TUMBLING DICE: ASSESSING COMMERCIAL CASINOS AS A STRATEGY FOR URBAN ECONOMIC DEVELOPMENT

By

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Author's Declaration Form

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Abstract

Casino gambling has rapidly expanded throughout the United States in recent decades as subnational governments elect to lift longstanding prohibitions on it. Casinos are seen by some to provide opportunities for economic development in areas hit hard by the loss of other industries and troubled public budgets. The decision of whether or not to legalize casino gambling significantly affects municipalities; however, little research has been done on their impacts at the city level. This thesis explores the effectiveness of commercial casinos as an urban economic development strategy, examining their impact in two case study cities over time on a series of economic indicators against control cities, and seeking evidence for industry cannibalization and job leakage theorized in literature. It uses a robust community matching process to establish controls with a difference-in-differences method to measure results. It finds that, while urban casinos have little effect on overall municipal economic health and do not appear to cannibalize jobs from other industries, they do bleed many jobs away to other communities by hiring mostly non-residents. To attain the economic development benefits city-level policy makers seek in their negotiations with casino operators, they must enact stringent local-hiring requirements before approving casino proposals.

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List of Abbreviations

- ACS American Community Survey
- AER Arts, Entertainment, and Recreation
- AFS Accommodation and Food Service
- AGA American Gaming Association
- LEHD Local Employer-Household Dynamics

Introduction

Casinos have proliferated throughout the U.S. following liberalization of commercial gambling restrictions over the past three decades, such that 984 casinos now operate legally in 39 states, up from only two states in the mid-1980s (AGA 2014). The American Gaming Association (2014) reports that 1.7 million jobs are supported by the casino industry, which also generates \$240 billion annually in "economic impact". Proponents are quick to tout the casino industry's large monetary footprint as evidence of real economic development. This line of reasoning is used to lobby decision makers at various levels of government to loosen legal restrictions on casinos, encouraging the industry to grow further with the promise of jobs and tax revenue. It does not, however, address the wider potential impacts of casino gambling as an industry, such as the possibility of displacing consumer spending, jobs, and tax revenue in other industry categories. Industry-funded research on casinos is of course prone to conflicts of interest, often one-sided, and rarely conducted with enough academic rigor to be considered truly credible (Grinols 2001; Walker 2013a). Academia is struggling to catch up to the industry's rapid proliferation with its own peer-reviewed studies. Further, most peer-reviewed research has been conducted at the state or county level, leaving municipal governments with few resources with which to judge the appropriateness of legalizing casinos within their jurisdictions.

Felsenstein (1999) and Calvano (2010) agree that giveaways and lump sum payments employed by casinos to receive community approval are distractions from understanding what is really at stake: the community's economy at large, which could be either buoyed or sunk by permitting casinos. As such, it is vital for communities to mitigate the information asymmetry with their own visions of economic development and goals for the project (Simmons 2000). Their economic development strategy must not be hijacked by the industry's "market logic" (Calvano 2010), and should depend on credible empirical evidence. This thesis ultimately seeks to add to that body of research in a novel way: by empirically observing the economic impact of commercial casinos in the urban context at the municipal level. It will contribute to the body of knowledge that allows municipal governments to make informed decisions about commercial casinos regarding their utility as an economic development strategy.

This thesis will follow Nichols's (2014) framework for quantifying economic impact, to attempt to determine whether or not allowing casinos has been an overall boon for the cities being investigated. It will also test Grinols' (1996) theory of industry cannibalization at the municipal level, to see if an increase in casino jobs leads to losses in jobs in other categories. Lastly, it will investigate Felsenstein's (1999) concept of job leakage, by determining whether or not casino jobs are going to residents of the municipalities in which the casinos are located.

Chapter one will provide a brief background on commercial casinos and their rapid growth. Chapter two will review the existing academic literature on commercial casinos, highlighting important themes explored in the thesis's original research. The third chapter describes the research design and methodology, which includes a difference-in-differences test of case study "casino cities" against covariate-matched control cities along a set of economic health indicators. The fourth chapter discusses the results of this original research, and this thesis concludes with the study's ramifications on policy regarding commercial casinos.

Chapter 1 – Background and Historical Context

Despite a contentious history, casinos and casino gambling have come to occupy a considerable portion of the U.S.'s economic landscape. This section will explore the conditions that led to casino gambling's rapid expansion throughout the United States.

1.1 Casinos in the U.S.: A Brief History

Gambling is a legally restricted activity in the United States, though the laws which govern it have gotten steadily looser over the past decades. In response to the economic challenge posed by the Great Depression, Nevada became the first state to legalize many forms of gambling via Assembly Bill 98 in 1931, which also had the effect of validating the state's many existing illegal casinos (Dunstan 1997). This paved the way for the development of Las Vegas and other cities as magnets for casino investment, first by reputed figures in organized crime, and eventually by legitimate businesspeople seeking to capitalize on a growing industry (Dunstan 1997). The nature of these cities as tourist destinations is not to be overlooked: combined with robust hospitality and entertainment industries, gambling won Nevada millions of visitors and an influx of billions of dollars throughout the twentieth century.

In the 1970s, the leaders of Atlantic City, New Jersey sought a means of reversing the once-popular oceanside destination's slide into crime and poverty. Voters in 1976 passed a referendum legalizing casino gambling within the city, the first such measure outside of Nevada, in hopes of attracting enough visitors and investment to revitalize the area (Dunstan 1997). Though Atlantic City was successful in attracting several casinos in the years to follow, its success as an economic development strategy remains dubious: to this day, crime and poverty persist in the city outside of the downtown casino resort area.

The casino industry took its next major step forward in the late 1980s. Following a lawsuit by the State of California against the Cabazon Band of Indians regarding the permissibility of operating card houses and similar gambling activities on semi-sovereign tribal lands, the U.S. Congress in 1988 passed the Indian Gaming Regulatory Act to provide the legal framework for what would come to be known as "Indian casinos" (Anders 1998). Provided that tribes codify gaming agreements with the states that encompass their lands, they would be free to launch gambling establishments open to the public (Anders 1998). These facilities provided immediate benefits to tribes throughout the U.S. in the form of positive cash flows from outside of their communities and thousands of new jobs. But although tribes often worked out revenue-sharing agreements with states, these new facilities would be exempt from tax on their earnings, and states quickly took notice of this missed revenue opportunity (Anders 1998).

With this precedent already in place, states throughout the 1990s sought to remove their own gambling restrictions to allow commercial casinos on non-tribal lands, which could be taxed directly at higher rates than non-gambling businesses. Faced with a recession early in the decade, states such as Louisiana, Illinois, and Mississippi legalized water-based casinos on riverboats and piers, while others permitted new gambling games at existing horse and dog racing tracks. Licensure soon expanded to land-based commercial casinos in several states. In this climate of liberalization, the 1990s saw unprecedented growth for the industry. Between 1990 and 1998, the number of U.S. counties hosting casinos grew from 26 to nearly 200, and commercial casino revenues grew from \$8.7 billion to more than \$22.2 billion (Grinols 2001). By the year 2014 the industry was generating over \$81 billion in annual revenues (AGA 2014). In short, what was recently a marginalized business in two states has grown into a massive nationwide industry.

1.2: A Note on the Difference Between Commercial and Indian Casinos

The U.S. casino industry can be reasonably split into two main categories: commercial casinos and Indian casinos. These two types are governed by different laws, and subject to very different operational and taxation rules.

Indian casinos are owned by federally-recognized Indian tribes and operate on semisovereign tribal lands, where they enjoy special status. Indian casinos are generally not subject to revenue taxation or reporting requirements, making collecting data on them difficult, although many choose to voluntarily contribute to the budgets of states in which their lands are located via compact agreements. Indian casinos tend to be located in more remote or lessurban areas, and draw more visitors to them from other locations. In 2014, 474 Indian casinos were in operation in 28 states, likely employing about 400,000 people (AGA 2014; Schwartz 2014).

Commercial casinos are similar to other private businesses and tend to be owned by a consortium of investors or large corporation. Their growth and operations are generally subject to a limited number of casino licenses in a particular state, and monitored closely by that state's gaming control body. Commercial casinos, while typically profitable, are commonly taxed differently and more heavily than other businesses, and may have to guarantee certain community benefits before they are permitted within a jurisdiction (Calvano 2010). In 2014, 510 commercial casinos were in operation in 23 states (AGA 2014), generating about \$38 billion in revenues (Schwartz 2015). They employ about 336,000 people (Schwartz 2014) and pay about \$8 billion in taxes annually (Schwartz 2012).

This thesis is concerned with commercial casinos; the data and analysis herein will not refer to Indian casinos. Commercial casinos alone, given their unique propensity to locate in major urban centers, are relevant to a discussion of casinos as an urban economic development tool. Indian casinos, while likewise employed for economic development on tribal lands, are generally not part of the urban fabric, and thus not as relevant to this discussion.

Chapter 2 – Thematic Literature Review

Casino gambling remains a sensitive topic in American policy, even as these venues proliferate. At issue are a multitude of considerations, including their potential social costs, the role of special interest groups, their economic development potential and how to quantify it, taxes and public budgets, the meaning of locality, competition between localities, industry "cannibalization", and the potential for market saturation. We will explore each of these issues in their recent context and how they will guide our research efforts.

2.1 Key Issues Framing the Discussion and Research

2.1.1 Social Costs and Negative Externalities

Like gambling as a whole, casinos are viewed with suspicion by many for their perceived propensity to generate negative externalities, including gambling disorders, increased crime, bankruptcies, social service costs, regulatory and police costs, family costs, and even suicides (Grinols 1996, 2001). This section will therefore serve to illustrate what is potentially at stake for communities that decide to allow casino gambling.

Some scholars agree that the casino industry relies disproportionately on what are called "problem" and "pathological" gamblers, or "P&P gamblers" (Grinols 2001), while others believe this is overstated (Walker 2013). The non-economic social costs of casinos can be difficult to measure, but are no less real and can cause serious harm to communities (Dunstan 1997; Eadington 1998). As such, much of the thinking and the research on American casinos has been about finding a balance between the negative externalities and positive economic development they conceivably generate, or attempts at proper cost-benefit analyses (Grinols 1996, 2001, 2006, 2008; Walker 2008a, 2013b).

Grinols and Walker have debated this at length. According to Grinols's research, between 1977 and 1996, growing numbers of casinos were positively associated with crimes like robbery, burglary, assault, and rape, and that these crimes form part of a total of more than \$40 billion in negative externalities generated by casinos (2006). Grinols' studies are unique in that they examine the time effect of casinos on crime, and find that there is a gestation or "lag" period of four to five years in which problematic gambling habits develop among a local population, ultimately leading to crimes that fuel these habits (2006). Walker (2008) takes exception to these findings, arguing that the social costs that Grinols lists are "comorbid" with, rather than caused by, P&P gambling. Further, he argues that social costs are not really "costs" in the purest sense, but rather wealth transfers, as they do not reduce total wealth in society (2013b).

2.1.2 Special Interest Groups and the Prisoner's Dilemma

The casino approval process involves considerable input from stakeholders including planners, churches, elected office holders, labor unions, neighborhood groups, the gaming industry and, increasingly, its professional lobby (Simmons 2000). Public relations has played a growing role since the commercial casino explosion began in the 1990s (Simmons 2000), such that it is necessary to address in this section how this shapes the perceptions of the public and of policy makers.

Walker (2013a) and Grinols (2001) agree that much of the research available on American casinos, particularly throughout the 1990s, has been industry-funded and biased, and therefore of little value. Calvano (2010) believes that Philadelphia's experience with commercial casinos was nothing less than corporate "value extraction" from urban communities, and that budgetary dependence on casino revenues was engineered by industry allies in local government. The casino industry sold this "wealth transfer" to communities by funding "goodies" for them up front, like little league baseball uniforms and church fundraisers (Calvano 2010). Kwiatoski (2014) reports on the casino approval process in New York's Hudson Valley, where casino developers first flouted the tax benefits of their proposed project to gain regulatory approval, and then returned to the prospective host community asking to pay up-front host fees instead in a "payment in lieu of taxes" agreement.

These cases illustrate the more assertive demands the casino industry is making of communities today, as more of the latter feel compelled to allow casinos to stay economically competitive with their neighbors. In terms of game theory, the casino industry is shifting from "player" to "resource holder". Felsenstein (1999) argues that early in the American casino boom, the reverse was true: casinos were the "players" competing for a limited number of casino licenses within regions, and the communities themselves were the "resource holders". Communities therefore benefitted from information asymmetries and extracted as much value from casino developers as possible in exchange for their permission to operate, in an inversion of the traditional Prisoner's Dilemma economic development model (Felsenstein 1999). However, scarcity of casino licenses was essential for this model to hold. As the number of licenses proliferates and the desire to compete with "defensive" casinos grows (Grinols 1996), the casino industry may be able to use its new position to extract rents from local communities.

2.1.3 Quantifying Economic Development

There is little consensus on how best to gauge the economic impact of commercial casinos. As noted above, some previous studies suffer from moral or commercial bias, or may contain important methodological flaws (Anders 2013). "Jobs created" as measured by employment within a casino, as well as "tax revenue generated" as measured by taxes paid by the casino, are common indicators used in industry-funded research due to their political palatability, though they are seriously flawed (Persky 1997). Persky (1995) points out that this research erroneously assumes that static casino jobs and tax numbers represent new demand

without loss of output elsewhere. But as Courant (1994) notes, true change in an economy cannot be measured by static numbers, but is instead marked by changes in the distribution of economic welfare—by outcomes rather than outputs. Careful selection of indicators to illustrate how this happens is important: quality of jobs is just as important as number of jobs, for one. Unfortunately, this data is not always readily available for study, so for lack of better options, inferences are usually made based on trends in jobs numbers. Wenz (2014) finds no "gold standard" indicator for assessing casinos' total socioeconomic impact.

Eadington (1998) asserts that casinos' economic rents for communities can be considerable, provided that supply is constrained by a very limited number of casino licenses. Gazel (1998) disagrees, arguing that this creates an oligopolistic market structure with little competition, negating the need for casinos to seek out-of-town "export" customers, and instead causing them to siphon spending from local gamblers away to shareholders in other locales. Felsenstein (1999) points out that even where local jobs are created, they may be going to commuters rather than local residents, representing a community leakage of jobs as well as revenue. Economopoulos (2014) finds that casinos' effect on certain indicators like per capita income can be markedly different in urban and rural areas. Taken in sum, even responsible academic study of the economic development impact of casinos is a somewhat imprecise business, but important inferences can be made with good research.

2.1.4 Taxes and Public Budgets

Taxes on casinos typically include a Wagering Tax on adjusted gross receipts, which is the volume of wagers minus the payouts to winners, plus admission fee taxes in some jurisdictions (Anderson 2013). The volume of tax revenues generated by casinos for local and state budgets is an argument often touted for legalizing them, and indeed, Walker (2008b) states that, "many states are still contemplating the introduction or expansion of gambling opportunities in an attempt to deal with fiscal crises." However, the research shows that the relationship between casinos and public coffers may not be that simple.

Walker (2011a), in a comprehensive state-by-state review of fifteen years of tax data, finds that commercial casinos actually reduce state revenues on balance, even as other forms of gambling, like lottery and horse racing, tend to increase them. He surmises that this is due to consumer casino expenditures coming at the expense of non-casino expenditures to such a large extent that sales tax revenue suffers (Walker 2013a); in other words, the classic cannibalization effect. This significant finding shows that dependence on casinos for revenue help is a losing proposition, and that, "the benefits side of the casino question is less of a certainty than is suggested in much of the public debate or literature," (Walker 2011a).

2.1.5 Locality

Comprehensive economic data is available for larger geographies like states and counties, though it may be more meaningful to look at less politically-defined geographies like city metropolitan areas. Gazel (1998) notes that the selected geographic level in most studies is arbitrary and dependent on where the most data is available.

Dunstan (1997) notes that smaller geographies show more benefit from casinos than large ones, as they are more likely to bring gamblers in from outside of the area. This suggests also that municipalities may benefit more from casinos than do the states that host them (Dunstan 1997), an interesting idea in light of Walker's finding that casinos harm state tax revenue (2011a). It may therefore be beneficial to compare effects at varying tiers of political geography or radii from a casino in question, in order to acknowledge where patterns differ.

2.1.6 Competition and Import Substitution

Several authors assert that "exporting" gambling by bringing in tourist gamblers form outside the economic area is the only real way to squeeze economic benefit out of a casino (Eadington 1998; Economopoulos 2014; Li 2010; Richard 2010; Persky 1995; Thompson 2005). The logic behind this is simple: if gamblers to a casino come from within the community, then wealth is simply redistributed within that community—disproportionately "up" to owners and shareholders (Calvano 2010)—generating negative externalities without creating any new wealth (Grinols 1996). At issue also is "import substitution" in the form of local "defensive" casinos (Grinols 1996), which disincentivize local residents from traveling elsewhere to gamble.

In terms of job creation, "new" employment can only be achieved by bringing new wealth into a community by exporting (Persky 1997). For this reason, rurally-located "resort" casinos are in a better position to benefit their communities than urban casinos, as more people from outside the community venture in to gamble there (Dunstan 1997; Eadington 1998). As Grinols (1996) and Felsenstein (1999) note, intercommunity competition manifests itself in a Prisoner's Dilemma situation, with communities electing to approve "defensive casinos" to prevent local gambling dollars from going elsewhere (Grinols 1996). Once a casino has been approved in one community, the cooperative solution is no longer available, and neighboring communities will have to approve casinos of their own (Grinols 1996).

Reviewing commercial casino revenues by state, Eadington finds that the vast majority of their gaming revenues, approaching 90%, come from within 75 miles of the casino (2011). Eadington (2011) also finds that gambling demand is less elastic than tourism, so that even as people travel less to distant casinos, they continue to gamble the same amount at local casinos as they open up. Walker (2008b), in a study of casino business volume by state, finds that the presence of casinos in adjacent states significantly decreases casino revenues in the state in

question. This state of increasingly localized competition invites more original research on casinos at the municipal level, some of which this thesis provides.

2.1.7 Industry Cannibalization

Dunstan (1997) argues that casinos largely displace spending by local residents at other local businesses – a phenomenon known as cannibalization. Perksy (1995) provided an early critique of industry-funded research in asserting that the static jobs and tax revenue figures touted by casino proponents cannot be considered "new" demand, as these frequently displace other industries. Gazel (1998) notes that in places where the ratio of local to nonlocal gamblers is high—places without much tourism—these cannibalization effects can be substantial. Walker (2008b) even notes the propensity of some gambling industries to cannibalize each other: casinos tend to eat into lottery revenues, for example. This thesis will contribute to the discussion of industry cannibalization at the municipal level, to observe whether or not a rise in casino employment has corresponded with job losses in other categories at varying distances to the casinos in our case studies.

2.1.8 Saturation

Wenz (2014) asks whether continued industry expansion will harm existing casinos, possibly reducing the gains seen in communities which currently offer a limited supply of licenses. Eadington (2011) asserts that casinos that tend to do well are generally free from serious competition due to high regulatory barriers. This can often be seen in casinos in small satellite cities which target gamblers from nearby major population centers; however, if another casino opens even closer to this center, the first is likely to suffer (Eadington 2011).

Anders (2013) notes that the positive economic benefits municipalities can enjoy due to casinos are erased if the market widens to allow for free competition. Gazel (1998) takes the opposite tack, arguing that monopolisitic and oligopolistic regulatory structures mean casino owners have little incentive to seek gambling customers from outside of the local area, leading to more local gambling and thus, more cannibalization. Eadington (1998) makes a point that casino legalization tends to open the regulatory "floodgates", inviting demands to legalize new forms of gambling to "level the playing field" without fully understanding the ramifications and adverse effects of gambling. This discussion is important when considered in conjunction with municipal-level research on casinos' economic impacts, as municipalities should understand whether approving casinos will bring diminishing positive returns if they are located near other casino cities.

2.2 Gaps in the Literature

The existing literature on the economic development potential of casinos is largely focused on county and state-level impacts. However, as the industry expands, it is becoming more important for municipalities to understand the potential risks and benefits of permitting casinos. There is little existing research on the performance of urban casinos as drivers of economic development at the municipal level—that is, of the economic benefits of casinos to the cities that host them. The literature also contains much theoretical discussion of *industry cannibalization* and *job leakage*, but little empirical study of these concepts at the municipal level. These questions must be addressed in order for cities to make informed decisions on whether or not to host a casino. This thesis seeks to provide empirical research to allow this.

Chapter 3 – Research Design

Pursuant to the theories raised in the literature about casinos as economic development tools, this thesis will address gaps in the empirical research in three areas: it will seek evidence for improvement of overall economic health, cannibalization of other industries, and casino job leakage to other municipalities, all at the municipal level.

3.1 Research Questions

RQ1: Do Urban Casinos Improve the Overall Economic Health of Cities?

H0: Cities with new urban casinos will not perform better along a set of economic indicators than similar cities without casinos.

H1: Cities with new urban casinos will perform better along a set of economic indicators than similar cities without casinos.

RQ2: Do Urban Casinos Lead to Cannibalization of Other Industries Within Cities?H0: A new urban casino will not lead to nearby job losses in other industry categories.H1: A new urban casino will lead to nearby job losses in other industry categories.

RQ3: Do Urban Casinos Leak Jobs to Other Cities?

H0: A new urban casino's jobs will not mostly benefit workers living outside the municipality.

H1: A new urban casino's jobs will mostly benefit workers living outside the municipality.

3.2 Research Tools

These three analyses are dependent on the availability of good data on a number of citylevel economic indicators, as well as on the locations of jobs in various industries to an appreciable precision. This information is available through two key tools on which this thesis relies heavily: the U.S. Census's American Community Survey (ACS) and Longitudinal Employer-Household Dynamics (LEHD).

The American Community Survey is regularly administered to a representative sample of 3.5 million U.S. households, tracking a multitude of demographic and economic indicators. The data is released yearly, compiled as 1-year, 3-year, and 5-year average estimate values for a particular year, with 5-year estimates being the most accurate. The ACS is widely regarded as the authoritative source of demographic information by year in the U.S. Its interface makes it easy to search for specific indicators in geographies as narrow as particular municipalities, making it indispensable for uncovering the economic performance data needed for this project.

The Longitudinal Employer-Household Dynamics is a relatively new tool providing data on the locations of all jobs within the U.S. to the census block level, currently for the years 2002 through 2014. The data is collected by the Census Bureau and by U.S. states from unemployment insurance earnings data and the Quarterly Census of Employment and Wages. This information can be broken down by various geographies including municipal boundaries and point radii, as well as by industry, worker age, and monthly earnings. LEHD data can be used to track jobs numbers within precise geographies, and can also be automatically cross-referenced with the locations of workers' homes to determine the number of workers in a certain geography who commute and from where.

3.3 Case Selection

To investigate the concepts above, I sought two real-world examples of cities that had recently legalized and opened their first commercial casinos in urban areas. Including two case studies could either further validate my findings if they were consistent across both cases, or if not, perhaps explain the differences in my findings via factors like the size or density of the city in question. In order to collect data that is both recent and available on LEHD and the ACS, I would seek cities that had opened their first casinos within the last ten years. Ideally, these two cities would be located within the same state, to control for both regional factors and the casino operational rules established by various state gaming control boards.

After extensive research, I settled on Pittsburgh, Pennsylvania (2010 population 305,704) and Bethlehem, Pennsylvania (2010 population 74,982). These two target cities, taken together, provide several advantages to this study. Both contain only one casino, each of which opened in the year 2009: Rivers Casino in Pittsburgh, and Sands Casino in Bethlehem. Both casinos are located near the centers of dense urban environments, rather than on the peripheries or in rural areas, and both are commercially-owned and not defined as Indian casinos. Their opening dates in 2009 are ideal as a "year zero", giving the study enough lead data to reliably establish similarities with control cities, and five years of lag data to assess the casinos' impacts.

3.4 Control Selection: Community Matching

Perhaps the greatest challenge in assessing the localized economic development impact of commercial casinos is determining how to explore the counterfactual – that is, how to determine what would have happened if there had been no casino. Because it is impossible to compare the same city over the same time period both with and without a casino, some substitute method must be used. This thesis sought non-casino control cities with similar economic and demographic circumstances as the target casino cities, to compare them over the same time period. To do this, it uses a covariate community matching method prescribed by Nichols (2014).

Community matching is a common and academically sound method for exploring the counterfactual in studies of this type (Nichols 2014). When applied rigorously, covariate or "nearest neighbor" matching identifies communities that are very similar to the target communities along a set of relevant indicators, which are measured before the introduction of a "treatment" (in this case, the opening of a city's first legal casino) (Nichols 2014). This quasi-experimental method then allows researchers to compare performance of the target community against the control communities for a period of time after to the introduction of the treatment, to find out whether the treatment is associated with any significant change. This method provides good insight into correlation, but cannot actually prove causality. In addition, the number of treatment and control cases will be necessarily small, as few communities are likely to be close matches, and there is always the possibility of variables unaccounted for in the methodology influencing the study results.

Following this method, a list of potential control cities is generated which match the target city along a set of relevant economic criteria, within a certain tolerance. I chose to follow Nichols's (2014) example in considerable detail, as his study likewise seeks to compare the local economic development impacts of casinos in Massachusetts with matched control cities. I borrowed the following "match" indicators from Nichols's paper: total population, unemployment rate, income (expressed as median personal earnings), labor force participation rate, percent of the population with at least a bachelor's degree, poverty rate, and share of workforce employed in manufacturing. I likewise believed that these were essential indicators

to providing an economic portrait of a particular city. To these, I added share of workforce employed in arts, entertainment, and recreation, as I believed it was important to establishing local industry compositions. This data was taken from American Community Survey 5-year estimates where available, and 3-year and 1-year estimates when those were the best available, with unemployment data from the Bureau of Labor Statistics' Local Area Unemployment Statistics 2004-2008 averages and the population data taken directly from the 2010 U.S. Census. All data except the Census data were taken for the year 2008 (the last year before casinos were introduced to any of the cities in the study), and likewise all data except the Census came from sample populations from annual surveys conducted by the U.S. Government. The Census itself was a direct count taken in the year 2010.

I also followed Nichols's example in determining my matching tolerances: I would consider a "match" any city whose indicator scores fell within 75% to 150% of my target cities' values. I believed that this range would allow me to identify enough control cities with similar enough economic characteristics to act as stand-ins for the counterfactual, although as I will explain, I had to slightly loosen the tolerances for indicators I deemed less important in order to have enough control cases. I began by exporting from the Census' website lists of all U.S. cities with populations between 75% and 150% of Pittsburgh's population, and between 90% and 120% of Bethlehem's population. Because there were many more cities near Bethlehem's population, I was able to use a tighter population tolerance. I did a light control for regional factors by limiting my results to states in the more industrial Midwest and Mid-Atlantic regions, removing city results in the far South, Southwest, West, and Northeast regions. This left me with 53 cities matching Bethlehem and 20 cities matching Pittsburgh on population alone.

I would then apply each city's score for each of the economic indicators I had chosen, to identify cities that meet the tolerance criteria I had set for each one. I created two Excel spreadsheets—one for Pittsburgh matches and one for Bethlehem matches—with each population-matched city listed against each indicator. I plugged each city's score into the spreadsheet directly from datasheets exported from the sources listed above, and inserted columns next to the indicator score columns that would list whether or not that city's score fell within 75% to 150% of the target city's score on that particular indicator, expressed as a simple "Y" or "N". The Excel formula was as follows:

=IF(AND([75% Lower Bound]<=[Score of Interest], [Score of Interest]<=[150% Upper Bound]),"Y","N")

I then added a final column to each spreadsheet that would note if a particular city matched *every* indicator. This required another simple formula:

= IF(AND([Ind1]="Y",[Ind2]="Y",[Ind3]="Y",[Ind4]="Y",[Ind5]="Y",[Ind6]="Y",[Column7]="Y"),"Y","")

I was left with few "perfect" matches. Gastonia, North Carolina and Lynchburg, Virginia matched Bethlehem on all indicators, while no cities matched Pittsburgh on all indicators. I would therefore have to loosen my tolerances on a few less vital indicators in order to allow a sufficient number of close matches. The indicators I deemed slightly less important, which therefore could be "loosened" while still yielding appropriate matches, were "Percent of population over age 25 with at least a Bachelor's Degree" and the two industry composition categories, "Manufacturing share of employment for workers age 16 and over" and "Arts, Entertainment, and Recreation and Accommodation and Food Services share of employment age 16 and over". For Bethlehem, I loosened all three indicator thresholds slightly to 70% to 160% of the target city's scores. For Pittsburgh, I had to loosen a bit more to get a reasonable number of matches: 70% to 160% for the Bachelor's Degree indicator, and 50% to 200% for the two industry composition indicators. This means that Pittsburgh's control cities are less-closely matched to the target city on the composition of its industries than Bethlehem's control cities, but owing to Pittsburgh's unusually low 5.4% manufacturing employment share compared to most other cities on the list, this was an appropriate adjustment. I also had to remove one of Bethlehem's matched cities, Waterloo, Iowa, from the final running, as that city

actually does have its own casino, and therefore could not function as a control city. I was left with four control cities each that met all tolerance criteria, listed in Table 1 below:

Table 1: Covariate-matched control cities.

Bethlehem, PA matches	Pittsburgh, PA matches
Concord, North Carolina	Jersey City, New Jersey
Decatur, Illinois	Minneapolis, Minnesota
Gastonia, North Carolina	Norfolk, Virginia
Lynchburg, Virginia	St. Paul, Minnesota

Each of these cities is of course very different, but each meets the economic criteria to match their target cities, and therefore functions as a counterfactual stand-in to the target city. Because each city's economic performance could vary due to a number of factors not accounted for in this study, I would attempt to mitigate variances by using average scores for all four control cities to compare against the target city. This would help to control for particular circumstances which might skew the metrics in some control cities, such as Jersey City's close proximity to New York City's major urban center.

3.5 Methodology

While all of the three research questions call for the ACS and LEHD tools, each must be approached differently. The first research question tests the performance of the casino cities along a set of economic indicators post-casino against those of matched control cities as the counterfactual. This would be done using a differences-in-differences comparison method, of the kind used by Card and Krueger (1994) in their landmark study of the effect of minimum wage increases on jobs numbers. The second and third research questions require tracking the movement of jobs between geographies via LEHD counts. I chose the years 2008 through 2014 to collect the data I would need. This would allow for one year of pre-casino data to illustrate any immediate impacts the casino may have had, and five years of post-casino data with which to track impact. I chose a set of economic indicators which I thought would give the best and most comprehensive look at economic health of a city. These are:

Median Earnings of Individuals over the Past 12 Months (ACS): This was chosen over household income as it would give a better snapshot of job quality, and over per capita (average) income so that it would not be skewed by high-earning outliers.

Poverty Status (share of individuals) over the Past 12 Months (ACS): The Census Bureau updates this definition annually with minimum income thresholds based on the Consumer Price Index and family size.

Total Number of Jobs Located Within a Defined Geography (LEHD): This is regardless of where the workers live. It suggests positive or negative economic growth within a certain area.

Unemployment Rate (ACS): This shows the portion of residents within a certain geography who are out of work but looking, regardless of the work location. It can help illustrate both municipal economic health and mismatches between jobs and jobseekers.

Percent of Jobs Taken by Nonresidents (LEHD): This indicator was calculated from Destination Reports, which show the municipalities in which workers who work in a certain geography live. It is especially useful for answering the third research question.

Percent of Workers in Service Jobs (ACS): This ACS indicator shows the share of workers living in a certain geography who work service positions, such as food service, regardless of the industry categorization of their employer. It can help address the second research question.

This thesis also makes use of official job reports at the Sands and Rivers casinos, made yearly to the Pennsylvania Gaming Control Board from 2010 through 2014.

3.5.1 RQ1: Do Urban Casinos Improve the Overall Economic Health of Cities?

This question considers results within the municipal boundaries of each city. To address it, I created two Excel workbooks (one for Bethlehem, one for Pittsburgh) with separate, identical sheets to track each of the six indicators above for the study and control cities, as well as an average of the control city scores, for the years 2008 through 2014. With the differences between each city's beginning and ending scores calculated, I would then calculate the difference between the study city's difference and the difference of the average of the control cities, which serves as the counterfactual. This follows the difference-in-differences method: the difference in scores at the end of the study period between the casino city (treatment) and the average of the matched non-casino cities (control) would show the strength of the effect, positive or negative, of the treatment (a casino within city limits). This would be repeated for each of the six indicators and for both the Bethlehem and Pittsburgh studies, with inferences to be made from the results.

3.5.2 RQ2: Do Urban Casinos Lead to Cannibalization of Other Industries Within Cities?

This question considers more localized results within the casino cities, at varying distances from the sites of the casinos themselves. For this reason, it is not possible to compare results to control cities, as these do not have casino sites themselves; it is therefore not possible to establish a clear counterfactual. Instead, we examine job counts before and after the casino, alone: the total number of jobs at varying distances to the casinos in 2008 (before the casinos

were opened) and in 2014 (after five years of operation) using the job location data available through LEHD. These distances will be within 0.25 miles of the casino site (which will mostly track jobs at the casino itself, plus some peripheral businesses such as gas stations or warehouses), from 0.25 miles to one mile from the casino site (immediate neighborhood), and from one to three miles from the casino site (extended neighborhood). Maps of these geographies are listed as Appendices M through R.

Because the literature suggests that consumer spending at casinos may replace spending at restaurants, movie theaters, and similar entertainment and service venues (Dunstan 1997; Gazel 1998; Walker 2008b), we will also track the change in jobs in the Census-coded industries "Arts, Entertainment, and Recreation" (AER) and "Accommodation and Food Service" (AFS). When broken out by location via the geographic tiers above, we will be able to see if the introduction of a casino is associated with an appreciable change in the number of jobs, as well as where and in what categories. If the theory of industry cannibalization holds true, we would expect an increase in casino jobs (total jobs within 0.25 miles from the casino site) to correlate with losses in AER and AFS jobs further away.

3.5.3 RQ3: Do Urban Casinos Leak Jobs to Other Cities?

This question will make use of LEHD's Destination Report, which can show where the workers working in a particular geography live. We will choose *municipality (place)* as the specificity level for the "home" geography, and the same 0.25 mile radius around the casino site as the "work" geography. This should pick up all jobs at the casino, but will inadvertently also pick up some peripheral jobs at other establishments. Jobs are likely to increase in the "work" geographies after the opening of the casinos: if more of these jobs are worked by people living outside of the municipality in which the casino is located, it would be consistent with the job leakage theory.

Chapter 4 – Findings

Analysis of the data is broken down by research question and target city. Economically desirable trends among the difference-in-differences results appear in green; undesirable trends appear in red. Discussion of the findings and policy implications follow.

4.1 RQ1: Do Urban Casinos Improve the Overall Economic Health of Cities?

4.1.1 Bethlehem

 Table 2: Bethlehem difference-in-differences in economic indicators.

 Sources: American Community Survey and US Census Longitudinal Employer-Household Dynamics

 Median Earnings

	Bethlehem (Treatment)	Average of Non-Casino Cities (Control)	Difference
Pre-Treatment (2008)	31,627	30,991	636
Post-Treatment (2014)	34,004	31,635	2,369
Change	2,377	644	1,733

Poverty Rate			
		Average of Non-Casino Cities	
	Bethlehem (Treatment)	(Control)	Difference
Pre-Treatment (2008)	15.1	17.2	-2.1
Post-Treatment (2014)	19.3	20.8	-1.5
Change	4.2	3.6	0.6

Total Number of Jobs			
	Pothlohom (Trootmont)	Average of Non-Casino Cities	Difference
	Bethenenn (Treatment)	(Control)	Difference
Pre-Treatment (2008)	32472	43298	-10826
Post-Treatment (2014)	35778	41346	-5568
Change	3306	-1952	5258

Unemployment Rate			
		Average of Non-Casino Cities	
	Bethlehem (Treatment)	(Control)	Difference
Pre-Treatment (2008)	5.7	7.0	-1.3
Post-Treatment (2014)	9.3	11.6	-2.3
Change	3.6	4.6	-1.0

Percent of Jobs Taken by Nonresidents

	Bethlehem (Treatment)	Average of Non-Casino Cities (Control)	Difference
Pre-Treatment (2008)	78.0	72.3	5.7
Post-Treatment (2014)	80.8	74.5	6.3
Change	2.8	2.1	0.7

Percent of Workers in Service Jobs

	Bethlehem (Treatment)	Average of Non-Casino Cities (Control)	Difference					
Pre-Treatment (2008)	17.9	17.8	0.1					
Post-Treatment (2014)	19.3	19.6	-0.3					
Change	1.4	1.8	-0.4					

Table 2 above shows the differences in Bethlehem's scores on each indicator over the study period, and compares them against the differences of the control. Median earnings increased in two control cities and decreased in the other two over the study period. Median earnings in Bethlehem increased by \$2,377, a \$1,733 improvement over the average of the non-casino control cities, where median earnings increased by only \$644. Poverty increased in Bethlehem and in each matched control city save for Concord, NC, where a 14% relative decrease in poverty seems to make that city an outlier. Compared to the average of all control cities, poverty increased 0.6 percentage points in Bethlehem; however, when Concord is removed from the control, poverty in Bethlehem actually *decreases* 1.1 percentage points. For this reason, the casino treatment's association with poverty rate is not immediately clear. Bethlehem and Concord both added to their total numbers of jobs over the study period, while the other cities each lost jobs on balance. Decatur, Illinois saw an unusually large decrease in

total jobs, with the raw number falling about 25%. Without accounting for this, Bethlehem added 5,258 more jobs than the average of the control cities, which lost nearly 2,000 jobs over the study period. When Decatur is removed from the control, the effect is similar but weaker: the control cities now lose 690 jobs on average, but Bethlehem retains an advantage of 3,996 jobs. All cities in the study saw a rise in the unemployment rate to varying degrees, and Decatur once again stands out by doubling its unemployment from 7% to about 14%. Without controlling for Decatur, Bethlehem shows an unemployment rate advantage (meaning its unemployment rate still increased, but by a smaller margin) of one percentage point over the control. When Decatur is removed, that advantage shrinks to a half a percentage point. Likewise, all cities saw an increase in the share of jobs within city limits that are worked by nonresidents of that city. This share increased by 0.7 percentage points more in Bethlehem than in the control cities, placing Bethlehem at a disadvantage in this category. Lastly, the share of workers in service jobs increased in most cities, but this increase was 0.4 percentage points smaller in Bethlehem than in the average of the control cities.

4.1.2 Pittsburgh

Table 3: Pittsburgh difference-in-differences in economic indicators. Sources: American Community Survey and US Census Longitudinal Employer-Household Dynamics

Median Earnings								
		Average of Non-Casino Cities						
	Pittsburgh (Treatment)	(Control)	Difference					
Pre-Treatment (2008)	31107	34292	-3185					
Post-Treatment (2014)	33332	36472	-3140					
Change	2225	2181	44					

Poverty Rate								
		Average of Non-Casino Cities						
	Pittsburgh (Treatment)	(Control)	Difference					
Pre-Treatment (2008)	21.2	19.2	2.0					
Post-Treatment (2014)	22.8	21.6	1.2					
Change	1.6	2.4	-0.8					

Total Number of Jobs								
		Average of Non-Casino Cities						
	Pittsburgh (Treatment)	(Control)	Difference					
Pre-Treatment (2008)	260,489	196,325	64,164					
Post-Treatment (2014)	278,959	204,697	74,262					
Change	18,470	8,372	10,098					

Unemployment Rate							
		Average of Non-Casino Cities					
	Pittsburgh (Treatment)	(Control)	Difference				
Pre-Treatment (2008)	7.1	7.9	-0.8				
Post-Treatment (2014)	9.4	10.0	-0.6				
Change	2.3	2.1	0.2				

Percent of Jobs	Taken by	y Nonresidents
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		Average of Non-Casino Cities			
	Pittsburgh (Treatment)	(Control)	Difference		
Pre-Treatment (2008)	72.7	74.4	-1.7		
Post-Treatment (2014)	74.5	75.5	-1.0		
Change	1.8	1.1	0.7		

		Average of Non-Casino Cities	
	Pittsburgh (Treatment)	(Control)	Difference
Pre-Treatment (2008)	21.1	18.9	2.2
Post-Treatment (2014)	21.1	19.5	1.6
Change	0.0	0.6	-0.6

Percent of Workers in Service Jobs

Table 3 above shows the differences in Pittsburgh's scores on each indicator over the study period, and compares them against the differences of the control. Median earnings increased in Pittsburgh and in each control city over the study period. However in Jersey City, NJ, earnings increased almost 12%, fully double that of the next control city. With all four control cities accounted for, Pittsburgh had a negligible earnings advantage of just \$44 annually. But when Jersey City's unusual increase is controlled by removing it from the average, that advantage climbs to \$846. This is still not a huge amount, implying it is not clear if Pittsburgh has a real earnings advantage. Poverty rate increased in all study cities, but less so in Pittsburgh than in most control cities, giving it a 0.8 percentage point advantage over the average. The total number of jobs decreased in two control cities and increased in the other two, where Jersey City once again appears to be an outlier due to a large increase in jobs. Without controlling for this, Pittsburgh still has a jobs advantage of over 10,000 jobs above the average of the control cities. When Jersey City is removed from the average, that advantage climbs to 15,661 jobs, meaning Pittsburgh's advantage is clear in both scenarios. The unemployment rate increased in all study cities, although by 0.2 percentage points less in Pittsburgh than in the control, implying a small positive advantage. The share of city-located jobs taken by non-residents changed little for most control cities but did increase in Pittsburgh, leaving it at a disadvantage of 0.7 percentage points. When St. Paul, MN, which has an unusually large increase in the share of jobs taken by non-residents, is removed from the control, Pittsburgh's disadvantage jumps to 1.5 percentage points. Finally, the share of workers in service jobs went virtually unchanged in Pittsburgh over the study period, although it varied among the control cities, with this share increasing on balance. Therefore, Pittsburgh ended the period with a 0.6 percentage point advantage over the control in this category, possibly due to some mitigating effect from the casino.

4.1.3 In Sum

Table 4: Summary of casino effect on indicators in both study cities.

	Bethlehem Raw Difference vs. Control	Pittsburgh Raw Difference vs. Control	Conclusion
Median Earnings	Increase	Unclear	Inconclusive
Poverty Rate	Unclear	Decrease	Inconclusive
Unemployment Rate	Decrease	Decrease	Decrease in unemployment rate
Total Number of Jobs	Increase	Increase	Increase in total number of jobs
Percent of Jobs Taken by Non-Residents	Increase	Increase	Increase in percentage of jobs taken by non-residents
Percent of Workers in Service Jobs	Decrease	Decrease	Decrease in percentage of workers in service jobs

The overall trend of each indicator as it relates to the casino treatment in Bethlehem and Pittsburgh is illustrated by Table 4. Lingering questions about the strength and direction of the trends associated with the casino "treatment" on the Median Earnings and Poverty Rate indicators mean that the relationship urban casinos have with them is largely unclear. What is much clearer, however, is that casinos are associated with an increase of the total number of jobs within a city, and with a decrease in unemployment of its residents, relative to economically similar matched control cities. Casinos are also associated with a decrease in the share of workers in service jobs. Because these jobs tend to pay lower than production or higher-skilled professional positions, this could perhaps be taken, along with the total jobs and unemployment indicators, as evidence of improving job markets in cities with casinos. Lastly, casinos appear to be associated with a larger share of city-based jobs going to non-resident workers, relative to the control. This indicator has some bearing on our question of overall economic health of casino cities and is discouraging in this regard, but will add much more to a discussion of the this thesis's third research question. Line charts tracking to performance of the casino cities against all control cities are included as Appendices A through L. It is beyond the scope of this thesis to weight the indicators above for their cumulative impact. Casinos appear to be positively associated with improved performance on at least three economic indicators, negatively associated with improved performance on at least one indicator, and to have an unclear association with two indicators. Further, the results between the two casino cities being studied are, relative to their respective controls, roughly similar. It therefore appears that the casino cities in this study may, on balance, perform slightly better along a set of indicators of overall economic health than similar non-casino cities. However, the lack of absolute clarity in some of the data make it difficult to reject the null hypothesis outright.

4.2 RQ2: Do Urban Casinos Lead to Cannibalization of Other Industries Within Cities?

4.2.1 Bethlehem

Table 5: Job numbers at various distances from the Sands Casino in Bethlehem. Source: US Census Longitudinal Employer-Household Dynamics. Total Jobs

								Net Change	% Change
	2008	2009	2010	2011	2012	2013	2014	2008-2014	2008-2014
Reported Jobs at Casino			981	1588	1910	2117	2232		
Casino and Nearby (0.25 mi radius)	164	183	297	255	2130	2492	2720	2556	1558.5
Immediate Neighborhood (0.25 to 1 mi away)	4230	3238	4576	6944	5185	5844	5709	1479	35.0
Exterior Neighborhood (1 to 3 mi away)	26438	25756	26184	26171	28462	28009	27571	1133	4.3
Sum	30832	29177	31057	33370	35777	36345	36000	5168	16.8
Full City	32472	30573	31756	34859	36447	36617	35778	3306	10.2
Arts, Entertainment, and Recreation Jobs								Net Change	% Change
	2008	2009	2010	2011	2012	2013	2014	2008-2014	2008-2014
Casino and Nearby (0.25 mi radius)	C) 38	152	0	1720	85	115	115	
Immediate Neighborhood (0.25 to 1 mi away)	30) 156	582	1311	93	79	38	8	26.7
Exterior Neighborhood (1 to 3 mi away)	322	266	284	296	218	248	263	-59	-18.3
Sum	352	. 460	1018	1607	2031	412	416	64	18.2
Full City	185	401	1018	1605	1953	342	375	190	102.7

1

Accommodation and Food Service Jobs									
	2008	2009	2010	2011	2012	2013	2014	Net Change 2008-2014	% Change 2008-2014
Casino and Nearby (0.25 mi radius)	9	0	2	166	164	2146	2209	2200	24444.4
Immediate Neighborhood (0.25 to 1 mi away)	76	52	194	72	117	109	136	60	78.9
Exterior Neighborhood (1 to 3 mi away)	2740	2623	2680	2590	3021	2724	2954	214	7.8
Sum	2825	2675	2876	2828	3302	4979	5299	2474	87.6
Full City	2861	2863	2685	2877	3271	5023	5350	2489	87.0

If the theory of industry cannibalization holds true, we would expect an increase of jobs at the geography closest to the casino (the 0.25 miles radius), due to the casino itself, to correspond with job losses at geographies slightly further out. This would especially hold true for the Arts, Entertainment, and Recreation (AER) and Accommodation and Food Services (AFS) job categories, where consumer spending is theorized to be pilfered by casinos. Table 5 shows the change in jobs numbers in each of these categories over the study period. It is worth noting that there appears to be a lag affecting when jobs at the casino were reported via LEHD: the Sands Casino first reported its initial 981 jobs to the Pennsylvania Gaming Control Board in 2010; however, LEHD does not seem to reflect the existence of these jobs until 2012. There also appear to be job categorization inconsistencies in the LEHD data, as the number of casino-site jobs listed as AER and AFS seem to vary wildly year to year.

Looking at Bethlehem, we see a marked and predictable increase in total jobs at the geography closest to the casino site, reflecting the opening of the casino itself, albeit with a time lag. Interestingly, at a time when all jobs citywide increased by about ten percent, jobs from 0.25 miles to one mile away from the casino increased by 35%, suggesting some kind of positive spillover effect to nearby businesses, rather than cannibalization. Drilling down to the two job categories of interest, we see that AER jobs doubled citywide over the study period. AER jobs at the casino site are difficult to interpret because of the wide year-to-year variation reported, probably due to inconsistencies in LEHD regarding the categorization and exact location of some casino jobs. But the interesting finding is at the geography tier one to three miles away from the casino: AER jobs actually *decreased* 18% over the study period, a finding

bolstered by what appears to be more consistent reporting. This does provide some evidence for industry cannibalization at distances greater than one mile from the casino site. Looking at AFS jobs, we see 79% growth at a distance of between 0.25 miles and one mile from the casino site, roughly consistent with 87% AFS job growth citywide. However, jobs at the next geography, one to three miles, grew less than eight percent. While this does not demonstrate cannibalization of AFS jobs, it may show a dampening effect: it is possible that AFS jobs would have grown more quickly at this geographic tier, consistent with citywide growth, were it not for consumer spending shifting to the casino.

4.2.2 Pittsburgh

Table 6: Job numbers at various distances from the Rivers Casino in Pittsburgh. Source: US Census Longitudinal Employer-Household Dynamics.

								Net Change	% Change
Total Jobs	2008	2009	2010	2011	2012	2013	2014	08-14	08-14
Reported Jobs at Casino			1288	1705	1801	1782	1774		
Casino and Nearby (0.25 mi radius)	2590	2523	1681	2276	3692	3695	2179	-411	-15.9
Immediate Neighborhood (0.25 to 1 mi away)	13,278	13,037	13,641	14,795	15,140	16,108	15,168	1890	14.2
Exterior Neighborhood (1 to 3 mi away)	147,634	149,497	154,645	157,976	149,449	154,471	152,084	4450	3.0
Sum	163502	165057	169967	175047	168281	174274	169431	<i>5929</i>	3.6
Full City	260,489	266,035	275,871	282,841	280,036	286,787	278,959	18470	7.1
								Net	%
								Change	Change
Arts, Entertainment, and Recreation Jobs	200	8 2009	2010	2011	2012	2013	2014	08-14	08-14
Casino and Nearby (0.25 mi radius)		0 0	17	22	27	25	24	24	
Immediate Neighborhood (0.25 to 1 mi away)	53	3 561	1,253	2,283	2,316	2,368	2,380	1847	346.5
Exterior Neighborhood (1 to 3 mi away)	3,46	9 3,454	3,369	3,907	3,971	3,628	3,532	63	1.8
Sum	400	2 4015	4639	6212	6314	6021	5936	1934	48.3
Full City	5,80	3 5,795	6,318	8,051	8,077	8,095	8,193	2390	41.2
									%
Accommodation and Food Service Jobs								Net	Change
								Change	2008-
	200	8 2009	2010	2011	2012	2013	2014	08-14	2014
Casino and Nearby (0.25 mi radius)	10	9 131	243	716	14	9	47	-62	-56.9
Immediate Neighborhood (0.25 to 1 mi away)	79	8 747	790	778	1,271	1,218	1,230	432	54.1
Exterior Neighborhood (1 to 3 mi away)	9,22	8 9,556	9,475	9,421	10,481	10,734	10,760	1532	16.6
Sum	1013	5 10434	10508	10915	11766	11961	12037	1902	18.8

The change in jobs across the same categories in Pittsburgh is listed in Table 6.

17,231

17,424

18,967

19,918

20,012

3100

18.3

Pittsburgh's findings may be a bit harder to interpret, as the exact number of jobs within 0.25

17,183

16,912

Full City

miles of the casino site is unclear, possibly due to the proximity of other large employers like Mercy Behavioral Health and the Community College of Alleghany County. This geography appears to show an increase in jobs in 2012, consistent with a lag in reporting jobs created at the casino, followed by a large loss of jobs in 2014. It is unlikely that these losses occurred at Rivers Casino, however, as the jobs it reported to the Gaming Control Board are more or less consistent throughout these years. It is more likely that these losses came from one of the other large employers nearby; however, given the dramatic size of the loss and the uncertainty surrounding the numbers at this tier, I am hesitant to ascribe this to the effect of industry cannibalization.

Total jobs in the immediate neighborhood (0.25 miles to one mile away) grew 14% compared to about seven percent citywide, implying a similar positive spillover effect to this geographic tier as the one seen in Bethlehem. AER jobs appear to have skyrocketed at this geographic tier, although interestingly, not at the casino itself. Once again, this may be due to inconsistencies as to the exact locations of some jobs within the LEHD dataset. What is clear, however, is that the 1,847-job increase at this tier made up the bulk of the 2,390 AER jobs added to the *entire city* in this category over the study period, while the next geographic tier (one to three miles away) added a negligible 63 jobs. Once again, this may demonstrate a sort of dampening effect on AER jobs at this farther tier. AFS jobs grew impressively at the immediate neighborhood level, although the issues this dataset has with exact job locations means that many of these jobs may be located at the casino itself. Jobs at the next tier are roughly consistent with both the entire three-mile radius of the casino and with the full city, showing little evidence for industry cannibalization.

4.2.3 In Sum

	Bethlehem				Pittsburgh		
							Conclusion
	All Jobs	AER	AFS	All Jobs	AER	AFS	
Casino and Nearby (0.25 mi radius)	Increase	Increase	Increase	Unclear	Unclear	Unclear	Casino likely adds jobs
Immediate Neighborhood (0.25 to 1 mi)	Increase	Increase	Increase	Increase	Increase	Increase	Positive spillover effect
Exterior Neighborhood (1 to 3 mi)	Damp.	Decrease	Damp.	No Effect	Damp.	No Effect	Dampened job growth

Table 7: Summary of casino effect on jobs at various distances in both study cities.

Table 7 compares the overall trends in job numbers by category and geography across both study cities. Inconsistencies in the LEHD datasets raise some challenges to interpreting these findings. However, on the whole, some trends are evident. Casinos predictably appear to add jobs at the casino sites, likely at ancillary businesses like gas stations and restaurants as well as at the casinos themselves. In the immediate neighborhoods of the casinos, they also appear to add jobs, on the whole and in the AER and AFS categories of interest. In the Pittsburgh case, the data may reflect this due to problems in accurately geolocating the Rivers Casino jobs. But in Bethlehem, where the casino jobs appear to be accurately pinpointed, this is more likely due to a positive spillover effect, perhaps in ancillary businesses. However, in neighborhoods farther out, casinos appear to have the opposite effect, dampening growth in these categories relative to their growth in the city overall, and in one case (AER jobs in Bethlehem) actually decreasing the total number. This provides some limited evidence of industry cannibalization of Arts, Entertainment, and Recreation jobs at one to three miles from casino sites, although it is hardly comprehensive and insufficient to reject the null hypothesis.

4.3 RQ3: Do Urban Casinos Leak Jobs to Other Cities?

4.3.1 Bethlehem

Table 8: Portion of workers at or very near Sands Casino who also live in Bethlehem. Source: US Census Longitudinal Employer-Household Dynamics.

Portion of Workers Living in Same Municipality

Casino and Nearby (0.25 mi radius of address)

								Net Change
	2008	2009	2010	2011	2012	2013	2014	2008-2014
Workers Who Live Within Bethlehem	33	38	69	50	391	483	570	537
Workers Who Live in Other Places	131	145	228	205	1739	2009	2150	2019
Percent Nonresidents	79.9	79.2	76.8	80.4	81.6	80.6	79.0	-0.9

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Figure 1: Proportion of Sands Casino workers by home location Source: US Census Longitudinal Employer-Household Dynamics.

4.3.2 Pittsburgh

Table 9: Portion of workers at or very near Rivers Casino who also live in Pittsburgh. Source: US Census Longitudinal Employer-Household Dynamics.

Portion of Workers Living in Same Municipality

Casino and Nearby (0.25 mi radius of address)

								Net Change		
	2008	2009	2010	2011	2012	2013	2014	2008-2014		
Workers Who Live Within Pittsburgh	726	711	363	547	894	920	465	-261		
Workers Who Live in Other Places	1,864	1812	1318	1729	2798	2775	1714	-150		
Percent Nonresidents	72.0	71.8	78.4	76.0	75.8	75.1	78.7	6.7		



Figure 2: Proportion of Rivers Casino workers by home location. Source: US Census Longitudinal Employer-Household Dynamics.

The trend regarding this research question is much easier to interpret. While the jobs added at Bethlehem's Sands casino are clearly reflected in the data at the casino site geography, it is clear that the vast majority of these jobs went to workers living outside of Bethlehem, as shown in Table 8 and illustrated in Figure 1. Though the sheer number of jobs for Bethlehem residents increased by 537, the proportion of resident to non-resident workers went virtually unchanged. In Pittsburgh, a higher proportion of jobs at the casino site went to people living outside of the city than the pre-casino proportion. This is shown in Table 9 and Figure 2. Given these findings, we reject the null hypothesis and conclude that new urban casinos' jobs mostly benefit workers living outside of the host cities.

4.4 Discussion

Urban casinos *may* improve the economic performance of municipalities compared to similar non-casino cities; however, the effect does not appear to be terribly strong. This thesis finds some limited evidence of industry cannibalization, or at least of casinos' propensity to dampen job growth in certain categories more than a mile away from the casino, but not enough to establish the theory as a maxim. It is possible that this is due to casino gambling's nature as an "export" activity: gamblers may be visiting from other areas, bringing enough new money

in to the host cities to offset any potential cannibalization effect. More research is needed in these areas, but this data suggests that, in their early years, urban casinos do not appear to have a substantial negative effect on urban municipal economies, but neither are they "magic bullets" of economic development. Municipalities will likely continue to experiment with casinos as a development strategy. At this point, it is difficult to predict who will be successful.

This thesis's most substantial finding, however, is that the vast majority of new jobs created at urban casinos seem to go to workers living outside of the municipalities that host them. This represents much lost value for these municipalities, which often elect to approve casinos based on the promise of many new jobs for their constituents. Host cities are, in effect, taking on all of the risks associated with allowing casinos, including crime and other social costs, as well as the standard financial risks associated with large real estate developments, while missing out on much of the return from them. Further, it is possible that, if more casino jobs had gone to city residents, casino cities' performance on the economic indicators tracked in the first research question may have improved. With the majority of casino wages being leaked from the communities under study, it seems that the economic development potential of casinos is likewise being exported, leaving these communities as neutral vessels into which outside money flows via "export" gambling, and from which this money flows to other communities via wages to commuting workers.

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Conclusion and Ramifications for Policy

The purpose of this thesis was to provide empirical evidence on the efficacy of commercial casinos as an urban economic development strategy at the municipal level. Using covariate community matching and difference-in-differences testing, it investigated whether or not commercial casinos are shown to improve the overall economic health of cities, whether they displace other industries within cities, and whether the bulk of new casino jobs go to city residents or to commuters from outside. It found that, while urban commercial casinos may have a neutral or slightly positive effect on overall economic performance, they may dampen job growth in some industry categories, and the vast majority of new jobs tend to go to workers living outside of the casino host city.

Casino host communities are therefore missing out on substantial value in the form of employee wages, and should employ policy to retain more jobs for municipal residents at the casinos they approve. Stricter legislation regulating casino operations, or Community Benefit Agreements (CBAs) with local leaders, could establish minimum-hiring quotas for city residents. Job fairs and similar community outreach efforts could also help identify workers with the skills needed for casino jobs, and the onus should be on casino operators to "train up" those without. These expectations should be made clear as communities negotiate with potential casino operators, and should come with sufficient penalties to ensure that they are met. With appropriate measures in place, municipalities are less likely to "export" wages along with the activity of gambling itself, and these may fuel the kind of economic development local leaders seek.

As long as municipalities remain the "resource holders" (Felsenstein 1999) for whom casino interests compete, they can leverage this position to ensure that the maximum economic

development benefit is being extracted from their decision to permit casinos. Communities can retain this position if state governments continue to strictly limit the number of casino licenses available to potential operators. These governments should therefore resist pressure from industry proponents to further liberalize restrictions, as well as pressure from municipalities seeking their own defensive casinos. Communities must continue to cooperate to avoid a race to the bottom that would provide few benefits to anyone but casino investors, and state governments play an important regulatory and coordinating role in this process. Further research may add to communities' toolkits by exploring casino impacts over longer time horizons, or by repeating the study in casino cities which have enacted strict local hiring requirements.

It is important to remember that casino gambling is not a wealth-generating activity. The best that communities expect are wealth transfers in their favor from other communities. On the large scale, it is a zero-sum proposition. Legalizing too many casinos in too many places would negate the benefits realized by some communities. However, increasing and improving the body of research on the municipal economic impact of casinos will help policy makers better identify where and under what conditions permitting casinos would be most equitable and beneficial.

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Appendices



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Appendix C: Total Jobs, Bethlehem vs. Control Cities Source: US Census Longitudinal Employer-Household Dynamics

Appendix D: Unemployment Rate: Bethlehem vs. Control Cities Source: American Community Survey



Appendix E: Share of Non-Residents in City-located Jobs, Bethlehem vs. Control Cities Source: US Census Longitudinal Employer-Household Dynamics



Appendix F: Share of Workers in Service Jobs, Bethlehem vs. Control Cities Source: American Community Survey





Appendix H: Poverty Rate, Pittsburgh vs. Control Cities Source: American Community Survey





Appendix I: Total Jobs, Pittsburgh vs. Control Cities Source: US Census Longitudinal Employer-Household Dynamics

Appendix J: Unemployment Rate, Pittsburgh vs. Control Cities Source: American Community Survey



Appendix K: Share of Non-residents in City-located Jobs, Pittsburgh vs. Control Cities Source: US Census Longitudinal Employer-Household Dynamics



Appendix L: Share of Workers in Service Jobs, Pittsburgh vs. Control Cities Source: American Community Survey





Appendix N: Map of 0.25 to 1 Mile Radial Area around Sands Casino, Bethlehem Source: US Census Longitudinal Employer-Household Dynamics



Appendix O: Map of 1 to 3 Mile Radial Area around Sands Casino, Bethlehem Source: US Census Longitudinal Employer-Household Dynamics



Appendix P: Map of 0.25 Mile Radius of Rivers Casino, Pittsburgh Source: US Census Longitudinal Employer-Household Dynamics



Appendix Q: Map of 0.25 to 1 Mile Radial Area around Rivers Casino, Pittsburgh Source: US Census Longitudinal Employer-Household Dynamics



Appendix R: Map of 1 to 3 Mile Radial Area around Rivers Casino, Pittsburgh Source: US Census Longitudinal Employer-Household Dynamics

