The Impact of Sports Stadiums and Franchises on Cleveland's Economy

by

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ON CLEVELAND'S ECONOMY

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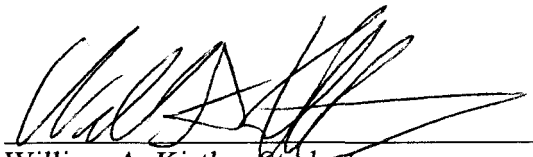
Signature



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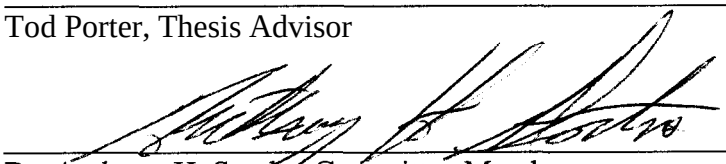

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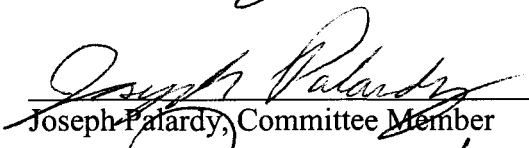

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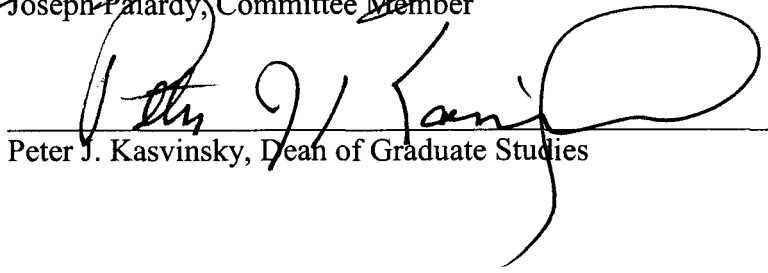

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Abstract

In this paper, I investigate the relationship between sports stadiums and the local economy. My analysis centers on the three new stadiums constructed during the 1990's in Cleveland, Ohio. Specifically, I discuss public subsidization and their inefficiencies. I then review past studies and discuss the results. In conclusion, I statistically test whether the stadiums and sports franchises have an impact on employment and wages in Cuyahoga County.

Acknowledgements

I would like to thank Dr. Stocks and Dr. Palardy for their guidance while serving on my thesis committee. I would especially like to show appreciation to Dr. Porter, my thesis advisor, for his leadership and direction. Finally, I would like to thank my parents to whom I owe everything.

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Introduction

Professional sports have a relationship with the American public that goes back for over a century. From the early days of the Yankees with stars like Babe Ruth and Lou Gerhig, baseball has been "America's Pastime." Just the same, football has been adored by its fans from Bart Starr and Jim Brown up to the stars of today. In more recent years, basketball and hockey have caught on in popularity. With the likes of Michael Jordan and Wayne Gretzky, fans flock to arenas to witness as these athletes dazzle us with their skills. This unmatched enthusiasm for professional sports and the accompanying heroes has led to a publicly funded boom in stadium construction. Industry experts estimate that more than $20 billion have been spent on new facilities for professional sports teams over the past 15 years (Rovell 2002). Public sources have contributed roughly two-thirds to the financing of these structures (LaFaive and Boles 2002). Tens of millions more dollars have been committed to more cities as teams threaten relocation.

City and state governments are continually helping to finance the construction of these new multi-million dollar stadiums. The average cost of a basketball or hockey arena is greater than $150 million. Even higher are football and baseball stadiums that come in at over $200 million. Why would local governments spend this enormous amount of money on these structures and is it economically rational to do? In this paper, the hotly debated subject of whether or not it is justifiable to subsidize these structures will be discussed and answered. The money could be used for other public facilities, such as parks, museums, schools, and theaters if it weren't spent on stadiums. For example, the same year Cleveland unsuccessfully offered $175 million to renovate

Municipal Stadium to prevent the Browns from leaving, the city closed 11 schools because of a lack of funding (Morris and Kraker 1998). Why would funding for schools be denied while stadiums continually receive the financial support? Are they moneymakers for the local government, do they add prestige to the city, or are they politically popular?

The first section will review the expenses and revenues of the 4 major sports leagues: Major League Baseball (MLB), National Football League (NFL), National Basketball Association (NBA), and National Hockey League (NHL). The second section will go into the details of subsidies, the different types of subsidies, and who supports or opposes them. In addition to the topic of subsidies, the second section will review current proposals and recently constructed sweetheart stadium deals. The third section will review past statistical studies and how professional franchises and stadiums have economically affected their cities. Finally, this paper will use Cleveland, Ohio and its boom of stadium construction as a model. A background review of the city, teams, and stadiums will be analyzed first. Cleveland will then be put under the microscope to see if it has indeed been affected economically by its sports franchises and the three new stadiums (Jacobs Field, Gund Arena, and Browns Stadium) built from 1994-1999. A statistical study will be performed on economic data to see if the city's economy has been influenced by the presence of pro sports. Has employment increased, retail sales risen and development increased with the formation of the new facilities since the late 90's? "The argument is that stadiums and sports provide economic benefits for the local economy and resulting prosperity further enhances the cities reputation. Does the image

of what stadiums and sports contribute to a municipality economy confirm to reality?" (Baade 1990).

Chapter 1-- Revenues and Expenses

As the various sports leagues have changed over the years, so have their fields, courts, and rinks. Hand in hand, the expenses and revenues of the tenants have developed throughout the past century. Before the turn of the twentieth century, facilities were built relatively inexpensively from wood. These stadiums were cheap and gave owners flexibility. In 1883 Oriole Park was built for a meager $5,000 (Danielson 1997). In contrast, Camden Yards was constructed for a meager $205 million (Cagan 1998). However, safety soon became a factor after one-third of the National League ballparks burned down in 1894. Stadiums of steel and concrete were then constructed. These facilities were a vast improvement and could also hold greater audiences. Revenues, therefore, started to increase also. At this time, the NFL could still use college or municipal stadiums so they didn't have any stadiums built until the first half of the century (Danielson 1997).

In the next fifty years the cities were changing and the present facilities were becoming obsolete. Seating, for example, was limited and uncomfortable. The seats were unpleasant because of the steel beams in the spectator's view. These ancient parks were also hard to clean and maintain. Also, because these facilities were erected around mass transit such as subways and trains, it was an inconvenience to attend when arriving by automobile. For example, Ebbets Field in Brooklyn, New York only possessed 300 parking places for 20,000 seats (Danielson 1997). Contributing to a need for new stadiums was also the demographic changing in cities. As people had to walk to their automobiles they had to go through some impoverished neighborhoods. Safety concerns were then examined as the upper class didn't want to attend. So comfort, accessibility,

and safety were starting to lead to new facilities during this time. The trend now was to use a large amount of money to attract moving teams, obtain expansion teams, replace obsolete parks, and modernize aging facilities.

In the 1970's, many parks were built to satisfy the needs for many new stadiums. Millions were spent on facilities, dubbed cookie-cutter stadiums, in San Diego, Philadelphia, Pittsburgh, St. Louis, Cincinnati, New York, and others. A quarter of a century later, these "new" parks were again being called obsolete; not physically obsolete, but economically out of date. The modem boom in stadium construction was born. Structures built in the 1990's not only have playing fields but hotels, restaurants, malls, and even swimming pools. This new round of construction has put a never seen before twist on revenues and expenses.

Revenues

Revenue from professional sports is currently assembled from rent, concessions, parking, advertising, broadcasting, personal seat licenses (PSLs), luxury boxes, merchandising, gate receipts, and naming rights. The broadcasting and gate receipts were previously the primary factors of revenue. In the modern era, luxury boxes, PSLs, and naming rights have drastically added to the revenue stream. The following ten points provide more detail on the different factors of revenue:

- Revenue from rent is what the team using the facility pays for its use. Additionally, any other outside events that are scheduled for entertainment. Arenas are used much more often than stadiums. They can be used for concerts,

trade shows, etc. These structures usually have two primary residents that coincide quite well in basketball and hockey teams.

- With more parking available to hold larger capacities today, parking can now generate a generous amount of revenue. Parking costs can usually quite large and noticeable, but the options are limited. Where else can you park when attending a game?
- Concessions have also changed from the earlier decades. Each city seems to have local or regional specialties for sale at the ballpark. Pro Player Stadium in Miami has a latino taste for the South Florida fans with beans and rice. Baltimore has Crown Royal and crab cakes sharing the menu with hot dogs and beer. Owner Art Modell said "let them eat cake!" but in the end he is reaping the rewards. In San Francisco, sushi is a common dinner item (Grau 1998). The commercial licensing agreement between the vendor and team can be paid in money up front or as a percentage of sales, usually a combination of both. The money collected by teams in concessions and parking are not shared with other teams in the league. This is true for all four of the major sports leagues.
- Merchandising, different than of parking and concessions, is shared between teams in all four leagues. This form of revenue has had tremendous growth as seen with gross sales reaching $6.5 billion in 1992 (Danielson 1997).
- Advertising has also caught on in today's parks. Not until recently have we ever viewed advertising on the walls and throughout the parks. Teams that move into new stadiums see advertising revenue increase by 250% (Grau 1998).

- Like merchandising, ticket receipts are shared among the teams in baseball and football. In football, the home team receives 60% of the revenue while the visitors collect the remaining 40%. In baseball, the National league gives the visitor 50% of the gate receipts. The American league, on the other hand, only gives the visitor 20% (Danielson 1997). Although attendance is at an all time high, it seems to have reached its maximum. Since only so many decent seats can be put in stadiums, it appears that sports teams may have approached the maximum revenue that can be gained from this form. Nevertheless, the prices can always creep higher.
- The revenue from broadcasting can be split into local and national. Local broadcasting revenue is not shared among any the teams in any of the leagues. This can, and does, lead to a great disparity between the large and small markets. The New York Yankees received $56.7 million in 2001 compared to $536,000 for the Montreal Expos (USAToday.com 2001).
- Personal seat licenses (PSLs) are relatively new to the revenue stream. They give the fan a right to buy a season ticket or other special seating. The Dallas Cowboys first did this in 1968 when they introduced PSLs ranging from $300 to $1000 per seat. The Carolina Panthers implemented the form we know today. The team raised $150 million in 1993 through PSLs (Noll and Zimbalist 1997). They raised from $600 to $5,400 per seat, and now all clubs hotly seek this form of revenue.
- Luxury seating, which includes special skyboxes or club seating, is also relatively new to this industry. This gives the fans better views, preferred parking,

indoor/outdoor options, and higher quality food and services. The New York Knicks receive $250,000-300,000 for 89 luxury suites and $110 for 2,600 club seats (Noll and Zimbalist 1997). These upper class seats definitely are a source of revenue not to be overlooked. With these expensive seats, the average fan buying the common seats means less and less to the teams looking for profit

- Another new phenomenon in the stadium game is naming rights. Corporations pay millions of dollars to name or rename facilities. Reliant Energy will pay the NFL's Houston Texans $10 million over the next 30 years. Hockey's Atlanta Thrashers will receive $9.3 million until 2019 from Royal Phillips Electronics (ESPN.com 2002).

Expenses

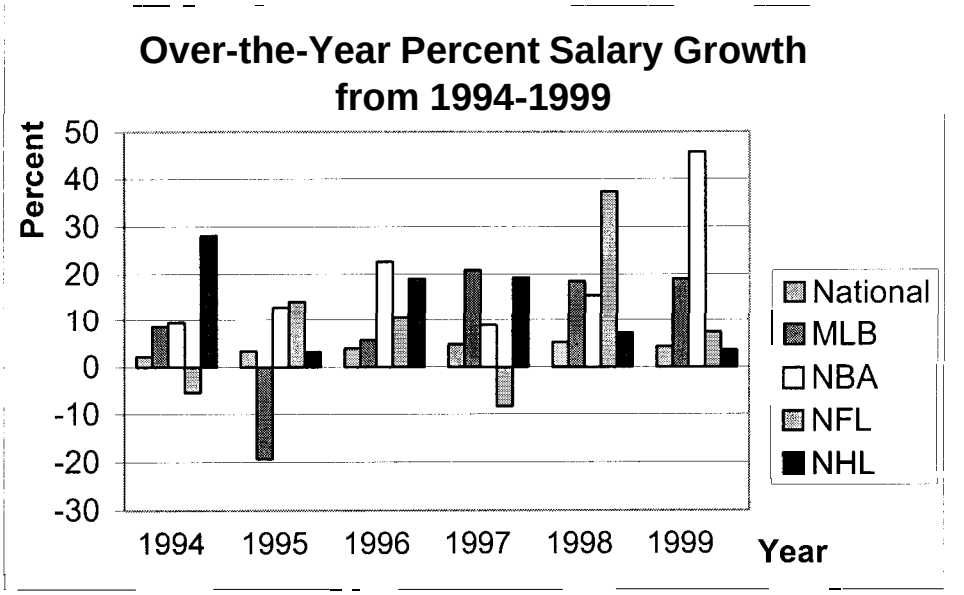
Franchises face expenses like infrastructure, construction (if getting a new stadium), utilities, insurance, wages, and maintenance and repair. These are the same basic expenses as decades ago, but they have been altered entirely. The following six points provide more detail on the various franchise expenses:

- Insurance and utilities have not changed dramatically. These are a small part of expenses for the modem ballparks.
- Infrastructure is the cost of roads, subways, and other like costs that go along with that of a stadium. Cleveland spent $145 million on infrastructure to the Gateway area (basketball and baseball) from 1994-1999 (Rovell 2002).
- The actual cost of building the stadiums has skyrocketed over the last few decades. Cincinnati put forth $297 million to Paul Brown Stadium (football) in

2000 (Munsey and Suppes 2002). This is compared to Cinergy Field (baseball and football), formerly known as Riverfront Stadium, which was constructed in 1970 for $44 million.

- Although not as large, refurbishing an aging stadium can be enormous also. In 1996 San Diego received $76 million worth of improvements to Qualcom Stadium (baseball) (Cagan 1998).
- Since the cost of these structures is increasing rapidly so are the debt costs. As costs reach $500-700 million, the debt has to be a concern and also factored in as whether to build.
- Player compensation in the professional sports world is a mind-boggling expense. By the 1999 season average salaries were $3.5 million in basketball, $1.7 million in baseball, $1.2 million in hockey, and $1.1 million in football. From 1993 to 1999 the compounded percent change has been 177.4% in NBA, 61.5% in the NFL, 108.8% in the NHL, and 57.9% in MLB (SportsFanInAction.com 1997). The recent contracts that have been signed are almost unbelievable. In 1997, Kevin Garnett signed a $126 million deal with the Minnesota Timbenvolves (Patrick 2002). Dovovan McNabb recently signed a contract for $115 million over 12 years with the Philadelphia Eagles (ESPN.com 2002). Not to be outdone is baseball's Alex Rodriguez, the Texas Rangers signed the shortstop for ten-years at a record $252 million (USAToday.com 2000). Chart 1 shows over-the-year percent salary growth from 1994-1999 which compares MLB, NBA, NFL, NHL, and National. The growth of all US workers (National), which is usually around 3%, grows at a much slower rate than the 4 major professional sports leagues.

Chart 1



Source: Sports Fan In Action (Sports) and BLS (National)

The sports world has seen revenues and expenses reach a level that was never imagined. The days of "Mom and Pop" owned franchises are long gone. It appears that the industry is now a faint resemblance of its past, and the stadium situation is the perfect example.

Chapter 2-- Stadium Subsidies- Efficiency and Fund Generation

It has been shown in Chapter 1 how expenses and revenues have changed throughout the years. These changes in the sports industry have led to a focus on new subsidized stadiums and arenas. Only the extravagant new structures with Personal Seat Licenses, luxury boxes and naming rights can produce the revenue that is desired. But exactly how do these subsidies affect the industry?

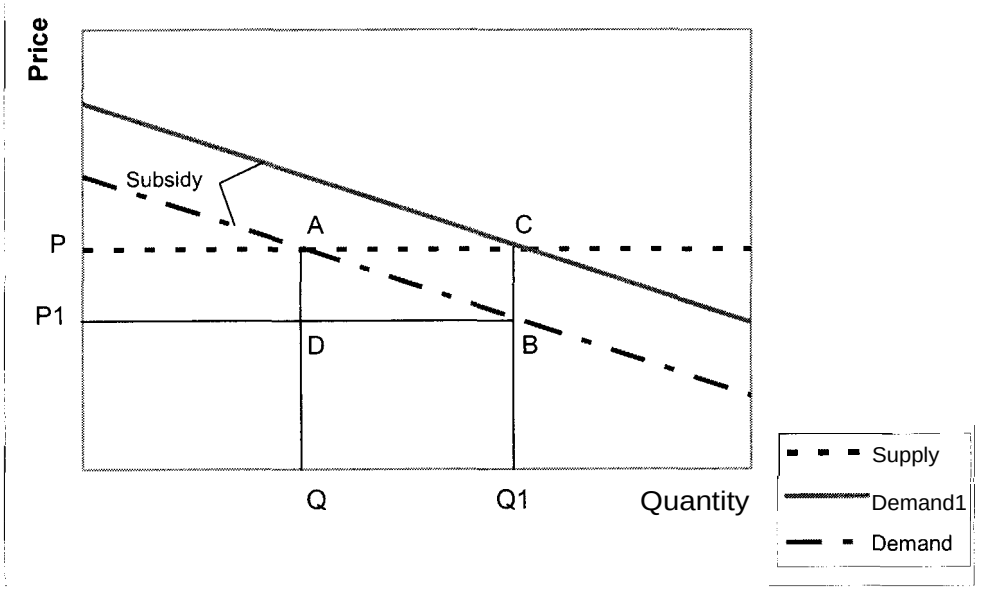
Effects and Efficiency

A subsidy is a payment from the government, whether if federal, state,-or local, that lowers the price or cost of some economic activity to individuals or businesses. Some well known examples are food stamps, low interest mortgage, subsidized private education, and even Medicaid. Although these topics may seem vastly different, they are strikingly similar to subsidized stadiums. For example, each one has a targeted group, whether it's low income families or professional sport team owners. Each also receives a good, food or stadiums, at lowered prices from the government.

Let's assume the government gives a subsidy of $S per unit consumed or sold in a market. We shall say the supply is perfectly elastic and the price is therefore determined in some larger market. The subsidy can be examined by either adjusting the supply or demand. In the case of the stadium subsidy, the cost is altered for the consumer and not the producer. Therefore, we see the demand line being adjusted. In Chart 2, when the government offers a subsidy it will shift the demand upward from Demand to Demandl. Benefits of a subsidy are shared between the producer and the consumer. In the case of

perfectly elastic supply, the price is set and the whole subsidy is enjoyed by the consumer.

Chart 2



Besides the obvious direct amount of the subsidy, there is also an efficiency cost involved. The magnitude of the benefit gained by original consumers can be viewed graphically as PADP1. The gain by new consumers is ADB. So the benefit gained by all consumers is PABP1. The amount of the subsidy paid, on the other hand, is PCBP1. The difference between the gain from the subsidy, PABP1, and the cost of the subsidy, PCBP1, is the triangle ABC. This represents the efficiency cost or excess burden of the subsidy (Fisher 1996).

For each unit from Q to Q1, the supply (marginal social cost) is greater than the demand (marginal social benefit). The subsidy makes it appear as if the commodity,

stadiums in this case, is cheaper than it actually is. Thus, society ends up allocating too many resources to this consumption and production.

Therefore, we can assume that without the millions of dollars that the government pours into sports facilities these structures would not be built. The subsidies lower the cost to build stadiums for the franchise owner and the quantity demanded is being inflated. Ultimately, we can assume that the quantity of facilities would be in much less demand without the market altering price by the public subsidy.

Many other alternatives are available besides the construction of stadiums. A select section of the community gains from these structures and they are displacing the consumption of other public goods. For the millions of dollars invested in stadiums, many parks and museums could be built along with providing better school systems and health care.

Fund Generation

Before a stadium is to be constructed many issues must be evaluated. The most important issue how to raise the money and whom to collect it from. The obvious choice would be for the facility to be privately financed like the Bradley Center in Milwaukee, but this has become far from reality in most cases. The next best scenario would be for the government to secure future revenues as a result of the new stadium. This could include, but not be limited to, luxury box revenue, naming rights, seating rights and other facility event revenue. This is often achieved by state, county or city issued bonds that are backed by such future revenues. Pro Player stadium, home of the Miami dolphins,

cost $115 million and 90% was funded with money from luxury boxes and clubhouse seats (Chapin and Anderson 2002).

If a stadium can't be negotiated to be paid with private funds or from future revenues streams then a subsidy is the only way to secure the building. The subsidy money must be generated by a tax of some sort.

A quick glance at some of the most common ways that governments raise money for a stadium subsidy:

- A ticket tax would seem to be the best sort of tax to raise money for a new stadium. The group being taxed would match up well with the group being rewarded with a new stadium. A 5% admission tax was incorporated into ticket prices at Safeco Field in Seattle which was built in 1999 (Chapin and Anderson 2002).
- Sales taxes are a major source of generating funds for new sports facilities. Allegheny County, Pennsylvania passed a 1% sales tax for the building of Heinz Field for the Pittsburgh Steelers. In Colorado, a one-tenth of 1% sales tax was levied within six counties to generate money for the Colorado Rockies' Coors Field (Chapin and Anderson 2002).
- Car Rental taxes are also quite common in this stadium subsidy game. Atlanta passed a 3% car rental tax for the Hawk's Philips Arena while the Mavericks and Stars will receive a subsidy from a 5% car rental tax in Dallas.
- Like the car rental tax levied on out of towners, a hotel tax is another option. The Atlanta Falcons benefit from a 7% hotel tax in Fulton County.

- The 'sin tax' is a tax levied on such items as beer, liquor and cigarettes. The Gateway Economic Development Corporation issues $117 million in bonds backed by a Cuyahoga County tax on alcohol ($3/gallon on liquor, 16 cents/gallon on beer) and cigarettes (4.5 cents per pack).
- Seattle will put forth $127 million for Seahawks stadium from sports related lottery games. Baltimore has done the same for Camden yards for $197 million.
- The Alamodome in San Antonio was partially built with a local mass transit tax.
- Safeco Field in Seattle was partially financed with a sales tax directed at food and beverages in King County restaurants, bars, and taverns.
- Not to be overlooked are tax-exempt bonds and the donation of land to teams. These subsidies are not as noticeable but are indeed quite costly. Assuming a $225 million new stadium, tax-exempt bonds can lead to a federal tax subsidy as high as $75 million over its lifetime (Bast 1998).

Taxes, like subsidies, can result in an efficiency cost. The efficiency cost of a tax does not arise from the funds being shifted to the government; these government goods and services can have value and benefits. The cost appears because the only way to legally avoid a tax is to change your behavior. The efficiency loss comes because individuals and businesses change their behavior and consume different goods after the tax. Society is moved to a less efficient welfare position when the economy is consuming less desirable goods and supplying different amounts of factors of production than it would in the absence of a tax.

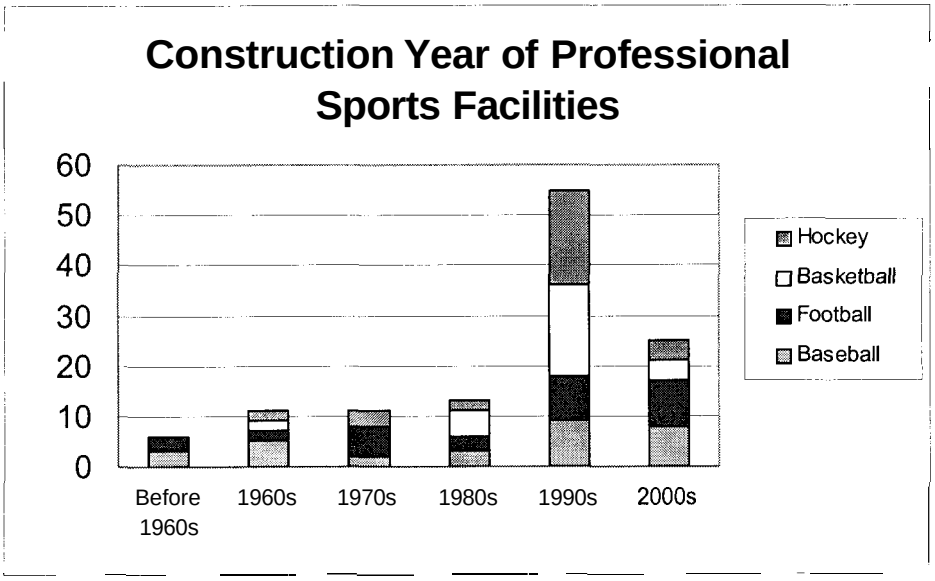
The subsidy process begins inefficiently by accumulating funds that are generated with taxes that alter individual's choices. The demand for hotels, car rentals, alcohol

and other goods is altered by their respective taxes. Then it continues with an efficiency cost when the subsidy makes it appear as if the commodity, stadiums in this case, are cheaper than they actually are.

Chapter 3-- Opposition, Support, and Current Stadium Situations

The professional sports industry has seen an unbelievable boom in stadiums beginning in the 1990s. Fifty-five facilities were built in the 90s with hockey and basketball getting 19 and 18, respectively. The new century has not altered the construction. The number of new facilities, including ones with definite plans, has already reached twenty-five. So as this stadium crazed era continues, who is supporting or opposing these stadiums and arenas, and what is their reasoning?

Chart 3



Source: National Sports Law Institute of Marquette University

Owners and players appear to be the main groups that profit from new stadiums. The owners obviously gain from receiving the subsidized facility that will give their revenue stream a substantial boost. Eli Jacobs bought the Baltimore Orioles in 1989 for $70 million and was able to sell in four years for $173 million. This 150% appreciation was largely due to Maryland building a $200 million stadium at the public's expense

(Bast 1998). The players also get to go to work in a state of the art facility. Not only do they get extravagant locker rooms and weight rooms, but they also get hefty raises as displayed in Chart 1. The taxpayer subsidized stadiums have made player salaries much higher than they otherwise would be. The undeserved income differential between the average worker and professional player agitates even rational adults that support the American way of life.

The fans attending these games would also seem to get additional gains from a new facility. The rabid fans can only picture their team signing big stars, fun times at a new park, and their team going for a title. The associated costs and how the money will be raised are far from their thoughts. Local business owners that directly profit by seeing increased business for themselves also openly support the subsidization. A restaurant or pub owner across from a proposed stadium sight would certainly think this was a good investment for the city.

Local unions that have high stakes at risk also support the construction. These groups and workers see a long project and certain gains for their respective group. Similarly, local government groups come out to support sports stadiums in full force. Over and over mayors view stadiums as a way to rejuvenate the city and perhaps lead to their re-election. The favorable press coverage and campaign contributions from pro-stadium groups are very enticing when election time is rapidly approaching.

The local media is sure to be on the side of stadium subsidies also. Their circulation or ratings is bound to be improved by the presence of a sports team. The new stadiums, big name players, and playoff runs that are often associated with new facilities are strongly craved by the media also. *Crain's Cleveland Business* published six pro-

Gateway articles and opinion essays in four consecutive issues while leading up to the stadium vote (Bast 1998).

The list of anti-subsidy groups is not quite as developed and lengthy as its counterpart. But as the typical sports facility costs local taxpayers more than $10 million per year, there are certain to be some opponents (Bast 1998). First, the majority of taxpayers that are informed correctly and completely are usually against the subsidies. Although this group is almost always not as informed and involved as they could be. Some devoted fans may even be anti-subsidy as they may have a soft spot in their heart for the current stadium. Lastly, advocates for other government programs will be against the sports subsidy. They would rather have the money spent on other welfare choices such as schools or low priced housing.

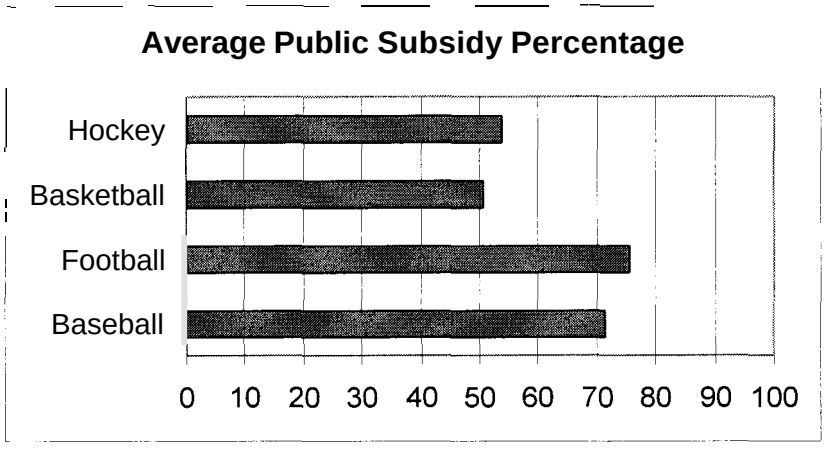
The pro-subsidy groups have come up with numerous reasons why each subsidy should be passed. They begin by arguing that the stadium will create new jobs and business, increased spending and an increase personal income for the area. They say that a 'multiplier effect' takes place. This is where the newly created number of jobs leads to new salaries; these salaries are then spent in the community, resulting in a greater demand for goods. This leads to a second round of jobs, salaries and demand for goods and services. The pro-stadium group also uses the claim of increased real estate value, more tourism, and overall increase in well-being that can't be measured.

Groups against the stadium argue that the jobs that are created are part-time and low paying such as parking cars and selling concessions. These are not the kind of jobs that lead to economic growth for a city or region. Very few skilled jobs and businesses are believed to be gained from a new stadium. Robert Baade suggests "that growth in the

number of low-skilled jobs tends to follow the creation of higher paying jobs, not the other way around" (Bast 1998). Next, the increase in salaries is then said to be spent outside of the area. Owners and players rarely live in the city that they play in and get paid by. These millions of dollars in revenue are not really reinvested in the community. Also, this group may ask "why would it be beneficial to help making the salary inequality even greater between the average worker and the players?" The subsidies generate more money, and then prompt even high salaries for the over priced players. Businesses will also have a hard time competing with a subsidized sports team. Local movie theaters, bowling alleys, and museums must pay more for advertising and input goods to compete. This leads to "opportunity cost' which is the value of the next best alternative use of the resources. How can it be known that we wouldn't be better off with the money put towards museums, schools, health club or parks?

The anti-stadium activists have a huge difficulty in getting these thoughts across to the taxpayers and voters. As displayed in Chart 4, every sport league sees the majority of its stadiums financed by the public.

Chart 4



Source: National Sports Law Institute of Marquette University

Football is the highest with 75% publicly financed followed by baseball (72%), hockey (51%) and basketball (51%).

Each member of this group faces a minor financial loss or little net gain with the outcome of the voting. Subsidy opponents rarely raise much money for public relations. In contrast, pro-stadium individuals, such as owners and players, have much more to gain or lose. The situation in Seattle that saw voters debating on a $240 million subsidy is the common example. Over $1.5 million was raised to help campaign for the subsidy while only about $50,000 was raised to oppose it (Bast 1998). Even if the attempt at a subsidy does fail, it keeps popping up on ballots until it passes. (See Table 1 in the Appendix for a complete list of the current stadiums, cost, and percent paid by the public.)

Chapter 4-- Past Statistical Findings

It has been shown in recent years that professional sports franchises have used their leverage and threats to demand, and usually acquire, new sports stadiums. With the flood of new stadiums has been an accompanying interest in how these franchises and structures affect the local economies. Do the franchises and facilities increase employment, raise real wages, and revitalize a district like the supporter's claim? Many studies have been performed in recent years to see exactly what the empirical data suggests. In the following chapter, models that used regression analysis will be the focus of discussion. Have the past statistical studies found sports variables to be insignificant or significant, and positively or negatively affiliated? (See Table 2 in the appendix for a detailed review of the past studies.)

Robert Baade and Richard Dye (1988) performed the first study, *An Analysis of the Economic Rationale for Public Subsidization of Sports Stadiums.* The manufacturing sector is evaluated to see whether stadium supporters' claims that professional sports and stadiums attract non-stadium-related businesses are valid. Since stadium supporters argue that sports function as a springboard for other businesses and through the multiplier effect increase local manufacturing activity, Baade and Dye thought a study on the manufacturing sector was necessary. Eight SMSAs including Buffalo, Cincinnati, Denver, Miami, New Orleans, San Diego, Seattle and Tampa Bay are used from 1965-1978. Three manufacturing measures are used as dependent variables, which include manufacturing employment (EMP), manufacturing value added (VA), and capital expenditures (CAP). Cyclical and multi-state region events are controlled by having each dependent variable measured as a percent of the multi-state region. The independent

sports variables include STAD, FOOT, and BASE. The population (POP) of the SMSA as a percent of the region is added along with a trend variable (TREND) to capture secular changes.

In summary, the three equations are estimated for each of the eight SMSAs:

1. EMP= f(POP, TREND, STAD, FOOT, BASE)
2. VA= g(POP, TREND, STAD, FOOT, BASE)
3. CAP= h(POP, TREND, STAD, FOOT, BASE)

When the equations were first estimated, there was a problem with the Durbin-Watson statistic. This means that there was a strong presence of autocorrelated error terms. The Cochrane-Orcutt method was then performed to correct for this problem.

Of the thirty-six possible sports variables, five were seen to be significant. Four measured positive at the 10 percent significance level and one was negatively significant (the critical t-value used was 1.86). FOOT was found to be significant two times. In Cincinnati, it was positively associated with CAP with a t-statistic of 2.26. But in New Orleans, FOOT was negative and significantly correlated with EMP (t-statistic -2.74). San Diego was the city that seemed to be unique in this model. BASE is positively correlated with CAP with a strong t-statistic of 3.24. Also, San Diego was the only city with positively significant STAD results. Both EMP (2.15) and CAP (2.66) were positively associated with Jack Murphy Stadium.

The sports related variables were not important in explaining the three manufacturing variables. This is verified by having sixteen of the twenty-four adjusted correlation coefficients less than .50. This shows that less than half of the manufacturing activity is explained by the independent variables included.

Although a few cases were significant, the overall results fail to show a statistically significant link between sports franchises and stadiums and the manufacturing sector. Stadium supporters' claim of a multiplier effect appears to have holes as the manufacturing sector failed to be positively affiliated with stadiums. Public subsidation of stadiums surely wouldn't be supported from this study by Baade and Dye.

Baade and Dye (1990) also performed the next study, *The Impact of Stadiums and Professional Sports on Metropolitan Area Development.* In this study, stadiums and sports teams were analyzed to see the effects they have on SMSA personal income and retail sales. The dependent variables are: SMSA real aggregate personal income (Y), SMSA real aggregate personal income as a fraction of appropriate region (Y/Yr), SMSA retail sales (RETAIL), SMSA retail sales as a fraction of the corresponding region (RETAIL/RETAILr). Nine SMSAs are included in the study (Cincinnati, Denver, Detroit, Kansas City, New Orleans, Pittsburgh, San Diego, Seattle and Tampa Bay) from 1965-1983. The independent variables are POP, STAD, FOOT, BASE, and TREND. POP/POPr is substituted for POP when the SMSA is being looked at as a fraction of the multi-state region. The population (POP or POP/POPr) and time trend (TREND) are both again added to control general influences.

In summary, the following four equations are estimated:

1. Y= f(POP, STAD, FOOT, BASE, TREND)
2. Y/Yr= g(POP/POPr, STAD, FOOT, BASE, TREND)

3. RETAIL= h(POP, STAD, FOOT, BASE, TREND)
4. RETAIL/RETAILr= i(POP/POPr, STAD, FOOT, BASE, TREND)

In equation 1, when real aggregate personal income (Y) was regressed on the independent variables (equation 1), only one variable was determined to be significant at

the 10 percent level (critical t-value 1.771). The impact of gaining a baseball (BASE) or football (FOOT) franchise for all SMSAs is insignificant. The stadium variable is insignificant in all but one SMSA. Seattle has a significantly positive correlation between STAD and Y with a t-statistic of 4.56. When the SMSA data are pooled, the results showed stadiums were not significance while the FOOT variable was significantly negative (-1.67) and the BASE variable was significantly positive (1.74). This was rationalized with the differing amount of home games between baseball and football, eight and eighty-one respectively.

This second set of results use Y/Yr as the dependent variable. This is similar to the first equation except for SMSA real aggregate personal income is now examined relative to its region's. Seven of the variables involved show up as significant with six being STAD variables and one being FOOT. When compared to the critical t-value of 1.771, Cincinnati (-1.77), Detroit (-2.05), Kansas City (-2.82), and Tampa Bay (-4.44) are all significantly negative. New Orleans (2.72) and Seattle (4.71) are positively significant. New Orleans' positive STAD variable is, however, offset by a significantly negative FOOT variable (-2.03). When the data are pooled, the results show STAD being negatively significant (-2.29) and BASE being positively significant (1.71).

The relationship test between sports variables and retail sales is performed differently than the sports and income variables. Since retail sales were only published every five years, there are only four years for each of the nine SMSAs. This led to a shortage of degrees of freedom when separate dummy variables were used for each SMSA. A single scale variable was then assigned the value for the area dummy from the income regression. The pooled results for RETAIL as the dependent variable show all

three sports variables as insignificant. When retail sales as a fraction of the region (RETAIL/RETAILr) was pooled and run against the sports variables, STAD showed up to be significantly negative. BASE is insignificant in this case, while FOOT, in a twist from the previous results, shows up as positively significant.

Overall, the results for this model show that sports teams and stadiums have no effect, and perhaps even a negative effect, on income and retail sales for a SMSA. The findings slightly changed depending on the independent variable, but a positive link was not consistently shown.

Stadiums, Professional Sports, and Economic Development: Assessing-the Reality by Baade (1994) is the third model examined. Thirty-six MSAs were chosen that all had a professional sports team from one of the four major leagues. Twelve MSAs were also included that didn't have a professional team to broaden the study and bring the total to forty-eight. These cities were studied from 1958-1987 to see whether the presence of pro sports (NT) or pro stadiums (NS) effected the growth of real per capita personal income (Y) in the MSA and the region. The real per capita personal income figures were compared to the other cities in the sample and to its own growth history.

In summary, the following equation is estimated:

1. $Y = f(NT, NS)$

Of the forty-eight MSAs, thirty-two had a change in the number of sports teams. When measured at the 5 percent significance level, thirty of the thirty-two showed no significant relationship between professional sports teams and real per capita personal income growth. In the remaining two cases, sports teams were seen to be positively and negatively significant once. Indianapolis was positively related and had a t-statistic of

2.15 (critical t-value is 1.9). Baltimore was negatively significant with a -2.79 t-statistic. When evaluating the stadiums coefficient, thirty MSAs a change in the number of arenas or stadiums that were less than 10 years old. Twenty-seven of these had no significant relationship with real per capita personal income. The three remaining cases all saw pro sports stadiums have a significantly negative impact on the dependent variable Y. St. Louis (-3.14), Washington, D.C. (-2.11), and San Francisco/Oakland (-1.94) were the cities with a negative significant level. The stadium coefficient estimates that a new stadium or arena reduces real per capita personal income growth by $101.1 in St. Louis up to a reduction of $204 in Washington, D.C. Although not all were significant, 63% of the stadium coefficients were negative. This would seem to support Baade's claims that employment created by stadium activity is seasonal, unskilled, and low paying

The amount of real per capita personal income growth explained by the sports variables was seen to be quite low. The highest level was Seattle with .33 of the dependent variable being explained.

Of the eight regions, no region showed a significant relationship when the impact of sports teams was tested on regional real per capita income. Sports stadiums, however, showed a strong link with four of the regions tested positively. The Far West (-2.37) and New England (-1.82) both were negatively significant. The Rocky Mountain (2.07) and Southwest (2.88), in contrast, were positively related. While regions and stadiums are seen to be positively correlated more often than the MSAs, the amount explained by the independent variables is even lower. The highest amount of Y explained by NT and NS was .05 in the Southwest region.

This results of this study are similar to Baade's others. He showed through regression analysis that sports teams and their stadiums are not consistently going to raise real personal income. Therefore, the use of public funds for the construction is not in the best interest of the general public.

Robert Baade (1997) along with Allen Sanderson also performed *The Employment Effect of Teams and Sports Facilities from Sports, Jobs, and Taxes.* Jobs generated by professional sports are believed to be highly concentrated in the nonmanufacturing sector with estimates as high as 98 percent. The majority of this nonmanufacturing employment is located in "trade" and "services." Baade and Sanderson examine to see how sports teams and stadiums affect employment in the amusement and recreation industry (SIC 79) and the commercial sports industry (SIC 794). Ten MSAs including Cincinnati, Denver, Detroit, Kansas City, Minneapolis, New Orleans, Pittsburgh, San Diego, Seattle, and Tampa Bay are used from 1958 through 1993.

The dependent variable, CE/SE, is the city's share of state employment in SIC 79 or SIC 794. Defining the dependent variable as a fraction of the state employment will factor out any general trend that affects both the city and state. In other words, the business cycle effects will be accounted for and there is no need to specify those variables. The independent variables include: CRPCY/SRPCPY- ratio of city real per capita income to the state's, CPOP/SPOP- city's share of state population, CAWW/SAWW- ratio of hours worked per week in durable goods sector in city relative to state, NT- number of professional sports teams, and NS- number of new stadiums or arenas that are 11 years old or less. The novelty effect of a stadium varies from city to

city. Therefore, the exact amount of years that a stadium was considered new depended on the specific city (this varied between seven and eleven).

In summary, the following equation is estimated:

1. CE/SE= f(CRPCY/SRPCPY, CAWW/SAWW, CPOP/SPOP, NT, NS, TREND)

When the model is tested on the amusement and recreation industry (SIC 79), three variables were found to be positively significant as well as three being negatively significant. The team variable, NT, was positively significant for Denver, Kansas City, and San Diego at the 5 percent level. NT was negatively significant for Seattle at the 1 percent significance level. The stadium dependent variable, NS, was significant and negatively associated with Minneapolis and Pittsburgh at the 1 percent level. When the model was run using commercial sports, SIC 794, as the dependent variable only three times were sports variables found significant. Kansas City had a significantly positive relationship with the team variable, NT, at the 1 percent level. Pittsburgh and Tampa Bay had a significantly negative relationship between commercial sports employment and the stadium variable. Pittsburgh was significant at the 1 percent level while Tampa Bay was at the 5 percent level.

Overall, the sports variables were significant in nine cases with four being positive and five negative. The team variable was positive four times and negative only once. In contrast, the stadium variable was found to be negative in four cases. It is also interesting that all of the positive sports variables were in cities that were located west of the Mississippi river. This could be true because western cities are more isolated and, therefore, more likely to have a regional following of fans. In this model, the sports

variable helped to explain a fair amount of the independent variables. Thirteen of the twenty adjusted correlation coefficients were above .50.

These results on nonmanufacturing employment by Baade follow the findings in his other studies. There is not a consistently positive relationship between sports variables and the amusement and recreation industry or commercial sports industry.

The next study, *Non-Financial Data and Analysis* from The Sports Stadium as a Municipal Investment, is performed by Dean Baim (1994). He uses regression analysis to see whether professional sports have an effect on service employment, non-agricultural employment, and crime. Numerous cities were evaluated from 1958 through 1984 with the exact years depending on the specific city and dependent variable. The dependent variables are service employment (SerEmp), non-agriculture employment (NonAgEMP), Crime Index (Crime). The relevant sport variables are FOOT and BASE which are dummy variables that represent the presence of pro baseball or football teams. The population variable, POP, is also added.

In summary, the following equations are estimated:

1. SerEmp= f(POP, FOOT, BASE)
2. NonAgEmp= g(POP, FOOT, BASE)
3. Crime= h(POP, FOOT, BASE)

In this study, the cities are not each run separately to determine the sports variables effects on the dependent variables. The cities are grouped together by population. The results are given for six different population categories, which include the following:

> 500,000
> 750,000
> 1,000,000
> 2,000,000

> 3,000,000
All

The service sector is often considered to possibly have a strong link between professional sports and employment. The results show that FOOT and BASE are both positively significant when tested for a relationship with SerEmp. When tested at the 5 percent significance level, only FOOT > 500,000 shows up insignificant. All the other eleven sports variables have positively significant results. The r-squared coefficient is also very strong with all six being .85 or higher. Thus, it is seen that the presence of professional football and baseball have an extremely positive effect on service employment.

The non-agricultural results also show a positive relationship with the sports variables. FOOT was seen to be positively significant in the cities less than two million, three million, and all. BASE was significantly positive in all categories. Baim claims that "this is more or less a result of baseball's long and continuous summer schedule." These results would definitely support the claim that baseball has a positive effect on non-agricultural employment in all types of cities.

Crime and the presence of sports teams have a visible positive relationship. Positive meaning a negative impact on the city, where as the independent variable increases and so does the dependent variable crime. For example, the presence of a football stadium tends to lead to more crime. Football and crime get a stronger statistical significance level up to cities of 1,000,000 where then it starts to decrease. All of the FOOT categories are positively significant except for the last category where all data points are included. Baseball shows higher t-values up to cities of 750,000 and then starts to decrease. Baseball is only positively significant in cities under 750,000 and

when the regression is run with 'all' cities. The correlation coefficient shows that the independent variables explain a fair amount of crime. Five out of the six categories explain more than 56% of crime. Although the sports variables have a strong link with the crime index, it appears that the POP variable also explains a lot. The t-statistics show a strong and continually growing association between the two variables.

The overall results by Baim show that the presence of a football and baseball team has a very strong and positive effect on service and non-agricultural employment. Crime is shown to increase with a team present but population is the key driving force and not the sports variables. These conclusions are in sharp contrast to all the results by Baade. Baim's results would support the public subsidy for professional sports since the gain in employment is so large.

The Growth Effects of Sport Franchises, Stadia, and Arenas is the first of two articles by Dennis Coates and Brad R. Humphreys (1999). The entry and exit of professional sports teams, stadium construction, and other sports variables are used to determine whether they affect real per capita personal income and growth in real per capita personal income. Three of the four major sports leagues (MLB, NFL, NBA) are examined in thirty-seven SMSAs from 1969-1994.

Two types of methodologies are performed which include a) entry and exit study and b) event study. The entry and exit study relates the dependent variables to economic and business variables for that year and to a vector of stadia and franchise variables. Population is not used as an explanatory variable because of the multicollinearity issue that would arise with the trend term. This study eliminates any national effects and for a given year generates SMSA specific results. In general, the level of income or growth in

income "is determined by time- and location-specific events and circumstances regarding sports franchise and stadia" (Coates and Humphreys 1999). The event study uses the sports variable as a means of explaining why a certain city varies from the average. This study uses the average level of income (growth in average income) as an explanatory variable. This allows the data to determine the relationship between the level of per capita income in the SMSA and the average level of real per capita income. This means that the average income is the same for all SMSAs for each given year. Thus, no year specific or city specific variables can be used because of the collinear association with average real per capita income (growth in average real per capita income). The authors stated that they place more confidence in the exit and entry study. Coates and Humphreys believed that the event study placed too much emphasis on the average level of real per capita income. The exit and entry study will, therefore, be stressed in this paper also. Both studies examine single and multiple entry and exit cases. The single entry and exit allows for effects each time a franchise comes and goes. The multiple entry and exit forces an equal effect on each event.

In the entry and exit study, ECON is the collection of business variables that describe real per capita income (RPCPI) and growth in real per capita income (GRPCPI). SPORT consists of numerous variables that capture the effects of stadia and franchises on the dependent variables (See Table 2 for the detailed list of Sports variables). In the event study, PCIBAR is the average level of income for the thirty-seven SMSAs. EVENT is the dummy variable indicating the occurrence of varying events.

In summary, these four equations are estimated:

Entry and Exit Study

1. RPCPI= f(ECON, SPORT, TREND)

2. GRPCPI= g(ECON, SPORT, TREND)

Event Study

3. RPCPI= h(PCIBAR, EVENT, TREND)
4. GRPCPI= i(PCIBAR, EVENT, TREND)

When looking at the results for the entry and exit model, only four sports variables were significant when tested on real per capita personal income. Baseball stadium capacity and capacity squared, basketball arena construction, and basketball franchise entrance were significant at the 5 percent level. Baseball stadium capacity and basketball franchise entrance were positive while capacity squared and basketball arena construction was negative. The positive gain on income from the basketball entrance is actually swallowed back by the negative influence from the arena construction. Three of the four construction variables are negative and each of them has a stronger t-statistics than the positive variable (football). The correlation coefficient of 99% shows a very high amount of RPCPI is determined by the independent variables. No sports variables are even close to being significant for growth in real per capita personal income.

The conclusion by Coates and Humphreys is one that is becoming quite familiar. They have shown again that the professional sports industry is not spurring the economy like the sports proponents have stated. The relationship between the growth rate of real income and stadiums and franchises is insignificant and the association for level of real income is negative.

The Effect of Professional Sports on the Earnings of Individuals: Evidence from Microeconomic Data is the second study by Coates and Humphreys (2002). Thirty-seven cities are examined from 1977-1998 to see if sports and stadiums (NFL, MLB, and NBA) have an effect on real average weekly wages. Sports and stadium supporters often claim

that the impact from sports is most heavily felt in certain sectors. These sports variables are, therefore, tested on the different occupations that are most likely to be affected by a change in the sporting industry.

The dependent variable in this study is real average weekly wage (rwkwage). The explanatory variables are NON-SPORT and SPORT. The non-sport variable consists of gender, race, age, education, and union. SPORT is the accumulation of stadium and franchise variables that could explain wages (see Table 2 for the detailed list of Sports variables). Thus, the wage equation will depend on the year, city, individual worker and professional sports environment. The approach in this equation "controls for the human capital of the individual worker and any time and location specific effects on the market for workers with those skills and asks whether or not the professional sports environment has any ability to explain wages that is not already explained by the other variables."

In summary, this equation is estimated:

1. rwkwage= f(NONSPORT, SPORT, TREND)

Seven sports variables were significant for the overall model when tested at the 5 percent level. Four baseball variables were significant with three being negative. The presence of a baseball franchise (t-statistic= -2.10), capacity squared (-1.97), and the departure of a baseball franchise (-1.96) were negative while baseball capacity (2.03) was positive. Also showing a strong association, three of the four the construction variables were determined to be significant in this study. The new construction of a baseball stadium (2.64), joint football and baseball stadium (-3.14), and basketball arena (3.28) were all found significant.

To test whether the professional sports variables had an impact on the different occupational groups, the authors ran the regression for varying types of occupation groups against the sports variables. The F-tests, which display the overall significance of the model, were then evaluated rather than individual variables. The results showed the occupations of retail sales workers, retail sales managers, hotel clerks, announcers, maids and bellhops, and athletes were insignificant. The full sample of workers, foodsewice workers, and ushers and ticket takers were found to be significant. The full sample of workers and food service workers were negative while ushers and ticket takers were found to be positive. The p-values for these three groups were all less than 1% signifying that this link happening by chance is almost zero. Taking a closer look at foodservice and ushers and ticket takers, we see the results scattered. Ushers had eight significant variables with four being positive and negative. Basketball arena construction was the only significant construction variable and it was positive. Foodservice had six significant variables with, like ushers and ticket takers, the results being evenly split between positive and negative association. Basketball arena and baseball stadium construction were both found positively significant as construction variables.

The results by Coates and Humphreys show each occupation is affected differently by professional sports. Depending on the type of job, the real average weekly wage may increase or decrease with the addition of a team or construction of a stadium. The overall conclusion, though, does not suggest that income increases because of professional sports.

The final model using regression analysis is *Revisiting the Income and Growth Effects of Professional Sports Franchises: Does Success Matter?* by Sam Richardson

(2002). Richardson uses a similar exit and entry model that Coates and Humphreys (1999) previously tested. Local economic (ECON), sports teams and construction (SPORTS), and sports success (SUCC) are used as the explanatory variables (See Table 2 for the detailed list of SPORTS variables). They are regressed on real per capita income (RPCPI) and area income growth (GROWTH). All four of the major sports league cities (NBA, MLB, NFL, and NHL) are included in this model. To make it a more general study, Richardson adds fourteen cities with no professional team which brings the total to fifty-seven. Like Coates and Humphreys, the income, or growth in income, will be determined by time and location specific event along with the sports variables.

In summary, the two equations are estimated for each of the SMSAs:

1. RPCPI= f(ECON, SPORTS, SUCC, TREND)
2. GROWTH= g(ECON, SPORTS, SUCC, TREND)

In the single entry and exit model, the overall result for real per capita income illustrates that six variables are statistically significant. Only four of the six are sports related with two being positive and two being negative. The presence of a baseball team and entry of a hockey were positively related to income. The construction of a baseball stadium and hockey arena was both negatively associated. The only difference in the multiple entry and exit model was that the baseball construction variable was not significant. In both models, 99.6% of the variation of income was explained by these variables.

When growth in income was tested in the single entry and exit model, only one sports variable was found significant. The presence of a baseball franchise was determined positively associated. The presence of a baseball franchise was also found significant in the multiple entry and exit model along with the departure of a first baseball

team. The correlation coefficient was .59 for the single and .55 for the multiple entry and exit model.

Richardson's model has a few key results. First, the success of the pro sports team has no affect on income or growth in income. In every model, all the sports related success variables appeared insignificant. Second, the presence of a baseball franchise appears positively related to income and growth. In all four models, the baseball franchise variable was found positively significant. Lastly, three construction variables were found to be a significant explanatory variable of income. In all three of these cases the association was negative.

Unlike the prior studies, *Cleveland's Gateway to the Future* by Austrian and Rosentraub (1997) doesn't use statistical findings to determine its conclusion. Employment and development in the immediate Gateway area was compared to other parts of downtown and the Cleveland area to see if baseball's Jacob's Field and basketball's Gund Arena had an economic effect on the city. This is achieved by examining employment and wage data for the Gateway area, Cuyahoga County, and Cleveland MSA before and after the Gateway construction. The pre-Gateway era is considered to be 1989-1992 and the post-Gateway is 1992-1995.

The Cleveland MSA and Cuyahoga County both witnessed decreases in employment before the construction and gains after. The Cleveland MSA decreased 1.4% and then increased 6.0% while Cuyahoga County deceased 3.2% and then gained 4.1%. Both of these geographic areas have services as the largest employer and manufacturing second. The Gateway micro area, on the other hand, saw employment from 1989-92 increase 4% and after the construction only result in a 2.7% gain. The

majority of this employment is located in the FIRE and service sectors, 36.4% and 36.6% respectively. Taking a closer look at some of the industries within the Gateway area, many things are seen that wouldn't be if looking at the whole area totals. While manufacturing declined 8% in the pre-construction frame, it declined 30.5% from 1992-1995. After the retail trade industry increased 3.1% prior to the stadiums, it then decreased by 13.6% in the latter stage. FIRE (13.8%, 9.5%) and services (1.4%, 9.6%) increased in both time frames. When looking at wages, the growth in average wages per employee was -.8% and then jumped to 5.7% after construction. However, if the athletes' salaries are factored out then the gain was 3.5%. This growth level was slightly ahead of the MSA and county (2.7%, 2.6%, respectively). The increase in employment and wages due to the construction of the stadiums does not appear to have altered the economy in any significant way. Employment slowed in the post-Gateway era and wages were similar to the rest of the Cleveland MSA.

The authors turned their attention to the effect that the stadiums might have had on sports-related industries. The potential stadium affected industries were general merchandise stores, apparel and accessory stores, eating and drinking places, hotels and motels, and amusement and recreation. The overall growth in employment was 10.2% and then 22.6% after Gateway was built. All of these industries had a smaller percentage in growth after construction than before except for amusement and recreation. This industry includes sports clubs and the increase was a direct result of the Indians and Cavaliers moving into the Gateway area. When compared to the MSA and county the results were mixed. General merchandise and apparel accessories had slower growth

than the larger regions while eating and drinking, hotels and motels, and amusement and recreation outgrew the MSA and county.

The last factor examined by Austrian and Rosentraub was business openings and closings. In the pre-Gateway period 54 net establishments were gained while 50 were gained in the post-Gateway era. In both periods the number of jobs created as a result of these openings was larger than those lost.

The results of this study by Austrian and Rosentraub are varied. Some industries see employment growth after construction while others follow the same trend through both periods. Wages increase more than the Cleveland MSA and Cuyahoga County but only by a slight margin. Therefore, it does appear that these structures can realign employment and wages between different industries and micro areas.

The final study reviewed is *An Assessment of the Microarea Impacts of Sports Stadia* by Timothy S. Chapin (1999). Baltimore, Cleveland, and Arlington, Texas are examined in the pre- and post-stadium periods at the district level to see if recent stadiums have had an affect on the economy. Chapin looks at whether the stadiums have an effect on spillover spending, additional construction in district area, and if it rejuvenated a devastated area. This is achieved by reviewing parcel level and zoning data, major construction projects completed or planned, aerial photographs, key planning documents, site visits, and interviews with local experts.

The cities and stadiums chosen were "because they represent the "success stories" of sports stadia in recent decades." Combine this with the review at the district level, which Chapin states "a new sports facility likely has an impact at a smaller geographical

level than these larger geographical regions" and the perfect circumstances to produce positive results are in place.

First, we will review the city of Baltimore with the new baseball stadium, Camden Yards, and football stadium, Ravens Stadium. If any stadium is responsible for the boom in professional sports stadiums, it is Camden Yards. Stadium proponents have stated that it, along with Ravens Stadium, has brought more people in, led to additional construction and revitalized downtown Baltimore. The Inner Harbor is the location of both of these stadiums and is also a collection of other tourist sites that include the Aquarium, Convention Center and numerous restaurants, bars, and shops.

Linking Baltimore's new stadiums and economic prosperity has its problems though. Before the stadiums were built this was a prospering area. The majority of the establishments that are currently there were present long ago. New construction was seen to be very small with no new hotels and only a handful of restaurants opening. The major projects (addition to the Convention Center renovation to the Power Plant, and new facilities for UM-B) that were undertaken can't be attributed to the stadium constructions. Only a few establishments were linked directly to the professional sports industry. This is mainly because the stadiums were constructed in an area that was mostly "built out as of 1990." Therefore, "with only a handful of large parcels available for development" the ability of the stadiums was limited to promote additional development. Chapin states that "Camden Yards should be recognized for what it is and not what its boosters claim it to be; a landmark, an architectural gem, an important entertainment facility, but not an example of a sports facility as an urban revitalization tool."

The Ballpark in Arlington, Texas was, unlike Baltimore, constructed in a suburban area. Not many other tourists attractions were near and the area was describes as "hugely underdeveloped" in 1990. Not surprisingly, the area around the stadium has undergone much construction and development. Ten hotels (with two more planned) and eight restaurants were built along with expansion of the Arlington Convention Center. Lakes, little league ball fields and an amphitheater have also popped up in recent years. The Ballpark in Arlington had an impact on the development of the area, but other factors had effects also. The transportation connections were perfect for residential and economic growth to occur. The presence of the Convention Center, Six Flags amusement park, and other recreation activities definitely played a role in the expansion in the microarea.

Whether or not the additional projects and positive results can be directly related to the stadium, city officials believe that "the development and location of projects was in large part the result of a new Ballpark." The Ballpark appears to have helped spur additional construction in the district and the efficiency of the surrounding district, and even has changed the whole character of the area. With that being said, The Ballpark has been an economic success for Arlington.

Cleveland's Gateway project, which consists of Jacob's Field and Gund Arena, is an urban development in a highly populated micro area similar to Baltimore's stadium situation. It is located in central downtown and has convenient access to the interstates. Thus, it received its name "because it represents a major "gateway" into Cleveland" as it sits adjacent to the two major highways running east-west and north-south.

Completed in 1994, the Gateway project has spurred two new hotels in the area and three more being planned at the time of the study. An overflow of restaurants, many of them sports related, have popped up since the construction also. Numerous new housing developments have also appeared in the Gateway district with many building having been converted to apartments or condominiums. Chapin states that this is largely because of the improved neighborhood and the increased activity around the area. With the Cleveland Gateway case, the majority of the "new" businesses or housing has occurred in old buildings. The area was already built-out so the result was less new construction and more refurbishing of vacant buildings.

The effects of the Gateway project have been well documented and Chapin does not disagree. The spillover effects have produced many benefits from new hotels and restaurants to helping the existing business' profit. Although the construction was small, the re-use of buildings was enormous. Chapin says Cleveland's situation was more redevelopment than development. Maybe the biggest affect that Gateway had on Cleveland is the character change. Tourists and people from the suburbs now flock to the district on weeknights and weekends. There was only empty building before construction and now it is a vibrant, flourishing micro area. The Gateway area has obviously changed the face of downtown Cleveland.

The aggregated results from the past findings have demonstrated how sports related variables are not consistently associated with economic growth. Overall, there is no evidence of a consistent positive relationship between the activities of sports teams and economic development. The few occasions that were significantly positive were usually offset by another that was negative.

Chapter 5-- Cleveland: The City, Franchises, and Stadiums

Cleveland, Ohio has gone through numerous events in the last century that shaped it into the city which it is today. The city's sports franchises and stadiums have been a large contributor to the city's image as it evolved over the years. In certain eras, the city has been ecstatic over its championship teams and at other times been in agony with decades of losing and the unforgettable loss of its football franchise. There were years when the football and baseball stadium was laughed at by the entire nation and other times when their facilities were used as a model for others. The following chapter will review the history of the city, franchises, and sports facilities. From baseball's League Park to Jacob's Field and football's Rams to the "new" Browns, it will be shown how Cleveland has evolved to its present status.

Baseball and the city of Cleveland have a relationship that spans over 130 years. Cleveland baseball started in 1869 when the Cleveland Forest Citys met the Cincinnati Red Stockings (Cleveland.Indians.com 2003). The name of the team and affiliation with the either the National or American League changed many times until 1915 when they were named the Indians. The ballpark in which they played was always changing also. From 1869 to 1932 the baseball team played in five different stadiums. Leading up to 1932, the baseball team settled in and played at League Park. This stadium had many deficiencies though, like seating capacity of 27,000, which kept it from being a permanent professional park. The City of Cleveland was flourishing at this time (Cagan 1998). It wasn't crippled by the Great Depression yet and was coming off one of its most successful decades ever. Cleveland had become the second largest automobile producer in the country. The steel mills were thriving as was the manufacturing industry. In 1932

the Indians played their first game at Cleveland Municipal Stadium which was built for $2.5 million in 1931 by the Works Project Administration with hopes of luring the 1932 Olympics to Cleveland (which failed). At that time it had the largest seating capacity of any arena in the world. The Indians played all their games in the stadium in 1932 and 1933 (Cleveland.Indians.com 2003). From 1934 to 1946 they only played weekend games and doubleheaders there and weekday games at League Park again. In 1947 the Indians moved to Municipal stadium as a full-time resident.

The football Cleveland Rams were formed in 1936 and played their games in League Park (Munsey and Suppes 2002). But they realized that crowd attendance required them to move to Municipal Stadium just like the Indians had done. They used it as their home from 1939 until 1943 when the team folded. Two years later in 1945 the franchise was reactivated and they played a few years at League Park before moving to Los Angeles. In 1946, the Cleveland Browns were formed and they played in Municipal Stadium. The city's long term fascination was born when they won the league championship the first four years in the league.

The Cleveland Cavaliers basketball franchise began play in 1970 at the Cleveland Arena. In 1974 they moved to a new arena, Richfield Coliseum, just outside of town between Cleveland and Akron. The team struggled in the early years, but they weren't the only struggling team in Cleveland. After the Indians success early in the century, the team hit very hard times in the 60s, 70s, and 80s. The Browns also didn't experience the winning ways that they did in their opening seasons. Municipal Stadium had grown out of favor with players and fans during this time also. Once thought as the jewel of the city, this stadium was now dubbed "The Mistake on the Lake." Like its franchises and

stadium, the city of Cleveland had fallen on hard times. "Cleveland itself was feeling the uncomfortable burn of a national spotlight that illuminated a shrinking population, deteriorating race relations, escalating poverty, and vanishing industrial jobs" (Cagan 1998). Not only was Cleveland losing population but so were Cuyahoga County and the Cleveland MSA. The whole region was in a downward spiral that had city leaders desperately searching for ways to revitalize the city. (Table 3 illustrates the shrinking population from 1970-1980 and 1970-1990.)

Table 3

Population Change in the Cleveland Area		
Census Area	**%Chg 1970-1980**	**% Chg 1970-1990**
Cleveland	-23.6	-32.7
Cuyahoga County	-12.9	-17.9
Region	***-5.5***	-7.7

Source: US Bureau of the Census

As the Cleveland area saw the population dwindle and unemployment rise, many ideas were evaluated to try to bring the prosperous years back. After a few failed investments, city leaders decided that a new domed stadium for the Indians would spur the economy. So in 1984 a proposal for a 150 million dollar domed stadium was put on the ballot (Cagan 1998). The stadium was to be paid by a county property tax but was quickly rejected. The idea of a new stadium didn't die so easily though. In 1990 the Central Market Gateway project was formed to get the Indians and Cavaliers new facilities. The dual facilities would be built in the old Central Market area that was once a thriving part of the city. Instead of a property tax, as proposed in 1984, this time a

county sin tax on alcohol and cigarettes would pay for the stadiums. One campaign slogan used to urge voters to vote yes stated "Gateway will create a development that will generate $33.7 million in public revenues every year and provide: 28,000 good-paying jobs for the jobless; Neighborhood housing development for the homeless; $15 million a year for schools for our children; revenues for City and County clinics and hospitals for the sick; energy assistance programs for the elderly" (Cagan 1998). Although it passed with 51.7% of the votes, within the city it was voted against by 56% of the voters. Twenty of the twenty-one wards in the city voted against it with a few rich areas in the city and the suburbs passing the proposal (Rosentraub 1999).

The financing for the new "Gateway" sports complex was now in place. The Indians and Cavaliers had arrived at this point from totally opposite directions. It took the Indians decades of threats that they were going to relocate. The Cavaliers, on the other hand, had just renovated the Richfield Coliseum and had to be wooed back to downtown. The cost of baseball's new Jacob's Field and basketball's Gund Arena was estimated at a combined $344 million. The cost was to be split 50/50 between the public and private sectors. But when Jacob's Field finally opened in April 1994 and Gund Arena in October 1994, the cost would be much higher than originally estimated by the city officials. The final cost of the project was estimated at $488 million with 64.8-66.7% coming from the public (Rosentraub 1999). Jacob's Field and Gund Arena were both state of the art facilities that had restaurants, elaborate scoreboards and sound systems, numerous luxury boxes, and team shops.

Cleveland didn't stop after constructing the Gateway complex. The Browns also received a new stadium, but out of the three professional sports franchises in Cleveland

their trip was the most complicated. From the day the Gateway ballot was passed, Art Modell, the owner of the Browns, had felt snubbed. Even though Cleveland was about to pass a $175 million deal to refurbish Municipal Stadium, Modell was negotiating with Baltimore to move the team. In November 1995, days before the vote to refurbish the stadium, Modell announced he was moving the Browns to Baltimore. The city was devastated, but it didn't take long for city leaders to take action. There was soon a deal with the NFL to acquire an expansion team to replace the Browns. The city had agreed to build another new stadium, mostly with an addition to the sin tax already in place. After Municipal Stadium was demolished and Cleveland Browns Stadium was constructed for $283 million, the "new" Browns played their first game in 1999 (Munsey and Suppes 2002).

The city of Cleveland now had three new stadiums constructed within five years. The downtown and lakefront area had been transformed into a thriving area. But it did come at a cost. The price tag on the new facilities was in excess of $700 million -- most of this was paid by the taxpayers.

Chapter 6-- Cleveland Data and Model

It was revealed in the past statistical studies of Chapter 4 that sports variables typically do not result in economic growth. In contrast, Cleveland's resurgence in the 1990's has been partially attributed to the construction of its three new facilities. Has Cleveland's turn around, sparked by professional sports, broken the mold; or have the sports variables been incorrectly labeled as rejuvenating the city? This Chapter describes the details of the model, reviews the independent and dependent variables, and evaluates the descriptive statistics of the data. It will also show that the regression model used is not identical to any of the previously discussed models. Instead, the techniques and variables have been modeled after numerous studies.

Model Description

The regression model was run with the dependent variables used in two different ways. In the first method, county employment and county real average weekly wage (for each industry) are the dependent variables. GDP growth rate, crime rate, education attendance rate, and lagged total county employment (wages) are then added as explanatory variables to control for external forces changing the data. This basic model, with county-level data, was used by Baade and Dye (1988), Baim (1994), and Coates and Humphreys (1999). In the second method, Cuyahoga County employment and real average weekly wage data are used as a fraction of State of Ohio data. For example, when examining retail employment using this method: retail employment = Cuyahoga County retail employment / State of Ohio retail employment. This will factor out the overall effects that were taking place in the region. A downturn in the national economy

would likely affect employment in both the state and county, thus the results would only recognize the county specific effects. The county to state ratio technique was widely used by Robert Baade. This procedure was twice incorporated by Baade and Dye (1988, 1990), and also by Baade and Sanderson (1997).

Independent Variables

The independent variables that are used in the regression model can be separated into two groups -- the sports variables and the non-sports variables (See Table 4 for complete details). Examined first are the sports variables, which can be further broken into three categories. Each professional sports league can potentially have a stadium variable, franchise variable, and playoff variable. Evaluating each of these separately will allow us to determine if there is a statistical relationship between any of the sports stadiums, franchises, or the quality of team when tested against the dependent variables.

Table 4- Independent Variables

Variable	Description	
FOOTSTAD	Dummy variable of 1 if new football stadium constructed within last 7 years; otherwise the dummy variable is 0.	New Cleveland Browns Stadium's ground breaking was May 15, 1997 and opening day was September 12, 1999.
GATEWAY	Dummy variable of 1 if new baseball or basketball stadium constructed within last 7 years; otherwise the dummy variable is 0.	Baseball's Jacob's Field ground breaking was in January 1992 and opening day was April 4, 1994. Basketball's Gund Arena had ground breaking on April 27, 1992 and opening day October 17, 1994.
FOOTFRAN	Dummy variable of 1 if football franchise is present; otherwise the dummy variable is 0.	Cleveland's football franchise is present from 1946 to November 1995 when they left for Baltimore. They returned in September 1999.
BASKPLAY	Dummy variable of 1 if basketball franchise made the playoffs the previous season; otherwise the dummy variable is 0.	
BASEPLAY	Dummy variable of 1 if baseball franchise made the playoffs the previous season; otherwise the dummy variable is 0.	

FOOTPLAY	Dummy variable of 1 if football franchise made the playoffs the previous season; otherwise the dummy variable is 0.
LAGCTOTE	Lagged total county employment (included in the county employment model)
LAGCTOTW	Lagged total county wages (included in the county wage model)
LAGCSTOTE	Lagged total county to state employment ratio (included in the county/state employment model)
LAGCSTOTW	Lagged total county to state wage ratio (included in the county/state wage model)
GDP	Rate of change in the Gross Domestic Product (Bureau of Economic Analysis)
CRIME	Crime rate per 100,000 population in Cleveland (Department of Justice)
CRIMECS	Crime rate per 100,000 population in Cleveland to State of Ohio ratio (Department of Justice)
EDUC	Elementary and secondary school attendance rate in Cuyahoga County (Ohio Department of Education)
EDUCCS	Elementary and secondary school attendance rate in Cuyahoga County to State of Ohio ratio (Ohio Department of Education)
TREND	Trend starting at 1 and increasing. When the stadium construction begins TREND is restarted at 1. This shows the structural change that occurs in the model.

The sports variables are only included in the model if there are changes during the reference period (1988-2000). When examining the stadium variables, a newly constructed facility is considered to be a change. To signify the stadium being new, a dummy variable of "one" is used; otherwise a "zero" is used. A stadium is labeled "new" in this model from the date of ground breaking. It continues to carry the "new" designation for the next seven years. For example, a stadium built in 1990 is considered "new" from 1990-1996. The ground breaking date was chosen because local spending and development begins at that time. This captures the "honeymoon" years of the facility where the city is excited over the stadium and when attendance is typically at a high. In this study, each sport gained a new facility during the timeframe that was examined (1988-2000). FOOTSTAD is the variable that represents the football stadium. Since the baseball stadium (BASESTAD) and basketball (BASKSTAD) arena broke ground within three months of each other, they have a very strong relationship. The correlation

coefficient between BASESTAD and BASKSTAD was highly positive at .92. BASKSTAD will be dropped from the model to avoid multicollinearity; BASESTAD is renamed GATEWAY and will signify the joint construction.

Similar to the dummy stadium variables, each sports league will have a dummy franchise variable of "one" if a franchise is present and a "zero" otherwise. Only the football franchise either entered or exited from 1988-2000 and will, therefore, be the only sports franchise variable in this model. The naming of the football franchise is FOOTFRAN. All three sports teams made the playoffs at least once from 1988-2000. Thus, BASKPLAY, BASEPLAY, and FOOTPLAY will be represented with a dummy variable of "one" for a year if their respective team made the league playoffs; otherwise the variable will be "zero."

Many of the previous models have a wide selection of sports variables such as number of championship won, stadium capacity, and multiple entry and exit variables. The variables included in this model are the basic stadium and franchise variables along with the playoff variables. This approach is extremely similar to Baade and Dye (1988, 1990).

The non-sports variables used in the model, as mentioned, are: GDP, CRIME, EDUC, LAGCTOTE, LAGCTOTW, CRIMECS, EDUCCS, LAGCSTOTE, LAGCSTOTW and TREND. Where the CRIME, EDUC, LAGCTOTE, and LAGCTOTW are used in the county model, the variables CRIMECS, EDUCCS, LAGCSTOTE, and LAGCSTOTW are used as a ratio to the state value in the county/state model. The lagged variables are lagged by a factor of one. The TREND

variable is a basic trend line that starts at one and increases, but once the stadium construction begins in January 1992, the trend variable is reset to one.

Dependent Variables

Numerous dependent variables can be statistically tested to see if an area is impacted by professional sports. New jobs, business openings, and real estate prices would be worthwhile figures to test, but complete data series are hard to locate. Employment and wages, on the other hand, are a reliable and common way to test for economic growth. Therefore, the dependent variables in this model are Cuyahoga County employment and real average weekly wage for select industries that are most likely to be affected by sports variables. For example, industries such as Construction, Retail, and Eating and Drinking Establishments were included because they could potentially have large impacts from the sports variables. Baade and Dye (1988), Baade and Sanderson (1997), and Baim (1994) are past statistical studies that had similar dependent employment variables. Coates and Humphey (2002) used real average weekly wage as a dependent wage variable. The data for both employment and wages are from the Covered Employment and Wages Program, Bureau of Labor Statistics and cover the years 1988-2000. The industries are classified according to the Standard Industrial Classification system (SIC).

The employment figures are the total monthly employment figures for each respective industry from January 1988 through December 2000. The employment variables each have 156 observations. The wage data are represented by the real average weekly wage for each respective industry from first quarter 1988 through fourth quarter

2000. Real average weekly wage was used so the effects of inflation would not have an impact. Since the wage variables are quarterly, they each have 52 observations. Table 5 shows the dependent variables and description for the county model while Table 6 shows the dependent variables and their description for the county/state model:

Table 5- Model 1, Dependent Variables

Variable	Description
CtotE	County Total employment
Cdiv2E	County Construction employment
Cdiv3E	County Manufacturing employment
Cdiv6E	County Retail employment
Cdiv8E	County Services employment
Csic53E	County General Merchandise Stores employment
Csic58E	County Eating and Drinking Establishment employment
Csic65E	County Real Estate employment
Csic70E	County Hotels and Lodging employment
Csic79E	County Amusement and Recreation employment
CtotW	County Total real average weekly wage
Cdiv2W	County Construction real average weekly wage
Cdiv3W	County Manufacturing real average weekly wage
Cdiv6W	County Retail real average weekly wage
Cdiv8W	County Services real average weekly wage
Csic53W	County General Merchandise real average weekly wage
Csic58W	County Eating and Drinking Establishment real average
Csic65W	County Real Estate real average weekly wage
Csic70W	County Hotels and Lodging real average weekly wage
Csic79W	County Amusement and Recreation real average weekly

Table 6- Model 2, Dependent Wage Variables

Variable	Description
CStotE	CountyIState Total employment
CSdiv2E	CountyIState Construction employment
CSdiv3E	CountyIState Manufacturing employment
CSdiv6E	CountyIState Retail employment
CSdiv8E	CountyIState Services employment
CSsic53E	CountyIState General Merchandise Stores employment
CSsic58E	CountyIState Eating and Drinking Establishment employment
CSsic65E	CountyIState Real Estate employment
CSsic70E	CountyIState Hotels and Lodging employment

CSsic79E	County/State Amusement and Recreation employment
CStotW	CountyIState Total real average weekly wage
CSdiv2W	CountyIState Construction real average weekly wage
CSdiv3W	CountyIState Manufacturing real average weekly wage
CSdiv6W	CountyIState Retail real average weekly wage
CSdiv8W	CountyIState Services real average weekly wage
CSsic53W	CountyIState General Merchandise real average weekly wage
CSsic58W	CountyIState Eating and Drinking Establishment real average
CSsic65W	CountyIState Real Estate real average weekly wage
CSsic70W	CountyIState Hotels and Lodging real average weekly wage
CSsic79W	CountyIState Amusement and Rec. real average weekly wage

In summary, the following four equations provide the framework for the regression analysis:

Model I- County

$$CW_t = B_o + B_1 FOOTSTAD_t + B_2 GATEWAY_t + B_3 FOOTFRAN_t + B_4 BASKPLAY_t + B_5 BASEPLAY_t$$

$$+ B_6 FOOTPLAY_t + B_7 LAGCTOTW_t + B_8 GDP_t + B_9 CRIME_t + B_{10} EDUC_t + B_{11} TREND_t + e_t$$

$$CE_t = B_o + B_1 FOOTSTAD_t + B_2 GATEWAY_t + B_3 FOOTFRAN_t + B_4 BASKPLAY_t + B_5 BASEPLAY_t$$

$$+ B_6 FOOTPLAY_t + B_7 LAGCTOTE_t + B_8 GDP_t + B_9 CRIME_t + B_{10} EDUC_t + B_{11} TREND_t + e_t$$

where,

CW_t = real average weekly wage in select Cuyahoga County industries at time t

CE_t = employment in select Cuyahoga County industries at time t

$FOOTSTAD_\tau$ = dummy variable which assumes a value of 1 if the county has a new football stadium in time t; value of 0 if it doesn't

$GATEWAY_t$ = dummy variable which assumes a value of 1 if the county has a new baseball or basketball stadium in time t; value of 0 if it doesn't

$FOOTFRAN_t$ = dummy variable which assumes a value of 1 if the county has a football franchise in time t; value of 0 if it doesn't

$BASKPLAY_t$ = dummy variable which assumes a value of 1 if the county has a basketball team make the playoffs in time t; value of 0 if it doesn't

$BASEPLAY_t$ = dummy variable which assumes a value of 1 if the county has a baseball team make the playoffs in time t; value of 0 if it doesn't

$FOOTPLAY_t$ = dummy variable which assumes a value of 1 if the county has a football team make the playoffs in time t; value of 0 if it doesn't

$LAGCTOTE_t$ = lagged total county employment in time t

$LAGCTOTW_t$ = lagged total county wages in time t

GDP_t = national real Gross Domestic Product rate in time t

$CRIME_t$ = county crime rate per 100,000 population in time t

$EDUC_t$ = county school attendance rate in time t

$TREND_t$ = trend variable that assigns a value of 1 for the first time period and increasing by one . Restarts when the groundbreaking of the first stadium begins in January 1992

B_o = constant

$B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}$ = coefficients to be determined

e_t = error term at time t

Model 2- County/State

$$CW/SW_t = B_o + B_1 FOOTSTAD_t + B_2 GATEWAY_t + B_3 FOOTFRAN_t + B_4 BASKPLAY_t + B_5 BASEPLAY_t$$

$$+ B_6 FOOTPLAY_t + B_7 LAGCSTOTW_t + B_8 GDP_t + B_9 CRIMECS_t + B_{10} EDUCCS_t + B_{11} TREND_t + e_t$$

$$CE/SE_t = B_o + B_1 FOOTSTAD_t + B_2 GATEWAY_t + B_3 FOOTFRAN_t + B_4 BASKPLAY_t + B_5 BASEPLAY_t$$

$$+ B_6 FOOTPLAY_t + B_7 LAGCSTOTE_t + B_8 GDP_t + B_9 CRIMECS_t + B_{10} EDUCCS_t + B_{11} TREND_t + e_t$$

where,

CW_t / SW_t = ratio of Cuyahoga County to State of Ohio real average weekly wage in select industries at time t

CE_t / SE_t = ratio of Cuyahoga County to State of Ohio employment in select industries at time t

$LAGCSTOTE_t$ = ratio of lagged total Cuyahoga County employment to lagged State of Ohio employment in time t

$LAGCSTOTW_t$ = ratio of lagged total Cuyahoga County average weekly wages to lagged State of Ohio average weekly wages in time t

$CRIMECS_t$ = ratio of crime rate per 100,000 in Cleveland to the crime rate in the State of Ohio

$EDUCCS_t$ = ratio of school attendance in Cuyahoga County to the school attendance rate in the State of Ohio

Descriptive Statistics

Cuyahoga County's monthly employment increased 7.6% from 1988 to 2000. This gain was much lower than the State's gain of 20.9%. Of the nine industries included in this study, Cuyahoga County saw increased employment in seven of the industries and decreases in two (See Table 7 for details).

Table 7- 1988-2000 Employment Statistics

	County			State		
Industry	1988 County Emp	2000 County Emp	1988-2000 County % change	1988 State Emp	2000 State Emp	1988-2000 State % change
All	664875	715730	7.6%	3949269	4775009	20.9%
Construction	22619	28781	27.2%	186002	246228	32.4%
Manufacturing	163768	129850	-20.7%	1110998	1080399	-2.8%
Retail Trade	128646	133938	4.1%	877356	1050254	19.7%
Services	203977	259051	27.0%	1026827	1491387	45.2%
Gen. Merch.	17084	12815	-25.0%	119788	119475	-0.3%
Eating/Drinking	42303	47451	12.2%	303771	372687	22.7%
Real Estate	9846	11389	15.7%	40567	51676	27.4%
Hotels/Lodging	6101	6191	1.5%	36346	37863	4.2%
Amuse/ Rec	6821	9540	39.9%	46422	64549	39.0%

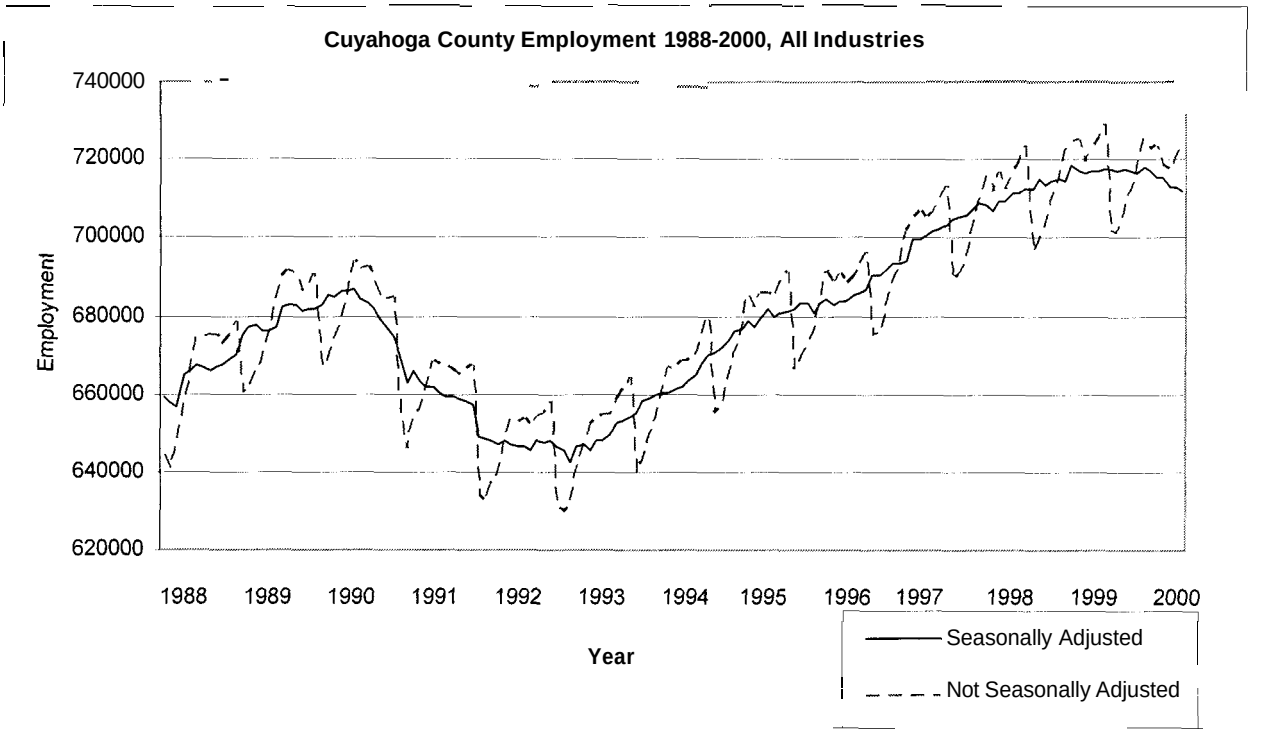
*Emp is the average monthly employment for each respective year

First, reviewing the industries with growth, the county grew at a slower pace than the State in six of the seven industries. Construction (County 27.2%, State 32.4%), Retail Trade (4.1%, 19.7%), Services (27.0%, 45.2), Eating and Drinking Establishments (12.2%, 22.7%), Real Estate (15.7%, 27.4%), and Hotels and Lodging (1.5%, 4.2%) had growth rates that were less than the state. Cuyahoga County's Amusement and Recreation (39.9%, 39.0%) was the only industry that had more growth than the state. In contrast, Manufacturing and General Merchandise Stores were the two industries which had decreases in employment from 1988-2000. Both Manufacturing (-20.7%, -2.8%) and General Merchandise Stores (-25.0%, -0.3%) had a larger percentage decrease in Cuyahoga County than the State of Ohio. Therefore, of the nine industries examined, Cuyahoga County showed a worse employment picture than the state in eight industries.

Employment is affected by changes in weather, harvests, holidays, and other cyclical events. Since these events follow a regular pattern, their influence on statistical trends can be eliminated by adjusting the data. These adjustments make it easier to

examine the cyclical and long term trends in the data series. Industries in this analysis such as the retail industry's boom in December and the construction industry's peak in the summer months can easily be factored out. As seen in Chart 5, which plots the seasonally and non-seasonally adjusted data for Cuyahoga total employment, the seasonally adjusted data have a much smoother trend for observation. Therefore seasonally adjusted employment will be used in the data set.

Chart 5- Cuyahoga County Employment, Seasonally and Non-seasonally Adjusted



Cuyahoga County's real average weekly wage grew 5.3% from 1988-2000. Ohio's real average weekly wage only increased 3.9% in the same timeframe (See Table 8 for details). Seven of the nine county industries analyzed in this study had increases.

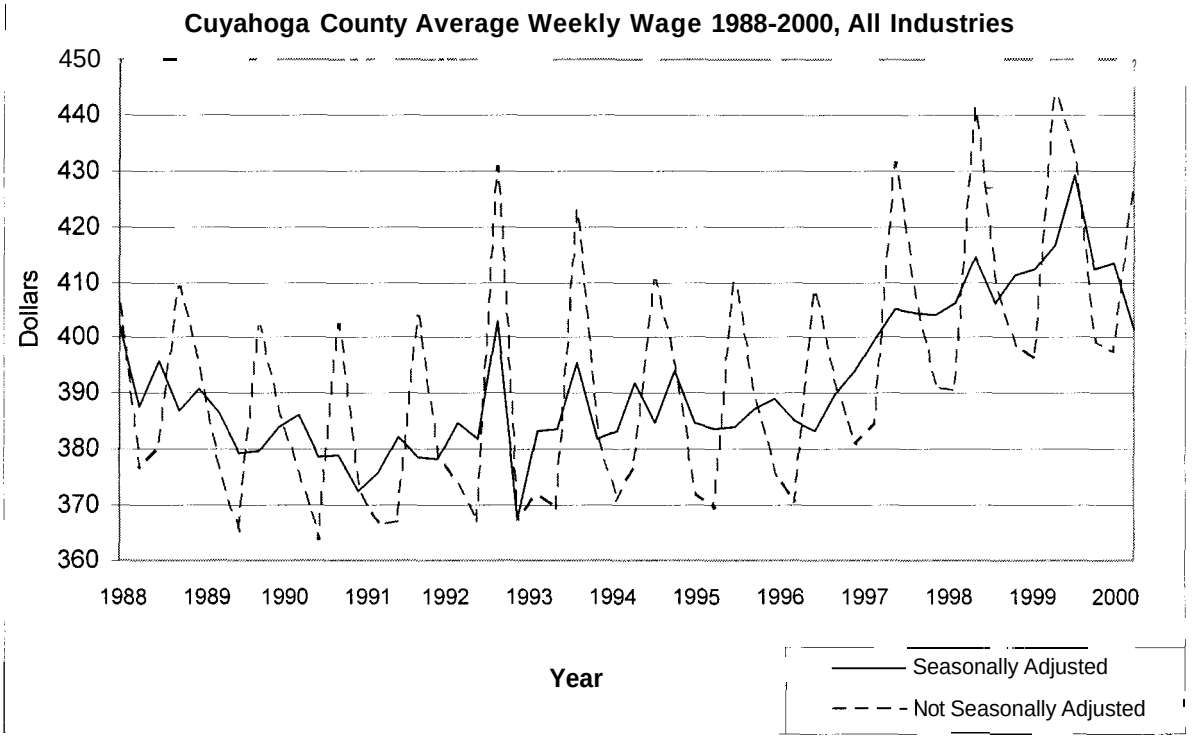
Table 8- 1988-2000 Wage Statistics

	County			State		
Industry	1988 County Real AWW	2000 County Real AWW	1988-2000 County % change	1988 State Real AWW	2000 State Real AWW	1988-2000 State % change
All	$393	$414	5.3%	$354	$368	3.9%
Construction	470	470	0.0%	401	414	3.3%
Manufacturing	531	560	5.5%	491	503	2.4%
Retail Trade	191	203	6.2%	179	194	8.5%
Services	348	377	8.4%	300	327	9.0%
Gen. Merch.	215	182	-15.4%	191	190	-0.4%
Eating/Drinking	125	134	7.1%	112	124	10.9%
Real Estate	321	384	19.7%	283	326	15.2%
Hotels/Lodging	177	203	14.3%	158	174	10.0%
Amuse/Rec	299	456	52.3%	192	227	18.0%

Of the remaining two county industries, one had no gain and one had a decrease. First, reviewing the industries with growth, Cuyahoga County grew at a faster pace than Ohio in four of the seven industries. Manufacturing (County 5.5%, State 2.4%), Real Estate (19.7%, 15.2%), Hotels and Lodging (14.3%, 10.0%), and Amusement and Recreation (52.3%, 18.0%) had faster growth in county real average weekly wage than in the state. Retail Trade (6.2%, 8.5%), Services (8.4%, 9.0%), and Eating and Drinking Establishments (7.1%, 10.9%), on the other hand, saw the state wages grow at a faster rate than the county's. Next, Construction (0.0%) in Cuyahoga County had no change while Ohio had 3.3% growth in real average weekly wage. Lastly, General Merchandise Stores had decreases at the county level (-15.4%) and state level (-0.4%). Therefore, of the nine industries examined, five saw the state having a better period from 1988-2000 than the county.

As with employment, wages experience the same seasonal problems. To eliminate this, the wages were also seasonally adjusted and will be used in the model's data set (See Chart 6).

Chart 6- Cuyahoga County Average Weekly Wages, Seasonally and Non-seasonally Adjusted



Chapter 7--Cleveland Model Results

As mentioned in Chapter 6, the model is used by regressing the dependent variables in two different methods – the county model and the countylstate ratio method. The county method will be discussed first and then the countylstate ratio method. Within both of these models, raw employment and wage data were initially used as the dependent variables. Problems were discovered, that will be discussed later in this chapter, and the dependent variables were changed to first differences. Therefore, within both methods, the raw data and then the first differences will be examined for both employment and wages.

County Model

When county employment was first tested, the adjusted r-squared values were all extremely high. These values ranged from 99% (CtotE, Cdiv3E, and Cdiv8E) of the dependent variable being explained to 86% (Cdiv2E). The majority of the individual explanatory variables were also found to be significant. Of the 110 possible independent variables, 73 t-values were found significant (50 positive, 23 negative). FOOTSTAD was significant in 5 of the 10 industries -- 4 being positive. GATEWAY, with the results being varied, was found to be significant for every employment industry. The building of the new Gateway was shown to have increased employment in the service sector industry (Cdiv8E) by 13,516. Manufacturing (Cdiv3E), on the other hand, shows a decline of 15,940 with the presence of the Gateway construction. FOOTFRAN had 4 significant industries with 3 negative and 1 positive. Of the 30 playoff variables, BASKPLAY stood

Table 9 – County Model Regression Results						Employment -- Ordinary Least Squares								
	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCTOTE	GDP	CRIME	EDUC	TREND	N	Adj-r Sq	F-value
CtotE	2165.18 1.91'	-1757.00 -2.42''	781.15 0.59	1527.07 2.74***	10.76 0.01	-75.41 -0.14	0.86 25.55''	150742.00 3.68''	1.91 1.74'	-1125.16 -2.46**	115.21 3.36***	156	0.99	1254.62
Cdiv2E	448.94 1.16	1112.76 4.47''	142.96 0.31	595.25 3.11***	-1099.61 -2.64***	-355.11 -1.97''	0.03 2.59***	60201.00 4.28''	1.73 4.60***	-378.50 -2.41**	67.39 5.73***	156	0.86	72.50
Cdiv3E	-1053.99 -1.98**	-15940.00 -46.79***	893.22 1.43	45.58 0.17	-195.34 -0.34	-847.55 -3.44***	0.28 17.49***	-9682.99 -0.50	1.27 2.46''	44.07 0.21	-312.36 -19.41***	156	0.99	2217.90
Cdiv6E	32.80 0.06	651.91 1.94*	-1864.29 -3.02***	-210.09 -0.82	902.26 1.61	355.26 1.46	0.16 10.42***	72377.00 3.82***	2.43 4.77''	-825.63 -3.99''	2.96 0.19	156	0.96	270.90
Cdiv8E	2316.22 3.72***	13516.00 33.84***	2167.13 2.95***	1753.80 5.71''	-288.14 -0.43	388.65 1.35	0.22 11.68***	18005.00 0.80	-0.94 -1.55	128.97 0.51	306.87 16.26'''	156	0.99	2283.27
Csic53E	409.65 2.04''	-1984.56 -15.40***	-403.99 -1.71*	-30.31 -0.31	681.63 3.17***	-200.72 -2.15''	0.04 6.16***	13445.00 1.85**	0.75 3.83''	372.34 4.58''	-59.88 -9.84''	156	0.96	308.32
Csic58E	-327.37 -1.09	1617.01 8.41***	-522.54 -1.48	234.54 1.59	57.24 0.18	257.54 1.85'	0.04 4.86***	53571.00 4.93''	0.43 1.46***	-700.57 -5.77***	52.24 5.75***	156	0.97	370.46
Csic65E	51.24 0.46	602.30 8.44***	152.24 1.16	-4.96 -0.09	-182.41 -1.53	85.99 1.67*	0.00 -0.73	-7397.77 -1.83*	-0.35 -3.28***	-38.05 -0.84	22.32 6.62***	156	0.94	172.66
Csic70E	357.26 5.65***	-727.35 -17.95***	-171.49 -2.30**	-16.55 -0.53	46.52 0.69	96.74 3.30***	0.01 4.82''	-1958.38 -0.86	-0.16 -2.67'''	190.21 7.43***	-5.59 -2.92***	156	0.94	184.12
Csic79E	-111.32 -0.87	254.32 3.09***	-159.10 -1.05	139.52 2.21''	-85.47 -0.62	126.44 2.12''	0.02 5.44***	22123.00 4.76''	0.45 3.69''	-99.40 -1.91'	13.24 3.40***	156	0.91	125.90
						Wages -- Ordinary Least Squares								
	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCTOTW	GDP	CRIME	EDUC	TREND	N	Adj-r Sq	F-value
CtotW	18.94 3.12***	-1.90 -0.50	-4.37 -0.63	5.22 1.55	-5.11 -0.77	5.07 1.59	-0.18 -1.05	144.78 2.76***	0.00 -0.89	1.70 0.66	0.09 0.33	52	0.65	7.98
Cdiv2W	25.60 4.82***	-27.75 -8.42***	-13.69 -2.25''	10.15 3.45''	0.96 0.17	5.18 1.86*	-0.46 -3.08***	-26.55 -0.58	-0.01 -1.35	5.74 2.53''	-0.66 -2.81'''	52	0.85	23.39
Cdiv3W	26.68 2.29''	3.91 0.54	-12.38 -0.93	9.88 1.53	-13.69 -1.07	7.08 1.16	-0.09 -0.29	225.88 2.25''	-0.01 -1.20	-4.09 -0.82	0.04 0.08	52	0.70	10.00
Cdiv6W	5.87 1.71'	-3.95 -1.85'	-2.18 -0.55	1.19 0.62	-0.08 -0.02	3.39 1.88*	-0.02 -0.24	75.86 2.56''	0.00 -0.58	4.31 2.93***	0.01 0.08	52	0.57	6.03
Cdiv8W	16.43 2.75''	8.25 2.22''	-3.59 -0.52	0.79 0.24	-2.30 -0.35	5.64 1.79'	-0.29 -1.70*	107.31 2.08''	0.00 0.51	0.86 0.34	0.39 1.47	52	0.68	9.05
Csic53W	1.56 0.21	-9.57 -2.09''	0.82 0.10	-1.87 -0.46	-3.67 -0.45	0.31 0.08	0.05 0.26	64.75 1.02	0.00 0.62	4.67 1.49	-0.37 -1.11	52	0.65	8.24
Csic58W	4.75 1.83'	-2.54 -1.58	-5.99 -2.01''	1.11 0.77	-1.46 -0.51	4.26 3.13''	0.03 0.42	47.30 2.11''	0.00 0.86	3.89 3.50***	0.10 0.87	52	0.73	11.17
Csic65W	22.93 3.09'''	-16.12 -3.40***	-6.34 -0.72	12.75 3.01***	-1.65 -0.20	2.53 0.63	-0.23 -1.05	200.65 3.04''	-0.01 -0.89	2.33 0.71	1.15 3.39***	52	0.83	19.36
Csic70W	20.55 2.7''	14.87 3.22***	-9.78 -1.15	-7.51 -1.82*	0.33 0.04	-5.07 -1.30	-0.12 -0.56	63.84 1.00	0.02 3.25***	-10.74 -3.38***	-0.19 -0.59	52	0.66	8.28
Csic79W	11.16 0.26	58.34 2.15''	81.99 1.63	-12.09 -0.50	35.80 0.74	24.82 1.08	-1.05 -0.85	212.23 0.56	0.00 -0.09	-25.52 -1.37	4.46 2.29**	52	0.52	5.12

*** 1 percent significance level **5 percent significance level *10 percent significance level

out with 4 industries being positively significant. The coefficients showed BASKPLAY adding from 139 to 1,527 jobs. When summing the number of significant sports variables, 20 were positive and 12 were negative (See Table 9 for details).

Within the non-sports group of variables, the lagged employment variable was positively significant in 9 of the 10 industries. The coefficients, however, showed a gain of less than 1 job in every case. GDP and CRIME were also positively significant in the majority of the industries.

In the initial testing of average weekly wage, the adjusted r-squared values were not quite as strong as with employment. The high showed that 85% of construction (Cdiv2W) was explained by the explanatory variable to a low of 52% explained for amusement and recreation (Csic79W). FOOTSTAD was strongly influential on wages with 8 industries being positively significant. The addition of the new football stadium added $25 per week for Cdiv2W. GATEWAY was significant in 7 industries with 4 being negatively associated with average weekly wages. As with FOOTSTAD, FOOTPLAY was significant in 4 industries, all positive. Of the non-sports variables, GDP was positively significant in 6 industries.

Most time series analysis requires that the data are stationary. A non-stationary time series that is said to have a unit root. If testing is done and a unit root is determined to be present, differencing is then required to correct for this issue. When the data in this model were tested using the Dickey-Fuller unit root test, a p-value of .90 for total employment and .89 for total wages verified that a unit root was indeed present. To correct this problem, employment and wages were both changed to first differences. When the Dickey-Fuller test was run with first differences, the results showed that no

unit root existed with a p-value of .0005 for employment and .0004 for wages. Thus, the regression was re-run with first differences used as the dependent variables (See Table 10).

When the county model was run using first differences for employment, the adjusted r-squared values ranged between .12 and -.07, which is a drastic decline from the original testing of employment. Only 4 of the possible 110 variables were found to be significant. The only sports variable that was significant was GATEWAY. The building of the Gateway project had a negative effect on employment and is estimated at deceasing manufacturing employment (Cdiv3E) by 560. GDP was positively significant when tested on the retail industry (Cdiv6E) and also hotel and lodging (Csic70E). EDUC was significant and the coefficient shows a 1% change in EDUC decreases total employment (CtotE) by 808.

The results for average weekly wage first differences contain adjusted r-squared values between .47 for services (Cdiv8W) and -.14 for general merchandise (Csic53W). Four sports variables were found significant and they were all positive. FOOTSTAD was significant for the services industry with the coefficient showing that the new football stadium added $14 to average weekly wages. GATEWAY was also significant for the services industry ($9). In addition, with Gateway as the independent variable, total county wages (CtotW) were found significant. Total county wages were estimated to have increased $8.50 with the building of the Gateway structure. FOOTPLAY was seen to have a $2.80 affect on eating and drinking establishment's average weekly wages. Within the non-sports variables, lagged total wages (LAGCTOTW) and GDP showed a

Table 10 – County model Regression Results					Employment – First Difference									
	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCTOTE	GDP	CRIME	EDUC	TREND	N	Adj-r Sq	F-value
CtotE	371.95 0.33	-584.27 -0.83	340.95 0.24	420.33 0.74	-860.29 -0.67	-211.00 -0.37	-0.06 -0.67	49728 1.41	-0.52 -0.50	-808.12 -1.65*	10.21 0.40	155	0.12	2.64
Cdiv2E	-41.92 -0.17	46.18 0.31	-27.62 -0.09	96.45 0.80	112.78 0.42	-27.94 -0.23	0.00 0.02	7294 0.97	0.11 0.48	30.77 0.30	-1.85 -0.34	155	-0.02	0.77
Cdiv3E	85.32 0.17	-569.40 -1.79'	186.31 0.29	71.34 0.28	-168.96 -0.30	62.60 0.24	-0.02 -0.41	7158 0.45	-0.53 -1.13	-219.79 -1.00	1.23 0.11	155	0.03	1.32
Cdiv6E	5.40 0.01	255.13 1.03	276.43 0.55	150.87 0.76	-185.95 -0.42	-276.11 -1.38	-0.03 -0.87	22874 1.85'	0.42 1.15	-265.05 -1.55	7.85 0.88	155	0.02	1.24
Cdiv8E	-317.42 -0.56	-85.24 -0.24	108.51 0.15	-162.81 -0.57	-448.49 -0.70	198.12 0.69	0.01 0.12	26435 1.49	-0.09 -0.16	69.01 0.28	12.81 1.00	155	0.00	1.00
Csic53E	143.01 0.83	62.61 0.59	69.30 0.32	33.57 0.39	59.98 0.31	-98.18 -1.14	0.00 0.00	2032 0.38	0.13 0.85	-99.11 -1.34	-0.15 -0.04	155	-0.06	0.35
Csic58E	-45.40 -0.20	36.71 0.26	-63.97 -0.23	36.11 0.32	-46.74 -0.19	-9.40 -0.08	-0.01 -0.81	1616 0.23	-0.11 -0.53	-39.38 -0.41	-2.96 -0.59	155	-0.02	0.81
Csic65E	10.26 0.11	-56.02 -0.93	-41.20 -0.34	-10.37 -0.21	-1.41 -0.01	36.64 0.75	0.00 0.34	-3596 -1.19	-0.11 -1.25	10.24 0.25	-1.53 -0.70	155	-0.07	0.19
Csic70E	-48.48 -0.90	15.47 0.46	-87.11 -1.28	-26.80 -0.99	-87.38 -1.44	34.89 1.28	0.01 1.27	2811 1.67*	0.04 0.82	2.32 0.10	1.39 1.14	155	0.05	1.67
Csic79E	7.17 0.05	0.56 0.01	-61.11 -0.33	4.36 0.06	-71.71 -0.43	14.12 0.19	0.01 0.67	1226 0.27	0.00 0.02	-26.75 -0.42	-0.14 -0.04	155	-0.07	0.23
						Wages -- First Difference								
	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCTOTW	GDP	CRIME	EDUC	TREND	N	Adj-r Sq	F-value
CtotW	7.04 1.03	8.52 2.01"	-1.08 -0.13	1.50 0.38	-1.10 -0.14	-0.93 -0.25	-0.60 -5.03"	167.53 2.75"	0.01 2.06"	-0.46 -0.16	0.22 0.69	51	0.42	3.65
Cdiv2W	4.50 0.60	1.88 0.41	-2.06 -0.23	2.69 0.62	3.50 0.41	-0.49 -0.12	-0.56 -4.24***	-29.66 -0.44	0.00 0.12	0.94 0.29	-0.10 -0.28	51	0.22	2.06
Cdiv3W	4.02 0.30	12.92 1.55	-0.89 -0.06	1.88 0.24	1.67 0.11	-0.16 -0.02	-0.66 -2.80"	237.22 1.98**	0.01 1.39	2.02 0.34	0.32 0.50	51	0.11	1.46
Cdiv6W	-0.82 -0.21	1.34 0.55	-0.93 -0.20	-0.90 -0.39	-0.23 -0.05	2.05 0.97	-0.19 -2.67***	64.92 1.84**	0.00 0.18	2.23 1.29	0.18 0.97	51	0.15	1.65
Cdiv8W	14.50 2.14"	9.02 2.14"	-3.62 -0.45	2.79 0.70	-6.33 -0.82	-2.88 -0.79	-0.69 -5.80"	139.80 2.31"	0.01 2.65"	-5.15 -1.73'	0.08 0.25	51	0.47	4.26
Csic53W	3.51 0.39	3.89 0.70	-7.57 -0.71	1.68 0.32	-6.83 -0.67	2.40 0.50	-0.23 -1.44	94.27 1.18	0.01 0.93	0.43 0.11	0.21 0.48	51	-0.14	0.54
Csic58W	-1.93 -0.66	0.16 0.09	-2.46 -0.71	-1.70 -1.00	-0.78 -0.24	2.83 1.81'	-0.05 -1.00	64.57 2.48"	0.00 0.01	1.27 0.99	0.06 0.42	51	0.09	1.39
Csic65W	3.97 0.48	-0.99 -0.19	7.23 0.73	4.92 1.02	6.70 0.71	-2.65 -0.60	-0.45 -3.08***	167.34 2.27**	0.00 0.22	1.38 0.38	0.28 0.70	51	0.23	2.11
Csic70W	5.04 0.47	3.94 0.59	-6.15 -0.48	6.60 1.05	-6.71 -0.55	-0.02 0.00	-0.15 -0.80	116.07 1.20	0.01 1.31	-5.37 -1.13	0.20 0.40	51	-0.15	0.52
Csic79W	79.55 1.41	37.17 1.06	43.03 0.64	0.32 0.01	4.68 -0.07	3.64 0.12	-2.12 -2.14"	375.42 0.75	0.04 1.00	-20.46 -0.83	0.06 0.02	51	-0.03	0.91

* 1 percent significance level **5 percent significance level '10 percent significance level

pattern in their results. LAGCTOTW was significantly negative in 7 industries while GDP was significantly positive for 6 industries.

The conclusion from the county is model is that the sports variables have almost no affect on employment. If any relationship was shown, it was negative with one variable having a negative impact. The results for wages did show a positive impact from the sports variables, although this impact was very minor.

County/State Model

When the independent variables were first tested against employment in the county/state ratio model, the adjusted r-squared values were all extremely high. The values ranged from 99% (CStotE) of the dependent variable being explained to 77% (CSsci65E). Of the 110 t-values, 64 were found significant (37 positive, 27 negative). FOOTSTAD was significant in 9 of the 10 industries with 7 having a positive impact on employment. GATEWAY, in contrast, was significant for 8 industries with 7 coefficients being negative. Average weekly wages had adjusted r-squared values ranging from 76% of eating and drinking establishment (CSdiv58W) wages explained to 18% in services (CSdiv8W). The significant t-values were less in number than in employment with 21 of the 110 cases significant (9 positive, 12 negative). GATEWAY again was found significant quite often. Of the 7 times it was significant, 5 were negatively associated with wages. (See Table 11 for details)

When the data in this model were tested using the Dickey-Fuller unit root test, a p-value of .552 for total employment and .156 for total wages verified that a unit root was

Table 11 -- County/State Model Regression Results Employment -- Ordinary Least Squares

	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCSTOTE	GDP	CRIMECS	EDUCCS	TREND	N	Adj-r Sq	F-value
CStotE	0.001	-0.003	0.000	0.000	0.000	0.000	0.674	0.005	0.003	0.016	0.000	156	0.997	3822.8
	3.724***	-6.347***	0.262	0.842	1.228	-1.745*	12.372***	0.815	2.274**	1.261	-4.521***			
CSdiv2E	0.003	-0.008	0.001	-0.001	-0.002	-0.004	-0.892	-0.025	0.059	0.171	0.000	156	0.794	46.5
	2.920***	-2.965***	0.645	-1.880*	-1.347	-5.614***	-3.063***	-0.806	7.728***	2.586***	-1.626			
CSdiv3E	-0.001	-0.004	0.001	0.000	0.000	-0.001	0.941	-0.004	0.012	0.074	0.000	156	0.995	2426.8
	-1.665*	-4.144***	2.088**	-1.007	-0.512	-5.424***	9.102***	-0.392	4.346***	3.153***	-2.206**			
CSdiv6E	0.002	-0.001	-0.002	0.000	0.001	0.000	0.820	0.017	0.007	0.029	0.000	156	0.979	560.8
	2.978***	-1.174	-3.792***	-1.649*	0.919	1.473	6.297***	1.232	2.162**	0.996	-1.578			
CSdiv8E	0.001	-0.007	0.001	0.001	0.000	0.001	0.714	0.016	-0.016	-0.052	0.000	156	0.991	1262.1
	1.912*	-5.518***	1.897*	6.163***	0.527	2.717***	5.806***	1.200	-5.146***	-1.858*	-4.959***			
CSsic53E	0.007	-0.010	-0.005	0.000	0.003	0.000	1.191	0.102	0.008	0.341	0.000	156	0.966	340.1
	4.684***	-2.682***	-2.868***	0.431	2.030**	0.056	3.035***	2.466**	0.738	3.824***	-4.397***			
CSsic58E	0.000	-0.005	0.000	0.000	0.000	0.000	0.173	0.157	0.016	0.070	0.000	156	0.869	79.5
	0.200	-2.669***	0.267	-1.083	-0.023	-0.271	0.907	7.814***	3.233***	1.623	2.212**			
CSsic65E	0.007	-0.011	0.000	0.001	0.001	0.001	0.139	0.060	0.014	-0.062	0.000	156	0.776	42.0
	3.489***	-2.248**	0.016	0.675	0.671	1.155	0.286	1.170	1.077	-0.559	-0.545			
CSsic70E	0.010	0.000	-0.010	0.001	0.003	0.010	1.519	-0.182	-0.101	0.312	0.000	156	0.906	115.4
	6.044***	0.111	-4.985***	0.707	1.458	9.041***	3.532***	-4.02***	-9.005***	3.190***	-1.300			
CSsic79E	-0.005	0.009	-0.004	0.003	-0.003	0.000	2.713	0.409	0.060	-0.706	0.001	156	0.850	67.8
	-2.372**	1.794*	-1.495	2.821***	-1.098	-0.219	5.197***	7.44***	4.404***	-5.948***	6.503***			
	Wages -- Ordinary Least Squares													
	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCSTOTW	GDP	CRIMECS	EDUCCS	TREND	N	Adj-r Sq	F-value
CStotW	0.005	0.009	-0.005	-0.004	-0.005	0.001	-0.168	-0.038	0.064	-0.180	0.001	52	0.375	3.3
	1.077	3.045***	-0.689	-1.429	-0.780	0.212	-0.936	-0.742	2.154**	-0.621	2.002**			
CSdiv2W	-0.006	-0.024	-0.007	-0.001	0.006	-0.011	0.031	-0.134	0.041	0.607	-0.001	52	0.594	6.6
	-0.611	-3.599***	-0.469	-0.114	0.420	-1.331	0.077	-1.179	0.603	0.930	-1.149			
CSdiv3W	0.012	0.015	-0.010	0.005	-0.002	0.004	0.012	-0.025	0.029	-0.511	0.000	52	0.681	9.1
	1.639	3.165***	-0.949	1.119	-0.244	0.711	0.042	-0.302	0.600	-1.095	1.100			
CSdiv6W	0.010	-0.027	-0.004	-0.005	0.010	0.001	0.032	-0.056	0.075	0.832	-0.001	52	0.745	12.1
	1.078	-4.556***	-0.326	-0.813	0.817	0.097	0.087	-0.534	1.221	1.395	-2.404**			
CSdiv8W	0.004	-0.002	-0.014	-0.010	-0.008	0.004	0.177	0.059	0.045	-1.479	0.000	52	0.186	1.9
	0.360	-0.309	-0.860	-1.427	-0.542	0.456	0.395	0.468	0.602	-2.044**	0.396			
CSsic53W	-0.002	-0.054	0.003	-0.016	-0.014	-0.043	-1.383	-0.301	0.503	-0.816	0.000	52	0.754	12.7
	-0.074	-3.032***	0.063	-0.975	-0.374	-2.002**	-1.271	-0.980	2.772**	-0.464	0.243			
CSsic58W	0.014	-0.044	-0.042	-0.006	-0.013	0.028	-0.055	0.115	0.122	2.342	-0.001	52	0.767	13.6
	0.871	-4.409***	-1.902*	-0.672	-0.623	2.289**	-0.091	0.668	1.203	2.379**	-0.677			
CSsic65W	-0.012	-0.018	0.012	-0.006	-0.002	-0.002	-1.461	-0.124	0.063	0.482	0.003	52	0.391	3.5
	-0.686	-1.665*	0.512	-0.590	-0.074	-0.150	-2.250**	-0.679	0.580	0.459	3.524***			
CSsic70W	-0.001	-0.013	-0.046	-0.076	0.014	-0.045	-0.816	-0.411	0.412	-5.649	0.000	52	0.330	2.9
	-0.015	-0.494	-0.803	-3.183***	0.262	-1.464	-0.524	-0.936	1.585	-2.242**	-0.071			
CSsic79W	-0.062	0.130	0.182	-0.053	0.077	0.029	-1.976	0.899	0.163	-16.074	0.020	52	0.489	4.7
	-0.445	1.480	0.928	-0.640	0.411	0.276	-0.367	0.592	0.182	-1.847*	2.666***			

*** 1 percent significance level ** 5 percent significance level * 10 percent significance level

Table 12 -- County/State Model Regression Results Employment -- First Differences

	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCSTOTE	GDP	CRIMECS	EDUCCS	TREND	N	Adj-r Sq	F-value
CStotE	-0.340 -0.419	-0.546 -1.225	-0.105 -0.092	-0.079 -0.173	-0.124 -0.122	0.234 0.382	-0.030 -0.330	-26.487 -1.060	-4.607 -0.785	-20.482 -0.428	0.001 0.027	155	-0.020	0.77
CSdiv2E	-4.535 -1.713*	-0.537 -0.369	0.642 0.173	0.553 0.369	-0.261 -0.078	1.894 0.948	-0.076 -0.255	-15.991 -0.196	-19.332 -1.009	153.471 0.984	0.040 0.610	155	-0.027	0.69
CSdiv3E	-0.144 -0.358	0.035 0.158	0.033 0.059	0.076 0.334	-0.299 -0.595	-0.192 -0.635	0.035 0.767	17.889 1.449	5.373 1.851*	2.177 0.092	0.013 1.348	155	-0.018	0.79
CSdiv6E	0.768 0.986	0.022 0.051	0.485 0.443	0.832 1.887*	0.420 0.431	0.372 0.634	0.000 0.002	-19.484 -0.813	-5.945 -1.055	52.888 1.153	0.005 0.282	155	0.049	1.61
CSdiv8E	0.840 1.082	-0.276 -0.648	0.754 0.692	0.284 0.647	-0.020 -0.021	-0.002 -0.004	-0.040 -0.458	-13.903 -0.582	-3.395 -0.605	-7.740 -0.169	-0.005 -0.241	155	-0.037	0.58
CSsic53E	-1.92 -0.595	-1.12 -0.630	-1.87 -0.412	-0.26 -0.141	0.57 0.141	5.29 2.170**	-0.03 -0.087	-74.51 -0.749	-43.78 -1.873*	236.86 1.244	-0.070 -0.873	155	-0.025	0.71
CSsic58E	0.836 1.800*	0.066 0.257	0.203 0.312	0.273 1.038	0.212 0.363	0.066 0.187	0.031 0.589	4.656 0.326	1.249 0.372	21.421 0.783	-0.004 -0.387	155	0.003	1.04
CSsic65E	-0.76 -0.193	0.04 0.019	-3.87 -0.697	-0.91 -0.405	-6.79 -1.372	2.14 0.718	-0.13 -0.284	-9.34 -0.077	-1.69 -0.059	-313.20 -1.346	0.085 0.867	155	-0.007	0.92
CSsic70E	3.72 1.802*	-0.01 -0.012	-7.84 -2.703***	1.71 1.464	-0.69 -0.266	1.34 0.858	-0.02 -0.087	-159.20 -2.504**	1.74 0.116	-319.67 -2.627*	-0.128 -2.518**	155	0.105	2.37
CSsic79E	-0.305 -0.228	0.781 1.059	-2.370 -1.258	0.451 0.593	-0.378 -0.225	0.051 0.051	0.057 0.373	-4.103 -0.099	7.515 0.774	19.698 0.249	-0.009 -0.257	155	-0.024	0.73
	Wages -- First Differences													
	FOOTSTAD	GATEWAY	FOOTFRAN	BASKPLAY	BASEPLAY	FOOTPLAY	LAGCSTOTW	GDP	CRIMECS	EDUCCS	TREND	N	Adj-r Sq	F-value
CStotW	-1.354 -1.315	-0.927 -1.536	0.471 0.316	-1.392 -1.935*	0.956 0.709	-1.273 -1.539	-0.443 -2.448**	14.861 1.422	8.302 1.213	-80.324 -1.270	0.038 0.608	51	0.227	2.1
CSdiv2W	-9.355 -1.305	-1.605 -0.382	-3.724 -0.359	1.538 0.307	2.923 0.311	2.273 0.395	0.999 0.793	27.740 0.381	4.601 0.097	28.820 0.065	0.371 0.851	51	-0.057	0.8
CSdiv3W	-27.298 -1.241	0.679 0.053	-21.783 -0.684	8.795 0.572	-1.446 -0.050	-6.973 -0.395	2.601 0.673	118.295 0.530	76.112 0.520	-118.866 -0.088	0.976 0.730	51	-0.082	0.7
CSdiv6W	0.929 0.893	0.598 0.982	-13.872 -9.224***	0.156 0.215	-13.780 -10.116***	0.529 0.634	0.047 0.259	-3.649 -0.346	4.345 0.629	15.249 0.239	0.017 0.276	51	0.749	12.1
CSdiv8W	-104.88 -0.799	70.18 0.912	0.94 0.005	-210.18 -2.292**	58.82 0.342	200.97 1.906*	-26.98 -1.171	85.25 0.064	-1397.94 -1.602	15525.00 1.925*	-5.474 -0.687	51	0.049	1.2
CSsic53W	-3.683 -1.113	-0.605 -0.312	-2.998 -0.626	-2.421 -1.047	0.422 0.097	0.191 0.072	-0.706 -1.215	-32.307 -0.962	-16.796 -0.764	288.420 1.419	-0.137 -0.683	51	-0.031	0.9
CSsic58W	2.114 0.209	1.271 0.214	-119.489 -8.144***	2.021 0.285	-113.433 -8.536***	5.804 0.713	-1.533 -0.861	-74.577 -0.725	74.494 1.106	643.231 1.033	0.110 0.178	51	0.716	10.4
CSsic65W	-5.852 -0.701	-6.400 -1.307	-8.704 -0.720	-1.601 -0.274	-1.173 -0.107	4.773 0.711	-0.723 -0.493	139.848 1.650*	-21.631 -0.390	-200.217 -0.390	-0.139 -0.275	51	-0.075	0.7
CSsic70W	33.368 0.460	3.351 0.079	7.979 0.076	58.503 1.153	-15.183 -0.160	21.314 0.366	20.689 1.623	359.106 0.487	498.268 1.033	3496.616 0.784	4.395 0.997	51	-0.034	0.9
CSsic79W	-698.6 -1.014	-113.8 -0.282	-577.6 -0.579	-572.5 -1.189	-361.8 -0.401	-188.0 -0.340	-57.4 -0.475	8498.614 1.215	3770.0 0.823	-45385.0 -1.072	-8.925 -0.213	51	0.004	1.0

*** 1 percent significance level ** 5 percent significance level * 10 percent significance level

indeed present. Employment and wages were again changed to first differences. When the Dickey-Fuller test was then run with first differences, the results showed that no unit root existed with a p-value of .00007 for employment and .048 for wages. Thus, the regression was re-run with first differences used as the dependent variables. (See Table 12 for details)

When the county/state regression was re-run with employment first differences, the r-squared values considerably declined. The values now ranged from .105 to -.037. Of the 110 coefficients estimated only 11 were statistically significant, that included 6 coefficients for the sports coefficients (4 positive, 2 negative). FOOTSTAD was positively significant when regressed on two industries, eating and drinking establishments (CSsci58E) and hotels and lodging (CSsic70E), while it was negative with construction (CSdiv2E). FOOTPLAY and BASKEPLAY were positively significant once each. The basketball playoffs had a positive affect on retail employment (CSdiv6E) while football playoffs had a positive impact on general merchandise stores employment (CSsic53E). FOOTFRAN had a negative affect on employment in the hotels and lodging industry (CSsic70E).

The county/state ratio model also watched the majority of the r-squared values decrease for average weekly wages when changed to first differences. Real estate (CSsic65W) fell to -.075 while retail employment (CSdiv6W), however, climbed to .749. Of the 10 significant variables, 7 were sports variables. In contrast to the employment results, 6 of the 7 significant t-values were negative. FOOTFRAN, BASKPLAY, and BASEPLAY each showed negative coefficients twice. The football franchise and baseball playoff variables were both seen to have negative impacts on retail (CSdiv6W)

and eating and drinking establishments (CSsic58W). BASKPLAY had a negative affect on overall county average weekly wages (CStotW) and services (CSdiv8W). FOOTPLAY was the lone sports variables having a positive impact on wages with a positive coefficient for services.

The overall county/state results showed a tendency for employment to be positively affected and average weekly wages to be negatively affected by the sports variables. However, these results also showed trends within some of the specific sports variables. FOOTPLAY was significant once for both employment and wages and in both cases it is positive. FOOTFRAN, however, is negatively impacting employment once and wages twice.

Chapter 8-- Conclusion

Stadium supporters debate that newly constructed facilities add jobs and businesses, increase wages, and have an affect on the city that can't be duplicated. In contrast, the past studies discussed in this paper show how sports variables aren't consistently linked with local economic growth. The results of numerous studies experienced a negative or inconsistent correlation between the sport variables and dependent variables. Many studies also had variables cancel one another out or results where the positive effects were minimal. The findings in this statistical study were no different.

In the county model, employment was only significant in one case. The Gateway project was found negatively associated with manufacturing employment. This industry was one of the largest in Cuyahoga County and was also the highest paying among the industries examined. Average weekly wages were significant in four industries, but the coefficients showed that the increases were not substantial. For example, the service industry, which has an average weekly wage of $337 in 2000, showed a modest gain of $14 per week.

The county/state model showed that sports variables had a positive affect on employment in four industries and a negative impact in two industries. The football stadium variable was positive for the hotel and lodging industry while football franchise was negative. These two football variables basically cancel each other out. The other three industries with positively significant sports variable had very low average weekly wages and aren't jobs that a community can build around. These industries included retail stores, general merchandise stores, and eating and drinking establishments which

had average weekly wages in 2000 of $203, $182, and $134, respectively. When testing the explanatory variables on average weekly wages, it was overwhelmingly obvious that the sports variables weren't supportive of wage growth. Six of the seven significant variables had a negative impact on wages.

In conclusion, the construction of stadiums in Cleveland was regularly called a success story. If the goal was the build state of the art structures and to refurbish a small district within a city, then the outcome was indeed successful. If the goal was to create thousands of jobs and substantially increase personal income, then the outcome was not as positive. Therefore, I believe the real winners of the 1990's stadium construction boom were the owners and players of these franchises. The citizens of Cuyahoga County have put millions of dollars in this investment and are still waiting for the return.

Appendix

Table 1- Current Stadium Situations

Table 1 is a complete table that shows each of the current major league teams with their current stadium (future stadium if necessary), year built, cost and percentage paid by the public.

Major League Baseball				
Team	Stadium	Year	Cost	Public %
Anaheim Angels	Edison Field	1966	24	100
Arizona Diamondbacks	Bank One Ballpark	1998	355	71
Atlanta Braves	Turner Field	1997	235	100
Baltimore Orioles	Camden Yards	1992	235	96
Boston Red Sox	Fenway Park	1912	1	NA
Chicago Cubs	Wrigley Field	1914	1	NA
Chicago White Sox	Comiskey park	1991	150	100
Cincinnati Reds	Cinergy Field	1970	44	100
	Great American Ballpark	2003	280	82
Cleveland Indians	Jacobs Field	1994	173	88
Colorado Rockies	Coors Field	1995	215	75
Detroit Tigers	Comerica Park	2000	395	63
Florida Marlins	Pro Player Stadium	1987	115	3
Houston Astros	Enron Field	2000	266	68
Kansas City Royals	Kauffman Stadium	1973	43	100
Los Angeles Dodgers	Dodger Stadium	1962	18	0
Milwaukee Brewers	Miller Park	2001	322	66
Minnesota Twins	Metrodome	1982	103	93
Montreal Expos	Olympic Stadium	1976	508	100
New York Mets	Shea Stadium	1964	21	100
New York Yankees	Yankee Stadium	1923	2	100
Oakland Athletics	Network Ass. Coliseum	1966	30	100
Philadelphia Phillies	Veterans Stadium	1971	50	100
	TBA	2004	346	50
Pittsburgh Pirates	PNC Park	2001	228	70
San Diego Padres	Qualcomm Stadium	1967	27	100
	TBA	2005	411	57
San Francisco Giants	Pac Bell Park	2000	306	5
Seattle Mariners	Safeco Field	1999	517	72
St. Louis Cardinals	Busch Stadium	1966	22	0
Tampa Bay Devil Rays	Tropicana Field	1990	85	100
Texas Rangers	The Ballpark	1994	191	80
Toronto Blue Jays	Skydome	1989	376	63

National Football League				
Team	Stadium	Year	Cost	Public %
Arizona Cardinals	Sun Devil	1958	1	100
	TBA	2005	331	71
Atlanta Falcons	Georgia Dome	1992	214	100
Baltimore Ravens	PSINet	1998	229	87
Buffalo Bills	Ralph Wilson	1973	22	100
Carolina Panthers	Ericsson	1996	248	0
Chicago Bears	Soldier Field	1924	10	100
Cincinnati Bengals	Paul Brown	2000	458	95
Cleveland Browns	Browns	1999	309	70
Dallas Cowboys	Texas	1971	30	83
Denver Broncos	Invesco Field	2001	365	73
Detroit Lions	Ford Field	2002	225	36
Green Bay Packers	Lambeau Field	1957	1	100
Houston Texans	Reliant	2002	402	71
Indianapolis Colts	RCA Dome	1984	95	50
Jacksonville Jaguars	Alltel	1946	135	90
Kansas City Chiefs	Arrowhead	1972	43	100
Miami Dolphins	Pro Player	1987	115	10
Minnesota Vikings	Hubert Humphrey	1982	103	81
News England Patriots	CMGI	2002	350	0
New Orleans Saints	Superdome	1975	134	100
New York Giants	Giants	1976	75	100
New York Jets	Giants	1976	75	100
Oakland Raiders	Coliseum	1996	223	100
Philadelphia Eagles	Veterans	1971	50	100
	Lincoln Financial	2003	395	21
Pittsburgh Steelers	Heinz Field	2001	244	69
San Diego Chargers	Qualcomm	1967	27	100
San Francisco 49ers	3com Park	1960	25	100
Seattle Seahawks	Seahawks	2002	430	77
St. Louis Rams	TWA	1995	300	100
Tampa Bay Buccaneers	Raymond James	1998	190	100
Tennessee Titans	Tennessee	1999	292	100
Washington Redskins	Jack Kent Cooke	1997	251	28

National Basketball Association				
Team	Stadium	Year	Cost	Public %
Atlanta Hawks	Philips Arena	1999	214	91
Boston Celtics	Fleet Center	1995	160	0
Chicago Bulls	United Center	1994	150	7
Cleveland Cavaliers	Gund Arena	1994	152	48
Dallas Mavericks	American Airlines Arena	2001	350	42
Denver Nuggets	Pepsi Center	1999	165	3
Detroit Pistons	The Palace	1988	70	0
Golden State Warriors	Colisum Arena	1966	26	100
Houston Rockets	Compaq Center	1975	27	100
	TBA	2003	202	90
Indiana Pacers	Conseco Fieldhouse	1999	175	41
Los Angeles Clippers	Staples Center	1999	375	73
Los Angeles Lakers	Staples Center	1999	375	73
Memphis Grizzlies	The Pyramid	1992	NA	NA
	TBA	2003		NA
Miami Heat	American Airlines Arena	1999	241	59
Milwaukee Bucks	Bradley Center	1988	71	0
Minnesota Timberwolves	Target Center	1990	117	100
New Jersey Nets	Continental Airlines Arena	1981	85	100
New Orleans Hornets	New Orleans Arena	1999	110	100
New York Knicks	Madison Square Garden	1968	43	100
Orlando Magic	TD Waterhouse Centre	1989	102	100
Philadelphia 76ers	First Union Corp Center	1996	206	11
Phoenix Suns	America West Arena	1992	90	39
Portland Trailblazers	Rose Garden	1995	262	13
Sacramento Kings	Arco Arena	1988	40	0
San Antonio Spurs	SBC Center	2002	175	84
Seattle Supersonics	Key Arena	1995	110	100
Toronto Raptors	Air Canada Center	1999	165	0
Utah Jazz	Delta Center	1991	90	21
Washington Wizards	MCI Center	1997	260	23

National Hockey League				
Team	Stadium	Year	Cost	Public %
Atlanta Thrashers	Philips Arena	1999	214	91
Boston Bruins	FleetCenter	1995	160	0
Buffalo Sabres	HSBC Arena	1996	123	44
Calgary Flames	Pengrowth Saddledome	1983	116	100
Carolina Hurricanes	Ralegh Ent. and Sports Arena	1999	110	87
Chicago Blackhawks	United Center	1994	150	7
Colorado Avalance	Pepsi Center	1999	165	3
Columbus Blue Jackets	Nationwide Arena	2000	150	0
Dallas Stars	American Airlines Arena	2001	350	42
Detroit Red Wings	Joe Louis Arena	1979	57	100
Edmonton Oilers	Skyreach Center	1974	45	NA
Florida Panthers	National Car Rental Arena	1998	212	87
Los Angeles Kings	Staples Center	1999	375	73
Anaheim Mighty Ducks	Arrowhead Pond	1993	120	100
Minnesota Wild	Xcel Energy Center	2000	170	100
Monteal Canadiens	Molson Centre	1996	152	0
Nashville Predators	Gaylord Ent. Center	1997	144	100
New Jersey Devils	Continental Airlines Arena	1981	85	100
New York Islanders	Nassau Veterans Memorial	1972	31	100
New York Rangers	Madison Square Garden	1968	43	100
Ottawa Senators	Corel Centre	1996	132	21
Philadelphia Flyers	First Union Corp. Center	1996	206	11
Phoenix Coyotes	America West Arena	1992	90	39
	Los Arcos Arena	2002	170	NA
Pittsburgh Penguins	Mellon Arena	1961	22	NA
San Jose Sharks	HP Pavilion	1993	170	82
St. Louis Blues	Savvis Center	1994	160	15
Tampa Bay Lightning	Ice Palace	1996	139	62
Toronto Maple Leafs	Air CanadaCentre	1999	175	0
Vancouver Canucks	General Motors Place	1995	106	0
Washington Capitals	MCI Center	1997	260	23

Source: National Sports Law Institute of Marquette University

*Cost rounded to nearest million

*Future sites are projections.

*Canadian costs are not exact b/c of exchange rate

*Doesn't include renovations

Table 2- Past Studies Summary Table

Author(s)	Baade/Dye
Title	An Analysis of the Economic Rationale for Public Subsidization of Sports Stadiums; The Annals of Regional Science; 1988
Dependent Variables	EMP- Manufacturing Employment, VA- Manufacturing Value Added, CAP- New Capital Expenditures
Data Description	Eight SMSAs are used in this study. Each dependent variable is measured as SMSA activity as a % of activity in the corresponding multi-state region. The data are from the Bureau of the Census, Annual Survey of Manufacturers.
Independent Variables	POP- Population of SMSA as % of region, TREND- simple trend from 1 to 14 for 1965-1978, STAD- dummy variable of zero before and one after renovation or new stadium, FOOT- dummy variable of zero if NFL not present and one if a team is present, BASE- dummy variable of zero if MLB team not present and one if a team is present
Conclusion	Only four of thirty-six variables were found to be significantly positive. San Diego was the only city where a stadium variable was significantly positive (EMP and CAP). These results lead us to believe new stadiums do not have a significant effect on the local economies.
Author(s)	Baade/Dye
Title	The Impact of Stadiums and Professional Sports on Metropolitan Area Development; Growth and Change; 1990
Dependent Variables	Y- SMSA real aggregate personal income, Y/Yr-SMSA real aggregate personal income as a fraction of appropriate region, RETAIL- SMSA retail sales, RETAIL/RETAILr- SMSA retail sales as a fraction of corresponding region
Data Description	This study uses nine SMSAs in the analysis. Regression analysis is run to evaluate the impact of stadiums on the SMSAs and then the SMSAs relative to its region. Real aggregate income figures (Y, Yr) are from the Bureau of Economic Analysis, Local Area Personal Income and are in 1982 dollars. Population figures (POP, POPr) are from the Bureau of the Census, Current Population Reports. Retail numbers (RETAIL, RETAILr) come from Bureau of the Census, Census of Retail Trade.
Independent Variables	POP- SMSA population, POP/POPr- SMSA population as a fraction of region, TREND- simple trend from 1 to 19 for 1965-1983, STAD- dummy variable of zero before and one after renovation or new stadium, FOOT- dummy variable of zero if NFL not present and one if a team is present, BASE- dummy variable of zero if MLB team not present and one if a team is present
Conclusion	The STAD variable was only significant and positive on area income (Y) in one out of nine SMSAs (Seattle). When compared to the region, STADs effects on area income (Yr) were more mixed with four significantly positive and two significantly negative. In both RETAIL and RETAILr, the results show STAD to be insignificant.
Author(s)	Baade/Sanderson
Title	The Employment Effect of Teams and Sports Facilities; Sports, Jobs, and Taxes; 1997
Dependent Variables	CE/SE- MSA share of state employment in SIC 79 (amusement and recreation) and SIC 794 (commercial sports industry)
Data Description	Ten MSAs were examined from 1958-93. Sports teams and new sport facilities were studied to see if they have an effect on employment in the amusement and recreation industry. Statistics gathered from the Bureau of Labor Statistics, County Business Patterns.
Independent Variables	CRPCY/SRPCPY- ratio of city real per capita income to the state, CPOP/SPOP- city share of state population, CAWWISAWW- ratio of hours worked per week in durable goods sector in city relative to state, NT- number of professional sports teams, NS- number of new stadiums or arenas that are 11 years old or less
Conclusion	The dependent variable NS was insignificant at the 5% level in all but four cases. These four cases were all seen to be negatively significant.
Author(s)	Baade
Title	Stadiums, Professional Sports, and Economic Development: Assessing the Reality; Heartland Policy Study; 1994
Dependent Variables	Y- real per capita personal income.
Data Description	Forty-eight MSAs were examined from 1958-87. This study examines whether the presence of professional sports and stadiums have an effect on metro real per capita income growth relative to other cities in the sample and its own growth. Location of teams and stadiums from 1992 Sports Almanac. Personal income data from Bureau of Economic Analysis.
Independent Variables	NT- number of professional sports teams, NS- number of stadiums or arenas that are 10 years old or less
Conclusion	Of the thirty cities where the stadium situation changed, twenty-seven were found to be insignificant. The remaining three cases were negatively significant. This study shows that stadiums have a negative impact on local economies.

Author(s)	Baim
Title	Non-Financial Data and Analysis; The Sports Stadium as a Municipal Investment; 1994
Dependent Variables	SerEmp- Service Employment, NonAgEMP- Non-agriculture Employment, Crime- Crime Index
Data Description	Regression analysis is used to evaluate the impact of sports teams on certain cities to see whether service employment, non-agriculture employment, and crime is significant. SerEmp and NonAgEmp are gathered from the Bureau of Labor Statictics. Crime data is from the United States Department of Justice, Federal Bureau of Investigation.
Independent Variables	POP- poulation of city, FOOT- dummy variable of zero if NFL not present and one if a team is present, BASE- dummy variable of zero if MLB team not present and one if a team is present
Conclusion	The specific results depend on the size of the city question, but overall they show that the independent variables have a positive impact on service employment and non-agricultural employment. As for Crime, more often than not it depends more on population than on sports variables.
Author(s)	Coates/Humphreys
Title	The Growth Effects of Sports Franchises, Stadia and Arenas; Journal of Policy Analysis and Management; 1999
Dependent Variables	RPCPI- real per capita income, GRPCPI- growth in real per capita income
Data Description	Three of the four major sports leagues (NFL, MLB, and NBA) and associated stadiums were examined in thirty-seven SMSAs from 1969-94. Numerous sports related variables are used to see if they affect real per capita income and growth in real per capita income. Income and population data are from the Regional Economic Information System, Bureau of Economic Analysis. The sports data are from Noll and Zimbalist (1997), Quirk and Fort (1992), and the Information Please Sports Almanac (1996).
Independent Variables	DROP- % change in population, BBCAP- baseball stadia capacity, FBCAP- football stadia capacity, BACAP- basketball stadia capacity, BAE1- first basketball franchise entered last 10 years, BAE2- second basketball franchise entered last 10 years, FBE1- first football franchise entered last 10 years, FBE2- second football franchise entered last 10 years, BBE1- first baseball franchise entered last 10 years, BBE2- second baseball franchise entered last 10 years, BBD1- first basketball franchise left last 10 years, BBD2- second basketball franchise left last 10 years, FBD1- first football franchise left last 10 years, BAD1- first baseball franchise left last 10 years, BAD2- second baseball franchise left last 10 years,
	BBCO- baseball stadium constructed last 10 years, FBCO- football stadium constructed last 10 years, BBFB- baseball/football stadium constructed last 10 years, BACO- basketball arena constructed last 10 years, BBF- baseball franchise present, FBF- football franchise present, BAF- basketball franchise present, BBE- any baseball franchise entered last 10 years, BAE- any basketball franchise entered last 10 years, FBE- any football franchise entered last 10 years, BBD- any baseball franchise left last 10 years, BAD- any basketball franchise left last 10 years, FBD- any football franchise left last 10 years
Conclusion	Three of the four construction variables are negative when regressed on real per capita income and each has a larger t-statistic than the positive variable. Basketball arena construction is significantly negative. The sports variables were shown to have no impact on growth of real per capita income.
Author(s)	Coates/Humphreys
Title	The Effect of Professional Sports on the Earnings of Individuals: Evidence from Microeconomic Data; 2002
Dependent Variables	rwkwage-real average weekly wage
Data Description	Three of the four major sports leagues (NFL, MLB, and NBA) and associated stadiums were examined in thirty-seven SMSAs from 1977-98. The characteristics of individual workers (male, female, etc), city, year specific events, and sports variables were examined to see if they affected wages. The employee data was used from the Bureau of Labor Statistics, Current Population Survey.
Independent Variables	male- 1 if male, white- 1 if white, black- 1 if black, inage- years of age, unioncov- 1 if job covered by union contract, unionmem- 1 if union member, athlete- 1 if an athlete, announce- 1 if radio/tv announcer, saleman- 1 if sales manager, salesret- 1 if sales clerklcashierlcounter worker, hotelclrk- 1 if hote lclerk, foodserv- 1 if food service worker, ushers- 1 if usher, maidbell- 1 if maid or bellhop, nohschl- 1 if didn't graduate highschool, bachdgr- 1 if bachelor degree, somecoll- 1 if some college, hschlgrd- 1 if highschool grad, fbfr- 1 if football franchise present, bafr- 1 if basketball franchise present, bbfr- 1 if baseball franchise present, bae- 1 if basketball franchise entered in last 10 years, bbe- 1 if baseball franchise entered in last 10 years, fbe- 1 if football franchise entered in last 10 years, bad- 1 if basketball franchise departed in last 10 years, bbd- 1 if baseball franchise departed in last 10 years, fbd- 1 if football franchise departed in last 10 years, bbcap- basketball seating capacity, fbcap- football seating capacity, bacap- baseball seating capacity, bbco- baseball stadium constructed in last 10 years, fbco- football stadium constructed in last 10 years, bbfbc- football/baseball stadium constructed in last 10 years, baco- basketball arena constructed in last 10 years

Conclusion	The results of this study show that the overall sports environment is frequently statistically significant as a determinant of income and the impact on wages is negative. The results do differ across occupations though. Some small groups of workers in the stadium see their income rise due to the presence of pro sports. But overall the real average weekly wage was seen to decrease by $46.11 for workers in this sample.
Author(s)	Richardson
Title	Revisiting the Income and Growth Effects of Professional Sports Franchises: Does Success Matter; Discussion Paper, Massey University Department of Applied and International Economics; 2002
Dependent Variables	RPCPI- real per capita SMSA income, GROWTH- growth in real per capita SMSA income
Data Description	The four major sports leagues and associated stadiums were examined in fifty-seven SMSAs from 1970-97. Local area and sports variables were regressed on income and income growth. Both a single and multiple entry and exit model were used.
Independent Variables	RPCPI-1- change from prior quarter real per capita income, DROP- % change in population, BKCAP- basketball stadia capacity, FBCAP- football stadia capacity, BSCAP- baseball stadia capacity, HYCAP- hockey stadia capacity, FBFR- football franchise present, BKFR- basketball franchise present, BSFR- baseball franchise present, HYFR- hockey franchise present, BKCO- basketball arena constructed last 10 years, FBCO- football stadium constructed last 10 years, BSFBCO- baseball/football stadium constructed last 10 years, BSCO- baseball stadium constructed last 10 years, HYCO- hockey arena constructed last 10 years, BKHYCO- basketball/hockey arena constructed last 10 years, FBFE- football franchise entered last 10 years, BKFE- basketball franchise entered last 10 years, BSFE- baseball franchise entered last 10 years, HYFE- hockey franchise entered last 10 years, FBFD- football franchise departed last 10 years, BKFD- basketball franchise departed last 10 years, BSFD- baseball franchise departed last 10 years, HYFD- hockey franchise departed last 10 years, FBFE1- first football franchise entered last 10 years, BKFE1- first basketball franchise entered last 10 years, BSFE1- first baseball franchise entered last 10 years, HYFE1- first hockey franchise entered last 10 years, FBFE2- second football franchise entered last 10 years, BKFE2- second basketball franchise entered last 10 years, BSFE2- second baseball franchise entered last 10 years, HYFE2- second hockey franchise entered last 10 years, HYFE3- third hockey franchise entered last 10 years, FBFD1- first football franchise departed last 10 years, FBFD2- second football franchise departed last 10 years, BKFD1- first basketball franchise departed last 10 years, BKFD2- second basketball franchise departed last 10 years, BSFD1- first baseball franchise departed last 10 years, BSFD2- second baseball franchise departed last 10 years, HYFD1- first hockey franchise departed last 10 years,
	FBPO- team(s) reached football playoffs, FBPOSW- football playoff series won, FBCH- football champions for that year, FBCH-1- football champions in the previous year, BKPO- team(s) reached basketball playoffs, BKPOSW- basketball playoff series won, BKCH- basketball champions for that year, BKCH-1- basketball champions in the previous year, BSPO- team(s) reached baseball playoffs, BSPOSW- baseball playoff series won, BSCH- baseball champions for that year, BSCH-1- baseball champions in the previous year, HYPO- team(s) reached hockey playoffs, HYPOSW- hockey playoff series won, HYCH- hockey champions for that year, HYCH-1- hockey champions in the previous year
Conclusion	Both the single and multiple entry and exit models found no significantly positive stadium construction variables. This model therefore does not support the theory of stadiums being spurs for economic growth.
Author	Chapin
Title	An Assessment of the Microarea Impacts of Sports Stadia; 1999 National Planning Conference; 2003
Description of Data Set	Microarea analysis was performed on the cities of Cleveland, Baltimore and Arlington, Texas. Chapin examines the spillover effects, new construction, and district revitalization that could be associated with the building of new stadiums in these cities. Parcel level data were collected for the district surrounding the new stadiums. Economic data, interviews, aerial photographs, and local planning documents were used to analyze each case.
Variables	Spinoff development, new construction, and changes in microarea.
Conclusion	This paper evaluates spillover effects, new construction, and district revitalization at the microarea level for Baltimore's Camden Yards, The Gateway in Cleveland, and The Ballpark in Arlington, Texas. Baltimore was shown to have minimal effects while Cleveland and Arlington were directly affected by their stadiums.
Author	Austrian/Rosentraub
Title	Cleveland's Gateway to the Future; Sports, Jobs, and Taxes; 1997
Description of Data Set	An in depth review was performed on Cleveland to see how the construction of its new stadiums (Gund Arena and Jacob's Field) affected various sectors of employment. The level of jobs in the pre-Gateway era (1989-1992) was compared to the construction/post-Gateway era (1992-1995). The employment data used were from the ES-202 program of the Bureau of Labor Statistics.
Variables	Various employment sectors included: construction, manufacturing, TCPU, wholesale trade- durable goods, retail trade- eating and drinking places, FIRE, services- business, health, legal, educational, engineering and management, government

Conclusion	Real wages per employee in the Gateway area increased and exceeded the growth rate for the county and metropolitan area. In contrast, slow job growth was seen. The rate of job growth in the Gateway area was actually less than in Cuyahoga County and in the Cleveland MSA.

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