THE HOSPITALITY SECTOR SUBSEQUENT TO THE GREAT RECESSION

by

Nathan Black

A Thesis
Submitted to the
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in Partial Fulfillment of
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of
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Geoinformatics and Geospatial Intelligence

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The Hospitality Sector Subsequent to the Great Recession

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DEDICATION

To my family, friends, coworkers, and all the people who got me this far and led me in the right direction: thank you from the bottom of my heart.
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LIST OF ABBREVIATIONS AND SYMBOLS

California ................................................................. CA
Connecticut ................................................................ CT
Dollar ........................................................................ $
Florida ........................................................................ FL
Georgia ........................................................................ GA
Gross Domestic Product .............................................. GDP
Illinois ......................................................................... IL
Indiana ......................................................................... IN
Major League Baseball ............................................... MLB
Major League Soccer .................................................. MLS
Michigan ..................................................................... MI
National Basketball Association .................................. NBA
National Hockey League .......................................... NHL
National Football League .......................................... NFL
New Jersey ................................................................... NJ
New York ..................................................................... NY
Nevada ......................................................................... NV
North Carolina .......................................................... NC
Ohio .............................................................................. OH
Pennsylvania ............................................................. PA
South Carolina .......................................................... SC
Theme Entertainment Association ................................ TEA
United States ................................................................ US or USA
United States Census Bureau ...................................... USCB
Virginia ......................................................................... VA
Wisconsin ...................................................................... WI
ABSTRACT

THE HOSPITALITY SECTOR SUBSEQUENT TO THE GREAT RECESSION

Nathan Black, M.S.

George Mason University, 2016

Thesis Director: Dr. Timothy Leslie

This thesis analyzes the relationship of socioeconomic and geographic variables upon the hospitality sector in metropolitan areas across the United States and Washington D.C. in particular. I focus on the effects of the aftermath of the ‘Great Recession’ of the late 2000s as a way to understand their significance upon an area’s recovery or function. The recovery of national metropolitan areas was measured through the percent growth in payroll from 2007 to 2011 while the function was measured through the percent of payroll related to tourist activity and hospitality dollars per capita. A static picture of Washington D.C. was analyzed to gain an understanding of the number of employees in an establishment for 2010. A greater understanding of the relationship between these variables and the hospitality sector could lead to better decision-making processes for how to prioritize investments or emphasize an area.
INTRODUCTION

Colloquially referred to as the ‘Great Recession’, the economic downturn that began in December of 2007 has proven to be a continuing drag on the economy despite the recession being declared officially over in 2009 (National Bureau of Economic Research, 2010). A generally accepted starting point is the bursting of the housing bubble in 2007, which had driven the housing market to astonishingly high prices and allowed for poorly regulated financial institutions to offer extremely risky financial packages to facilitate both a continued growth in home ownership and a continued acquisition of assets. The bursting of this bubble worldwide exposed these institutions to hundreds of billions of dollars in losses as well as any investors which had borrowed from them. This panic caused a heavy decline in the stock market and ensured that the ensuing recession’s effects would be long-lasting. (Financial Crisis Inquiry Commission, 2011) By early 2009, the GDP of the United States had declined by four percent, the most since World War II (Ritchie, Molinar, & Fretchling, 2010).

A downturn in consumer spending adversely affects every sector of the economy. Some sectors of the economy are inherently more sensitive to economic downturns (Corgel 2003, 2004). Communities that are mostly dependent on a specific industry, such as Detroit and the automotive industry or small Appalachian towns and the coal industry, may find themselves in a long-term economic depression that lasts for years or decades.
The degree to which an industry may be negatively impacted can depend on the cause of the economic downturn. As previously stated, one of the causes of the Great Recession was the disruption of the housing bubble (Financial Crisis Inquiry Commission, 2011), and some of the industries hardest hit by the Great Recession were related to construction and finances. The residential building construction and specialty trade contractor industries combined lost an estimated 1.2 million jobs, while the financial activities industry lost 461,000 jobs. This is in contrast to the 2001 recession, where financial activities and building construction saw increased employment and specialty trade contractors saw a decline. (Scopeliti, 2014)

Spending during an economic downturn tends to have a disproportionately negative effect on travel and tourism, and hospitality industries as a whole are acutely sensitive to such periods of time. The tourism sector – also referred to as the hospitality sector for the purposes of this paper – is one such area, requiring a steady supply of disposable income. (Best Hospitality Degrees, 2016) The hospitality sector generates an estimated $1.1 trillion in economic output for the US economy every year. This part of the economy accounts for one quarter of service exports and 7% of all exports (US Department of Commerce, Office of the Travel and Tourism Industries).

The restaurant industry generates a staggering $709 billion in annual sales or 4% of the US GDP (National Restaurant Association, ‘Industry Impact’). The integration of this one part of the hospitality sector is difficult to understate. Roughly one third of all Americans will have been hired by a restaurant for their first job, and roughly ten percent
of the entire US workforce is currently employed in some capacity for one. (National Restaurant Association, ‘Job & Careers Powerhouse’).

In this thesis, I will investigate the performance of the hospitality sector during the Great Recession by quantifying the relationship of several socioeconomic and geographic factors on three different measurements of industrial performance. These measurements are the percent of payroll related to hospitality, dollar per capita, and percent growth in payroll. In addition, I will investigate the relationship of socioeconomic and geographic factors on the number of employees for establishments within Washington D.C. metropolitan area for the year 2010.
RELEVANT LITERATURE

On its face, hospitality involves the facilitation of vacations or visits to places of interest. What businesses that precisely entails is much less clear. Noteworthy examples of businesses that rely on hospitality to produce or sell a variety of products and services include sports teams, hotel accommodations, amusement parks, and restaurants. A typical industry is united by a common product or service (Smith, 2006). Given the widely different types of products these businesses offer, it is implausible to classify the hospitality sector as an ‘industry’ in anything but a colloquial form.

Within this loose definition of the ‘hospitality sector’ can be identified several distinct industries. While these industries alone do not share a common product they do share a common audience in visitors from outside the region. When looking at these industries by NAICS code, they can be placed into five broad categories: transportation, travel arrangements, entertainment, accommodation, and dining (Smith, 2006). Smith’s categorical definitions and NAICS code selections form the basis for establishment selection for this study. The full list of codes used for this thesis can be found in the Methodology section.

Smith’s categories and NAICS codes are not the only means of defining the hospitality sector, though many of these alternatives acknowledge that the industries included combine to form a hospitality ‘product’. An alternate definition by Sinclair and
Stabler (1997) calls hospitality (referred to as tourism in the paper) a “composite product involving transport, accommodation, catering, natural resources, entertainment, and other facilities and services, such as shops and banks, travel agents, and tour operators.” This definition is simultaneously more and less specific than Smith’s, naming some of the categories Smith used by different names while adding industries that contribute the raw materials and financial resources for businesses that more directly interact with tourists.

Typically, an economic sector can be noted for its dominance by a few select companies. In the early part of this decade, six companies – Random House, Penguin, Hachette, HarperCollins, Simon & Schuster, and Macmillian – controlled sixty percent of book revenues in the United States (Losowsky, 2013). In the fast food industry, McDonalds has traditionally held a prevailing position. The idea of ‘Big Oil’ has been around for over a century, with a handful of companies owning the lion’s share of the market. But in relation to hospitality the market behaves much differently. In this sector, business is “characterized by a large number of small and medium sized business and its lack of market leaders with a significant share of the market” (Wild, 1989, pg 82). The hospitality sector behaves in a wildly different manner compared with other parts of the economy.

The prominence of the hospitality sector has led to the existence of several scientific journals, including the Journal of Hospitality and Tourism Management, Tourism Management, and the International Journal of Tourism Research. Much of the literature is based around the effects of decisions made by localities upon the hospitality
sector’s performance. Studies often focus on the behavior of these localities or of specific industries within the hospitality sector.

Drivers of the Hospitality Sector

In 2015, travel and hospitality generated $7.2 trillion USD in economic output for the global economy (World Travel and Tourism Council, 2016). The World Travel and Tourism Council stated that at the time the hospitality industry accounted for almost ten percent of total global GDP as well as one in eleven jobs. As a raw engine for economic activity, hospitality is a prominent and visible area to emphasize.

An overwhelming dependence on the hospitality sector for economic growth can have highly detrimental consequences, however. Some development strategies relating to an overemphasis on hospitality do not create a long term benefit, such as focuses on increases in capacity without any improvements to the quality of hospitality services (Hajdinjak, 2015). The focusing on a flawed hospitality-centric strategy to the neglect of different sectors can result in stunted regional economic growth.

The positive economic effects generated by hospitality are not limited to business income. The commercial activity generated by the hospitality sector also creates tax revenue for governments, an increase in community employment, and additional sources of income (Chen, 2013). While tax revenue is the most immediately impactful consequence in the form of balancing government budgets, the increase in employment can help with other factors in the community. Successful hospitality sector activity can also lead to further investment in the area from foreign nationals (Smith, 2004). These
additional benefits give governments an incentive to engage in hospitality development to stimulate the economy. Some of these ways that areas attempt to spur development can be found in several key types of tourist attractions: amusement parks, major league sports, beaches, and casinos.

Literature has shown that sectors of the economy are inherently more sensitive to economic downturns, such as hotels (Corgel 2003, 2004). The hospitality sector is one such area. From the first quarter of 2008 to the first quarter of 2009, the number of workers engaged in producing ‘direct tourism output’ declined by roughly two hundred and twenty thousand. From the third quarter of 2007 to the first quarter of 2009, the value of US products sold to domestic or foreign tourists minus inflation – or ‘real tourism demand’ – fell by six percent. This decline meant that real tourism demand was fifteen percent less than it had been twenty years earlier. As a point of comparison, GDP had increased by twenty-eight percent (Ritchie, Molinar, & Fretchling, 2010).

**Amusement Parks**

Amusement parks can be instrumental in propping up a region’s economy. When the Walt Disney Company announced plans to build a Disneyland resort in Hong Kong, the Hong Kong government expected that 1.4 million additional tourists would come when the park opened in 2005 (Variety, 1999). In addition, Hong Kong expected many new jobs to be created. This influx of new visitors and employment was anticipated to be a new and long-lasting boost to the region’s economy.
From that perspective it is not difficult to understand the appeal of an amusement park to a metropolitan area’s tourist profile. One hundred thirty-four million, three hundred and thirty thousand people travelled to a Disney theme park in 2014, with over fifty-five and a half million of those tourists in the Orlando area alone (TEA, 2015). TEA’s report for 2015 also noted that in 2014, increases in international and domestic tourism resulted in record attendance in North American parks.

This positive economic performance came in spite of a general feeling of malaise concerning the economy. While 2014 marked a year of unprecedented attendance and profits, in that same year sixty-six percent of Americans polled stated they thought the economy was ‘recovering, but not so strongly’ while another twenty-six percent claimed the economy had ‘not recovered at all’ (Pew Research Center/USA Today, 2014). That the public generally perceived that the economic situation was not improving yet was willing to spend more money on tourism suggests two diametrically opposed ideas: that the amusement park industry, one based on the spending of disposable income, is making ever-increasing amounts of money from a customer base that feels it doesn’t have any spare income.

The long-term implications of an amusement park’s presence can be beneficial. When SeaWorld purchased an amusement part in the San Diego metropolitan area in 2013, the head of a regional economic development council claimed the increase in visitors and SeaWorld’s marketing department could “bring in more spending by people from outside the San Diego region” (Hirsh, 2013). This is slightly contradictory to how many theme parks generate profit. In one study, it was found that stores within the parks
themselves generated over 40% of the park’s profits (Rajaram & Ahmadi, 2003). This suggests a potential danger in relying on amusement parks to generate an economic base.

The degree of revenue generated by stores within amusement parks implies a great incentive for parks to extend the length of time a visitor spends within the park as long as possible (Birenboim, 2013). This suggests that metropolitan areas and the businesses anticipating an increase in customers from an amusement park’s presence will be competing for those customers when they are on the way to, departing from, or taking a break from the amusement park.

Investment and development centered around theme parks remains alluring in spite of the park’s potential desire to keep visitors within their boundaries. Disneyland Park opened in 1955 in Anaheim, California. By 2005 Anaheim had a convention center, a second Disney theme park, and two major league sports teams in the Los Angeles Angels of Anaheim (MLB) and the Anaheim Ducks (NHL). A study commissioned by Disney found that the annual economic impact of Disneyland Park was roughly at $3.6 billion for businesses throughout Southern California (Cain, 2005).

**Major League Sports**

There may be no greater and more visible incentive to support the hospitality industry than major league sports teams. Given the popularity of select sports leagues and their advertising ubiquity, sports teams are a source of pride to the regions in which they reside. With the growth in the number and population of metropolitan areas, the competition for teams has empowered franchises to increasingly request public funds to help invest in new sporting stadiums. For a new football or basketball stadium, costing
approximately $325 million on average, the public usually pays around $200 million – this means that more than $6 billion was spent on large-scale sports establishments in the time between 1990 and 2000 (Rappaport & Wilkerson, 2001). This is a staggering number that has proven controversial.

Public funds are often committed to stadium construction despite potential objections to the funding and if an insufficient offering of public funds is made it can lead to a sports franchise’s relocation. This was recently observed by the relocation of the NFL’s St. Louis Rams to Los Angeles, and could potentially continue with the San Diego Chargers or the Oakland Raiders also relocating to Los Angeles in 2017 (Byers, 2016). The consideration of relocating teams is not a recent or an uncommon occurrence.

During the past decade, roughly half of the teams in the NFL have had some level of discussion concerning potential relocation. The desire for a metropolitan area to keep or attract professional sports teams can lead to difficult decisions. Detroit committed to spending hundreds of millions of dollars on a hockey stadium for the Detroit Red Wings six days after the city had filed for bankruptcy. The Milwaukee Bucks, a NBA team, threatened to relocate if they were not granted a new facility. Glendale, Arizona terminated a deal with the NHL’s Arizona Coyotes over a stadium that had the city paying millions a year, only to succumb to public pressure from fans (Strong, 2015). (Corbett & Mitchell, 2015; Isidore, 2013; Kaas, 2016; Last Week Tonight with Jon Oliver, 2015) The loss of a regularly scheduled and prominent event like a major league sports game presents could result in the loss of some of the hospitality sector’s business
to competitors in other areas. The pressures associated with regularly investing money for stadium purposes would not be tolerated if there were no benefit to doing so.

These projects are usually justified along similar lines of reasoning to other types of development – that the investment will result in an increase in jobs, economic activity, and tax revenue in the region. This assumption is so prevalent and unquestioned that sports teams rely on it to help negotiate for larger investments of public funds. But if purely judged along those lines, the use of public funds may not be worth the investment. The annual benefit value between net job creation, imported sales taxes, and increased income taxes off of player salaries led to anywhere between a $50-100 million deficit against the cost of the stadium itself. (Rappaport & Wilkerson, 2001).

None of this is to say that hosting a large sporting event or sports team is without tangible or intangible benefit. Beijing’s hosting of the 2008 Olympics was seen as an effort by the Chinese to “demonstrate to the world the country’s economic achievements over the past two decades.” (Ren, 2008, p. 180) This was a direct challenge to the common perception of China as a poor and backwards country or an unstable Communist country (Manzenreiter, 2010). While this reputation may persist in some circles news stories about China have taken on markedly different tones since then.

The expectation of increased economic activity and employment remains consistent throughout announcements concerning stadium construction. Professionals in the hospitality sector estimated that the combination of the then-under construction Lucas Oil Stadium and an expansion of the Indiana Convention Center in Indianapolis would add as many as twenty-five thousand jobs by 2010, which counted not only jobs in those
facilities but jobs in nearby hospitality-related businesses (Beaty, 2005). This is in spite of research that “consistently found no substantial evidence of increased jobs, incomes, or tax returns” (Coates & Humphreys, 2008). There is noticeably a large split in literature over whether sports teams and their stadiums have any economic benefit and if so how large that benefit entails.

Beaches
Beaches are among the most prominent tourist destinations. Indeed, going to the beach for amusement may be a pastime as old as humanity itself (Fabbri, 1990). With most of the population growth on the planet expected to be within sixty kilometers of the coast, it is expected that use of the coastline for multiple purposes is to increase dramatically (Miller, 1990; Griffin, 1992). It has been surmised that beaches are “more used than any other type of shore” (Schlacher et al., 2007). For these reasons, beaches often present a great opportunity for communities.

Such opportunities are often exploited with success. A community within twenty-five miles of the coast has a higher percent of total earnings related to hospitality than areas outside of that range. (Klein, Osleeb, and Viola, 2004) In 1998, it was found that “a single beach, Miami Beach, had more annual visits than Yellowstone, the Grand Canyon, and Yosemite National Parks combined.” (Houston, 1998) The presence of a pristine beach can turn a small community into one attracting money from across the world (Orams, 2003). In that context it would appear that beaches can be an equalizer or a way for those communities to stand out from the crowd.
The majority of literature suggests that beaches have an outsized impact on the performance of hospitality. This impact is commonly measured in the amount of money generated or the growth of the hospitality sector. With a sizeable boost in tourism for areas within twenty-five miles of the coast and so much money being spent to keep beaches appealing for tourists, it is clear even if beaches are not the ultimate tourist attraction their pull cannot be ignored.

**Casino Gambling**

Gambling law is a highly complex area of law in the United States. Traditional casino establishments are not banned on a national level but only Nevada and Louisiana permit them on a statewide basis. This is not to say that casinos are illegal in the other forty-eight states. It would be more accurate to state that most states limit legalized gambling to specific locations such as Atlantic City in New Jersey. Gambling is commonly seen as a vice (Gu, Li, and Tam, 2013), but the income generated from regulation and taxation of gambling lends itself to both be encouraged and discouraged by the government (Smith, 2000).

In the example of Macao and China, the growing economic power of China’s middle class supports Macao’s gambling-based economy. China permitted citizens with special visas to visit Macao. The government policies related to visas had significant effects on Macao’s casinos, and the taxation of its gambling industry had its own ramifications (Xinhua, Guoqiang, & Tam, 2012). In addition to the income raised from taxation the policies had an effect of preventing damage to Macau’s economy due to the
consequences of gambling upon the tourists’ home towns. This is an important effect since gambling is an extremely popular activity even if casinos aren’t available.

Fourteen years ago, it was found that twenty-seven percent of Americans had gambled in a casino within the last twelve months and that their average win or loss at those locations was one hundred and forty-three dollars. By comparison, despite lotteries having been played by sixty-percent of the same group the average win or loss was eleven dollars (Welte et al., 2002). Casinos tend to bring older patrons with less disposable income, though not exclusively so (TIA, 2000; Morrison et al., 1996).

The types of people who go to casinos can be divided into two groups. The first group pertains to local customers and eschews closely to the idea of a patron with a lower income. The second group relates to tourists, people who have a greater level of income and some degree of higher education. This second group in one study was found to have had fifty-six percent of the tested group had completed a post-high school program, while only forty percent of the first group had done the same. The tourist groups further fracture by whether gambling was a major or minor incentive to make the trip. Tourists who identified gambling as a major incentive to making their trip tended to be more focused on staying within the casino and were less likely to do other activities (Hinch & Walker, 2002).
**Research Opportunity**

While a large body of research exists for the hospitality sector, it largely is focused on the impact of decisions made by actors within the sector. That is not to say that the effect of geographic or socioeconomic variables has not been explored. However, study of these factors is usually limited to specific use cases like a particular location or a specific type of phenomenon, such as the proximity of ocean coastlines (Klein, Osleeb, and Viola, 2004) or the effect of negative economic conditions. Combining different types of geographic and socioeconomic variables to study their potential effects on the hospitality sector’s performance in the aftermath of a period of poor economic behavior is an opening for further research.
METHODS AND DATA

Methodology

This thesis investigates the relationship of socioeconomic and geographic factors to various measurements of the hospitality industry’s performance. The process involves the following research questions:

1) Do selected socioeconomic and spatially related variables have a statistically significant effect on the economic performance of metropolitan areas following an economic downturn?

2) Do selected socioeconomic and spatially related variables have a statistically significant effect on the size of establishments in a metropolitan area?

The research questions differ in their investigations of scale. Answers to the first research question can be determined at the inter-metropolitan level through the use of metrics of economic performance. The second research question concerning the size of establishments is more appropriately investigated at an intra-metropolitan scale. The nature of the second research question necessitates some method of measuring the number of employees at a place of business and the number of businesses can easily reach into the tens of thousands. It is best to determine whether there is a statistically significant effect in any metropolitan area before attempting to check all metropolitan areas.
Three measurements were selected to serve as metrics for economic performance on a national scale. These three measurements can be measured across a period of time to measure change without worrying about any one specific circumstance. The fourth, number of employees in an establishment, would be unreasonably time-intensive to analyze at the same scope. To further complicate matters, for this fourth dependent variable only data for 2010 could be acquired.

This disparity of data availability and time requirements only further underscored the compulsion to split the dependent variables. Therefore the percent of payroll related to hospitality, dollars per capita, and percent growth in payroll are measured on a national scale and will be referred to as a ‘macro-scale’ study. The number of employees in an establishment will be measured in one metropolitan area and will be referred to as a ‘micro-scale’ study.

**NAICS Codes**

The hospitality sector does not fit most accepted definitions of industry. Instead, the sector is better considered as a collection of distinct industries that combine to create an experience that is then sold to a common audience. Which specific industries are included is a matter of some debate.

There is some agreement in literature that businesses that involve transportation, accommodation, travel arrangements, and entertainment can be referred to as part of the sector. Other industries that are sometimes defined as ‘hospitality’ are restaurants, banks, and natural resource extraction (Smith, 2009; Stabler, 1997). Literature is consistent on
the inclusion of industries like restaurants and hotel accommodations, but less consistent on banking and natural resources.

This thesis will use Smith’s definition of the hospitality sector. While Smith’s study of business sizes in the hospitality sector focused on Canada, he used NAICS codes to identify which industries would be used for analysis (Smith, 2009). Given the United States identifies and also groups businesses together through the use of NAICS codes, these codes present an excellent method of selecting types of businesses for analysis. Many of the NAICS codes selected by Smith were consolidated to the three-digit level. The final list of NAICS codes used can be found in Table 1.

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
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<tr>
<td>481///</td>
<td>Air Transportation</td>
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<tr>
<td>483///</td>
<td>Water Transportation</td>
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<tr>
<td>485///</td>
<td>Transit &amp; Ground Transportation</td>
</tr>
<tr>
<td>711///</td>
<td>Performing Arts, Spectator Sports, &amp; Related Industries</td>
</tr>
<tr>
<td>7121//</td>
<td>Museums, Historical Sites, &amp; Similar Institutions</td>
</tr>
<tr>
<td>713///</td>
<td>Amusement, Gambling, &amp; Recreation Industries</td>
</tr>
<tr>
<td>7211//</td>
<td>Traveler Accommodation</td>
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<tr>
<td>722///</td>
<td>Food Services &amp; Drinking Places</td>
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**Macro-Scale Methodology**

Three dependent variables were selected to measure economic performance for US metropolitan areas. To qualify as a metropolitan area for the purposes of the USCB, the area of interest required a population of at least fifty thousand people. Standardized variables are used to account for the relative difference in size of metropolitan areas. For example, New York City is one of the most populous cities on the planet with several million residents while several metropolitan areas barely meet the requirements to be considered metropolitan.

The first selected dependent variable was percent GDP related to hospitality. This variable would measure the relative importance of an area’s hospitality sector to the overall economy, as well as its growth or diminishment. For example, the hospitality sector’s importance in Fargo, North Dakota could be compared to the same sector’s importance in New Orleans despite the difference in the size of the hospitality sector and the overall population.

The second dependent variable was hospitality dollars per capita, or tourism dollars per capita. This variable was more a measurement of the amount of money each tourist spent relative to the population of their destination. Just like the other two variables, it avoids using the raw numbers of the metropolitan areas in favor of a more standardized point of comparison.

The third dependent value was percent growth in employee payroll. This variable would measure the change in employee payroll over the period of time studied. Similar to
the first dependent variable, presenting the value as a percent instead of a raw number allows for an easier comparison between different sized metropolitan areas.

Several factors could be important to the performance of the hospitality sector in a metropolitan area. Nine independent variables were selected for final use in the analysis. These variables were selected to encompass a wide variety of geographic, social, and economic differences between metropolitan areas. A full list of the independent variables can be found in Table 2. A visualization comparing the dependent variables of percent payroll related to tourism and tourism dollar per capita can be found in Figure 1.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>Percent Payroll Related to Tourism (Log)</td>
</tr>
<tr>
<td>Percent Non-White Population</td>
<td>Tourism Dollar per Capita (Log)</td>
</tr>
<tr>
<td>Number of Sports Teams</td>
<td>Percent Growth in Payroll</td>
</tr>
<tr>
<td>Is in ‘South’ region</td>
<td></td>
</tr>
<tr>
<td>Is in ‘Midwest’ region</td>
<td></td>
</tr>
<tr>
<td>Is in ‘West’ region</td>
<td></td>
</tr>
<tr>
<td>Within 25 miles of ocean coast</td>
<td></td>
</tr>
<tr>
<td>Area of Notable Entertainment</td>
<td></td>
</tr>
<tr>
<td>% Democrat popular vote (2008)</td>
<td></td>
</tr>
</tbody>
</table>
The population of a metropolitan area could have some impact on tourism. A higher population implies a larger tax base that a metropolitan area can draw from to use on major projects (Rappaport & Wilkerson, 2001). Many of these projects can improve the infrastructure necessary to withstand the increasing demands of tourists. Given the possible impact of population size on the size of the tax base, it could be assumed that population size has an impact on the hospitality sector’s performance. Likewise, the
population’s composition could have an effect. For a visualization of non-white residents as a percent of population across the United States, see Figure 2.

Figure 2: Non-White Population as a Percent Across US Metropolitan Areas
Major league sports teams are often a source of local pride. These teams are connected with popular sporting events which are heavily advertised. Due to the nature of sports stadium locations and construction, sports teams’ stadiums are not always located within the bounds of the city of their namesake. For example, Washington D.C.’s football team played at FedEx Stadium during the period of study which stood in Landover, Maryland. If this is the case, the team will be associated with its location’s namesake – the D.C. football team would still be matched with the Washington D.C. metropolitan area. Five major league sports teams, each representing a different sport, will be counted towards the number of teams a metropolitan area has. A full accounting of these teams can be found in Table 3, though it is important to note that not every team in the five leagues has all of their teams in the United States. Several NHL, MLB, and MLS teams are located in Mexico and Canada and therefore are not included in the analysis. The analysis will not just consider whether a team has a sports team in any of the selected leagues but the number of teams across all leagues.

<table>
<thead>
<tr>
<th>Sports League</th>
<th>Sport</th>
<th>Number of Teams (US and Foreign)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLB</td>
<td>Baseball</td>
<td>30</td>
</tr>
<tr>
<td>MLS</td>
<td>Soccer</td>
<td>18</td>
</tr>
<tr>
<td>NBA</td>
<td>Basketball</td>
<td>30</td>
</tr>
<tr>
<td>NFL</td>
<td>Football</td>
<td>32</td>
</tr>
<tr>
<td>NHL</td>
<td>Hockey</td>
<td>30</td>
</tr>
</tbody>
</table>
The next variable I will consider in understanding the recovery of the hospitality sector is the percent of the population that is not Caucasian, or ‘white’. Many metropolitan areas are magnets for immigrants and minorities (Christopher & Leslie, 2014), and regions that are ethnically homogenous in favor of the United States’ majority ethnic population may have reacted differently to the Great Recession than regions with a heterogenous or ethnically minority population. This difference in reaction or in population may have affected the attractiveness of some metropolitan areas over others.

Regionality was also selected as a geographic factor. The United States Census Bureau divides the country into four separate regions for the purposes of presenting its data. These regions are ‘West’, ‘Midwest’, ‘South’, and ‘Northeastern’. This analysis measures whether a metropolitan area is located in the South, Midwest, or West divisions as a binary variable – metropolitan areas are identified as belonging to the Northeast region unless given a value of 1 in one of the regionality variables. In the event a metropolitan area crossed into multiple regions, the metropolitan area was assumed to belong to the region where its urban core belonged. Any metropolitan area in a territory lacking a USCB statistical area was not included in analysis. A full list of which states are located in each region can be found in Table 4.
Table 4: States Listed by USCB Region

<table>
<thead>
<tr>
<th>Northeast</th>
<th>South</th>
<th>Midwest</th>
<th>West</th>
<th>No Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>Maryland</td>
<td>Ohio</td>
<td>Alaska</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Delaware</td>
<td>Michigan</td>
<td>Hawaii</td>
<td>U.S. island territories</td>
</tr>
<tr>
<td>Vermont</td>
<td>District of Columbia (D.C)</td>
<td>Indiana</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>West Virginia</td>
<td>Illinois</td>
<td>Oregon</td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>Virginia</td>
<td>Wisconsin</td>
<td>California</td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>North Carolina</td>
<td>Minnesota</td>
<td>Nevada</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>South Carolina</td>
<td>North Dakota</td>
<td>Idaho</td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Kentucky</td>
<td>South Dakota</td>
<td>Montana</td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>Tennessee</td>
<td>Nebraska</td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia</td>
<td>Missouri</td>
<td>Utah</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Florida</td>
<td>Kansas</td>
<td>Colorado</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alabama</td>
<td></td>
<td>Arizona</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mississippi</td>
<td></td>
<td>New Mexico</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arkansas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Louisiana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oklahoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Texas</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proximity to an ocean coastline was considered as an important geographical variable. Optimal coastline creates the potential for public beaches, a prime tourist attraction. Studies have shown that tourism earnings as a percent of total earnings for an area are higher for regions that are within twenty-five miles of a coast. Conversely, areas outside of the twenty-five mile range perform no better or worse than others in that range. (Klein, Osleeb, and Viola, 2004). The possibility of this increased performance based off
of coastal proximity needed to be accounted for considering that the purpose of performing the macro-scale analysis was to measure the degree of recovery.

Political affiliations may have had a significant impact on the hospitality sector’s recovery. Political officials and their policies can adversely affect business plans (Yasarata et al., 2010) and conversely can create regional policies that promote growth (Valente, Dredge, & Lohmann, 2015). During the official beginning of the Great Recession, the United States was in the middle of a presidential election between Senator John McCain of Arizona and Senator Barack Obama of Illinois. In November of 2008, Senator Obama was elected the forty-fourth President of the United States. Areas where each candidate performed well may be reflective of political behavior for the areas of study, which would in turn affect economic strategy and potentially the degree of economic recovery. For the purposes of this thesis, the measurement of choice will be the percent of population that voted for then-Senator Barack Obama. A metropolitan area was determined to be voting for a candidate depending on the combined voting record of the counties the area encompassed.

Finally, the degree of prominence or pre-existing popularity of a metropolitan area’s hospitality sector may be important to how it recovers. Select metropolitan areas were identified as being ‘notable’, whether for its gambling sectors (example: Las Vegas), its beaches (example: Los Angeles), or amusement park attractions (example: Sandusky). These ‘notable’ areas were selected based on one of three different factors. The TEA’s report for 2014 listed total attendance in the United States with the top twenty parks being ranked (TEA, 2015). The first five metropolitan areas to be listed in that
ranking were selected. Other metropolitan areas were selected for having high values in
the County Business Patterns for NAICS codes related to gambling, and the ten
metropolitan areas that appeared most on sites listing beach destinations when the phrase
‘top beach destinations in the US’ is typed into search engines. In total, twenty-two
metropolitan areas were selected based on achieving any of these three criteria. In this
analysis, this measurement is binary and only cares whether the metropolitan area is
amongst the twenty-two areas identified as notable when compared to the dependent
variables. For a full list of the notable areas as well as a visualization of the notable areas
compared to their number of sports teams, see Table 5 and Figure 3.
<table>
<thead>
<tr>
<th>Metropolitan Areas Identified as ‘Notable’</th>
</tr>
</thead>
</table>
| Atlantic City-Hammonton, NJ  
  *Notable for: Gambling*  |
| Bridgeport-Stamford-Norwalk, CT  
  *Notable for: Gambling*  |
| Brunswick, GA  
  *Notable for: Beach*  |
| Chicago-Joliet-Naperville, IL  
  *Notable for: Gambling*  |
| Deltona-Daytona Beach-Ormond Beach, FL  
  *Notable for: Beach*  |
| Detroit-Warren-Livonia, MI  
  *Notable for: Gambling*  |
| Hartford-West Hartford-East Hartford, CT  
  *Notable for: Gambling*  |
| Las Vegas-Paradise, NV  
  *Notable for: Gambling*  |
| Los Angeles-Long Beach-Santa Ana, CA  
  *Notable for: Park Attendance, Beach*  |
| Miami-Fort Lauderdale-Pompano Beach, FL  
  *Notable for: Beach*  |
| Myrtle Beach-North Myrtle Beach-Conway, SC  
  *Notable for: Beach*  |
| New Haven-Milford, CT  
  *Notable for: Gambling*  |
| New York-Northern New Jersey-Long Island, NY-NJ-PA  
  *Notable for: Beach*  |
| Norwich-New London, CT  
  *Notable for: Gambling*  |
| Ocean City, NJ  
  *Notable for: Beach*  |
| Orlando-Kissimmee-Sanford, FL  
  *Notable for: Park Attendance*  |
| Palm Bay-Melbourne-Titusville, FL  
  *Notable for: Beach*  |
| Pensacola-Ferry Pass-Brent, FL  
  *Notable for: Beach*  |
| San Diego-Carlsbad-San Marcos, CA  
  *Notable for: Park Attendance*  |
| Sandusky, OH  
  *Notable for: Park Attendance*  |
| Tampa-St. Petersburg-Clearwater, FL  
  *Notable for: Park Attendance*  |
| Virginia Beach-Norfolk-Newport News, VA-NC  
  *Notable for: Beach*  |
Figure 3: Metropolitan Areas Identified as ‘Notable’ Compared to Number of Sports Teams
Taken together, these regression-based models will show the statistical significance or lack thereof of variables outside a metropolitan area’s control upon its performance or recovery from an economic downturn. All models will be tested for problems in the model residuals, including normality, heteroscedasticity, and spatial dependence. For more information concerning the preparation of data, see the ‘Data’ section. For the results of the macro-scale analysis, see the ‘Results’ subsection.

**Micro-Scale Methodology**

The purpose of the micro-scale study was to analyze the statistical significance of socioeconomic and geographic factors for the number of employees in an establishment for the year 2010. For this scale of analysis, there is only one dependent variable - the size of establishment. The number of employees is a direct way to approximate establishment magnitude.

DC was chosen as it is the capital of the United States and filled with notable landmarks. The DC metropolitan area is colloquially divided into three parts: ‘Northern Virginia’, DC itself, and the middle of Maryland. The exact number of counties as well as which ones were considered part of the metropolitan area, differs depending on the source. This discrepancy is common, even between data sources used for this thesis. The DC metropolitan area was comprises twenty-two areas across Virginia, Maryland, and West Virginia. This area was determined using a combination of the United States Census Bureau’s delineation of the Washington-Arlington-Alexandria metropolitan area and the definition used by referenceUSA, the data source for establishment information.
used in this thesis. For a complete breakdown of the counties and independent cities included in the area of study, see Table 6. For a visualization of the area of study, see Figure 4.

<table>
<thead>
<tr>
<th>Virginia (County)</th>
<th>Virginia (City)</th>
<th>Maryland</th>
<th>West Virginia</th>
<th>District of Columbia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington</td>
<td>Alexandria</td>
<td>Calvert</td>
<td>Jefferson</td>
<td>DC</td>
</tr>
<tr>
<td>Clarke</td>
<td>Fairfax City</td>
<td>Charles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fairfax</td>
<td>Falls Church</td>
<td>Frederick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fauquier</td>
<td>Fredericksburg</td>
<td>Montgomery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loudoun</td>
<td>Manassas</td>
<td>Prince</td>
<td></td>
<td>George’s</td>
</tr>
<tr>
<td>Prince William</td>
<td>Manassas Park</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spotsylvania</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stafford</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The NAICS codes used for the micro-scale study are not the same as the ones for the macro-scale. The selected codes are still based off of Smith’s selections, but codes relating to travel were cut from this scale of analysis due the focus on a single metropolitan area. The final selected NAICS codes for micro-scale analysis were 7111// (Performing Arts Companies), 7112// (Spectator Sports), 7132// (Gambling), 7139// (Other Amusement and Recreation), 7211// (Traveler Accommodation), 7224// (Drinking Places – Alcoholic Beverages), and 7225// (Restaurants & Other Eating Places).
Eleven independent variables were selected for the microscale analysis. Depending on whether an establishment is privately or publicly owned, different incentives and pressures could be in place. Public ownership may face demands from stockholders in the controlling company to generate dividends while private ownership could face the desire for profit from the owners themselves (All Business, 2015). These dissimilarities in ownership goals create a wide variety of differing pressures on the establishment. For the purposes of analysis, this was measured as a binary variable for whether the establishment was privately owned.

Landmarks can be a center of interest in cities. Whether the landmark is the subject of religious pilgrimage or purely historical in nature, these attractions naturally pull persons from outside the area to their location (Cohen-Hattab, 2010). With potential customers being attracted to these locations it makes natural business sense for establishments to want to be in close proximity to them. Landmarks were selected for use in calculating the nearest distance to them based on their inclusion in the National Parks Service’s list of National Historic Landmarks.

Population density could also influence the magnitude of an establishment. Studies have shown a positive relationship between increases in GDP and population density (Owusu, 2012), which is possibly indicative of effects on business practices. Population was calculated on a county-level or city-level basis, depending on whether the administrative area was a county or an independent city.

Firms tend to select locations close to other firms. With limited space in a metropolitan area businesses tend to cluster in order to compete for customers. These
clusters are often beneficial to economic activity (Leslie, 2010). I hypothesize that if proximity to similar types of firms had a statistically significant impact, then perhaps it would favor smaller establishments.

The state itself might have had some impact. The general principle of regionality in the macro-scale study can be transferred to the micro-scale: states can create policies that help or hinder business (Valente, Dredge, & Lohmann, 2015). Several variables measure whether the establishment is located within the boundary of DC, Maryland, or West Virginia. If an establishment is not marked as having a value of ‘1’ in any of those variables it is assumed to be in Virginia.

Due to historical and legal reasons, counties are not the only administrative unit in Virginia. There are thirty-eight independent cities in the state that are not technically included in any county. Six of them are included in the area of study. It was considered possible that given the size of these independent cities, the size of establishments may be significantly different. Literature has established a positive relationship between increases in economic activity and population density, and with independent cities constituting a large number of people in a small area (Owusu, 2012).

During the calculation of distance from nearest store, some stores returned a value of zero. This means that during the geocoding of establishments, these places were written as being directly on top of one another. Rather than immediately discounting the geocoding as flawed, it was hypothesized that these returned values of zero represented strip malls or similar locations since they had the same address. The possibility that such locations could be significant was added to the analysis.
While considering the proximity of metropolitan areas to the coastline for macro-scale analysis, a similar question emerged for the micro-scale. Did distance from a shoreline imply anything about an establishment’s characteristics? The distance from shoreline was determined in two different ways: by the absolute distance of an establishment to the ocean coastline, and whether the establishment was located in a county or city adjacent to the ocean.

Finally, the proximity of the establishment to the metropolitan area’s urban core – Washington D.C. – was considered. Rather than attempting to measure the absolute distance of each establishment from DC, a more generalized measurement was used. A binary variable measuring whether the establishment was within ten miles of DC was generated and used in the analysis.

Data
A quick definition of terminology must be performed before explaining the various means used to determine this thesis’s results.

The United States Census Bureau currently identifies three-hundred and sixty-three metropolitan areas throughout the states and territories of the United States for the period of study. Both types of areas are composed of an urban core and its surrounding area. The Census Bureau does not necessarily limit the boundaries of an area by state or by single city. This leads to areas such as Omaha-Council Bluffs, a metropolitan area stretched across two different states.

To measure the degree of recovery for each metropolitan area, a start and ending date must be selected. According to both the International Monetary Fund and the
National Bureau of Economic Research, the United States was in a state of recession between December 2007 and June 2009, roughly a year and a half of time. December is an extremely late point to begin counting for the purposes of this thesis’s methodology, however this allows for the use of 2007 as an unaffected starting point for analysis. This is preferable to determining the point at which each of the three hundred and sixty three areas of study were at their nadir in economic performance.

The selection of an ending date is not as immediately clear. While June 2009 is the official end to the Great Recession, the end to a period of recession is not equivalent to a full and complete recovery. The recovery from the Great Recession has actually been unusually middling. While the number of private sector jobs has increased constantly since the end of the recession, that the total number of jobs has erased the losses of the recession, and the unemployment rate has approached levels not seen since the months prior to the recession’s official start, by measures of average hourly earnings a full recovery still has not occurred (Center on Budget and Policy Priorities, 2016). As of this thesis, it has been seven years since the end of the recession and almost nine years since its start. For reasons that will be explained when discussing the availability of data, 2011 was selected for an end point to the study.

**Macro-Scale Data Preparation**

As previously detailed, three hundred and sixty three metropolitan areas were to be analyzed. These areas each experienced the Great Recession and its ensuing recovery in different ways by virtue of individual policies and locations.
Before any data was collected, it was necessary to establish whether the parameters set forth by the research questions were valid. The macro-scale research question requires a comparison of socioeconomic and geographic factors against measurements of industrial performance in order to determine the degree of recovery.

‘Degree of recovery’ implies that this dataset will involve data extending over a period of time. How long this period of time lasts quickly turned into a function of the available data. Literature review previously established the use of certain NAICS codes as a basis for the definition of the hospitality sector. The Great Recession was determined to have begun in 2007 by the National Bureau of Economic Research, and to have ended in 2009. For data collection purposes this represents a three year period. Since 2009 was considered the ‘low’ point of economic activity, additional time was added to the period of study to allow for a post-recession recovery to take place. In total, the period of study extended to five years and ended in 2011.

Data on the performance of the NACIS codes associated with the hospitality sector was generated by the United States Census Bureau for their County Business Patterns dataset. This dataset is produced yearly, meaning there were five years of data to possibly analyze. A decision was made at that juncture that the degree of recovery would be an overall measurement, limiting the necessary years of data to 2007 and 2011.

The County Business Patterns dataset during the 2007-2011 period had measured every metropolitan statistical area. In the County Business Patterns dataset, the areas were identified only by a MSA code. By joining the County Business Pattern to the Metro Area Geography Reference in Excel, statistical areas could be matched with their
names through their common MSA code. The formatting and calculation of information was done using a combination of Microsoft Excel, GeoDa, and ArcGIS.

The County Business Patterns dataset contained by default all NAICS codes. This meant that every valid NAICS code for the 2007-2011 period was pulled for all statistical areas. Most of the codes that were kept can be found in Table 1 in the introduction. In addition to these codes, the code ‘------’, or six dashes, was also kept. The six dash code represented the total performance of a statistical area across all NAICS codes.

Each metropolitan area’s NAICS codes are assigned several different fields by default. Not all of these fields were necessary to complete the analysis as originally designed. Excluding the key field MSA and NAICS codes, two more fields were used. ‘Total Mid-March Employees with Noise’ and ‘Total Annual Payroll ($1,000) with Noise’ were both used to generate two of the dependent variables for the macro-scale study, payroll related to hospitality and percent growth in payroll. Because the study is measuring data from the beginning of the recession to its end, values from 2007 were compared to values from 2011.

One final issue arose while generating data. Accurate data concerning the popular vote could not be located for metropolitan areas located in the state of Alaska. Attempts to retrieve this information from the Census Bureau while getting the information for other counties returned a value of zero for Alaska metropolitan areas. While Alaska voted for Senator McCain in 2008, it is a statistical improbability that no one in the state voted for Senator Obama. Because of this discrepancy, Fairbanks and Anchorage are not included in the final analysis.
Micro-Scale Data Preparation

The data collection for this scale mainly used referenceUSA, which maintains a database concerning commercial activity for research purposes. The data was freely accessible through the use of George Mason credentials. At the time of this thesis’s publication this arrangement seemed to have expired and the data is no longer readily available. The data referenceUSA had available at the time concerned establishments throughout the United States for the year 2010.

Search by NAICS code and metropolitan area was integrated into the referenceUSA database’s search engine. However the ability to search by NAICS code only allowed for searches at the two and four number level, such as ‘12///’ or ‘1234///’. Since some of the NAICS codes used in the macro-scale were only specified to the three number level, the search request expanded to include all possible four number NAICS codes that would have been under the original three number codes. Codes relating to types of transportation were removed from consideration. This was due to the change in scale; it was considered more desirable to study tourist attractions and stores at this scale.

The information provided by referenceUSA fed into several of the dependent and independent variables, the most obvious being the number of employees in each establishment. The database’s computation of the number of employees in each establishment meant that the raw dependent variable for the micro-scale had already been calculated. The final values would eventually be calculated with the Log function of ArcGIS. The classification of whether a business was privately owned was derived from a similarly named field.
Because the addresses of establishments were already split into several fields, it became possible to easily use the values to geocode their locations for spatial analysis. All but five establishments were successfully geocoded through ArcCatalog. This helped allow for the assignment of establishments to counties within the metropolitan area. The value for which state each establishment was in had already been assigned in referenceUSA. This county assignment later helped with helping apply population density values for relevant establishments.

Evaluating the distance between nearest establishments and to the nearest landmark was a tool in ArcGIS. Landmark coordinates were based off of information from an open-source tool called GeoHack (https://tools.wmflabs.org/geohack/). While running this tool, it was discovered that several establishments had generated a ‘nearest distance to store’ value of zero. This was seen as a sign that these locations were malls of some fashion and so this zero value was considered as a new independent variable.

The type of administrative division held particular interest due to Virginia’s use of both independent cities and counties. The relatively smaller size of these cities changed the parameters of other independent variables. The definition for what constituted ‘close’ to DC changed from being directly adjacent by land or over the Potomac River to any city or county within ten miles.

Given literature review of increased economic performance for areas within twenty-five miles of a coastline and that DC falls within that distance there was a compelling case to make for including a similar kind of variable. Counties were identified as being adjacent to a major body of water and assigned a value of ‘1’ if they were. For
the purposes of this thesis, a major body of water was defined as either the Atlantic Ocean or the Potomac River.
RESULTS

The groups of dependent and independent variables for both the macro-scale and micro-scale studies have been placed into regressions using the methodologies described in the Methodology section.

**Macro Scale Analysis**

Three dependent variables were used to measure the economic performance for metropolitan areas. This resulted in the creation of three separate models. The results for all three models can be found in Table 7.

**Percent of Payroll Related to Hospitality**

It was thought that as an economy improves following a recession, that the percent payroll related to tourism would overall increase.

The result of the regression overall was an adjusted R-squared value of 0.254, showing a correlation between the model and the variables. In this model, it was determined that some measures of regionality, being within twenty-five miles of the ocean coastline, being selected as a site of ‘notable entertainment’, and the percent of popular vote for Senator Obama in 2008 all were statistically significant. Almost every variable in the regression related to geographic location proved to be significant and providing a positive correlation with the dependent variable. While the Jarque-Bera and Breusch-Pagan tests were significant, removing the outliers of Atlantic City, San Jose,
and Myrtle Beach yielded similar coefficient results while solving normality and heteroscedasticity problems.

Being located within twenty-five miles of the ocean coast had been previously shown in literature to be statistically significant for this type of variable (Klein, Osleeb, and Viola, 2004). The presence of beaches within a metropolitan’s boundaries is outside of human control; they are a function of natural processes. The results borne out by this regression only furthers the idea of a beach’s potential to impact the hospitality sector.

Effects from variables related to regionality were among the strongest for the model. Metropolitan areas in the South had a positive correlation while those in the West had an even stronger correlation, but areas in the Midwest had no statistically significant impact. This suggests that there was some benefit to the size of the sector for being located in those regions.

Being located within twenty-five miles of the ocean coast had a stronger positive link with the dependent variable. The presence of beaches within a metropolitan’s boundaries is outside of human control; they are a function of natural processes. The potential for beaches to impact the hospitality sector was already supported by literature review and this positive correlation only furthers that idea.

A socioeconomic variable – the percent of popular vote for Senator Obama in 2008 – showed a stronger correlation than that of the coastline. But being a location of ‘notable entertainment’ had a very strong positive impact on the percent payroll related to tourism. This independent variable is second only to being located in the West census region for the magnitude of its effect upon the dependent variable. The locations selected
as notable likely constituted a large amount of the metropolitan area’s attraction and made for a higher degree of sector prominence.

**Dollars Per Capita**

The adjusted R-squared score for hospitality dollars per capita is nearly identical to the first model’s, at 0.242. For this model, the percent of the population that was non-white, the number of sports teams, being designated as a place of ‘notable entertainment’, and the popular vote for Obama in 2008 were statistically significant. While the Jarque-Bera and Breusch-Pagan tests were significant, removing the outliers of Atlantic City, Columbia (MO), Columbia (SC), and Provo (UT) yielded similar coefficient results while solving normality and heteroscedasticity problems.

The percent of non-white population had a negative effect on the dependent variable. While there are serious implications to this independent variable being negative at all, measures of regionality were not significant. If the presence of a large non-white population alone were an overall negative then regionality would not only be significant but being located in the Midwest – the region with the lowest non-white population – would be significant and positive.

The popular vote for Senator Obama in 2008 and the designation for ‘notable entertainment’ were positively correlated with dollars per capita. Locations designated as ‘notable entertainment’ often have major tourist attractions (e.g. Orlando and Disney World, Sandusky and Cedar Point) that help influence visitors to spend more money in the region, despite incentives to keep them within the premises (Rajaram & Ahmadi, 2003).
The number of sports teams in a metropolitan area had a very positive impact on the dependent variable. There is a segment of a sports team’s fan base that will travel to their favored team’s ‘away’ games. This can involve paying for transit, hotel rooms, food, stadium tickets, and several other items that quickly add up in total. For this metric of economic activity, it is clear that having sports teams can help with economic performance following a downturn.
### Table 7: Macro-Scale Regression Results

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Model 1 Percent Payroll Related to Hospitality (log)</th>
<th>Model 2 Hospitality Dollars Per Capita (log)</th>
<th>Model 3 Percent Growth in Payroll</th>
<th>Model 4 Percent Growth In Payroll [Spatial Error]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.370e⁻⁰⁰⁷ (1.000)</td>
<td>4.859e⁻⁰⁰⁷ (1.000)</td>
<td>-1.886e⁻⁰⁰⁷ (1.000)</td>
<td>-0.1227 (1.000)</td>
</tr>
<tr>
<td>Total Population</td>
<td>-0.119 (0.319)</td>
<td>-0.217 (0.071)</td>
<td>0.221 (0.415)</td>
<td>-0.122 (0.549)</td>
</tr>
<tr>
<td>% Non-White Pop</td>
<td>-0.078 (0.175)</td>
<td>-0.118 (0.048)</td>
<td>0.105 (0.362)</td>
<td>0.146 (0.052)</td>
</tr>
<tr>
<td># Sports Teams</td>
<td>0.005 (0.962)</td>
<td>0.410 (0.001)</td>
<td>-0.155 (0.657)</td>
<td>-0.155 (0.620)</td>
</tr>
<tr>
<td>Is Southern</td>
<td>0.236 (0.007)</td>
<td>0.017 (0.849)</td>
<td>-0.151 (0.273)</td>
<td>-0.192 (0.252)</td>
</tr>
<tr>
<td>Is Midwestern</td>
<td>-0.060 (0.413)</td>
<td>-0.087 (0.235)</td>
<td>-0.180 (0.148)</td>
<td>-0.222 (0.177)</td>
</tr>
<tr>
<td>Is Western</td>
<td>0.349 (0.001)</td>
<td>0.045 (0.532)</td>
<td>-0.357 (0.003)</td>
<td>-0.461 (0.009)</td>
</tr>
<tr>
<td>&lt; 25 mi from Coast?</td>
<td>0.127 (0.018)</td>
<td>0.104 (0.056)</td>
<td>-0.140 (0.176)</td>
<td>-0.125 (0.209)</td>
</tr>
<tr>
<td>Notable Entertain</td>
<td>0.304 (0.001)</td>
<td>0.232 (0.001)</td>
<td>-0.214 (0.046)</td>
<td>-0.125 (0.034)</td>
</tr>
<tr>
<td>% Democrat (2008)</td>
<td>0.166 (0.003)</td>
<td>0.230 (0.001)</td>
<td>-0.025 (0.694)</td>
<td>0.027 (0.786)</td>
</tr>
<tr>
<td>Lambda</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.455 (0.001)</td>
</tr>
<tr>
<td>Model Diagnostics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj R2</td>
<td>0.254</td>
<td>0.242</td>
<td>0.128</td>
<td>0.204</td>
</tr>
<tr>
<td>F (sig)</td>
<td>13.2995 (2.445e-018)</td>
<td>12.4643 (3.491e-017)</td>
<td>2.2423 (0.027)</td>
<td>N/A</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>75.2585 (0.001)</td>
<td>122.8428 (0.001)</td>
<td>13.5524 (0.001)</td>
<td>N/A</td>
</tr>
<tr>
<td>Breusch-Pagan</td>
<td>174.0764 (0.001)</td>
<td>88.276 (0.001)</td>
<td>15.4535 (0.051)</td>
<td>22.3 (0.008)</td>
</tr>
<tr>
<td>Moran’s I</td>
<td>-0.0049 (.448)</td>
<td>-0.0018 (.69787)</td>
<td>0.132</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Percent Growth in Payroll**

For the final model pairing to the percent growth in payroll, the adjusted R-squared score was 0.128, the weakest of the tested dependent variables. In this model, being located in the West census region and being an area of notable entertainment were
statistically significant. Both attributes resulted in slower growth. Other aspects of a metropolitan area did not affect the region’s growth in tourism pay.

While the Jarque-Bera and Breusch-Pagan tests were significant, removing the outlier of Williamsport yielded similar coefficient results while solving normality and heteroscedasticity problems. Running a Spatial Error model to alleviate concerns over spatial dependence in the errors also yielded similar results, with the exception that the positive effects of a larger non-white population are now only marginally insignificant.

Micro Scale Analysis

One dependent variable – the number of employees in an establishment – was measured for this scale of analysis. The full results of the regression can be found in Table 8.

For this model, the adjusted R-squared score was 0.174. This is a correlation between the dependent variable and the selected independent variables, though it is a weaker one than in some of the macro-scale regressions. Population density, being located in Maryland or DC, and having a ‘nearest business’ distance of zero were all statistically significant. When correcting for spatial autocorrelation in errors with a spatial lag model the adjusted R-squared score decreased to 0.151, with most variables retaining their level of statistical significance and magnitude. Location in West Virginia became borderline significant, while ‘nearest business’ regressed to being borderline insignificant.
<table>
<thead>
<tr>
<th>Predictor</th>
<th>Model 1 Number of Employees (Log) (standardized coefficients)</th>
<th>Model 2 Number of Employees (Log) Spatial Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.011 (0.001)</td>
<td>2.716 (0.001)</td>
</tr>
<tr>
<td>Distance to Nearest Landmark</td>
<td>-0.005 (0.589)</td>
<td>-0.007 (0.478)</td>
</tr>
<tr>
<td>Population Density</td>
<td>0.037 (0.012)</td>
<td>0.039 (0.011)</td>
</tr>
<tr>
<td>Private Business?</td>
<td>0.425 (0.001)</td>
<td>0.433 (0.001)</td>
</tr>
<tr>
<td>Is in MD</td>
<td>-0.027 (0.009)</td>
<td>-0.035 (0.001)</td>
</tr>
<tr>
<td>Is in WV</td>
<td>-0.016 (0.052)</td>
<td>-0.020 (0.014)</td>
</tr>
<tr>
<td>Is in DC</td>
<td>-0.024 (0.028)</td>
<td>-0.027 (0.013)</td>
</tr>
<tr>
<td>Is in a county that touches water</td>
<td>0.005 (0.571)</td>
<td>0.007 (0.450)</td>
</tr>
<tr>
<td>Nearest Business is 0 distance away</td>
<td>0.015 (0.044)</td>
<td>0.015 (0.055)</td>
</tr>
<tr>
<td>Within 10 miles of DC</td>
<td>-0.006 (0.559)</td>
<td>-0.007 (0.556)</td>
</tr>
<tr>
<td>Lag Variable</td>
<td>--</td>
<td>-0.222 (0.001)</td>
</tr>
<tr>
<td>Adj R2</td>
<td>0.174</td>
<td>0.151</td>
</tr>
<tr>
<td>F (sig)</td>
<td>329.4 (0.001)</td>
<td>--</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>2102.9 (0.001)</td>
<td>--</td>
</tr>
<tr>
<td>Breusch-Pagan</td>
<td>99.9 (0.001)</td>
<td>109.1 (0.001)</td>
</tr>
<tr>
<td>Moran’s I</td>
<td>14.8 (0.001)</td>
<td>--</td>
</tr>
</tbody>
</table>
Almost none of the significant variables had a particularly strong effect. An establishment being located in any location other than Virginia while using Virginia as a basis proved to have a negative effect on the dependent variable. While being located within the DC area was a detriment to higher establishment employment, the same could not be said for other densely populated areas. Given that several of the places within the area of study were independent cities with a smaller area than counties and all of those areas were in Virginia, it is plausible to say that while being within DC was detrimental to a higher employee count being within a city might not.

Type of ownership proved to be the variable with the highest degree of impact. Interestingly the data recorded franchised businesses such as McDonalds as ‘private’, likely as a function of the legal arrangements relating to franchising agreements. Franchised businesses are often run according to a strict and centralized business plan which regulates business activities, including hiring behaviors.

Sharing locations with another business had a positive effect on employment, and was almost statistically significant following correction for spatial error. If the idea holds true that these locations are in fact malls of some variety, then the concept of malls generating their own foot traffic enters into play.
CONCLUSION

This thesis was written with the intent to investigate the effect of socioeconomic and geographic factors against different measurements of the hospitality industry’s performance. All four dependent variables were different ways to measure economic performance. Percent payroll related to hospitality was a way to identify the importance of the hospitality sector to an area’s economy and hospitality dollars per capita was a measure of how much money the average tourist was willing to spend. Both of these variables were intended to correlate to an area’s overall economic performance for the hospitality sector. Percent growth in payroll was more closely linked to the idea of economic recovery, with significance for the variable implying that the selected variables had an impact on the degree of recovery for the sector. For the micro-scale analysis, measuring the number of employees at establishments at the intra-metropolitan area scale was intended to help draw conclusions about how location and other factors could affect establishment size.

This thesis should not be interpreted as asserting that certain socioeconomic and geographic variables included in this paper have an effect on the performance of the hospitality sector without additional supporting evidence. One of the two dependent variables measuring economic performance for the macro-scale portion of this paper has a looser connection to the health of the hospitality sector than the other, which is
coincidentally the same where these variables are statistically significant. Given the nature of the independent and dependent variables and the results of their regression, additional consideration must be given.

On a national scale, the model performance with regards to $R^2$ indicates that the chosen variables accounted for roughly twenty-five percent of the variance in the hospitality sector’s behavior for the dependent variables relating to economic performance. Two patterns emerge when looking at the macro-scale dependent variables for measuring economic performance. For measuring the percent payroll related to hospitality, variables related more towards the geography of the metropolitan areas had statistically significant effects. Measures of regionality that favored regions with a coastline and relative proximity to that coastline were found to have positive influences. Combined with the relatively strong effect of ‘notable entertainment’ areas and how some of the cities selected for that designation were selected as beach destinations, it is plausible that metropolitan areas along the coast with beaches are likelier to have a more prominent hospitality sector.

A different pattern emerges when measuring hospitality dollars per capita. Instead of variables relating to the area’s geography having significant impact, instead variables relating to the area’s socioeconomic profile become prominent. The percentage of non-white population had a negative effect, while the presence of sports teams proved to create the strongest effect on the dependent variable. Hospitality dollars per capita was designed as a measurement of how much money a tourist would spend on a per capita basis, and was included as a way to analyze tourist spending habits independent of the
metropolitan area’s size. As a result, the variable is more oriented towards measuring the behavior of tourists participating in the hospitality sector than the overall performance of the sector. This is important to keep in mind considering the statistical significance and magnitude of effect concerning the number of sports teams in a metropolitan area and the percent of non-white population.

Sporting event tickets are inherently expensive, as are concessions and parking permits and all the expenses that come along with travelling to major league sports games. The average price of an NFL ticket in 2007 was sixty-seven dollars and eleven cents, increasing to seventy-seven dollars and thirty-four cents by the end of the period of study (Statista). Access to a beach is nominally free, as are many museums. Fans travelling to metropolitan areas for away games also have to buy lodging and transportation. Being designated as an area of ‘notable entertainment’ makes sense for this way of looking at the results for similar reasons it made sense for percent payroll related to hospitality: prominent tourist attractions attempt to persuade visitors to spend as much money as possible.

While the results for hospitality dollars per capita show a strong effect by the number of sports teams in a metropolitan area, scientific literature is more split on the issue. The cost overruns for sports stadiums can be drastically more severe depending on the use of the stadium, potentially exceeding overall economic benefits (Rappaport & Wilkerson, 2001). A noteworthy example is the 2004 Olympics in Athens, where some of the constructed venues far exceeded their initial estimated cost (Poulios, 2004). One estimate placed cost overruns at sixty percent of the originally planned budget and many
of the sporting venues constructed went unused following the event. In addition to cost overruns, eighty percent of the money funding the Olympics that year was provided by Greece. The country has been in constant recession since 2009, and by 2011 government debt as a percent of GDP reached 170.6% (Flyvbjerg & Stewart, 2010; Panagiotopoulou, 2014).

In addition to the split in scientific literature, a large number of sports teams in a metropolitan area (as seen by Figure 3 and compared with Figure 1) did not necessarily imply either being considered ‘notable’ for the purposes of the thesis nor a high measurement of the dependent variables. This is difficult to juxtapose with the results showing the independent variable having the largest positive effect of all upon hospitality dollars per capita. While the paper may seem to suggest that sports teams are a net positive for a metropolitan area’s economy, the methodology pertinent to it only allows for it to be plausibly suggested that the presence of major league sports teams incentivizes tourists to spend more money on the hospitality sector. Additional research is necessary before drawing a more concrete link between sports teams and their overall economic benefits.

There will continue to be debate over the fiscal wisdom of using public funding for sports stadiums (Last Week Tonight with Jon Oliver, 2015; Rappaport & Wilkerson, 2001; Flyvbjerg & Stewart, 2010). But the results clearly suggest that the presence of sports teams increase the amount of money the average tourist spends on the hospitality sector.
My model showed that the selected independent variables had an overall negative impact on the percent growth in payroll during the period of study, with significant drivers of this being geographic location in the Western census region and being labelled a center of notable entertainment. These results run counter to the models produced by other dependent variables. The reason for this divergence in results is likely to due to the industry’s behavior during the economic recovery. The period of study was from 2007 to 2011, but based on data from the Bureau of Labor Statistics nonfarm payroll employment had not fully recovered by that time, and would not do so until six and a half years following the start of the recession (Center on Budget and Policy Priorities, 2016).

The percent non-white population was the only independent variable to have a negative and statistically significant effect upon hospitality dollars per capita. The regression results showed a link between a higher percentage of non-white population and a decline in the dependent variable. Literary research has suggested that the image of tourism is widely accepted to be the sum of beliefs, ideas, and impressions that someone has of a location (Crompton, 1992). In practice, there is a significant amount of research suggesting that a large minority population does not create crime but merely the perception of crime and there is evidence to suggest that a tourist’s perception of an area can impact their decision making – whether that perception is justified or not(Jackson, 1986; Golden, 2011; Quilliam and Pager, 2010). This thesis did not test for the effects of negative perceptions upon the dependent variables, such as crime rates or the percentage of population below the poverty line. A significant amount of research would be required
before a link between the non-white population and a weakened hospitality sector could be deemed plausible.

The nature of one of the dependent variables, tourism dollars per capita, orients it less towards the overall performance of the hospitality sector and more towards the behavior of tourists that participate in sector activity, and all of the dependent variables as constructed measure the hospitality sector exclusively. It is because of this orientation that the impact of the number of sports teams cannot be construed as being beneficial to the economy at large. Likewise, the non-analysis of negatively-oriented independent variables negates the ability of this thesis to emphatically state a connection between the racial makeup of an area and the hospitality sector without additional research.

A weaker conclusion can be drawn from voting patterns. Voting patterns were statistically significant, with more significant hospitality sectors and increases in tourism per capita corresponding to higher voting preference for Senator Barack Obama in 2008. 2008 was considered a ‘wave’ election. Since members of the same political party usually have similar ideas for policies, it is plausible that Democratic economic policies in that timeframe had a significant if small positive effect.

Beaches were stated by the majority of scientific literature to be an important part of an area’s tourism profile (Klein, Osleeb, and Viola, 2004; Houston, 1998; Oramas, 2003). When modeling the relative size of the hospitality sector, proximity to the ocean coast and being in the southern or western region was important. These two variables, combined with the overriding significance of places described as ‘notable entertainment’ leads in an interesting direction. The regression results suggest that having access to a
beach is significant in determining the standing of an area’s hospitality sector, even if the beach is not amongst the most popular in the country.

For employment numbers on an establishment level in the D.C. area, being inside the urban core of a metropolitan area appeared to have a net negative effect. But while being inside D.C. itself had a negative impact, being inside a densely populated area was actually a plus towards higher establishment employment. Packing businesses into close proximity to one another can be beneficial as well, with places in close proximity to one another like strip malls possibly creating their own foot traffic. Privately-owned businesses proved to be more likely to have a higher number of employees on staff. This behavior is likely driven by franchising business plans, which have been tested and retested at large expense by their parent companies.

The general conclusions for both scales propose certain nuances to the effect certain factors had upon the hospitality sector. While socioeconomic and local factors showed no statistically significant effect for the chosen method of showcasing economic recovery, said factors did have a notable effect for general measures of economic performance. While alternative methods of measuring change in the economy could still connect those factors and an economic recovery, accounting for factors similar to the independent variables in this analysis can still help drive decision-making concerning the hospitality sector.

A decision to account for these factors can help localities make investments to steel themselves against periods of economic decline. The hospitality sector generates roughly $1.1 trillion in economic output and key industries within the sector are highly
vulnerable to poor economic performance (US Department of Commerce, Office of the Travel and Tourism Industries; Corgel 2003, 2004). By considering the impact of significant independent variables or factors similar to ones analyzed for this thesis, areas could find less volatility in their hospitality sectors in the event of a future recession.

The Great Recession of 2007 ended up being the worst period of economic performance since World War II, and a general perception existed that there was little to no recovery (Ritchie, Molinar, & Fretchling, 2010; Pew Research Center/USA Today, 2014). With the hospitality sector’s importance in a diverse economy, preventing negative growth whenever possible is vital. There have been and may always be external events and factors that overwhelm long-term plans and force periods of poor economic performance. But through better planning processes and gaining a better understanding of all the resources a metropolitan area has to work with, the worst tendencies of these periods could be mitigated to some degree.
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BIOGRAPHY

Nathan Black graduated from Lake Braddock High School, Burke, Virginia, in 2007. He received his Bachelor of Arts from Virginia Tech in 2011. He received a Graduate Certificate for Geoinformatics and Geospatial Intelligence from George Mason University in 2015.