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# **Innovation and Production Networks in Regional Music Scenes**

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## **Introduction**

Interest in the impact of regional music scenes on urban economic development has grown in the past decade along with interest in the links between culture, amenities, and prosperity. Numerous researchers and professionals, from innovation economists to regional economic developers to local officials, have become extremely interested in the role of entertainment economies, including music scenes, on regional economic development. Many regions with lively music scenes have supported research into the effect of their music scenes on the regional economy, generally validating the importance of local music. Fewer empirical studies, however, concentrate on the role of innovation in music scenes. Understanding the role of innovation in a regional economy cuts across several fields including regional economic development, public policy, sociology, technology, and music. In this study, I build a foundation for the study of musical innovation networks by:

- 1) examining research to date regarding the structure of music industries and their roles in local economies; and
- 2) comparing several localities in order to explore differences in the chain of musical production and innovation.

## **Background Literature**

Relevant background literature for this topic can be found in several fields, including economic impact of regional music scenes, production processes in the music industry, and descriptions of innovation networks.

### **Background Literature: Economic Impact of Music Scenes**

Several studies have collected data regarding urban music scenes and their economic impact on Metropolitan Statistical Areas (MSAs), including Austin (Texas), Seattle (Washington), Nashville (Tennessee), Atlanta (Georgia), and Memphis (Tennessee). In general, these estimates tally businesses and people associated with music scenes through various sources,

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and use a multiplier to estimate the economic impact of these businesses and individuals. Edmiston and Thomas (2004) use commercial data from *ReferenceUSA*, which categorizes businesses by SIC code. Beyers et al. (2004) use U.S. Census data to estimate music-related establishments, employment, and economic impact in the Seattle area. Austin's study (2001) uses U.S. Census data, as well as data from the Texas Music Office, a Texas state government entity charged with promoting the Texas music industry and compiling useful statewide information. Raines and Brown (2006) use *ReferenceUSA* and U.S. Census data, along with survey data from the local music community, to estimate employment and economic impact around Nashville, Tennessee. Each of these studies serves as a useful reference tool regarding local music scenes in established music cities.

In compiling data regarding the economic impact of local music scenes, several methodological issues were encountered and addressed to varying levels of effectiveness by the studies. First, the difficulty of conversion between SIC and NAICS codes is evident. Six-digit SIC codes offer greater specificity for pinpointing music-related businesses but fall short of capturing true numbers in some categories. Likewise, U.S. Census data can effectively estimate many categories, but lack specificity in the NAICS codes for some music-related businesses. This lack of specificity leads to overestimation in the absence of further crosschecking or validation. In many instances, the conversion does not allow for comparison of SIC and NAICS data with full confidence. Second, the inclusion of clubs and bars in the data presents difficulties. These establishments are vital to healthy local music scenes, but not all bars and clubs host local music and contribute to a scene. Third, both data sets underestimate or fail to provide data on key indicators due to limitations in data collection. For instance, self-employed musicians are difficult to categorize because many work only part-time or on the side, and do not declare such work. Such information often has to be supplemented through other data sources, such as local surveys.

Taylor and Terrell (2004) collect establishment and economic data on local music industries for key "music industry capitals," including New York, Chicago, Los Angeles, Atlanta, and Nashville, and in doing so present a possible solution to the methodological difficulties expressed above. By using eight key indicators where the U.S. Census data are relatively clear, such as recording studios, publishers and licensors, managers and agents for entertainers, musical instrument stores, and musicians, the authors compare the music scenes in the key capitals over an eight-year period. In do-

ing so, the authors identify several indicators where U.S. Census data can be compared to *ReferenceUSA* data with confidence. Even still, some categories listed above, such as managers and agents for entertainers, would overestimate music-related businesses in favor of entertainment-related entities.

### Background Literature: The Music Industry Production Chain

The statistical indicators presented above represent people and places located throughout the product development cycle in the music industry. Many authors include elements of four major components of the music production chain: creators, producers, distributors, and consumers. In a useful and comprehensive analysis of the Scandinavian music industry, the Nordic Industry Fund (2003) identified six components of the for-profit pop music industry in Scandinavia: creators, industrialists, distributors, consumers, suppliers, and related services. The authors emphasize that the networks between components are not necessarily linear, and that collaboration occurs between these “intersecting areas” at many levels. Peitz and Waelbroeck (2004) build on these categorizations, describing the vertical integration that exists within producers and distributors in the traditional music industry hierarchy. Most research focuses on a national-level perspective of the music industry, whether U.S. or abroad.

Anderson and Miles (1999), and subsequently Frederiksen (2002), emphasize the distribution channels through which consumers receive music. These authors differentiate two types of performances:

- 1) recorded, where artists interact with consumers through intermediaries, including broadcasts, films, videos, advertisements, retail outlets, and in some instances bars; and
- 2) live, where artists interact directly with consumers.

While still a for-profit activity in many cases, live concerts can serve several functions for a musician, such as promoting name recognition, producing revenue, or stimulating innovation through collaboration with other musicians. Thus, live local performances will be critical components in the development of any local music scene, and audiences will judge musical innovation to determine its acceptability.

Caves (2000) describes the “buzz” that occurs around particular innovations, causing more consumers to gain interest and create a “herd attitude.” Recording companies rely on this for marketing, and actually target markets where particular musical innovations may succeed as the music becomes accepted. Thus, audiences contribute to musical innovations by selectively choosing innovations that are within acceptable stylistic boundaries, and by experimenting with popularized new products around which a “herd mentality” builds.

In order to reach the consumer, new music must move through the production cycle. Another body of work explores the relationship between diversity, innovation, and popular music. Studying data sources for product diversity such as *Billboard* charts, these studies trace how changes in the music industry led to alternating periods of growth and decline with respect to diversity in Top-40 or Top-100 charts (Peterson and Berger 1975; Lopes 1992; Alexander 1996). In using *Billboard* charts as data sources, these studies are focusing on the products that have reached the pinnacle of the music industry production chain. While attempting to determine the effect of industry concentration on musical diversity, such work does not address the early stages of the production chain where new forms are created. For this, a brief overview borrowed from technology economics and policy literature is useful.

### **Background Literature: Innovation Network Literature**

Literature regarding the study of innovation networks, which are generally understood as the methods in which new products are created and developed, has concentrated until now on technological development. The increasing interest in correlations between productive technological and artistic regions, however, lends to the application of methodologies across fields. Innovation networks are labor-intensive to study, but identifiable through the actors, technologies, and dynamic relationships included within (Jaffe, Trajtenberg et al. 1993; Saxenian 1994; Zucker, Darby et al. 1998; Carlsson, Jacobsson et al. 1999; Hansen 2001). In other words, the nodes in such networks, represented by the physical people, places, and products, provide opportunities for tracking development of the intangible, knowledge-based concept of innovation. In addition, the multitude of indirect data sources, which create the intensive nature of study, necessitates the identification of key nodes that identify robustness in the network. In the case of regional music scenes, these key nodes can be identified through

statistical indicators of confidence that offer insight into the development, health, and economic impact of the scene. Infrastructure metrics like those gathered in studies of Austin, Atlanta, Seattle, and Nashville, offer insight into the music industry production cycle, as well as innovation networks.

### Data Analysis

The empirical analysis addressed macro-level data collection from national sources to describe key indicators of musical activity, while setting the stage for more intensive data collection involving network analysis and innovative activity. Employment and business data were gathered to measure musical activity in the Metropolitan Statistical Areas (MSA) of Austin–Round Rock (Texas), Nashville–Davidson (Tennessee), and Seattle–Tacoma–Bellevue (Washington). Similar to previous work, data for these cities came from the commercial *ReferenceUSA* data set, the 2002 U.S. Economic Census, and the 2000 U.S. Census. The people and places associated with musical activity and innovation were examined to

- 1) understand the comparability of data sets regarding music-related metrics;
- 2) explore links between metrics of musical activity and stages in the production chain for the music industry; and
- 3) collect one measure regarding innovation in local music networks.

### Data Validation: *ReferenceUSA* and U.S. Census

The comparison between *ReferenceUSA* data, using 6-digit SIC codes, and U.S. Census data, using 6-digit (and occasionally 7-digit) codes, is difficult but useful for validation purposes. Core indicators for music activity were identified by comparing SIC and NAICS categories with similar levels of specificity, with an emphasis on relevance to network measurement. Until now, studies measuring the regional economic impact of local music scenes have attempted to capture all activity. This study, rather, uses only core metrics of relevance in order to avoid inclusion of non-music related activity, while still capturing the “pulse” of a regional music scene.

Comparison between *ReferenceUSA* data and U.S. Economic Census data, as shown in table 1, indicates that for SIC and NAICS categories of greater specificity, such as recording studios or music publishing,

*ReferenceUSA* using 6-digit SIC codes tends to capture more data. For categories with less specificity, however, such as drinking places<sup>1</sup> or businesses associated with “miscellaneous services,” the Census data using NAICS codes capture more activity. This is likely explained for some categories, such as NAICS 512210 (Record Production), in that a 6-digit NAICS category corresponds with part of a 4-digit SIC category that does not capture all activity. NAICS category 512210 corresponds with several 6-digit SIC codes such as 8999-21, -27, and -52 (Music Arrangers and Composers, Music Copyists, and Music- Foreground). Other SIC codes, however, may capture businesses associated with NAICS 512210 without inclusion, creating a faulty comparison. Further, the lack of specificity with Census data due to disclosure limitations reduces the ability to crosscheck results. This problem could be addressed through local data gathering, a difficult endeavor reinforcing the intensive nature of studies into innovation networks as described by the authors cited above. Empirical comparison of the two business classification systems does not indicate the superiority of one or the other, thus allowing for the utilization of either depending upon the research goal.

### Division in the Music Production Chain: Empirical Analysis

Cities such as Nashville, New York, and Los Angeles are known hubs for commercial record production, have a large presence of key music industry entities, and are “go-to” cities for aspiring musicians. Other cities such as Austin, Texas and Seattle, Washington are known to have lively music scenes that spawned new musical genres (progressive country or revived blues in Austin, and grunge in Seattle), but have not developed large production centers. In one sense, such lively scenes are innovative hubs that develop music the record industry later capitalizes on. Moving generally through the music production chain of music creators, producers, distributors, and consumers, the SIC/NAICS categories can be associated with early-, middle-, and late-stage production to explore the empirical relationships surrounding accepted views of the production chain. As identified by the authors of the Nordic Industry Fund study, however, these classifications are loose, as networks of businesses and actors have multiple levels of interaction.

Core musical activity indicators were associated with early-, middle-, and late-stage production activity as shown in tables 1 and 2. Table 1 shows comparison of *ReferenceUSA* data with U.S. Census data for each

category across the three cities. Table 2 uses *ReferenceUSA* data to calculate music activity indicators per 100,000 people for each MSA, in order to create metrics comparable across localities.<sup>2</sup> Indicators, such as record stores, instrument stores, and drinking places, were associated with early-stage music production due to their role in supplying musicians with equipment, ideas, and venues for musical creation. In general, these early-stage metrics were similar between the three case cities, indicating similar levels of early-stage activity in all three. It should be noted that while not all drinking places (bars, clubs, and taverns) contribute to musical innovation, they are such an integral part of a local music scene that deletion would weaken the analysis, so some level of oversampling is accepted. Middle-stage activity indicators, such as recording studios and equipment suppliers, were more prevalent in Nashville, indicating that economic activity associated with production is greater there. Late-stage activity, or distribution activity associated with businesses such as music publishers, is also higher in Nashville than in Austin or Seattle. Several SIC/NAICS categories associated with record producers and distributors, such as NAICS 334612, 512210, and 512220, cannot be easily differentiated between middle- or late-stage activities. No matter which stage of production activity they are classified in, the data reinforces that Nashville is stronger in these categories than either Seattle or Austin.

The placement of musicians in the music activity chain requires further exploration. Due to the nature of the music industry, data on musicians, especially aspiring musicians, is often not effectively captured by traditional census or survey data. For one, many musicians have other jobs and only perform part-time, causing their occupational activity to avoid collection in some instances. In addition, most musicians may play in many orientations, including bands of primary association, secondary affiliations, separate projects, and solo work. As such, the SIC/NAICS categories of bands and orchestras do not likely capture the full extent of musical activity taking place. The presence of bands or orchestras declaring this activity as a full-time occupation may indicate late-stage production as a musician's affiliations become solidified. Alternatively, it may indicate a lively scene capable of supporting such groups; the classification of this is certainly debatable. Regardless, data from the five-percent occupation survey of the U.S. Bureau of Labor and Statistics (BLS) likely captures this employment more accurately and is used in the tables below.

SIC Code	NAICS Code	Description	Austin, TX MSA		Nashville, TN MSA		Seattle, WA MSA		Totals	
			RefUSA	US Cen	RefUSA	US Cen	RefUSA	US Cen	RefUSA	US Cen
5735	451220	Pre-Recorded Tape, CD, and Record Stores	52	28	48	47	63	91	163	166
5736	451140	Musical Instrument Stores	78	21	140	33	153	75	371	129
5813	722410	Clubs, Taverns, and Lodges (Drinking Places)	230	184	166	86	376	514	772	784
8299 (P)	n/a	Music Schools and Instruction*	47	n/a	44	n/a	107	n/a	198	n/a
		Musicians†	n/a	1303	n/a	4534	n/a	2776	n/a	8613
3651	334310 (P)	HH Audio and Video Equipment	2	0	12	5	4	11	18	16
3931	339992	Musical Instrument Mfrs	5	0	6	10	5		16	10
7389-47	512240/90	Recording Studios‡	96	12	301	84	115	29	512	125
2741	512230	Music Publishing§	6	0	265	105	7	0	278	105
3652 (P)	334612	Pre-Recorded Music	1	0	11	12	3	0	15	12
3652 (P)	334612, 512220	Recorded Music Production and Reproduction**	1	0	11	35	3	0	15	35
7929	711130	Bands and Orchestras††	62	43	43	308	81	64	186	415
8999 (P)	512210	Misc. Services, NEC (Record Production)‡‡	9	11	12	36	7	18	28	65
<b>Totals</b>			<b>588</b>	<b>299</b>	<b>1048</b>	<b>749</b>	<b>921</b>	<b>802</b>	<b>2557</b>	<b>1850</b>
<b>NAICS SIC</b>									<b>NAICS SIC</b>	
Early									1.02	
Middle									0.35	
Late									1.02	
									n/a	
									n/a	

Table 1. ReferenceUSA (SIC) and 2002 U.S. Economic Census (NAICS) infrastructure metrics for Austin-Round Rock, Texas, Nashville-Davidson, Tenn., and Seattle-Bellevue-Tacoma, Wash. MSAs by SIC and NAICS Category.

\* Only relevant categories were chosen from SIC category 8299, Schools and Educational Services, (including 8299-15, 18, 36, and 38), NAICS category 61160-2 includes Art, Drama, and Music Schools, and was not included for lack of specificity.

† Data for Musicians from U.S. Bureau of Labor and Statistics five-percent Occupational Survey.

‡ SIC category 7389-47, Recording Studios, was compared to NAICS categories 512240 (Recording Studios) and 512290 (Other Sound Recording Industries) combined.

§ Only SIC category 2741-04, Music Publishers, was used, as it corresponded to NAICS category 512230.

\*\* Two NAICS categories, 334612 (Pre-Recorded Music) and 512220 (Integrated Record Production/Distribution) are included with the relevant SIC 3652 categories (3652-01, 02, 04, 05, 06, 07, 98).

†† Only relevant categories were chosen from SIC 7929, Bands, Orchestras, and Actors (including 7929-01, 02, 03, 06), NAICS category 711130, Bands, Orchestras, and Actors, does not permit for greater specificity, so actors may be included in these tallies.

‡‡ Only relevant categories were included from SIC category 8999, Miscellaneous Services Not Elsewhere Classified (including 8999-21 and 27).

SIC Code	NAICS Code	Description	Austin, TX MSA		Nashville, TN MSA		Seattle, WA MSA		SIC Total
			RefUSA	Per/100K	RefUSA	Per/100K	RefUSA	Per/100K	
5735	451220	Pre-Recorded Tape, CD, and Record Stores	52	3.58	48	3.37	63	1.97	163
5736	451140	Musical Instrument Stores	78	5.37	140	9.84	153	4.78	371
5813	722410	Clubs, Taverns, and Lodges (Drinking Places)	230	15.83	166	11.67	376	11.74	772
8299 (P)	n/a	Music Schools and Instruction*	47	3.24	44	3.09	107	3.34	198
		Musicians†	1303	91.60	4534	318.72	2776	86.66	8613
3651	334310 (P)	HH Audio and Video Equipment	2	0.14	12	0.84	4	0.12	18
3931	339992	Musical Instrument Mfrs	5	0.34	6	0.42	5	0.16	16
7389-47	512240/90	Recording Studios‡	96	6.61	301	21.16	115	3.59	512
2741	512230	Music Publishing§	6	0.41	265	18.63	7	0.22	278
3652 (P)	334612,512220	Recorded Music Production and Reproduction	1	0.07	11	0.77	3	0.09	15
7929	711130	Bands and Orchestras (ReferenceUSA)**	62	4.27	43	3.02	81	2.53	186
7929	711130	Bands, Orchestras, and Actors (2002 Census)††	43	2.96	308	21.65	64	2.00	200
8999 (P)	512210	Misc. Services, NEC (Record Production)**	9	0.62	12	0.84	7	0.22	28
<b>Totals</b>			<b>631</b>	<b>43.44</b>	<b>1356</b>	<b>95.32</b>	<b>985</b>	<b>30.75</b>	<b>2972</b>

Table 2. ReferenceUSA (SIC) Infrastructure Metrics for Austin-Round Rock, Texas, Nashville-Davidson, Tenn., and Seattle-Bellevue-Tacoma, Wash. MSAs by SIC Category, including values per 100,000 people. §§

\* Only relevant categories were chosen from SIC category 8299, Schools and Educational Services, (including 8299-15, 18, 36, and 38). NAICS category 61160-2 includes Art, Drama, and Music Schools, and was not included for lack of specificity.

† Data for Musicians from U.S. Bureau of Labor and Statistics five-percent Occupational Survey.

‡ SIC category 7389-47, Recording Studios, was compared to NAICS categories 512240 (Recording Studios) and 512290 (Other Sound Recording Industries) combined.

§ Only SIC category 2741-04, Music Publishers, was used, as it corresponded to NAICS category 512230.

\*\* Only relevant categories were chosen from SIC 7929, Bands, Orchestras, and Actors (including 7929-01, 02, 03, 06).

†† NAICS category 711130, Bands, Orchestras, and Actors, does not permit for greater specificity, so actors may be included in these tallies. ‡ Only relevant categories were included from SIC category 8999, Miscellaneous Services Not Elsewhere Classified (including 8999-21, 27, and 52).

§§ In the table (P) stands for partial, in that only part of the SIC or NAICS category corresponds.

Figure 1 shows the distribution of business ages for each of the case study cities, a possible indicator of the vitality of a local music scene. Little difference appears in this distribution between the Austin, Nashville, and Seattle MSAs, a finding validated by statistical analysis. The peculiar spike in businesses twenty-two years old represents a limitation in the data set. *ReferenceUSA* data for business ages only date to 1984. Thus, some businesses are likely older and the general curvilinear descent of business ages continues. The similarity in age distribution may indicate that either little variation occurs in the age distribution of music-related businesses in different cities (regardless of a city's innovative activity) or position in the music production cycle (or the maturity of the Austin, Seattle, and Nashville scenes) is roughly equivalent, and as such shows little variation among the data.

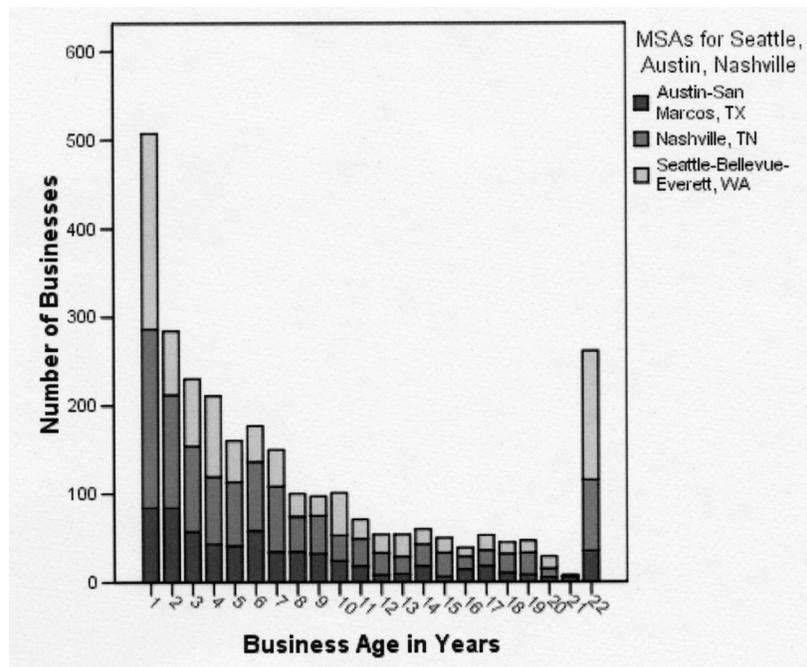


Figure 1. Age of business, by MSA.

Figures 2 and 3 display data for business revenue and business size, broken down by MSA. Similar to figure 1, both graphs trend downward in

a curvilinear fashion. Statistical analysis does not reveal significant associations for either business revenue or size when comparing between the MSAs. Data were not collected to determine if the music industry in these developed musical cities differs from other industries in the cities.

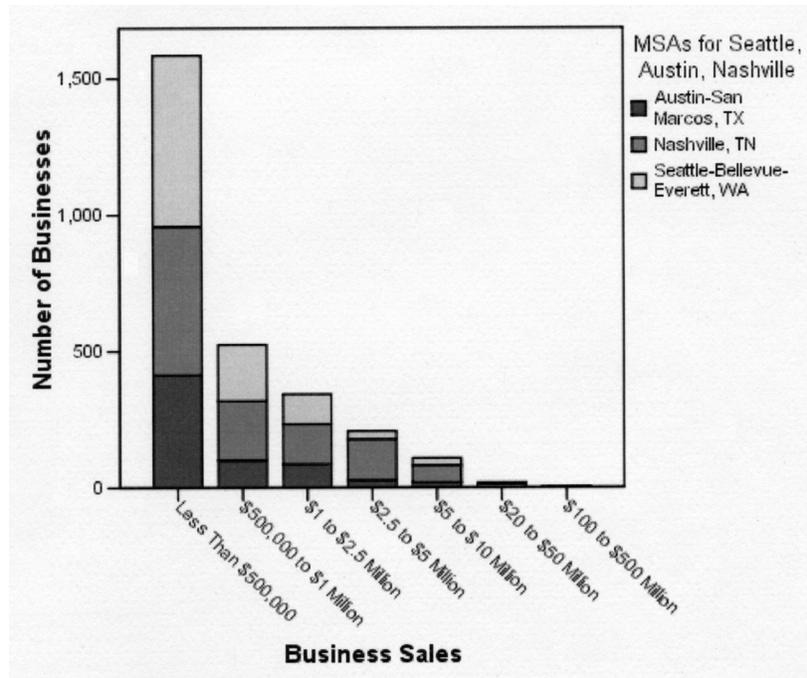


Figure 2. Business revenue, by MSA.

## Conclusions

The data above indicate little difference in the distribution of revenue, age, and size of music-related businesses in the Austin, Seattle, and Nashville MSAs. The data do indicate, however, that certain MSAs can be empirically linked with divisions in the production cycle of commercial music, opening the possibility for a greater understanding of musical innovation on a national scale. To date, little research has explored this concept in the music industry. It is not clear, however, whether the data reveal the presence of true innovative musical activity, or more “humdrum” activities as described by Caves (2000).

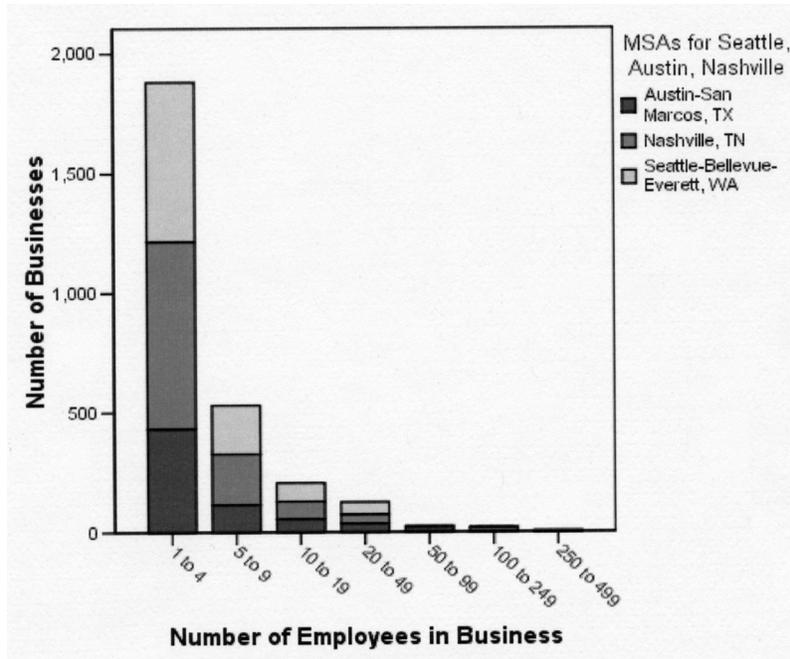


Figure 3. Number of employees in a business, by MSA.

The data provide significant insight into the production cycle and support an intuitive assertion: Nashville, as a music capital, contains a music industry with more activity through all stages of the music production cycle. It would follow that similar relationships would appear if data were gathered for other known music centers such as New York or Los Angeles. The similarities in early- and middle-stage production metrics among the case cities suggest active levels of musical activity in all three at the creation or formulation stage. If musical innovation were closely related to musical production, it would follow that innovation and new forms were being created equally in all three cities. This, however, may not be the case. A music scene in one city may have some other intangible or as yet unmeasured quality that allows or encourages its musicians to be far more innovative in their musical activity. Perhaps that city simply attracts better talent due to its aura, environment, infrastructure, or reputation. In this case, macro-level data would reveal the activity in that city to be similar to other cities, while not capturing the creative character of it. In order to explore this question,

micro-level research could investigate the scene “on the ground” to determine such activity. Indeed, describing the social networks involved in regional music scenes necessitate such study, and capturing micro-level data would work to validate the macro-level analysis as compiled by national organizations, as U.S. Census or *ReferenceUSA* sources likely contain some level of sampling error.

This research into musical production and innovation networks is an initial inquiry into several intriguing, and perhaps promising, lines of study regarding music, innovation, and economic development. For one, more extensive data can explore the progression of music through a development and production cycle. Identifying other cities of musical prominence, as well as other cities of nascent musical development, can further reveal how the industry innovates. Necessary for this study is a greater understanding of the empirical indicators associated with music industry production, if such data exist. Secondly, this mode of thinking can be linked to other disciplines in order to explore how a regional economy may simultaneously develop assets in multiple fields. Such assets may also relate to separate stages in an innovation and production cycle. Thirdly, further data can be developed that examine not only the people and places in the music scene, but the products, which may lend distinct insight into musical innovation. Finally, the data at hand can be further analyzed using graphical techniques to link industry development with fields such as urban studies or economic development. The applicability of such study comes from viewing musical innovation through the separate lenses of commercial industry, regional development, or human innovation.

## **Endnotes**

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- <sup>1</sup> “Drinking Places” combines several categories of businesses, including bars, clubs, discos, and other venues serving alcoholic beverages.
- <sup>2</sup> Population estimates as of July 1, 2005, from the U.S. Census CBSA Annual Estimates.

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