Working Paper No. 12-05

Exclusive Dealing and Its Effects: The Impact of Large Music Festivals on Local Music Venues

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1 Introduction

In June of 2010 Illinois Attorney General Lisa Madigan opened an antitrust investigation of the popular Chicago music festival, Lollapalooza (Knopper, 2010). The basis for this investigation is the exclusivity clause which artists playing the festival must sign, restricting them from playing any public or private concerts within 300 miles of the festival for 180 days prior to and 90 days past the summer event. Among four leading music festivals in the US this is a common requirement, only varying in one of the four festivals (Kot, 2010). This one di ering festival is crucial, however, allowing for exploitation of the cross variation between clauses to ensure the interpretation of exclusive dealing as competition dampening. The implicit concern of the Illinois Attorney General and many venues trying to attract musicians is that these massive festivals violate antitrust laws and diminish the ability of local music venues to compete. This paper directly addresses this concern by empirically examining the impact of exclusive dealing on the ability of venues within the radius of these clauses to compete.

The massive annual music festival is relatively new to the US. Despite the success of Woodstock, the model was largely not continued from year to year in the United States as it was in Europe.[1] Beginning in the early 2000's, however, four of the largest current music festivals in the US were held annually. These festivals have very similar three day formats, attract bands from a variety of music genres, and are the largest in the country. Bands from most contemporary genres are represented; including popular music, rock, independent, folk, rap, hip-hop, punk, and more. Coachella (2001) in Indio, California; Austin City Limits (2002) in Austin, Texas; Bonnaroo (2002) held in Manchester, Tennessee; and Lollapalooza (2005) conducted annually in Chicago have attracted many bands and large audiences while maintaining the exclusive contracts mentioned above (Kot, 2010).[2]

Exclusive dealing is used as a form of vertical integration by rms that cannot legally integrate, or would prefer to have an exclusive relationship without integrating. Exclusivity can be enforced in various ways, but most important for this paper are contractual agreements, speci cally music festivals using exclusivity clauses when contracting with musicians. The classical view of exclusive dealing is laid out by the Chicago school (Bork, 1978; Posner, 1981): exclusivity allows the upstream rm in the deal to invest in the downstream rm without fear of free-riding by other upstream rms, creating an environment where the dealer can reduce costs and increase e ciency. Conversely, several authors have addressed the possibility of decreased competition as a result of exclusive dealing. The concern is that rms employing this practice can foreclose competitors or deter entry into a market (Aghion and Bolton, 1987; Bernheim

[1] For examples see Glastonbury and Isle of Wight Music Festivals in England or Roskilde in Denmark.

[2] Lollapalooza began as a travelling festival from 1991 through 1997, but became a stationary three day festival in 2005.

and Whinston, 1998). Such concerns re ect the issue addressed in the antitrust laws and the implicit reason for the Illinois Attorney General's investigation into Lollapalooza.

There is a question of actual enforcement of this clause by the festivals. In 2012, Coachella music festival began the unique practice of repeating its performance over consecutive weekends. The exact same lineup of bands played the opening weekend and then performed again the very next weekend so that the festival could sell twice the tickets for the event. In most cases bands would likely look to book additional performances in southern California in between weekends, however, anecdotal evidence by booking agents suggested that performing in the area was limited to \Las Vegas and San Francisco" because of the radius clause.[3] Further anecdotal evidence from interviews with venue operators suggests that some exceptions to exclusive dealing clauses are made, but only for venues owned by companies that operate a festival. These exceptions should do nothing to deter the notion that this clause is used as an anticompetitive practice.

Music venues face two possible e ects from the presence of these music festivals. The rst is that the clause diminishes the ability of smaller rms a ected by the contracts to attract enough popular bands to ll their schedule, perhaps leading to shut down. The second, and less obvious possibility is that these festivals create local demand for the bands and various genres of music involved, therefore generating a wider base of artists which can play the regional music venues

Two recent papers expand the condition under which entry can be restricted by exclusive dealing. Segal and Whinston (2000) show that if discriminatory o ers are allowed, an upstream rm can reach its exclusion threshold as long as the fee paid to buyers is not greater than their gains from exclusion. If true, the e ciency arguments do not account for a decreasing payment to buyers, and therefore welfare can in fact decrease with the practice. The paper does have the very limiting assumption that contracts cannot ever be breached. According to Simpson and Wickelgren (2007) the lack of breach is a aw in their argument, and they allow breach and payment of damages in their paper. With the assumption that buyers are Bertrand competitors, refusing the exclusive dealing contract from a seller would only pass on bene ts to the nal consumer. The conclusion then is that the seller and buyer bene t from the seller monopolizing the upstream through an exclusive contract.

Lafontaine and Slade (2008) provide an overview of empirical work on exclusive dealing. They nd a paucity of studies and minor e ects on competition. The primary problem of empirical studies of the topic revolves around a lack of industries to study and data di culties in those that exist. Empirical studies began with an analysis of insurance rates, where Marvel (1982) nds that exclusive-dealing contracts are used to protect manufacturer's property rights in non-brand-speci c promotional investments. Slade (1998); Sass (2005); Rojas (2011) have addressed exclusive dealing questions within the beer industry, where exclusive dealing is common but may vary geographically or by law. These papers nd little evidence of anti-competitive e ects within this industry caused by exclusive dealing. In addition, Rojas uses the pass-through rate of exogenous state taxes to assert that the practice can result in higher welfare, primarily from e ciency gains.

This paper takes advantage of the unique geography of music festivals across the US and compares di erences in the number of music venues in cities a ected by these contracts to those outside of their in uence. The areas falling within the radius of these music festival clauses are not obviously di erent in characteristics from those outside and so the null hypothesis tested is that after controlling for demographics there is no di erence between cities within a festival radius from outside of that range. Therefore, I create a model using the di erences in similar cities to isolate the e ect of exclusive dealing. With panel data, regional and time xed e ects

area, a unique dataset is needed to provide a contribution. For this I've assembled a completely original record of venues across United States cities. The nal contribution of this paper will be to provide some tangible evidence in the investigation of the antitrust policy and potential prosecution in Illinois. The dampening of competition and foreclosure e ects hypothesized in the theoretical literature make intuitive sense, but have not been persuasively shown in any practical applications. Claims against Lollapalooza, and transitively the other major festivals in the US are worthy of investigation in order to determine whether a signi cant anti-competitve impact does exist.

The data reveal that there was very little di erence in the number and growth of music venues in areas a ected by music festivals and those outside of their range before their permanent presence.[4] After the festivals began the venue characteristics of the two areas change, and my results show that exclusive dealing by the four largest rock festivals in the United States create a substantial and signi cant negative e ect on number of music venues in cities within a festival's in uence, all else held constant. I estimate the impact ranges from a low of about 9 percent decrease in the number of venues against the predicted mean to a high estimate of about 35 percent. Further analysis shows the e ect di ers depending on the size of the city. These results are robust to alternative models. Finally, I estimate a structural model to isolate how the exclusive dealing clause a ects local venues. The results of this model strengthen the evidence of a competition dampening e ect through the clause and act as a complement to the preceding models. However, strong assumptions must hold to justify the results of the structural model.

The remainder of this paper is organized as follows: Section 2 provides background on concert production and a priori predictions of exclusive dealing e ects. In Section 3 I create the models to be estimated. Section 4 introduces the data and provides some initial summary

the potential e ect of le sharing on concert activities, and in so doing researched how this aspect of the music industry is operated. Connolly and Krueger (2006) review the concert booking process, nding that artists get most of their revenue from touring the country and putting on concerts. Album production typically involves labels taking on the cost of production of an album and paying a very small percentage of its sale price to the artist. Artists usually organize tours through promoters, who nance the events and take 15 to 30 percent of ticket and merchandise revenue in addition to their contractually agreed upon guarantee. For the venue, in addition to a rental fee their primary income comes from concessions and parking. The incentives of the band and promoter are not well aligned with the venue because ticket

not. These cities could be a ected by the exclusive dealing without plausibly being the reason for the music festivals to locate nearby.

There are, of course, many smaller music festivals and temporary productions in the US that

playing these festivals would not be new to the consumers, adding little to the base. In that case, simply assuming that the marginal bene t of seeing a musician or genre of music declines in the number of times the performance is seen means a decreased demand for surrounding local venues. This assumption is easily justi ed, at least in the short run. Most musicians are not quick to debut new songs, so seeing the same show repeatedly would almost certainly result in decreasing marginal utility.

An additional source of decreasing demand could come from a budget constraint for the amount of music seen in a year. Anecdotal evidence of ticket prices shows the festivals to be considerably more expensive than a typical individual concert by one of its participants. For example, a weekend pass to Coachella in 2011 was $319.[8] This is in addition to any food, drink, and memorabilila purchases made while attending the festival. Some additional purchases are likely due to the closed nature of these festivals and their length; which extends well beyond the average concert. A survey of ticket prices for Coachella headliners that toured after the festival in 2011: The Arcade Fire, The Strokes, and The Black Keys found average prices before service fees of $45, $44, and $39.[9] While service fees add considerably to ticket prices in most concerts, these are three of the bands that headlined the festival and are therefore considered to be in highest demand and likely priced higher than most other performers. It is clear that these festivals are considerably more expensive than an individual concert, and any consumer attending one would spend a larger than average portion of their music budget on this festival. All of these e ects would lead to a reduction in demand for other concerts that are held by local rms.

Disentangling the demand and exclusive dealing e ects is di cult. If the demand e ect is positive, the results of this paper can be seen as a lower bound of the impact of exclusive dealing. Where demand e ects are negative, appropriate association is more di cult. Additional tests in Section 5.3 show that the most likely demand e ect is positive, making the results showing correlation between decreased venues and exclusive dealing the most feasible explanation.

3 Empirical Model Speci cation

In order to measure the impact of the exclusivity clauses I create several models using city characteristics that are plausibly relevant to the number of venues which locate there, and ensure robustness through alternative speci cations. Each model has number of venues in a city as the dependent variable, and includes an indicator for whether a city is within a festival radius. The panel data set allows for xed e ects in time and region, as well as further control

[8] http://consequenceofsound.net/2011/01/coachella-2011-is-about-to-sell-out/ (Accessed 4/23/2011).

[9] Tour dates found on Songkick.com, ticket prices found on venue websites.

variables for each individual festival.

The baseline model is

$$\begin{aligned} Venues_{it} = {} & {}_0 + {}_1 Festival_{it} + {}_2 FIT_{it} + {}_3 PrimaryCity_{it} \\ & + {}_4 Metro_{it} + X_{it} + {}_t + {}_j + {}_{it} \end{aligned} \tag{1}$$

city's music venues by controlling for demographics and music demand. The null hypothesis is that coe cent estimates on the Festival variable, and alternatively individual variables (ACL, Bonnaroo, Coach, and Lol) are zero. A negative estimate for these variables shows that all else held constant, cities inside a festival's range have fewer venues than outside. Theory indicates that competition is reduced because of increased xed costs of entry or decreased variable pro ts of operating in a market controlled by the exclusive dealing rm. Alternatively, a positive e ect would indicate that all else held constant, some demand e ect is swamping any exclusive dealing dampening; in this case the demand increase would be due to a change in local preferences.

PrimaryCity should have a positive e ect if the cities where festivals locate have unique qualities that allow for a greater number of venues. The Metro variable is anticipated to deliver a negative result. Firms likely make the reasonable assumption that most concert consumers build some travel within a metropolitan area into their costs for music. This fact, coupled with the largest population in the area should cause venues to locate in the most populous city in an MSA over its smaller counterparts, all else constant.

4 Data

To answer the research question, data is needed that measures how music venues are distributed across time and between American cities. Songkick.com has collected data on concerts and music tours dating back over 30 years. This company provided me their concert data from 1998 through 2009 in 259 major US cities. Seven of those 259 American cities, all with a population over 100,000, did not provide suitable data for determining venues. Additionally, Anchorage, Alaska and Honolulu, Hawaii are excluded due to possible di culties attracting touring bands which are unrelated to a music festival. New Orleans is excluded after 2004 because a fundamental change in the city's economy seems likely as a result of Hurricane Katrina. There are 249 cities remaining for the entire sample over the 12 year period. From this data I can determine the number of dedicated venues dependent on touring acts; culling sports venues, theaters devoted primarily to performance arts, and small venues with occasional concerts. Entry and exit over time, and di erences across regions, should allow me to determine and control for general trends in the US market, and then separate those trends from any e ects caused by the music festivals.

The dataset was veri ed by exploring the web presence of each individual music venue, and all rms not devoted to concerts as a product were eliminated. In the case of some music venues which were no longer operational this included looking for reviews on popular sites such as yelp.com, and exploring news stories containing information about the venue in question. There is some concern in the collection of data in the early years of the data set, as the company was

not in existence until 2006. Songkick collected data from around the world accumulating over

and concerts more speci cally.

4.1 Summary Statistics

as exclusive dealing dampening competition, but not eliminating it.

5 Results

The Results section is divided into the estimates of the maximum likelihood model relating the number of venues in a city to the characteristics most likely to a ect them, and then the various robustness checks that ensure their accuracy. There are two estimation methods reported. Considering the number of festivals is nonnegative count data with many zero observations, Poisson estimation is an appropriate candidate. The Poisson does have an equidispersion assumption, so a negative binomial approach is also reported in this paper to allow for variance which di ers from the mean. In all of the following tables xed e ects are omitted for space, but year and regional xed e ects are included in each model. Tables 4-10 present the raw results from the three speci cations. Because these are maximum likelihood speci cations, each coe cient is interpreted as the log di erence in count outcomes of the dependent variable from a one unit change in the independent variable, holding all else constant. Tables 13-18 give the marginal e ects associated with each of these tables in terms of di erence from the mean. For ease of interpretation the marginal e ects are referenced in the body of the results section. These estimates represent the positive or negative movement away from the predicted mean number of venues associated with a unit change in the variable of interest, all else held constant.

5.1 Baseline Results

The rst results reference the baseline model outlined in Equation 1. Results for this model appear in Table 4 and the associated marginal e ects in Table 16. Columns one and two show parameter estimates using the single festival indicator for any city within a festival radius. These results utilize the entire sample. As expected, not being the primary city in a metropolitan area is quite important to how many venues are in a city. Metro estimates are signi cant and range from a .8 decrease in venues to a 1.2 decrease. One explanation for this substantial e ect is opening and movement of venues toward the largest and likely most attractive city in the metropolitan area.

The estimate for city population is signi cant and certainly more substantial than county population, which is not precisely estimated. Interestingly, in ation adjusted income is never signi cant as a predictor of venues. Unlike most industries, concert production is not helped

on the order of .09 additional venues for each additional percentage point. This late youth to maturing adult age range is coveted for its disposable income and desire for entertainment, and the estimates reinforce their importance in the number of venues. The final control variable is the indicator for a city playing host to the festival, the PrimCity indicator. This variable should capture any effect of the unique characteristics specific to a city which attracted one of these major events, but is not precisely estimated and irrelevant.

Also in this table are results for two different forms of the primary variable of interest. Columns one and two show estimates for the single Festival indicator. The estimates, which are significant, show a .37 to .41 decrease in venues from the mean, holding all else constant. This impact is important given the predicted mean over the entire sample of about 1.6 venues. These estimates are consistent with the idea that the exclusive dealing clauses are effective, and that their purpose is to limit competition in order to drive demand to the festivals. If the results are accurate there is certainly some force decreasing the number of venues here, on the order of an approximately 24 percent decrease compared to the predicted mean.

Columns three and four use an indicator for each individual festival to distinguish effects between festivals. With the exception of the negative binomial estimate of Lollapalooza in column four, all of the estimates are significant. The marginal effects are similar across festivals, with Coachella showing the largest negative effect and Lollapalooza and Bonnaroo the smallest.

The possibility remains that cities are affected differently by exclusive dealing depending on size or year. Table 4 includes an interaction term, FestivalPop, relating the Festival indicator to a city's population. The Festival indicator shows a strong negative estimate, but the effect is clearly lessened in larger cities. Specifically, the impact of a festival is about a .4 venue marginal decrease. When the interaction is considered, for every 100,000 person increase in a city's population there is an associated lessening festival impact of .07. It appears that larger cities are better able to avoid the effects of the clauses, and indeed may even experience a net gain in venues.

One explanation for this counterintuitive relates to the depth of the market in individual cities. If there is a threshhold of music demand and diversity of preferences that must exist within a city to allow for a venue to operate, a festival could help to surpass that threshhold. Although the supply of some popular bands may be restricted, the net effect will be exposure to additional genres of music allowing for more venues to cater to diverse preferences. This would be more likely in larger cities, due to the probability that more people would be exposed to the music of the festival and diversify their preferences. Smaller cities would have the same supply

Using individual festival indicators and interactions, that impression is reinforced at every point. Cities in uenced by Austin City Limits and Bonnaroo have the largest mitigating e ect from population increases. These results are encouraging to the exclusive dealing interpretation. Coachella and Lollapalooza take place in two of the largest cities in the US. The surrounding metropolitan areas have a consumer base for music that was almost surely well established

Additionally, if the market will support a radio format then music venues can expect concert demand in that same genre. The more concentrated the radio market the less diverse the demand for music. A homogenous population limits the genres consumers demand and means a smaller group of artists that each venue can book. With this speci c control of taste on such a small scale, the impact of exclusive dealing is further isolated. The radio data only covers six of the twelve years, but the similarity of the estimates to the original model proves this su cient to interpret the model and the associated e ect of festivals as being properly speci ed.

The control variables are not overtly a ected by the addition of this index, showing generally the same signi cance and magnitude as existed when they were excluded. Turning again to the general festival indicator in columns one and two, the e ect is to strengthen slightly the negative impact from being located in a festival radius. In results not reported here, adding the radio measure strengthens already large positive regional e ects (compared to the South) for the Midwest and Northeast, and further decreases the already weak estimate of the West indicator. So accounting for taste in music on the city level certainly does not diminish the e ect of exclusive dealing, and in fact demand is likely more accurately measured than is possible using xed e ects alone.

Estimates of the parameters on individual festivals are all strengthened very slightly. Looking at Austin City Limits, Coachella, and Lollapalooza all estimates are now negative, signi - cant, and with a slightly greater impact. Conversely, the interaction terms, not reported here for space lose most of their e ect. Although still signi cant, the results are so small as to remove any serious e ect from population increases. It is worth noting that the models using radio measures are done with a considerably smaller sample size, about half of the observations available to the full sample. Overall, including this measure for music taste and diversity seems to encourage the possibility of anticompetitive e ects from the festival clauses.

5.3 Robustness Results

The rst robustness tests answer two questions, whether the radius clause is at work here or if there is simply some other factor related to the festival or area driving the di erence. The initial step is to see if there are demand shocks in the region coming from the festivals. Additionally, I will investigate whether or not there is some fundamental di erence between cities in and outside before these festivals started.

The question of a demand e ect makes interpretation of the results on exclusive dealing clause more di cult. In general, if a festival has a net positive or no demand e ect then the results can be seen as entirely attributable to exclusive dealing. Fortunately for this study Coachella's exclusive dealing clause di ers from the others, in that instead of a 300 mile radius

around the festival, the clause names many speci c Southern California counties (Kot, 2010). This creates an e ective radius of approximately 200 miles around Indio, California. In the rst two columns of Table 7, with marginal results in Table 15, I test the impact on venues that comes with a city being in this distance which would fall under exclusive dealing in any of the other festivals, but does not with Coachella's clause. The variable CoachExclusion measures the e ect of being immediately outside of the festival's radius. Clearly, the impact is substantial, and would seem to indicate that the demand e ect is causing a positive in uence

test shows it is impossible to attribute any of the di erence in the venues to being in a radius

of the clause border, at 301-400 miles away. At this distance any demand e ect should be dampened, and the expectation would be of a decrease in venues from exclusive dealing. The sample is much smaller leading to lower signi cance, but the coe cients on the 201 to 300 variable are negative and given the mean number of venues in this sample of 1.48, represent a decrease in venues from four to seven percent. If taken as a representation of an area a ected only by the exclusive dealing clause then the exclusive dealing e ects are somewhere between 11 and 77 percent of the broad e ects found earlier. These numbers are smaller than the sample at large, however, at one seventh the observations derived from only 66 cities also lack much of the

The S(Y,) function in this paper is of the form:

$$S(Y;) = Population_{it} + {}_1PopCounty_{it} + {}_2Age_{it} + {}_3Region_{it} + {}_4$$

could take these few years to begin to create the barriers to entry, thereby decreasing the overall number of venues in these areas. In cities with greater numbers of venues, represented by the Delta2 and Delta3 variables, the e ect on xed costs is neglible and often negative.[18] This is consistent with the idea that larger cities are not a ected in the same way as smaller cities, and potentially bene t from the festival's impact.

5.5 Exclusive Dealing Example

This paper has reported various speci cations and estimates measuring the exclusive dealing impact on local rms. In order to illustrate the e ect on a speci c city I will create an example. Using the general Festival indicator found in columns one and two of all tables with a population interaction term, and evaluating at the mean value of all indepedent variables, the predicted number of venues is 1.634. The marginal e ect of the exclusive dealing clause in this model is between -.37 and -.41. All else equal, the average city inside of a festival radius has a predicted value of about 1.234 venues, or approximately a 25 percent decrease when compared to a city outside. As population increases this e ect diminishes. For every 100,000 person increase above the mean population, the e ect is lessened by about .07. Of course, the population coe cient is also signi cant and positive, at about .075 venue increase per 100,000. These two e ects working together, holding all other variables at their mean value, show that a 275,000 person increase beyond the average would elminate the predicted e ect of the festival. This implies that smaller cities are disporportionately a ected by the exclusive dealing, and in fact at some level of population the total number of venues in a city may bene t from a festival's presence. Again, this result can be explained if increased demand e ects are more prevalent in larger cities, swamping the supply constraints from exclusive dealing. In this scenario, smaller cities are more strongly in uenced by the constraint on supply and do not bene t from heterogeneous preferences.

6 Conclusion

The exclusive dealing that the four major American music festivals engage in has some negative e ect on the local music venues in the a ected cities; either through foreclosure, dampening competition, or increased barriers to entry. By attracting artists to their events with larger payouts and bigger crowds the festival locks the artist into a short-term exclusive deal preventing further concerts in the area. The bene ts to the festival are clear, forcing local residents to buy passes to the event if they want to enjoy their favorite band in the near future drives up demand.

[18] Due to convergence issues there are three deltas: an indicator for one rm, an indicator for two or three rms, and an indicator for three or more rms.

And then because of the typically brief nature of a concert tour venues will likely have trouble booking those acts again in the same year.

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Table 1: Summary Statisics Within and Without

Within				Without			
Variable	Mean	Std. Dev.	Obs	Mean	St Dev.	Obs	T-stat
Venues	1.658	3.068	777	1.649	2.748	2200	-.272
Population	334,000	530,134	777	302,068	647,708	2200	-1.27
ACL	0.257	0.437	777	0	0	2200	-27.4
Bonnaroo	0.162	0.369	777	0	0	2200	-20.49
Coach	0.416	0.493	777	0	0	2200	-39.3
Lol	0.167	0.373	777	0	0	2200	-20.88
Northeast	0	0	777	0.12	0.325	2200	10.37
Midwest	0.19	0.393	777	0.19	0.392	2200	.097
West	0.416	0.493	777	0.359	0.48	2200	-2.9
South	0.394	0.437	777	0.331	0.269	2200	-13.2
Income	43,112.27	9237.48	777	43,965.34	9369.07	2200	2.3
CountyPopulation	2,560,711	3,214,136	777	992,547	1,380,134	2200	-18.37
Median_age	33.4	2.3	777	34.9	3	2200	11.8
Entries	0.094	0.366	777	0.123	0.383	1956	1.7
Exits	0.055	0.265	777	0.084	0.315	1956	2.1

Notes: T-test - H_0: $_{within}$ $_{without}$ = 0
$p < 0{:}05$, $p < 0{:}01$, $p < 0{:}001$

Table 2: Summary Statistics from 1998-2001

Within	Without

Table 4: Results excluding Radio Measure

	Poisson	Neg Bi	Poisson	Neg Bi

Table 5: Results including Radio Measure

	Poisson Venues	Neg Bi Venues	Poisson Venues	Neg Bi Venues
Population	0.0270	0.0598	0.0219	0.0481
	(0.00205)	(0.0249)	(0.00213)	(0.0178)
Metro	-1.233	-0.872	-1.216	-0.848
	(0.117)	(0.124)	(0.111)	(0.121)
Percentage18-44	0.112	0.125	0.117	0.121
	(0.00805)	(0.00948)	(0.00772)	(0.00841)
Festival	-0.422	-0.613		
	(0.101)	(0.146)		
FestivalPop	0.0638	0.0939		
	(0.0142)	(0.0290)		

Table 7: Coachella ED Test - Marginal E ects

	Poisson Venues	Neg Bi Venues	Poisson Venues	Neg Bi Venues
Population	0.0885	0.0885	0.104	0.179
	(0.00806)	(0.00806)	(0.00871)	(0.0213)
CountyPop	-0.00659	-0.00660	-0.00715	-0.00404
	(0.00545)	(0.00545)	(0.00445)	(0.00302)
Metro	-0.852	-0.852	-0.883	-0.276
	(0.217)	(0.217)	(0.150)	(0.177)
LogIncome	4.887	4.887	1.474	1.121
	(0.552)	(0.552)	(0.297)	(0.381)
Percentage18-44	0.409	0.409	0.0596	0.0437
	(0.241)	(0.241)	(0.0263)	(0.0235)
CoachExclusion	1.427	1.427		
	(0.140)	(0.140)		
201 - 300			-0.0116	0.0686
			(0.106)	(0.115)
Constant	-68.86	-68.86	-17.09	-13.12
	(10.68)	(10.68)	(3.067)	(3.830)
Observations	514	514	1053	1053
Log Likelihood	-485.6	-485.6	-1571.6	-1386.1

Standard errors in parentheses

$p < 0:05$, $p < 0:01$, $p < 0:001$

Time and Region Fixed E ects are included in the model, but excluded from the table for space

Table 8: Festival Robustness Tests

	Poisson Venues	Neg Bi Venues	Poisson Venues	Neg Bi Venues
Population	0.0304	0.134	0.0339	0.158
	(0.00201)	(0.0189)	(0.00451)	(0.0476)
CountyPop	0.00704	-0.00509	0.00615	-0.00364
	(0.00152)	(0.00205)	(0.00333)	(0.00454)
Metro	-1.361	-0.825	-1.409	-0.872
	(0.0838)	(0.0968)	(0.174)	(0.195)
Percentage18-44	0.0931	0.0784	0.0487	0.0215
	(0.00993)	(0.0291)	(0.0520)	(0.0215)
FourHundredFest	-0.00106	0.0705		
	(0.0821)	(0.0798)		
PrimCity	0.368	-0.214		
	(0.138)	(0.326)		
EverAny			0.0748	-0.0900
			(0.146)	(0.137)
Constant	-3.464	-2.374	-6.976	-6.906
	(1.691)	(1.669)	(4.540)	(3.908)
Observations	2947	2947	729	729
Log Likelihood	-5299.9	-4418.7	-1264.3	-1021.1

Standard errors in parentheses
$p < 0.05$, $p < 0.01$, $p < 0.001$
Time and Region Fixed Effects are included in the model, but excluded from the table for space

Table 9: Post 2000 Robustness Tests

	Poisson Venues	Neg Bi Venues	Poisson Venues	Neg Bi Venues
Population	0.0288	0.0774	0.0231	0.0614
	(0.00183)	(0.0280)	(0.00193)	(0.0228)
CountyPop	0.00153	-0.00233	0.0180	0.00536
	(0.00250)	(0.00245)	(0.00344)	(0.00292)
Metro	-1.109	-0.812	-1.143	-0.793
	(0.0952)	(0.103)	(0.0920)	(0.0996)
Percentage18-44	0.109	0.129	0.113	0.126
	(0.00620)	(0.00834)	(0.00610)	(0.00757)
Festival	-0.383	-0.558		
	(0.0920)	(0.142)		
FestivalPop	0.0721	0.0913		
	(0.0139)	(0.0308)		
PrimCity	-1.185	-0.679	0.276	-0.295
	(0.510)	(0.323)	(0.284)	(0.264)
ACL			-0.629	-0.855
			(0.173)	(0.220)
Bonnaroo			-0.610	-0.638
			(0.172)	(0.225)
Coach			-1.744	-1.149
			(0.292)	(0.216)
Lol			-0.446	-0.568
			(0.148)	(0.157)
ACLPop			0.0944	0.127
			(0.0103)	(0.0260)
BonPop			0.243	0.275
			(0.0306)	(0.0452)
CoachPop			0.0146	0.0344
			(0.00872)	(0.0255)
LolPop			0.0276	0.0543
			(0.0143)	(0.0245)
Constant	-1.280	-0.276	1.161	0.441
	(1.872)	(1.788)	(1.864)	(1.739)
Observations	2218	2218	2218	2218
Log Likelihood	-4011	-3360.3	-3796.3	-3325.8

Standard errors in parentheses

$p < 0.05$, $p < 0.01$, $p < 0.001$

Time and Region Fixed Effects are included in the model, but excluded from the table for space

Table 10: Two Hundred to Three Hundred Mile Test

	Poisson Venues	Neg Bi Venues	Poisson Venues	Neg Bi Venues
Population	0.139	0.150	0.148	0.178
	(0.0285)	(0.0299)	(0.0218)	(0.0254)
CountyPop	0.0909	0.108	0.0293	0.0211
	(0.0125)	(0.0181)	(0.0115)	(0.0104)
Metro	-1.724	-1.581	-0.0819	-0.0675
	(0.414)	(0.417)	(0.193)	(0.163)
Percentage18-44	0.0927	0.0951	0.121	0.145
	(0.00761)	(0.00878)	(0.0183)	(0.0220)
Overlap	0.156	0.146		
	(0.165)	(0.178)		
PrimCity	-5.470	-6.541		
	(0.505)	(0.998)		
201 to 300			-0.00294	-0.0516
			(0.019)	(0.021)
Constant	-6.148	-2.361	-11.79	-11.09
	(4.067)	(5.863)	(4.272)	(3.394)
Observations	241	241	453	453
Log Likelihood	-419.4	-418.3	-645.7	-636.1

Standard errors in parentheses

$p < 0.05$, $p < 0.01$, $p < 0.001$

Time and Region Fixed E ects are included in the model, but excluded from the table for space

Table 11: Structural Model

	(1) Original Specification	(2) Including Radio Measure
DeltaFest1Year4	-0.112	
	(0.457)	
DeltaFest1Year5	-0.170	-0.105
	(0.393)	(0.401)
DeltaFest1Year6	-0.0731	-0.0253
	(0.371)	(0.378)
DeltaFest1Year7	0.0305	0.0630
	(0.352)	(0.357)
DeltaFest1Year8	0.0794	0.121
	(0.323)	(0.329)
DeltaFest1Year9	0.106	
	(0.323)	
DeltaFest1Year10	0.0627	0.0901
	(0.314)	(0.320)
DeltaFest1Year11	0.102	
	(0.310)	
DeltaFest1Year12	0.105	0.110
	(0.303)	(0.306)
DeltaFest2Year4	0.0988	
	(0.324)	
DeltaFest2Year5	0.179	0.173
	(0.279)	(0.284)
DeltaFest2Year6	-0.0332	-0.0179
	(0.289)	(0.294)
DeltaFest2Year7	-0.0220	-0.0218
	(0.307)	(0.314)
DeltaFest2Year8	-0.0597	-0.0861
	(0.276)	(0.282)
DeltaFest2Year9	-0.133	
	(0.268)	

Standard errors in parentheses
$p < 0.05$, $p < 0.01$, $p < 0.001$

Table 12: Structural Model - Continued

	(1) Original Specification	(2) Including Radio Measure
DeltaFest2Y10	-0.00844 (0.246)	-0.0190 (0.251)
DeltaFest2Y11	-0.104 (0.250)	
DeltaFest2Y12	-0.0523	-0.0345

Table 13: Results without Radio - Marginal E ects

	Poisson Venues	Neg Bi Venues	Poisson Venues	Neg Bi Venues
Population	0.034***	0.116***	0.028***	0.101***
	(0.00)	(0.03)	(0.00)	(0.03)
CountyPop	0.005*	-0.003	0.011***	0.001
	(0.00)	(0.00)	(0.00)	(0.00)
Metro	-1.192***	-0.804***	-1.113***	-0.767***
	(0.08)	(0.09)	(0.07)	(0.09)
Percentage18-44	0.113***	0.089**	0.108***	0.087**
	(0.01)	(0.03)	(0.01)	(0.03)
Festival	-0.373***	-0.408***		
	(0.09)	(0.12)		
FestivalPop	0.074***	0.065*		
	(0.02)	(0.03)		
ACL			-0.564***	-0.573***
			(0.10)	(0.13)
Bonnaroo			-0.445***	-0.386**
			(0.11)	(0.15)
Coach			-0.873***	-0.642***
			(0.07)	(0.11)

L.83.982 t.959 Td [((0.0h9 T. b3((0.02))-2932((0.03))]TJ -84.3 -101L.83.982 t.959 Td [((0.0h3431(Bonnaro)-
(0a4o -2932(/2C5)]Ta1c(0.0h3065*
(01