The Location Patterns of Artistic Cultures: A Metro- and Neighborhood-Level Analysis

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Abstract

Analysing census and industry data at the metro and neighbourhood levels, this paper seeks to identify the location characteristics associated with artistic clusters and determine how these characteristics vary across different places. We find that the arts cannot be taken overall as an urban panacea, but rather that their impact is place-specific and policy ought to reflect these nuances. However, our work also finds that, paradoxically, the arts' role in developing metro economies is as highly underestimated as it is overgeneralised. While arts clusters exhibit unique industry, scale and place-specific attributes, we also find evidence that they cluster in 'innovation districts', suggesting they can play a larger role in economic development. To this end, our results raise important questions and point toward new approaches for arts-based urban development policy that look beyond a focus on the arts as amenities to consider the localised dynamics between the arts and other industries.

Introduction

Recent research asserts that the arts and artists provide important social and economic

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benefits to cities and neighbourhoods (Currid, 2007, 2009; Grodach, 2011; Markusen and Gadwa, 2010; Stern and Seifert, 2010). While such work documents the important role of artists in positive neighbourhood change, much less is known about the larger patterns that artistic concentrations exhibit in their location choices and how these choices vary in different places. This knowledge is essential to develop a better understanding of where and under what conditions artists and artistic businesses can contribute to place-based improvements.

In this paper, we analyse the wider patterns of artistic location to identify the physical, demographic and economic characteristics associated with arts industry clusters and determine how these characteristics vary across different places. Analysing census and industry data at the metro and neighbourhood levels, we address the following question: What types of attributes are associated with arts industry clusters and how do these attributes vary in different places? Our findings suggest that arts clusters exhibit unique scale and place-specific attributes. In this regard, we find that while the arts are likely to cluster in highly educated, urbanized metros, there is high variation in neighbourhood-level location patterns. We also uncover distinctions between different arts clusters at the neighbourhood level suggesting that different modes of artistic production possess distinctive place-specific requirements. At the same time, while we found surprisingly little association between the arts and other knowledge-based industries at the metro level, at the neighbourhood level there is evidence to suggest that arts industries cluster in 'innovation districts'. These findings should inform a more locally focused policy and development approach.

The location characteristics of artistic clusters

In considering the characteristics of neighbourhoods with a strong artistic presence, prior research has emphasised three broad factors: affordable rents, neighbourhood aesthetics, and characteristics of living and work space. In this regard, numerous case studies of gentrification demonstrate that artists are not simply attracted by cheap rents alone, but by places that appeal to the 'artistic habitus' or a lifestyle rooted in the aesthetic of older often industrial neighbourhoods that contain buildings with historic architecture and adaptable, open floor plans and which are typically found in walkable, mixed use central city locations (Ley, 2003; Lloyd, 2010; Ryberg, 2012; Zukin, 1982). Additionally, some point toward the attraction of social and economic diversity (Florida, 2002; Stern and Seifert, 2010). According to Richard Lloyd (2010), artists are particularly attracted by the 'street level diversity' of neighbourhoods with significant minority populations and that tend to possess above-average levels of poverty and crime not simply because they are affordable, but because such places serve as a mark of social status and inspiration. While in-depth and helpful in identifying neighbourhood qualities that may attract artists, some of this work runs the risk of stereotyping artists as a homogenous group that primarily seeks out troubled neighbourhoods for their aesthetic benefit, which inevitably leads to gentrification.

Another significant stream of research to explain the location characteristics of artists and arts-related businesses comes from the economic geography literature on industrial districts. According to this work, complementary firms concentrate or cluster to take advantage of specialised pools of labour and

other industry-specific resources and efficiencies (Scott, 2000; Storper, 1997). In relation to the arts and cultural sector, this work has focused on demonstrating the importance of features that enhance participants' ability to tap into supportive and collaborative social networks and trade information on emerging trends and styles (Currid, 2007, 2009; Grodach, 2011; Lloyd, 2010; Markusen and Schrock, 2006). Further, artists and artistic industries are found to locate near concentrations of artistic venues and specialised institutions (e.g. nightclubs, art spaces, design schools) to gain access to their consumer base, industry gatekeepers, and potential employment and contract opportunities (Currid and Williams, 2010; Lloyd, 2010). Finally, some research finds strong association between the arts and other creative or knowledge-rich industries at the regional level, particularly the employment of artists and media and related industries (Florida, 2002). However, other research finds that 'advanced services' exhibit locally distinct clustering and concentration patterns or co-locate predominantly in large cities (Currid and Connolly, 2008; Polese, 2012). As such, another potential factor influencing artistic location patterns could be attributed to aspects of the regional economic base.

For these reasons, most literature has emphasised that cultural industries display a significant tendency to cluster in specific places. The few studies that attempt to dissect arts industries at the local level find that certain industries co-locate in distinct clusters rather than a single dense agglomeration of many industries (Currid and Williams, 2010) and, at the regional level, that there are distinct patterns between large and small metros (Denis-Jacob, 2012; Markusen and Schrock, 2006). We suspect that more detailed patterns can be mined here.

While both streams of research help direct us toward the attributes that influence the location preferences and clustering of artists and artistic businesses, there has been no attempt to simultaneously explore these streams of literature by attempting to understand if and how the arts exhibit common patterns across places and geographic scale. For its part, the case study work is very localised, not generalisable across many places, and primarily concentrates on 'artists' loosely defined rather than articulating their integration in a larger artistic cluster or concentration. In contrast, the economic geography literature tends to focus on the regional-level and often considers a very large group of creative industries or occupations. Additionally, both streams of research predominately focus on large cities with established cultural industries (e.g. New York, Los Angeles, Chicago, San Francisco). We question the generalisability of such cases to the majority of the USA where different processes and trends may be at work.

In sum, we have yet to truly explore if there are larger patterns in how the arts cluster generally and across a range of different places, both within and outside the traditional hubs of creative economy activity. This paper begins to address this gap in our understanding of artistic location patterns by utilising data that enable us to consider the aforementioned variables and their influence on wider artistic location patterns across a range of cities. We seek to understand the extent to which particular social, economic and demographic attributes may shape or are shaped by the presence of arts clusters at both the metro and neighbourhood levels. The ability to identify and analyse the variables that influence location preferences of artistic businesses and how these preferences vary in different places is critical to advance our understanding of how the arts are associated with place improvements. More broadly, we hope our findings help inform the implementation of targeted arts development policy for cities, neighbourhoods and the USA as a whole.

Table 1. Industries in arts cluster.

NAICS code	Industry
453920	Art dealers
512110	Motion picture and video production
512191	Teleproduction and other postproduction services
512199	Other motion picture and video industries
512210	Record production
512220	Integrated record production/distribution
512230	Music publishers
512240	Sound recording studios
541310	Architectural services
541320	Landscape architectural services
541410	Interior design services
541420	Industrial design services
541430	Graphic design services
541490	Other specialised design services
541922	Commercial photography
611610	Fine arts schools
711110	Theater companies and dinner theaters
711120	Dance companies
711130	Musical groups and artists
711190	Other performing arts companies
711510	Independent artists, writers, and performers
712110	Museums

Source: 2010 US Census Bureau, North American Industrial Classification System.

Data and methods

Data

We defined the arts cluster based on 22 industries from the North American Industry Classification System (NAICS) (Table 1). We selected this group to capture the range of industries directly involved in artistic production. We purposely excluded industries related to the consumption of art such as book stores, recorded music stores, and radio and TV broadcasting. As such, we concentrate on a fairly limited scope of activity compared with many other studies of arts and creative economy clusters (Florida,

2002). While the argument can be made for an occupational approach (Markusen and Schrock, 2006), we focus on arts industries in part because these are the only data available at the neighbourhood-level nationwide. Additionally, not only are occupational data an imperfect measure of artists, there is evidence that industry data stand as a reasonable proxy for arts clusters more broadly. Stern and Seifert (2010) find a high correlation between commercial arts firms, arts organisations and artists.

We analysed the arts cluster at the regional and neighbourhood levels. Regional-level analysis is based on a location quotient, or industry concentration, in all 366 2010 metropolitan statistical areas in the USA. To proxy neighbourhood-level arts activity, we rely on Zip Code Business Patterns data. While zip codes – or any administratively defined geography such as census tracts – are imperfect definitions of a neighbourhood, they are the most consistent geography at which the Census reports business patterns data at the micro-level. In total, we study 13,946 zips; all of those located in metro areas that contain the variables appropriate to our study.[1] This captures 89% of US arts employment in 85% of the zips in all metro areas. We explore neighbourhood-level arts concentrations based on two measures: location quotient and employment per capita.[2] By employing the two measures we get a better idea of how neighbourhood-level employment works in reference to both industry and population. In addition to analysing the data as a whole, we break down our analysis based on four metropolitan area population size groups: large metros (over 1,000,000), mid-sized metros (500,000 to 1,000,000), small metros (250,000 to 500,000), and smallest metros (under 250,000).

Using these data, in each population group we examine the relationships between the arts cluster and a set of 33 social, economic and housing variables derived from

the 2007–2011 American Community Survey and 2010 NAICS business patterns (Table 2). At both the metro and neighbourhood level, ACS data are based on the proportion or average of the total population specific to each variable. All industry measures are based on a location quotient at the metro level and the LQ and per capita employment at the neighbourhood level. We divided these variables into a set of groups that represent assumptions about neighbourhood- and metro-level features that account for arts cluster locations as discussed in the aforementioned literature. These include 'urban' variables based on the widely held assumption that artists and arts industries tend to agglomerate in the urban core attracted by older housing stock, lower rents, and a built environment that is comparatively dense and more walkable than the surrounding suburban communities. We include a set of diversity variables given that Florida (2002), Stern and Seifert (2010) and others claim that artists and others working in creative occupations are attracted to diverse places. In addition to variables based on race (black) and ethnicity (Hispanic), we include foreign-born, non-native English speakers, and non-family households as proxies for diversity. We include variables indicative of upward mobility (high education, income, rent and management occupations) and disadvantage (poverty, unemployment, single-parent households and public assistance). We study variables related to work at the neighbourhood level because arts industries likely have a high proportion of people that work at home, given that a high share of people who telecommute or freelance are in arts, sciences and management industries and possess high levels of education according to the Census (2012).

The remaining variables represent industries that may have a close association with and/or depend on arts industry products

Table 2. Independent variables and groupings.

Urban	Diversity	Upward mobility	Disadvantage	Work	Industries	Amenities
Total population	% Black	Avg. household income	% Unemployed	% Work at home	Media	Amenities
Pop. density	% Hispanic	Avg. rent	% in poverty	% Work in place of residence	Finance	Coffee & juice bars (snack, non-alcoholic)
Avg. household size	% Foreign-born	% BA degree or higher	% Single-parent household	% Not in labour force	High tech	Bars (alcoholic beverages)
Avg. rooms	% Non-English speakers	% Manager	% Public assistance		Universities	Restaurants
% Rental housing	% Non-family households		% Vacant units			
% Multi-unit housing						
% Housing pre-1950						
% Walk to work						

and services and are largely a part of the 'knowledge' or 'creative' economy. These include composite measures of finance, high technology and media industries as well as the presence of universities. We also create a measure for local consumption amenities (See Appendix for list of composite industries). In New York, Currid (2006) finds a close association between the arts and finance and Markusen and Schrock (2006) note that artists often work in media and related industries. Similarly, we suspect that many art industries could have close associations with universities given the concentration of faculty and students and their potential for supporting spin-off businesses. Finally, we include amenities variables because some find that artists are associated with amenities such as bars, restaurants, coffee shops and juice bars (Clark, 2004; Silver and Clark, 2013).[3]

Methodology

To explore metro- and neighbourhood-level arts industry cluster location characteristics, we first perform a bivariate correlation analysis on the arts clusters and the census and industry variables. Following this, we build a set of multivariate linear regression models using ordinary least squares (OLS). Correlations enable us to identify the variables with significant relationships to the arts industries and remove insignificant and highly correlated variables from the regression models.

Our dependent variable in both metro and neighbourhood models is the location quotient of the total employment in the arts industries listed in Table 1. Additionally, at the zip code level, we perform a deeper analysis using principal component factor analysis on two groupings of arts industries' per capita employment based on correlations and drop those arts industries with little to no relationship to other variables. As we

assume some correlation between arts factors, we apply an Oblimin oblique rotation, which produces five distinct factors that we label Cultural Product Services, Music Services, Film Services, Arts Districts and Arts Education Districts (see Appendix for factor loadings). Cultural Product Services includes a mix of arts industries related to film, music and design that commonly support both the arts and other industries. Music Services includes industries related to the production of music. Arts Districts represent areas that contain a mix of museums, performing arts theatres and art galleries. Arts Education Districts are similar but combine music groups (e.g. orchestras, operas and jazz ensembles) and fine arts schools. Both districts share a location with architects, all of which commonly seek a central city location. We drop Film because only two variables load on the factor.

Rather than summing the arts industries into a single cluster and assume that each contributes to the cluster equally, the principal component factor analysis weights each industry according to its contribution in the overall group. While we look broadly at the arts industry cluster, the factors allow us to more precisely examine arts location characteristics at the smaller scale of the zip code where the literature finds varying co-location patterns among arts industries without predetermining which arts industries cluster together (Currid and Williams, 2010).

Correlations indicate a strong possibility of multicollinearity among the industries and amenities we include as independent variables in our per capita model. To address this, we also conduct a principal components factor analysis on per capita employment variables at the zip code level for all of the industries listed in Table 2 above – finance, high technology, media industries and universities – and the amenities – bars, coffee shops and juice bars, and restaurants (see Appendix for factor loadings). This produces

a factor we label 'Innovation Districts' that displays consistently high factor loadings for all of the variables and cumulatively explains 56% of the variance. The industrial composition of an innovation district varies, but typically encompasses a range of industries in technology, media and finance alongside higher-education institutions and amenities catering to this workforce in a defined geographic area. Well-known examples are found in Barcelona, Boston, Pittsburgh and Toronto.

Following this, we build the OLS regression models to identify the characteristics that best predict the location of arts activity overall and by population size group. The metro level model takes the form

$$y = X\beta + \varepsilon \qquad (1)$$

where y is a vector ($n \times 1$) of observations of the dependent variable; X is a matrix ($n \times p$) of observations of the independent variables; β is a vector ($p \times 1$) of regression coefficients; and ε is a vector ($n \times 1$) of random error terms. The metro-level model also includes a dummy variable to control for any locational effects specific to New York City and Los Angeles.

For the zip code analysis, there is a concern that factors at the MSA correlated with our zip code level independent variables may also have an effect on the dependent variables we are analysing. Thus, for the zip code level the model takes the form

$$y = X\beta + D\gamma + \varepsilon \qquad (2)$$

where, in addition to the elements previously explained, D is a matrix ($n \times j$) of MSA dummy variables taking on a value of 1 when the zip code is nested in the MSA and 0 otherwise; and γ is a vector ($j \times 1$) of regression coefficients for each of the MSA dummy variables. This vector is not reported in the output as the coefficients are of little substantive interest. Its main importance is

to control for metro-level fixed effects correlated with our independent variables that have a significant relationship with our dependent variables. Thus, results estimated using this equation account for the possibility of omitted variable bias resulting from metro-level fixed effects and should be considered more conservative than running models that do not consider metropolitan effects.

We further adjust all models to account for possible multicollinearity by examining the bivariate correlation matrices for each geographic level as well as each population group. In the final models presented, no independent variable is correlated with another at 0.7 or higher (or −0.7 or lower). We further adjust our models by removing variables that produce high variance inflation factors (VIFs). Only one of our variables in each of the final regression models (education at the metro level and non-family households at the zip level) possess a VIF score over 5 and all are below 10, indicating that multicollinearity should not have a major impact on the results. Finally, we remove insignificant variables that do not contribute to the adjusted R-squared for the metro-level population group models. We perform this additional adjustment on these models because they examine relatively small sample sizes and thus require a smaller subset of variables for identification of significant relationships with arts clusters.

Analysis and results

Reinforcing expectations, metro data show that arts clusters gravitate toward regions that are urbanized, relatively diverse and economically secure, and there is evidence that the arts are associated with strong economies. Our local-level analysis, however, reveals somewhat of a contrast. Here, the larger arts cluster splits into four clusters reflecting the distinct locational patterns of

the arts at the micro-level. Further, the primary predictor of an arts cluster is the presence of a larger innovation industry district and, while we can identify the four distinct arts clusters, their social and physical character is varied and difficult to pinpoint. In terms of metro size, we observe a distinct set of differences between large and mid to small metros. As we discuss later in the paper, these findings provide an important corrective to common assumptions about artistic location patterns. In the first section we present a brief descriptive analysis of the arts cluster geography, followed by the results of bivariate correlations and the statistical analysis.

Descriptive analysis: Arts cluster locations

Overall, as much of the extant literature suggests, very few metros possess strong arts concentrations (LQ 1.2 or greater), just 28 out of 366 metro areas, conforming to the overarching 'winner-take-all' geography of cultural industries (Currid, 2006; Scott, 2000). Los Angeles, with its immense film industry, and Santa Fe, with its highly concentrated arts and design sector, maintain by far the strongest concentrations in the arts cluster followed by a diverse set of places including large metros such as New York and San Francisco, tourist destination Honolulu, and music industry hub Nashville (Figure 1). Santa Fe's considerably smaller employment base amplifies its high concentration but other small metro college towns also make a strong showing including Ashville, NC; Boulder, CO; and Ann Arbor, MI. In contrast, some large metros with established arts employment such as Boston and Chicago do not hold a competitive advantage but still retain sizeable bases of employment in the arts.

The top neighbourhoods or localised areas based on the arts district factors represent a range of places. As anticipated, these are predominately found in central city locations and large metros, though not necessarily in the leading arts metros. Cultural Product Services districts are led by Los Angeles (centred in Hollywood and Santa Monica) and, to a lesser extent, New York. Other strong areas include downtowns in Boston, Minneapolis, Pittsburgh and the Dallas Design District. The majority of top 20 Music Services areas are found in New York (including much of Midtown, Chelsea and the West Village) and Los Angeles. This category also includes Nashville's Music Row and downtown Portland, OR. In contrast, Los Angeles and New York barely make a showing in either of the top Arts District locations. Arts Districts represent a mix of areas with established cultural facilities as in Chicago's Loop area around Millennium Park and the Chicago Symphony Center, Minneapolis's Hennepin Avenue theatres, downtown San Jose, and the Canyon Road galleries of Santa Fe. Chicago also tops the Arts Education Districts with the Arts Institute of Chicago and Columbia College. Other areas include downtown San Antonio, downtown Philadelphia and Union Square in San Francisco, all of which contain proximate art schools and cultural facilities.

Arts cluster correlations

Correlation analysis at the metro and neighbourhood levels suggests that arts clusters are attracted to urbanized areas regardless of metro size (Tables 3–5). In fact, based on the neighbourhood per capita measure, these variables become more significant as metro size declines suggesting that, in line with existing literature, arts clusters seek out 'urban' neighbourhoods despite smaller city locations. Beyond this, however, location characteristics at the two scales part ways. At the metro level, variables representing upward mobility reveal the strongest positive correlations with the arts cluster and
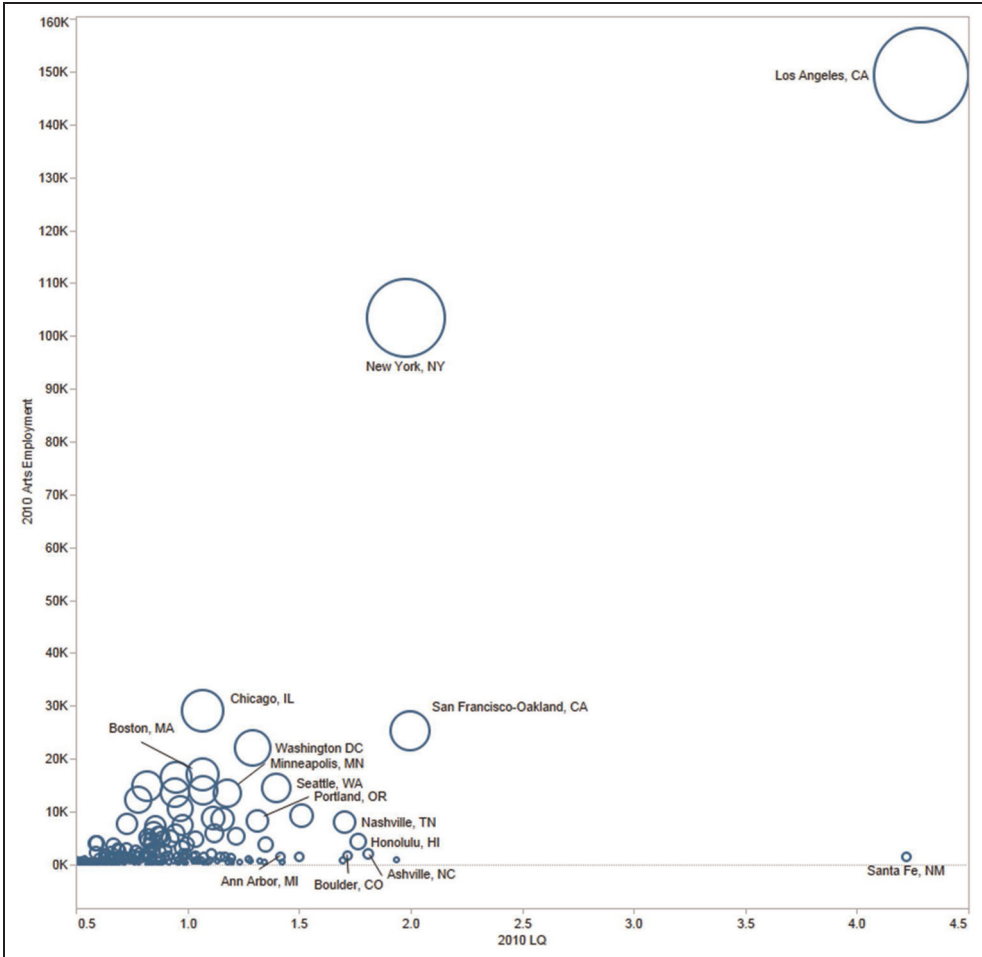
Figure 1. 2010 metro arts cluster employment size and concentration.

associations are positive for diversity. Alongside this, the arts cluster holds a negative relationship with the disadvantage variables particularly in mid-sized metros. In contrast, neighbourhood-level correlations for the census variables are weak or insignificant but there is a close association with per capita amenities and industries (Table 5). Correlations with the amenity variables are strongest for small metros (250,000–500,000) though all metro sizes hold moderate to very strong associations. Arts clusters display the strongest neighbourhood-level associations with other industries, again most notable in

the small metros (250,000–500,000). We address the high correlations in the regression models by employing factor analysis as described above.

In short, while there is evidence of a relationship between arts clusters and indicators of economic health, the relationship is predominately at the metro level. This could indicate that while arts industries gravitate toward and contribute to stronger metro economies, they do not necessarily drive neighbourhood-level growth or gentrification and that arts industries may depend on

Table 3. Significant metro correlations by metro size category.

Variables	All Metros	Large (over 1,000,000)	Mid (500,000-1,000,000)	Small (250,000-500,000)	Smallest (under 250,000)
Density	0.473	0.660	0.432		
Avg. HH size		0.282			−0.251
Avg. rooms	−0.119	−0.433			
Rent occ	0.205	0.603			
Hu2plus	0.449	0.433	0.548	0.404	0.239
Hupre50					
Walk to work	0.212	0.322	0.379	0.391	0.275
Black	−0.124				−0.247
Hispanic		0.297	−0.312		
Foreign	0.338	0.512			
Noneng	0.186	0.462			
Nonfamily HH	0.289			0.542	0.335
Avg. hhinc	0.544	0.366	0.615	0.539	0.446
Avg. rent	0.552	0.482	0.608	0.498	0.446
BA plus	0.576		0.644	0.715	0.516
Manager	0.558		0.622	0.661	0.478
Unemployment	−0.127		−0.400		−0.151
Poverty	−0.295		−0.601	−0.297	−0.184
Oneparent HH	−0.289		−0.570	−0.525	−0.293
Public asst.			−0.308		
Vacant		−0.316			
Work at home	0.476		0.374	0.587	0.518
Not in LF	−0.255		−0.337	−0.240	−0.146
Media	0.133	0.305		0.264	0.178
Finance	0.394		0.471	0.290	0.306
Tech	0.351		0.419	0.460	0.238
Social capital					
Universities					
Amenities	0.277			0.369	0.427

different features depending on the scale in consideration.

Predicting arts cluster locations: Regression analysis

Metro-level results. In this section, we aim to determine the most influential variables in arts cluster locations looking at both the wider urban region and local neighbourhood levels. Metro-level data confirm many of the bivariate correlation results and reinforce the metro-/neighbourhood-level contrast. The models explain 59% of the variance in arts cluster location in all 366 metros and more for three of the four population groups (Table 6). In line with the bivariate analysis, our remaining signifier of upward mobility,

Table 4. Neighbourhood LQ correlations by metro size category (significance < 0.05 only).

Variables	All Zips	Large (over 1,000,000)	Mid (500,000-1,000,000)	Small (250,000-500-000)	Smallest (under 250,000)
Pop. density	0.142	0.152	0.076	0.049	0.053
Avg. household size	−0.128	−0.180		−0.105	−0.096
Avg. rooms	−0.068	−0.090			−0.067
Rental housing	0.097	0.114	0.055		
Multiunit housing	0.159	0.170	0.102	0.070	0.058
Housing pre-1950	0.081	0.123	0.057		
Walk to work	0.124	0.142	0.132		0.097
Black	−0.027	−0.052			
Hispanic		−0.027	−0.055		
Foreign-born	0.100	0.100			
Non-English speakers	0.049	0.053			
Non-family households	0.171	0.209	0.101	0.108	0.086
Avg. household income	0.226	0.246	0.157	0.110	0.120
Avg. rent	0.220	0.238	0.149	0.126	0.099
BA degree	0.273	0.305	0.188	0.142	0.188
Manager	0.182	0.224	0.119	0.095	0.065
Unemployment	−0.052	−0.089			
Poverty	−0.044	−0.051			
Single-parent households	−0.134	−0.184	−0.090	−0.051	−0.068
Public assistance	−0.044	−0.057			−0.059
Vacant units	0.039	0.031	0.045	0.045	0.125
Work at home	0.165	0.226	0.131	0.085	0.099
Not in LF	−0.047	−0.064			
Media	0.070	0.091	0.073		
Finance	0.079	0.079	0.077		0.066
Tech	0.025	0.023			
Universities	0.027		0.060		
Amenities	0.018				0.050
Coffee and juice	0.054	0.071	0.056		
Bars					0.052
Restaurants	0.095	0.128	0.080	0.056	0.044

a highly educated metro population, is by far the strongest predictor of the arts cluster.[4] Alongside this, we find a negative association with poverty. In the regression models, the urban variables lose some of their explanatory power. Here, arts clusters are more likely found in areas with smaller, older housing and residents working at home, but they are negatively associated with indicators of density including multifamily units and walking to work. Foreign-born residents and non-family households hold positive, significant associations. In

terms of amenities, only one of the variables, restaurants, holds a positive association and none of the industries variables are significant. The Los Angeles/New York dummy is positive and significant at 0.29.

Examining the results by population size, however, shows a clear distinction between the large, mid, and small sized metros in terms of arts location. In the large metros, the primary predictor of an arts cluster is essentially a location in Los Angles and New York. Mid-sized metros stand out for their lack of diversity (high negative associations

Table 5. Neighbourhood per capita correlations by metro size category (significance < 0.05 only).

Variables	All Zips	Large (over 1,000,000)	Mid (500,000-1,000,000)	Small (250,000-500-000)	Smallest (under 250,000)
Pop. density	0.056	0.045	0.072		0.16
Avg. household size	−0.16	−0.184	−0.225	−0.176	−0.212
Avg. rooms	−0.18	−0.182	−0.269	−0.224	−0.22
Rental housing	0.152	0.145	0.281	0.205	0.243
Multi-unit housing	0.207	0.199	0.319	0.264	0.349
Housing pre-1950	0.061	0.065	0.114	0.09	0.062
Walk to work	0.297	0.353	0.255	0.201	0.195
Black			0.108		0.057
Hispanic					
Foreign-born	0.062	0.057			0.06
Non-English speakers	0.032	0.030			
Non-family households	0.21	0.215	0.366	0.24	0.331
Avg. household income	0.055	0.055			
Avg. rent	0.083	0.084			0.099
BA degree	0.125	0.131	0.075	0.089	0.197
Manager	0.071	0.084			
Unemployment			0.047	0.045	
Poverty	0.05	0.048	0.168	0.093	0.089
Single-parent households	−0.082	−0.1	−0.08	−0.069	
Public assistance	0.020		0.126		
Vacant units	0.052	0.083	0.048		0.099
Work at home	0.074	0.111	0.061		
Work in place	0.116	0.133	0.172	0.107	0.195
Not in LF			0.118		0.09
Media	0.534	0.537	0.69	0.957	0.481
Finance	0.698	0.707	0.265	0.943	0.59
Tech	0.517	0.517	0.371	0.734	0.062
Universities	0.688	0.743	0.163		
Amenities	0.26	0.24	0.286	0.882	0.329
Coffee and juice	0.635	0.638	0.326	0.823	0.372
Bars	0.445	0.381	0.749	0.942	0.394
Restaurants	0.591	0.564	0.644	0.918	0.494

with foreign-born residents and non-family households) as well as significant and negative associations with smaller, older housing and poverty and, unlike the large metros, a strong positive association with finance. Arts in the smaller metros are found in areas with high education levels, more people that work at home, and smaller, older housing units. Additionally, restaurants and a university presence define metros with arts industry clusters in the 250,000–500,000 range while the smallest metros show art cluster

associations with the diversity variables, lower poverty levels and finance.

Taken as a whole, our results suggest that there are few uniform predicators of an arts presence across the different metro size groups. While simple correlations point toward urbanized, diverse and upwardly mobile metro arts clusters, the regression analysis controls for strongly related variables and, therefore, we see their weaker residual effect. Ultimately, this indicates that there is considerable variation in the significance of

Table 6. 2010 Metro-level arts cluster regression results.

	All metros	Large (over 1,000,000)	Mid (500,000–1,000,000)	Small (250,000–500,000)	Smallest (under 250,000)
Pop. density	0.102	0.24	0.13		
Avg. rooms	−0.138**		−0.558***	−0.337***	−0.126
Rental housing	0.046				
Multiunit housing	−0.181***		0.222	−0.180**	−0.209**
Housing pre-1950	0.150**		−0.394***	0.342***	0.199**
Walk to work	−0.178***	−0.167	0.229**	−0.128	−0.215**
Black	−0.004				
Foreign-born	0.156**	0.137	−0.773***		0.231***
Non-family households	0.132*	0.143	−0.488***		0.269**
BA degree	0.506***			0.737***	0.485***
Unemployed	0.026			0.109	
Poverty	−0.184***		−0.558***	−0.126	−0.168**
Public assistance	0.105**		0.153		0.107
Vacant housing	0.011	−0.257**			0.1
Work at home	0.220***	0.15		0.198**	0.285***
NYC_LA	0.292***	0.663***			
Media	0.038			0.109	
Financial	0.034	−0.196*	0.546***		0.157***
High tech	−0.024				
Universities	0.032			0.157**	
Coffee and juice Bars	−0.123**				−0.150*
Bars	−0.034		0.324***		
Restaurants	0.171***	0.133		0.248***	0.111
R^2	0.62	0.77	0.8	0.72	0.5
Adjusted R^2	0.59	0.72	0.75	0.68	0.46
N	366	51	50	78	187

Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

the variable groupings by place and metro population size. In the discussion section we will consider the implications.

Neighbourhood-level results. Neighbourhood-level regression results provide an interesting contrast to the metro level. Although the neighbourhood-level LQ measure registers a weak set of R^2s, topping out at just 0.188 for neighbourhoods in large metros, there are some significant differences from the metro-level analysis that deserve mention (Table 7). Overall, we continue to observe a strong but considerably weaker association with a highly educated neighbourhood population yet, in contrast to the metro level, there is no significant relationship to poverty and we observe conflicting associations with diversity (a negative association with foreign-born residents and a positive relationship with non-family households). We continue to see some signs of attraction to urban locations (positive associations with density and older housing). Finally, whereas metro industry associations are uniformly insignificant, neighbourhood-level results register a positive association with media industries and negative links to other industries. These relationships, moreover, are driven essentially by the large metros where, unlike at the metro level, we get a number of significant, albeit weak, relationships.

Table 7. 2010 Neighbourhood-level arts cluster regression results (LQ).

Variables	All metros	Large (over 1,000,000)	Mid (500,000– 1,000,000)	Small (250,000– 500,000)	Smallest (under 250,000)
Pop. Density	0.043***	0.051***	−0.039	−0.016	0.045*
Rental Housing	−0.044**	−0.059**	−0.050	−0.014	−0.040
Housing Pre-1950	0.116***	0.129***	0.089**	0.070*	0.066*
Walk to work	0.003	−0.019	0.050*	−0.013	0.047*
Black	−0.008	−0.008	0.053	−0.032	0.020
Foreign-born	−0.056***	−0.034*	−0.075*	−0.086*	−0.021
Nonfamily Households	0.102***	0.154***	0.034	0.087*	0.023
BA degree	0.227***	0.232***	0.179***	0.120**	0.127***
Unemployed	0.013	0.024	−0.013	0.012	−0.007
Poverty	0.006	−0.010	0.123**	0.016	−0.038
Vacant Housing	0.027**	0.015	0.022	0.002	0.093***
Work at home	0.068***	0.113***	0.043*	0.025	0.005
Media	0.021*	0.025*	0.017	0.017	0.007
Financial	−0.011	−0.023*	0.026	−0.012	0.021
High-tech	−0.024**	−0.025*	−0.012	−0.032	−0.037*
Universities	−0.017*	−0.035**	0.026	−0.008	0.000
Coffee and Juice Bars	−0.005	−0.023*	0.020	0.005	−0.010
Bars	0.013	−0.002	0.034	−0.001	0.045*
Restaurant	0.030***	0.051***	0.047*	0.002	−0.011
R^2	0.163	0.196	0.106	0.095	0.150
Adjusted R^2	0.139	0.188	0.077	0.048	0.075
N	13,946	7275	2161	1964	2546

Note: *$p < 0.1$; **$p < 0.05$; ***$p<0.01$.

Based on the per capita measure, we get more robust R^2s in all but the music cluster, which defies a clear pattern based on our data and we exclude it for the most part from the discussion for this reason (Tables 8–10).[5] Bar the music cluster, there are important factors that can predict the localised arts cluster locations. Above all, contrasting with prior results, the innovation district factor – a composite of knowledge-driven industries and amenities – is by far the strongest predictor of all arts clusters. Unlike at the metro level, a combination of high levels of education and low poverty are not predictive of arts cluster location patterns.

Each cluster contains a number of significant variables indicative of place character but these predict a small amount of the variance in arts cluster locations.[6] Results indicate that the arts clusters are generally more common in urbanized areas (density, walk to work) with fewer rental units and varying associations with older housing. Non-family households are commonly present as well except in the arts education districts, which show no significant association with diversity. In short, the variables that influence arts cluster locations appear to be both place and neighbourhood specific and vary according to the type of arts cluster, whether arts district, arts education cluster or cultural product services (Tables 6–8).

Population groups show little variation from the broad finding that variables are idiosyncratic to place and arts cluster type. Overall, the innovation district factor does remain a consistent, robust predictor of the

Table 8. Neighbourhood-level arts district regression results (per capita).

Variables	All metros	Large (over 1,000,000)	Mid (500,000– 1,000,000)	Small (250,000– 500,000)	Smallest (under 250,000)
Pop. density	0.032***	0.029**	−0.083***	−0.014	−0.077***
Avg. HH Size	0.007	0.002	0.089***	−0.012	0.024
Rental housing	−0.035***	−0.063***	−0.039	0.016	−0.056*
Housing pre-1950	0.010	−0.014	0.153***	0.011	0.172***
Walk to work	0.059***	0.133***	−0.021	−0.036**	0.081***
Black	0.009	0.015	0.033	−0.004	0.063**
Foreign-born	−0.015	0.002	−0.076***	−0.008	−0.037
Non-family households	0.032**	0.030	0.062*	−0.018	0.087**
BA degree	0.001	0.005	0.017	0.000	0.111***
Unemployed	−0.006	−0.016	0.004	0.009	0.044*
Poverty	0.000	0.006	−0.007	0.005	−0.028
Vacant housing	0.016**	0.029***	−0.002	−0.002	0.025
Work at home	−0.016**	−0.041***	−0.005	0.027*	0.007
Innovation district	0.664***	0.624***	0.720***	0.825***	0.264***
R^2	0.49	0.48	0.52	0.68	0.22
Adjusted R^2	0.47	0.47	0.5	0.66	0.16
N	13,946	7275	2161	1964	2546

Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Table 9. Neighbourhood-level arts education district regression results (per capita).

Variables	All metros	Large (over 1,000,000)	Mid (500,000– 1,000,000)	Small (250,000– 500,000)	Smallest (under 250,000)
Pop. density	0.017*	0.032**	−0.060***	−0.052**	0.084***
Avg. household size	−0.009	−0.013	−0.019	0.040	−0.014
Rental housing	−0.031**	−0.035*	−0.003	0.031	0.096***
Housing pre-1950	0.023**	0.035**	−0.029	0.017	−0.024
Walk to work	−0.036***	−0.073***	−0.005	0.021	−0.054**
Black	−0.001	−0.007	0.058**	−0.006	0.031
Foreign-born	0.009	0.019	−0.031	−0.028	0.032
Non-family households	−0.017	−0.022	0.090**	0.146***	0.021
BA degree	−0.003	−0.014	−0.064***	0.034	0.048*
Unemployment	0.031***	0.046***	−0.010	0.040	−0.014
Poverty	0.007	−0.004	0.048	−0.016	−0.009
Vacant housing	−0.009	−0.004	−0.081***	−0.023	−0.048*
Work at home	0.050***	0.072***	0.051***	−0.006	−0.065***
Innovation district	0.552***	0.581***	0.653***	0.576***	0.150***
R^2	0.29	0.31	0.49	0.42	0.13
Adjusted R^2	0.27	0.3	0.47	0.39	0.06
N	13,946	7275	2161	1964	2546

Note: *$p < 0.1$; **$p < 0.05$; ***$p<0.01$

Table 10. Neighbourhood-level cultural products services regression results (per capita).

Variables	All metros	Large (over 1,000,000)	Mid (500,000–1,000,000)	Small (250,000–500,000)	Smallest (under 250,000)
Pop. density	0.006	−0.000	−0.112***	−0.083***	−0.025
Avg. household size	−0.007	0.012	−0.025	−0.012	0.018
Rental housing	−0.039***	−0.039**	−0.049	0.013	0.009
Housing pre-1950	−0.004	−0.009	0.113***	−0.003	0.000
Walk to work	0.027***	0.010	0.009	0.053*	0.020
Black	0.004	0.000	−0.005	0.007	0.005
Foreign-born	0.036***	0.041**	−0.032	0.020	−0.028
Non-family households	0.082***	0.133***	0.057	0.165***	0.050
BA degree	−0.036***	−0.061***	0.105***	0.029	−0.003
Unemployment	0.033***	0.057***	0.035	−0.032	0.030
Poverty	−0.029**	−0.037**	0.098***	0.006	−0.004
Vacant housing	−0.052***	−0.078***	−0.069***	−0.005	−0.020
Work at home	0.056***	0.094***	−0.045**	−0.031	−0.033
Innovation district	0.518***	0.546***	0.496***	0.249***	0.158***
R^2	0.31	0.34	0.32	0.15	0.12
Adjusted R^2	0.29	0.33	0.3	0.11	0.04
N	13,946	7275	2161	1964	2546

Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

arts clusters, though it is considerably weaker in the smallest metros. In direct contrast to the metro level results, high education remains an insignificant predictor of the arts district clusters in all but the smallest metros, except in the location of cultural product services in the mid-sized metros (but negative in large metros). The disadvantage variables, unemployment and poverty, are generally insignificant predictors of all arts clusters in all metros (unemployment is positive for large metro arts education districts and cultural product services and poverty is positive for mid-sized metro cultural product services). Beyond these particular findings, census variable associations vary considerably between arts clusters and population groups. Large metro arts districts stand in contrast to the other regions for their lack of older, rental properties but comparatively dense areas. Large metro arts education districts are similar but found in older neighbourhoods with low levels of walking to work.

Discussion and conclusions

We set out to identify the metro- and neighbourhood-level attributes that are associated with arts clusters and the extent to which patterns in arts clustering might emerge. In response to the lack of scalar comparative work, we explore if and how these attributes vary by place both undertaking a macro regional comparison and looking more closely at different measures of neighbourhood dynamics. The use of these two different geographies suggests different ramifications for development and policy initiatives along with our understanding of how the arts spatially concentrate.

We find that the established hubs – Los Angeles, New York, Nashville and Santa Fe, for example – remain important art centres. However, we also find that other smaller metros and neighbourhoods outside these hubs have notable employment concentrations. In short, while the arts industry geography is fairly dispersed, the major centres

remain the dominant economic capitals of the arts and culture industries.

With regard to policy and development, our statistical findings indicate that, on the whole, arts industries exhibit distinct metro- and neighbourhood-level location patterns which suggests that arts policy ought to be targeted through place-specific (rather than overarching) initiatives. There are distinctions across and between geographic scale, populations and the arts industries themselves, more so than in high technology (Saxenian, 1996) or finance clusters (Sassen, 1991). In other words, a comprehension of arts clusters requires specificity and particular attention to the uniqueness of the type of art and the place itself. Targeted local development may be the most important means by which to support the arts, rather than broader federal, state or regional efforts. Distinctions between arts clusters occur at a localised level and thus ought to be supported as such.

There are, however, some general findings worth mentioning. Overall, the arts are more likely to cluster in urbanized metros with indicators of economic health. This finding is not unexpected, given that places with strong economies are more likely to provide employment opportunities for an arts workforce. However, we found surprisingly little association with the arts and other creative or knowledge-intensive industries at the metro level as others have found for the leading centres of the global economy (Currid, 2006; Florida, 2002). At the same time, Los Angeles and New York continue to explain the location of a considerable amount of metro-level arts employment, reaffirming their positions as the dominant locations of commodified artistic production in the USA.

Our results at the neighbourhood level using both measures report many opposite results from the metro level, suggesting that arts clusters may seek out the broader attributes of certain types of cities, but locally require different attributes in their production processes and 'work life', so to speak. Our analysis of arts clusters tracks concentration of arts industry employment rather than where artists live. Thus, we find that art clusters are tied less to conventional signs of gentrification and 'urban' characteristics but rather they may be found where other related industries that rely on specialised expertise and knowledge abound, or what we call an 'innovation district'. While we do not challenge the general notion of an artistic enclave, our data underscore that such areas are produced under stochastic conditions and that arts industries locate in a much wider variety of places but particularly in and around the innovation districts.

We also find previously overlooked segmentation between arts industries at the neighbourhood level. When measured based on per capita employment, the larger arts cluster rooted in prior literature splinters into distinct clusters including two different types of arts districts, cultural product services, music services and film services. Our initial regression models based on the full cluster produced high multicollinearity with industry variables despite nearly 14,000 observations. As such, while this group of industries may make sense at a larger scale or when studying the occupational skills base, in terms of neighbourhood-level industry clustering, we found more nuanced patterning to exist. In other words, these different arts clusters are drawn to neighbourhoods comprised of different characteristics. This suggests that various types of art production – whether design industries, film or music – rely on different agglomeration economies and resources.

More generally, our research suggests that arts clusters do not have a definitive location pattern and that place-specificity – by size, scale and type of industry clusters – informs much of our findings. Local-level

arts industry clusters do not exhibit clear associations with diversity or with urban characteristics except in larger metros. This confirms our overall takeaway that we cannot generalise to the entire USA based on large metros alone, which often become the poster children for ubiquitous arts revitalisation initiatives. Smaller metros tend to exhibit meaningfully different neighbourhood compositions associated with their arts clusters. Moreover, the location characteristics of arts clusters are difficult to precisely identify below the metro level because they are found in such a wide variety of places. Arts industries may locate in areas with particular industry strengths or with other similarly concentrated labour markets in the CBD or suburban business districts. They may be found in neighbourhoods with high concentrations of specialised consumer amenities or in different types of arts-based entertainment districts and, therefore, comprise a much more diverse set of places than the stereotype of a hip, bohemian neighbourhood (Brennan, 2012).

Ultimately, these findings indicate that arts scholars and urban policymakers need to rethink how we define, study and think about artistic neighbourhoods as well as the context under which the arts are utilised to stimulate economic development or influence gentrification. We caution that our work does not unearth the causal relationship between art and economic development and certainly not the direction of this dynamic. Anecdotal and descriptive work suggests an important link but the extent to which there is a measurable, outcome-based relationship between art and development remains difficult to pin down. However, our work helps illuminate the distinction between metro- and neighbourhood-level differences in arts clusters. Our results suggest that arts industries and their labour pools seek out the larger urban milieu with density, diversity and amenities, but also

possess specific needs as related to their type of cultural production, as the diverse local attributes by cluster imply.

From a policy perspective, our research suggests a very focused, localised and place-specific approach towards the arts as agents in economic development, but also a broader role in wider regional growth efforts. Again, we caution that the extent to which the arts shape development is not entirely clear. However, our work does indicate means by which the relationship between the two could be nurtured across different clusters and geographic scales.

Paradoxically, we find that the arts are not an urban panacea as recent literature and policy would suggest, but also their role in developing metro economies is highly underestimated. While many of the variables linked to arts clusters are incredibly place specific, the arts are linked to broad measures of innovation and development as captured by our 'innovation district' factor, suggesting the arts can play a larger role in economic development irrespective of metro size or geographic boundaries of city and neighbourhood. This overall finding would suggest that the current innovation district schemes as witnessed in Boston, New York City, and elsewhere ought to incorporate arts industries.

To this end, these results raise important questions, but also new approaches for arts-based urban development policy and the role of the arts in creative and knowledge-based industries more widely. These are important issues because supporting industry clusters remains an important component of economic development planning and the arts are increasingly on the policy radars of many cities, but more often viewed as amenities than economically important industries. Arts-driven economic development is currently applied through a very crude overarching arts district or 'creative city' initiative rather than looking at the specific relationship between local artistic

clusters and their milieu. Such an approach also ignores local dynamics between other industries and land use and zoning that may inform and shape the economic geography of firms and industrial activity.

Additionally, the amenity route may be short-sighted in terms of economic development policy because it undervalues the possible role of the arts in more robust and long-term industrial development and because it ignores the agency of the people powering artistic clusters. Our results suggest that the arts are a necessary component of innovation districts and are associated more generally with economic growth. Stemming from the results of our analysis, the arts' high association with innovation districts both reinforces popular notions of creative industries, but also points toward a shortcoming of common innovation district policy, which tends to exclude arts industries in the equation. Additionally, the role of a wider urban dynamism should not be underestimated as an attraction for artistic labour pools to local neighbourhoods. In short, while macro findings are consistent, the specificity of place dynamics should motivate those regions big and small – that are not necessarily New York City or Los Angeles – to cultivate the types of localised attributes important to arts clusters. We hope this research serves as a starting point for rethinking these dynamics and further research into the extent to which the arts may be an important and underutilised engine of economic growth and prosperity.

Funding

Notes

1. For this reason, we excluded zip codes that consisted of single buildings and self-contained sources of arts industry employment such as film studios. We therefore undercount but capture the vast majority of metro area arts employment.

2. Both measures have their respective merits and shortcomings for neighbourhood level analysis. The LQ is a problematic measure at the micro level first and foremost because zip codes do not contain the industry mix found at the regional level. Additionally, this method includes a high proportion of zips with low arts employment yet high LQs because the zip itself had little employment overall, which may skew the results. Similarly, per capita employment has the drawback of inflating places with very low population but high employment. This was not a major problem among the large number of zips in the study, but it does understate the strength of some zip codes in Los Angeles and particularly New York City. In short, while the per capita measure does not offer direct comparability of neighbourhood- and metro-level results, we feel it is the best option for this study. Nonetheless, we retain the neighbourhood LQ measure for comparability with the metro level where LQ is a standard measure of concentration. Employing both measures is useful given the exploratory nature of this study.

3. While the NAICS provide important industry employment data, they are problematic because they do not allow us to differentiate between qualities of amenities – for example the difference between a chain and locally owned restaurant. However, we also do not want to make assumptions about the types of amenities that may attract arts activity. Another shortcoming in our data is that we are not able to analyse local zoning and land use, which are potentially important factors in arts industry location at the neighbourhood level.

4. We also ran the model replacing average household income with education with virtually identical results, but a slightly lower association (0.19). These two variables are strongly related and so we do not include in the same model.

5. We ran per capita regressions on all arts industries but results indicate high levels of

multicollinearity in the smaller population groups. This led us to discard these results and pursue the more nuanced arts factor approach.

6. The adjusted R^2 for regression models with census variables alone is 0.11, 0.02 and 0.06, for arts districts, arts education districts and cultural product services, respectively. Although we continue to see very weak relationships with these variables in this model there are three notable differences. First, for all three arts clusters, density is positive rather than negative though this variable still shows a very weak association. Second, walking to work becomes a more significant variable particularly for large metros (up to 0.445 in large metro arts districts). Third, non-family households display a somewhat stronger association overall but particularly notable in mid-sized metro arts districts (0.319) and arts education districts (0.323).

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Appendix

Variables for industry and amenities composite measures.

Industry	NAICS Code	NAICS Title
Media	511110	Newspaper publishers
	511120	Periodical publishers
	511130	Book publishers
	515111	Radio networks
	515112	Radio stations
	515120	Television broadcasting
	519110	News syndicates
Finance	521110	Monetary authorities
	522292	Real estate credit
	522310	Mortgage and non-mortgage loan brokers
	523110	Investment banking and securities dealing
	523120	Securities brokerage
	523130	Commodity contracts dealing
	523140	Commodity contracts brokerage
	523210	Securities and commodity exchanges
	523910	Miscellaneous intermediation
	523920	Portfolio management
	523930	Investment advice
	551111	Offices of bank holding cos.
	551112	Offices of other holding companies
	525990	REITs
High tech	511210	Software publishers
	541511	Custom computer programming services
	541512	Computer systems design services
	541513	Computer facilities management services
	541519	Other computer related services
	541710	R & D in the physical, engineering, and life sciences
Amenities	445110	Supermarkets
	445120	Convenience stores
	445210	Meat markets
	445220	Fish and seafood markets
	44523/	Fruit and vegetable markets
	445291	Baked goods stores
	311811	Retail bakeries
	722213	Snack and non-alcoholic beverage bars
	448110	Men's clothing stores
	448120	Women's clothing stores
	448130	Children's and infants' clothing stores
	448140	Family clothing stores
	448210	Shoe stores
	448310	Jewellery stores
	448320	Luggage and leather goods stores
	45121/	Book stores and news dealers
	453110	Florists
	722210	Full-service restaurants
	722410	Drinking places (alcoholic beverages)

Innovation district factor analysis

Variable	Factor score
Media	0.764
High tech	0.734
Finance	0.814
Universities	0.592
Coffee & juice bars	0.867
Bars	0.593
Restaurants	0.821
Variance explained	56%

Art industry group 1 factor analysis

	Cultural products	Music	Film
Teleproduction	0.749		
Sound recording	0.761		
Graphic design	0.844		
Record production		0.762	
Integrated record prod. & distr.		0.860	
Music publishing		0.829	
Motion picture/video production			−0.916
Independent artists			−0.937
Variance explained	21%	33%	18%

Art industry group 2 factor analysis

	Art district	Art education
Music groups		0.969
Architects	0.458	0.697
Fine art schools		0.958
Art dealers	0.617	
Museums	0.739	
Theatres	0.579	
Variance explained	21%	44%