* 6: 96-113.
- Evans, A. 2018. *The Economic and Fiscal Impacts of the 2018 Cactus League*. Arizona State University Seidman Research Institute. <http://www.az-sta.com/downloads/files/reports/cactus-league-baseball-association-2018-economic-impact-report.pdf>
- Farrow, S. and A. Rose. 2018. "Welfare Analysis: Bridging the Partial and General Equilibrium Divide for Policy Analysis," *Journal of Benefit-Cost Analysis* 9(1): 67-83.
- Feickert, J., R. Verma, G. Plaschka, and C.S. Dev. 2006. "Safeguarding Your Customers: The Guest's View of Hotel Security," *Cornell Hotel and Restaurant Administration Quarterly* 47(3): 224-244.
- Germain, J., Downs, P., and R. Anglin. 2018. *2018 Major League Baseball Florida Spring Training Economic Impact Study*. Downs & St. Germain Research Report to Florida Sports Foundation.  
<http://www.flasports.com/wp-content/uploads/2018/07/MLB-Spring-Training-Economic-Impact-Report.pdf>
- John, R., A. Rose, K. Byrd, D. Wei, and J. Eyer. 2020. *Does Enhanced Security Improve Business Performance?* Final Report to the US Department of Homeland Security, Center for Risk and Economic Analysis of Terrorism Events (CREATE), University of Southern California, Los Angeles, CA.
- HVS Convention, Sports & Entertainment Facilities Consulting. 2014. *Spending and Fiscal Impact Analysis: Broward County Convention Center*.  
<https://www.broward.org/CCExpansion/EconomicImpact/Documents/EconomicImpactReport.pdf>
- HVS Convention, Sports & Entertainment Facilities Consulting. 2019. *Spending and Fiscal Impact Analysis: Wisconsin Center District*. [http://wcd.org/wp-content/uploads/2019/12/2019-HVS-WCD-Spending-Impact-Study\\_192119.pdf](http://wcd.org/wp-content/uploads/2019/12/2019-HVS-WCD-Spending-Impact-Study_192119.pdf)
- Miller, R. and P. Blair. 2009. *Input-Output Analysis: Foundations and Extensions, 2<sup>nd</sup> Ed.* Englewood Cliffs, NJ: Prentice-Hall.
- Mohan, L. 2007. *An Examination of Variables Influencing the Travel Behavior of Professional Hockey Fans*. PhD dissertation, Department of Parks, Recreation and Tourism Management, North Carolina State University, Chapel Hill, NC.
- Ortiz, M. J. 2018. *New Orleans Ernest N. Morial Convention Center 2017 Economic Impact Analysis*. Division of Business and Economic Research (DBER) at The University of New Orleans (UNO).  
<https://exhallnola.com/wp-content/uploads/2019/06/NOMCC-2017-Report-Revised-2.pdf>.

- Philadelphia Convention & Visitors Bureau (PCVB). 2019. *2018 Annual Report*.  
[https://www.discoverphl.com/wp-content/uploads/2019/04/PHLCVB037\\_2018\\_Annual\\_Report\\_Concepts\\_FNL\\_2.pdf](https://www.discoverphl.com/wp-content/uploads/2019/04/PHLCVB037_2018_Annual_Report_Concepts_FNL_2.pdf).
- Pro Forma Advisors LLC. 2013. *Proposed Seattle Arena Economic Impact Analysis*.  
<http://www.seattle.gov/dpd/BuildingConnections/SeattleArenaFEISAppendicesFG.pdf>.
- Rittichainuwat, B.N. and G. Chakraborty. 2009. "Perceived Travel Risks Regarding Terrorism and Disease: The Case of Thailand," *Tourism Management* 30(3): 410-418.
- Rose, A. and W. Miernyk. 1989. "Input-Output Analysis: The First Fifty Years," *Economic Systems Research* 1: 229-71.
- Rose, A., M. Avetisyan, and S. Chatterjee. 2014. "A Framework for Analyzing the Economic Tradeoffs between Urban Commerce and Security," *Risk Analysis* 34(5): 1554-79.
- Taylor, T. and K. Toohey. 2006. "Security, Perceived Safety, and Event Attendee Enjoyment at the 2003 Rugby World Cup," *Tourism Review International* 10(4): 257-267.
- Taylor, T. and K. Toohey. 2007. "Perceptions of Terrorism Threats at the 2004 Olympic Games: Implications for Sport Events," *Journal of Sport and Tourism* 12(2): 99-114.
- Toohey, K., T. Taylor, and C. Lee. 2003. "The FIFA World Cup 2002: The Effects of Terrorism on Sport Tourists," *Journal of Sport and Tourism* 8(3): 186-196.
- U.S. Office of Management and Budget (OMB). 1992. *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, OMB Circular A-94, Washington, DC.
- U.S. Office of Management and Budget (OMB). 2003. *Regulatory Analysis*, OMB Circular A-4, Washington, DC.

**Appendix Table 1. Sectoral Economic Impacts of Increased Attendance at the MLB Stadium on the MSA Region – Lower-Bound Estimate**

	<b>Sector</b>	<b>Direct Spending (10<sup>6</sup> \$)</b>	<b>Gross Output (10<sup>6</sup> \$)</b>	<b>GDP (10<sup>6</sup> \$)</b>	<b>Personal Income (10<sup>6</sup> \$)</b>	<b>Employment (jobs)</b>
1	111 Crop Farming	0.00	0.01	0.01	0.00	0
2	112 Livestock	0.00	0.01	0.00	0.00	0
3	113 Forestry & Logging	0.00	0.00	0.00	0.00	0
4	114 Fishing, Hunting &	0.00	0.01	0.00	0.00	0
5	115 Ag & Forestry Svcs	0.00	0.00	0.00	0.00	0
6	211 Oil & Gas Extraction	0.00	0.33	0.27	0.29	1
7	212 Mining	0.00	0.03	0.01	0.00	0
8	213 Mining Services	0.00	0.03	0.02	0.02	0
9	221 Utilities	0.00	1.38	0.59	0.24	1
10	230 Construction	0.00	0.79	0.41	0.28	5
11	311 Food products	0.00	0.55	0.13	0.08	1
12	312 Beverage & Tobacco	0.00	0.42	0.12	0.05	1
13	313 Textile Mills	0.00	0.00	0.00	0.00	0
14	314 Textile Products	0.00	0.01	0.00	0.00	0
15	315 Apparel	0.00	0.00	0.00	0.00	0
16	316 Leather & Allied	0.00	0.00	0.00	0.00	0
17	321 Wood Products	0.00	0.04	0.01	0.01	0
18	322 Paper Manufacturing	0.00	0.09	0.02	0.02	0
19	323 Printing & Related	0.00	0.12	0.05	0.04	1
20	324 Petroleum & Coal	0.00	0.66	0.26	0.04	0
21	325 Chemical Manufacturing	0.00	0.16	0.05	0.03	0
22	326 Plastics & Rubber	0.00	0.06	0.02	0.01	0
23	327 Nonmetal Mineral	0.00	0.09	0.04	0.02	0
24	331 Primary Metal Mfg	0.00	0.00	0.00	0.00	0
25	332 Fabricated Metal Products	0.00	0.09	0.03	0.02	0
26	333 Machinery Mfg	0.00	0.01	0.00	0.00	0
27	334 Computer & Electronic Products	0.00	0.03	0.01	0.01	0
28	335 Electrical Eqpt &	0.00	0.01	0.00	0.00	0
29	336 Transportation Eqpmt	0.00	0.05	0.02	0.02	0
30	337 Furniture & Related	0.00	0.04	0.01	0.01	0
31	339 Miscellaneous Mfg	0.00	0.05	0.02	0.01	0
32	42 Wholesale Trade	0.00	2.47	1.65	0.97	10
33	441 Motor Veh & Parts	0.00	0.41	0.32	0.21	3
34	442 Furniture & Home Furnishings	0.00	0.15	0.10	0.06	1
35	443 Electronics & Appliances Stores	0.00	0.08	0.05	0.06	1
36	444 Bldg Materials & Garden Dealers	0.00	0.29	0.18	0.11	3
37	445 Food & Beverage Stores	1.67	2.14	1.47	0.99	29
38	446 Health & Personal Care	0.84	1.05	0.66	0.46	11
39	447 Gasoline Stations	0.39	0.49	0.31	0.25	7
40	448 Clothing & Accessories	1.07	1.35	0.82	0.39	16

	Sector	Direct Spending (10 <sup>6</sup> \$)	Gross Output (10 <sup>6</sup> \$)	GDP (10 <sup>6</sup> \$)	Personal Income (10 <sup>6</sup> \$)	Employment (jobs)
41	451 Sporting Goods, Hobby, Book, & Music Stores	0.49	0.60	0.39	0.28	11
42	452 General Merchandise	1.77	2.27	1.47	0.92	31
43	453 Miscellaneous Store	0.62	0.78	0.48	0.42	20
44	454 Non-Store Retailers	0.00	0.50	0.26	0.07	4
45	481 Air Transportation	0.00	0.42	0.21	0.11	1
46	482 Rail Transportation	0.00	0.07	0.04	0.02	0
47	483 Water Transportation	0.00	0.00	0.00	0.00	0
48	484 Truck Transportation	0.00	0.55	0.26	0.22	3
49	485 Transit & Ground	3.62	4.07	1.72	2.23	67
50	486 Pipeline Transportation	0.00	0.04	0.04	0.07	0
51	487 Sightseeing	0.00	0.23	0.12	0.10	1
52	492 Postal service, Couriers & Messengers	0.00	0.49	0.33	0.27	4
53	493 Warehousing & Storage	0.00	0.25	0.15	0.13	3
54	511 Publishing Industries	0.00	0.42	0.29	0.14	1
55	512 Motion Picture & Sound Recording	0.00	0.14	0.09	0.05	1
56	515 Broadcasting	0.00	0.54	0.16	0.07	1
57	517 Telecommunications	0.00	1.98	0.98	0.31	3
58	518 Internet & Data Process	0.00	0.32	0.13	0.12	1
59	519 Other Information	0.00	0.22	0.07	0.05	0
60	521 Monetary Authorities	0.00	0.90	0.58	0.31	3
61	522 Credit Intermediation & Related	0.00	0.85	0.47	0.45	5
62	523 Securities & Other	0.00	1.50	0.53	0.51	9
63	524 Insurance Carriers &	0.00	3.06	1.49	0.93	11
64	525 Funds, Trusts, & Other Financial Vehicles	0.00	0.49	0.20	0.04	2
65	531 Real Estate	0.00	10.16	7.01	0.57	28
66	532 Rental & Leasing Svcs	0.00	0.38	0.22	0.10	2
67	533 Lessor of Nonfinance Intangible Assets	0.00	0.49	0.29	0.01	0
68	541 Professional, Scientific & Tech Svcs	0.00	5.74	3.74	3.23	36
69	551 Management of	0.00	1.76	1.13	0.96	7
70	561 Admin Support Svcs	0.00	2.69	1.86	1.50	36
71	562 Waste Mgmt & Remediation Svcs	0.00	0.37	0.18	0.12	2
72	611 Educational Svcs	0.00	0.69	0.44	0.42	12
73	621 Ambulatory Health Care	0.00	2.29	1.52	1.39	19
74	622 Hospitals	0.00	1.39	0.79	0.71	9
75	623 Nursing & Residential	0.00	0.39	0.25	0.24	6
76	624 Social Assistance	0.00	0.43	0.28	0.26	10
77	711 Performing Arts & Spectator Sports	24.51	27.89	17.44	14.55	318
78	712 Museums & Similar	0.28	0.31	0.15	0.16	4

	<b>Sector</b>	<b>Direct Spending (10<sup>6</sup> \$)</b>	<b>Gross Output (10<sup>6</sup> \$)</b>	<b>GDP (10<sup>6</sup> \$)</b>	<b>Personal Income (10<sup>6</sup> \$)</b>	<b>Employment (jobs)</b>
79	713 Amusement, Gambling & Recreation	3.35	3.82	2.47	1.05	39
80	721 Accommodations	5.78	5.81	3.49	1.75	56
81	722 Food Svcs & Drinking	9.03	11.27	6.46	4.33	179
82	811 Repair & Maintenance	0.00	0.94	0.65	0.53	9
83	812 Personal & laundry Svcs	0.00	0.48	0.30	0.36	12
84	813 Religious, Grantmaking, & Similar Orgs	0.00	0.54	0.41	0.22	4
85	814 Private Households	0.00	0.05	0.05	0.05	4
86	92 Government	0.00	0.65	0.64	0.53	7
	<b>Total</b>	<b>53.41</b>	<b>112.71</b>	<b>67.94</b>	<b>45.55</b>	<b>1,075</b>