A Comparison of Clustered and Isolated Casino Performance in Missouri

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Abstract

This paper utilizes data on Missouri's casino industry to examine how clustered casinos, such as those in Kansas City and St. Louis, perform compared to dispersed or isolated casinos, such as those in Boonville, Caruthersville, La Grange, and St. Joseph. Missouri limits the number of casino licenses allowed; however, it does not explicitly mandate casino locations. Missouri provides a unique natural experiment for comparing location model performance. Although there is no published research on which type of casino location model is more effective for generating industry revenues and associated taxes, state legislatures have nevertheless been following an isolated casino location model. But it is not at all obvious that this strategy leads to higher aggregate revenues. Using 2011 data on Missouri's casino industry, we find that casino performance may not depend on whether it is isolated or in a cluster. This result suggests that the casino market is relatively efficient, given the regulations it faces. However, there may still be significant costs from restricting casino locations. We speculate that politicians are likely to use the isolated model as a mechanism to maximize voter support for casino legalization.

Keywords: casino markets; threshold; range; regional development; competition

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Introduction

Commercial casinos now operate in 43 states, with increasing social acceptance (American Gaming Association, 2022). Yet, proposals for additional expansion of the casino industry are still controversial due to sparse evidence on casinos' economic and social impacts. While there has been some evidence that casinos have a positive effect on county-level employment (Cotti, 2008) and state-level per capita income (Walker & Jackson, 2013), the evidence is mixed on the degree to which casinos provide a significant boost to states' tax revenues (Walker & Jackson, 2011). This is interesting, given that tax revenue is likely the most important political motivation for legalizing casinos. As the casino industry has expanded, competition has obviously increased as well. Yet, one important issue that has not been addressed in the literature is whether casinos' relative locations affect their aggregate market performance. Will total casino revenues in a state be larger if casinos are clustered or isolated? This is an important policy issue, particularly for states contemplating expansion of the casino industry or the potential tradeoff between tax revenues and "saturation" in established markets (Barrow, Borges, & Meister, 2016). The problem is further complicated by the fact that the industry continues to expand, both in terms of physical casino locations, as well as new forms of legal gambling, such as online casinos and sports betting, which have been enabled by technological advances and legal developments.

While all states have zoning regulations that limit where businesses may be built or operate, casino location regulations vary dramatically across states. The most established U.S. casino markets, in Nevada, Atlantic City, NJ, and the Mississippi Gulf Coast, developed in relatively free markets which gave casino developers freedom in choosing their casinos' locations. The result is "clusters" of casinos in these markets: numerous proximate casinos. Like shopping malls which cater to many different consumer preferences, casino clusters often include a wide variety of amenities, including shopping, restaurants, theaters and concerts, and other types of entertainment in addition to gambling.

As legalization across the United States began in the wake of the 1988 *Indian Gaming Regulatory Act*, many states began restricting casino locations. This was the case with Midwestern states that mandated gambling could only take place on riverboats. Early examples were in Illinois, Indiana, Iowa, Louisiana, and Missouri, all of which legalized casinos between 1989 and 1993. These states may have limited casino games to riverboats as a political strategy to placate casino opponents who did not want casino gambling occurring within a state for NIMBY, moral, traffic, or infrastructure concerns. In the early 1990s, riverboat casinos also offered a type of historical charm and novelty different from the mega-casinos in Las Vegas and Atlantic City.

Many states that later adopted casinos allowed them to be built on land but restricted their numbers and locations. This strategy was likely an effort to prevent a "new Las Vegas" from developing. In Kansas, Ohio, Maryland, and Massachusetts, legislators mandated that casinos locate in specific regions of the state. Kansas and Massachusetts were divided into several regions, and the law allows one casino in each region. Ohio and Maryland are similar, but locations are more narrowly restricted to specific cities or counties. In all these cases, casino clusters were not allowed; each casino was isolated, given a de facto regional monopoly license to operate. A similar framework has been proposed in Georgia and South Carolina. This strategy of limiting competition and regulating casino locations may provide benefits to each casino, since restricting supply likely creates profit above a competitive market level.

Little has been published in the academic literature to guide policymakers on the issue of casino location and performance. One can find competing anecdotal support for both isolated and clustered casino strategies. For example, in discussing potential casinos in neighboring Portsmouth and Norfolk, Virginia, it was simply taken for granted that casinos near each other would not provide as much benefit as two isolated casinos:"The general consensus is that two casinos close together in Hampton Roads would cannibalize each other's customers" (Kimberlin & Tolliver, 2019). Yet, on efforts to legalize casinos in

Japan, Cohen (2018) and Gallaway, Bussmann, and Szybala (2018) discuss the potential benefits of a clustered Japanese casino model, similar to Macau's Cotai Strip.

While casino clusters, such as those in Las Vegas, Biloxi, and Atlantic City have been successful, so have isolated casinos in places like Kansas, Ohio, Maryland, and Massachusetts. Whether aggregate casino revenues — and resulting tax revenues — are affected by whether casinos are clustered or isolated is an important policy question. Given that fiscal stress, or the desire to increase tax revenues at the margin, is one of the key political motivations for legalizing casinos (Calcagno, Walker, & Jackson, 2010), information on the relative performance of isolated and clustered casinos should be valuable to the casino industry, regulators and legislators, and to voters. We believe this is the first attempt in the literature to study the relative performance of clustered and isolated casinos.

We utilize data from Missouri casinos to compare the revenue performance of casinos in the natural clusters that developed in Kansas City and St. Louis (KC, SL) to that of isolated casinos in other parts of the state. While the Missouri data provide a unique natural experiment, our findings in this study can provide insights applicable to other casino markets. The paper is organized as follows: The second section provides background on the theory of industry clusters and regional competition. In the third section, we define isolated and clustered casinos in the context of Missouri's casino industry. The fourth section presents and analyzes data from Missouri's different casinos. In the fifth section, we discuss the different casino markets' performance at the Metropolitan/Micropolitan Statistical Area level. In addition, we discuss limitations of this study and how government restrictions on casinos' locations may reduce the economic benefits of casino development. The sixth section concludes.

The data suggest that isolated and clustered casinos elicit similar behavior from their customers, but that isolated casinos tend to draw their regional customers from a longer range than do the clustered casinos. We argue that casinos behave similar to how competitive firms would behave, given the regulations they face. Casino managers have adjusted casino size, game composition and pricing, and amenities in response to their regulatory framework, consumers' preferences, and competition within the industry. We posit that, although isolated casinos draw regional customers from a longer range, legislation mandating isolated (or regional monopoly) casinos may simply be a political strategy for maximizing voter support for casinos across a given state. While legalizing casinos with restricted locations might be more beneficial than banning casinos, there are also costs to limiting casinos' locations.

Background and Theory

There are no published studies on different casino location strategies, but there are three areas of literature related to other industries that help our analysis and data interpretation. We briefly review key ideas on industrial clustering, export-based development, and regional development theory.

Industrial Clustering

While most U.S. communities have zoning regulations to manage development, most industries develop without significant other government restrictions on their locations. Industrial clusters may develop when economic incentives push in that direction. For example, shopping malls and food courts, the auto manufacturing industry in Detroit, technology firms in Silicon Valley, Italian restaurants in Boston's North End neighborhood, and bars and strip clubs along New Orleans' Bourbon Street all represent different types of industrial clustering.

There is a well-established literature on industrial clusters and how they can play a key role in the development and expansion of cities (Hoover & Giarratani, 1984; Krugman, 1995; Melo, Graham, & Noland, 2009; Porter, 2000; Stimson, Stough, & Roberts, 2006). As firms within an industry locate near each other, they can expect economies due

to reduced transport costs (Belleflamme, Picard, & Thisse, 2000; Glaeser, 2010), the availability of specialized input services, and the formation of a highly specialized labor force (Fujita & Thisse, 2013). These economies make the clustered industry more profitable and can promote increased economic development.

In the case of professional sports stadiums, public subsidies have garnered political support on grounds that they create net positive economic benefits. However, this is rarely the case, and Coates and Humphreys (2008) explain that when such subsidies are beneficial, the stadium is located in a city with at least one other professional sports franchise and is in the central business district. It therefore benefits from agglomeration economies with hotels, restaurants, and bars that already exist. This finding suggests that similar benefits may accrue from the development of casino clusters.

Clustered developments may also benefit consumers; so-called "transfer economies" can accrue to customers if they compare different products on a single shopping trip (Nourse, 1968). Shopping malls represent clustered stores which reduce customers' travel time and costs. Although such economies are often discussed in terms of retail goods, they would also seem to apply to services (Huallacháin, 1989), tourism and to casino customers. This is likely the case with casino resorts along the Las Vegas Strip and the hospitality industry in the New Orleans French Quarter (Canina, Enz, & Harrison, 2005; Enz, Canina, & Harrison, 2005).

Casino patrons may receive transfer economies, as resorts offer a variety of complementary products, such as gambling, bars, restaurants, and theatrical entertainment. Isolated casinos may provide an additional benefit, as they reduce travel costs for many rural patrons, relative to visiting an urban casino.

Export-based Development

Politicians often tout exports as a mechanism for economic development; the expansion of the consumer base and the related increase in demand will obviously help any exporting industry. Similarly, a regional economy with an industrial cluster is more likely than a single firm to export its product or service. Thus, as Stimson, Stough, and Roberts (2006) explain, policymakers often support policies which promote exporting industries. Of course, the theory of export-based growth applies to tangible products as well as services, such as tourism. The main industry in many Caribbean islands is tourism.

Casinos in Las Vegas — and in any other market that attracts tourists — "export" their products when tourists visit. Since casino revenues are taxed at relatively high rates, averaging 25–40% of gross gaming revenues (GGR) in many markets (American Gaming Association, 2022), attracting casino revenues from tourists may reduce the tax burdens on the local populations. This same argument often justifies high hotel and rental car taxes. However, as casinos became more widespread across the United States, "defensive legalization," or legalizing casinos in order to keep consumers within a particular state, has become increasingly important (Eadington, 1995). Nevertheless, the economic benefits of casino development — either in terms of employment or tax revenues — is larger to the extent casinos can attract tourists.

Some authors have argued that casinos can only create positive economic benefits to the extent they attract tourists (Goodman, 1994; Grinols, 2004). However, it is obvious that exports cannot be the sole source of economic growth (Hoover & Giarratani, 1984; Tiebout, 1975; Walker, 1999), since voluntary transactions in economy tend to be mutually beneficial. Mutually beneficial transactions are the source of economic development, even if the customer is local.

Gravity Modeling

One commonly used analytical tool in evaluating the potential market for casinos is called "gravity modeling." It accounts for the size of firms as well as the distance between them, just as Newtonian physics uses mass and distance to explain gravity between

two objects. This stream of research applied to firms follows Huff (1963), who analyzed the market size of shopping centers. The Huff model considers both the supply and demand sides of the market, using a particular supply size with potential demand. Applied to casinos, variants of the Huff model attempt to predict casino revenues as a function of the relevant population count, distance to competing casinos, and average spend per casino customer. Such models exhibit varying degrees of accuracy in predicting casinos' performance (Barrow & Borges, 2014), largely due to the difficulty in predicting the number of potential visitors to a casino.

The regional economic concepts of "threshold" and "range" clarify how the mix of resident and tourist customers might have disparate impacts on clustered and isolated casinos. "Threshold" refers to the minimum population or spending that is needed to support a particular business; "range" refers to the maximum distance customers are willing to travel in order to buy a particular good or service (Berry & Horton, 1970). For a given location, we would expect to see a larger threshold and range for casino clusters, compared to an isolated casino. The threshold should be higher since consumers' spending will be spread across several casinos. More casinos will include more restaurants, shopping, shows, and variety in gambling products offered, so we would expect a cluster of casinos to have a longer range than an isolated casino. However, it could also be that the isolated casino appeals to customers further away if there are no other casinos, or many other entertainment options, nearby.

Concepts such as threshold and range improve our understanding of factors that may explain casino revenue and customer count. To the extent casinos are clustered, offering more variety for customers, we would expect them to attract more local spending, tourists from further away, and a greater positive local economic impact, as they "export" their product. Unfortunately, the data necessary to measure the number of tourists and locals who visit casinos is unavailable.[1] For this reason, our analysis must rely more on anecdotal evidence rather than an econometric model that controls for tourism. Furthermore, neither theory nor the empirical literature provides a clear, objective way to distinguish between a casino cluster and an isolated casino; it is a matter of degree.

Missouri Casinos

Missouri provides an ideal natural experiment to study the relative performance of casinos located in clusters versus isolated ones. First, Missouri does not mandate casinos' locations, which is important, given the question in this study. Casinos can locate where developers believe they will serve customers best and have the potential for the greatest expected profit. Thus, when a casino developer decides on a location and size of casino to build, they will consider numerous factors, including state-imposed license fee and taxes, the number of potential customers, customers' median income, the proximity of other casinos, and the potential for new market entrants, among other factors. In Missouri, developers built larger casinos where the population is greater and median incomes are higher (in KC and SL); smaller casinos have been built in more rural areas.[2] Second, although new casinos have opened and others have merged or closed, the number of casinos in Missouri has been relatively stable. Between 2007 and 2011, twelve casinos were operating. A thirteenth license was awarded during 2011; that casino began operating during 2012. Third, there are no legal tribal casinos, racetracks or racetrack casinos, online gambling, or sports betting in Missouri. Few other states have only commercial casinos operating. This is important

[1] This issue has been responsible for much of the controversy over the potential link between casinos and crime. For example, in his literature review, Walker (2010) finds that those studies that find a link between casinos and increased crime likely do so because they exclude tourists from their population at risk measure.

Interestingly, many casinos do have relatively good information on their customers' home addresses. This is because many casino patrons sign up for "rewards" or "loyalty" cards to earn benefits as they spend money. Unfortunately, casinos are reluctant to share these data with researchers.

[2] The fact that casinos decide where to locate also means they select whether to locate in a market with other casinos, or a more isolated location. We discuss this issue in more depth later in the paper.

because our focus of inquiry is on the location strategy of casinos. Other forms of gambling have been shown to affect casino gambling (Philander, 2011; Philander, Abarbanel, & Repetti, 2015; Philander & Fiedler, 2012; Walker & Jackson, 2008), which would cloud our analysis. Finally, and most importantly, no other state offers several casino clusters and isolated casinos for comparison, without other legal forms of gambling in the state.

Among the pre-COVID years of data available, we view 2011 as the most recent, stable year for analyzing the Missouri casino market. Since twelve casinos were operating between 2007 and 2011, the data for 2011 follow a period of relative stability; such stability does not occur later in the decade. Two new casinos opened in 2012, fundamentally changing the KC casino market. The Hollywood Casino at the Kansas Speedway opened in early 2012. Despite its Kansas location, this casino is located between the most populous and wealthy county in Kansas (Johnson County) and the casinos in KC, Missouri. Its opening likely caused a sharp decline in Johnson County residents' visits to Missouri casinos. The casino in Cape Girardeau opened later in 2012. Although it is about 80 miles from the Caruthersville casino, the new casino likely affected consumers in southeast Missouri and southwest Illinois, disrupting those two markets. Aside from casino openings, several other legal changes — to online gambling, daily fantasy sports, and sports betting — occurred after 2011. Specifically, the U.S. Department of Justice issued an opinion in 2011 stating that online lottery games do not violate the 1961 Wire Act (Seitz, 2011); this opinion was later reversed, in 2018. Daily fantasy sports was legalized in Missouri in 2016 (Associated Press, 2016). Finally, the U.S. Supreme Court's decision in *Murphy v. NCAA* (2018) allowed states to legalize sports betting. Although only the daily fantasy sports act has directly impacted Missouri, these legal changes could have affected Missouri casino revenues, considering potential changes in Kansas and Illinois, and in the spending patterns of traditional casino gamblers in Missouri. Obviously, COVID-19 disrupted the entire casino industry, with most U.S. casinos shutting down for some time during 2020. Given all these factors, 2011 appears to be the ideal year for analyzing the Missouri casino industry.

Casino Proximity

The two major metropolitan areas in Missouri are Kansas City and St. Louis. Although both cities cross the state line (KC with Kansas and SL with Illinois), most of the population — as well as most of the casinos — are in Missouri. The casinos in KC are under nine miles apart from each other; those in SL are under 18 miles apart. The markets in KC and SL represent the clustered markets in this study. We define "casino clusters" as casinos located within a reasonable driving distance from each other. This definition is subjective, but our goal is to discuss those casinos among which a customer might visit during a particular outing for the purpose of gambling. If two casinos are not within a "reasonable driving distance" (which we define as 18 miles) of each other, we consider them to be isolated. There are five other "isolated" casinos in Missouri. These are casinos for which the closest competing casino is between 45 and 95 miles away. Isolated casinos are in Boonville (central), Cape Girardeau (southeast), Caruthersville (southern-most), La Grange (northeast), and St. Joseph (northwest). All Missouri casinos, as well as casinos nearby in Kansas and Illinois, are shown in Map 1.[3] Each casino is surrounded by a "ring," discussed later. Close-ups of the KC and SL markets are shown in Maps 2 and 3.

Driving distances among the casinos in KC and SL markets are shown in Tables 1 and 2. Travel time is estimated using Google Maps, which enables one to predict future drive times, on any day and at any time, based on typical traffic patterns and delays. (The driving times shown in the Tables occur at 7:00pm on a typical Wednesday evening.) Predicted drive times between the different pairs of casinos in each market range from four to 40 minutes.

[3]We have excluded a small tribal casino in Kansas City, Kansas. As it is a tribal casino, public revenue data are not available. We believe this casino is unlikely to significantly affect the market because of its relatively small size.

Table 1
Driving times among Kansas City casinos

Kansas City casinos ***Drive time (minutes)***	Ameristar	Harrah's	Isle of Capri	Argosy	Hollywood
Ameristar Casino Hotel (MO)	–	12	14	18	28
Harrah's N KC Casino (MO)	12	–	7	12	22
Isle of Capri Casino (MO)	16	8	–	14	20
Argosy Casino Hotel & Spa (MO)	20	12	14	–	20
Hollywood Casino at Kansas Speedway (KS)	28	22	20	18	–

Source: Authors' calculations using Google Maps.

Table 2
Driving times among St. Louis casinos

Kansas City casinos ***Drive time (minutes)***	Lumiere	Casino Queen	River City	Argosy	Hollywood	Ameristar
Lumiere Place (MO)	–	4	14	30	24	22
Casino Queen (IL)	5	–	16	30	28	26
River City Casino (MO)	16	16	–	40	35	35
Argosy's Casino, Alton (IL)	30	30	40	–	30	28
Hollywood Casino (MO)	24	26	35	28	–	9
Ameristar Casino, St. Charles (MO)	24	24	30	26	10	–

Source: Authors' calculations using Google Maps.

Map Rings and Census Tracts

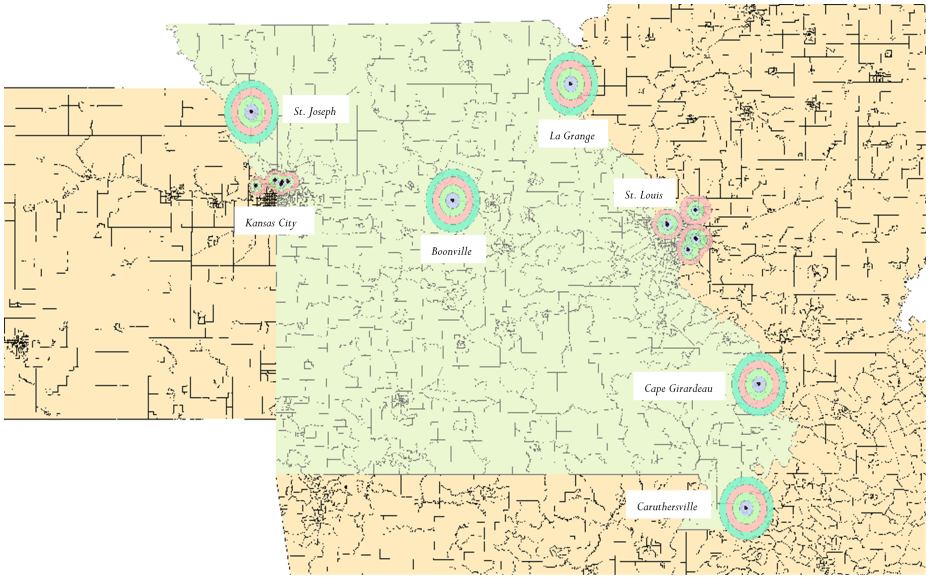
Maps 1–3 are created using ArcGIS software, which enables us to isolate the resident population within a certain radius of each casino. The isolated casinos shown in Map 1 are surrounded by four rings each. These rings represent radii of 5-, 10-, 15-, and 20-mile distances. We chose longer distances for the isolated casinos than the urban casinos, in part because a particular travel time is likely to cover a much longer distance in rural areas than in urban areas.

Map 2 shows the KC market. The rings surrounding these casinos represent 2-, 4-, and 6-mile radii (blue, green, red, respectively). The rings enable us to define clusters based on distance. Map 3 illustrates SL casinos. Casinos in the SL area are more dispersed than they are in KC; the rings in Map 3 represent 3-, 6-, and 9-mile radii (blue, green, red, respectively). We chose different distances for ring sizes in the two cities because of specific casino pairs. In KC, the Hollywood and Argosy are about 12 miles apart. If we consider that a potential casino patron is likely to choose the closest casino, then it makes sense to split the population between these two casinos.[4] Similarly for SL, the Argosy and Hollywood casinos are roughly 18 miles apart. We therefore chose 9 miles as the radius for the largest ring, so that these casinos would constitute separate "mini clusters" within the SL market.

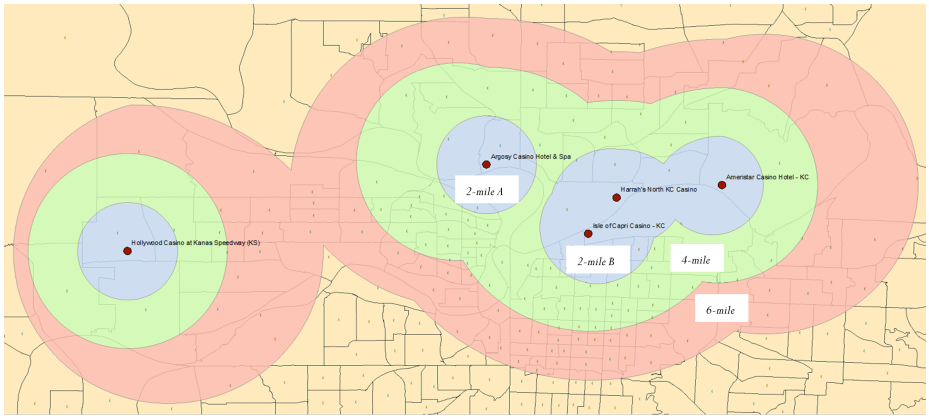
The KC and SL casino market maps also illustrate census tracts. Each census tract is outlined in black, with a small green "c" indicating the centroid. Census tracts are relatively small areas that have similar population sizes. As a result, more densely populated tracts cover a smaller area than tracts in sparsely populated areas. We use census tracts within the rings to quantify the residents living near each casino. When the population is calculated within a blue ring (Maps 2 and 3), it is calculated by summing the populations from all the census tracts that fall within the ring. To be included as within the ring, the centroid of the

[4]We are ignoring the likely fact that the larger property will attract customers from a greater distance than the smaller property. In this initial study we are attempting to test the simplest model possible.

census tract must fall within the blue ring. If the centroid does not fall within the blue ring, then none of that tract's population is counted as falling within that distance of the casino. The same process is used to calculate the populations within the other size rings in Maps 2 and 3.[5]



Map 1
Casinos in/near Missouri, 2019 (rings show varying surrounding distances)

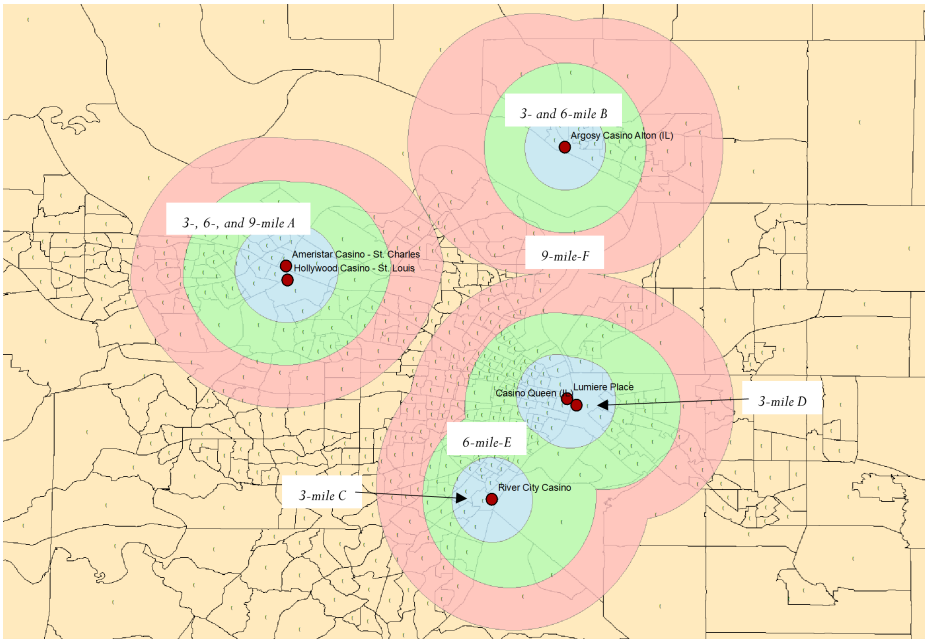


Map 2
Casinos in the Kansas City area (census tracts and 2-, 4-, 6-mile rings shown)

Data and Analysis

The Missouri Gaming Commission provided detailed property-level casino data, which we collected on each Missouri property except Cape Girardeau, which opened in 2012. Several properties in Illinois are included (Argosy in Alton, and Casino Queen in E. St. Louis); data were provided by the Illinois Gaming Board. Data include fiscal year 2011

[5]Maps produced by the ArcGIS software show imperfect circles; this is normal for the software.



Map 3
Casinos in the St. Louis area (census tracts and 3-, 6-, 9-mile rings shown)

(July 2010 – June 2011) adjusted gross revenue (AGR), which is defined as the total bets placed by casino customers minus any winning bets paid-out. Other data include casino floor square footage, number of machine and table games, and admission count.[6] We also collected census population tract data which are aggregated to the various rings shown in Maps 1–3.

Our discussion in this section focuses on the casinos' performance, as measured by total revenues, and revenues per capita and over certain geographical areas. Casino volume is important to policymakers and voters, as casino revenues translate into tax revenues for local and state governments.[7] It is important to acknowledge that a new casino also has economic development effects, such as increased employment and complementary economic activity (e.g., see Cotti, 2008 and Walker & Jackson, 2013). For example, a casino that locates in a dilapidated part of a city might be a catalyst for new businesses to open nearby to take advantage of the new traffic a casino attracts. In a small town, a casino development might spur new restaurants and hotels nearby. While these are certainly important effects of casinos, our analysis in this paper focuses on the casinos' revenue data.

Isolated Casinos

We first present demographic, revenue and performance data for the isolated casinos in Missouri. Data for casinos in Boonville, Caruthersville, La Grange, and St. Joseph are shown in Table 3. The average AGR for these casinos was around $48.4 million in 2011. The casinos' average annual admission count was 1.4 million. The middle of the

[6]Casino revenue, table and machine count, and square footage data are from the Missouri Gaming Commission (https://www.mgc.dps.mo.gov) and Illinois Gaming Board (https://www.igb.illinois.gov) monthly and annual reports. All revenue data are for the 2011 fiscal year (July 2010 – June 2011), in nominal dollars. Population data are for 2010, from the U.S. Census Bureau. Specific data on census tracts are from https://www.arcgis.com/home/item.html?id=ca1316dba1b442d99cb76bc2436b9fdb. Calculations using the data are by the authors.

[7]To keep the analysis simpler, we focus on casino revenues rather than tax revenues, which can vary due to municipal or county taxes within the state.

table shows the estimated population across different radius "rings" for each isolated casino shown in Map 1. We also present the Metropolitan/Micropolitan Statistical Area (MSA) population for each casino location. For example, Boonville is near the Missouri capital, Columbia, and is a part of the Columbia MSA, which has 166,231 residents. The property at Boonville is the largest of the isolated casinos, roughly 50% larger than the other casinos. Its revenue is twice as large as any other isolated casino, almost certainly due to its location along Interstate 70 and proximity to Columbia, which is just to the east, beyond the 20-mile ring.

Next, we explore some of the performance indicators in Table 3. "Admissions per 5-mile population" shows that some casinos have hundreds of annual admissions per nearby resident. The Mark Twain in La Grange had 638 admissions per resident within the 5-mile ring. This suggests that most of the casino's customers came from outside a 5-mile radius. In contrast, the St. Jo Frontier had only 29 admissions per 5-mile resident, indicating that a much larger proportion of its customers came from within the 5-mile ring, compared to the Mark Twain.

Table 3
Isolated casino data

Location | casino name	**Boonville Isle of Capri**	**Caruthersville Lady Luck**	**La Grange Mark Twain**	**St. Joseph St Jo Frontier**
Population*				
Metropolitan | Micropolitan Statistical Area	Columbia, MO	Dyersburg, TN	Quincy, IL	St. Joseph, MO
MSA Population	166,231	38,110	77,419	127,692
5-mile ring	9,403	6,262	1,836	46,396
20-mile ring	27,745	38,198	75,828	112,129
Casino size | composition				
Square footage	28,000	21,400	18,000	18,000
# table games	19	14	13	11
# machine games	991	595	656	550
Total # positions^	1,105	679	734	616
Casino volume				
Total revenue (mil. $)	$82.00	$33.26	$38.12	$40.15
Admissions (mil. people)	2.226	0.926	1.171	1.326
Performance indicators				
Admissions / MSA population	13	24	15	10
Admissions / 5-mile pop.	237	148	638	29
Admissions / 20-mile pop.	80	24	15	12
Rev. / admissions	$36.84	$35.92	$32.55	$30.28
Rev. / position, per day (RPP)	$203	$134	$142	$179
Rev. / 5-mile population	$8,721	$5,311	$20,763	$865
Rev. / 20-mile population	$2,955	$871	$503	$358
Rev. / MSA population	$493	$873	$492	$314

Notes: *Ring population estimates include all tracts' populations whose centroids are located within the ring. All references to rings refer to the length of the radius from the casino.
^ Positions are calculated by adding machine games to tables, where tables are assumed to have six seats each.

Switching to "admissions per 20-mile population," we can see that three of the isolated casinos (Caruthersville, La Grange, and St. Joseph) have relatively small numbers, ranging from 12 to 24. Based on these numbers, it is likely that a large proportion of customers at these casinos come from the local (20-mile radius) area — if each resident visits the casino one or two times a month. The Boonville casino receives 80 admissions per resident within 20 miles. As noted above, this is due to Columbia being just outside the 20-mile range and to the casino's proximity to Interstate 70.

The key performance measure is "revenue per position per day" (RPP), which is also a common focus of market saturation studies (e.g., Barrow et al., 2016). Each slot- or video poker machine represents one "position," and each seat or space at a table game like

blackjack and craps represents a position. Differences in RPP across casinos in a market may indicate excess supply ("market saturation") or excess demand (a shortage) in the market. As Table 3 shows, the average RPP for isolated casinos is $165. This figure will be compared to RPP for the KC and SL markets in the following sections. As with the other measures discussed, the Boonville casino's RPP lies at the high-end of performance among isolated casinos.

Any casino's revenue will depend, in part, on the proximity of other casinos. All Missouri casinos (except Boonville) are located on or near rivers bordering other states, i.e., Kansas, Illinois, and Tennessee. Previous evidence has indicated that casinos in adjacent states compete (Walker & Jackson, 2007). If there are not casinos in a neighboring state, border casinos would be expected to attract tourists from that state. This likely explains the relatively high Rev./MSA population for Caruthersville. Since Tennessee does not have casinos, Caruthersville, MO and Tunica, MS offer the closest casinos for western Tennessee residents.

Kansas City

The KC metro area has a population of about 2 million people. The four casinos in the KC market are the Argosy, Isle of Capri, Harrah's, and Ameristar. Data for these casinos are presented in Table 4. The average AGR for the KC properties is $178 million, with a range of $84 to $241 million. Average admissions were 5.2 million, with a range of 3 to 7.6 million. The average RPP was $225, with a range of $177 to $271.

Table 4
Kansas City — individual casino data

Location | casino name	Riverside Argosy	Kansas City Isle of Capri	North K.C. Harrah's	Kansas City Ameristar
Casino size | composition				
Square footage	62,000	45,300	63,300	140,000
# table games	39	22	62	74
# machine games	1,894	1,163	1,585	2,840
Total # positions^	2,128	1,295	1,957	3,284
Casino volume				
Total revenue (mil. $)	$193.14	$83.64	$193.30	$241.10
Admissions (mil. people)	5.290	3.039	5.057	7.563
Performance indicators				
Rev. / admissions	$36.51	$27.52	$38.22	$31.88
Rev. / position, per day (RPP)	$249	$177	$271	$201

Notes:^ Positions are calculated by adding machine games to tables, where tables are assumed to have six seats each.

In Table 5 we present aggregate data for the KC casinos according to the rings shown in Map 2, and for the KC MSA. We omit the far-left ring from the analysis, since the Hollywood casino opened in Kansas in 2012 (the year after our sample year). The remaining four casinos are shown in two separate 2-mile rings. One includes the Argosy, and the other includes the Isle of Capri, Harrah's, and Ameristar. In Table 5 these are shown in columns *2-mile A* and *2-mile B*, respectively; these rings are also labeled in Map 2.[8]

Near the bottom of Table 5, note that the Argosy receives 723 admissions per resident living within 2 miles of the casino; revenue per resident is $26,407. These data indicate that a large proportion of customers come from outside the 2-mile radius to this casino. The *2-mile B* ring (Map 2) represents the three casinos less than two miles apart. As seen in Table 5, these casinos had 384 admissions per capita within the 2-mile ring area, and

[8]The *2-mile A* column in Table 5 repeats data shown in Table 4 for Argosy; the Argosy operates alone in the *2-mile A* ring.

Table 5
Kansas City — clustered casino data

Cluster (ring radius[+] | ID)	2-mile A	2-mile B	4-mile	6-mile	MSA[†]
Casino(s) in ring	Argosy	Isle of Capri Harrah's, Ameristar	Argosy, Isle of Capri, Harrah's, Ameristar		
Population within ring[*]	7,314	40,827	207,653	412,499	2,009,300
Casino size					
Square footage	62,000	248,600		310,600	
# table games	39	158		197	
# machine games	1,894	5,588		7,482	
Total # positions^	2,128	6,536		8,664	
Casino volume					
Total revenue (mil. $)	$193.14	$518.04		$711.18	
Admissions (mil. people)	5.290	15.659		20.949	
Performance indicators					
Admissions / ring population	723	384	101	51	10.4
Rev. / admissions	$36.51	$33.08		$33.95	
Rev. / position, per day (RPP)	$249	$217		$225	
Rev. / ring population	$26,407	$12,689	$3,425	$1,724	$354

Notes:[+]All references to rings refer to the length of the radius from the casino.
[*]Ring population estimates include all tracts' populations whose centroids are located within the ring.
†Measures in this column are for the entire MSA, even when description indicates "ring population."
^ Positions are calculated by adding machine games to tables, where tables are assumed to have six seats each.

revenue per resident of $12,689. Although this is less than half of the Argosy's, it is still high enough to indicate that many patrons come from outside the 2-mile ring. Revenue per admission for casinos in both rings is similar ($36.51 and $33.08). The Argosy had RPP of $249, while it was $217 for *2-mile B* casinos.

When we consider 4- or 6- mile rings (Table 5, and labeled in Map 2), we see that all four KC market casinos fall into these rings. When ring size increases, sample population increases, and as a result, the admissions and revenue per ring population decrease dramatically. Expanding to the MSA-level (right-most column, Table 5), admissions per MSA population is 10.4 and AGR per MSA population is $354 in the KC market.

Unfortunately, we do not have data on the amount of tourism to these markets, so we cannot determine the degree to which tourism might affect the market numbers. We do note, however, that revenue per admission is similar across all the different clusters/ring sizes. We argue this is an indication that the market is competitive, in terms of offering homogeneous products which consumers tend to see as good substitutes.

St. Louis

The SL metro area is home to about 2.8 million people (about 780,000 larger than KC). There are six casinos in the market: the Ameristar, Hollywood, River City, and Lumiere on the Missouri side of the Mississippi River; and the Argosy and Casino Queen on the Illinois side. Data for these casinos are presented in Table 6. The average AGR for the SL properties is $184 million, with a range of $73 to $278 million. Average admissions were 5.1 million, with a range of 1 to 7.8 million. The average RPP was $225, with a range of $172 to $269.

In Table 7 we present aggregate data for the SL casinos according to the rings shown in Map 3, and for the SL MSA. There are four 3-mile rings. Ring *3-mile A* includes the Ameristar and Hollywood; *B* is the Argosy; *C* is the River City; and *D* includes the Lumiere and Casino Queen. As we saw with KC ring data, in SL the high admissions per resident living within a short distance to the casinos indicate most customers come from outside the measured rings. When we expand to the 9-mile rings (Table 7, and labeled in Map 3), we see that Ameristar and Hollywood fall into one ring, and the remaining four casinos

Table 6
St. Louis — Individual casino data

Location | casino name	St. Charles Ameristar	St. Louis Hollywood	Alton, IL Argosy	St. Louis River City	St. Louis Lumiere	E. St. Louis, IL Casino Queen
Casino size | composition						
Square footage	130,000	120,000	23,000	90,000	75,000	40,000
# table games	72	86	16	59	67	28
# machine games	2,738	2,503	1,065	2,034	2,011	1,158
Total # positions^	3,170	3,019	1,161	2,388	2,413	1,326
Casino volume						
Total revenue (mil. $)	$278.31	$269.29	$73.06	$180.90	$173.22	$130.17
Admissions (mil. people)	7.784	6.998	0.944	6.314	6.584	1.946
Performance indicators						
Rev. / admissions	$35.75	$38.48	$77.39	$28.65	$26.31	$66.89
Rev. / position, per day (RPP)	$241	$244	$172	$208	$197	$269

Notes:^ Positions are calculated by adding machine games to tables, where tables are assumed to have six seats each.

fall into another. Admissions per resident remain relatively high even at that distance, with 36 for *9-mile A* and *9-mile F*. However, once we aggregate to the MSA-level (right-most column, Table 7), admissions per MSA population is 11.1, and AGR per MSA population is $396, which is similar to KC.

As was noted for KC, we do not have tourism data for SL. The revenue per admissions varies quite a bit more among the SL casinos than it did in KC; the outliers are the casinos on the Illinois side of the river (Table 6). It is important to note that the two Illinois properties (Argosy and Casino Queen) are much smaller than the casinos on the Missouri-side of SL; they have fewer admissions and lower revenues than the other casinos in the market. This is likely because a high proportion of the SL metro population lives on the Missouri side of the river, making travel to the Illinois-side casinos relatively inconvenient. Another factor might be that Illinois banned smoking in casinos in 2008. While non-smoking casinos may be more attractive to some gamblers, the smoking ban in Illinois led to a net loss in revenues (Garrett & Pakko, 2009). Overall, the Illinois-side casinos have high revenues per admission, but very low RPP.

Comparison of Isolated and Clustered Markets

Next, we compare the three different casino markets for which data were presented above and highlight key differences in casino performance based on location strategy (i.e., clustering or isolation). In Table 8 we present variables aggregated to the MSA-level for ease of comparison. The isolated casinos' data were aggregated and treated as a group.

Under the "performance indicators" section of Table 8, we see that isolated, KC, and SL casinos all have similar "admissions per casino square foot," "revenue per admission," and "revenue per square foot." This finding implies that casino customers' marginal risk preferences are similar across the different Missouri markets since they lose roughly the same amount per admission at all casino groups. It also suggests that casino managers are choosing efficient casino sizes, as admissions and revenue per square foot are similar across markets.

There are several other metrics on which KC and SL casinos are similar but are significantly different from the isolated casinos. These include per capita income, number of machine games as a proportion of all gaming positions, number of machine games per square foot, admissions per MSA population, revenue per MSA population, and RPP.

Table 7
St. Louis — clustered casino data

Cluster ring radius⁺ | ID	**3-mile A**	**6-mile A**	**9-mile A**	**3-mile B**	**6-mile B**	**3-mile C**	**3-mile D**	**6-mile E**	**9-mile F**	**MSA†**
Casino(s) in ring		Ameristar, Hollywood			Argosy	River City	Lumiere Casino Queen	River City Lumiere Casino Queen	Argosy River City Lumiere Casino Queen	(All listed)
Population within ring*	55,781	200,502	405,213	15,418	47,533	49,895	70,425	456,782	987,602	2,787,700
Casino size | composition										
Square footage		250,000			23,000	90,000	115,000	205,000	228,000	478,000
# table games		158			16	59	95	154	170	328
# machine games		5,241			1,065	2,034	3,169	5,203	6,268	11,509
Total # positions^		6,189			1,161	2,388	3,739	6,127	7,288	13,477
Casino volume										
Total revenue (mil. $)		$547.60			$73.06	$180.90	$303.39	$484.29	$557.35	$1,104.95
Admissions (mil. people)		14.782			0.944	6.314	8.530	14.844	15.788	30.57
Performance indicators										
Admissions / ring population	265	74	36	61	20	127	121	32	16	11.1
Rev. / admissions		$37.05			$77.39	$28.65	$35.57	$32.63	$35.30	$36.14
Rev. / position per day (RPP)		$242			$172	$208	$222	$217	$210	$225
Rev. / ring population	$9,817	$2,731	$1,351	$4,739	$1,537	$3,626	$4,308	$1,060	$564	$396

Notes:⁺All references to rings refer to the length of the radius from the casino.
*Ring population estimates include all tracts' populations whose centroids are located within the ring.
†Measures in this column are for the entire MSA, even when description indicates "ring population."
^ Positions are calculated by adding machine games to tables, where tables are assumed to have six seats each.

Table 8
Market data comparison[+]

Casino markets	**Isolated casinos, aggregated**	**Kansas City**	**St. Louis**
Metropolitan | Micropolitan Statistical Area(s)	St. Joseph, MO Columbia, MO; Dyersburg, TN; Quincy, IL;	Kansas City	St. Louis
Population (MSA)	409,452	2,009,300	2,787,700
Per capita income	$35,772	$43,445	$44,120
Casino size | composition			
Square footage	85,400	310,600	478,000
# table games	57	197	328
# machine games	2,792	7,482	11,509
Total # positions^	3,134	8,664	13,477
# machine games / total # positions	89.1%	86.4%	85.4%
# machines / square footage	0.0327	0.0241	0.0241
Casino volume			
Total revenue (mil. $)	$193.53	$711.18	$1,104.95
Admissions (mil. people)	5.649	20.949	30.570
Range indicators			
Admissions / MSA population	14.9	10.4	11.0
Rev. / MSA population	$473	$354	$396
Performance indicators			
Admissions / casino square footage	66.15	67.45	63.95
Rev. / admissions	$34.26	$33.95	$36.14
Rev. / square footage	$2,266	$2,290	$2,312
Rev. / position, per day (RPP)	$169	$225	$225

Notes:[+]Much of the data are derived from Tables 3, 5, and 7. Data for isolated casinos are the summed values for individual casinos; data for Kansas City and St. Louis are from the MSA columns of Tables 5 and 7, respectively.
^ Per capita income for isolated casinos is the average of their MSAs', which ranged from $33,264 to $37,979. Data source: Bureau of Economic Analysis, regional data/interactive data tables (https://www.bea.gov/data/income-saving/personal-income-county-metro-and-other-areas).

Considering "admissions per MSA population," we can see in Table 8 that it is much higher in isolated casino markets (14.9) than in KC (10.4) or SL (11.0). While in absolute numbers the difference may seem small, admissions per MSA population in isolated markets are 43% greater than in the KC market and 35% higher than in SL. Next, "revenue per MSA population" is around 25% higher in the isolated markets ($473) than in KC ($354) or SL ($396). When we compare per capita income in different markets, we see that it is about 18% lower in the isolated markets ($35,772) compared to KC ($43,445) and SL ($44,120). Perhaps the most important difference between the isolated casinos and the KC/SL markets is the "revenue per position per day" (RPP). In both KC and SL, RPP is $225, but in isolated markets it is only $165. Although revenue per square foot of casino space is similar across the isolated and clustered markets, ranging from $2,226 to $2,312, we see a significant difference in the number of machine games per square foot (0.0327 in isolated casinos; 0.0241 in KC and SL). This means that machine games are 36% more densely arranged in isolated casinos than in KC or SL casinos.

Discussion

Several of the variables that reflect both supply and demand in the markets, such as revenue per admission, revenue per casino square foot, and admissions per square foot, suggest that isolated casinos perform like their clustered counterparts. This is likely a reflection of casino management effectively reacting to market conditions, given their regulatory constraints. Indeed, relatively competitive conditions[9] could explain why the market was so

[9]We are not arguing that Missouri casinos are literally operating in a perfectly competitive market. There are numerous regulations and few firms in the market. Nevertheless, their relative performance is similar to what we

stable for the five years leading up to our sample year, 2011. The main differences between the isolated and clustered casino markets are the per capita income of MSA residents, RPP, and the "composition" and the "range indicator" variables.

As explained in the second section, we expect the threshold — the minimum population or spending needed to sustain the business — for clustered casinos to be greater than for an isolated casino, simply because several casinos will need more revenue to survive, *ceteris paribus*, than a single casino. We also noted that we expected the range to be longer for a cluster of casinos than for a single casino, since the cluster would offer more and a greater variety of amenities. However, several of the variables listed in Table 8 suggest otherwise. The isolated casinos appear to draw customers from a longer distance, based on admissions and revenue per MSA population, which are much higher in isolated markets than in the clustered ones. The lower per capita income in isolated casino MSAs is surprising given the similarity of revenue per admission across isolated and clustered casinos, but it further supports the theory that isolated casinos have a longer range. Finally, several of the isolated casinos are near major interstate highways, which makes it relatively easy for customers from outside the MSA to visit the isolated casinos.[10]

Another result of operating (or at least locating) without restrictions is that the isolated casinos also happen to be in relatively rural areas. When a casino opens in a rural area, it typically provides a variety of new amenities, such as casino games, restaurants, music venues, and shopping, for communities that previously had relatively few options. Rural residents may therefore be willing to drive a further distance to experience something new, compared to urban residents who already have countless entertainment options nearby.[11] As a result of attracting more customers from outside their MSAs, isolated casinos likely create more significant positive economic impacts for their local communities because a larger proportion of their customers are visiting from outside the local area. This is basically a tourism effect.

Next, we discuss the lower RPP in isolated casinos compared to the clustered markets. Although research has suggested that a low RPP may be evidence of market saturation, that is not the only possible explanation for a low RPP. In Missouri, we find that the isolated casinos have an RPP that is 25% lower than the KC and SL casinos. In addition, residents in the isolated markets have per capita income around 18% lower than residents in clustered markets. This may be explained by the fact that casino developers tend to build larger properties in areas with higher-income customers. In addition, there are several reasons that customers at isolated/rural casinos may have different preferences and behavior compared to customers at clustered/urban casinos.

First, if customers of isolated casinos are willing to drive longer distances to visit a casino, then they may also be likely to spend a larger proportion of their budgets on non-gambling amenities (relative to customers at clustered casinos) if the casino provides amenities not provided elsewhere nearby. Second, customers at isolated casinos are likely to have less experience with casino games, especially if they must drive further to reach a casino than customers at urban casinos, which makes them more likely to prefer machine games over table games. Slot machines are relatively simple, but table games, such as craps and blackjack, are relatively complicated to learn. Third, if customers at isolated casinos have relatively low per capita incomes, then they also are likely to prefer lower-denomination machines. They may also avoid table games which require larger minimum bets than almost all machine games.

We analyzed "casino composition," or the proportion of machines to total number of gaming positions, and the number of gaming positions per square foot among the different

would expect to see among competitive firms. The markets in Las Vegas and Macao are much closer to being perfectly competitive.

[10]For example, Boonville is adjacent to Interstate 70; St. Joseph is near Interstates 29 and 229; and Caruthersville is near Interstates 55 and 155.

[11]A related issue, of course, is that driving a particular distance will typically be easier in a rural area than in an urban area. For example, serious rush hour delays are common in big cities, but rare in rural areas.

casino markets. As shown in Table 8, isolated casinos have a higher proportion of machine games to total gaming positions. In addition, the machines are more densely arranged on the casino floor, compared to clustered casinos. As a result, casino managers can provide a greater number and variety of machines to appeal to their customers. Finally, we note that if isolated casino customers have a relatively strong preference for machine games, this also implies that table games will be open less often or for fewer hours each day. This would also contribute to the lower RPP we found in isolated markets.

Limitations

Many factors contribute to a casino's ability to earn revenue. In this study we have only considered casino revenue and revenue adjusted for various population and distance measures. These data provide a foundation for understanding the tax benefits of casinos in different locations. Of course, tax revenues are not the only important result of casino development. Indeed, casinos have been shown to have a positive impact on local employment and state-level economic growth, as well as negative socioeconomic impacts, particularly due to gambling disorder that afflicts a small percentage of the population. We do not attempt to analyze these other effects; as a result, we are unable to make strong policy recommendations about casino development.

Another limitation of our analysis is that tourism count data are not available, either at the casino-level or at the MSA-level. We are therefore unable to directly test the impact of residential versus tourist customers. We instead use a round-about methodology, and because we opted to analyze the casinos as groups, we are unable to provide any conclusions about performance differences among individual casinos.[12]

The most important limitation of this study is that the casinos in Missouri did not locate randomly. In fact, in the context of our study, casino developers "select into treatment" when deciding where to build a new casino. That is, casino developers choose a location and size for a casino based on existing regulations, market conditions, and their predictions about future development. This selection bias implies that each casino chose to locate where its management thought it would maximize its long-term profitability. Therefore, the smaller casinos being in more rural areas of Missouri is no more the result of chance than is a new casino opening in downtown St. Louis. Because each casino selected into its category (i.e., clustered or isolated), we are unable to perform an econometric analysis of which casino location strategy is "better."

The Cost of Mandating Location

Examples abound of retail firms choosing to locate near their competitors: Lowes and Home Depot; Target and Wal-Mart. At the same time, it is not uncommon for a grocery store, for example, to locate outside a city, in a place where it projects future growth to occur. In all cases, we assume that businesses attempt to maximize their long-run profits, given existing regulations and the current market landscape. There is typically no need — aside from standard zoning laws — for politicians or regulators to dictate where Whole Foods should build its next grocery store. Those people who earn their living in the grocery business have the best information on which to make such decisions efficiently.

The same should be true of casino developers. It would, indeed, be odd if a group of regulators performed better at predicting potential market size and ideal casino location than the casino developers themselves. In fact, there are several examples of regulated casino locations having less-than-optimal outcomes, relative to what would have likely happened in the absence of location restrictions. In 2007, Kansas legalized casinos, limiting them to one casino in each of four zones in the state. Yet, developers were not interested in the southeast zone until 2014, after the state lowered the capital investment requirement from $225 million to $50 million, and lowered the license fee from $25 million to $5.5

[12]Other studies, such as Gallagher (2014) and Walker and Nesbit (2014), examine casino competition using spatial analyses.

million (Hanna, 2014). Almost certainly, developers would have been interested in building a casino in the Kansas City area. Casino legislation in Massachusetts similarly limited casino development to one casino in each of three zones in the state. The MGM Springfield, which opened in the western part of Massachusetts in 2018 has never performed up to expectations. At the same time, the Wynn Encore, in Boston has been extremely successful. During 2023 it proposed a $1.7 billion expansion (Velotta, 2023). Given these trends, had casino developers been permitted by the state to locate each of the three casinos in any appropriately zoned location of the state, it is likely, although not certain, that MGM may have preferred a second Boston-area casino to the isolated Springfield location.

These examples from Kansas and Massachusetts suggest that restrictions on a casino's location can reduce the economic and social benefits from casino development, relative to allowing casinos to locate where they see fit. Although this cost is abstract and difficult to measure, it should not be ignored. Further, had Missouri mandated casino location — either isolated or clustered — the performance of the marginal casino would not be expected to be in line with the performances discussed in earlier sections.

Conclusion

Missouri is unique among commercial casino states in the United States. It limits the number of commercial casinos to thirteen and does not mandate their locations. Two markets (Kansas City and St. Louis) have developed casino clusters, and five other casinos are isolated, with at least 45 miles between them and the next closest casino. The casinos in Missouri provide a natural experiment for comparing the revenue performance of clustered and isolated casinos, and by extension, the potential tax benefits of different location strategies. We believe this is the first study of the issue using casino-level data. The implications of this study are relevant to casino location decisions in other states that also grant casino developers the freedom to choose their own development locations. The results herein cannot be used to imply favoritism toward one restrictive location model relative to another (i.e., isolated or clustered), although any restrictive location model is likely to lead to lower performance of the industry relative to a model that gives casino developers the freedom to choose their own location.

Using fiscal-year 2011 data of Missouri casinos (and Illinois casinos that are part of the SL metro area), we analyzed casino size, revenue, admittance, the number of machine and table games. Our analysis considered performance adjusted for population within various distances (2 and 3 miles up to 20 miles, and at the Metropolitan Statistical Area level), to highlight differences in performance. Since the differences between 2-mile and 9-mile casinos were negligible, we instead focused on an analysis of the casinos at the MSA-level for KC, SL, and the four isolated casinos considered as a group.

Casinos in KC and SL perform similarly. Customers in all three markets appear to behave similarly. The key differences we found were between the isolated casino group and the clustered groups (KC and SL). Compared to the clustered casinos, the isolated group exhibited higher admissions and revenue per MSA population, but also a lower MSA-level per capita income and lower revenue per position per day. These findings are consistent with isolated casinos attracting customers from a longer range (i.e., distance) than the clustered casinos.

An analysis of casino "composition" revealed that isolated casino managers dedicate a larger proportion of casino floor space to machine games than their clustered counterparts, and that in isolated casinos, machine games were more densely arranged than in clustered casinos. These findings suggest that customers at isolated casinos — many of whom are residents of rural communities — have a relatively strong preference for machine games over table games. Casino managers in these markets respond by offering a larger variety and number of machine games to cater to their customers.

Our results suggest that isolated and clustered casino performance is similar in terms of revenues. However, isolated casinos will tend to draw customers from a longer range.

These results are consistent with previous findings in the literature that casinos are likely to have greater economic benefits for relatively small communities, in part because customers are more likely to come from outside the local area. This may be one reason why some state legislatures, like in Kansas, Maryland, Massachusetts, and Ohio, mandated that a single casino be in each "zone" in their state. However, we noted that there may be significant inefficiency costs that arise when regulators limit or dictate a potential casino's location.

Since the data do not reveal any revenue-related reason to restrict casinos' locations, we speculate that legislators and regulators decide to specify casino locations for political reasons. For example, if Massachusetts had not mandated one casino per zone, all three casinos might have been built in Boston. Voters in western Massachusetts might have objected to this, especially if they view casinos as providing local employment and tax benefits. It would be reasonable for politicians to expect that mandated dispersion of casinos would maximize votes for casinos in the state.

Of course, there may be other reasons politicians might want to prevent casino clusters from occurring. There may simply be NIMBY concerns, or a desire to prevent a "new Las Vegas" from developing in a city. Dispersed casinos might be seen as attracting more customers from out-of-state than in-state. Or regulators may presume that clustered casinos will attract more disordered gamblers than isolated casinos. In any case, the development of the Missouri casino market suggests that, when given the freedom to do so, these businesses will choose the best location possible, in their effort to maximize their profits and the value they create for society.

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