Music for the Masses:

The Economic Geography of Music in the U.S., 1970-2000

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Abstract

Where do musicians locate, and why do creative industries such as music continue to cluster? This paper analyzes the economic geography of musicians and the recording industry in the U.S. from 1970 to 2000 to shed light on the locational dynamics of music and creative industries more broadly. We examine the role of scale and scope economies in shaping the clustering and concentration of musicians and music industry firms. We argue that these two forces are bringing about a transformation in the geography of both musicians and music industry firms, evidenced in a shift away from regionally-clustered, genre-specific music scenes, such as Memphis or Detroit, toward larger regional centers like New York City and Los Angeles, which offer large markets for music employment and concentration of other artistic and cultural endeavors which increase demand for musicians. We use population and income to probe for scale effects, and concentrations of other creative and artistic industries to test for scope effects, while including a range of control variables in our analysis. We use lagged variables to determine if certain places are consistently more successful at fostering concentations of musicians and the music industry and test for path dependency. We find some role for scale and scope effects and that both musicians and the music industry are concentrating in a relatively small number of large regional centers.

Keywords: musicians, recording industry, agglomerations

JEL: R11, R12, Z11

Introduction

Why do people and firms locate where they do? It is a question that has vexed economic and geographic thinkers for ages. In the agricultural era, people located around river deltas and other sources of fertile, productive soil. With the rise of trade, villages, towns and nascent cities grew up along ports, river-ways and transport routes. During the industrial age, giant agglomerations of factories, shops, warehouses, offices and people swelled near sources of raw materials and major transportation routes. With the rise of globalization and technology-based knowledge industries, many contend that physical constraints on location have been weakened or been eliminated. More recently, we hear that the "world is flat" (Friedman, 2005), as both firms and people have far less reason to cluster (Leamer, 2007, for a critique).

But locational clustering continues in the face of globalization. Porter (2000) counters that clustering remains important as firms take advantage of networks, suppliers, markets and related factors, referring to this as a "location paradox" (Porter, 2006). Research on high-technology industries finds that even knowledge-based industries like hardware and software (Saxenian, 1994) and biotechnology (Cortright and Mayer, 2001), which are far less tied to natural resources or capital-intensive infrastructure, tend to cluster around universities, networks of related firms and entrepreneurial talent, end-users, venture capital and specialized services. An important line of economic theory and research (Jaffe, 1986; Lucas, 1988; Romer, 1986, 1990) has found that such co-location in knowledge-intensive

industries generates benefits in terms of knowledge spillovers which increase the efficiency of both innovation and commercialization.

Why would creative activity like arts, entertainment, or music continue to cluster? Music is a classic creative industry (Caves , 2002). There is little physical capital involved, and musicians are quite mobile. Musicians don`t make use of raw materials and they don`t have to go to work in giant capital intensive factories. To paraphrase Lucas (1988), there is every reason why musicians and the music industry should "fly apart". Yet they do not. Several studies (Scott, 1999; Florida and Jackson, 2008) note the considerable concentration in locations of music production.

Our research examines the location of musicians and their industry in the late twentieth century. Drawing from previous studies, it tests a variety of theories and propositions about musicians and their industry and why they continue to cluster. In the past, musicians were seen to cluster in locationally specific scenes based on specific genres, like Dixieland jazz in New Orleans, country in Nashville and Motown in Detroit. A wide body of research (e.g. Southern, 1997; Mark, 1998; Connell and Gibson, 2002) has documented the rise of music scenes in multi-ethnic, crossroads locations, so it might be expected that musicians cluster around areas of ethnic and cultural diversity. In recent decades, music scenes have emerged in college towns where music talent is located, students have free time to form and play in musical acts, and there is considerable demand for live music performance. We argue that such locationally-based scenes are less important today, and that the

economic geography of music is being reshaped by two key interacting forces which act on places: economies of scale and scope (Andersson and Andersson, 2006).

Economies of scale appear when the production implies large fixed costs or when there is a need for a larger marketplace in order to support the economic activity. In a narrow sense, this can be seen in the location of professional musicians, whose employment often is related to a fixed investments such as concert halls, performance venues or recording studios. On a broader level, such economies of scale will be reflected in larger markets which can increase overall demand for music and related musical activities by providing more people, more venues and broader range of tastes. To test for scale economies, we look at the effects of population size, empirically testing to see if musicians and musical groups are in fact seem to be drawn to major population centers that provide greater access to scale in terms of bigger markets and more diverse audiences. We expect the location of employed or professional musicians to be related to recording studios, music halls and film and televisionproduction facilities, all of which represent considerable fixed costs. For self-employed musicians, the location needs to offer enough venues and performing opportunities. For those not yet able to live off their music, the location also needs to offer complementary jobs.

Economies of scope stem from the ability to take advantage of other related and co-located activities. These will be evident in places where musicians can get involved in a number of different production processes. Economies of scope can be reflected in related arts and cultural disciplines, for example in the way that more dance troupes or musical theatre productions increase demand for musicians. Since

musicians typically mix sources of income (PEW, 2004), a musician may play in his or her own band, perform in a group accompanying a dance troupe or musical theatre, and also work as a professional studio musician. We test directly for these scope economy effects, examining the role of other artistic and cultural industries and occupations on the location of musicians and music industry firms. Since other research (e.g. Southern, 1997; Connell and Gibson, 2002) has found the presence of churches and religious institutions to play a role in creating opportunities for musicians, we also examine their role in music locations.

We also examine the effects of path dependency – that is, historical concentrations of musicians and music industry assets. Some locations have a long history of fostering musicians and musical genres. We expect path dependency to be particularly strong for the recording industry, since changing location implies not only sunk costs in lost networks, but also significant fixed costs. We test for a certain degree of path dependency in the distribution of musicians and music industry firms, since regions with strong past concentrations would appear to have an historic advantage as locations for both.

To explore these possibilities, our research provides an empirical examination of the location of musicians and music establishments in the U.S. from 1970 to 2000. We begin by charting the regional location of musicians and music industry establishments at the metropolitan level. We separate professional musicians from all musicians, where the latter also include a certain share of self-employed musicians, based on an assumption that the two work under different conditions.

To probe for these effects, we examine the influence of scale-related factors like population and income, scope-related factors like other artistic fields and disciplines, and also the historic location of musicians and music establishments. We examine these relationships over time using lagged variables to probe for temporal autocorrelation. We also look closely at the role of outliers on our findings.

Theory and Concepts

Music is one of the world's defining cultural products. From early touchstones like spirituals and Tin Pan Alley to the post-World War II explosion of popular music genres like rock and roll and hip hop, it has been a major influence on culture, fashion, and society in general ever since uniquely American styles of music emerged in the nineteenth century.

Levitin (2006) notes that music is one of the few universal cultural norms: we don't know of any society throughout human history that lacked music. Cowen (1998) and Bull (2005) identifies music's unique accessibility in that it can be consumed with either full or partial attention (at a concert or while commuting or driving a car), and almost everyone is at least a casual listener and buyer. Kittler (1999) relates the technology development and music. Connolly and Krueger (2005) note the ways that research on music offers useful insight into economics and social science more broadly and Attali (1985) shows the close connection between music and (political) society from a historic perspective.

There is now a significant, growing literature on arts, culture and the creative industries. Caves (2002) defines creative industries as those that produce intangible

products which are idiosyncratic and for which demand is impossible to determine in advance. Such industries benefit from a geographically concentrated economic structure that includes cultural producers, agents, gate-keepers and other market actors. Markusen (2004) outlines the specialization of creative activity across locations. Florida (2002) documents the clustering and concentration of the creative class and its effect on innovation and economic outcomes. Scott (1999, 2000) notes that dense production agglomerations are a key characteristic of originality and innovation in culture industries, and that in the recorded music industry specifically, commercially effective forms of creativity are positively related to agglomeration.

Historians have also noted the tendency of musicians and artists to cluster together (Mark, 1998). The term "music scene" was originally used to describe the musical genres associated with mid-twentieth century crossroads music locations that brought diverse rural talent into contact with larger audiences, performance venues, recording studios, radio stations, managers, and record labels. Scenes like Memphis, New Orleans, Detroit and Chicago were built by entrepreneurs who constructed studios like Sun, Stax, and Motown to commercialize the fruits of artistic agglomeration and cross-pollination in these locations. Negus (1999) highlights the role of major labels in different types of genres and artists, with a focus on their corporate business style. The role of organizational structure and project-based creative activities is further developed in Lorenzen and Fredriksen (2005) and Sedita (2008).

Connell and Gibson (2002) provides extensive work on the close connection between music and place, in terms of cultural expressions, immigration groups, and so on.

Florida and Jackson (2008) find that the location of the music industry is potentially shaped by two forces. On the one hand, they note the concentration of music industry employment and establishments in major centers like New York, Los Angeles and Nashville. On the other, they find some dispersal of musicians in smaller locations, including rural and ex-urban areas.

As noted above, we argue that the effects of scale and scope economies are transforming the economic geography of the music industry. In terms of scale economies, we argue that musicians and music industry firms will be attracted to larger places. This is reinforced by the shift in the economics of music industry revenues from music recordings to live performance (see Connolly and Krueger, 2005). We also argue that larger places will benefit from related scope economies. A broad artistic, cultural and entertainment economy can provide demand for musicians who may be employed by or perform in cultural enterprises from dance to radio to television to commercial jingles. Currid (2007) shows how venues, clubs, recording studios, and performance spaces act as conduits for economic and social networks. Churches and religious institutions may play a similar role in providing greater music employment in some regions.

Our research and methods test explicitly for the effects of these scale and scope economies on the distribution of musicians and music industry firms, while controlling for other factors.

Research and Methods

To investigate these issues we provide an empirical analysis of the location of musicians and music establishments in the U.S. from 1970 to 2000, examining the factors that effect the location of all musicians, professional or employed musicians, and the recording industry. We use three distinct time points, because they reflect the evolution of the music industry over some 30 years and through different genres and systems of technology (from albums to CDs to digital music).

We employ the following variables in our analysis. We begin by describing our dependent variables.

Dependent Variables:

Recording Industry: This variable is based on industry data and is a location quotient for recording industry establishments. It is not fully compatible over time. The first year is for 1977 and is defined as “Phonographic record makers” and is based on the Standard Industrial Classification (SIC). The same definition applies to the 1990 variable, but by 2000 the definition has changed to "Recording Industry" and is now based on North American Industry Classification System (NAICS) definition. While the change of definition over time is unfortunate, we still believe this is the best variable available. These data are from the Census Bureau’s County Business Patterns (CBP) series.

Musicians: This variable is based on occupation and is a location quotient for employed and self-employed (i.e. self-reported) musicians for the years 1970, 1990, and 2000, based on data from the U.S. Census Public Use Micro Sample (PUMS). Much of location theory focuses on the location of firms. However, we must remember that in the case of self-employed, the firm and individual become the same unit, implying that the location preference will be a function of both.

Professional Musicians: We include a separate variable for professional or employed musicians. It differs from the musician's variable, which includes a large number of self-employed musicians. Professional musicians are those who are employed to work as musicians, and thus may be more likely to be drawn to concentrations of venues or recording studios. This variable is a location quotient for employed musicians and singers, based on data from the United States Bureau of Labor Statistics (BLS) for 2000. The historic BLS data is not available, so we cannot use lagged versions of this variable.

Explanatory variables:

A series of variables probe for the effects of scale economies on the location of musicians.

Population: This variable tests for economies of scale effects related to population size. It represents total population by metropolitan region, taken from the U.S. Census.

Income per Capita: This variable also reflects scale economies created by income. It may be a better proxy for this than population, as income levels vary significantly by location. Drawn from the U.S. Census, it includes proceeds from wages and salaries plus self-employment income; interest, dividends, rents, royalties, estates, trusts; social security or railroad retirement income, Supplemental Security Income (SSI), public assistance, welfare payments, retirement, survivor, or disability pensions, and all other income.

Other variables examine scope economy effects.

Artists: The first of these is artists. It is based on industry data and is a location quotient for the number of employees within the industry of independent artists, performing arts, spectator sports, and related industries. We use PUMS data for the years 1970, 1990, and 2000. We include this variable based on the assumption that musicians and the music industry can gain from interaction from similar creative activities, a kind of economies-of-scope effect. It is important to note that this variable does not include musicians of any sort. We also include earlier years for this industry to probe for path dependency.

Dancers: This variable is based on occupational data and is a location quotient for employed and self-employed dancers and choreographers. We use PUMS data for the years 1970, 1990, and 2000. As the case for artists, we see the dancers variable as a scope effect and also test for path dependency over time.

Broadcasting Industry: This variable is based on industry data and is a location quotient for the number of employees in the broadcasting industry. We use PUMS data for the years 1970, 1990, and 2000. The broadcasting variable also aims to capture scope economy effects.

Churches: This variable is based on industry and is a location quotient for the number of employees within churches (religious organizations). We use PUMS data for the years 1970, 1990 and 2000. Based on theory, we can assume religious institutions to have an effect on the fostering of musicians. In some regions, religious institutions may even play an important role in doing so. We also include churches over time to control for path dependency effects over time.

We would have liked to include the number of venue places per capita in the analysis, but unfortunately the data is not available. The only related variable would have been "bars", and since far from all bars provide live music we decided to exclude it.

Control Variables

We include a series of control variables as well.

Human Capital: This variable is based on educational attainment, measured as the percentage of the regional labor force with a bachelor's degree and above, calculated from the U.S. Census. We use it as a control variable for the regional characteristics related to market and demand structure.

College Population: This variable is based on the share of population enrolled in college, based on the 2000 U.S. Census data. This is another control variable to probe for the regional demand characteristics.

Service Economy Employment: This variable is the service economy's share of employment, based on the 2000 BLS data. We know that many musicians are self-employed and that often a second job is required to supplement music income. We use it to control for the effects of the availability of service jobs on music geography.

Foreign-Born Population: The foreign-born share of population by metro area, calculated from the 2000 U.S. Census data. We know from earlier studies that regions with large migration flows have been more efficient in fostering music genres and scenes. This variable aims to probe for such effects.

Methods:

We use a series of methods to examine the role of scale and scope economies on the geography of music. We provide descriptive statistics in the form of regional shares, location quotients, maps and plots to get a general picture of the location of all musicians, professional musicians, and recording industry establishments from 1970-2000. We use bi-variate correlation analysis for our dependent and independent variables to check for correlations between the present and the past. We use multivariate regression analysis of the factors which affect the location of

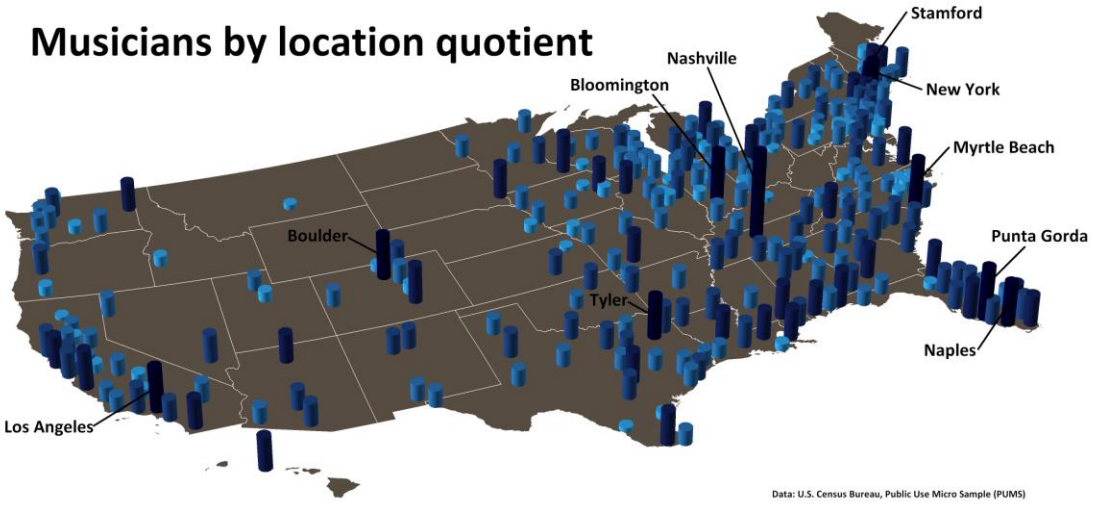
musicians, professional musicians and the recording industry, to examine to what extent the same variables hold in a multivariate context. Each regression is run with and without lagged variables, to explicitly probe for path dependency effects – both in relation to music activities and scope effects from other creative activities.

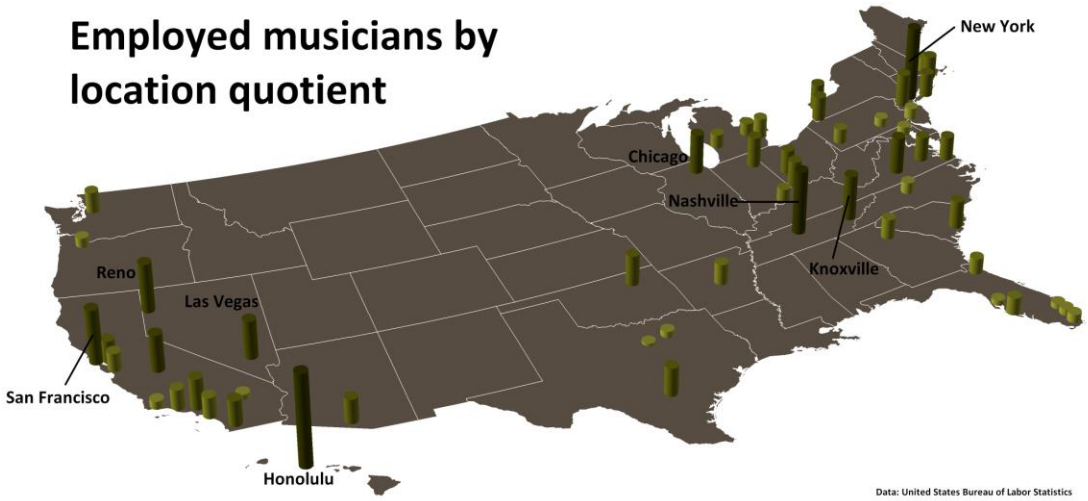
Findings

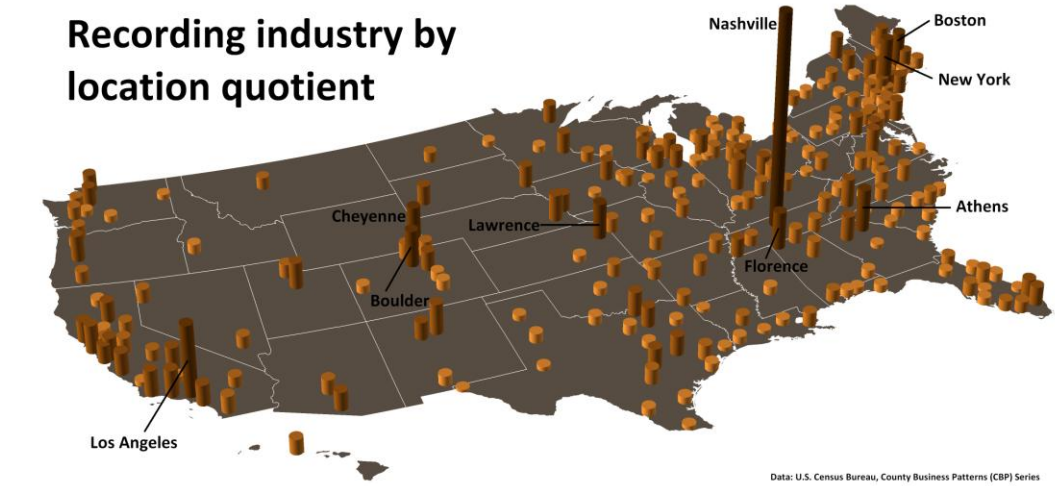
We now turn to the main findings of our analysis. Figure 1 provides maps of the location quotients for all musicians, employed or professional musicians and recording industry establishments for the year 2000. Table 1 (see appendix) shows the regional share of all musicians, professional musicians, and recording industry establishments for available years from 1970 to 2000.

Figure 1

Musicians, Employed Musicians and Recording Establishments, 2000




Employed musicians by location quotient
New York
Chicago
Nashville
Knoxville
Reno
Las Vegas
San Francisco
Honolulu
Data: United States Bureau of Labor Statistics


Recording industry by location quotient
Nashville
Boston
New York
Athens
Cheyenne
Lawrence
Florence
Boulder
Los Angeles
Data: U.S. Census Bureau, County Business Patterns (CBP) Series

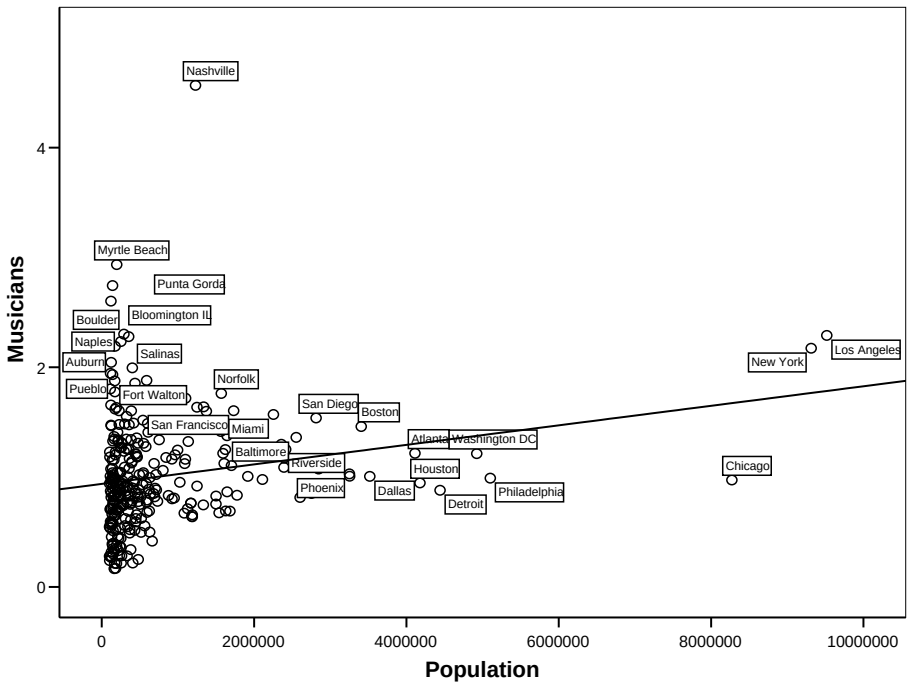
Both the distribution of talent and music (recording industry) establishments are concentrated. In 1970, the top three locations for musicians accounted for 10.4 percent of total musicians, the top ten for 17.8 percent and the top twenty for 23.7 percent. By 2000, the top three accounted for 15.2 percent, the top ten, 26.9 percent, and the top twenty, 37.6 percent.

Los Angeles and New York are consistently the top two locations for musicians (based on share of national employment) from 1970 to 2000. Chicago has displaced Detroit in third place. Washington, DC, Nashville, Boston, Atlanta, Philadelphia, San Diego and Houston round out the top 10 locations for musicians in 2000. Oakland, Dallas, Seattle, Tampa, and Baltimore have fallen off the list since 1970.

Turning now to employed or professional musicians, in 2000, the top two regions accounted for 11.9 percent, the top ten for 27.4 percent, and the top twenty 41.8 percent. But the locations for professional musicians differ considerably than those for all musicians. Honolulu tops the list, followed by New York and Nashville. Interestingly, Los Angeles does not make the top ten, which is rounded out by San Francisco, Reno, Knoxville, Chicago, Las Vegas, Fresno, and Lynchburg. Professional musicians tend to be overrepresented in tourist destinations, which provide greater-than-average opportunities for relatively stable employment in music. Nashville's ranking reflects both its role as a center for recording and musical performance and the presence of session musicians, employed by country music and Christian record labels on a semi-permanent basis.

The recording industry is considerably more concentrated than musicians. In 2000, the top three locations accounted for 38.5 percent of all establishments, the top ten, 52.6 percent and the top twenty, 63.9 percent. Los Angeles, New York, and Nashville are the top three locations for the recording industry, accounting for nearly 40 percent of the entire industry. Miami, Chicago, Nassau (a suburb of New York), Atlanta, Orange County (a suburb of Los Angeles), Greenville, South Carolina, and Washington, D.C. round out the top ten. Since 1970, Philadelphia, Detroit, San Francisco, and Bergen County, N.J. (a suburb of New York) have fallen out of the top ten.

Figure 2: Musicians, Employed Musicians and Recording Industry vs Population



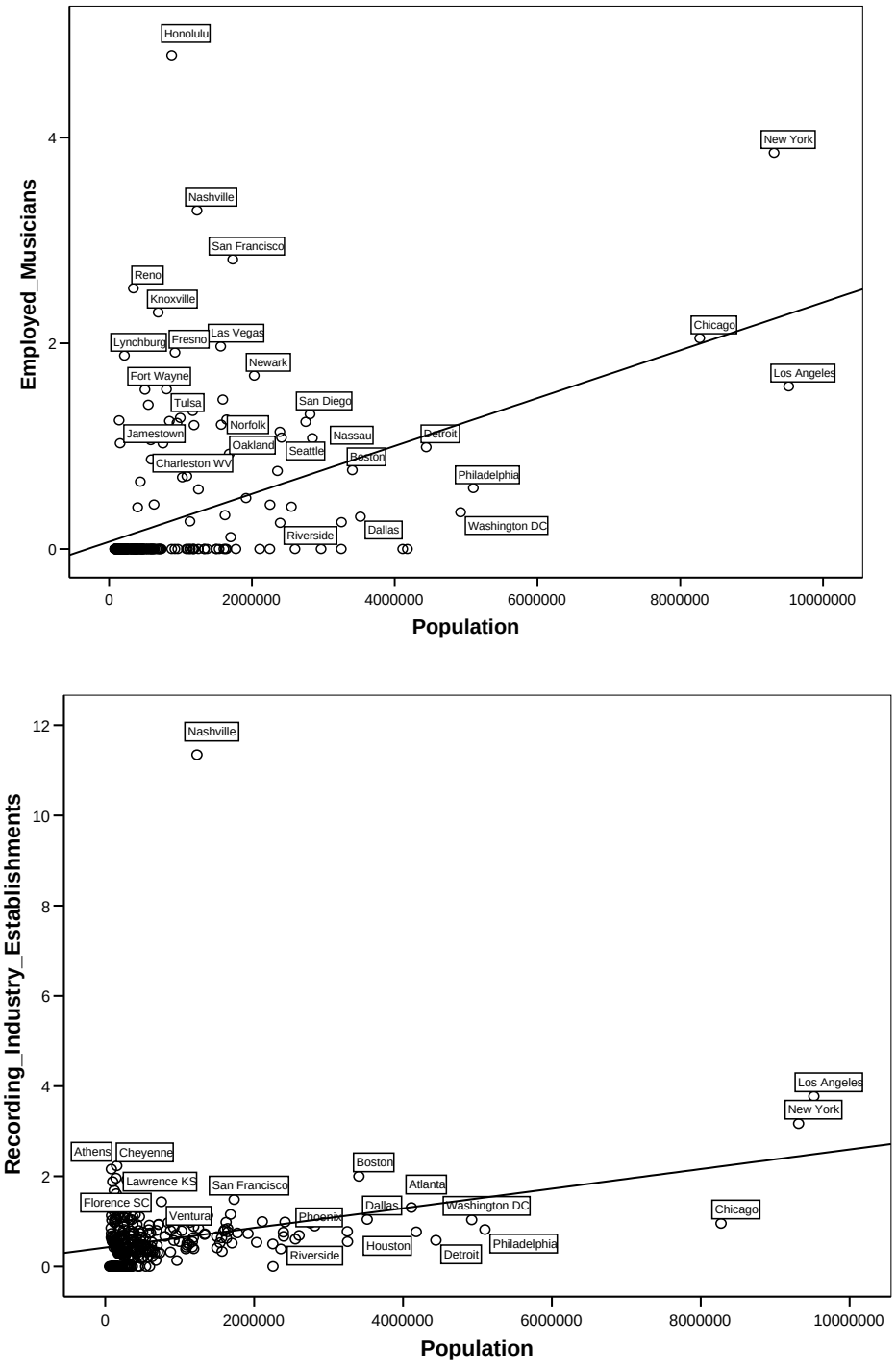
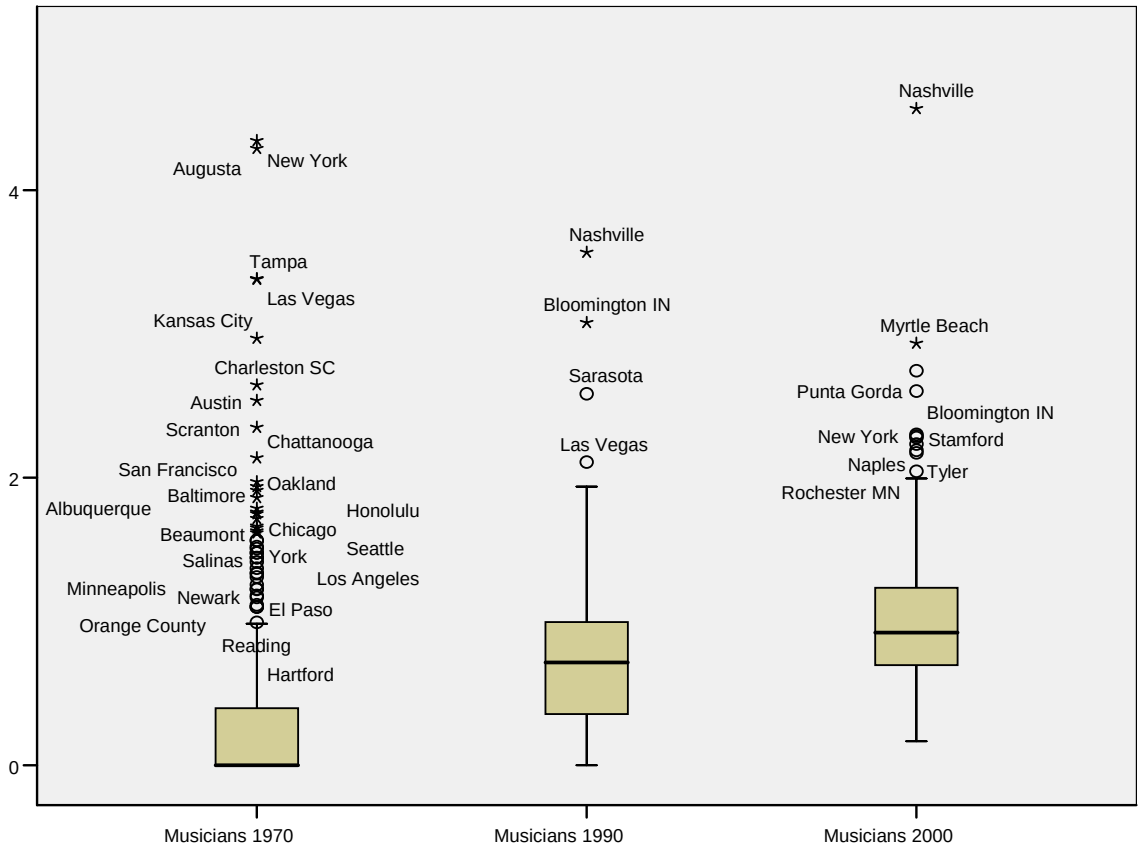


Figure 2 provides scatter graphs that plot musicians, professional musicians and recording industry establishments against population. Observations above the

line are regions that have a higher share of the music variable than their population share would predict. Here the positions of Los Angeles and New York stand out, showing significant overrepresentation for their population size. New York is well above the line for all three music variables. Los Angeles is in the same superstar class, significantly overrepresented for both musicians and recording industries, although it is slightly underrepresented for employed musicians. Among the smaller centers, Nashville is the standout, overrepresented for all three variables, most dramatically for recording industry. Chicago, on the other hand, is notable for its underrepresentation. It is significantly underrepresented for both musicians and recording industry, and for employed musicians it has only the share expected for its size.

Figure 3: Box Plots for Musicians and for Recording Industry



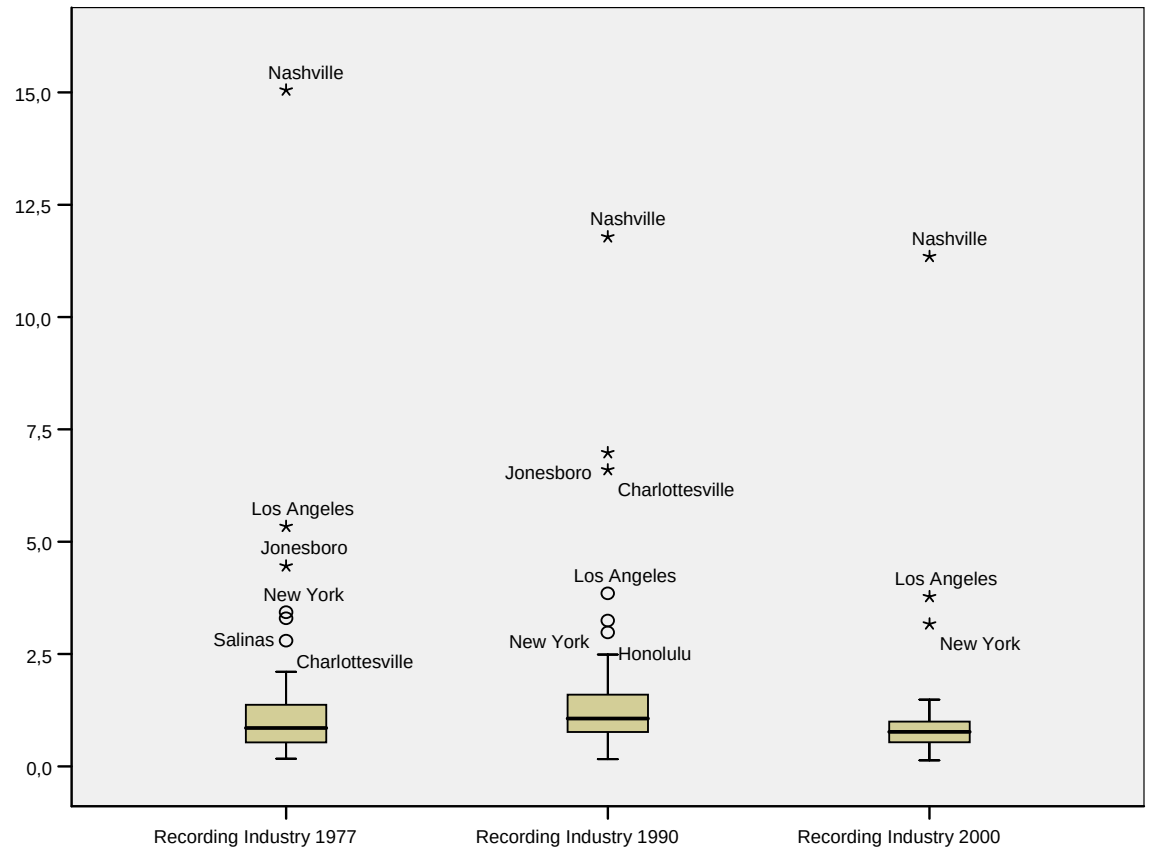


Figure 3 provides box plots for musicians and recording industry establishments between 1970 and 2000. These box plots show the median, quartiles, outliers, and extreme values for a scale variable. The interquartile range (IQR) is the difference between the seventy-fifth and twenty-fifth percentiles and corresponds to the length of the box.

The box plots illustrate the rise of Nashville as a center for both professional musicians and the recording industry, in line with the findings of Scott (1999) and Florida and Jackson (2008). They further confirm the dominance of New York, Los Angeles, and Nashville as recording industry clusters and the role of Las Vegas as a

location for professional musicians. The plots also show an overrepresentation of professional musicians in smaller regions, including tourist destinations like Naples, Myrtle Beach, Punta Gorda, and Bloomington, Indiana, home to a leading music conservatory.

Correlation Analysis

To further identify the factors that influence these patterns of regional concentration, we proceed with a bivariate correlation analysis between musicians, the recording industry, and other key variables in our analysis. Table 2 summarizes the results.

Table 2: Correlations for the Music Industry (2000)

	Musicians	**Professional Musicians**	**Recording Industry**
Musicians	1	.329(**)	.413 (**)
Professional Musicians	.329(**)	1	.386 (**)
Recording Industry	.413(**)	.386 (**)	1
Population	.263(**)	.447 (**)	.321 (**)
Income per Capita	.285(**)	.192 (**)	.237 (**)
Foreign-born Pop.	.255(**)	.301(**)	.190 (**)
Service Jobs Share	.042	.077	.148 (**)
Human Capital	.187(**)	.100	.288 (**)
Percent of Population in College	-.021	-.035	.104
Churches	.116(*)	-.091	-.047
Artists	.458(**)	.298(**)	.479(**)
Dancers	.052	.305(**)	-.011
Broadcasting Industry	.184(*)	.085	.136(*)

* indicates significance at the 0.05 level
** indicates significance at the 0.01 level

Interestingly, the three key music variables – all musicians, professional musicians and recording industry establishments - are only moderately correlated with one another. The correlation between musicians and professional musicians is 0.329, between musicians and the recording industry it is 0.413, and between professional musicians and the recording industry, 0.386. This is an indication that musicians and professional musicians are located in different types of regions, and that only a share of the musicians are drawn to recording industry centers.

The highest correlations are between musicians and artists (0.458) and between employed musicians and population (0.447). Generally speaking, the correlations between the music variables and artists are consistently highest, which suggests that economy of scope can be a driving force for the location of musicians in general and that musicians connect with other types of creative activities. The correlations between music and population, income and foreign-born population are reasonably high. Surprisingly, the correlations between musicians, on one hand, and human capital and college population, on the other, are low. The music variables also register weak correlations with service job share, churches, and the broadcasting industry.

Musicians in general are significantly, though weakly, correlated with professional musicians (0.329) and recorded music establishments (0.413). Musicians also exhibit weak correlations with population (0.263), income per capita (0.285), and foreign-born population (0.255). Musicians are not significantly correlated with service jobs share or the percentage of the population in college.

The variable for professional musicians is significantly (if somewhat weakly) correlated with the other two music variables: 0.329 with musicians and 0.386 with the recording industry, and more strongly with population (0.447). Professional musicians also exhibit weak correlations with foreign-born population (0.301), artists (0.298), and income per capita (0.192). Professional musicians are not significantly correlated with service jobs share, human capital, the percentage of population in college, churches, or the broadcasting industry.

The recording industry is significantly (if somewhat weakly) correlated with musicians in general (0.413) and professional musicians (0.386), and more strongly with artists (0.479). The recording industry also exhibits weak correlations with human capital (0.288), income per capita (0.237), foreign-born population (0.190), service job share (0.148), and the broadcasting industry (0.136). It is not significantly correlated with the percent of the population in college or with the presence of churches.

Table 3: Correlations for the Music Industry and lagged variables

	Musicians 2000	Professional Musicians 2000	Recording Industry 2000
Musicians 1990	.264(**)	.288(**)	.413(**)
Musicians 1970	.223(**)	.397(**)	.282(**)
Recording Industry 1990	.297(**)	.325(**)	.613(**)
Recording Industry 1977	.349(**)	.344(**)	.675(**)
Dancers 1990	.020	.310(**)	.066
Dancers 1970	.141(*)	.480(**)	.090
Broadcasting Industry 1990	.105	.085	.120(*)
Broadcasting Industry 1970	.271(**)	.376(**)	.283(**)
Churches 1990	-.016	-.065	.065
Churches 1970	.189(**)	.288(**)	.298(**)
Artists 1990	.046	.231(**)	.028
Artists 1970	.176(**)	.406(**)	.196(**)

* indicates significance at the 0.05 level
** indicates significance at the 0.01 level

Table 3 shows the correlation coefficients between the music variables in 2000 and lagged versions of the other variables. The correlations are significant for all three music variables, but strongest for the recording industry. This path dependency is not surprising, given the recording industry's relatively high fixed costs, especially compared to musicians, who can migrate to other regions at relatively low cost. It is interesting to note that the correlation between professional musicians and all musicians and artists is weaker with the more recent lagged variable (1990, 0.231) than with the older one (1970, 0.406). The variables that turned out non-significant are left out of the regressions reported below.

Multivariate Regression Analysis

We now turn to a fuller, multivariate analysis of the factors that affect our three music variables. The aim is to examine the effects of scale and scope economies on the geography of music. We chose to eliminate the two variables that did not exhibit significant evidence of a correlation with any of the music variables - percent of population in college and churches (1990). Each of the regressions is run with and without lagged variables to examine to what extent the past, in terms of musicians and recording industry but also in terms of other related creative industries, have an effect on the current geography of music. Table 4 summarizes the key results of our OLS estimations.

Table 4: Multivariate Regression Analysis

	Musicians 2000		*Professional Musicians 2000*		*Recording Industry 2000*	
Variables	***Without Lag***	***With Lag***	***Without Lag***	***With Lag***	***Without Lag***	***With Lag***
Musicians 2000			.159	.091	.550 **	.116
			(1.657)	(1.027)	(5.236)	(1.669)
Professional Musicians 2000	.077	.055			.278**	.114*
	(1.657)	(1.027)			(3. 687)	(2.132)
Recording Industry 2000	.201**	.113	.210**	.185*		
	(5.236)	(1.669)	(3.687)	(2.132)		
Population	-2.6E-008	E -4.6-008	1.55E-007**	1.11E-007**	4.90E-008	1.08E-008
	(-1.033)	(-1.650)	(4.439)	(3.132)	(1.175)	(.379)
Income per Capita	.005	.005	.003	.006	-.012	-.003
	(.601)	(.670)	(.268)	(.560)	(-.927)	(.144)
Foreign-born Pop.	.785	.653	1.027	0.981	-1.501*	-1.213*
	(1.756)	(1.414)	(1.598)	(1.645)	(-2.035)	(-2.616)
Churches 2000	.366**	.312**	.010	.124	-.130	-.200
	(3.371)	(3.029)	(.070)	(.911)	(-.787)	(-1.891)
Artists 2000	.335**	.330**	-.056	-.100	.455**	.273**
	(4.579)	(4.237)	(-.515)	(-.959)	(3.709)	(3.407)
Musician 1990		.010		.028		.156*
		(.135)		(.297)		(2.146)
Musician 1970		.001		.005		-.032
		(.017)		(.067)		(-.539)
Recording Industry 1990		.037		.046		.236**
		(.939)		(.910)		(7.371)
Recording Industry 1977		.040		-.001		.287**
		(1.127)		(-.022)		(9.456)
Broadcasting 1990		.064		-.087		-.129
		(.845)		(-.892)		(-.129)
Broadcasting 1970		.087		-.007		.036
		(1.262)		(-.078)		(.507)
Churches 1970		-.038		.094		-.009
		(-.409)		(.784)		(-.099)
Dancers 1970		.002		.083 **		-.037**
		(.165)		(5.006)		(-2.765)
Artists 1990		-.034		.113		.029
		(-.767)		(1.964)		(.635)
Artists 1970		.032		-.049		.007
		(.463)		(.554)		(.105)
Observations	227	227	227	227	227	227
R2 Adj	0.313	0.327	0.270	0.411	0.358	0.751

* indicates significance at the 0.05 level

** indicates significance at the 0.01 level

The first model is for all musicans (including self-employed). It generates an R^2 Adj of 0.313. The findings indicate that musicians are significantly associated with the presence of the recording industry. They are also related to the presence of churches and artists. Population, income per capita, and foreign-born population are all insignificant. Interestingly and perhaps surprisingly, the variable for professional musicians is also insignificant in this model.

Next we introduce a series of lagged variables to test for path dependency and endogenous effects. Keeping all the existing variables in the model, we add the lagged variables to check for changes in the significance levels and R^2 Adj values. To what extent is there evidence of path dependency in the presence of musicians and the recording industry? Adding the lagged variables increases the R^2 Adj value slightly (by just 0.014). Surprisingly, where musicians were located in 1970 or even 1990 does not appear to affect the location of musicans in 2000. In fact, when we add the lagged variables, the coefficient for recording industry ceases to be significant. There is little evidence of path dependency in the location of musicians.

The second model is for professional musicians. Here the R^2 Adj is 0.27. Two variables are significant: population and recording industry. When the lagged variables are added to the model, the R^2 Adj value increases from 0.27 to 0.41. However, the only lagged variable that is significant is Dancers for 1970, a relationship for which there is no clear explanation.

The third model is for recording industry establishments. The R^2 Adj is 0.358. The coefficients for professional musicians and overall artistic concentrations are both significant. The coefficient for foreign-born population is negative and

significant, and a VIF test suggests that the negative relationship is not due to any collinearities in the model. When Nashville, an extreme outlier, is excluded, the coefficient for foreign-born becomes insignificant.

This model becomes considerably stronger when lagged variables are added, with an R^2 Adj of 0.751. Clearly, recording industry location exhibits considerable path dependence. The coefficients for recording industry in 1970 and 1990 are both significant at the 0.01 level. It appears that concentrations of recording industry establishments are highly dependent on the past. It should also be noted that when they are added to the model, the coefficient for musicians becomes insignificant and that for employed musicians weakens considerably.

Thus, we find evidence that path dependency is much stronger for the recording industry than for musicians themselves. One likely reason is that musicians are more mobile. Musicians can pick up and move easily. They can migrate at a much lower cost and can perceive benefits to moving among locations where the recording industry and other employment opportunities are located. Recording industry establishments are less mobile, because of higher fixed costs. They will tend to develop cost advantages to scale and agglomeration and lock-in those advantages over time. Musicians who wish to record can travel to these locations when the need arises.

Conclusions

Our research has explored the location of musicians and the music industry, tracking and analyzing the locational trends of all musicians, professional musicians

and the recorded music industry between 1970 and 2000. In general terms, we assumed that the location of musicians and the recording industry would be driven by economies of scale and economies of scope. We probed for this by looking specifically at the scale effects of population and income and the scope effects of related artistic and cultural industries, while controlling for other factors. We also examined the extent to which music clusters are path dependent – that is, whether or not they are influenced by previous concentrations and are generally stable over time.

The results of our analysis suggest that both musicans and the music industry are highly concentrated. Nashville has emerged over time as a primary location for both professional musicians and the recorded music industry, alongside New York and Los Angeles. Generally speaking, music becomes more concentrated as we move up the value chain from all musicians to professional musicians to the recording industry. This is in line with what we would expect. Many activities related to recording and professional musicians are related to higher fixed costs, which in the end need to be covered. Self-employed musicians can move across regions, with a lower degree of sunk costs involved. Our findings suggest that both scale and scope economies play significant roles in the economic geography of music, but that each operates in different ways and through different channels. Scale economies in the form of population size are significantly related to the location of professional musicians, but are not related to the concentration of all musicians or to the recorded music industry. However, our analysis also finds that the relation between population and musicians or recording industryholds only for the very large

regions, failing to hold more generally for all regions. In other words, we see major scale effects, but they hold only for the largest regions. Two large metropolitan areas - New York City and Los Angeles - remain leading centers for musicians and the recorded music industry, but Chicago's role and status has decreased over time, along with a cohort of other large regions. Income has little effect on music location.

Scope economies that stem from co-location with other creative industries also play a significant role. These variables have the strongest effect on musicians (including self-employed) and the recording industry, but not on the distribution of professional musicians.

Furthermore, professional musicians appear to cluster around the recorded music industry, as expected. Musicians (including those who are self-employed) appear to cluster around the recording industry, artistic clusters and religious institutions. The recorded music industry is concentrated around professional musicians, broader artistic concentrations, and population. We find evidence of considerable path dependency in the recorded music industry, which is likely due to the higher fixed costs of recording industry hardware and infrastructure.

Control variables like human capital, college population, service industry jobs, or foreign-born population – which are proxies for market size and type - appear to have little, if any, effect on the location of musicians and the recorded music industry.

Basically, our findings suggest that the geography of musicians and the music industry are shaped by a series of interacting forces. A set of "big three" regions – New York, Los Angeles and Nashville - appear to have consolidated their locational

advantages in music over time. The first two are large, diverse metropolitan areas which combine large markets for music performance with substantial concentrations of music industry "hardware" and related commercialization functions, as well as substantial concentrations of related artistic and entertainment industry that provide opportunities for employment and other spillover benefits. Nashville has consolidated its role as a center for recorded music and professional musical talent.

To a certain extent we find our results surprising. We would have expected a stronger impact from the scale effects of larger markets, scope effects of related creative sectors and activities, and also from historical concentration or path dependency. Taken together, the scale- and scope-related variables generated an R2 Adj value of approximately 0.3, and adding the lagged variables hardly changed this number for musicians. Path dependency was, however, stronger for the recording industry (R2 Adj increased from approx 0.36 to 0.75 with lagged variables), which is in line with what we could expect, since it would involve huge sunk costs to relocate such activities. One should also remember that path dependency probably still matters in some regions, but our results suggest that this does not hold for the current distribution of musicians in general.

The relationship between musicians and the recorded music industry is also interesting. Our analysis appears to suggest that musicians are only loosely linked to their "industry" and have considerable degrees of freedom to locate away from the infrastructure required to commodify and commercialize recorded music. This

is likely to accelerate in an era of digital downloading where more value is extracted from performance than from recorded music.

We also find that musicians are quite mobile – evident in the rapid rise and fall of specific locations for musicians outside of the "big three" over time. While the recorded music industry appears locationally stable, the locations for musicians rise and fall fairly dramatically over time. The musical world is not becoming any "flatter", so to speak: The top twenty locations accounted for 37.6 percent of musicians and 41.8 percent of employed musicians in 2000. Yet, the specific locations have changed dramatically since 1970.

While musicians have every reason to "fly apart", to paraphrase Lucas (1988), they do not. They continuously cluster and aggregate over time. And the way they do so is very interesting: Outside of the big three, music locations appear to form and reform almost in real time as musicians seek out and cluster in new places. Part of this is a function of the shift, over time, away from the dominance of recorded music to performance and the consumption of experiences. This shift is evident both in the rise of tourist destinations like Honolulu, Las Vegas, Reno and others as musical cluster, and in the persistence of the clusters of New York and Los Angeles.

We believe that the case of music poses intriguing implications and interesting challenges for the theory of location in an era of creative, knowledge-driven production where traditional inputs, infrastructures and transportation costs matter far less, if they matter at all. It is clear from the case of music that population matters, but only to a degree. Income and human capital play virtually no role – a

finding that is strikingly different than for other knowledge-based sectors like software or biotechnology. Furthermore, the geography of music is distinguished by constant change and churn. Clusters of musicians appear to rise and fall rapidly, forming and reforming almost in real time. Yet a small number of regions have locked up top positions. The factors that attract and shape concentrations of musicians, outside of the top three locations, appear to be rather fleeting. Locations rise and fall relatively quickly. The geography of music is simultaneously stable and unstable, highly mobile and concentrated.

Most of all, we believe there is a great deal to be learned by studying the institutional structure and behavior of musicians and the music industry. We echo Connolly and Krueger (2005), who stress that research on music can uncover important insights into economics - though we wish to add geography and sociology to the list. We encourage more research on this important and understudied subject and hope our analysis and findings spur more interest and analysis.

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Appendix

Table 1: Regional Shares

Musicians (incl. Self-Employed)				Professional Musicians		Recording Industry Establishments			
	1970	1990	2000		2000		1977	1990	2000
Regions	**Share**	**Share**	**Share**	**Regions**	**Share**	**Regions**	**Share**	**Share**	**Share**
∑ Top 3	10.45	20.36	15.21	**∑ Top 3**	11.94	**∑ Top 3**	51.39	38.17	38.47
∑ Top 10	17.80	34.35	26.88	**∑ Top 10**	27.39	**∑ Top 10**	66.36	54.45	52.61
∑ Top 20	23.70	47.15	37.56	**∑ Top 20**	41.79	**∑ Top 20**	76.08	67.68	63.88