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That's Entertainment

- scale and scope economies in the location and clustering of the entertainment economy

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That's Entertainment:

Scale and Scope Economies in the Location and Clustering of the Entertainment Economy

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Abstract

It is argued that the introduction of new technology is leading toward the decentralization of the production and consumption of creative products and industries. But creative industries and workers may benefit from being around large markets, access to shared labor, network interactions and economies of scale as well as scope. We hypothesize that the combined effects of scale and scope economies shape significant geographic concentration of the entertainment industry. We test for this using data for 297 U.S. metropolitan areas from 1970-2000 for the entertainment industry overall and its key sub-segments. The findings indicate show that the entertainment industry is concentrated in New York and Los Angeles which significantly outperform other large regions. We further note the rise of one or two highly specialized locations in individual segments of the entertainment industry such as Nashville in music or Las Vegas for dancers. We also find some dispersal of entertainment activity to smaller centers. We conclude that the entertainment industry is characterized by a biurificated spatial structure – with concentration driven by the conjoined effects of scale and scope economies growing at the very top (among the very largest city-regions) and dispersal growing at the bottom.

Keywords: Entertainment, agglomeration, economies of scale, economies of scope
JEL: R11, R12, Z11

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Introduction

Why do certain kinds of economic activity locate where they do? It's a question that has vexed economists and geographers for ages. In agricultural times, populations located around river deltas and other sources of fertile, productive soil. With the rise of trade, villages, and towns, nascent cities grew up along ports, river-ways and transport routes. During the industrial age, giant agglomerations of factories, shops, warehouses, offices and people surged near sources of raw materials and major transportation routes.

Classical location theorists like Von Thünen (1826), Weber (1909), Christaller (1933) and Lösch (1940) argued that firms and industries seek to minimize transportation costs between the location of resources and the final marketplace. Marshall (1890) argued that firms cluster or agglomerate, achieving increasing returns to scale from collocation. But with the rise of globalization and technology-based knowledge industries, many have argued that physical constraints on location have been weakened or been eliminated. Some (Cairncross, 1997) argue that we are witnessing the "death of distance"; more recently we hear that the "world is flat" (Friedman, 2005), as both firms and people have far less reason to cluster (see Leamer 2007 for a critique). Anderson (2006) argues that the rise of digital production and distribution technologies is shaping the restructuring of entertainment industries from a previous orientation around large companies, established acts and "hits" to a "long tail" distribution distinguished by growing markets for smaller niche acts, companies and products.

But why would knowledge-driven or creative industries making intangible products continue to cluster? Drawing upon seminal contributions by Marshall (1890) and Jacobs (1969}, economists and geographers have advanced more recent theories for why they might. An important line of economic theory and research (Jaffe et al, 1986; Lucas, 1988; Audretch and Feldman, 1996) has found that collocation in knowledge-intensive industries stems from knowledge spillovers which increase the efficiency of both innovation and commercialization. Porter (2000) argues that clusters derive advantages from proximity to networks, suppliers, markets and related factors. Research on high-technology industries finds that even knowledge-

based industries like software (Saxenian, 1994) and biotechnology (Cortright and Mayer, 2001) locate around universities, networks of related firms and entrepreneurial talent, end-users, venture capital and specialized services.

Human capital also has been found to play a role. Jacobs (1969) initially identified the way that cities bring together diverse groups of human talent and spur innovation. Lucas (1988) later formalized these insights specifying the role played by human capital externalities in economic development. Empirical research by Glaeser (2000) found that firms are drawn to common labor or talent pools then to inter-firm linkages. And a model developed by Berry and Glaeser (2005) suggests that talent clustering is supported by skilled entrepreneurs who themselves employ skilled labor at higher rates then employers at large. Rantisi's study of fashion entrepreneurs in New York (2004) finds that such entrepreneurial clustering also occurs in creative occupations.

There is now a significant, growing literature on the economics and geography of artistic, cultural and 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. Florida (2002) documents the clustering and concentration of the "creative class" and its effects on innovation and economic outcomes. Scott (2000) notes that dense production agglomerations drive originality and innovation in cultural industries. Markusen (2004a) outlines the specialization of creative activity across locations, and the ways in artists contributes by adding skills to non-artistic industries (2004b). Nissan and Carter (2007) build on Markusen and Schrock's (2006) ranking of the top artistic cities in the United States, and find that artistic centers are associated with regional size and regional income level.

Sassen (1991, 2006) contends that global cities have become sites of both entertainment production and consumption that provide residents and visitors alike a "vicarious feeling of participation in the creative process" (p. 154). Scott (2005) suggests that in places like Times

Square or Las Vegas, production, consumption and the physical fabric of the city blend to form an "invisible unity" (p. 469). Clark et al (2003) describe the modern city as an "entertainment machine," arguing that Moltotch's (1976) growth machine model has been replaced by one where power holders seek to provide amenities and experiences. Clark, Rothfield and Silver (2008) document the formation of geographically contained "scenes" based on networks of producers and consumers." Currid (2007) shows how venues, clubs, recording studios and performance spaces act as conduits for economic and social relationships and networks. Several studies (Scott 1999; Florida and Jackson 2007) note the considerable concentration in locations of music production.

Despite the importance of entertainment to the global economy, most research has tended to focus on the artistic, cultural and creative industries broadly defined. There have been few systematic studies of the entertainment industry and none that we know of that focus on the geography of this sector. Wolf (1999) estimates the U.S. entertainment industry to be a $480 billion dollar industry in the late 1990s ahead of healthcare as a percentage of household spending 5.2 vs. 5.4 percent, and larger then steel or financial services as the ``driving wheel of the new world economy``(p. 4).Vogel (2007) estimates that Americans spend more than $280 billion dollars annually on legal forms of entertainment, and that global spending on entertainment is close to one trillion dollars. Maddison (1988) and Vogel (2004) see the growth of entertainment as part and parcel of the rise of the post-industrial (Bell 1973), knowledge driven economy (Drucker, 1969, 1993) and the relative shift in time spent on work versus leisure.

Entertainment is a relatively unique economic sector with the following attributes (per Vogel 2004). First and foremost, it is hit-driven – the costs many losses are absorbed by profits from a few big successes. Entertainment products are relatively unique and need to be marketed separately, which implies high marketing expenditures per unit. They are characterized by short product life-cycles, and frequently make use of new technology – hence new mediums weaken old ones. Recently some have argued that digitization is transforming

entertainment industries leading to niche consumption and a "long-tail" pattern (Anderson 2006, see Elberse 2008 for a critique), and enabling decentralization of the production and consumption of entertainment.

Porter (1998) contends that the clustering of the entertainment sector is shaped by forces that are as the same as any other economic activity. Still, the idiosyncratic, non-standardness and relatively short product life cycles of entertainment products shapes a potentially stronger relation to location as production center and especially as marketplace. While standardized products are able to disperse to lower cost locations over the product cycle (see Vernon 1959, 1960), this is much less likely in creative areas where new products must be generated constantly and where network relationships predominate. Creative production systems constantly renew and customize their supply in their initial location, by drawing in new producers and forging new teams, partnerships and alliances. Furthermore, the production of entertainment in general demands a high level of knowledge or skill which is locally bounded. The consumption of entertainment is to a large degree localized as well through networks, values, norms and scenes. In more formal terms, agglomeration effects are crucial both for production and consumption of entertainment, especially when entertainment products are distance sensitive, as is the case with live performance. Recent research on music (Krueger and Connelly 2005) identifies a noticeable shift in revenues from recorded products toward live performance. This is in line with the broader literature charting the increased role of experiences and amenities in premium locations (Florida 2002, Clark and Lloyd 2003, Glaeser et al, 2001).

Our research examines the economic geography of entertainment, exploring the location of entertainment talent and firms between 1970 and 2000. Because entertainment has been the subject of only intermittent study, there is no single definition of the entertainment economy. Wolf (1999) defines entertainment to include: film, television, spectator sports, music, casinos, and games. Vogel (2004) includes: movies, music, television programming, broadcasting, publishing, sports, performing arts and music industries. Of course, as in any empirical exercise,

we are restricted by data availability. Our definition of entertainment includes both firms and occupational data. On the occupation side, we include: actors and performers, artists, musicians, and dancers. On the firm or establishment side, we include: broadcasting and recording industry establishments. We also include churches as a large number of performers and entertainers work in them.

We use a formal model for the location and clustering of entertainment based on network externalities and economies of scope and scale, based on work by Andersson and Andersson (2006). We orient our analysis around two central hypotheses: (1) the entertainment economy and its constituent sectors gain from location in large markets (due to economies of scale), and (2) entertainment sectors gain from collocation around each other (due to economies of scope). We test these propositions using data of the location of entertainment talent and establishments for 297 U.S. metropolitan for 1970, 1980, 1990 and 2000, and we also conduct a cluster analysis to examine the collocation of these sectors.

Theoretical Model

We now outline a model for the micro-economic foundations of the entertainment sector based on earlier work by Andersson and Andersson (2006). As with the production of virtually all goods and services, geography matters in entertainment production. Every location features its own specific costs and benefits, related both to the supply factor (industry inputs) and the demand factor (industry outputs). In the entertainment industry, the supply factors are affected by the regional network of human capital in the sector, and their costs for interactions and collaborations. In the production stage of entertainment, the need for face-to-face interaction between actors can be expected to be higher than in traditional manufacturing goods or more routine-based services, though perhaps comparable to other knowledge based and creative industries. Recall that Caves (2002) theorizes that the inability to determine the success of creative products in advance leads to an industry structure characterized by unique production processes, idiosyncratic contracts, geographic clustering and networks. Following Caves (2002),

we assume the need for a network of many creative workers with a wide range of skills ranging from talent to commercial functions like agents, managers, producers, marketers and so on. The demand factor is strongly related to the transportation and distribution costs of the final entertainment good. It is the cost of transporting the people to the place of performance and also the cost for delivering the entertainment product to the individuals. While these costs have decreased over time, the cost of transporting people is still relatively higher than the cost for transporting more routinized goods.

The individuals co-operating in entertainment processes can be viewed as parts of a unique system. For instance, the production of a record implies the collaboration between songwriters (often divided between a lyrics writer and a music composer) writing the actual material, the artists performing the song, managers working for the artists, recording studio engineers and producers of the records, media relations for making the record known to the public, video producers for making the video for TV, transportation for logistical services when transporting the record to the stores, etc. which creates economies of scope in the case of collocation.

Economies of scope appear when the same idea is spun into a number of different production processes, and generates different products and processes of different value. A book may for example also be turned into a theatre play or a film, and a piece of music can be turned into a CD or a concert. In more formal language the cost of a creative idea can be spread over a number of different entertainment markets. This can be described as follows, as per Andersson and Andersson, (2006), where firms aim to maximize profit (V), with a the revenue (R) equal to price (P) times quantity (Q), and profit function according to:

$$V = \sum_i R_i(\ell_i, I) - \sum_i \omega_i \ell_i - pI$$

where R_i is the revenue from product i, ℓ_i is the resources allocated to the production of I, I is the copyright to the creative idea, ω_i is the price per unit of ℓ_i and p is the price of the

copyright of the creative idea. The interpretation of I could also be the regional characteristics that the firm is able to take advantage of, e.g. the music sound of Nashville. At an optimum the following conditions are fulfilled;

$$\frac{\partial R_i}{\partial \ell_i} = \omega_i : \quad \sum_i \frac{\partial R_i}{\partial I} = p;$$

where *i* is all creative ideas that are generating a positive marginal revenue when used.

So far, we can determine that the entertainment producers have reasons to exploit economies of scope to decrease the cost of each creative idea, production or regional characteristics. Economies of scope may be especially important if the regional demand does not cover the costs related to specialization in one specific production or product. In such cases, addition of another product can reduce the average costs of production for both included products (e.g. using a concert hall for both theatre plays, music events and at low seasons conferences and educational activities).

This results in the following profit (V) function that firms aim to maximize;

$$V = \sum_i P_i(\ell_{1i}) Q_i(\ell_{2i}, S) - \sum_i \varpi_1 \ell_{1i} - \sum_i \varpi_2 \ell_{2i} - C(S)$$

where P_i is the price of product *i*, ℓ_{1i} is the amount of creative labor needed to design product *i*, Q_i is the volume of the production of *i*, ℓ_{2i} is the amount of non-creative labor in the production of *i*, S is the use of multiple-use production capacity, ϖ_1 is the cost for creative labor, while ϖ_2 is the cost of labor non-creative labor and C is the cost of multiple-use production capacity.

The optimal conditions, if the maximization problem satisfies the standard concavity conditions, and given concave functions for $P_i(\ell_{1i})$ and $Q_i(\ell_{2i}, S)$, and convex function for C(S), will be;

$$\frac{\partial V}{\partial \ell_{li}} = \frac{\partial P_i}{\partial \ell_{li}} Q_i - \varpi_1 = 0 \text{ ; (i=1,...,m);}$$

$$\frac{\partial \mathrm{V}}{\partial \ell_2} = \mathrm{P_i} \frac{\partial \mathrm{Q_i}}{\partial \mathrm{L_{2i}}} - \omega_2 = 0 \text{ ; (i=1,...,m);}$$

$$\frac{\partial \mathrm{V}}{\partial \mathrm{S}} = \sum \mathrm{P_i} \frac{\partial \mathrm{Q_i}}{\partial \mathrm{S}} - \frac{\partial \mathrm{C}}{\partial \mathrm{S}} = 0;$$

And where the optimal use of creative labor is equal to;

$$\sum_i \frac{\partial P_i}{\partial \ell_{li}} \alpha_i = \sum \frac{\varpi_1}{Q}$$

Following Andersson and Andersson (2006) we assume that many of the processes involved in entertainment production involve a highly specialized labor force and high fixed costs related to investments in technology and housing. From an economics point of view, high fixed costs necessitate scale production to decrease the average fixed cost per unit produced, to make production possible. The scale can be related to the number of produced units and the size of the final market, e.g. the size of the audience. While the costs related to the number of produced units are borne by the producer, the cost in relation to the size of the final market is carried by the consumers in the form of transportation costs for getting to the place of performance.

(Figure 1 about here)

From these relations, the cost-minimizing equation (including a fixed and a variable cost, linearly increasing with the scale of production Q. C_D denotes average distribution and other transaction costs which increases linearly with the size of the audience);

$$\mathrm{C_Q} = \frac{\mathrm{F}}{\mathrm{Q}} + \mathrm{C}$$

$$C_D = aQ$$

$$T = C_Q + C_D = \frac{F}{Q} + C + aQ$$

Where T is the total average cost. Under the assumption that the objective function is convex, the unique minimization with regard to the audience size is achieved at:

$$Q = \sqrt{\frac{F}{a}}$$

From this relation it is shown how the optimal value of Q increases in F. From this, one can conclude that the optimal production scale is positively related to size of the fixed costs and negatively related to the average distribution cost. Markets with competitive advantages in entertainment need to fulfill two conditions; (1) a sufficiently large demand, and (2) low costs of production. Figure 2 illustrates how the cost function shifts to the right with an increase in fixed costs.

(Figure 2 about here)

In other words, the expected effects from the larger markets are twofold; (1) there are economies of scale in the employment of creative labor, and (2) there are economies of scope in the employment of multiple-use production capacity.

Economies of scale will increase with the size of the region. Consequently, only very large regions can generate demand large enough to cover the costs related to one specialized single product line. On one hand, increased entertainment production increases scope economies since there are more opportunities for "new work to be made from old" (Jacobs, 1969). On the other hand, the difficulties of administrating entertainment production, must also multiply- pushing scope economies to decrease as market size increases.

Data, Variables, and Methods

The preceding model predicts that the entertainment sector will be located in large metropolitan regions primarily due to economies of scale, but also due to economies of scope. To test this empirically, we use data on entertainment and its key subsectors at four points in time, 1970, 1980, 1990 and 2000.

Variables

The variables in our analysis are designed to cover the key subsectors of entertainment. They include the following:

Actors and Performers includes employed and self-employed actors, entertainers and performers for 1970, 1980, 1990 and 2000, based on data from PUMS.

Arts/Entertainment Industry (A/E Industry) includes the number of employees within the industry of independent artists, performing arts, spectator sports, and related industries, for 1970, 1980, 1990 and 2000, based on data from PUMS.

Musicians includes employed and self-employed musicians for 1970, 1980, 1990 and 2000, based on data from the U.S. Census Public Use Micro Sample (PUMS).

Dancers includes employed and self-employed dancers and choreographers for 1970, 1980, 1990 and 2000, based on data from PUMS.

Broadcasting includes the number of employees within the broadcasting industry, for 1970, 1980, 1990 and 2000, based on data from PUMS.

Recording Industry includes recording industry establishments. This variable is not fully compatible over time. The first is for 1977 and is defined as “phonographic record makers” and

is based on the SIC. The same definition holds for 1980 and 1990. However, in 2000 it is changed to “recording industry" and now based on NAICS definitions. The data for this variable is from County Business Patterns (CBP).

Churches includes the number of employees within churches (religious organizations), for 1970, 1980, 1990 and 2000, based on data from PUMS. We include it because churches and religious institutions hire a significant share of entertainers particularly musicians.

Our measures cover 297 U.S. metropolitan regions. We calculate regional shares and location quotients for entertainment and its key subsectors. We also provide scatter-graphs which plot regional entertainment shares against regional population. We employ correlation analysis to probe associations between various entertainment subsectors. We also provide box plots to chart the distribution of values for key variables. Basically, a box plot shows the median, quartiles, and outliers and extreme values for a scale variable. The inter-quartile range (IQR) is the difference between the 75th and 25th percentiles and corresponds to the length of the box. We also conduct a cluster analysis for 1970, 1980, 1990 and 2000, to identify possible geographical collocation patterns between the different entertainment sectors, and also search for changes over time and to probe for possible network and scope economies across different entertainment sectors.

Findings

We now turn to an analysis of our findings. We begin by discussing regional shares of entertainment and its sub-sectors. We then turn to location quotients for an analysis of regional specialization in entertainment. A scatter plot analysis follows wherein regional entertainment shares are compared against population shares. Finally we analyze box-plots for each of the

entertainment sectors included in the analysis; actors and performers, dancers, broadcasting, and the recording industry.

Regional Shares

Table 1 shows the regional concentration of entertainment and its subsectors. The entertainment economy is geographically concentrated and has remained so over time. The two major locations, not surprisingly, are Los Angeles and New York which dominate entertainment overall and virtually all of its key subsectors.

(Table 1 about here)

The recording industry is the most concentrated, although its geographic concentration appears to have declined somewhat over time. The top three locations account for more than a third of the industry, the top ten for more than half and the top 20 for nearly two-thirds. Nashville a relatively small metropolitan area, though one that is highly specialized in music, ranks alongside New York and Los Angeles here. A striking pattern is apparent across the subsectors. In almost every case, New York and Los Angeles make the list of the top three regions, but they are joined by one specialized center: Nashville for musicians, Las Vegas for dancers, Orlando (home of Disney) for performers, Washington DC (the federal capital and a major media location for broadcasting, and Chicago for the arts and entertainment industry.

Several, small centers outperform their size in terms of entertainment share. Orlando employs more actors and performers than New York, Boston, Washington D.C. Atlanta or Chicago. Las Vegas hosts more of the entertainment industry than Dallas, Detroit, Miami, or Denver.

Chicago is an interesting case. Although it is the nation's third largest metropolitan region, it only ranks in the top three for arts/entertainment industry overall- and not for any other segment. This pattern suggests that large regions like New York and Los Angeles have the

population and market size to support a wide range of entertainment activities, but that in any individual area of entertainment, specialized centers are able to develop a niche in that field.

Location Quotients

An analysis that only examines shares and does not consider how locations perform relative to their size is naturally biased toward larger regions. In light of this, we also calculate location quotients for the entertainment industry and its segments. Table 2 presents the results. When location quotients are used, the dominance of Los Angeles and New York fades. These two regions rank among the top three in just two fields – recording industry and the arts/entertainment industry. Nashville dominates for musicians and the recording industry. Other locations, particularly tourist destinations, show up in a wide range of categories: Las Vegas and Honolulu for dancers; Orlando for performers; Santa Fe for the arts and entertainment Industry; Sarasota and Myrtle Beach along with Bloomington, IN (home of a major music school) for musicians; Boise, Denver, and Tulsa for broadcasting.

(Table 2 about here)

Scatter-Plots

Figure 1 provides a series of scatter graphs which chart the share of entertainment subsectors against its population for year 2000. The regions above the line can be considered to "punch above their weight", to have greater concentrations of an industry than their size would predict. New York and Los Angeles do this in almost every case. Orlando and Las Vegas are above the line for performers, Las Vegas for dancers, Nashville for the recording industry and Washington DC and Atlanta (home of CNN) for the broadcasting industry. Chicago is notably below the line in every case.

Many large regions host entertainment subsectors which are smaller than their populations would predict. The nation's fifth and sixth largest metropolitan areas- Houston and Philadelphia- underperform in terms of broadcasting, actors and performers, entertainment. These findings

are consistent with a pattern where the two largest regions dominate, alongside one or two smaller, more specialized locations.

(Figure 3 about here)

Correlation Analysis

We now turn to the relationships between entertainment subsectors to see to what degree they are connected to one another. To get at this, , we conducted a bivariate correlation analysis of the different entertainment subsectors in 1970, 1980, 1990 and 2000. Table 3 summarizes the results.

(Table 3 about here)

In 2000, the strongest correlations were between musicians, the recording industry and A/E Industry with correlation coefficients of 0.4 and above. Performers, dancers and the arts/entertainment industry also appear reasonably closely connected, with correlation coefficients of nearly 0.3 (0.288). Musicians and performers are also somewhat associated with the broadcast industry with correlation coefficients above 0.15. It is also important to note that the correlations between sectors appear to have become considerably weaker over time. In 1970, there were a host of correlation coefficients of 0.5, 0.6 and 0.7 or higher. Once again, this pattern suggests the growth of two large dominant centers and the simultaneous rise of smaller, more specialized niche entertainment regions.

Box Plots

We use box plot analysis to investigate the distribution of location quotients across regions. Box plots allow us to distinguish between places that within a normally distributed

range of location quotients, and the outliers with exceptionally high or low concentrations. Figure 4 summarizes the key results.

(Figure 4 about here)

One key finding is the substantial decline in the number of outliers over time across virtually every subsector of entertainment. Music had twenty-five outliers in 1970, a number that shrunk to six in 1980 and 1990, before increasing to eight in 2000. Nashville also substantially increased its distance over other music locations over time. For performers, the number of outliers shrunk from fifteen in 1970 to six in 1980, three by 1990 and grew somewhat to nine by 2000. For dancers, the number of outliers declined from seventeen in 1970, to about ten in 1980 and 1990 to six in 2000. And for both performers and dancers we again see the increased role of tourist destinations, notably Las Vegas. The same trends are apparent in the broadcasting and recording industries.

Generally, while the range of possible values has decreased, the distribution across the range has become more varied; three features of the box plots suggest this. First, the median location quotient has consistently increased, indicating that a greater number of regions are playing a role. Since the national concentration (the denominator of the LQ) has not changed significantly over this period, the rising LQs indicate that regions with higher concentrations (above the median) have been losing out to regions with lower concentrations (below the median). Second, the inter-quartile range shows that the overall distributions have widened. Regions with values around the median have been replaced by regions with values further away from the median. And third, the total range of values has decreased. Taken together these findings suggest increasing specialization across regions and entertainment fields. That is certain regions are coming to specialize in certain types of entertainment.

Cluster Analysis

Our model suggests that entertainment sectors will locate based on economies of scope. While economies of scale would explain why we basically find these industries in larger markets, the scope economies would explain why these sectors would co-locate. The findings of the correlation analysis indicate that the linkages among entertainment sectors have grown weaker over time. But correlation analysis is limited by the fact that it only considers two variables at a time. To examine geographic clustering between sectors, we have also performed hierarchical cluster analysis.

A cluster analysis is a method to identify homogenous subgroups in cases of a population. It seeks to identify a set of subgroups that minimize the within-group variation and at the same time maximize the between-group variation. We use location quotients to generate the clusters. We show the variable clusters with dendograms which show illustrate the cohesiveness of the clusters formed and provide information about the appropriate number of clusters. Figure 5 provides the results.

(Figure 5 about here)

In both 1970, there is a clear cluster formation of broadcasting, churches, musicians and the arts/entertainment industry. A couple of steps further away, but still rather closely related to this first cluster, is the recording industry. Not much further away we find actors and performers, while dancers exhibit an entirely different location pattern.

In 1980, the arts and entertainment industry as a whole becomes removed from the broadcasting, churches, and musicians cluster. Broadcasting, Churches, and Musicians are still closely related to each other. Actors do not co-locate with the larger cluster, but their location is more related to the cluster than the arts and entertainment industry.

In 1990, broadcasting and churches are still closely connected. Musicians move one step further away, but are still closely related to them. A/E industry is still further away spatially. Now, musicians, churches, and broadcasting attach in the next step with performers and the recording industry. Dancers and A/E industry attach with the others, one step out.

In 2000, broadcasting, churches, musicians and arts/entertainment industry appear clustered together. Performers will attach further away and dancers are located far from the others. The recording industry has continuously moved away from other groups since 1970 and is now the least co-located group.

The cluster analysis reveals a good deal of dynamism in the way entertainment sectors relate to each other geographically over time. However, in all three cluster analyses there is a close relationship between the concentration of the broadcasting industry and the concentration of churches. Musicians also tend to co-locate with both the broadcasting industry and churches, although to a slightly smaller degree. The arts and entertainment industries were located closely to the broadcasting/churches/musicians core in 1970 and in 2000, but less closely located in 1990.

The recording industry and dancers have generally been the groups that cluster the least with other entertainment groups. In the case of the recording industry, this might well be explained by historical advantages, since the industry demands more capital investments (and sunk costs) than service oriented industries. Also, the final product of the recording industry (the record) is rather standardized and can be transported at low cost from larger to smaller markets.

The revelation that dancers don't co-locate with musicians and the arts and entertainment industry is somewhat surprising. One might expect a pattern of collocation since dancers; musicians and actors can both use the same performance space, and potentially spread costs by sharing it. There are two potential explanations for the diffusion of dancers; these are compatible with each other and the rest of our analysis. The comparable lack of spec

Also, actors and performers were rather close to the broadcasting/churches/musicians cluster center in the 1990s, but less so in 1970 and also in year 2000. It is surprising that actors appear to be more dependent on the presence of these factors than on the Arts and Entertainment Industry in general.

The results of the cluster analysis indicate that regions divide based on their concentrations of musicians and arts/entertainment industry. These findings contradict - and in our view outweigh - the findings of the correlation analysis which showed an association between musicians and arts/entertainment industry. The cluster analysis consistently separates (rather than links) these two groups for the years 1970 and 1990. However, they do co-locate in year 2000. Before that, regions are not *uniformly* high or low in these two groups. Rather, they can be can be differentiated by the concentration of musicians and by the concentration of the arts and entertainment industry.

Conclusions

Our research has examined the economic geography of entertainment industries and occupations. Instead of seeing entertainment as a single monolithic industry or field, we view it as a set of distinct sectors with possible spatial interrelationships. At the outset, we proposed a formal model for the geography of the entertainment economy, primarily based upon economies of scale and scope. Drawing from a formal model outlined by Andersson and Andersson (2006), we hypothesized that the effects from the larger markets are twofold; (1) there are economies of scale in the employment of creative labor, and (2) there are economies of scope in the employment of multiple-use production capacity. Our research generated three key findings.

First, we find the entertainment industry to be geographically concentrated. New York and Los Angeles registered at the top of the entertainment rankings in 1970 and retained those positions over time, although their relative concentrations (LQ's) did subside somewhat over time. These places have significant concentrations of virtually every entertainment industry segment. This suggests that scope economies operate alongside scale economies in these large regions. We further find that these regions outperform other large regions by a considerable margin. Regions from Chicago on down underperform relative to size. The entertainment economy thus appears to have strong threshold effects which seem to lock-in advantage in the two largest regions. The largest regions are shaped not simply by large markets and co-location

of entertainment industry sectors but by sophisticated consumers who are entertainment omnivores (Peterson, 1992). These types of consumers and markets can be seen to be pioneers or early adopters or taste-makers when it comes to trying out new entertainment products and experiences. Furthermore, entertainment goods in general are far less standardized and have a shorter life-cycles; consumers of entertainment experiences thus expect renewal and turnover at a faster pace (Caves 2002) and its customers demand new products at a faster pace. These characteristics of entertainment reinforce the joint effects of scale and scope on geographic concentration.

Second, our findings indicate a substantial second-order pattern of regional specialization, where each entertainment occupation segment is clustered in one or two highly specialized locations, such as musicians in Nashville, dancers in Las Vegas, actors in Orlando, artists in Santa Fe and broadcasters in Washington DC. This reflects pure specialization, agglomeration and clustering dynamics. But we also note that many of these specialized locations are also tourist destinations. Tourist locations have a particular geographic effect in entertainment we refer to as "borrowing size." Tourists in effect work to boost size of entertainment markets in those destinations. Las Vegas, for instance, welcomes more than 36 million visitors every year -an increase of over 100,000 on the average day. Furthermore, tourists have a much higher propensity to consume entertainment than the average resident. For these reasons, entertainment destinations capitalize on a particular kind of scale effect.

Third, our findings point to a countervailing dispersal of entertainment activity over time to smaller regions. The entertainment sector is represented in more regions in year 2000. What might help to explain this countervailing pattern? Growth in demand for entertainment overall is one factor. Consumers now spend more time and money on entertainment than they did thirty years ago, and this increase demand for entertainment in local markets. The lion's share of this growth has been driven by growth in entertainment services (Vogel 2007). Since entertainment services are inherently more "local" than entertainment goods, it makes sense that entertainment service growth has been accompanied by some geographic dispersal.

Dispersal may also be driven by technological change and the rise of digital production and distribution (see Anderson 2006).

Taken together, the empirical results confirm the theoretical model advanced initially by Andersson and Andersson (2006). That model specifies the strong shaping effects of scale and scope economies in the entertainment industries, suggesting that scale economies in large markets act to lower the transportation costs, and increase the productive efficiencies of entertainment products, while scope economies reinforce geographic concentration by spreading entertainment costs across more products. Our empirical findings support the interaction and mutually reinforcing effects of scale and scope economies on the geography of entertainment. This can be most clearly seen in the extreme geographic concentration of entertainment in the two largest metropolitan areas - New York, and Los Angeles. These regions host much larger entertainment economies than even their large populations would predict, and they host concentrations of every entertainment sub-sector. The effects of scale and scope economies are also evident in the way that tourist entertainment centers borrow size. The higher consumption propensity of tourist centers, and specialized scale economies to geography (that is classic agglomeration effects) are also clearly evident in the evolutionary development of specialized entertainment centers like Nashville in music and recording.

However, we also not that the countervailing dispersal of the entertainment industry exhibited in the relative rise of smaller centers over the past two decades would seem to contradict these scale and scope effects. Here, we suggest that the emergence of these small centers reflects a broad and fundamental shift in the economics of entertainment from the consumption of products to that of experiences. Over the past thirty years, the amount of personal income spent on entertainment has grown driven by a dramatic increase in demand for entertainment services. The amount spent on live performance has more than doubled since 1979, while the amount spent on movies, magazines, and newspapers has dropped. This has increased demand for entertainers across the board. While many concentrate in large and/ or specialized regions, others have been able locate and find some degree of employment in a wide

array of smaller locations. The rise of digital recording and distribution technology has helped enabled this shift which reflects Anderson's (2006) long tail effect to a degree.

Ultimately, the economic geography of entertainment has become biurificated - with growing concentration in two large centers alongside specialization in one or two more specialized centers and the simultaneous spread of entertainment to a growing number of smaller locations. To play off Anderson's (2006) metaphor, the geography of entertainment takes the form of a "fatter head" alongside a longer tail. More than ever, scale and scope economies are key factors in the geography of entertainment.

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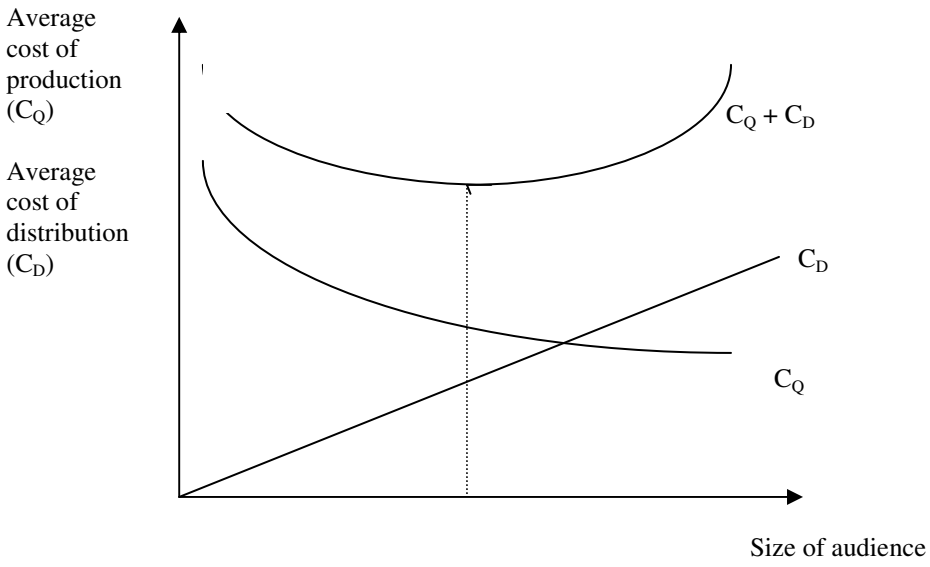


Figure 1: Average costs of entertainment production in relation to market size (In Andersson and Andersson 2006)

Table 1: Regional shares

Sector	1970	1980	1990	2000
Musicians	Los Angeles New York Houston ∑10.45% Top 10: ∑17.45% Top 20: ∑23.70%	New York Los Angeles Chicago ∑19.56% Top 10: 32.23% Top 20: 43.00%	Los Angeles New York Chicago ∑20.36% Top 10: ∑34.35% Top 20: ∑47.15%	Los Angeles New York Chicago ∑15.20% Top 10: ∑26.80% Top 20: ∑37.56%
Broadcasting	Los Angeles New York San Diego ∑10.04% Top 10: ∑16.26% Top 20: ∑21.30%	New York Los Angeles Washington DC ∑19.28% Top 10: 26.98% Top 20: 35.12%	Los Angeles New York Washington DC ∑17.16% Top 10: ∑30.59% Top 20: ∑43.01%	Los Angeles New York Washington DC ∑13.70% Top 10: ∑25.68% Top 20: ∑35.84%
Dancers	Los Angeles New York Honolulu ∑28.10% Top 10: ∑49.59% Top 20: ∑57.85%	New York Los Angeles Chicago ∑23.78% Top 10: 35.56% Top 20: 45.07%	New York Los Angeles Las Vegas ∑17.37% Top 10: ∑33.78% Top 20: ∑48.76%	New York Los Angeles Las Vegas ∑15.64% Top 10: ∑28.22% Top 20: ∑41.89%
Actors/ Performers	Los Angeles New York Bergen ∑50.00% Top 10: ∑56.80% Top 20: ∑64.00%	Los Angeles New York Chicago ∑46.36% Top 10: 56.95% Top 20: 64.31%	Los Angeles New York Washington DC ∑32.76% Top 10: ∑45.16% Top 20: ∑57.05%	Los Angeles Orlando New York ∑18.74% Top 10: ∑32.15% Top 20: ∑44.08%
A/E Industry	Los Angeles Orange County Pittsburgh ∑6.84% Top 10: ∑18.61% Top 20: ∑34.75%	New York Los Angeles Chicago ∑8.88% Top 10: 20.81% Top 20: 31.55%	Los Angeles Las Vegas New York ∑11.12% Top 10: ∑28.02% Top 20: ∑37.62%	Los Angeles New York Chicago ∑18.94% Top 10: ∑29.60% Top 20: ∑41.29%
Recording Industry	Los Angeles New York Nashville ∑51.39% Top 10: ∑56.56% Top 20: ∑78.72%	Los Angeles New York Nashville ∑51.54% Top 10: 65.64% Top 20: 76.87%	Los Angeles New York Nashville ∑38.17% Top 10: ∑55.06% Top 20: ∑79.58%	Los Angeles New York Nashville ∑35.36% Top 10: ∑52.60% Top 20: ∑63.87%

Table 2: Location Quotients

Sector	1970*	1980	1990	2000
Musicians	1. New York 2. Augusta 3. Tampa	1. Las Vegas 2. Bellingham, WA 3.Nashville	1. Nashville 2. Bloomington IN 3. Sarasota	1. Nashville 2. Myrtle Beach 3. Punta Gorda
Broadcasting	1.New York 2. Columbia SC 3. Boulder	1. Tallahassee 2. Huntington-Ashland 3.Jackson, MS	1.Springfield MO 2. Abilene 3. Tyler	1.Boise City 2. Denver 3. Tulsa
Dancers	1.Las Vegas 2. Honolulu 3. Wichita	1. Las Vegas 2. Reno 3.Honolulu	1.Las Vegas 2. Anchorage 3. Honolulu	1.Las Vegas 2. Myrtle Beach 3. Honolulu
Actors and Performers	1.New York 2. Stockton 3. Los Angeles	1. Los Angeles 2. New York 3.Stamford	1.Salinas 2. Los Angeles 3. New York	1.Orlando 2. Hagerstown 3. Vineland
A/E Industry	1.Las Vegas 2. Orange County 3. Fort Lauderdale	1. Reno 2. Las Vegas 3.Atlantic-Cape May	1.Atlantic City 2. Reno 3. Las Vegas	1.Santa Fe 2. Los Angeles 3. New York
Recording Industry	1.Nashville 2. Florence AL 3. Danbury	1. Nashville 2. Florence AL 3. Jonesboro AR	1.Nashville 2. Jonesboro 3. Charlottesville	1.Nashville 2. Los Angeles 3. New York

* The value for Recording Industry is from 1977

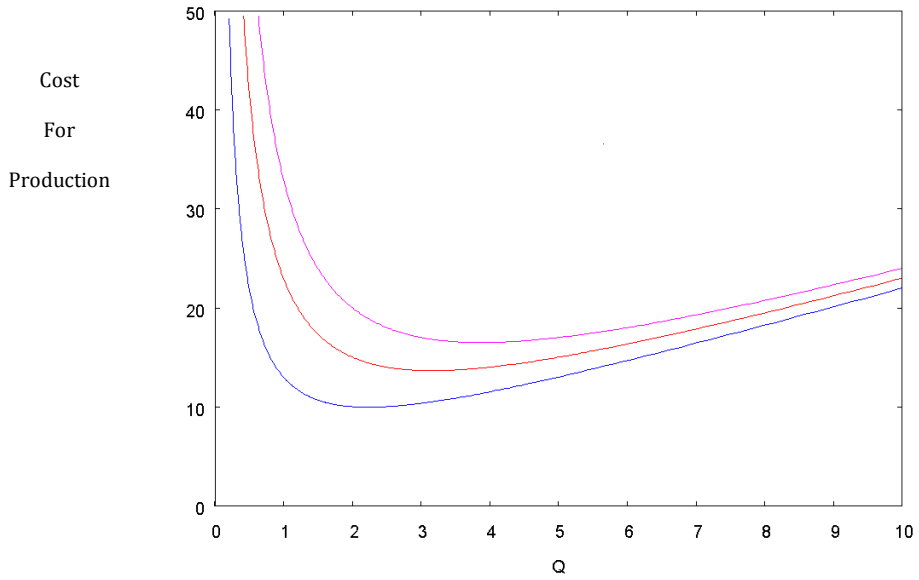
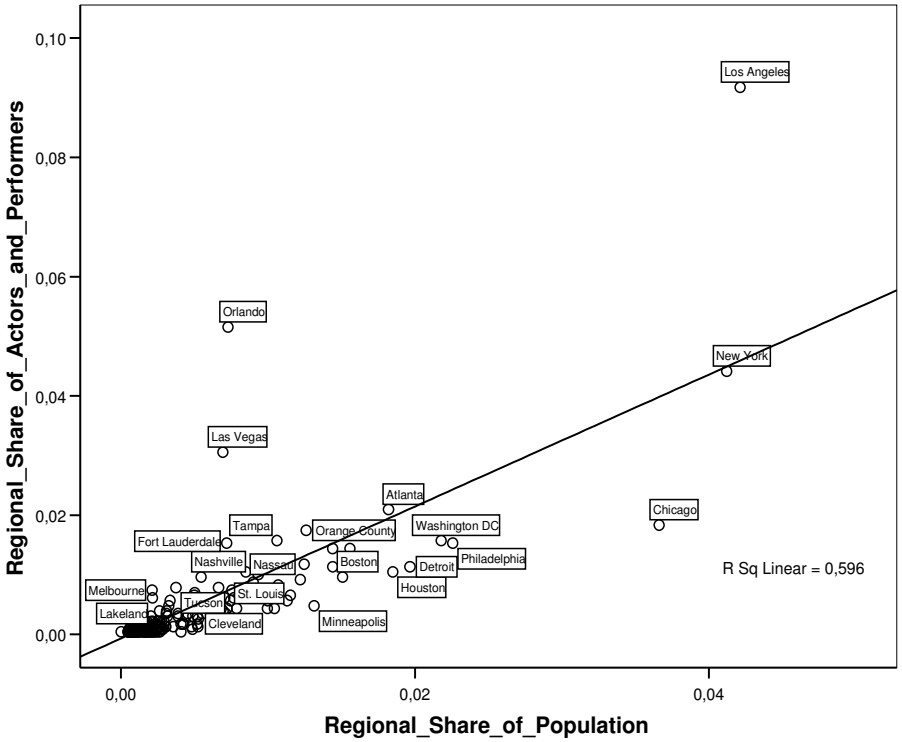


Figure 2: Cost for production at different levels of fixed costs (10, 20 and 30) with all other variables constant.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Regional_Share_of_Population
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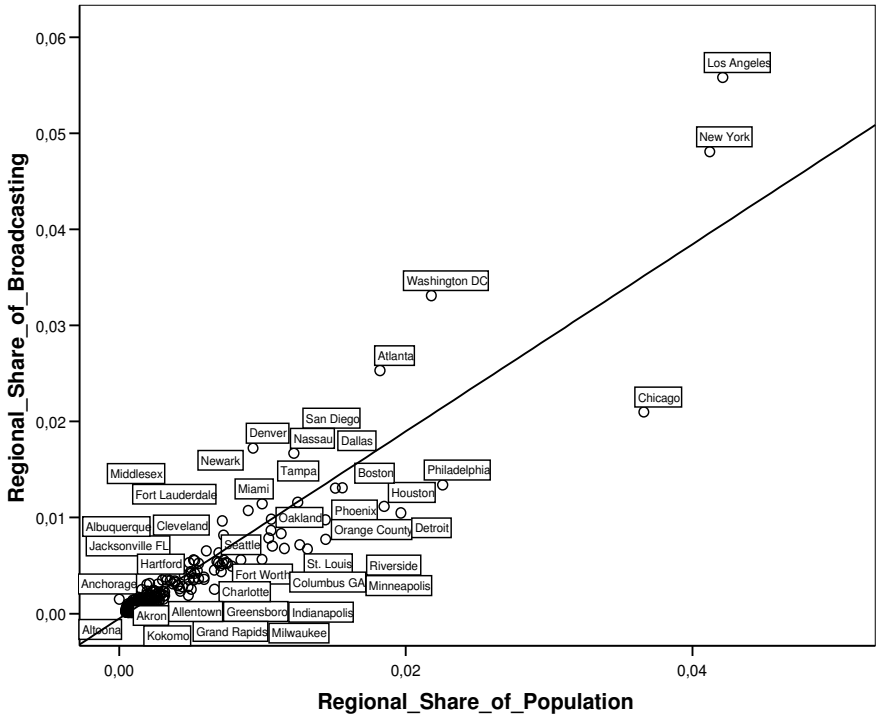
0,08
0,06
0,04
0,02
0,00
0,00
0,02
0,04
Los Angeles
New York
Orlando
Las Vegas
Atlanta
Chicago
Tampa
Orange County
Washington DC
Fort Lauderdale
Nashville
Nassau
Boston
Philadelphia
Detroit
Houston
Melbourne
St. Louis
Tucson
Lakeland
Cleveland
Minneapolis
R Sq Linear = 0,596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Regional_Share_of_Population
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0,04
0,03
0,02
0,01
0,00
0,00
0,02
0,04
Los Angeles
New York
Washington DC
Atlanta
Chicago
San Diego
Denver
Nassau
Dallas
Newark
Tampa
Boston
Philadelphia
Middlesex
Miami
Fort Lauderdale
Houston
Albuquerque
Cleveland
Oakland
Phoenix
Orange County
Detroit
Jacksonville FL
Seattle
Hartford
St. Louis
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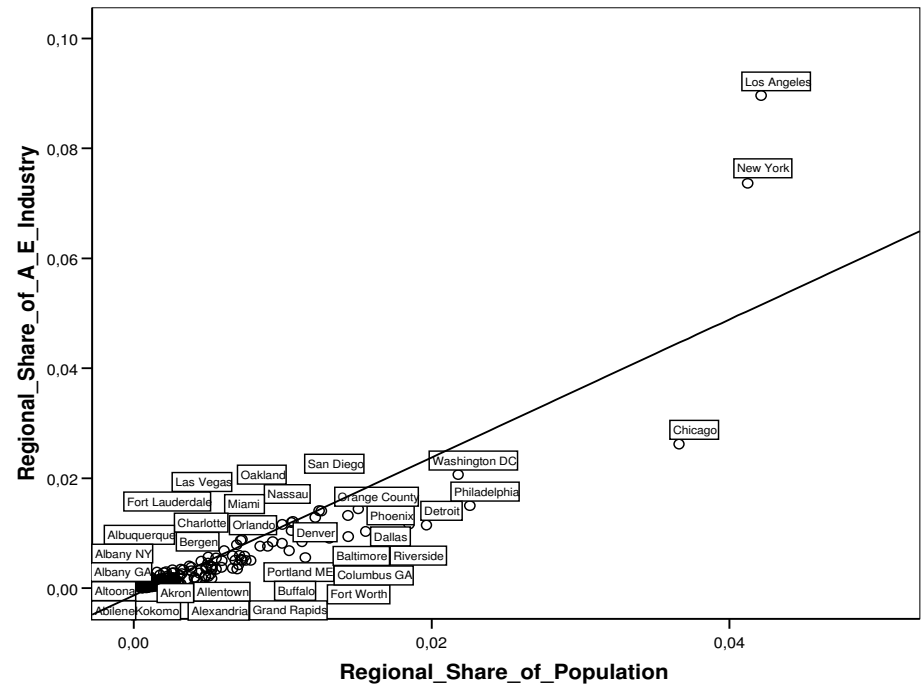
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Los Angeles
New York
Chicago
Washington DC
San Diego
Oakland
Las Vegas
Nassau
Orange County
Philadelphia
Fort Lauderdale
Miami
Phoenix
Detroit
Charlotte
Orlando
Albuquerque
Bergen
Denver
Dallas
Albany NY
Baltimore
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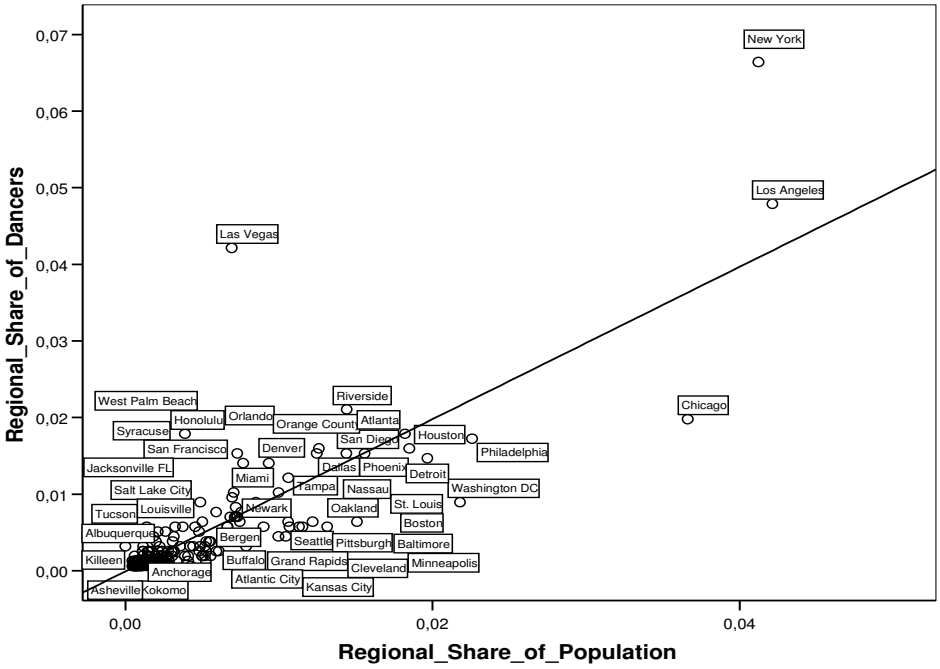
Fort Worth
Abilene
Kokomo
Alexandria
Grand Rapids


Regional_Share_of_Dancers
Regional_Share_of_Population
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0,06
0,05
0,04
0,03
0,02
0,01
0,00
0,00
0,02
0,04
New York
Los Angeles
Las Vegas
Chicago
Riverside
West Palm Beach
Orlando
Honolulu
Orange County
Atlanta
Syracuse
San Diego
Houston
San Francisco
Denver
Philadelphia
Jacksonville FL
Dallas
Phoenix
Detroit
Miami
Salt Lake City
Tampa
Nassau
Washington DC
Tucson
Louisville
Newark
Oakland
St. Louis
Albuquerque
Boston
Bergen
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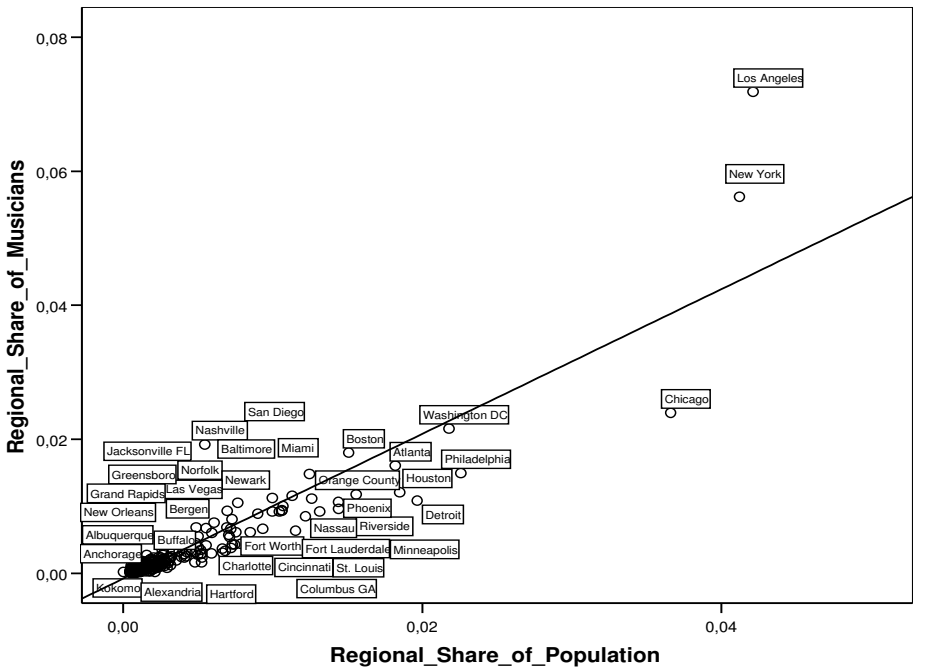
Kokomo



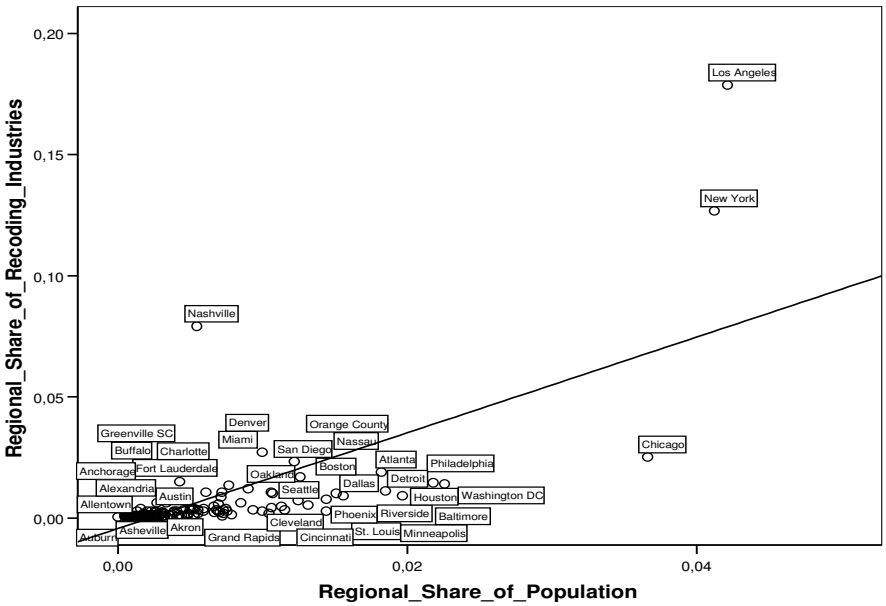


Figure 3: Scatter-Graphs Year 2000

Table 3: Correlations

1970

	Musicians	Actors and Performers	Dancers	A/E Industry	Broadcasting	Churches	Recording Industry (1977)
Musicians	1						
Actors and Performers	.471(**)	1					
Dancers	.426(**)	.359(**)	1				
A/E Industry	.672(**)	.303(**)	.603(**)	1			
Broadcasting	.696(**)	.555(**)	.317(**)	.606(**)	1		
Churches	.731(**)	.235(**)	.185(**)	.636(**)	.742(**)	1	
Recording Industry (1977)	.202(**)	.176(**)	.107	.129(*)	.249(**)	.199(**)	1

1980

	Musicians	Actors and Performers	Dancers	A/E Industry	Broadcasting	Churches	Recording Industry
Musicians	1						
Actors and Performers	.352(**)	1					
Dancers	.320(**)	.244(**)	1				
A/E Industry	.309(**)	.065	.527(**)	1			
Broadcasting	.074	.354(**)	.182(**)	.021	1		
Churches	.-049	.068	-.190(*)	.223(**)	.250(**)	1	
Recording Industry	.298(**)	.666(**)	.099	-.012	.076	-.073	1

1990

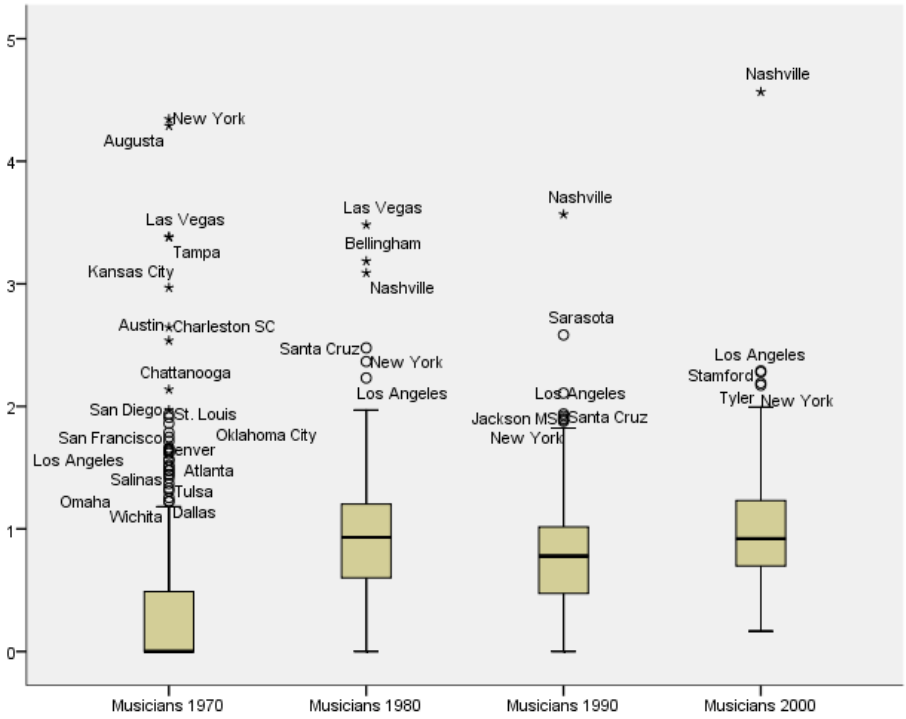
	Musicians	Actors and Performers	Dancers	A/E Industry	Broadcasting	Churches	Recording Industry
Musicians	1						
Actors and Performers	.463(**)	1					
Dancers	.305(**)	.336(**)	1				
A/E Industry	.307(**)	.223(**)	.545(**)	1			
Broadcasting	.589(**)	.362(**)	.273(**)	.337(**)	1		
Churches	.510(**)	.186(**)	.118(*)	.180(**)	.634(**)	1	
Recording Industry	.211(**)	.224(**)	.052	-.065	-.006	-.018	1

2000

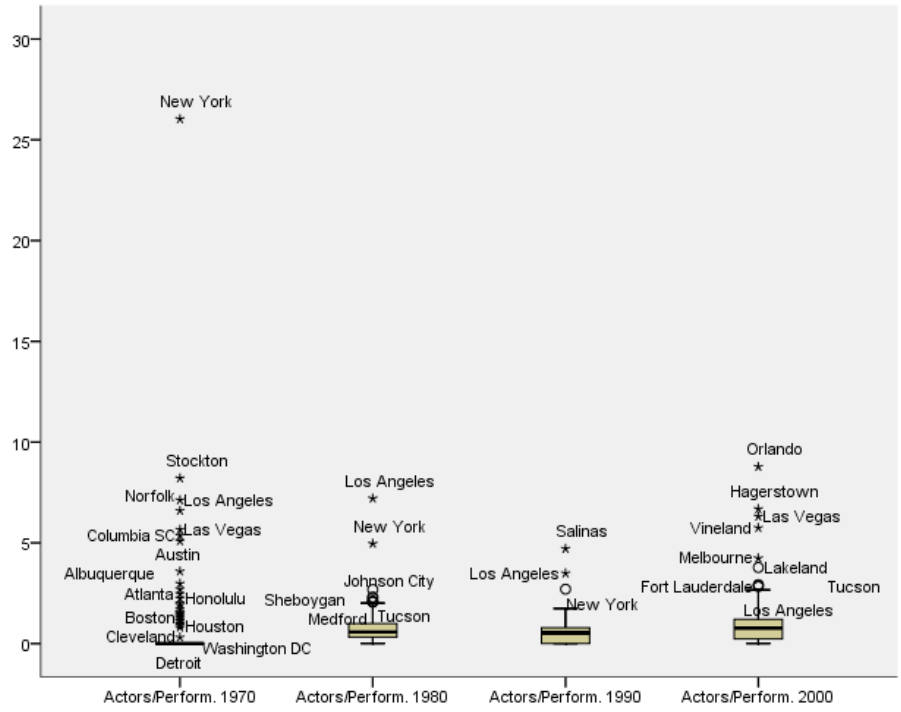
	Musicians	Actors and Performers	Dancers	A/E Industry	Broadcasting	Churches	Recording Industry
Musicians	1						
Actors and Performers	.178(**)	1					
Dancers	.052	.288(**)	1				
A/E Industry	.458(**)	.288(**)	.164(**)	1			
Broadcasting	.184(**)	.158(**)	.132(*)	.244(**)	1		
Churches	.116(*)	-.110	-.113	-.251(**)	.037	1	
Recording Industry	.413(**)	.171(**)	-.011	.479(**)	.136(*)	-.047	1

** Correlation is significant at the 0.01 level (2-tailed).

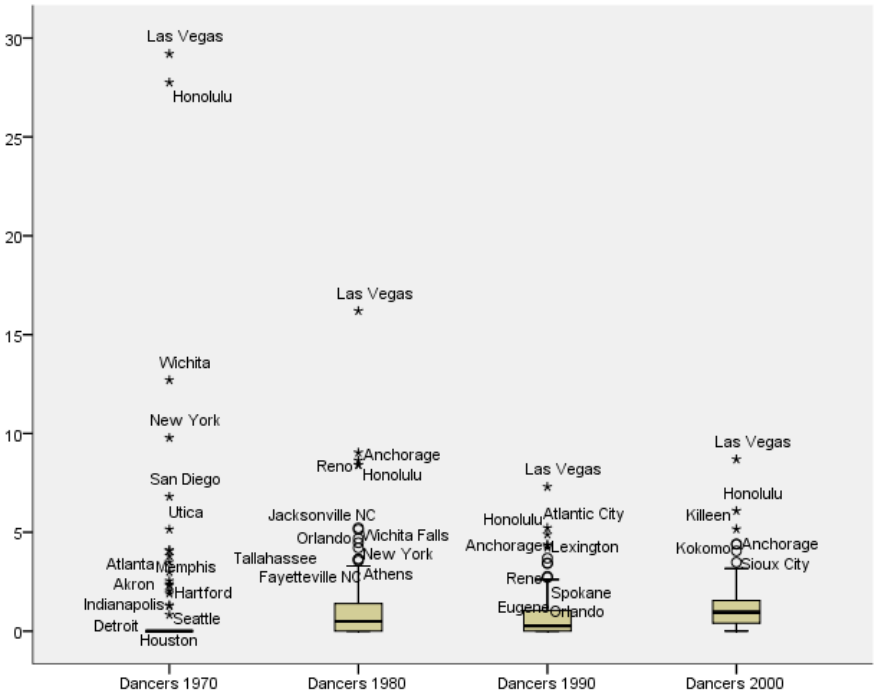
* Correlation is significant at the 0.05 level (2-tailed).



Box plot for Musicians



Actors and Performers



Dancers

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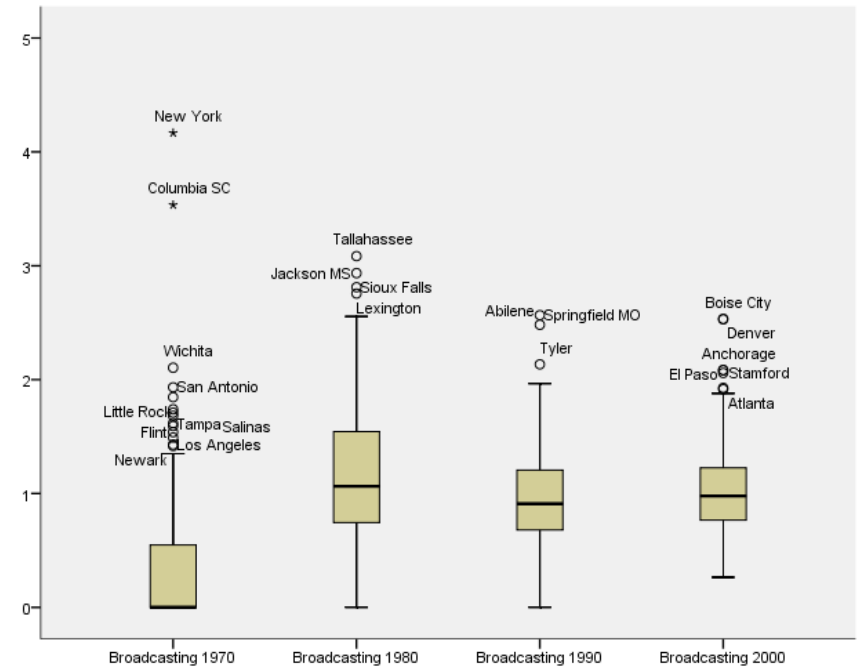

Broadcasting

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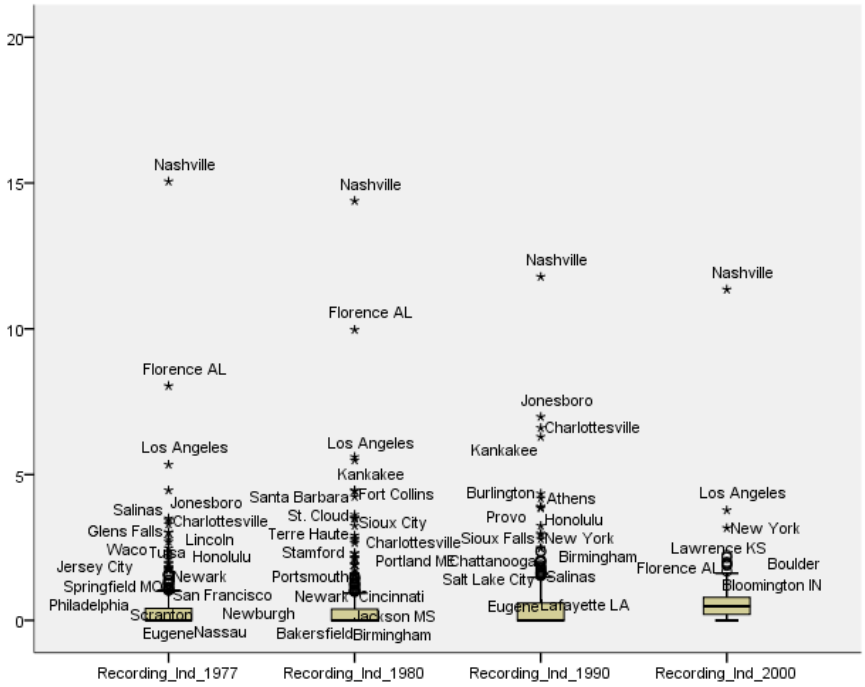
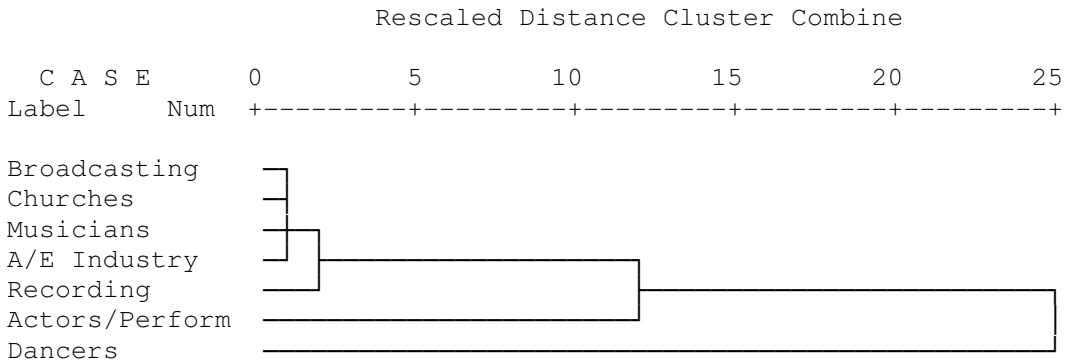


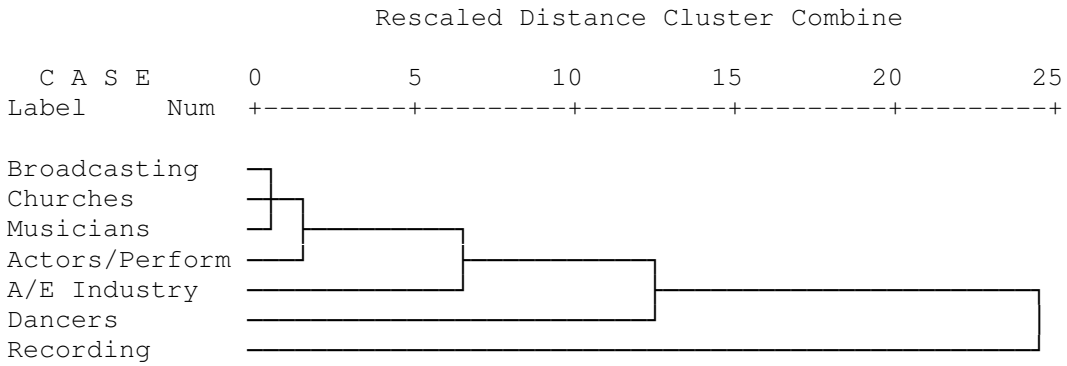
Recording Industry

Figure 4: Box Plots

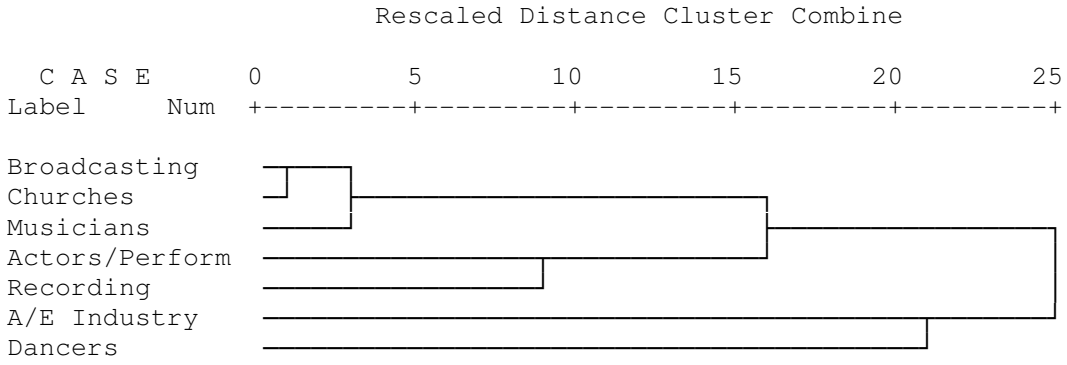
Dendrogram for year 1970



Dendrogram for year 1980



Dendrogram for year 1990



Dendrogram for year 2000

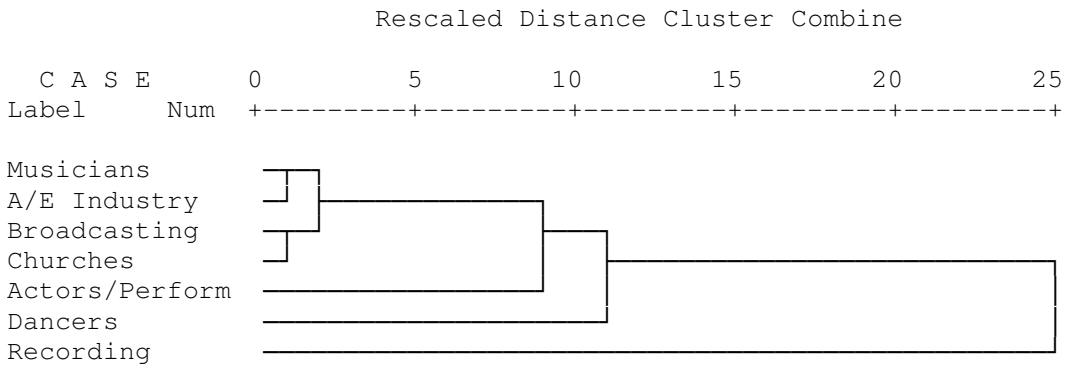


Figure 5: Dendograms