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New York as a Global Creative Hub:
A Competitive Analysis of Four Theories on World Cities

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How New York City has maintained its position atop the global urban hierarchy as a leading player in the world and national economy is part of the broader discussion on why cities grow and why some remain at the top of the heap decade on decade. There are several dominant theories explaining New York City's success, most notably those that argue the city is a center of command and control or managerial elite and is a global hub of finance and its related services. Yet an emerging framework explaining New York City's dominant position argues for the importance of global creative centers. From an occupational analysis of these competing hypotheses emerges a picture of New York City as a great bastion of creativity and cultural and artistic production. These results provide a unique perspective on New York City's position in the world hierarchy of cities and new opportunities for economic development strategies.

Keywords: *creativity; New York City; global cities; world cities; economic development*

How New York City has maintained its position atop the global urban hierarchy as a leading player in the world and national economy is part of the broader discussion on why cities grow and which ones remain at the top of the heap decade on decade. Some would argue that because New York City is big, it has advantages. But this argument is not sufficient in itself. Increasing numbers of scholars have argued that New York City gains advantages as a result of its position as a global center of finance and management. Most notable in the unyielding world city debate are the dominant global city and command and control paradigms put forth during the past two decades (Beaverstock, Smith, & Taylor, 1999; Castells, 2000; Friedmann, 1995; Knox & Taylor, 1995; Sassen, 1991). Piore and Sabel (1984) and Castells and Hall (1994) have argued for the increasing significance of high-technology industrial districts to the post-Fordist economy. Even before this groundbreaking work done on industrial communities, Bell (1973) posited the rise of a postindustrial service economy that would be characterized by high-skilled human capital. Yet an emerging framework explaining New York City's dominant position argues for the importance of creativity in economic development (Florida, 2002; Markusen & King, 2003; Markusen, Schrock, & Cameron, 2004; Scott, 2000, 2005). This line of thinking considers the importance of innovation

and artistic and cultural production in the generation of growth and competitive advantage. In the main, these different approaches have attempted to explain more broadly how economic growth happens and why it happens in particular places in the wake of deindustrialization and the rise of a world system of cities and economies. Broadly speaking, what components and characteristics are intrinsic in the success of a region or city in a global postindustrial economy?

Through the analysis of occupational clusters, this research has found that New York City's true competitive advantage is, unquestionably, in its dense concentration of creative, but more specifically, artistic and cultural producers. From fashion designers to film directors to musicians, New York's greatest strength is in its ability to harness its artistic talents such that they contribute greatly to both the local culture and economy and the global marketplace. Despite the longstanding perception of New York as the nation's financial capital or center of management and headquarters, it appears that these sectors are not overly represented within the region and that other metropolitan areas are leading within these latter occupational clusters.

This article examines world city theory with respect to New York City. After briefly reviewing the topical literature, this article uses the location quotient (LQ) to measure the concentration of occupations within the New York region associated with each respective theory. I argue that New York City's competitive advantage lies in the occupational clusters it is most concentrated in, as compared to other metropolitan regions. Finally, I discuss the results indicating New York City's advantage as a global creative hub, looking at future economic development strategies for optimizing the region's growth.

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CONCEPTS AND THEORIES

This first section reviews four competing theories on world cities with particular emphasis on how they explain the New York regional economy. This section will consider the following approaches: (a) finance and professional services, (b) command and control, (c) high-technology industrial districts, and (d) creativity and artistic and cultural production.

Finance and Professional Services

The most conventional conception of the global city enumerates two characteristics: world cities as defined as centers of both finance and high-level producer and professional services. Although finance and high-level producer and professional services are distinct industrial sectors in their own right, scholars often consider them in tandem, as those in finance and professional services often agglomerate in the same economic geography because of both positive externalities associated with close proximity and need for each other's labor pool, services, and skill sets. As such, Friedmann (1995), Knox and Taylor (1995), and Sassen (1991) argue that global cities are the world centers of both professional service and financial activity. Sassen argues that financial services and global headquarters are essential in defining a global city. Beaverstock et al. (1999) borrow from Sassen's approach and look at the concentration of financial and advanced producer services in defining global cities. Most recently, Glaeser (2005) has attributed the dense flow of information and agglomeration of high-level business services (e.g., localization economies) as an explanation for why New York has maintained its position as the world's great hub of finance. Scholars from this school point to data that indicate these cities as the centers of world financial markets. Historically, in this respect, New York City has dominated as a center of financial dynamism and innovation, trumping every other city nationally and competing only with the likes of London, Paris, and Tokyo.

Command and Control

Drawing on her work on the aforementioned industries, Sassen (2000) has coined the term *command and control* to explain how the hierarchy across and within industry plays out in global cities:

"National and global markets, as well as globally integrated operations, require central places where the work of running global systems gets done" (p. 32). Essentially, Sassen (1991, 2000) argues that world cities possess the central command functions in the global economy and that the high levels of management and executive functions that are concentrated in London, Paris, Tokyo, and New York dominate production activity throughout the world. In this tradition, economic developers have argued that New York is a headquarters city and that its place in the global economy is a product of executive and management prowess. Castells (2000) argues that these global cities are home to the managerial elite but also possess what Davis (1996) has called the Third World service proletariat, such that there is a tendency to have an economically polarized distribution of workers, which creates deep tensions across socioeconomic lines, a topic that will not be considered specifically in this article. Important to note, however, is that this dense agglomeration of high human capital workers draws low-skilled workers to the service industry that caters to this managerial elite, further creating demographic chasms within urban geographies (Castells, 2000; Davis, 1996; Soja, 1989).

Flexible Specialization and the Industrial District

Another perspective that emerged in the early 1980s that explained how particular regions emerged successful in the aftermath of the mass production economy is that of industrial districts. This emphasis shifted the focus from the city and firm to the region and from the internal structure of the firm to the network of resources and diverse organizations collaborating and competing in a flexible specialization environment (Piore & Sabel, 1984; Scott, 1993). Silicon Valley, easily the most cited example of this new type of industrial community, has been characterized as possessing a dense network of highly specialized and advanced engineering and technological firms located in a vast spatial network extending from San Jose, California, to San Francisco. Due to the immeasurable success, both in terms of innovation production and wealth produced in the region, Silicon Valley has often been considered the new model for economic growth in the postindustrial economy. Learning from the success of the high-technology economy of Silicon Valley, many regions worldwide attempted to create technopoles or planned communities of technology and engineering-related fields modeled after the flexible specialization and collaborative institutional research that Silicon Valley possesses (Castells & Hall, 1994). Due to this new emphasis on industrial diversity, it was argued that places such as Pittsburgh and Detroit failed because they relied on one industry and that most production remained internal to the firm. Saxenian (1994) posits that the reason that Boston's high-technology corridor, Route 128, failed to keep up with Silicon Valley was its inflexibility and firm culture marked by autarky and hierarchy, a far cry from the diverse and collaborative culture of its West Coast counterpart. Long before the rise of the industrial district literature, Jacobs (1969) made one of the earliest arguments for industrial diversity in her seminal classic *The Economy of Cities*. Thompson (1965) shares this perspective in his discussion of cities as incubators of innovation because of the diverse and eclectic people, firms, and skill sets that are able to interact within the dense urban environment.

In this respect, New York City demonstrated some of the characteristics of these types of community in its garment district. Rantisi (2002a, 2002b, 2004) astutely explores the intricate network of diverse suppliers and firms that collaborate within this very spatially based economy in her look at the economic geography of New York fashion. She notes the same dense yet flexible networks within the fashion industry that are remarkably similar in their dynamics to those found in high-technology industrial districts. Although Rantisi's (2002a, 2002b, 2004) insights into the dynamics of the fashion industry draw an important resemblance to those in high technology, scholars propagating the significance of industrial districts posit that these new clusters are characterized by the significance of technology- and engineering-related occupations in driving economic growth.

The Global Creative City

A framework that has recently emerged to explain the dominance of particular global regions and cities is the importance of creativity. Stemming from early arguments by Schumpeter (1942)

and Jacobs (1961), this line of thinking considers the importance of ideas, innovation, and artistic and cultural production in the generation of economic growth and new divisions of labor. Most notably, Florida (2002) argues that creativity, or the ability to generate "meaningful new forms" (p. 68), is the central tenet to the global economic system. Global cities are those that possess high concentrations of people who engage in creativity, also known as the creative class. Whereas Florida has looked at this on a broader level, other scholars such as Markusen and King (2003), Markusen et al. (2004), Caves (2000), and Scott (2000) have probed the relationship between culture and creativity in particular regions and industries.

The argument for creativity from a cultural and artistic perspective is manifold. Caves (2000), from an industrial perspective, and Markusen and King (2003) and Markusen et al. (2004), from an occupational approach, argue that creativity is essential to our economy. Markusen and King—in what they call the *artistic dividend*, "the degree to which the character of a place is distinctly artistic" (p. 3)—argue that creative occupations contribute to both the vibrancy and diversity of urban life and also both directly and indirectly to other facets of the economy such as tourism, business (marketing and advertising), and attracting other workers to the region. Caves considers the important relationship between art and commerce and the dramatic impact that creative industries have on the geography of production and the economy as a whole. Florida (2002) argues that the creative class is more than 30% of the workforce. Whereas traditional creative workers such as dancers, actors, writers, and musicians are included in this category, Florida posits that other occupations such as those in technology and research and development also participate in the creative process. Creativity, he argues, is fundamental to economic growth, the mastermind behind innovation.

Whereas creative industries and occupations have become increasingly important in powering city, national, and world economies in the present day (Caves, 2000; Florida, 2002; Markusen & King, 2003; Markusen et al., 2004), historically, New York City has always been home to artists, musicians, writers, and actors. The city has always been a hotbed of creative and intellectual breakthroughs, driven by creativity and talent. Although different industries have powered New York and have taken on great importance throughout history, creativity has always been a part of New York City's raison d'etre. Once heralded as a bastion of industrial and then financial prowess, the city has become a leading player in the postindustrial global creative economy, an economy that relies on the innovation, ideas, and creativity of human capital. New York City is not driven only by Colgate-Palmolive or JP Morgan Chase. It is also driven by creativity: creativity on the streets, creativity out of music studios in Brooklyn, creativity in the art galleries of Chelsea, creativity on Broadway's stages. And this creativity comes in all forms: It is marketable, it is street culture, it is obscure, and it is mainstream. New York City's diversity of creativity gives it the ability to recreate and generate the ideas and innovation that drive its economy.

Thus far, this article has outlined four of the most prevailing theories on how world cities establish their prowess as global leaders in the wake of postindustrial economic restructuring. There is no doubt that each of the competing paradigms of finance and producer services, command and control, high-technology districts, and creativity contribute to New York City's dominant position in the global economy. But the central question is "Of these different theories on world cities and economic growth, which is the best explanation for New York City's ability to reshape, adapt, and continue to be a great world center of growth and innovation?"

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DATA AND METHODS

To test these competing hypotheses, an occupational analysis was conducted to look at the concentration of occupations in these different sectors of finance and producer services, management, technology, and creativity. This research uses a measure referred to as an LQ to examine the representation of different occupations in the greater New York City economy.[1] This is a method for measuring the concentration of a particular occupation in a region in comparison to its concentration in the United States. This research classifies LQs with the following strata:

Occupations with an LQ of 0.00 to 0.99 have below-average representation in the region, those with an LQ of 1.00 have an average representation, and those occupations with an LQ greater than 1.00 have above-average representation in the region. Using 2000 and 2004 Occupational Employment Statistics (OES) data, which is taken from the Bureau of Labor Statistics, I determined the LQ to measure the concentration of occupations in the New York Primary Metropolitan Statistical Area.[2] Whereas occupations in finance, professional services, and top-level management are straightforward, I have focused on artistic and cultural producers in looking at creative occupations. I chose to look at both 2000 and 2004 for the selected occupational categories so that changes within occupational sectors can be observed over time.

OES collects occupational data as opposed to industrial data, which allows us to see what people do, not just what industry they work for, providing a richer picture of the region's aggregate skill sets. Furthermore, OES data are industry-reported, meaning that the data capture only those workers gainfully employed in that particular occupation within an industry, which is demonstrative of actual economic output.[3] A final point: Because OES data are on the Metropolitan Statistical Area (MSA) level and industry-reported, it also reveals where workers are being gainfully employed. Unlike census data, which are reported by the individual and thus does not reveal the location of the worker's job or occupation, OES data allow us to see which geography is economically benefiting from workers' skill sets. Regardless of whether workers are commuting from parts of New Jersey that are not a part of the New York Primary Metropolitan Statistical Area, the LQs capture that there are particular occupational concentrations that the New York region possesses. That particular types of workers are coming to work in New York is a further indication of the region's ability to maintain a competitive advantage in particular occupational sectors.

LQs highlight the strengths and weaknesses in a region's economy, as defined by the proportional representation of a particular occupation. This method evaluates the competitive advantage that a region possesses over other comparable geographies. It does not necessarily exhibit those industries that are generating the most economic revenue. Although this is not the only method for analyzing the dynamics of an economy, it does allow economic developers to gauge where a region has a particular strength and offers insight into understanding how to direct development within a particular industry, drawing from Markusen's (2004a) argument for creating a distinctive city. Conventional LQ analysis often focuses on industries rather than occupations. As Markusen (2004b) and Markusen and King (2003) have noted, however, occupational analysis allows for a more specific look at the impact of particular fields on economic growth and further closes the gap between regional and community approaches to economic development. That said, to see how workers in New York are more or less economically rewarded compared to those in other U.S. regions, this research also undertakes LQ analysis measuring the region's salaries by occupation.

Although LQ computations traditionally use the total United States as the base, I have opted to use more stringent (and more appropriate) criteria—gauging the LQs of New York's occupations relative to other MSAs in the United States. Hence, this research evaluates New York City relative only to other metropolitan areas, as urban centers are generally the most concentrated in creative occupations, and as such, this approach will give us the most accurate picture.

While the very definition of an LQ is that it compares one geographical unit to the aggregate of its comparable units, this research also chooses to analyze LQs in the selected occupations for a series of other large[4] metropolitan regions to provide a broader, more detailed picture of where the New York region stacks up in terms of its LQs compared to other large MSAs' LQs. Specifically, this research will look at other East Coast metropolitan regions, those in the California industrial corridor, and other rising competing cities such as Austin and Charleston, South Carolina.

The following section will present data on New York's occupational sectors for 2000 and 2004, along with 2004 LQ data for a selection of other large U.S. metropolitan regions (the actual data can be found in detailed tables in the appendix). To gauge the economic welfare of workers in New York, this research provides 2004 salary LQs.[5] Although the results point to many conventional conceptions of New York's strongholds, some of the results underscore crucial

opportunities for the New York City region's economy and perhaps more surprising, usurp traditional perceptions of the city as a great center of command and control.

FINDINGS

To summarize the main findings of the analysis, I look now at the occupational clusters associated with each world city theory. I discuss these four theories in turn, looking at the New York City region and comparing it to other leading metropolitan areas.

Command and Control

For several decades, scholars have been pointing to the concentration of managerial, executive, and CEO occupations as a signifier of a global city (Castells, 2000; Sassen, 1991). Much of this line of argument has posited New York City as the quintessential example of this type of economic prowess. Yet the results of this research present a very different picture. In fact, New York does not maintain a competitive advantage in managerial and CEO occupations, and they are notably not concentrated in New York City compared to MSAs as a whole. Relative to other large MSAs, New York's concentration of chief executives, at 1.02, ranks below, most notably, Boston (2.45); Charleston, South Carolina (1.37); Chicago (1.08); Raleigh–Durham, North Carolina (1.10); San Diego (1.04); San Francisco (1.33); and Washington, D.C. (1.39).[6] General and operational managers, an occupational sector that has increased from a 0.50 LQ in 2000 to 0.74 LQ in 2004, still lags significantly behind other major MSAs, most of which boast LQs higher than 1 for general and operational managers. The only management occupation that New York demonstrates a concentration in is marketing managers (1.44), which could arguably be considered a public relations and advertising occupation. And still, the region lags behind Boston (2.14), Raleigh–Durham (1.58), and San Francisco (2.34). In fact, although New York possesses an LQ of more than 1 for several of the management occupations, it does not rank first in any management occupation, indicating that several other major MSAs are more dominant in command and control occupations.

A common argument for New York as a center of command and control is that the management occupations located within the region, if not the most concentrated, are the most powerful and highest paid. As the contested severance package of $140 million for Michael Ovitz, former president of the Walt Disney Company, along with similar deals for other top-level executives, indicates, salary is a useful and illuminating proxy for how much power and control an occupational position possesses. In this respect, and going along with the traditional argument that New York is a great center of managerial elite, empirically, New York's management salaries should be greater than those of other metropolitan areas. However, analysis of salary LQs from 2000 to 2004 indicates that top-level management in the New York MSA are worse off than that in other metropolitan regions. In fact, at 0.92, salaries for chief executives are comparatively less than in MSAs as a whole. Overall, the salary results point out that the managerial elite in New York City are not at an economic advantage (see Table 1).

Corroborating with my results, the Center for an Urban Future (2003) reports that the New York metropolitan region has been losing *Fortune* 500 companies for the past 50 years. In 2000, the New York Consolidated Metropolitan Statistical Area,[7] which is a broader (and more forgiving) geographical unit, was home to only 14% of all large corporate headquarters in the nation, down from 16% in 1990 and 31% in 1955. Today, New York hosts not one main office of the nation's top 20 retailers.

Simply put, despite the conventional wisdom that New York is the center of management for major corporations, it appears that not only is it lacking in actual concentration but it lags in overall ranking compared to other MSAs. Furthermore, New York City's reputation as a headquarters city should be reconsidered in light of the increasing flight of major corporations for other locales.

TABLE 1
Command and Control in New York City

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Chief executives	1.00	1.01	0.92
General and operations managers	0.50	0.74	1.06
Marketing managers	1.18	1.44	0.99
Sales managers	0.72	0.73	1.12
Administrative services managers	1.01	1.46	1.04
Legislators	0.00[a]	0.27	1.59
Computer and information systems managers	1.13	1.26	0.96
Engineering managers	0.41	0.49	0.90

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = Location quotient.
a. An LQ of 0.00 indicates that there is such a low number of people working in that occupation that the Bureau of Labor Statistics must report zero employment for confidentiality purposes.

Broadly speaking, these results indicate that despite the majority consensus that New York's prosperity is a product of being a great center of managerial and executive control, such a perception is overemphasized and empirically unsound. This result is not to say that those who work in command and control occupations are insignificant to the New York economy, but instead, it points to a misperception that these occupations are highly represented (and, in the aggregate, highly paid) in the region. In terms of an overall advantage or dominance, these results signify that other industries may offer greater opportunities for competitive advantage and overall distinction for the region's economy.

Finance

New York City, a global center of financial services and transactions, possesses high concentrations of financial occupations. However, whereas all of these occupations possess concentrated LQs, it is important to note that finance, often considered the New York region's stronghold, is not nearly as well represented as are other occupations. In fact, most financial occupations have an LQ around 2, which demonstrates a higher concentration than in other U.S. metropolitan areas but does not indicate a significant concentration or competitive advantage compared to other industrial and occupational advantages the region possesses. Although this statement seems counter to the early strata defining an LQ of more than 1 as being more represented than average, the dramatically high LQs of other soon-to-be discussed occupations demonstrate that an LQ of 2 is not a distinguishing advantage. That said, some occupations within finance, such as personal financial advisors and securities, commodities, and financial services agents possess high concentrations in the New York region. However, notwithstanding these two occupations, the theory of New York as the densest financial centers does not appear to be supported (see Table 2). In comparison to other U.S. MSAs, New York maintains top rank in securities, personal financial advisors, and financial analysts. However, metropolitan regions such as Boston, Chicago, Washington, D.C., and San Francisco are close behind in these occupations and leading in others such as actuaries, budget analysts, financial examiners, and general financial specialists.

Although there has been an ebb and flow within particular occupational sectors, overall, from 2000 to 2004, the region's concentration in financial occupations remains, for all intents and purposes, consistent. However, the city's share of the nation's security jobs has declined from 36% in 1987 to 23% in 2002; and between 1990 and 2002, the securities industry grew by just 0.6% in New York City, whereas New Jersey experienced a 248% job expansion in the same years, indicating that finance is becoming increasingly decentralized, seeking locales outside the MSA. These results indicate what some economists have been positing for several years: Finance appears to be losing some of its dominance over New York City's economy (Center for an Urban Future, 2003).

TABLE 2
Financial Occupations in New York City

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Personal financial advisors	5.16	5.23	0.93
Accountants and auditors	1.55	1.68	0.94
Credit analysts	2.89	1.31	1.28
Budget analysts	1.10	0.93	0.92
Financial analysts	3.24	3.16	0.87
Actuaries	2.33	2.54	0.95
Financial examiners	2.25	2.58	0.75
Financial managers	2.20	1.93	1.12
Tax preparers	2.06	1.38	0.99
Securities, commodities, and financial services sales agents	4.44	3.83	1.20

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = Location quotient.

Overall, the results of this research and the accompanying data run contrary to traditional perceptions of the region's employment dynamics. The data indicate that the financial sector does not possess a significantly greater proportion of the region's employment than that in other metropolitan regions; and compared to other occupational sectors that will be discussed, it does not create New York City's distinction. Furthermore, when one looks at New York's economic trajectory, it appears that the region is losing jobs to places outside the regional economic geography, indicating that the long-standing focus on New York as a financial center should be rethought.

Professional Services

The concentration of the financial sector and command and control occupations has been linked to a broader argument of cities as postindustrial production sites (Sassen, 1991). Beaverstock et al. (1999), Bell (1973), Glaeser (2005), and Sassen (1991), among others, have noted the tight linkages between finance, management, and the high-level producer and business services that these industries require. Beaverstock et al. characterize world cities as centers of "innovations in corporate services and finance [that] have been integral to the recent restructuring of the world-economy now widely known as globalization" (p. 5). Professional services are both those for consumers and those for the firms that produce for consumers. These professional services often do not produce goods but instead provide high-level advice, management of assets, legal assistance, and other services. From this viewpoint, world centers are those that possess high levels of occupations that engage in this activity. This article will consider several of these types of producer services—namely, law, medicine, and media and public relations.

Law

Law and its related occupations continue to boast a strong presence within the New York region but with a caveat. There has been a significant decline in the concentrations of judges, adjudicators and hearing officers, law teachers and arbitrators, and mediators and conciliators, with the former two sectors possessing LQs of 0, indicating that there is such a low number of employers that the Bureau of Labor Statistics cannot report the exact number (due to confidentiality reasons).[8] Skadden, Arps, Slate, Meagher & Flom L.L.P., the nation's largest law firm, moved 150 jobs to White Plains, New York, one of the several law firms that has been moving jobs to different locales (Center for an Urban Future, 2003). On the other hand, other occupations, specifically court reporters and law clerks, have seen an upsurge, with concentrations more

TABLE 3
Law and Related Occupations

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Administrative law judges, adjudicators, hearing officers	4.07	0.00	0.00[a]
Arbitrators, mediators, conciliators	3.36	2.08	0.82
Law teachers	3.13	0.00	0.00
Court reporters	3.18	3.48	1.10
Law clerks	2.61	3.22	0.78
Lawyers	2.28	2.44	0.88
Paralegals and legal assistants	2.11	1.76	0.83

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = location quotient.
a. Salary data have not been provided by the Bureau of Labor Statistics when 0.00 is shown as the salary LQ.

TABLE 4
Public Relations and Advertising Occupations

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Public relations specialists	2.45	2.06	0.82
Advertising sales agents	2.32	2.83	0.88
Media and communication workers	N/A[a]	2.89	0.80
Advertising promotion managers	2.21	2.17	1.22
Market research analysts	2.16	2.15	0.82

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = location quotient.
a. Data are not available in 2000 for this occupation because it is a newly created occupational division.

than 3 (see Table 3). Overall, however, using salary as a proxy, those working in these occupations are less economically better off than those in other metropolitan regions.

These results indicate that New York has less of an advantage in legal services than what has been theoretically put forth and conveyed as conventional wisdom. In fact, Washington, D.C., has usurped New York's advantage in this sector, boasting dense concentrations between 2.5 and almost 4.00 in most legal occupations.

Professional Services and New York's Madison Avenue: Advertising

We can see Madison Avenue's advertising industry as a part of the city's professional strength but also as an offshoot of arts and culture, with public relations specialists and advertising sales and other related occupations at least twice as concentrated as in the rest of the United States. Some of the arts occupations discussed later also cross over to the advertising industry. Again, however, media and public relations do not appear to be the region's stronghold in terms of actual concentration (see Table 4). Moreover, from 1990 to 2002, the city's share of jobs in the nation's advertising industry fell 2%, and the city's national share in the publishing industry declined 1.3%. Two top publishing houses, John Wiley and Sons and Matthew Bender, relocated to New Jersey in 2000, taking 1,000 jobs with them, whereas S.I. Newhouse relocated between 250 and 500 back office jobs to Delaware (Center for an Urban Future, 2003).

Nevertheless, New York remains the leader in terms of rank in public relations, with San Francisco a close second across the board and Los Angeles dominating in agents and business managers (7.04 LQ).

TABLE 5
New York City and Medicine

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Podiatrists	4.78	6.13	0.00
Internists	4.50	3.89	0.81
Psychiatrists	4.25	5.98	0.73
Medical scientists	6.15	1.37	0.72

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = location quotient.

Medicine

Due to the dense concentration of medical schools, top-level research hospitals, and exceptional medical care, New York continues to dominate as a world-class center of medicine. New York has seen a significant drop in medical scientists, and places such as Raleigh–Durham, Boston, San Francisco, and San Diego are far ahead in this occupational sector. However, the New York region boasts a great advantage in actual physician care, and this advantage has increased substantially from 2000 to 2004 in some of these occupations. Medicine does seem to offer a significant competitive advantage compared to the other occupational clusters discussed thus far. Again, however, as with the other occupational sectors, medical employees are being paid substantially less relative to those working in other metropolitan regions (see Table 5).

Overall, New York still possesses an advantage in professional services, with a particular advantage in medicine but also faring well both in law and Madison Avenue's legacy of advertising and public relations. Dominance in these occupations is not significantly more than in other leading metropolitan regions, and overall employment figures indicate a general decline in the past several decades. From 1970 to 2000, the city's percentage of the region's employment in professional and business services declined from 60% to 45%, a 25% decline overall (Center for an Urban Future, 2003). The results in finance and professional services run parallel and indicate a general trend that, although the city still possesses an advantage in these occupations (arguably the two act symbiotically as a part of a larger agglomeration as Glaeser [2005] has posited), their concentrations have declined, and overall, these industries are not as dominant as has been suggested by scholars in the past several decades.

High Technology Districts

In the aftermath of the collapse of mass production in the United States and the dramatic economic restructuring of cities and regions, there emerged a consensus that the places that were the new hubs of vitality were those steeped in clusters of technology, engineering, and related fields, an argument put forth by Solow (1956) decades earlier. Advancements in goods and services produced by these industries were improving quality of life and creating new divisions of labor and opportunities for wealth generation. Most notably, places such as Silicon Valley, heralded as the brainchild of the new economy, illuminated this line of thinking. From such a perspective, regions were directed to encourage growth in technology-related fields. There were those who argued that place and geography would no longer be important to growth and that technology would dominate our lives and drive our economy. Those places that could foster these industries and occupations were the leaders in the postindustrial economy. Undoubtedly, technology and engineering have become increasingly important in today's economy. Yet a framework that argues for technology as a central tenet of today's economy leaves out some of the most dominant

TABLE 6
High Technology

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Computer and information scientists	0.00	0.95	0.63
Operations research analysts	0.79	0.71	0.73
Network and computer systems administrators	0.96	0.91	0.94
Computer programmers	1.34	1.61	0.84
Computer support specialists	1.03	1.01	0.95
Computer systems analysts	1.09	0.82	0.84
Computer specialists, all others	N/A	0.64	0.83
Network systems and data communications analysts	1.34	1.14	0.88
Mathematical scientists	N/A	0.00	0.00

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = Location quotient.

TABLE 7
Engineering and Related Occupations

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Electronics engineers	0.50	0.57	0.80
Chemical engineers	0.25	0.36	0.69
Industrial engineers	0.28	0.29	0.79
Mechanical engineers	0.34	0.43	0.78
Civil engineers	1.01	0.78	0.85
Materials engineers	0.37	0.00	0.00
Computer hardware engineers	0.42	0.49	0.81
Environmental engineers	0.42	0.59	0.82
Computer software engineers, applications	0.67	0.96	0.83
Computer software engineers, systems software	0.72	0.82	0.74
Computer support specialists	1.03	1.01	0.95
Industrial engineering technicians	0.18	0.14	0.72
Mechanical engineering technicians	0.41	0.28	0.74
Biomedical engineers	0.55	0.34	0.65
Electromechanical technicians	0.45	0.00	0.00
Engineering managers	0.41	0.49	0.91

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = Location quotient.

powerhouses of the world economy. As this research indicates, New York City's prowess as a world center cannot be considered from this perspective. Not only does New York not possess a high representation of high-technology and engineering-related fields, but these occupations are starkly absent from the region's economy, both proportionately and in sheer employment numbers. In fact, these occupations possess some of the lowest LQs of all occupations in the New York City region, and this result has, broadly speaking, remained constant from 2000 to 2004 (see Tables 6 and 7). Instead, regions such as Austin, Boston, Raleigh–Durham, and Washington, D.C., possess exceptionally higher concentrations in engineering and related fields. Boston, for example, has a 6.54 LQ for biomedical engineers, a 4.87 LQ for computer and information scientists, and a 7.54 LQ for electromechanical technicians, whereas Washington, D.C., possesses a 9.04 LQ for civil engineers and a 3.90 for operation research analysts, among other high LQs for related occupations.

TABLE 8
The Arts

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Fashion designers	14.33	15.98	0.77
Fine artists	6.06	4.98	1.10
Craft artists	N/A	4.71	1.08
Musicians and singers	5.08	6.79	0.00
Dancers	5.46	2.82	0.00
Art directors	5.42	4.90	0.96
Writers and authors	3.44	2.89	0.77
Editors	3.21	3.82	0.92
Multimedia artists and animators	3.05	2.61	0.76
Architects	2.96	2.34	0.84
Choreographers	0.72	1.72	1.70
Commercial and industrial designers	0.82	1.96	0.00
Graphic designers	1.45	2.10	0.97
Curators	N/A[a]	3.31	0.89

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = Location quotient.
a. Individual occupational category, *curators*, was created in 2004.

These results point toward two important observations: First, the importance of high technology in a postindustrial economy as the magic elixir cannot be prescribed or witnessed as the success story of all vibrant global cities and regions. In the case of New York, high technology and engineering do not possess a competitive advantage; and furthermore, the region is significantly lacking in these fields, indicating that there are other explanations for its global dominance. Second, despite the dot-com crash, New York City has been able to maintain a strong economy and an independence from the high-technology industry. Although the New York region witnessed a 74% decline in venture capital funding from 2000 to 2002 (Center for an Urban Future, 2003), it has been able to remain vital and diverse in its industrial and occupational fields. Perhaps this latter point is due to the region's lack of a high-technology and engineering core to begin with, but nevertheless, this result indicates an overall ability for New York to remain a global center without possessing a dense technological industrial district.

New York as a Creative Hub

As the results in Table 8 indicate, the occupations that are most concentrated and reflect the greatest opportunities for regional competitive advantage are not in finance or managerial control, high-level producer services, or engineering but instead in arts and culture. Fashion designers, with a 15.98 LQ, boast the highest concentration of all creative occupations. Across all fields and industries analyzed, New York's most concentrated occupations are within art and culture. Overall, the region's artistic and cultural economy boasts a 2.60 LQ, indicating a broad sweeping advantage in creative occupations.[9] Generally, most artistic and cultural occupations in the region possess LQs of at least 3, with several boasting concentrations higher than 5. From a national comparison, New York dominates in most creative occupations, with Los Angeles being the only other significant competitor. San Francisco also boasts a strong presence in creativity, but again, this advantage still lags behind New York's overall dominance.

Other artistic occupations that possess at least 2.5 times the concentrations of all U.S. MSAs include applied artistic occupations, such as architects, writers and authors, and multimedia artists and animators. New York holds its leading position, ranking in the top two or three of large metropolitan regions in these fields as well.

In the case of New York, high techology and engineering do not possess a competitive advantage; and furthermore, the region is significantly lacking in these fields, indicating that there are other explanations for its global dominance.

TABLE 9
Media, Film, and Television Production in New York

Occupation	2000 LQ	2004 LQ	2004 Salary LQ
Sound engineering technicians	10.16	6.21	0.96
Film and video editors	5.20	6.09	0.71
Broadcast technicians	4.29	2.04	0.91
Producers and directors	4.03	4.15	0.80
Audio and video equipment technicians	3.46	2.59	0.71
Set and exhibit designers	0.00	3.7	1.08
Makeup artists	9.13	19.28	0.87
Editors	3.21	3.82	0.92
Media and communication workers	N/A	2.89	0.80
Camera operators	4.27	3.25	0.70

SOURCE: Data from the U.S. Bureau of Labor Statistics (2000, 2004).
NOTE: LQ = Location quotient.

Media, Film, and Television Production

The many occupations that participate in media, film, and television production are also highly concentrated in New York (see Table 9). Only Los Angeles compares in concentration of occupations within this field. Furthermore, despite the ongoing perception that Los Angeles is the overwhelming leader in film and television, the industry's LQs in New York are close behind and at times ahead of those for Los Angeles. Specifically, New York is close behind Los Angeles in broadcast technicians, film and video editors, and producers and directors. New York ranks higher than Los Angeles in set and exhibit designers and makeup artists, in part because of Broadway's dominance in live theater. Overall, New York has a greater concentration in the film, video, and media niche than Los Angeles—possessing a 5.40 aggregate LQ compared with the latter's 4.17 LQ. Other than Los Angeles and New York, no metropolitan area has any significant hold on the film and television industry, and only Washington, D.C., and Chicago boast concentrations in media-related occupations.

Arguably an extension of the arts, film, video, and media occupations corroborate the overall finding that the New York metropolitan region's true distinction and, therefore, competitive advantage is in artistic and cultural production. The sheer dominance, both in terms of LQs and ranking compared to other large metropolitan regions, reflects that New York is above all a great center of creativity. Furthermore, this advantage appears to be growing. There are more than 150,000 jobs in arts and culture, and this number grew 52% from 1992 to 2001, offering more potential growth than even the much revered financial industry. In those same years, employment in TV and film and commercial theater almost doubled (Center for an Urban Future, 2002). So not only does it appear that New York City's true distinction as a global city is in creativity but that the region has demonstrated its ability to expand this advantage, creating greater possibilities for growth.

CONCLUSION

This article examined four theories of New York City's economic development: (a) command and control or management, (b) finance and professional services, (c) high technology, and (d) creativity. The four theories presented in this article argue that a region's competitive advantage in the world economy is a result of its concentration and advantage in particular industries. This research tested these theories with an occupational analysis. The findings point to a salient chasm between the theoretical explanations for economic advantage and the hierarchy of world cities

and the empirical evidence that the case of New York City presents. As this analysis indicates, arguments that attribute New York City's success to its overrepresentation in financial services are misleading. Indeed, the financial sector contributes massively to the regional economy, but in terms of a true competitive advantage and proportional occupational dominance, finance is not New York's stronghold. The same can be said even more so of the command and control or managerial elite arguments put forth by Sassen (1991, 2000) and Castells (2000), respectively. Not only are CEOs and managers not especially concentrated within the region, they are actually represented substantially less in the New York City region than in the United States as a whole and in overall ranking compared to other large metropolitan regions. Again, the argument for high-technology clusters driving economic growth and competitive advantage cannot explain New York City's development, as indicated by the region's poor showing in engineering and technology-related occupations. Although the region does possess an advantage in professional or producer services, this advantage still is not anywhere near as competitive or proportional as its strength and representation in its artistic and cultural occupations.

The findings indicate that New York City's real competitive advantage and unique position as a global city appear to lie in its ability to be a great center of creativity—specifically in the arts, design, media, and entertainment. It is in these sectors that the region possesses its greatest strengths and possibilities for prosperity. These results point to the importance and power of creativity in New York City's growth and success, indicating possibilities for new strategies in maintaining its competitive advantage. As art and culture are recognized as central to the growth and success of cities, cultivating and supporting these industries become intrinsic to the region's economic optimization.

It is important to point out that, across the board, salary LQs were below average in all occupational categories. From one perspective, the low salary LQs for finance and management-related occupations are a useful proxy for challenging the postulation that New York–based workers in these industries are the most powerful, as income is a good indicator of power and prestige. However, the overall low salary LQs indicate a general trend that those working in New York City come here for reasons other than high-paying jobs, suggesting that the region is offering richer amenities, lifestyle, tolerance, or any number of other important factors that appear to outweigh the region's salary disadvantages. More important, in the vein of Jacobs (1969) and Lucas (1988), workers may be driven to locate in New York to seek out the dense social networks and connections that rapidly advance their careers. New York's great attraction may be that it is an integrated production and distribution system that provides access to high volumes of knowledge, ideas, information, skill sets, and greater possibilities for individual success within one's field.

Although there are many measures to test the economic dynamics of a region, LQ analysis is a quantifiable gauge of the city's standing relative to other cities, and the insights gained from the numbers are important considerations in setting economic policy that aims to sustain and further maximize New York's competitive advantage in the creative economy. One of the obvious criticisms toward the LQ analysis is that it does not reveal actual economic revenue of a particular occupation or industry. In the case of New York, an obvious claim is that although finance does not appear to proportionally dominate the regional economy, the industry generates tremendous profits.

This research would argue that a partial reason that New York's financial industry dominates the economy in terms of revenue is to a certain extent that it has also been the recipient of large financial incentives to stay in the city. For instance, in the past two decades, the city of New York offered multimillion-dollar tax incentive packages as a way to retain large corporations that threatened to relocate to the suburbs. From 1998 to 2000, the city offered an estimated $2 billion in incentives to more than 80 large firms and financial exchanges (Center for an Urban Future, 2003). Despite the tax breaks and incentives, however, many firms have gone elsewhere after reaping the benefits of government support. Since 1998, approximately 17 financial firms that had been given incentives to remain in the New York region have been acquired by other

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firms (Center for an Urban Future, 2001). Such consolidations and mergers catalyze job loss, job relocation, and massive cuts in operations. Another example is the New York Mercantile Exchange, which was awarded financial incentives, but it did not prevent the Exchange's decision to downsize 10% of its workers in the summer of 2000. In June 1997, New York City offered a $28.5 million tax incentive to Merrill Lynch; in exchange, the financial firm promised to keep 9,000 jobs in the region and add another 2,000. Approximately a year later, Merrill Lynch eliminated 3,400 jobs nationwide; 700 cutbacks occurred in New York City (Center for an Urban Future, 2001).

The region's economic development policy has been remarkably ineffectual in directing financial incentives to retain industry. The region should adopt a broader development scheme that does not primarily invest resources and funds in the financial industry, which has become notorious for its capricious "come and go as it pleases" location decisions. Instead, the city should look to expanding its strategies to support the artistic and cultural community, which has created (and continues to nurture) a strong permanent legacy within New York's boundaries.

As New York City's greatest strengths appear to be in cultural and artistic production, the region should look to recommendations that target these sectors specifically. Building on Markusen and King's (2003) policy recommendations to promote an artistic dividend, this research indicates that it is in New York's best interest to invest in creative communities, arts education, collective care, and the social and physical networks that allow for creative endeavors, exploration, and innovation. Similarly, Florida (2002) and Jacobs (1961) posit that to truly generate creativity, regions and cities must look to establishing creative milieus that encourage new thinking and fusions of diverse ideas and resources. Such a strategy builds off of a general consensus in regional studies on the importance of promoting strengths and establishing networks of support as opposed to attempting to generate new comparative advantages that would be disharmonious with the region's resources and established prowess (Castells & Hall, 1994; Piore & Sabel, 1984; Scott, 1993, 2000), an initiative that Markusen (2004a) has succinctly called the distinctive city.

Similar to Jacobs (1969), Scott (2000) notes that dense production agglomerations are especially likely to be sites of originality and inventiveness. Castells and Hall (1994) argue that innovation can begin by creating solutions for local problems that can transcend into products for a national or global market, which is particularly relevant to artistic and cultural producers, whose local goods and services, from hip-hop to fashion, become multimillion-dollar industries in the world economy. The nature of an economy so dependent on agglomeration of diverse firms, people, and resources means that regions must not just nurture a particular industry but all of the necessary externalities that are associated with its success.

As the fashion designer Donna Karan once noted, "New York to me is the visualization of the entire universe. It's the bridge to the world . . . a constant source of inspiration and creativity to me" ("She'll Take Manhattan," 2004). Whether it is because they seek diverse places with variety, the grittiness of urban life, or the openness and tolerance that particular places offer, creative industries and people appear to locate in places that allow for flexibility in networks of exchange in social and economic realms of life. And perhaps this is because, ultimately, creativity is a function of people. It is out of human beings that we find new ways of painting, acting, developing software, and creating new advancements in science and medicine, and as such, regions and cities must be aware and proactively attempt to establish places that encourage innovation and creative thinking. Part of this involves supporting creative occupations and industries through collective resources and promoting initiatives that work on maximizing a region's distinctive advantage.

The findings speak to the importance of creativity in sustaining the vitality of the New York economy, in particular by supporting and capitalizing on the competitive advantage of the region's artistic and cultural occupations. This analysis highlights the opportunities for increasing growth and the key players, in terms of occupations, that participate in making New York City a central force in the global creative economy.

APPENDIX

2004 Occupational Location Quotients for Major Metropolitan Statistical Areas

TABLE 1A

Management and Finance

Occupation	New York	Austin	Boston	Charleston, North Carolina, South Carolina	Chicago	Los Angeles	Miami	Minneapolis–St. Paul, Minnesota–Wisconsin	Raleigh–Durham– Chapel Hill, North Carolina	San Diego	San Francisco	Washington, D.C.
Command and control or management												
Administrative services managers	1.46	0.00	1.54	1.82	1.16	0.91	0.63	0.86	0.66	0.82	1.14	2.16
Chief executives	1.02	0.69	2.45	1.64	1.64	0.91	1.00	0.59	0.27	1.03	1.39	1.03
Food service managers	0.63	1.60	1.26	1.18	0.84	1.28	0.86	1.00	1.10	1.24	1.15	0.72
General and operations managers	0.74	1.28	1.30	1.37	1.08	1.05	0.62	0.89	1.10	1.04	1.33	1.39
Human resources managers	1.83	0.76	1.52	0.58	1.06	0.92	0.46	2.14	1.28	1.14	1.74	1.70
Industrial production manager	0.43	1.16	1.02	1.13	0.96	0.94	0.40	1.34	1.03	1.02	0.55	0.28
Legislators	0.27	0.00	0.00	1.80	1.61	0.43	0.52	1.43	0.00	0.75	1.34	0.45
Marketing nmanagers	1.44	1.19	2.14	0.65	1.30	1.14	0.70	1.44	1.58	1.35	2.34	1.10
Managers, all other	1.09	0.56	1.36	0.51	2.17	0.86	0.78	1.48	1.32	1.15	1.68	2.23
Purchasing managers	0.77	0.87	1.32	1.10	1.36	1.25	0.60	1.32	1.26	1.27	0.98	1.37
Sales managers	0.73	0.94	1.50	0.91	1.32	1.16	0.70	1.24	1.15	1.08	1.58	0.90
Management overall	0.95	0.82	1.40	1.15	1.32	0.99	0.66	1.25	0.98	1.08	1.38	1.21
Finance												
Accountants and auditors	1.68	1.76	1.16	0.79	1.17	0.95	1.16	1.13	0.86	0.86	1.20	1.29
Actuaries	2.54	2.00	3.05	0.00	3.16	0.79	0.00	2.17	0.00	0.00	2.38	0.93
Budget analysts	0.94	0.00	1.66	0.78	0.88	0.99	0.59	0.29	0.70	1.50	1.42	4.14
Credit analysts	1.31	0.51	1.19	0.30	1.48	1.09	0.96	1.68	0.89	0.91	1.27	0.78
Financial analysts	3.16	1.21	2.16	0.26	1.47	0.86	0.75	1.66	1.75	0.63	2.25	1.34
Financial examiners	2.58	0.00	2.19	0.00	2.10	0.73	0.99	1.48	1.41	0.31	3.73	1.38
Financial managers	1.93	0.97	1.74	0.95	1.08	0.95	0.68	1.14	1.24	1.02	1.64	1.15
Financial specialists, all others	1.89	0.93	0.00	0.59	2.18	1.03	0.93	2.19	2.09	0.00	0.00	1.87
Personal financial advisors	5.23	0.98	1.76	0.76	0.97	1.25	1.75	0.69	0.75	0.79	2.01	0.81
Securities, commodities, and financial service sales agents	3.83	0.61	1.22	0.39	1.57	0.79	1.54	1.69	0.75	1.05	3.81	0.66
Tax preparers	1.38	0.74	1.00	0.00	1.31	1.97	4.12	1.05	2.91	1.06	1.59	1.75
Finance overall	2.41	0.88	1.56	0.44	1.58	1.04	1.23	1.38	1.21	0.74	1.94	1.47

SOURCE: Data from U. S. Bureau of Labor Statistics (2004).

TABLE 2A
Professional Services

Occupation	New York	Austin	Boston	Charleston, North Carolina, South Carolina	Chicago	Los Angeles	Miami	Minneapolis–St. Paul, Minnesota–Wisconsin	Raleigh–Durham–Chapel Hill, North Carolina	San Diego	San Francisco	Washington, D.C.
Law												
Judges, magistrate judges, and magistrates	1.30	0.00	0.00	2.99	1.76	0.00	0.00	1.56	0.00	0.00	0.00	0.00
Law clerks	3.22	0.00	0.51	0.00	1.26	1.29	1.14	1.12	0.41	0.73	1.97	2.65
Lawyers	2.44	1.30	1.34	0.79	1.24	1.06	1.64	1.09	0.89	0.84	2.07	2.72
Paralegals and legal assistants	1.76	1.36	1.26	1.27	0.61	0.95	1.59	1.29	1.47	1.04	1.97	1.99
Arbitrators, mediators, and conciliators	2.08	0.00	2.50	0.00	1.17	1.97	0.00	4.98	0.00	0.00	0.00	3.89
Administrative law judges, adjudicators, and hearing officers	0.00	0.00	0.00	0.00	0.99	1.37	1.92	0.93	2.96	1.93	3.20	3.64
Court reporters	3.48	0.00	1.89	0.00	0.57	5.98	0.00	0.00	0.00	0.00	0.00	3.02
Law overall	2.04	0.38	1.07	0.72	1.09	1.80	0.90	1.57	0.82	0.65	1.31	2.56
Education												
Adult literacy, remedial education	1.41	2.45	1.57	2.01	0.99	0.00	1.06	1.88	1.96	1.39	1.10	1.23
Graduate teaching assistants	4.61	0.00	9.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19
Self-enrichment education teachers	1.79	0.90	1.25	1.12	0.59	1.01	1.23	0.93	1.74	2.07	1.99	0.99
Education overall	2.60	1.12	4.25	1.04	0.52	0.34	0.76	0.93	1.23	1.15	1.03	1.14
Public relations and advertising												
Advertising and promotions managers	2.17	1.13	1.61	1.03	1.46	1.39	0.75	0.50	0.84	1.19	2.37	1.54
Advertising sales agents	2.83	0.79	0.99	0.68	0.89	1.19	1.12	0.74	0.81	0.89	2.17	0.89
Agents and business managers	3.57	0.00	0.98	0.00	0.89	7.04	1.08	0.36	0.00	1.01	2.02	7.36
Market research analysts	2.15	2.27	0.00	0.34	1.52	0.95	0.71	2.21	1.42	0.77	1.73	1.92
Management analysts	1.11	0.00	1.66	0.83	1.17	0.86	1.04	1.22	0.84	0.90	1.71	4.41
Media and communication workers	2.89	0.00	1.64	1.07	2.09	2.17	1.93	1.54	0.00	0.60	1.99	4.11
Public relations managers	2.92	1.35	2.00	0.87	1.01	0.95	0.98	1.16	1.72	0.87	2.39	2.14
Public relations specialists	2.06	1.50	0.00	0.53	0.60	0.92	1.48	0.93	1.37	1.06	2.16	2.42
Public relations and advertising overall	2.46	0.88	1.11	0.67	1.20	1.93	1.14	1.08	0.87	0.91	2.07	3.10
Medicine												
Medical scientists, except epidemiologists	1.37	2.60	4.66	0.00	0.47	1.18	0.41	1.59	5.19	3.15	8.15	1.46
Internists, general	3.40	0.00	1.33	0.52	1.03	0.52	0.00	2.08	1.56	0.00	0.00	1.28
Podiatrists	6.13	0.00	1.12	0.00	1.34	0.00	1.31	2.43	0.00	0.00	1.31	1.60
Psychiatrists	5.98	1.09	3.36	0.00	0.72	0.00	0.85	1.35	0.00	1.46	1.45	2.13
Medicine overall	4.22	0.92	2.62	0.13	0.89	0.42	0.64	1.86	1.69	1.15	2.73	1.62
Professional services overall	2.67	0.76	1.80	0.64	1.02	1.40	0.92	1.36	1.05	0.90	1.81	2.39

SOURCE: Data from the U. S. Bureau of Labor Statistics (2004).

TABLE 3A
Engineering and High Technology

Occupation	New York	Austin	Boston	Charleston, North Carolina, South Carolina	Chicago	Los Angeles	Miami	Minneapolis–St. Paul, Minnesota–Wisconsin	Raleigh–Durham–Chapel Hill, North Carolina	San Diego	San Francisco	Washington, D.C.
Engineering and high technology												
Biomedical engineers	0.34	0.00	6.54	0.00	1.99	1.25	0.00	6.37	1.67	6.20	0.00	1.91
Chemical engineers	0.36	0.00	1.85	2.67	0.55	1.34	0.15	1.07	1.72	0.80	0.40	1.36
Civil engineers	0.78	1.49	1.23	1.19	0.62	1.00	1.23	0.62	1.58	1.27	1.81	0.96
Computer and information scientists	0.95	0.00	4.87	3.99	0.67	0.73	0.00	0.00	1.27	3.98	0.00	9.04
Computer and information systems managers	1.25	1.16	1.97	0.72	1.23	0.82	0.52	1.61	1.84	1.00	2.20	2.11
Computer hardware engineers	0.49	8.49	3.95	0.90	0.24	0.92	0.46	0.53	2.37	2.68	2.30	2.75
Computer programmers	1.61	2.18	1.22	0.49	1.04	0.74	0.66	0.84	1.75	0.96	1.53	2.15
Computer software engineers, applications	0.96	1.66	2.41	0.22	0.80	1.10	0.42	2.08	1.58	1.67	2.88	2.45
Computer software engineers, systems software	0.82	3.52	2.75	0.73	1.10	0.83	0.61	1.00	0.00	1.31	2.33	3.62
Computer specialists, all others	0.64	1.03	1.37	0.13	0.00	1.08	0.52	4.20	1.85	2.03	3.23	2.81
Computer support specialists	1.01	1.64	1.48	0.59	0.91	0.86	0.97	1.11	2.55	0.88	1.13	1.84
Computer systems analysts	0.82	2.75	1.53	0.70	1.23	0.71	0.87	1.05	2.00	0.92	1.47	3.36
Electrical engineers	0.57	3.12	2.02	1.05	0.86	1.16	0.35	1.21	0.93	1.32	0.68	1.24
Electromechanical technician	0.00	2.43	7.54	0.00	1.40	1.30	0.00	0.00	0.00	2.69	1.62	0.00
Engineering managers	0.49	1.53	1.51	0.89	0.89	0.95	0.41	1.20	1.62	1.57	1.31	1.39
Environmental engineers	0.59	2.95	1.80	2.39	0.78	0.74	0.38	0.47	0.00	1.07	1.93	4.19
Industrial engineering technicians	0.14	6.88	1.02	1.81	1.08	0.59	0.81	2.61	0.00	0.97	0.00	0.33
Industrial engineers	0.29	1.61	1.41	1.22	0.81	0.81	0.52	1.83	1.07	1.27	0.67	0.48
Materials engineers	0.00	0.00	2.37	0.00	1.72	0.68	0.57	0.96	0.54	2.01	0.67	1.02
Mechanical engineering technicians	0.28	1.45	1.94	0.00	1.05	1.31	0.27	3.39	0.76	1.90	0.57	0.52
Mechanical engineers	0.43	0.70	1.60	0.68	0.94	0.96	0.25	1.74	0.62	1.04	0.59	0.92
Network systems and data communication analysts	1.14	2.16	1.56	0.00	0.98	0.69	0.97	1.27	3.15	1.03	2.23	2.61
Operations research analysts	0.71	4.48	2.28	0.67	0.67	0.67	1.55	1.74	1.12	0.98	2.39	3.90
Engineering and high technology overall	0.64	2.23	2.44	0.91	0.94	0.92	0.54	1.60	1.30	1.72	1.39	2.22

SOURCE: Data from the U. S. Bureau of Labor Statistics (2004).

TABLE 4A
Art and Culture, Film, Video, & Media

Occupation	New York	Austin	Boston	Charleston, North Carolina, South Carolina	Chicago	Los Angeles	Miami	Minneapolis–St. Paul, Minnesota–Wisconsin	Raleigh–Durham–Chapel Hill, North Carolina	San Diego	San Francisco	Washington, D.C.
Artistic and cultural occupations												
Architects, except landscape	2.35	1.60	1.80	1.42	1.34	1.06	2.37	1.03	1.07	0.80	3.22	1.54
Art directors	4.90	1.31	1.98	0.00	1.70	1.83	1.11	2.13	0.83	0.69	2.96	1.06
Art, drama, and music teachers	1.19	0.00	2.85	0.00	1.88	1.49	1.54	1.50	1.47	1.02	1.77	1.51
Artists and related workers, all others	4.30	0.00	2.29	0.00	3.76	0.68	0.00	4.06	0.00	2.66	0.00	2.49
Choreographers	1.72	0.00	0.30	0.00	1.81	0.84	0.00	0.39	0.00	0.00	1.59	1.63
Commercial and industrial designers	1.96	0.00	3.92	0.00	0.76	1.19	0.36	1.27	0.00	0.77	1.33	0.46
Craft artists	4.72	0.00	0.00	0.00	0.00	0.00	0.00	7.91	0.00	7.86	0.00	0.00
Curators	3.31	1.23	5.57	0.00	0.81	2.20	1.63	0.58	5.03	0.00	0.00	2.30
Dancers	2.82	0.00	0.00	0.00	0.61	3.98	1.89	4.36	0.00	0.00	7.28	1.45
Designers, all other	2.65	0.00	1.13	0.00	1.95	1.71	1.45	2.08	0.00	0.87	0.00	4.44
Fashion designers	15.98	0.00	0.00	0.00	0.43	4.78	0.88	0.47	0.00	0.57	2.01	0.00
Fine artists (including painters, sculptors, and illustrators)	4.98	0.00	3.39	0.00	1.59	1.47	2.58	1.90	3.11	0.75	1.39	1.36
Floral designers	0.84	0.75	0.69	1.97	1.12	0.52	1.07	1.06	0.00	1.37	0.77	0.70
Graphic designers	2.10	1.35	1.21	0.65	0.99	1.25	0.93	1.35	1.04	1.04	1.71	1.15
Interior designers	1.38	2.43	1.03	1.16	1.17	0.75	3.59	1.27	0.91	1.43	1.37	1.41
Multimedia artists and animators	2.61	0.85	2.23	0.00	1.52	6.43	0.00	1.25	0.54	1.88	6.22	1.01
Music directors and composers	0.00	0.00	0.44	0.00	0.75	7.97	3.00	2.07	0.00	1.13	6.62	0.98
Musicians and singers	6.79	0.00	0.97	0.00	1.18	3.41	0.00	0.78	0.00	1.53	3.19	0.90
Writers and authors	2.89	1.81	1.48	0.50	0.00	2.98	1.10	2.46	1.09	0.88	2.10	3.10
Art and culture overall	3.55	0.60	1.65	0.30	1.23	2.34	1.24	2.00	0.79	1.33	2.29	1.45
Film, video, and media												
Audio and video equipment technicians	2.59	0.00	1.21	1.01	0.92	4.12	1.15	1.32	1.31	1.33	1.34	1.83
Broadcast technicians	2.04	1.14	1.32	2.09	0.56	2.68	3.42	0.69	1.29	0.38	1.41	1.33
Camera operators, television, video, and motion picture	3.25	0.55	1.69	0.00	0.69	6.35	1.99	1.17	0.73	0.89	2.21	1.44
Editors	3.82	0.00	2.18	0.00	1.05	1.46	1.21	1.40	0.94	0.87	2.65	2.67
Film and video editors	6.09	0.00	1.44	0.00	0.57	8.79	2.12	0.73	0.79	0.55	1.75	0.84
Makeup artists, theatrical and performance	19.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Producers and directors	4.15	0.94	0.00	1.14	0.69	6.21	1.38	0.93	1.04	0.70	2.46	1.51
Set and exhibit designers	3.71	1.58	0.00	0.00	2.52	2.66	1.31	0.97	0.00	1.98	3.94	2.99
Sound engineering technicians	6.21	0.00	0.00	0.00	0.93	7.25	1.58	0.70	0.00	0.40	1.19	0.90
Media and communication workers	2.89	0.00	1.67	1.07	2.09	2.17	1.93	1.54	0.00	0.60	1.99	4.11
Film, video, and media overall	5.40	0.42	0.95	0.53	1.00	4.17	1.61	0.95	0.61	0.77	1.89	1.76
Art, culture, and media overall	4.48	0.51	1.30	0.42	1.12	3.26	1.42	1.47	0.70	1.05	2.09	1.60

SOURCE: Data from the U. S. Bureau of Labor Statistics (2004).

NOTES

1. $LQ = (O_R/TE_R)/(O_N/TE_N)$ where O_R = regional occupational employment, TE_R = total regional employment, O_N = national occupational employment, TE_N = total national employment.

2. New York City's Primary Metropolitan Statistical Area (PMSA) includes the following counties: Bronx, Kings, New York, Putnam, Queens, Richmond, Rockland, and Westchester. PMSAs and Metropolitan Statistical Areas (MSAs) are slightly different in geography: Whereas they are both based on an aggregation of counties, when a population reaches over one million and particular commuting and population criteria are met (as is the case with the New York City region), the MSA is subdivided into PMSAs. Therefore the NYC PMSA is comparable to other MSAs (and other PMSAs).

3. Although it excludes those artists who do not work for a firm or who own their own business, it is a good proxy for capturing those artists who are actually producing art with economic value. Put another way, Occupation Employment Statistics (OES) data capture the difference between saying one is an artist and actually generating revenue from artistic production. On the other hand, OES data do not count workers who are self-employed, meaning that some occupations (particularly within arts and culture) are underrepresented as those within these sectors often work for themselves. Nevertheless, OES are the best proxy for measuring occupational concentrations on an annual basis, as census data are only provided decennially.

4. Large metropolitan areas are defined as those with a population of over one million. Specifically, this research includes occupational data on Austin; Boston; Charleston, South Carolina; Chicago; Los Angeles; Miami; Minneapolis-St. Paul; Raleigh-Durham; San Diego; San Francisco; and Washington, D.C.

5. This research has conducted salary location quotient (LQ) analysis for 2000 to 2004, but the LQs remain generally constant, and as such, 2004 is demonstrative of the general picture of worker welfare in the selected occupations over the past four years.

6. See appendix for tables with occupational LQs for major MSAs.

7. A Consolidated Metropolitan Statistical Area (CMSA) is a combined geography of two or more contiguous MSAs. New York City's CMSA includes Bergen-Passaic, NJ PMSA; Bridgeport, CT PMSA; Danbury, CT PMSA; Dutchess County, NY PMSA; Jersey City, NJ PMSA; Middlesex-Somerset-Hunterdon, NJ PMSA; Monmouth-Ocean, NJ PMSA; Nassau-Suffolk, NY PMSA; New Haven-Meriden, CT PMSA; New York, NY PMSA; Newark, NJ PMSA; Newburgh, NY-PA PMSA; Stamford-Norwalk, CT PMSA; Trenton, NJ PMSA; and Waterbury, CT PMSA.

8. Because OES data are samples, albeit large samples, sometimes there is irregularity in the results. For example, obviously all the law judges did not leave New York's MSA between 2000 and 2004, but there was some degree of decline, and the sample picked up on this decrease in employment. But because the sample number became smaller and judges are not a common occupation, the decline resulted in a number that was too low to report. The same situation occurs with other specialty occupations, for example, makeup artists.

9. This location quotient was derived by running an aggregate analysis on all artistic and cultural occupations, most of which are included in the tables presented.

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