

Central Place Theory, the Spatial Dynamics of Professional Sports Teams
Relocation and Expansion, and the Public Financing of Stadium Construction

Geography 565

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Abstract:

The increasingly profitable North American professional sports industry drives individual leagues, like the NBA, NFL and NHL, to continue exploration into either league expansion or franchise relocation. This paper examines what determines viable candidates for league expansion and franchise relocation. We apply Central Place Theory (CPT) to display how a rational economic landscape, based purely on population threshold and market size, would place new teams or relocate current ones geographically. However, the presence of human phenomena and auxiliary variables renders a purely rational economic landscape inadequate. We conduct an interview with Dr. Sean Dinces, an expert in political economy and urban history. Through our applications of CPT we determine numerous franchise candidates. Despite having an adequate population and an underserved location, the potential cities are not in talks to acquire an additional professional sports team. Our interview with Sean Dinces assists our process of identifying the outlying variables that are prohibiting these suitable cities from franchise acquisition. We conclude that the sports landscape does not resemble a rational economic world and identify the government's willingness to publicly subsidize stadiums as one of the primary factors affecting franchise relocation and league expansion.

Introduction:

Professional sports leagues, in many ways, are no different than any other competitive business model. To continue to grow and flourish, leagues must expand and adapt to the ever-changing surrounding environment. A key strategy sports leagues and team owners continually apply is that of league expansion and franchise relocation. Additionally, what social, economic, political, cultural and geographical factors affect league expansion and franchise relocation?

Walter Christaller's Central Place Theory assists in beginning the dialogue of expansion and relocation, specifically in relation to market size and a city's particular ability to support a professional team. Christaller's spatial theory originated within the field of urban geography and attempts to explain the reasons behind the distribution patterns, size, and number of cities and towns around the world. The theory states that a 'central place' exists to provide goods and services to a surrounding market area. Our research will examine the goods and services that professional sports teams provide to a particular city and its surrounding areas. Central Place Theory requires the assumption of a standard, rational economic environment and our applications will assume the same. The failure of CPT to adequately explain the patterns of league expansion and franchise relocation will help reveal underlying political and economic factors. The role of CPT in our study is to demonstrate that league expansion and relocation strategies are not purely rational economic phenomena. Two aspects that inevitably affect the outcomes and direction of expansion and relocation are potential stadium construction and current stadium quality. These two facets of the conversation are often unsurprisingly accompanied by a wealth of questions surrounding funding.

Consequently, the debate over publicly financed stadiums directly and perpetually affects the professional sports landscape in America and Canada. In this paper we investigate two central questions: First, how do the fallacies and breakdowns of Central Place Theory help to explain the processes of league expansion and franchise relocation? Second, how does the willingness of city governments and the general public to subsidize stadiums affect the desirability of certain locations for expansion and relocation?

Place Setting:

To gain better insight into the processes regarding league expansion and franchise relocation, we look at three different franchises representing different facets of the process. First, we investigate the Milwaukee Bucks (National Basketball Association) and their procedure to secure the franchise in Milwaukee despite the continual threats of relocation. Las Vegas (National Hockey League) represents a city currently bidding for a hockey franchise. Their particular scenario includes the construction of a state-of-the-art arena and its completion in Spring, 2016. Lastly, we research the St. Louis Rams, team that have moved several times in its history and is in jeopardy of relocating yet again. Currently, Los Angeles appears to be the overwhelming favorite to land the St. Louis Rams' franchise. Our research is not limited to these teams, but their timeliness and individual relevance to the topic pressures us to analyze these teams in greater detail.

Milwaukee Bucks:

The Milwaukee Bucks have not moved since the city was awarded the franchise in 1968. The team had early success in the city winning a title in their first three years as a franchise

(“Team History”, n.p.). Relocation rumors started when former owner Herb Kohl sold the team to Marc Lasry and Wesley Edens in 2014. The Milwaukee Bucks’ lease on their current stadium, the BMO Harris Bradley Center, is set to expire in 2017. According to Bucks president Peter Feigin, “ The NBA does not want the Bucks to extend the lease in an inadequate facility” (Feigin qtd in Kass 2015, n.p.). Feigin also noted that the NBA would buy back the team for profit and move them to a new location as per an agreement with the new owners, citing Seattle or Las Vegas as potential destinations. The threat of moving to either city is apparent because Seattle hosted the Supersonics before they moved and became the Oklahoma City Thunder along with rumors that “Seattle and another expansion city will be added to the next TV contract” (Rogers et al 2014, n.p.) Both the former and new owners had pledged roughly \$250 million to a development project that would feature the Bucks’ new stadium; however, the stadium would cost about \$500 million, so half would need to come from public funding via taxes (Kass 2015, n.p). In August 2015, Wisconsin Governor, Scott Walker, signed legislation that would give the project the needed tax money to build the new stadium in Milwaukee, and by extension keep the Bucks in Wisconsin. He continually cited the appeal to keep the tax dollars collected from staff and players in Wisconsin as the driving factor for the decision (Johnson 2015, n.p.).

St. Louis Rams:

The NFL’s St. Louis Rams have been brought up in recent discussion of relocation due to their poor performance relative to their in state rivals, the Kansas City Chiefs. This is not the first time that the Rams organization would relocate. If rumours are true and they do decide to leave St. Louis for another city, their destination is likely to be Los Angeles, a city that hosted the team prior to their move to St. Louis. The Rams started as a charter franchise in Cleveland, Ohio in

the second American Football League in 1937. The Rams finished with the second best record before owner Homer Marshman when the NFL was planning to expand. They would eventually have success in the NFL when they won their first championship in 1945 after being purchased by Daniel Reeves and Fred Levy Jr. in 1941. Reeves would, in 1946, move the Rams to Los Angeles, citing the higher capacity of Memorial Coliseum in Los Angeles, which was bigger than any stadium in Cleveland at the time, as the driving factor. The team would go on to have some success in Los Angeles winning an NFL championship and making an appearance in the Super Bowl in 1980 (“Chronology” 2008, n.p.).

For the 1980 season and onward until 1995, the Los Angeles Rams relocated to Anaheim Stadium (while keeping the Los Angeles in the name) to chase the growing suburban development outside of Los Angeles. Another strategic reason they relocated was to combat the “blackout rule”, which meant that local NFL games were only televised in the case of a sellout crowd. This posed problems as the Los Angeles Memorial Coliseum had a capacity of over 100,000 (“Coliseum History” n.d, n.p). The move did little to help the Rams’ success as they struggled on the field being surpassed by nearby sports franchises at the time, as the Lakers would go on to win five NBA championships (“Season by Season” n.d, n.p), the other Los Angeles NFL franchise, the Raiders would flourish, going on to win the Superbowl in 1983 (“History” n.d, n.p), also the Dodgers, LA’s MLB franchise would win the World Series twice in the decade (“Los Angeles/Brooklyn Dodgers in the World Series” n.d, n.p). With the team struggling to support itself and attendance dwindling, the owner Georgia Frontiere moved the team to St. Louis after NFL owners approved the relocation in 1995. The Rams have been in St. Louis ever since and enjoyed early success appearing in the Super Bowl twice, winning one in

the 1999-2000 season. However, after their third Super Bowl appearance in 2003, they had limited success with only one playoff appearance in 2004. (“Chronology” 2008 n.p. Peltz 2008, n.p.).

Due to the lack of success for the Rams in St. Louis, the Rams organization has been discussing a relocation back to Los Angeles with the current owner Stan Kroenke. Kroenke has plans for a stadium in Inglewood, a suburb of Los Angeles. The city of St. Louis also plans to hold a hearing for the potential relocation of the franchise in 2015, as per NFL guidelines for cities that could potentially lose their franchise (Kirn and Feldt 2015, n.p, Held and Marlow 2015, n.p).

Las Vegas:

The approval of the AEG MGM Arena, a \$350 million dollar stadium set to be built on the Las Vegas strip via private funding, the city becomes a consideration for sports leagues with desires to expand. It stands out being a city with a large population and an influx of tourists, so it is strange that there a league has not established a team there (Garofalo 2015, n.p.). The AEG MGM arena is planned to house either a new or relocated NHL team according to preliminary talks with a group willing to eventually establish a team in the new stadium (Stutz 2015, n.p.). Bill Foley, an investor based in Las Vegas submitted a bid for an NHL expansion team. That bid is currently in its third and final stage, where the NHL needs to decide if it wants to expand. If it does, it will choose between Las Vegas and Quebec City as potential sites for a new NHL team (Carp 2015, n.p.). From this it would seem like Las Vegas is a prime candidate for an expansion team, but an ownership group in Las Vegas would have to deal with several disadvantages. First Kantowski mentions that roughly 33 percent of Las Vegas’ population works at night typically

during the times games are scheduled, which would cut down the potential customer base. In addition, the TV market for Las Vegas is rather small ranking at forty-second in the country, so television broadcasts would not provide much in terms of income (Kantowski 2014, n.p.). Both of these factors weigh heavily against Las Vegas' bid for a franchise.

Literature Review:

To explain the location and relocation of teams through the lens of Central Place Theory (CPT) we must first explore literature relating to political, economic, and geographical concepts within sports industry. This review revolves around two main concepts: Central Place Theory and the benefits of a respective city's acquisition of a sports franchise. CPT and its various elements, like urban hierarchies and nearest neighbor help us understand how the theory works, and how demand-side economics would play into predicting where potential expansion and relocation teams would be placed in a rational economic landscape. This contrasts with our human and concepts of public funding and collective conscious, which show what goes on politically and socially to get teams to a particular location.

Location / Relocation

A popular topic in sports is the idea of relocation, defined as a current team moving out of its current city into a new host city. Relocation can happen for a variety of reasons, the most prominent being the issue of a stadium adequacy. Historically, relocation was an extremely common tool used for attempting to find a new host city that would attract an increased number of visitors, consequently improving the ownership's financial situation (Shropshire 1995, 27). Today, team owners will often lobby for an improved stadium if the current one is insufficient in

terms of the team's facilities or desired capacity. Ownership will threaten relocation to a city that either already has a new stadium or concrete plans to build one (Shropshire 1995, 47, Weiner 2000, 2). Another key factor in relocation is to chase the ever changing centers of profit, which means that teams will relocate to areas where they are more likely to turn a high profit. This is due to either population or economic growth patterns. For example, the recent westward and southward population trend in the United States, or the rise of southern England in the early 1900's leading to the relocation of several soccer teams to attempt to capture a larger potential market by either the size of the population or by regional interests (Bale 1993, 136-7, Comer and Newsome 1998, 9, Weiner 2000, 6, Bale 2003, 107). The first known instance of this occurring in North American major league sports was in the 1957 when the Brooklyn Dodgers moved to Los Angeles. The New York Giants followed suit a few years later with their move to San Francisco (Shropshire 1995. 28).

Central Place Theory (CPT)

Central Place Theory (CPT) is a model published by Walter Christaller in 1933 that attempts to explain urbanization in terms of arrangement, size, and number of settlements. The 'central place' described in the theory is a place that provides a service to the populations around it. CPT revolves around two concepts: the threshold, defined as the minimum population that would justify the particular service, and the range, defined as the maximum distance consumers would travel to acquire a specific good. The range is called the central place's sphere of influence. Christaller's theory acts under multiple assumptions. The most relevant to this paper being that all areas possess an evenly distributed population, and consequently, an even number of resources. This assumed rational economic world predicts the ideal expansion location at the

boundaries of the existing market areas. The theory also assumes that all consumers hold similar purchasing power and will automatically gravitate towards the nearest market, regardless of other influential variables.

The theory does not take into account the variable of cultural preferences and patterns of activity. Applying this theory to the topic of Sports Geography, Jonathan C. Comer and Tracy H. Newsome examined Oklahoma City's unsuccessful 1997 NHL expansion bid. Their conclusion stated that Oklahoma City was a poor match for NHL expansion due to the city's lack of activity patterns in regards to hockey as well as its identity as football country (Comer and Newsome 1998, 7). Regional preference can play a role in determining whether or not a market is viable for expansion. A similar sized city in Canada would draw roughly four thousand more attendees for a hockey game than would a city in the United States (Bale 2003, 91, Kuby et al 2006, 250). Given these assumptions, the way humans act cannot be plotted assuming equally across space, the model will break down in the course of this paper (Comer and Newsome 1998, 3). The degree to which CPT predicts the location for expansion or relocation is an indirect assessment of rational economics. Due to the model's proclivity towards assuming a rational economic world, we must explain the economic, social, cultural and regional factors that contribute towards the lengthy decision-making processes behind league expansion and franchise relocation.

Relative Location

A closer inspection of Central Place Theory and its rational economic world requires a further assessment of the term 'relative location'. The idea suggests that if a proposed service is too close to similar services, the surrounding services will reduce the potential sphere of

influence given the increase in consumer choices. Comer and Newsome (1998) explore this concept in an attempt to explain why Oklahoma City or Tulsa (OKC has since obtained an NBA franchise) have not been selected as the hosts for a major league team. They suggest that because the cities were surrounded by multiple professional sports teams, both cities have their need for professional sports services satisfied as a result of the overlapping television markets reaching both cities (Comer and Newsome 1998, 8). The success of a nearby team in the same league can also impact the viability of a sports team, forcing the likelihood for relocation. For example, due to the Boston Braves' poor finish in 1952 compared to their inter-city rivals, the Red Sox, the organization moved the team to Milwaukee in 1953. Almost immediately, the team saw a surge in support and success, which eventually led to greater success on the field. The Braves finished second in the National League in their first year in Milwaukee (Shropshire 1995, 28). The success variable is relevant to one of our case studies (the St. Louis Rams). The Rams who have experienced limited recent success, having not made the playoffs since the 2004 NFL season. Compared to the nearby Kansas City Chiefs, who have made the playoffs in 2010 and 2013 and have enjoyed more recent success in regards to winning seasons. This discrepancy in success could affect ticket sales and fandom support, subsequently leading to an increased likelihood for franchise relocation ("Kansas City Chiefs Franchise Encyclopedia" n.d, n.p, "St. Louis Rams Franchise Encyclopedia" n.d, n.p)

Nearest Neighbor Analysis

Nearest neighbor is a part of central place theory that looks at a central place and takes into account the nearest place to the original. This allows us to demonstrate how far a given point is from any other central place and determine whether or not a need for a centralized service is

viable in the specific area. For example, the 1998 Major League Baseball (MLB) and 1997 NHL expansions raised the league average nearest neighbor distance significantly, signifying that leagues have the tendency to expand to more isolated regions in an attempt to grow the sport's following (Comer and Newsome 1998, 7). Comer and Newsome's paper states that the MLB (addition of Tampa Bay and Phoenix) and the NHL (addition of Nashville, Columbus, St. Paul, and Atlanta) expansions increased the average nearest neighbor distance. This would imply that league executives prefer to award expansion teams to more isolated cities with underserved markets as opposed to cities within a closer proximity to existing franchises (Comer and Newsome 1998, 7). However, there are plenty of cases across North America where this theory does not hold true. Las Vegas's acquisition of a franchise would not follow this particular trend due to its proximity to NFL, NHL, MLB and NBA franchises in Phoenix and Southern California. The current NHL nearest neighbor average distance is 499 km. Las Vegas's nearest NHL neighbor (Phoenix) sits significantly below the average at 398 km. The MLB's average nearest neighbor distance is 416 km. The Arizona Diamondbacks ballpark is the closest to Vegas at 412 km. (Comer and Newsome 1998, 7).

CPT and Urban Hierarchies

Our world is not symmetrical. Cities, businesses, populations, various social classes, and even sports are all unevenly distributed. A city's population threshold is not always analogous to its threshold for professional sports teams and stadiums. Theoretically, the larger the population, the more venues, businesses, and other entities would fit into a profitable market within the city. *Take Me Out to the Ball Game* (2006) highlights a case study that looks into Central Place Theory and Urban Hierarchies (Kuby 2006, 249-260). New teams and stadiums need to be

located in areas where they can support a fan base, yet at the same time not steal and compete for business from near by teams. *Take Me Out to the Ball Game* (2006) also ties CPT together with Urban Hierarchy and explains the different levels of functions: Low, Medium, and High. A low order central place function establishment is somewhere that is visited often, and only needs a small area to be a successful business. An example of such would be a gas station or a grocery store. A high order central place function is an establishment you do not visit often but you would be willing to travel a great distance to when needed. Sporting events and sports stadiums fall into the latter function because some fans will travel a great distance just to watch a single event. Medium order central place functions fall between low and high. A larger populated city can generate higher revenues for sports teams, which can provide them with more stable stadium situation. Stadium placement in a non-central place can lead to relocation and the construction of new stadiums.

This hierarchical classification scheme is central to John Bale's Sports Place Theory (2003). It separates sports places into first, second, and third order places. Where the first order place is the largest and most central and the third order is a smaller service on the periphery as demand for sports decreases with distance as a result of travel costs (Bale 2003, 86, Ahfelt and Fedderson 2010, 15). For the purpose of our paper, this sports hierarchy could be represented through a Major League team as a first order place, a Minor League team as a second order place, and a local sports recreation facility representing a third-order place.

Public Financing of Stadiums

When discussing the potential relocation and expansion of a franchise, the politics surrounding construction of a stadium provide a massive topic of controversy. Multiple studies

have examined the intricacies of funding a stadium, particularly in regards to the argument over public financing. The overwhelming majority of arguments state that from a monetary standpoint, it is not advantageous for a city to allocate public funds to the construction of a new arena or stadium. (Coates and Humphreys 2003, Eckstein and Delaney 2002, Baade 1996)

Specifically Robert A. Baade's article (1996) , *Professional sports as catalysts for metropolitan economic development.*, continues the trend supporting the notion that professional sports stadiums are not adequate stimuli for urban economies. This article analyzes the concept of job creation in relation to stadium construction. Baade considers this an adequate gauge of economic progression and points out the many, faulty job-influx claims made by privately owned sporting franchises (Baade 1996, 12). The dialogue between sports ownership groups and city governments is an essential facet within this discipline. The exchange between these two parties often decides the fate of potential stadium construction, thus deciding the fate of franchise relocation and league expansion.

Intra-Urban Stadium Location

The process of franchise relocation or league expansion inevitably evolves into a discussion of stadium construction. Specifically, the dialogue concerning where to place the respective stadium within the city sparks healthy and necessary debate. The geographic argument presented by academics, such as Arthur C. Nelson (2002), argues that the most economically advantageous location for a professional sports stadium exists in the downtown or central business district. Nelson's article, *Locating Major League Stadiums Where They Can Make a Difference Empirical Analysis with Implications for All Major Public Venues.*, utilizes detailed analysis of 25 metropolitan areas to thoroughly support his argument for downtown stadium

locations. (Nelson 2002, 107-115) Tracy Newsome and Jonathan Comer (2000) approach the same subject but use a distinctive research method. They place each metropolitan sports stadium into three geographical categories: suburban, central city, and downtown. They conclude that the clear, recent trend is towards downtown stadium construction. (Newsome and Comer 2000, 105-120) The intra-urban location debate explains the appeal of sports franchises to the city and its population as a whole. Our case study of the Milwaukee Bucks and St. Louis Rams presents an extremely applicable example to this concept. Both franchises possess stadiums within the central business district, while the Bucks recently undergo plans to construct a new downtown stadium, the Rams lack of ability to fund and construct a new stadium in its downtown has propelled relocation rumors towards Los Angeles.

Collective Consciousness

Although the desire and attainment of a professional sports franchise is often exclusively linked to its monetary implications on a city, research also directs itself at the more qualitative, non-pecuniary benefits to attaining a sporting franchise. Due to increased backing of theories that deny legitimate economic benefits resulting from stadium construction, stadium supporters have highlighted the intangible social benefits. These benefits include a sense of cultural identity, and pride of franchise attainment and stadium development (Eckstein and Delaney 2002, 237-246). League expansion and franchise relocation discussions often present a contrast between smaller cities and large metropolises. Rick Eckstein and Kevin Delaney (2002) derive specific analysis from both camps in their piece, *New Sports Stadiums, Community Self-Esteem, and Community Collective Consciousness*. The article states, "Stadium supporters' appeals to community self-esteem and community collective conscience seem most effective in smaller cities, newly emerging

cities (in the South and West), and those cities that have suffered serious population decline” (Eckstein and Delaney 2002, 243). Their assessment of southwestern, emerging cities applies well to our place setting of Las Vegas. Las Vegas is one of the last major cities in the United States yet to acquire a “big four” (NBA, NFL, NHL, MLB) professional sports franchise. The impact of intangible, qualitative benefits of stadium construction must be evaluated to derive more information on the effectiveness and influence of league expansion and franchise relocation.

Impact on Social Capital

Matthew Nicholson and Russell Hoye’s book, *Sport and Social Capital* (2008), propels the conversation of the intangible, subtle advantages to a certain cities’ acquisition of a professional sports franchise. The authors define the concept of social capital as so, “Social capital is a theoretical paradigm that has gained increasing currency in recent years as academics and politicians alike have searched for ways to conceptualize social, economic, demographic and political changes and their impact on communities” (Nicholson and Hoye 2008, 7). Although they do not focus on stadium construction and franchise acquisition, their argument applies seamlessly to our research topic. Social capital and the theories surrounding it give substantial backing to many cases for acquiring a franchise and provide influential insight on the success of previous urban stadium development projects.

Economics of Sports Teams and Other Nearby Businesses

Economics play a crucial role in different community environments and within the dynamic between cities and sports teams. Businesses surrounding the placement of a new sports team facility tends to benefit in certain ways. In *Sports Economics*, (Downward et al 2009) the

authors refer to the many different roles of a sports team and its facilities when placed within a city. A sporting event is not the only way that a team can provide income to a city. There are other events in which a sporting team could use its stadium or another facility to provide a service to the city. An example of this could be as simple as an appearance to a charity event, or a boost in local sporting stores of a specific jersey or piece of equipment. This is all because of the civic pride that a sports team brings to a community (Groothius et al, 2004). Economics, stadium usage, and sports teams go hand in hand when it comes to the relocation of stadiums.

Market Size

The size of a city plays a crucial role when exploring the fallacies and breakdowns of Central Place Theory. When selecting a city to move a sports team to, or to build a new stadium it is important to consider the market size. This mostly includes population but also prompts a other contributing factors. One factor that is overlooked is the parking space a city has. With the relocation of a team or the construction of the new stadium, there needs to be an appropriate amount of space for fan parking. There also needs to be an appropriate amount of hotels for overnight fan accommodations as many fans will travel far to see their favorite sporting team. The Green Bay Packers can be seen as an outlier for a professional sports team and stadium location. The city's population is 105,000 and the stadium holds over 80,000 people itself every single game. Television viewings is a sports team's largest source of revenue. When selecting a new sport for a professional sports team, the viewership and size of the television market is looked at heavily as explained in the *Station Index and Sport Management Review* ("Top 100 Television Markets" n.d, n.p, Mongeon and Winfree 2012, n.p.).

Costs of a Stadium and Team

Cost and revenue breakdowns of a sports team and their stadiums is a way to understand how long it will take a team to break even for a local government or private investors when relocating to a new city. These financial factors include rent, ticket sales, facility revenues, premium seating, concessions, advertising, parking, other team revenues, maintenance, building costs, land costs, municipal costs, and inflation. *The Real Cost of Public Funding for Major League Sports Facilities* breaks down these factors for us to better grasp the effects and efficiency of public funding to sports teams. A single sports team is not the only stream of revenue a stadium and city can have. Stadiums are commonly rented out for other functions and also have significant profit margins from concessions and parking. Understanding how the different streams of revenue from a sports team can increase profitability can sway decisions on where to relocate teams to (Long 2002, 129).

Methods

We plan to predict the potential relocation and expansion candidates for Major Leagues sports teams using Bale's and Christaller's Central Place Theory (2003, 1933). We plan to examine the locations of teams and large cities within the United States to investigate where teams such as the Milwaukee Bucks and the St. Louis Rams could (could have in the case of the Bucks) relocate to as well as evaluate whether or not cities like Las Vegas are a suitable place for an expansion team across three leagues: the National Hockey League (NHL) , the National Basketball Association (NBA) , and the National Football League (NFL). To address our research questions, we will use a combination of manual mapping and interviewing. We will

manually apply the Central Place by connecting each of the current places for franchises for each sports league, and determined based on where the lines fell where a potential franchise could locate themselves based on their market sizes. We will interview Dr. Sean Dinces to gain valuable knowledge regarding political and economic factors regarding the process.

Central Place Theory Implementation:

We will make three separate maps using Central Place Theory for the three site settings: St. Louis Rams, Milwaukee Bucks and the potential NHL Las Vegas expansion in relation to their respective leagues. The St. Louis Rams application will investigate the current market size and geographic location of the Rams in 2015 as well as a potential prospective location in Los Angeles. The Milwaukee Bucks application will look into Milwaukee's ability to maintain an NBA franchise and its competitiveness in the midwest market. Finally, the Las Vegas application will assess the cities' ability and propensity to acquire an NHL franchise.

We are planning to draw out Central Place Theory using GIS software to create Thiessen polygons similar to the polygons detailed by Kuby et al in "Take me Out to the Ballgame" (2010). The function draws the perpendicular bisector between each team to form polygons. Central Place Theory states that the best place for expansion or relocation would be the point where multiple polygons, so we would like to see if these locations match up with suggested expansion and relocation cities (Kuby et al 2010, 276).

If CPT places a team in a region with multiple teams, for example Texas has 3 NBA teams, we will find the nearest neighbor distance as well as the population of the CPT candidate city in order to see if the city's population could compensate for potential market area overlap. (Comer and Newsome 1998, 7)

Interview:

To answer to questions left by the Central Place Theory's anticipated failure, we interviewed historian Sean Dinces, who is a professor of history, specializing in the politics and the economics of the sports industry and stadium building at the University of Wisconsin-Madison. Dinces will be key in filling in the holes left by Central Place Theory analysis given his extensive experience with the various political and economic factors that go into stadium building and the history of sports. We started in a structured manner, by asking him the questions we had prepared in advance, and then delved into a less structured discussion about our key topics: expansion, relocation, and public financing.

Questions for Dr. Sean Dinces:

1. What factors do you feel are the main drivers of being awarded an expansion/relocation team? What benefits does a sports franchise bring to a city? Why do cities compete with one another for sports franchises?
2. How important is a major league sports franchise to: (a) community identity? (b) community self-esteem? (c) retaining or attracting new businesses to a area? (d) retaining or attracting highly skilled workers to a community?
3. How important are the factors of populations of underserved markets and travel distance to home games for league expansion and franchise relocation today? What other factors are necessary to look at to adequately evaluate the processes of expansion and relocation? i.e. social, political, cultural
4. What impact does publicly financed stadium construction have, if any, on league expansion and franchise relocation? How does the dialogue between city governments,

big businesses and sports ownership affect the process of league expansion and relocation?

These questions helped us gather valuable information about the various factors that could explain why Central Place Theory cannot fully determine where a league will expand or relocate a team to. Dinces' experience and research will provide key political and economic factors that Central Place Theory could not take into account in the model. These questions would also reveal if the sports stadium is truly important to the process of location and relocation.

Data Collection and Analysis

Results

To answer our question about the relocation and expansion for the NHL, NBA, and NFL, we first applied central place theory to see where, in a perfectly rational economic world, a new or relocating team should be placed in relation to the other teams across the league. The world does not behave in the rational way that a model like Central Place Theory needs to accurately predict the locations of sports teams. We supplemented the Central Place analysis with an interview with Professor Sean Dinces. The interview assists with insight on the human elements that accompany the processes surrounding the movement of teams.

Central Place Theory Results

To look at how Central Place Theory applies to our research question, we created a series of maps using GIS software to create Thiessen polygons for each of the current team locations for each of the host cities for each team in the three leagues we are observing. Thiessen polygons



Figure 1B: NBA Big Cities

Table 1A

Potential City (CPT)	Population (Threshold)*	# of Converging Market Areas
Montreal, QC	3,824,221	3
St. Louis, MO	2,787,701	3
Pittsburgh, PA	2,356,285	3
Kansas City, MO	2,009,342	3
Columbus, OH	1,901,974	3
Nashville, TN	1,670,890	3
Austin, TX	1,716,289	3
Shreveport, LA	439,000	4

* "Metropolitan Statistical Areas" (United States Census Bureau, 2014); "Population and dwelling counts, for urban areas, 2006 and 2001 censuses - 100% data". Statistics Canada. 2008-11-05.

Table 1B

Expansion / Relocation Candidate City	Metro Population*	# of Converging Market Areas
Seattle, WA	3,671,478	1
Pittsburgh, PA	2,356,285	3
Vancouver, BC	2,135,201	0
Kansas City, MO	2,009,342	3
Columbus, OH	1,901,974	3
Las Vegas, NV	1,951,269	3
Louisville, KY	1,269,702	0

* "Metropolitan Statistical Areas" (United States Census Bureau, 2014); "Population and dwelling counts, for urban areas, 2006 and 2001 censuses - 100% data". Statistics Canada. 2008-11-05.

Figure 1A shows the cities that should be host cities for potential sports teams, which are identified as the cities that are located closest to where multiple Thiessen polygons come together. Figure 1B shows the NBA cities and Thiessen polygons in relation to cities that are above a population threshold of 175,000 people, a number close to the lowest populated host city in the NBA. To show the differences in population size within the cities without teams in both figures we used a proportional scheme to visually show which of these cities could be eligible based on population size and relative location to the polygon edges. The format of Figures 1A and 1B are what we used for the other two leagues with a minor difference in that we increased the population threshold to 200,000.

Central Place Analysis

NBA:

For the NBA, the minimum population threshold is set by Salt Lake City with a population of 186,440 rounded down to 175,000. In our analysis of the maps and overlays produced by the Thiessen polygon methods and our GIS work, we noticed patterns emerging for each map in each league. Looking at which cities were closest to the polygons coming together in Figure 1A, produced a few plausible cities that could hold an expansion team based on, primarily, their population. The two that clearly stand out are Nashville and Las Vegas. Nashville is interesting in that it hosts both an NHL team, the Predators and an NFL team, the Titans. Also, it is important to note Nashville's metropolitan population of roughly 1.75 million. It is not outlandish to consider Nashville as a potential site to host another major sports franchise. While Nashville's location in relativity to other southern and Midwest NBA franchise could prove troublesome to the success of a professional basketball franchise, the city's high population of 1.75 million could circumvent that despite being surrounded by four teams. Despite Nashville's viability, there are no rumours or talks to either move or expand to the city any time soon

The other city of note is Las Vegas. Currently, expansion talks concerning Vegas have revolved exclusively around the NHL. However, our Central Place Theory map would place a basketball team in the city. If Las Vegas loses its bid for an NHL team, it seems to be a possibility that it could go after an NBA team. This possibility is a probable one, especially considering the new arena built by MGM. Arenas for hockey and basketball are virtually interchangeable. Also, interestingly enough, Las Vegas along with Seattle were suggested as

potential relocation spots for the Milwaukee Bucks to try to threaten the city of Milwaukee into meeting the team's demands for a new facility (Kass 2015). However, the NBA conducted a survey, which found that a team in the Las Vegas area is highly unlikely to make a profit, which would turn away many potential owners from taking the risk of attempting to bring a team to the city (Kantowski 2015 n.p.). Seattle lost their NBA, the Supersonics, because the team could not find public funding for a new stadium, so the city definitely maintains the potential to support a team, but it does not appear to be underserved according to CPT, mainly due to the presence of the team in Portland, Oregon. In Figure 1A, the city of Independence, Missouri sticks out because of its population, and its distance from other teams. Since the closest team is the Oklahoma City Thunder at 307 miles away, a team placed there would not have to deal with significant fan base overlap. The relative opposite of this situation can be found in Temple, TX. A city that also was identified in Figure 1A, Temple stands much too close to Houston, San Antonio and Dallas, all of which are less than 200 miles from away. Lastly, Temple falls far below the population threshold of 175,000 with a population of 66,102. In this case the population cannot compensate for its proximity to the other teams.

Through identifying cities with populations higher than 175,000 in relation to the Thiessen polygons, Figure 1B produced varying results. The model breaks down for the western United States since there are few cities that pass the population threshold near the edges of the polygons, suggesting expansion or relocation at these particular locations is not the best option. However, the Midwest and the east coast illustrate some interesting results. In Figure 1B, two cities that already host multiple sports teams and pass the population threshold are near the convergence of multiple Thiessen polygons. These two cities both lie in Missouri, and are St.

Louis and Kansas City. The cities have the population to support an NBA team, so why aren't these markets being tapped by the NBA? Four large polygons converge between Kansas City and St. Louis in central Missouri. Our model absolutely suggests that this portion of the midwest is underserved in terms of professional basketball. It is important to note that both teams have supported fairly successful professional basketball franchises before. St. Louis with the ABA's Spirit of St. Louis, and Kansas City with the Kings.

Moving east, four cities stick out as potential candidates: Columbus, Pittsburgh, Nashville, and Montreal. The first three cities all have large populations, and are not too far from polygon convergences. The last city, Montreal, offers an interesting opportunity to expand into the Canadian market, which currently exclusively is served by the Toronto Raptors. Montreal is relatively close to other large cities, like Ottawa and Quebec, so it has a significant population base to draw fans from.



Figure 2B: NFL Big Cities

Table 2A

Potential City (CPT)	Metropolitan Population (Threshold)*	# of Converging Market Areas
Montreal, QC	3,824,221	3
Columbus, OH	1,901,974	3
Ottawa, ON	1,236,324	3
Louisville, KY	1,235,708	3
London, ON	474,786	3
Shreveport, LA	439,000	3
Fort Wayne, IN	416,257	3

* "Metropolitan Statistical Areas" (United States Census Bureau, 2014); "Population and dwelling counts, for urban areas, 2006 and 2001 censuses - 100% data". Statistics Canada. 2008-11-05.

Table 2B

Expansion / Relocation Candidate City	Metropolitan Population*	# of Converging Market Areas
London, ENG	13,879,757	N/A
Los Angeles, CA	13,131,431	0

* "Metropolitan Statistical Areas" (United States Census Bureau, 2014); "Metropolitan regions: Demographic balance and crude rates. Eurostat" (2013)

We examined the NFL with the minimum threshold population set by Green Bay with 104,057, rounded down to 100,000. In Figure 2A, two parts of the map jump out. The first being the sets of city clusters close to polygon edges that can be found in Iowa (Dubuque, Iowa City, and Ottumwa) and Arkansas (Conway, Pine Bluff, and El Dorado). Although CPT in its classical form assumes a single city or node, the convergence of market area boundaries in the vicinity of clusters of small cities suggests other possibilities for expansion and relocation. The case for these would be that one city would be the host while the others would help provide the population necessary to create a sustainable fan base. It is also interesting to note that neither state has a major league professional sports team in any of the most popular sports in the US, so it could be a draw to be the first to bring major league sports to those states. This conversation could also begin a conversation on the lack of professional sports teams in these states, although the most probable reason is a lack of a major city, since none of cities in either cluster pass the minimum population threshold for an NFL team.

Tuscaloosa, Alabama also stands out as a potential host for an NFL team, sitting at a population of 200,821 people. It has a well established football culture, being in "football country" (Comer and Newsome 1998), with the popularity of the Alabama Crimson Tide also in Tuscaloosa. Similar to the Green Bay Packers, a Tuscaloosa professional football team could

potentially be strongly supported by nearby cities such as Birmingham and Montgomery. Green Bay maintains a population of 104,779, nearly half of the Tuscaloosa population. It is not too far of a stretch to argue that another, similarly football-crazy state could support an NFL team. The polygons show that there could be two cities in Idaho (Burley and Twin Falls) which show the trend of CPT breaking down west of the city clusters in Iowa and Arkansas, with the model suggesting that the league should place teams in cities with populations well below the population threshold of 100,000 set by Green Bay.

Comparing Figures 2A and 2B, supports the trend that CPT breaks down in the western United States, with no cities that pass the population threshold around the polygon edges. In the east, CPT does not fare much better, though it does have some cities near boundaries. The best locations given by Figure 2B are in Canada, in the London, Hamilton, and Toronto area, which is a cluster of fairly large cities, and the area between Ottawa and Montreal. Toronto is a fascinating option for the NFL in that it allows the league to go international, and Toronto hosts teams in NBA and MLB. Canada also has a market for football as made evident by the presence of a Canadian Football League, which brings up the biggest issue with expanding, or relocating to Canada, the competition with the CFL. Would the presence of a CFL team make an NFL team not viable, or would the CFL prevail due to how established it is in Canada?

For the purpose of our case study for the St. Louis Rams' potential relocation to Los Angeles, we created Thiessen polygons based on a hypothetical move for the Rams to Los Angeles, and compared them to large cities with a threshold of 200,000 and above. Figure 2C shows that with a move to Los Angeles, CPT would actually suggest a team should be in St. Louis, considering the five polygons that converge in the area around St. Louis. The amount of

NHL:

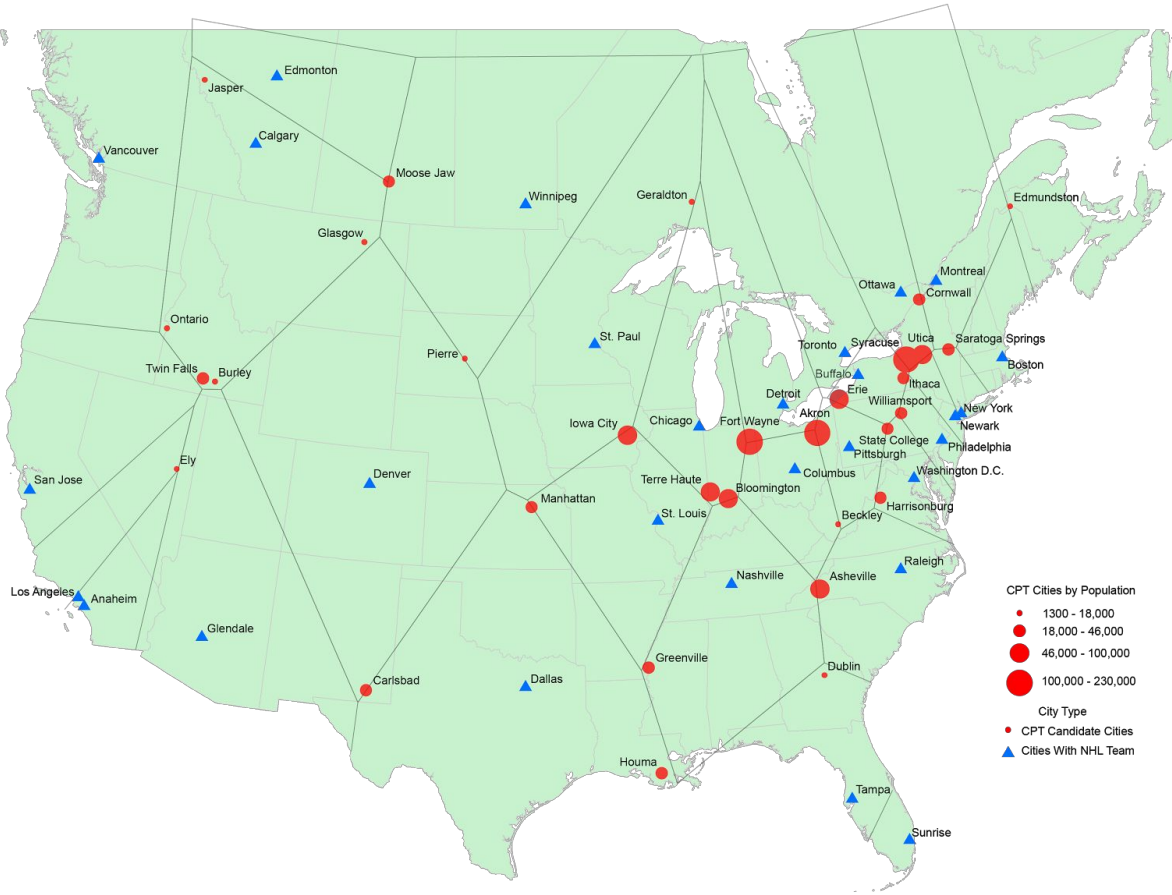


Figure 3A: NHL CPT Cities



Figure 3B: NHL: Big Cities

Table 3A

Potential City (CPT)	Metropolitan Population (Threshold)	# of Converging Market Areas
Cleveland, OH	2,077,240	3
Indianapolis, IN	1,887,877	3
New Orleans, LA	1,189,866	3
London, ON	474,786	4
Fort Wayne, IL	416,257	3

* "Metropolitan Statistical Areas" (United States Census Bureau, 2014); "Population and dwelling counts, for urban areas, 2006 and 2001 censuses - 100% data". Statistics Canada. 2008-11-05.

Table 3B

Expansion / Relocation Candidate City	Metro Population	# of Converging Market Areas
Seattle, WA	3,671,478	0
Las Vegas, NV	1,951,269	0
Quebec City, QC	765,706	2

* "Metropolitan Statistical Areas" (United States Census Bureau, 2014); "Population and dwelling counts, for urban areas, 2006 and 2001 censuses - 100% data". Statistics Canada. 2008-11-05.

The NHL will be examined using Sunrise, Florida -- Florida Panthers-- as the minimum population threshold with a population of 88,843 rounded up to 100,000 .Central Place Theory's production of possible cities for NHL expansion or relocation, once again, failed quite miserably in certain areas and provides tangible possibilities in others. One would have to imagine that the town of Carlsbad, New Mexico, would lack the necessary funds and population density to successfully support a professional hockey team. A similar, yet slightly more fascinating, case arises in southern Idaho and western Oregon. (Twin Falls, Burley and Ontario) Five tips of polygons converge in this westerly region of the United States, suggesting that this portion of the US is underserved in regards to professional hockey. However, similarly to Carlsbad, New Mexico, problems surrounding fiscal capabilities and population threshold come to the forefront after further examination. Akron, Ohio is another city identified by this initial Central Place Theory application. According to the Census Bureau, Akron's population is 198,100. This population is substantial but there would be qualms about placing a franchise in a city that is only the fifth-largest city in Ohio especially with Cleveland, population 390,113, less than a hundred miles away. Continuing to move eastward, our final cluster that appeared substantial is one that lies through the central region of New York state. The cities of Ithaca, Utica, Saratoga

Springs and especially Syracuse, all exist on our map near polygons convergences. Syracuse population 144,669, the largest city of the four, can assume the position of potential stadium location. Considering their geographic proximity, the four cities could potentially combine markets to supports a central New York NHL team. The average distance from the three, smaller, outlying cities is 84.13 miles. The lengthy travel distance could prove troublesome but it is close enough to mention as a possibility. The combined population of the four cities is 264,307, which is roughly 8,000 more than current NHL franchise holder, Buffalo, NY.

The initial construct of Figure 3B, draws one to the heartland of the country. The conglomeration of Kansas City, Omaha, Wichita and Lincoln and its relation to multiple polygon convergences calls out for further inspection. Considering that Kansas City is the most central of the cities mentioned above and the size of metropolitan Kansas City is by far the largest of the group, KC will be our representative for potential team attainment. It is important to note that from 1974-1976 Kansas City was the home to the Scouts, an NHL team. The team eventually moved on west to Denver, Colorado. The outlying cities of Omaha, Lincoln and Wichita help to support the existing professional sports teams in Kansas City (Royals and Chiefs). It is fair to assume their potential future fanfare assistance to an NHL franchise. Although Kansas City currently has an NHL/NBA ready arena downtown, there are other, far more important aspects that must be considered. According to The Kansas City Star, there are no known ownership groups interested in landing an NHL franchise. The NHL currently requires a 500 million dollar expansion fee to be paid for a new franchise. This is the driving factor against a potential Kansas City franchise and further pushes the importance of ownership and money towards attaining a franchise.

Although Figure 3A and 3B does not identify Las Vegas as a specific location for possible expansion or attainment, it is too important to ignore, due to the city's propensity for a NHL expansion franchise. There are two polygon intersections in Nevada. However, they are much farther north than the southern-lying Las Vegas. The existing franchise locations in Los Angeles, Anaheim, Phoenix, and San Jose appear to be the reason for the locations of these northern-Nevada polygon convergences. Central Place Theory and its assumptions would most likely infer that a Las Vegas franchise would struggle to obtain a sufficient market share, given its proximity the four franchise listed above.

A discussion of professional hockey cannot and must not be had with the absence of the hockey epicenter, Canada. Currently, the NHL contains seven, well-supported Canadian franchises. According to ESPN, Ottawa held the lowest attendance percentage in relation to stadium capacity of the Canadian teams at 95.3 percent. This statistic continues to propel the notion that Canadian fan bases will successfully support their franchises. This support is in part why the NHL and potential owners are looking at another expansion franchise north of the US border. Quebec City, along with Las Vegas, are currently deep into expansion talks with the NHL and all signs point towards future expansion at these two locations. Figure 3B identifies Quebec City as a possible location due to its population of 516,625. The nearest Thiessen polygon intersection comes quite close to Quebec City but does not cross into Canada. This particular convergence lies in the northern region of Maine. Our CPT application in Figure 3B could suggest a future franchise in this northeast region. However, the size, success and history of nearby franchises, Montreal and Boston, could prove detrimental to a potential NHL expansion in Quebec City.

The province of Saskatchewan currently does not have an NHL franchise. Its neighboring provinces, Alberta and Manitoba support a total of three professional hockey teams. Figure 3B contains two convergences within Saskatchewan, suggesting that the province could hold underserved markets for the trans-national hockey league. The province's two biggest cities, Regina and Saskatoon, both with a population around 200,000, most likely would be too small to support a major sports franchise. However, given the popularity of the sport in Canada, a province-wide population of 1.13 million could potentially support a successful hockey team. Similar to the American sporting examples of the Arizona Cardinals, Carolina Panthers, and New England Patriots, a name consisting of a larger entity than a city, can often attract a more substantial fan base.

The cities that are identified as underserved candidates do not really match up with the cities that are currently have rumours regarding potential league expansion and franchise relocation. This would imply that the sports landscape is not an economically rational one, as CPT assumes. It paves the way for other factors to explain these trends for example cultural interest. Out of all the cities rumoured for NHL expansion or relocation, Quebec City is by far the smallest (Table 3B), but it is in Canada, the hockey epicenter of the world. This cultural background would compensate for a lack of population relative to Seattle and Las Vegas. This could also explain why Los Angeles has not been awarded a team despite being in talks for relocation, as Los Angeles does not really have a whole lot of interest in football. This also ties into the owners using Los Angeles as a threat to their host cities to give in to their demands for public funding, since on the surface Los Angeles with their massive metro population seems like an enticing option for owners (Table 2B, Sean Dinces, Interview, November 2015).

Interview Results and Analysis

Sean Dinces is an urban historian specializing in the political economy of the sports business and stadium building since World War II. As a professor at the University of Wisconsin-Madison, he has published many articles relating to the topics discussed in this particular paper. His article, “Fanfare without the Fans” highlights the increasing capitalistic trends in relation to stadium consumerism (Dinces 2014). Additionally, Dinces’ article, “A Bad Case of ‘Peanut Envy’: Concessions Markets and Monopoly Power at Chicago’s United Center.” examines the monopolistic tendencies enacted by Chicago’s professional sports ownership groups (Dinces 2014). Our interview with Professor Dinces leads us to conclude that there are many variables contributing to the promotion of a professional sports team’s relocation or expansion. These variables often help to fill in the gaps Central Place Theory leaves behind and involve aspects along the basis of economics, stadium placement, and television markets.

Since World War II potential sports franchise markets have realized a large amount of growth, in numbers and individual size. This can be mostly be attributed to the population growth that cities experienced following the war. With new opportunities for teams to move to, Professor Dinces acknowledged that municipal governments were forced to consider if they were willing to attribute funds toward acquiring a team. This aligns well with our analysis predictions in that funding is a key driver. Regardless if Central Place Theory recommends a team to relocate to a specific area, the new hosting city will have to consider if spending public funds on a new sports stadium is economically and socially viable. As Professor Dinces explained, there are many different economic effects that need to be considered for acquiring a team. He claimed that most of the research that he has partaken in concludes that sports franchises do not provide

pecuniary benefits to the community. Additionally, he noted the surge in research on the topic around the turn in the millennium. Research that overwhelmingly disproved the notion that sports franchises' economically benefit their particular cities (Interview, Sean Dinces, November 2015).

Franchises and the highly paid earners attached to them, tend to keep all of the profits that they receive for themselves and rarely use their profits to invest back into the city where their team is located. Dinces referred to this as the Leakage Effect. This phenomena is applicable in almost all cities in the United States with the exception of Los Angeles, New York City, Chicago, and a few other large metro areas. The reason the Leakage Effect doesn't take place in these larger cities is because players and owners tend to choose these popular metropolises as areas to live, particularly in the offseason. A good example of this can be found with the Milwaukee Bucks. The new owners Marc Lasry, and Wesley Edens both live primarily in New York, New York. Their primary place of living is not in Milwaukee or Wisconsin and subsequently, their money is most often spent elsewhere. In very rare cases, there is a phenomenon called the honeymoon effect where the newly relocated team provide an economic benefit to surrounding areas for a few years. However this does not usually last long and consequently, franchises tend to go on to negatively affect their respective cities in the long run. Through his economic explanation of sports franchises, Professor Dinces also mentioned the Substitution Effect. If we assume that wages are stagnant in certain cities, there is only so much discretionary spending that can take place. This would mean that the placement of new entertainment would not create more spending for individuals, it would only draw revenue away

from previous nearby entertainment entities. This, in turn, would negatively affect existing entertainment and sporting options (Interview, Sean Dinces, November 2015).

Professor Dinces provided a concise explanation of the effect new stadiums have in a community. Often the construction projects for stadiums require a large chunk of land use. This is because stadiums tend to grab as much land as possible so that they can provide as many profitable facilities to customers. These facilities are meant to profit the stadium and the franchise, and tend to draw money and customers away from local business. Surrounding neighborhoods are promised increased economic traffic for food, parking, bars, and shops but the reality is that fans tend to move towards the stadium to spend their money. Once a fan is within a certain proximity of the stadium and event, they are less likely to travel out to the neighborhood for amenities (Interview, Sean Dinces, November 2015). It is also important to note, that stadiums could also be used as an anchor of an entertainment district (Figure 4), like that of the Milwaukee Bucks. The Bucks new stadium is setting the stage for surrounding developments by giving something tangible for taxpayers to focus on.



Figure 4: Concept Art for the New Milwaukee Bucks Stadium and Entertainment District

Discussion

In our interview, Dinces mentions that teams in the NFL have the option to shy away from larger TV markets because the NFL implements revenue sharing between teams. This makes placing a team within a suburb, or outside of the traditional large city TV market area viable. This could make a team placed within the city clusters (shown in Figure 2A viable) because TV markets are less of a factor in the NFL than the NBA or MLB. The Iowa City/Cedar Rapids cluster has a TV ranking of 90 which is smaller than the smallest TV market currently in the NFL (Green Bay ranks 68th). Despite having a small TV market, there is the possibility that an NFL team could be viable there because of revenue sharing and it could attract viewers from the nearby Des Moines TV market. The other group, the Pine Bluff/Conway cluster, has a ranking of 57. This puts it between Buffalo and Green Bay, making it viable according to TV market size (Interview, Sean Dinces, November 2015).

The TV market size would pose a problem for Las Vegas though, since CPT (Figure 1A) placed an NBA team in the area, and the NBA does not have a revenue sharing plan in place, so the TV market is a much bigger deal than in the NFL. Las Vegas has the 40th largest TV market, which isn't small, but in comparison to other significant cities. For example Seattle has been mentioned in several relocation and expansion rumors and ranks much higher at 14th largest market, as well as St Louis, another major city ranks 21st. This raises the question of why Las Vegas as opposed to St. Louis or Seattle?

In our discussion with Professor Dinces, we talked about how difficult it is to define someone as a sports team fan. He had mentioned a recent study had been done with the Milwaukee Bucks fan base. The purpose of the study was to see how many Milwaukee Bucks

fans resided in Milwaukee county, and a fan was somebody who attended at least one game per year and viewed a couple on television. The results showed that 7% of all Milwaukee residents are actually fans of the Milwaukee Bucks Basketball Team. This is a relatively low amount and helps us confirm that the Milwaukee population does not care too much for its professional basketball team. This would be an indicator that building a new stadium in downtown Milwaukee might not increase fan interest which would not increase revenues (Interview, Sean Dinces, November 2015).

Public Subsidy

There is no law requiring professional sports stadia to be public funded. However, the consistent trend of publicly subsidized stadiums across the country would suggest otherwise. Historically speaking, the main variable driving franchise relocation is the condition of a team’s respective arena or stadium. Subsequently, that dialogue almost always covers municipal government’s willingness to contribute funds towards the team’s cause (Interview, Sean Dinces, November 2015). The table below highlights the National Football League’s stadiums built since 1997 and the public’s monetary onus to those particular construction costs.

Table 5.1*

City - Team	Year of Completion	Public Subsidy (millions)	% of Total Cost	Total Cost (millions)
Tampa Bay Buccaneers	1998	\$194.00	100%	\$194.00
Cincinnati Bengals	2000	\$424.80	94%	\$449.80
Baltimore Ravens	1998	\$203.60	90%	\$226.00
Indianapolis Colts	2008	\$619.60	86%	\$719.60
Cleveland Browns	1999	\$200.00	74%	\$271.00
Denver Broncos	2001	\$289.00	72%	\$400.80

Tennessee Titans	1999	\$206.90	71%	\$291.70
Arizona Cardinals	2006	\$308.00	68%	\$455.00
Seattle Seahawks	2002	\$300.30	65%	\$461.30
Houston Texans	2002	\$289.00	61%	\$474.00
Pittsburgh Steelers	2001	\$171.60	61%	\$280.80
Minnesota Vikings	2016	\$498.00	47%	\$1,070.00
Dallas Cowboys	2009	\$444.00	37%	\$1,194.00
Philadelphia Eagles	2003	\$188.00	36%	\$518.00
Washington Redskins	1997	\$70.50	28%	\$250.50
Detroit Lions	2002	\$110.00	25%	\$440.00
New England Patriots	2002	\$72.00	17%	\$412.00
San Francisco 49ers	2015	\$114.00	12%	\$987.00
New York Giants/Jets	2010	\$0.00	0%	\$1,600.00

**NFL Stadium Public Subsidy since 1997* (“National Football League” 2013, 1-33)

It is important to note that the table above does not include recent renovations to previously outdated stadia, like Lambeau Field (Green Bay, WI), Arrowhead Stadium (Kansas City, MO) or Soldier Field (Chicago, IL). The brand-new recent stadium constructions across the country show an overwhelming trend toward continued public subsidization. Out of the 19 NFL stadiums constructed since 1997, 11 stadiums were publically subsidized by more than 61 percent from the public. There are a few definitive outliers (New England, San Francisco, New York) but the majority favor public subsidization over private. This trend is particularly interesting due to the wealth of research that came out of the 1990’s supporting the notion that professional sports stadia does not economically benefit the surrounding community (Interview, Sean Dinces, November 2015) (see Appendix A).

Table 4A*

Team	City	Year	Stadium	New Stadium?	Public Funding?	Relocate/Expansion
Colts	Indianapolis, IN	1984	RCA Dome	Yes	Yes: 40%	Relocation
Cardinals	Phoenix, AZ	1988	Sun Devil Stadium	No	-	Relocation
Jaguars	Jacksonville, FL	1995	Jacksonville Municipal Stadium	Yes	Yes: 90%	Expansion
Panthers	Charlotte, SC	1995	Ericsson Stadium	Yes	No	Expansion
Ravens	Baltimore, MD	1996	Ravens Stadium	Yes	Yes: 90%	Relocation
Titans	Nashville, TN	1997	Nissan Stadium	Yes	Yes 71%	Relocation
Browns	Cleveland, OH	1999	First Energy Stadium	Yes	Yes: 74%	Expansion
Texans	Houston, TX	2002	Reliant Stadium	Yes	Yes: 61%	Expansion

**Public funding information for NFL Expansion/Relocation since 1984 (“National Football League” 2013, 1-33)*

Table 4B*

Team	City	Year	Stadium	New Stadium?	Public Funding?	Relocate/Expansion
Sharks	San Jose, CA	1991	SAP Center	Yes	Yes: 82%	Expansion
Senators	Ottawa, ON	1992	Canadian Tire Centre	Yes	No	Expansion
Lightning	Tampa, FL	1992	Amalie Arena	Yes	Yes: 62%	Expansion
Stars	Dallas, TX	1993	Reunion Arena	No	Yes 100%	Relocation
Panthers	Sunrise, FL	1993	BB&T Center	Yes	Yes: 87%	Expansion
Ducks	Anaheim, CA	1993	Pond of Anaheim / Honda Center	Yes	Yes: 100%	Expansion
Avalanche	Denver, CO	1995	Pepsi Center	Yes	No	Relocation
Coyotes	Phoenix, AZ	1996	Gila River Arena	No	Yes 82%	Relocation
Hurricanes	Raleigh, NC	1997	PNC Arena	Yes	Yes 84%	Relocation
Predators	Nashville, TN	1998	Nashville Arena	Yes	Yes: 100%	Expansion
Thrashers	Atlanta, GA	1999	Philips Arena	Yes	Yes: 91%	Expansion
Wild	St.Paul, MN	2000	Xcel Energy Center	Yes	Yes : 74%	Expansion
Blue Jackets	Columbus, OH	2000	Nationwide Arena	Yes	No	Expansion
Jets	Winnipeg, MB	2011	MTS Centre	No	Yes: 30%	Relocation

**Public funding information for NHL Expansion/Relocation since 1984 (“National Hockey League” 2013, 1-33)*

Table 4C*

Team	City	Year	Stadium	New Stadium?	Public Funding?	Relocate/Expansion
Clippers	Los Angeles, CA	1984	Memorial Sports Arena	No	Yes: 100%	Relocation
Kings	Sacramento, CA	1985	Sleep Train Arena	Yes	No	Relocation
Timberwolves	Minneapolis, MN	1988	Target Center	Yes	Yes: 100%	Expansion
Magic	Orlando, FL	1988	Orlando Arena	Yes	Yes: 100%	Expansion
Bobcats	Charlotte, NC	1988	Charlotte Coliseum	Yes	*	Expansion
Heat	Miami, FL	1988	Miami Arena	Yes	Yes: 100%	Expansion
Grizzlies	Vancouver, BC	1995	GM Place	Yes	No	Expansion
Raptors	Toronto, ON	1995	Air Canada Centre	Yes	No	Expansion
Grizzlies	Memphis, TN	2001	FedEx Forum	Yes	Yes: 83%	Relocation
Hornets/ Pelicans	New Orleans, LA	2002	New Orleans Arena	No	Yes: 100%	Relocation
Thunder	Oklahoma City, OK	2008	Ford Center	No	Yes: 100%	Relocation

**Public funding information for NBA Expansion/Relocation since 1984 (“National Basketball Association” 2009, 1-21)*

Tables 4A, 4B, and 4C reveal that making the public finance the majority of the stadiums for franchise relocation and league expansion seems to be mostly an American trend as can be seen by comparing the American teams, with the Canadian teams. Very few if any Canadian teams rely on public funding to build their stadiums with Winnipeg's MTS Centre only drawing 30% of their funding from the public. This is strange with the strong cultural backing hockey (many of the stadiums above are either for, or have hockey teams as co-tenants) has in in Canada, one would assume that Canadians are more willing to fund some of these new stadiums to get more teams in Canada. In addition the the current stadiums for the Toronto Maple Leafs

and the Montreal Canadiens are both 100% privately funded, raising questions with the need for public funding (“National Hockey League” 2013, 15,29).

Median Household Income

An economically rational world seeks out underserved consumers and consumers willing and able to spend. A city that meets the minimum population threshold (#) for an NBA team, and retains a high median household income would be a prime location for expansion or relocation. Median household income provides an opportunity to track economic trends across the US and predict consumer ability to spend on entertainment services. The table below highlights cities with a metropolitan population of at least 1.2 million and that currently do not possess a professional basketball franchise. The table also includes the average for current NBA franchise-holding cities. This allows for direct comparison to the current financial makeup of the NBA’s 30 cities.

Table 5*

Potential NBA Cities	Median Household Income	Metropolitan Population (Millions)
Baltimore, MD	\$57,291	2.71
Hartford, CT	\$52,188	1.21
Seattle, WA	\$50,733	3.61
Austin, TX	\$48,950	1.72
<i>NBA Current Cities Average</i>	<i>\$47,599</i>	<i>----</i>
San Diego, CA	\$47,067	3.10
Kansas City, MO	\$46,193	2.01
Cincinnati, OH	\$44,914	2.13
Columbus, OH	\$44,782	1.90
St. Louis, MO	\$44,437	2.79
Nashville, TN	\$44,223	1.67
Las Vegas, NV	\$42,468	1.95

Pittsburgh, PA	\$37,467	2.36
Tampa Bay, FL	\$37,406	2.93

*"Metropolitan statistical areas ranked by median household income", (United States Census Bureau 2014)

This table identifies four cities that hold a higher median household income than the current NBA city mean. All four of these cities have a metropolitan population over 1.2 million, placing them well above the minimum threshold for a professional basketball team. Comparing this list to our NBA CPT cities (Figure 1C), only Austin, TX appears on both. Austin is located near three converging market areas (Table 5) and holds an median household income over \$1,000 more than the NBA-city average. However, the Texas capitol is consistently left out of relocation and expansion discussions. This lack of attention suggests that notion that North American professional sports' relocation and expansion does not behave in an economically rational way.

If the landscape of economics is rational, then Baltimore, Hartford, Austin and Seattle would consistently emerge as prime candidates for NBA expansion or relocation. (Table 5) Seattle lost their Supersonics in 2008 to Oklahoma City due to the government's' inability to put forward sufficient public funds for a new arena. Compared to Oklahoma City which funded their new stadium (Ford Center) with entirely public funds. Oklahoma City has a median household income of \$36,797, in comparison to Seattle's \$50,733. That massive difference, along with the nearly 2.5 million metropolitan population difference suggest that rational economics are not being enacted. Basic economic theory would suggest that Seattle would be a more viable candidate for a franchise than Oklahoma City. However, other variables inevitably play a role and in this instance, the issues surrounding public subsidization of stadia once again affected the national landscape of professional sports.

Economics of Demand

The NHL's recent discussion over new potential expansion franchises (Las Vegas and Quebec City) is partly due to the recent franchise "fee" set by the league. The NHL requires the ownership group to pay \$500 million to the league, just for the right to create an expansion team. That number does not include costs for an arena or base operational costs. To put this outrageous request in perspective, we will look at the current Forbes evaluations of NHL franchises. Forbes found 19 of 30 NHL franchises to be valued under 500 million dollars. Only three franchises are valued at over \$1 billion and the lowest evaluation is the Florida Panthers at \$190 million. The NHL's fee undoubtedly hinders the possibility of expansion. This brings up the discussion over the economics of demand. The NHL, along with the NBA, NFL and MLB, are closed leagues, meaning that new teams cannot enter the league based on performance. This is vastly different to the European sporting model, largely based relegation (demotion to an inferior league) and promotion (advancement to a superior league) to help maximize the amount of teams. This model ensure that the economics of demand are met (Armstrong 2015, n.p)

The American model does not take into account demand economics in the slightest. Sports owners and league executives view the scarcity of teams as a valuable tool in upkeeping their respective teams' financial stability. Our research focuses on the public funding of stadiums as a driving variable towards this scarcity. However, American sports leagues also utilize tools such as revenue sharing, salary caps and specific antitrust policies as ways to maintain this ideology of team scarcity. This discussion is not a matter of right and wrong or good and evil, rather it is a necessary assessment and comparison of large facets and institutions of modern society.

Future Research

Although we believe we have done enough research to provide a variety of answers to our research questions, because of time constraints, the conclusions we have come to could be improved with further research in a few key areas. First off, it would be imperative to interview more people regarding the ideas of expansion and relocation, or the ideas behind public funding of stadium construction. This strategy would assist us in retrieving a more comprehensive and wide-ranging set of viewpoints, while simultaneously building of our previous interview with Professor Sean Dinces. More specifically, interviews with people from outside of academia, such as those within the private sector, or those who have a backgrounds with a specific franchise or ownership group would provide another perspective to help expand our research. This duality would help to expand the point of views and input into our research question. The next, clear opportunity would be to perform more analysis into the economic aspects of our research question. As we dive deeper into the second facet of our research question, it is impossible to ignore the inevitable wealth of economic-focused topics that arise. From an urban geographical standpoint, it would be important to investigate where the money lies in relation to downtown stadiums and arenas. The underlying business interests and the particular ownership groups around arenas would help to explain the disadvantages and advantages of franchise attainment. Sports teams and stadiums are frequently seen as neighborhood enhancements, so the question would be if the stadiums act as a sort of draw for the public to willingly invest their tax money into the project? Lastly we could research the geographic variability of the fandoms surrounding each team, and see if those trends could be a factor in where a league or owner decides to place a team.

Conclusion

League expansion and franchise relocation relevancy within the North American sports' landscape appears strong shows no sign of diminishing. There are numerous variables that contribute to franchise relocation and league expansion. We conclude that Central Place Theory, and demand-side economics are not effective in solely explaining the patterns that these tendencies exhibit. This is due to human phenomena, and by extension, sports team locations do not follow a rational economic landscape. As a result, most of the cities highlighted by CPT are not viable cities for hosting a sports team, either having a population under the minimum threshold to support a team, or lacking underlying human elements such as public funding or cultural background. Public funding remains an essential facet for a team's stability in a particular location. Most recently, this was demonstrated by the NBA's Seattle SuperSonics, who lost their team because they couldn't collect sufficient public funding for a new arena. Conversely, the Milwaukee Bucks were able to retain their team due to their ability to raise capital through public subsidization. Throughout the future, numerous teams will continue to face relocation due to the league and ownership's desire for facility upkeep. Due to the wealth of research supporting the notion that public subsidization does not economically benefit a particular city, it is not outlandish to suggest the publicly funded stadium trend to decrease. However, it is clear that sports leagues are an extremely profitable industry and ownership will continue to attempt to maximize profits. Leagues will continue to pressure relocation ideas, and cities will continue to see a financial imbalance for supporting their own sports franchises. The future municipalities' decision-making will continue to contribute to the long-term landscape of the professional sports industry in the United States and Canada.

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Appendix A: Interview with Professor Sean Dinces

Variables for Relocation/Expansion

- Recent growth of new markets after the war
 - Ex. Dodgers to LA, post WWII
- To what extent are municipal governments willing to contribute their funds towards acquiring a team

Economic Effects

- overwhelming research and support around the 90's that says franchise attainment does not provide pecuniary benefits
- Leagues want to create artificial scarcity of teams to try to coerce cities into taking action to keep/get a team
- potential of honeymoon effect in the first couple of years (rare, few examples)
- unevenness of potential economic benefit
 - playground for the rich
 - Leakage Effect
 - players and owners often to not contribute back to city
 - they live in different cities(exception of LA, NYC, Chi, etc)
 - Substitution Effect
 - assuming that wages are stagnant in a certain cities, there is only so much discretionary spending to go around
 - new entertainment possibilities take away from previous avenues

Stadium Displacement

- large renewal projects often used to clear out unwanted space
 - sometimes viewed as a positive
 - some view valuable parts of cities as necessary places for revitalization

- neighborhood scale
 - promised increased economic traffic from bars, cafes, shops
 - often the stadium successfully engulfs the nearby commercial market
 - they want to get their consumers to buy their items and be at their venue for as long as possible
 - some stadiums build huge parking lots all around the stadium
 - local shops and restaurants often do not see the return on investment.
 - Stadiums that bring in tourists may have positive effect
 - ex: Fenway Park, Wrigley Field

‘Possible that sports development projects have had a non-negative or slightly positive effect but these cases are rare and hard to come by.’

Reaction to the studies of the 90’s

- leagues and team owners panicked
 - began to repackage their arguments towards city governments
 - collective consciousness, identity, morale
 - However, be wary of these arguments because they were mostly, originally created by team ownerships and professional sports leagues
 - (Without massive surveys, research and focus groups, it is impossible to know the true effects of these qualitative arguments.)

NFL Example

- does not think that the move to Los Angeles will happen
 - NFL likes having LA as a convincing factor
 - needs to keep the scarcity of teams idea up
 - more valuable as a driving factor than as an actual NFL franchise
 - notes LA’s lack of football prowess, motivation

TV Markets

- common sense factor
 - mentions that the Rangers would never move to Omaha, TV market would be the main reason
- good way to call team’s bluff in regards to the threats of relocation
- NFL - Revenue Sharing
 - sacrifice of TV Market would make more sense in the NFL due to their sharing of revenues, less of a desire to attain their own huge market share

- separate from baseball for example