EMPLOYMENT GROWTH AND SPECIALIZATION IN THE NATION'S LARGE CITIES DURING THE 1990S

Boston Among 35 American Cities

CITY OF BOSTON
Thomas M. Menino
Mayor

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Mark Maloney
Director

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THOMAS M. MENINO, *MAYOR*
CITY OF BOSTON

Boston Redevelopment Authority
Mark Maloney, *Director*

Clarence J. Jones, *Chairman*
Consuelo Gonzales Thornell, *Treasurer*
Joseph W. Nigro, Jr., *Co-Vice Chairman*
Michael Taylor, *Co-Vice Chairman*
Christopher J. Supple, *Member*
Harry R. Collings, *Secretary*

Report prepared by
Yolanda Perez

Edited by
John Avault
Gregory Perkins
Jim Vrabel

Dan Moon and Betty Chin, Graphics
Jim Alberque and Martin Gamache, Maps

Research Division
Gregory W. Perkins, Interim Director

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Summary

This report looks at employment data between 1992 and 2000 in thirty-five of the largest American cities and in the United States as a whole. From the data, findings about the location, growth, and concentration of jobs reveals the continued importance of cities to the U.S. economy.

The major findings of this study are:

- These 35 cities are a very important part of the nation's economy, generating one of every six jobs nationally.
- Whereas the 35 cities studied in this report have 13% of the U.S. population they have 17% of the total U.S. employment — meaning that their employment role is 37% greater than their population role.
- Boston, with a jobs to population ratio of .94 provides a stronger employment role than for the 35 cities (ratio of .53) and the nation (ratio of .41).
- Only Boston, San Francisco and New York, among all the 35 cities, have more than 10,000 private payroll jobs per square mile.
- Boston in particular continues to be one of the leading cities in the country, especially when it comes to generating jobs in the highly-skilled knowledge based industries — as between 1992 and 2000 this sector grew by 29% in Boston, above the nation's rate of 28%, and above the 35 Cities rate of 16%.
- The cities roles as centers for manufacturing, wholesaling, and distribution continue to lose ground to the suburban parts of metropolitan area.
- The Food/Travel/Entertainment sector grew by 25% in the nation's economy between 1992 and 2000 compared with 21% for the 35 cities but 49% for Boston.

City Selection

- 35 cities were chosen including Boston. 31 of the cities are in the top 50 American cities in population and the other four were smaller.
- Cities chosen were either the most populous cities or large cities that also had a substantial density of jobs per square mile or jobs per employee.
- Other cities were chosen as examples of certain "economic types" such as tourist destination, centers for high technology, or faster growing cities of the south and west.

From a list of the largest cities in each state the 35 cities examined in this report were chosen based on their population and employment size, as well as on job density (employment per square mile). Eighteen of the twenty most populous cities in the U.S. were included and the two not chosen were deleted because they had very low job numbers. Of the largest cities only Jacksonville, Florida and Milwaukee, Wisconsin were not included because of their lesser employment role.

Of the smaller cities chosen, their inclusion was based on the fact that they represented certain economic specialties (such as Las Vegas, New Orleans, Honolulu, Orlando and Anaheim for tourism; or Austin, Minneapolis and Raleigh for their high technology importance; or St. Louis and Pittsburgh because of their high jobs density or Atlanta, Seattle, Denver, Portland or Charlotte because of their emerging economic performance and their sunbelt or western locations).

Throughout the report, the combined employment composition of the 35 cities will be contrasted with that of total U.S. employment. Data for individual cities will occasionally be featured. Among the individual cities Boston will be highlighted throughout the report.

Data

- The employment data used in this study is from a special extract not usually available.
- Job data do not include either the public.sector or privates sector proprietors or individual contractors.
- A new industry classification system makes the time series somewhat discontinuous.

Employment data from this report come from the "special city extracts" prepared by the U.S. Department of Housing and Urban Development (HUD) and from the County Business Patterns reports that are issued annually by the U.S. Bureau of the Census. These special city extracts are the only source of detailed employment data available from federal agencies at the city level.

These data count only private payroll jobs. Government jobs are excluded, as are jobs in family businesses, partnerships, proprietorships and self-employment. Government employment varies among cities to a considerable degree with many cities having primarily a local government specialization but some, such as Austin and Columbus also having large State government roles, and others such as Boston and Atlanta having large Federal and State government workforces. Thus government employment can vary from 2 or 3 percent of private employment to 12 or 13 percent. The non-payroll jobs not included in private employment generally account for about 15% of private sector employment.

Employment data in this report cover the years 1992, 1996 and 2000. These years mark the beginning, mid-point and end of the last economic expansion. Year 2000 data represent a different industry classification system than the 1992 and 1996 data, and some care is needed in interpreting changes over time. Prior to 1998, business establishments were categorized by the Standard Industrial Classification system (SIC). Stating in 1998, County Business Patterns implemented the new North American Industry Classification System (NAICS). Although NAICS presents a much better picture of the modern economy than the old SIC system did, there is no way to make the new categories compatible with the old SIC categories.

Industry Clusters

- A three-level system of industry clusters—knowledge-based producer services, goods-producing manufacturing, and food, travel, and entertainment provide a useful means of looking at the job growth and industry specialization of Boston and 35 large cities.

Three main industry clusters have been created in this report to highlight the differences between goods-producing industries, knowledge-based service industries, and the travel and entertainment industries.

The knowledge based cluster groups industries that provide high value-added producer services based which use advanced technology. This cluster has four sub-components: professional services such as legal, accounting, engineering, real estate and management consulting; financial services such as banking and securities investment services; medicine and higher education; and the information services such as publishing, communications, and computer-services.

The blue collar cluster identifies sectors that are goods-producing manufacturing, which may also include some high-technology components such as computer and biotechnology. It also includes the businesses involved in the wholesaling and distribution of goods.

Finally, the food, travel and entertainment cluster identifies service-based industries that may include either highly-skilled specialties such as music and art or predominantly lower-skilled businesses such as restaurants or hotels. When combined, these three clusters include almost four-fifths of Boston's jobs.

While the changes in industrial classification from the SIC to NAICS system does have some effect on the cluster totals in this report, they do not affect the overall totals. Furthermore, the changes allow for better groups of industries with similar and related activities.

Figure 1 illustrates the individual industries within each of these three clusters.

Figure 1: Industry list[1]

Knowledge Base	Blue Collar	Food, Travel & Entertainment
Publishing, communications, computer-related services, finance & insurance, real estate, legal services, health services, education, engineering and management.	Construction, manufacturing, transportation, and wholesale trade.	Eating & drinking places, hotels & other lodging, amusements & recreation services, museums, performing arts & spectator sports.

Location and Workforce Factors

- The real estate choices and workforce offerings that cities provide in large part determine the nature and specialization of cities' economies.

Each industry requires real estate (land and buildings) and labor (a workforce pool with specialized talents and skills). Availability of these requirements in different locations determine the types of industries that locate and grow in different cities.

Knowledge-based economies typically require different types of real estate facilities based upon the four kinds of sub-specialties. The professional services and financial services components require large amounts of office space, more efficiently provided vertically in high-rise office buildings. However, suburban sites with more low-rise and less dense buildings may also work well, too.

Also within the knowledge-based cluster, the health care and higher-education component require specialized buildings and facilities. The medical, biotechnology, and scientific research and development sectors require specially equipped space and equipment. Institutions of higher education require ample and for campuses with room for classrooms, meeting rooms and offices.

Blue-collar industries require large amounts of land for factories to produce the goods, and for warehouses to store products and materials, and

[1] Full list of SIC and NAIC industry clusters used in this report is in the appendices.

access to transportation to distribute the goods. , These requirements are increasingly better offered in suburban locations or on the periphery of urban areas where the lower cost of land allows for horizontal buildings and easier access to transportation, factors that are in limited supply in many cities.

The various industries within the food, travel and entertainment cluster also require uniquely built and located space. Food & beverage services require retail space usually found on ground floors and proximate to highly visible and accessible pedestrian locations. The hotel and lodging sector demands certain kinds of lodging buildings in urban, suburban or rural settings near to where visitors may be. Visitor sites such as museums, theaters and sports venues require specialized buildings for presentation or performance, support facilities for providing services and ample space for visitor parking.

Each industry also requires an availability of a skilled workforce in a given area to meet its occupational staffing requirements.

Occupations for the knowledge-based industries often require higher education credentials, specialized technical skills, as well as practical computer aptitude. Jobs in the professional, financial, higher educational and health care, and information sectors range from those that require many years of specialized training (such as for doctors and lawyers), those that require moderate skill levels such as financial analysts and nurses and fewer occupations are in the lower-skilled jobs like security, cleaning, and maintenance.

Occupations in the blue collar industries demand a range of skills, physical prowess, and educational attainment levels. Increasingly the modern manufacturing industries with more automation and higher productivity have high and moderately skilled positions as computer and technical skills replace laborers and handlers.

Jobs in the food, travel and entertainment industries require a variety of skills depending on the specialization. Artists, musicians, museum curators, hotel managers and even restaurant chefs require specialized skill or training while food services support, security, cleaning, and retail clerks require lesser skills.

It is reasonable to assume that how a given location can satisfy the demands of various industries for their real estate and facilities requirements as well as for their workforce demands, determines the particular concentration industries in each city.

Employment Location

- The 35 large cities provide a 32% greater jobs role than population role.
- Boston has an even greater employment role than population role making it more of a city of commuters than many of the nation's larger cities.

Total private-sector payroll employment in the United States in 2000 was 114 million. Total combined employment in the thirty-five cities studied was 19 million – or 17% of the U.S. total. That means that more than one in six U.S. workers reported for work in one of these 35 cities.

As **Table 1** illustrates, these figure are all the more impressive given that the combined area of these 35 cities was only 6,980 square miles - or 0.2% of the total U.S. total land area. It is as if the total population of New York State (19 million persons) reported for work every day in an area the size of New Jersey (2 percent of the U.S. land area).

These same 35 cities are home to 13% of the nation's population. Comparing the cities' 13% population share their 17% employment share highlights the dependence of suburban residents on city jobs. The 35 cities' employment role is 32% greater than their population role. Boston displays an even greater employment to population role. In the U.S. the employment to population ratio is .41, for the 35 cities it is .53 and for Boston it is .94.

Despite continued suburbanization of employment, major cities continue to play a significant role in generating jobs for the U.S. economy.

The job density for the US is 32 jobs per square mile compared to 2,785 jobs per square mile in the 35 cities. Boston, with 11,382 jobs per square mile, is rivaled by New York and San Francisco in supporting more than 10,000 private payroll jobs per square mile.

.

Table 1: City list

City	State	2000 Population	2000 Employment	Square Miles	Job Density (jobs per square mile)	Jobs-Pop Ratio (jobs per population)
USA	USA	281,421,906	114,064,976	3,537,438	32	0.41
New York	NY	8,008,278	3,279,382	303	10,812	0.41
Los Angeles	CA	3,694,820	1,426,628	469	3,041	0.39
Chicago	IL	2,896,016	1,249,249	227	5,501	0.43
Houston	TX	1,953,631	1,268,550	579	2,189	0.65
Philadelphia	PA	1,517,550	606,509	135	4,489	0.40
Phoenix	AZ	1,321,045	691,175	475	1,455	0.52
San Diego	CA	1,223,400	618,771	324	1,908	0.51
Dallas	TX	1,188,580	814,396	343	2,378	0.69
San Antonio	TX	1,144,646	512,374	408	1,257	0.45
Detroit	MI	951,270	258,090	139	1,859	0.27
San Jose	CA	894,943	364,653	175	2,085	0.41
Indianapolis	IN	791,926	564,665	362	1,562	0.71
San Francisco	CA	776,733	555,647	47	11,898	0.72
Columbus	OH	711,470	414,264	210	1,970	0.58
Austin	TX	656,562	392,402	252	1,560	0.60
Baltimore	MD	651,154	298,378	81	3,693	0.46
Memphis	TN	650,100	370,829	279	1,328	0.57
Boston	**MA**	**589,141**	**550,896**	**48**	**11,382**	**0.94**
Washington	DC	572,059	414,983	61	6,759	0.73
Nashville-Davidson	TN	569,891	398,547	473	842	0.70
Seattle	WA	563,374	433,777	84	5,170	0.77
Denver	CO	554,636	411,303	153	2,681	0.74
Charlotte	NC	540,828	409,711	242	1,691	0.76
Portland	OR	529,121	360,171	134	2,682	0.68
New Orleans	LA	484,674	208,525	181	1,155	0.43
Las Vegas	NV	478,434	209,731	113	1,851	0.44
Atlanta	GA	416,474	416,749	132	3,164	1.00
Minneapolis	MN	382,618	298,949	55	5,445	0.78
Honolulu	HI	371,657	237,478	86	2,771	0.64
Miami	FL	362,470	214,515	36	6,009	0.59
St. Louis	MO	348,189	263,578	62	4,258	0.76
Pittsburgh	PA	334,563	316,083	56	5,685	0.94
Anaheim	CA	328,014	193,517	49	3,957	0.59
Raleigh	NC	276,093	200,039	115	1,746	0.72
Orlando	FL	185,951	214,091	94	2,290	1.15
Thirty-five city total		36,920,311	19,438,605	6,980	2,785	0.53

Source: US Census and County Business Patterns Special Extracts, 2000

Employment Change, 1992-2000

- The employment growth for the 35 cities did not grow as fast as growth in the nation's economy from 1992 through 2000 but Boston's job growth nearly matched the national rate.
- Boston's economy has a longstanding knowledge-based specialization and an emerging specialization in the food, travel, and entertainment cluster.
- Boston's manufacturing role continues to decrease rapidly.

Between 1992 and 2000, the total number of private payroll jobs in the United States increased by 23%, from 92.8 million employees to 114.1 million. During that same period, total employment in the thirty-five cities increased by 16%, from 16.7 million employees to 19.4 million. In Boston, employment grew by 22%, from 450,318 in 1992 to 550,896 in 2000. Boston outpaced the 35-city average and nearly matched the national rate.

Over the last eight years, knowledge-based jobs have seen the greatest increase across the U.S., growing by more than 28%, from 25.4 million to 32.6 million. Knowledge based jobs in the cities studied grew by just over 16% during that time, from 6.2 million to 7.2 million. In Boston, as **Figure 2** shows, jobs in the knowledge-based sector grew by 29% - almost twice the rate of the 35 cities and even higher than the national average. Knowledge based jobs in Boston increased from 249,374 in 1992 to 321,224 in 2000.

Between 1992 and 2000, the number of "blue-collar" jobs in the country remained nearly the same, increasing by just 1%, from 32.1 million to 32.9 million. Over that same period, blue-collar jobs in the 35 cities decreased by 6.5%, from 4.6 million to 4.3 million. In Boston, the decrease in blue collar jobs was even more pronounced. Blue collar jobs in Boston decreased by 15%, falling from 72,662 to 61,894.

Over the last eight years, the number of jobs in the food, travel & entertainment cluster grew by approximately 20% throughout the country and in the thirty-five cities, with the main growth in the food and beverage sector, which increased by 23% at both the national level and at the 35 cities level. In 1992 there were 6.6 million employees at restaurants and bars in the United States; by 2000 this number grew to 8.1 million. The combined cities reported just under a million food & beverage employees (987,856) in 1992, and 1.2 million in 2000. Although already a visitor and entertainment destination, the number jobs in this cluster grew by more than twice that rate in Boston, increasing by 49%, from 34,322 in 1992 to 51,260 in 2000.

Figure 2: Boston Changing Employment, 1992 - 2000

Employment	1992	2000	% Change Boston	% Change 35 cities	% Change U.S.
Total Employment	450,318	550,896	22%	16%	23%
Knowledge based	249,374	321,224	29%	16%	28%
Blue collar	72,662	61,894	-15%	-5%	3%
Food, Travel & Enter.	34,322	51,260	49%	21%	25%

Over the last eight years, Boston's overall job growth almost matched that for the nation as whole despite the fact that the U.S. outside of Boston includes faster-growing suburban areas and rapidly-growing regions of the South and West. Over this same time, total U.S. employment increased by 23%, while total employment in Boston increased by 22%. During this time, however, while the number of knowledge based jobs across the country increased by 28% nationally, they increased by 29% in Boston – and the number of those new jobs (more than 70,000) more than made up for the loss of blue collar jobs in Boston (just over 10,000). Meanwhile, the number of jobs in the travel & entertainment cluster increased by more than 16,000 – almost 50%.

Overall, Boston accounts for just 0.5% of the total US employment. But Boston accounts for a much higher percentage of jobs in its specialty areas. Boston accounts for 2% of all U.S. jobs in finance, 2% of all education jobs, and 2% of all museum jobs in the country – four times its overall share of total employment.

35 Cities Share of US Employment

- These 35 cities with 17% of the nation's total employment have 20% of the knowledge-based jobs, 15% of the manufacturing jobs, and 17% of the food-travel-tourism jobs.
- The high-skilled producer services industries- law, education, health, financial services, and business services- have an even grater presence in Americas' larger cities.
- Transportation and wholesale distribution retain their important urban role.
- Food, travel and entertainment continue to become specialties of the nation's large cities.

Between 1992 and 2000, the strength of various industries and the number of jobs they generated varied among the 35 cities studied here. As **Figure 3** illustrates, these cities reflected the overall national shift of jobs toward the knowledge based service industry and away from the manufacturing economy. The chart also shows that these cities, holding 17% of total US employment, were home to just over 20% of the nation's knowledge based employment, approximately 15% of U.S. total blue collar employment, and 17% of the country's travel & entertainment employment.

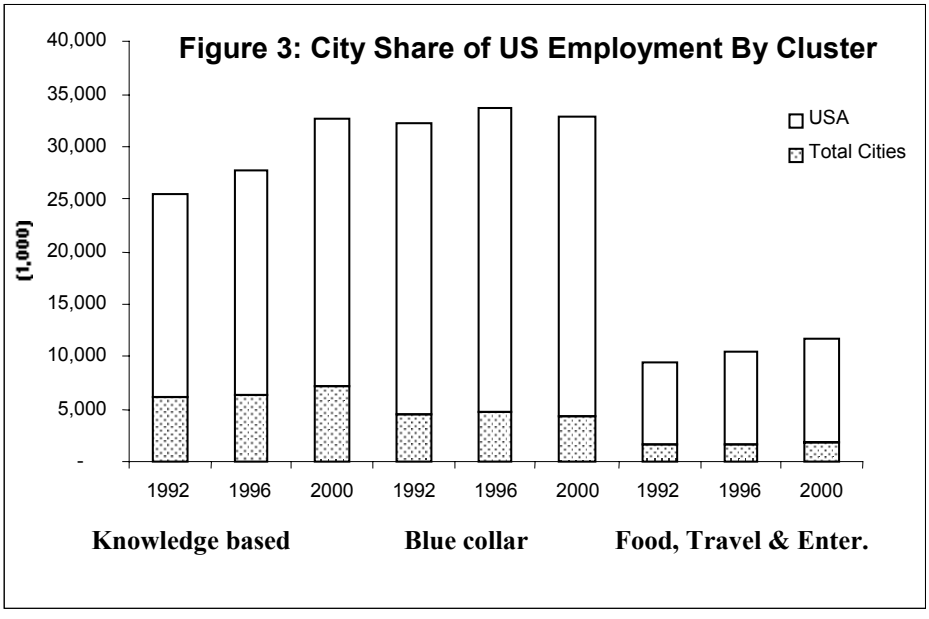
Within the knowledge based cluster, these 35 cities contained approximately 30% of the nation's finance jobs, 35% of the jobs in business or administrative services, 40% of the legal jobs, and half of all of the jobs in the security & commodity sector nationally.

Clearly, these 35 cities are home to a broad and deep segment of the nation's high-skilled producer services.

Within the blue collar cluster, cities have a greater share of employment in the transportation and wholesale sectors than the national average. Approximately 1 in 5 transportation jobs and 1 in 6 wholesale jobs were in these cities, compared to 1 in 10 of all manufacturing jobs. Clearly, the cities' roles as hubs for transportation of people and of goods and as centers for wholesale trade and the consequent distribution of goods activities are paramount.

Approximately one-third of all air transportation jobs are found in these cities, reflecting the fact that many of the nation's airports are located directly inside these cities' borders.

Within the food, travel and entertainment sector approximately one in seven food service workers in the country were in the thirty-five cities; one-in-four hotel or lodging employees; and two-out-of-five museum employees. The major American cities have been, in the past, and continued to be in the 1990s, centers for dining, lodging, tourism, and entertainment. This is true for the tourist, the business visitor, or the conventioneer. As travel becomes an increasing part of the American economy this role will continue to grow commensurately,



Employment Composition and Specialization in 35 Cities

- Employment composition differs between the United States as a whole and its major cities as **Figure 4** illustrates.
- Between 1992 and 2000, cities had a greater percentage of knowledge- based employment than the national average – see **Table 2.**
- The United States as a whole had a greater percentage of blue-collar employment than the 35 cities.
- The percentage of employment in food, travel & entertainment cluster was basically the same between the nation and the cities examined.

The percentage of employment in the knowledge based cluster reflected the sharpest difference between the cities studied and the rest of the country. In 1992, 37% of all employees in these cities worked in knowledge based industries, compared to 25% in the U.S. By 2000, cities had about two out of five people (40%) working in this industry, while the percentage in the U.S. was about one in three (33%).

Within the knowledge based cluster, finance jobs made up over 10% of the total employment in these cities, but only about 7% for the U.S. as a whole; jobs in health services accounted for about 10% of total employment in both the 35 cities and across the nation; jobs in professional and scientific services accounted for 9% of the cities' total employment, but only about 5% of U.S. total.

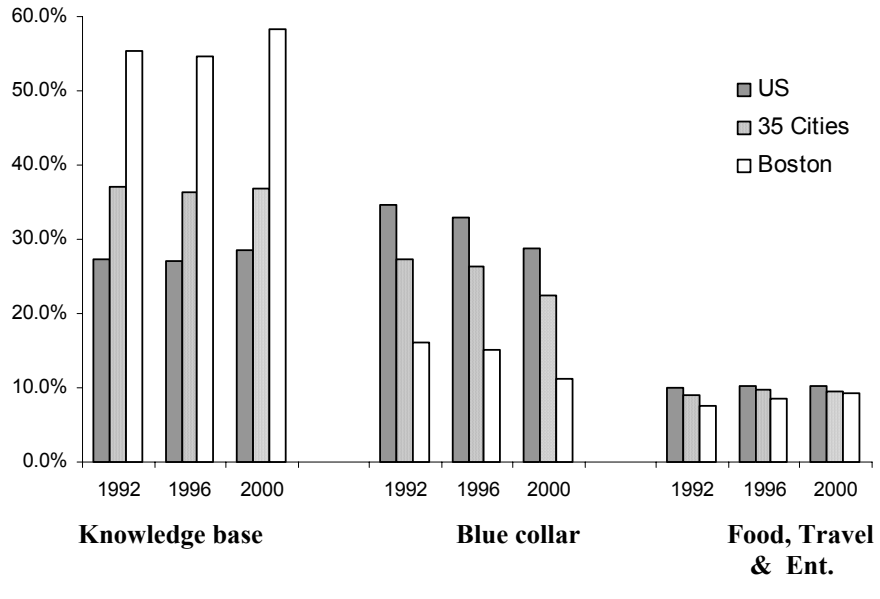
The data showed that the percentage of employment in the blue-collar cluster for the U.S. was 35% in 1992, but declined to 29% by 2000. The decrease in blue collar employment was even more pronounced in the 35 cities, dropping from 27% in 1992 to 22% in 2000.

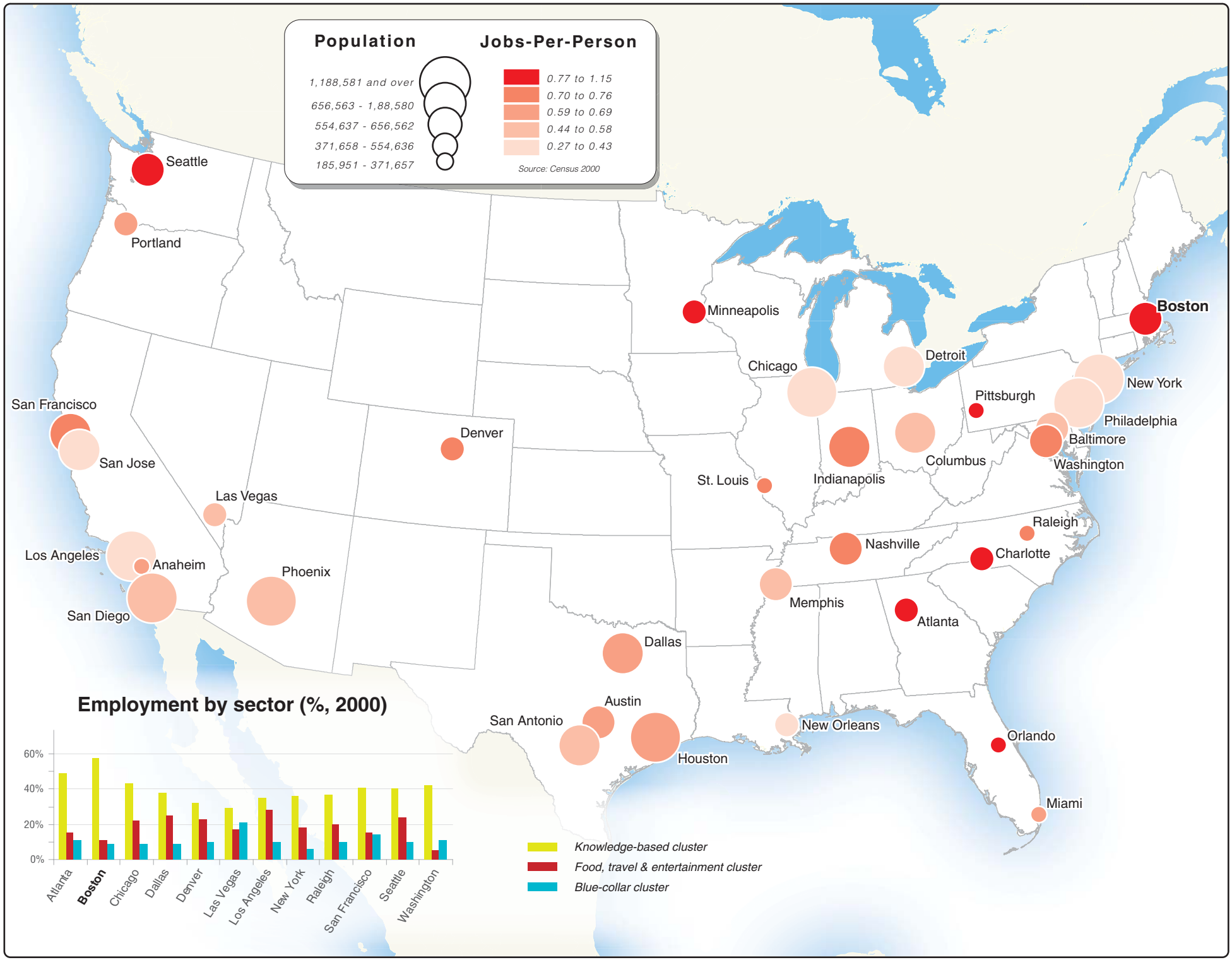
Within that cluster, the data also showed that while the cities studied had a lower percentage of their jobs in manufacturing and a slightly lower percentage in construction compared to the nation as a whole; they had basically the same percentage in the wholesale industries; and a higher percentage of workers in the transportation sectors.

The percentage of employment in the food, travel & entertainment cluster was basically the same for the 35 cities and for the U.S. as a whole. About one in ten workers are employed in these areas, mainly in food & beverage services. The food, travel & entertainment sectors illustrate how the industry clusters are inter-related.

The concentration of food, travel & entertainment industries employment is also very similar between these cities and throughout the country, with the bulk of jobs in food & beverage places (7%) and hotels & lodging (2%). The cities had a greater share of jobs in the performing arts & spectator sports sector of the industry, with about 1% of their total employment in these areas.

Figure 4: Employment Composition By Cluster




Population
1,188,581 and over
656,563 - 1,88,580
554,637 - 656,562
371,658 - 554,636
185,951 - 371,657
Jobs-Per-Person
0.77 to 1.15
0.70 to 0.76
0.59 to 0.69
0.44 to 0.58
0.27 to 0.43
Source: Census 2000
Seattle
Portland
San Francisco
San Jose
Las Vegas
Los Angeles
Anaheim
San Diego
Phoenix
Denver
Minneapolis
Chicago
Detroit
Pittsburgh
New York
Boston
Philadelphia
Baltimore
Washington
Columbus
Indianapolis
St. Louis
Raleigh
Nashville
Charlotte
Memphis
Atlanta
Dallas
Austin
San Antonio
Houston
New Orleans
Orlando
Miami
Employment by sector (%, 2000)
60%
40%
20%
0%
Atlanta
Boston
Chicago
Dallas
Denver
Las Vegas
Los Angeles
New York
Raleigh
San Francisco
Seattle
Washington
Knowledge-based cluster
Food, travel & entertainment cluster
Blue-collar cluster

Boston's Employment Composition

- As **Table 2** shows, Boston, from 1992 through 2000, showed some change in job composition with increased knowledge-based and food, travel & entertainment sectors and a continuing drop in blue-collar manufacturing.
- By 2000, 58% of Boston's jobs were in the knowledge-based cluster, 11% in blue collar industries, and 9% in food, travel and entertainment.

According to the latest figures, Boston's share of employees in the knowledge based industries (58%) was exactly double the US average (29%). Of the nearly 3 out of every 5 Boston workers working at knowledge based jobs, 18% are employed in the finance, insurance and real estate sector – more than double the national average.

Boston's share of those employed in health services is 15%, slightly higher than the US average. Boston's share of those employed in education is 8%, double the cities the average for the 35 cities studied, and four times greater than the US average. Boston share of those employed in professional services is slightly higher than the 35-city and national averages.

Only 16% of Boston's total employment was in blue collar industries in 2000, compared to 29% across the nation and 22% in the 35 cities. The percentage of employment in manufacturing in Boston is almost identical to that of the employment in the retail sector.

Boston's share of those employed in the food, travel, and entertainment cluster was 9%, slightly below the 10% national average and equal to the 35 city average. Hotel employment specialization at 2% is very similar among Boston, the 35 cities, and the nation. About 1% of Boston's employment was in performing arts and spectator sports. Boston had a bit larger percentage of museum employees than did the 35 cities or the nation as a whole.

Table 2: Employment Composition, Boston, 35 Cities and the Nation

Boston

Employment	1992	% Emp	1996	% Emp	2000	% Emp
Total Employment	450,318		498,906		550,896	
Knowledge based	249,374	55%	272,850	55%	321,224	58%
Blue collar	72,662	16%	74,923	15%	61,894	11%
Food, Travel & Entertainment	34,322	8%	42,137	8%	51,260	9%

35 Cities

Employment	1992	% Emp	1996	% Emp	2000	% Emp
Total Employment	16,723,877		17,506,608		19,438,605	
Knowledge based	4,557,439	37%	6,372,476	36%	7,154,605	37%
Blue collar	1,526,959	27%	4,615,587	26%	4,340,333	22%
Food, Travel & Entertainment	1,221,275	9%	1,691,874	10%	1,846,322	9%

United States

Employment	1992	% Emp	1996	% Emp	2000	% Emp
Total Employment	92,800,870		102,198,864		114,064,976	
Knowledge based	25,387,349	27%	27,619,254	27%	32,591,602	58%
Blue collar	32,121,282	35%	33,620,458	33%	32,948,825	11%
Food, Travel & Entertainment	9,267,809	10%	10,481,196	10%	11,622,410	9%

Location quotients

- This report utilizes the location quotient (LQ) technique to compare employment concentration in various industry sectors in the 35 cities with that of the U.S. as a whole.
- Location quotients are used to measure industry concentration and specialization.

An LQ is calculated by dividing an industry's percentage share of a city's total employment by the U.S. average percentage share of all jobs in that industry. An LQ above 1.0 means the area has a higher percentage than the whole. An LQ below 1.0 means that the area has a lower percentage than the whole.

For example, only 0.76% of all U.S. jobs are in the security & commodity trades. The location quotient for this category is thus represented as 1.0. In Boston, however, the percentage of jobs in the security & commodity trades is 9.04% of the city's total employment. Therefore, Boston's location quotient for securities & commodity trades jobs is thus 11.91 (9.4 divided by .76), which is almost 12 times greater than that the U.S. average.

Cities Economic Specialties

- **Tables 3 through 8** illustrate that employment composition and specialization vary significantly among the individual 35 cities studied.

Boston, with 58%, had the highest percentage of employment in the knowledge based industries of any of the cities studied, followed by Pittsburgh (56%), Atlanta (49%), Philadelphia (48%), Minneapolis (44%), Washington, D.C. (42%), and San Francisco (41%). Finance and education were the major sectors of employment in these cities.

Cities with the highest percentage of blue collar employment were: Anaheim (41%), San Jose (35%), Indianapolis and Phoenix (31%), and Portland (29%). Manufacturing (particularly computer or electronic products) and transportation were the major sectors of employment in these cities.

Las Vegas (21%), New Orleans (19%), Honolulu (18%), Orlando (17%), and San Francisco (14%) had the highest percentage of travel & entertainment jobs. The hotel and food & beverage sectors were the largest employment areas within that cluster.

Tables 3 through 8 show how cities are centers of different activities such as finance, healthcare, transportation, culture and travel. These tables include sector specific employment, percentage of total employment and LQ. For the six sectors, the top five LQ are listed along with the US, 35 cities total and Boston.

Securities and hospitals, profiled in Tables 3 and 4, are examples of knowledge based sectors. Boston has the highest LQ in securities, 11.91 followed by New York (7.60), Minneapolis (6.29), San Francisco (4.73) and Chicago (4.12). Boston is also in the top five cities with the highest hospital LQ. Pittsburgh has the highest with (2.58), Boston (2.27), Detroit (2.14), Philadelphia (2.11) and Miami (2.02).

Two blue-collar sectors examples, profiled in tables 5 and 6, are computer manufacturing and air transportation. For computers the top five cities are San Jose (8.42) and Austin (6.33), Anaheim, CA (5.31), San Diego, CA (2.57) and Orlando, FL (1.88). Boston has an LQ of 0.33, well below the US average. Air transportation centers include Denver, CO (6.75), Chicago, IL (6.14), Orlando, FL (6.02), Honolulu, HI (5.29) and Phoenix, AZ (4.37) – which include three popular vacation destinations. Boston comes in sixth with an LQ of 4.03 – Logan serves as a major transportation link for the New England region.

Examples within food, travel and entertainment include accommodation and museums profiled in tables 7 and 8. Vacation spots have the highest hotel LQs: Las Vegas (6.58), Honolulu (3.83), New Orleans (3.57), San Francisco (2.70) and Anaheim (2.29). Boston has about the same percentage of workers as the US – 1.5-%. Boston hotels serve primarily business travelers. Although museums account for less than 1% of the total employment in country, cities have a very high concentration. Baltimore (5.35), Pittsburgh (4.47), New Orleans (4.40), San Francisco (4.24), Chicago (4.11) and Boston come in with an LQ of 2.90.

Tables 3 & 4: Knowledge based sectors

Table 3: Securities		Emp	% of ttl emp	LQ
Boston	MA	49,812	9.0%	11.91
New York	NY	189,154	5.8%	7.60
Minneapolis	MN	14,285	4.8%	6.29
San Francisco	CA	19,966	3.6%	4.73
Chicago	IL	39,041	3.1%	4.12
35 Cities Total		428,637	2.2%	2.90
USA		866,222	0.8%	1.00

Table 4: Hospitals		Emp	% of ttl emp	LQ
Pittsburgh	PA	35,846	11.34%	2.58
Boston	MA	54,986	9.98%	2.27
Detroit	MI	24,278	9.41%	2.14
Philadelphia	PA	56,136	9.26%	2.11
Miami	FL	19,092	8.90%	2.02
USA		5,014,641	4.40%	1.00
35 Cities Total		727,349	3.74%	0.85

Tables 5 & 6: Blue collar sectors

Table 5: Computer manufacturing		Emp	% of ttl emp	LQ
San Jose	CA	41,936	11.5%	8.42
Austin	TX	33,930	8.6%	6.33
Anaheim	CA	14,030	7.25%	5.31
San Diego	CA	21,719	3.5%	2.57
Orlando	FL	5,488	2.6%	1.88
USA		1,557,087	1.4%	1.00
35 Cities Total		205,149	1.1%	0.77
Boston	MA	2,477	0.4%	0.33

Table 6: Air transportation		Emp	% of ttl emp	LQ
Denver	CO	14,993	3.6%	6.75
Chicago	IL	41,414	3.3%	6.14
Orlando	FL	6,952	3.2%	6.02
Honolulu	HI	6,774	2.9%	5.29
Phoenix	AZ	16,294	2.4%	4.37
Boston	MA	11,973	2.2%	4.03
35 Cities Total		192,469	1.0%	1.83
USA		615,605	0.5%	1.00

Tables 7 & 8: Food, travel and entertainment sectors

Table 7: Hotels		Emp	% of ttl emp	LQ
Las Vegas	NV	21,380	10.19%	6.58
Honolulu	HI	14,078	5.93%	3.83
New Orleans	LA	11,546	5.54%	3.57
San Francisco	CA	23,284	4.19%	2.70
Anaheim	CA	6,862	3.55%	2.29
35 Cities Total		346,219	1.78%	1.15
Boston	MA	8,605	1.56%	1.01
USA		1,767,782	1.55%	1.00

Table 8: Museums		Emp	% of ttl emp	LQ
Baltimore	MD	1,546	0.52%	5.35
Pittsburgh	PA	1,368	0.43%	4.47
New Orleans	LA	888	0.43%	4.40
San Francisco	CA	2,278	0.41%	4.24
Chicago	IL	4,964	0.40%	4.11
Boston	MA	1,545	0.28%	2.90
35 Cities Total		42,849	0.22%	2.28
USA		110,380	0.10%	1.00

Notes

1. Full list of industry sectors for blue collar, knowledge based and travel & entertainment clusters for SIC (years 1992 and 1996) and NAICS (year 2000).

2. City employment, annual growth and percent change: For the U.S. Thirty-five cities combined and individual cities using 1992, 1996 and 2000 employment data.

3. Employment growth for the three industry clusters: blue collar, knowledge based and food, travel & entertainment for the years 1992-1996, 1996-2000 and 1992-2000 for the US, thirty-five cities combines and individual cities.

4. Employment composition for the U.S., thirty-five cities and Boston using 1992, 1996 and 2000 data. Individual sectors grouped into blue-collar, knowledge-based and food, travel & entertainment clusters as well as individual specialty sectors.

5. LQ (Location Quotient) for the industry clusters for the individual thirty-five cities using 1992, 1996 and 2000 employment data.

List of industries by cluster and classification system

Standard Industry Classification (SIC)		North America Industrial Classification (NAIC)	
Knowledge-based		**Knowledge based**	
2700	Printing & publishing	5110	Publishing industries
4800	Communication	5120	Motion pictures & sound recording
60	Finance, insurance, & real estate	5130	Broadcasting & telecommunications
7800	Motion pictures	5140	Information & data processing services
8000	Health services	52	Finance & insurance
8100	Legal services	5310	Real Estate
8200	Educational services	54	Professional, scientific & technical services
8700	Engineering & management services	55	Management of companies & enterprises
		61	Educational services
		6210	Ambulatory health care service
		6220	Hospitals
Blue-collar		**Blue-collar**	
15	Construction	23	Construction
20	Manufacturing	31	Manufacturing
40	Transportation & public utilities	42	Wholesale trade
50	Wholesale trade	48	Transportation & warehousing
Food, Travel & entertainment		**Food, Travel & entertainment**	
5800	Eating & drinking places	7110	Performing arts, spectator sports & related industry
7000	Hotels & other lodging	7120	Museums, historical sites & like institutions
7900	Amusements & recreation services	7130	Amusements, gambling & recreation industry
8400	Museums, botanical, zoological gardens	7210	Accommodation
		7220	Food services & drinking places

APPENDIX TABLE A: City Employment, Annual Growth Rate & Percent Change

		Total Employment			Annual Growth Rate			Percent Change		
City	**State**	**1992**	**1996**	**2000**	**92-96**	**96-00**	**92-00**	**92-96**	**96-00**	**92-00**
Las Vegas	NV	112,176	168,549	209,731	11%	6%	8%	50%	24%	87%
Austin	TX	247,323	322,007	392,402	7%	5%	6%	30%	22%	59%
Orlando	FL	142,614	159,468	214,091	3%	8%	5%	12%	34%	50%
Phoenix	AZ	497,531	595,418	691,175	5%	4%	4%	20%	16%	39%
Raleigh	NC	147,315	171,810	200,039	4%	4%	4%	17%	16%	36%
San Jose	CA	269,395	310,262	364,653	4%	4%	4%	15%	18%	35%
San Antonio	TX	380,866	452,637	512,374	4%	3%	4%	19%	13%	35%
Anaheim	CA	144,694	159,961	193,517	3%	5%	4%	11%	21%	34%
Atlanta	GA	316,444	356,044	416,749	3%	4%	4%	13%	17%	32%
Charlotte	NC	313,187	358,405	409,711	3%	3%	3%	14%	14%	31%
San Diego	CA	490,345	512,915	618,771	1%	5%	3%	5%	21%	26%
Indianapolis	IN	450,892	473,893	564,665	1%	4%	3%	5%	19%	25%
Columbus	OH	335,028	363,114	414,264	2%	3%	3%	8%	14%	24%
Nashville-Davidson	TN	322,822	372,763	398,547	4%	2%	3%	15%	7%	23%
USA	**USA**	**92,800,870**	**102,198,864**	**114,064,976**	**2%**	**3%**	**3%**	**10%**	**12%**	**23%**
Portland	OR	293,073	341,428	360,171	4%	1%	3%	16%	5%	23%
Boston	**MA**	**450,318**	**498,906**	**550,896**	**3%**	**3%**	**3%**	**11%**	**10%**	**22%**
Denver	CO	338,753	357,543	411,303	1%	4%	2%	6%	15%	21%
San Francisco	CA	462,896	489,281	555,647	1%	3%	2%	6%	14%	20%
Houston	TX	1,066,896	1,119,104	1,268,550	1%	3%	2%	5%	13%	19%
Dallas	TX	694,202	756,513	814,396	2%	2%	2%	9%	8%	17%
Seattle	WA	370,838	385,583	433,777	1%	3%	2%	4%	12%	17%
Total Cities		**16,723,877**	**17,506,608**	**19,438,605**	**1%**	**3%**	**2%**	**5%**	**11%**	**16%**
Memphis	TN	325,270	348,912	370,829	2%	2%	2%	7%	6%	14%
New York	NY	2,903,647	2,950,408	3,279,382	0%	3%	2%	2%	11%	13%
Minneapolis	MN	277,885	283,171	298,949	0%	1%	1%	2%	6%	8%
Chicago	IL	1,165,344	1,152,696	1,249,249	0%	2%	1%	-1%	8%	7%
Pittsburgh	PA	299,691	303,308	316,083	0%	1%	1%	1%	4%	5%
Miami	FL	203,410	192,142	214,515	-1%	3%	1%	-6%	12%	5%
Philadelphia	PA	575,186	580,490	606,509	0%	1%	1%	1%	4%	5%
Baltimore	MD	292,149	286,876	298,378	0%	1%	0%	-2%	4%	2%
Washington	DC	407,392	387,023	414,983	-1%	2%	0%	-5%	7%	2%
New Orleans	LA	207,842	203,696	208,525	-1%	1%	0%	-2%	2%	0%
Los Angeles	CA	1,424,999	1,314,053	1,426,628	-2%	2%	0%	-8%	9%	0%
St. Louis	MO	263,668	270,778	263,578	1%	-1%	0%	3%	-3%	0%
Detroit	MI	264,717	264,512	258,090	0%	-1%	0%	0%	-2%	-3%
Honolulu	HI	265,069	242,939	237,478	-2%	-1%	-1%	-8%	-2%	-10%

APPENDIX TABLE B: Employment growth: knowledge-based cluster							
		Knowledge based industries			Growth Rate		
City	State	1992	1996	2000	1992-1996	1996-2000	1992-2000
USA		**25,387,349**	**27,619,254**	**32,591,602**	**2%**	**4%**	**3%**
Total Cities		**6,192,553**	**6,372,476**	**7,154,605**	**1%**	**3%**	**2%**
Anaheim	CA	26,229	29,448	35,181	3%	5%	4%
Atlanta	GA	124,264	130,265	202,318	1%	12%	6%
Austin	TX	77,398	86,755	137,460	3%	12%	7%
Baltimore	MD	127,750	127,998	98,038	0%	-6%	-3%
Boston	**MA**	**249,374**	**272,850**	**321,224**	**2%**	**4%**	**3%**
Charlotte	NC	78,539	101,321	136,967	7%	8%	7%
Chicago	IL	470,647	442,796	531,512	-2%	5%	2%
Columbus	OH	103,016	114,254	141,910	3%	6%	4%
Dallas	TX	218,138	247,827	312,176	3%	6%	5%
Denver	CO	126,801	130,589	131,413	1%	0%	0%
Detroit	MI	102,203	93,721	89,409	-2%	-1%	-2%
Honolulu	HI	80,592	74,760	71,064	-2%	-1%	-2%
Houston	TX	289,667	299,712	404,580	1%	8%	4%
Indianapolis	IN	130,905	126,213	166,286	-1%	7%	3%
Las Vegas	NV	24,983	45,509	60,400	16%	7%	12%
Los Angeles	CA	517,337	470,716	502,985	-2%	2%	0%
Memphis	TN	80,543	87,603	127,370	2%	10%	6%
Miami	FL	78,862	75,271	83,292	-1%	3%	1%
Minneapolis	MN	98,666	115,143	131,687	4%	3%	4%
Nashville-Davidson	TN	105,093	112,490	135,688	2%	5%	3%
New Orleans	LA	69,015	71,104	73,917	1%	1%	1%
New York	NY	1,296,451	1,302,576	1,187,638	0%	-2%	-1%
Orlando	FL	47,198	54,184	49,170	4%	-2%	1%
Philadelphia	PA	276,335	288,611	290,053	1%	0%	1%
Phoenix	AZ	139,527	156,560	207,310	3%	7%	5%
Pittsburgh	PA	148,945	158,516	175,894	2%	3%	2%
Portland	OR	92,111	106,800	121,898	4%	3%	4%
Raleigh	NC	46,781	51,570	73,792	2%	9%	6%
San Antonio	TX	125,420	147,941	169,883	4%	4%	4%
San Diego	CA	160,668	164,545	221,243	1%	8%	4%
San Francisco	CA	186,950	189,859	229,637	0%	5%	3%
San Jose	CA	55,107	62,760	96,744	3%	11%	7%
Seattle	WA	130,037	130,972	173,565	0%	7%	4%
St. Louis	MO	93,292	103,797	89,862	3%	-4%	0%
Washington	DC	213,709	197,440	173,039	-2%	-3%	-3%

- **Boston, despite being an older mature city economy and a city of small size and less available room for growth, has seen growing employment, at the national average, for the knowledge-based industries.**

APPENDIX TABLE C: Employment growth: blue-collar cluster							
		Blue collar industries			Growth Rate		
City	State	1992	1996	2000	1992-1996	1996-2000	1992-2000
USA		**32,121,282**	**33,620,458**	**32,948,825**	**1%**	**-1%**	**0%**
Total Cities		**4,557,439**	**4,615,587**	**4,340,333**	**0%**	**-2%**	**-1%**
Anaheim	CA	59,841	61,497	79,088	1%	6%	4%
Atlanta	GA	74,983	82,958	60,835	3%	-7%	-3%
Austin	TX	61,163	86,815	91,601	9%	1%	5%
Baltimore	MD	76,908	69,326	59,584	-3%	-4%	-3%
Boston	**MA**	**72,662**	**74,923**	**61,894**	**1%**	**-5%**	**-2%**
Charlotte	NC	120,806	124,043	110,443	1%	-3%	-1%
Chicago	IL	318,049	299,624	272,348	-1%	-2%	-2%
Columbus	OH	86,045	93,161	97,740	2%	1%	2%
Dallas	TX	215,490	211,914	200,810	0%	-1%	-1%
Denver	CO	93,598	93,394	94,034	0%	0%	0%
Detroit	MI	84,576	88,645	71,091	1%	-5%	-2%
Honolulu	HI	65,326	55,955	45,306	-4%	-5%	-4%
Houston	TX	348,253	366,439	352,562	1%	-1%	0%
Indianapolis	IN	121,404	165,870	175,638	8%	1%	5%
Las Vegas	NV	17,905	34,367	35,540	18%	1%	9%
Los Angeles	CA	423,792	376,664	399,718	-3%	1%	-1%
Memphis	TN	129,118	129,819	105,208	0%	-5%	-3%
Miami	FL	53,946	49,905	40,963	-2%	-5%	-3%
Minneapolis	MN	88,642	64,394	58,860	-8%	-2%	-5%
Nashville-Davidson	TN	88,161	100,138	103,222	3%	1%	2%
New Orleans	LA	46,339	38,724	34,962	-4%	-3%	-3%
New York	NY	733,894	705,059	596,621	-1%	-4%	-3%
Orlando	FL	37,545	37,094	42,484	0%	3%	2%
Philadelphia	PA	126,347	116,260	108,054	-2%	-2%	-2%
Phoenix	AZ	170,779	208,707	212,643	5%	0%	3%
Pittsburgh	PA	54,544	51,601	41,102	-1%	-6%	-3%
Portland	OR	96,232	111,431	103,855	4%	-2%	1%
Raleigh	NC	37,167	40,740	40,803	2%	0%	1%
San Antonio	TX	90,227	104,836	113,360	4%	2%	3%
San Diego	CA	132,593	132,889	136,641	0%	1%	0%
San Francisco	CA	94,669	91,161	81,072	-1%	-3%	-2%
San Jose	CA	114,300	125,970	126,822	2%	0%	1%
Seattle	WA	107,723	114,835	104,067	2%	-2%	0%
St. Louis	MO	88,771	84,485	62,529	-1%	-7%	-4%
Washington	DC	25,641	21,944	18,833	-4%	-4%	-4%

- **Boston's role as a location for manufacturing, blue-collar industries has been declining, which was also true for the majority of the 35 cities studied.**

APPENDIX TABLE D: Employment growth: Food, travel & entertainment cluster							
		Food, travel & entertainment industries			Growth Rate		
City	State	1992	1996	2000	1992-1996	1996-2000	1992-2000
USA		**9,267,809**	**10,481,196**	**11,622,420**	**3%**	**3%**	**3%**
Total Cities		**1,526,959**	**1,691,874**	**1,846,322**	**3%**	**2%**	**2%**
Anaheim	CA	23,635	28,815	18,991	5%	-10%	-3%
Atlanta	GA	34,101	43,169	44,328	6%	1%	3%
Austin	TX	27,783	35,799	43,323	7%	5%	6%
Baltimore	MD	22,699	23,914	26,331	1%	2%	2%
Boston	**MA**	**34,322**	**42,137**	**51,260**	**5%**	**5%**	**5%**
Charlotte	NC	30,885	29,041	34,490	-2%	4%	1%
Chicago	IL	98,501	102,742	111,032	1%	2%	2%
Columbus	OH	29,558	35,580	37,227	5%	1%	3%
Dallas	TX	61,319	65,469	69,954	2%	2%	2%
Denver	CO	30,918	35,247	41,230	3%	4%	4%
Detroit	MI	18,722	18,042	23,032	-1%	6%	3%
Honolulu	HI	48,295	44,564	43,187	-2%	-1%	-1%
Houston	TX	92,014	96,090	105,024	1%	2%	2%
Indianapolis	IN	42,198	49,896	51,235	4%	1%	2%
Las Vegas	NV	37,439	38,081	44,574	0%	4%	2%
Los Angeles	CA	130,777	121,916	140,156	-2%	4%	1%
Memphis	TN	26,514	28,103	28,409	1%	0%	1%
Miami	FL	21,102	20,548	23,131	-1%	3%	1%
Minneapolis	MN	21,570	24,979	26,979	4%	2%	3%
Nashville-Davidson	TN	38,585	44,312	40,543	4%	-2%	1%
New Orleans	LA	32,566	35,773	40,096	2%	3%	3%
New York	NY	159,781	213,421	212,141	8%	0%	4%
Orlando	FL	21,570	23,817	35,961	3%	11%	7%
Philadelphia	PA	40,464	43,046	48,777	2%	3%	2%
Phoenix	AZ	49,262	58,458	64,257	4%	2%	3%
Pittsburgh	PA	22,040	21,297	23,681	-1%	3%	1%
Portland	OR	27,643	31,817	34,666	4%	2%	3%
Raleigh	NC	14,745	17,565	19,956	4%	3%	4%
San Antonio	TX	45,473	56,252	60,555	5%	2%	4%
San Diego	CA	60,078	65,078	76,058	2%	4%	3%
San Francisco	CA	57,621	64,923	79,205	3%	5%	4%
San Jose	CA	22,980	26,119	30,092	3%	4%	3%
Seattle	WA	37,110	38,924	45,505	1%	4%	3%
St. Louis	MO	21,100	22,924	23,285	2%	0%	1%
Washington	DC	43,589	44,016	47,651	0%	2%	1%

- **Boston, in the 1990's, was one of the fastest-growing American cities for employment in the food, travel and entertainment cluster.**

APPENDIX TABLE E: Employment Composition: 1992							
		USA		**Cities**		**Boston**	
Total Employment 92		92,800,870		16,723,877		450,318	
SIC 92		**USA**		**Cities**		**Boston**	
Knowledge based sector		**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
2700	Printing & publishing	1,492,533	2%	348,674	2%	10,753	2%
4800	Communication	1,309,995	1%	224,084	1%	-	0%
60	Finance, insurance, & real estate	6,905,698	7%	1,976,380	12%	82,670	18%
7800	Motion Pictures	462,558	0.5%	133,077	1%	1,042	0%
8000	Health services	9,726,647	10%	1,895,294	11%	75,766	17%
8100	Legal services	951,908	1%	393,343	2%	15,639	3%
8200	Educational services	1,918,707	2%	526,959	3%	35,256	8%
8700	Engineering & mngt srv	2,619,303	3%	694,742	4%	28,248	6%
	Total knowledge based	25,387,349	27%	6,192,553	37%	249,374	55%
SIC 92		**USA**		**Cities**		**Boston**	
Blue collar sector		**Sector Emp.**	**% Total Emp**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
15	Construction	4,500,006	5%	620,901	4%	7,002	2%
20	Manufacturing	16,669,947	18%	1,755,892	10%	20,871	5%
40	Transportation & Public Utilities	4,857,154	5%	1,044,035	6%	32,544	7%
50	Wholesale trade	6,094,175	7%	1,136,611	7%	12,245	3%
	Total blue collar	32,121,282	35%	4,557,439	27%	72,662	16%
SIC 92		**USA**		**Cities**		**Boston**	
Food, Travel & entertainment sector		**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
5800	Eating & drinking places	6,571,253	7%	987,856	6%	24,586	5%
7000	Hotels & other lodging	1,501,654	2%	308,779	2%	8,470	2%
7900	Amusements & recreation services	1,125,023	1%	204,024	1%	-	0%
8400	Museums, botanical, zoological gardens	69,879	0.1%	26,300	0.2%	1,266	0.3%
	Total T&E	9,267,809	10%	1,526,959	9%	34,322	8%
SIC 92		**USA**		**Cities**		**Boston**	
Specialty sectors		**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
4500	Air transportation	660,304	1%	176,901	1%	9,375	2%
6000	Depository institutions	2,157,509	2%	575,775	3%	17,963	4%
6100	Nondepository institutions	456,706	0.5%	68,060	0.4%	-	0%
6200	Security & commodity brokers	425,583	0.5%	222,968	1%	-	0%
6300	Insurance carriers	1,569,307	2%	363,728	2%	-	0%
6400	Insurance agents, brokers & srv	641,875	1%	124,437	1%	-	0%
6500	Real estate	1,325,795	1%	364,512	2%	-	0%
6700	Holding & other investment offices	266,334	0.3%	82,270	0.5%	-	0%
7300	Business services	5,346,332	6%	1,221,275	7%	28,087	6%

APPENDIX TABLE F: Employment Composition: 1996							
		USA		**Cities**		**Boston**	
Total Employment 96		102,198,864		17,506,608		498,906	
SIC 96		**USA**		**Cities**		**Boston**	
Knowledge based sector		**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp**
2700	Printing & publishing	1,490,400	1%	312,040	2%	10,664	2%
4800	Communication	1,375,879	1%	253,518	1%	-	0%
60	Finance, insurance, & real estate	7,194,274	7%	1,993,149	11%	92,666	19%
7800	Motion Pictures	512,308	1%	114,653	1%	1,055	0.2%
8000	Health services	10,990,227	11%	1,982,642	11%	82,091	16%
8100	Legal services	959,809	1%	372,209	2%	15,290	3%
8200	Educational services	2,101,429	2%	577,508	3%	38,967	8%
8700	Engineering & mngt srv	2,994,928	3%	766,757	4%	32,117	6%
	Total knowledge based	27,619,254	27%	6,372,476	36%	272,850	55%
SIC 96		**USA**		**Cities**		**Boston**	
Blue collar sector		**Sector Emp**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
15	Construction	5,206,925	5%	673,423	4%	8,793	2%
20	Manufacturing	17,067,700	17%	1,666,905	10%	20,293	4%
40	Transportation & Public Utilities	4,681,179	5%	1,130,382	6%	34,523	7%
50	Wholesale trade	6,664,654	7%	1,144,877	7%	11,314	2%
	Total blue collar	33,620,458	33%	4,615,587	26%	74,923	15%
SIC 96		**USA**		**Cities**		**Boston**	
Food, travel & entertainment sector		**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
5800	Eating & drinking places	7,416,595	7%	1,099,418	6%	28,673	6%
7000	Hotels & other lodging	1,600,846	2%	326,334	2%	6,534	1%
7900	Amusements & recreation services	1,383,859	1%	237,487	1%	5,640	1%
8400	Museums, botanical, zoological gardens	79,896	0.1%	28,635	0.2%	1,290	0.3%
	Total T&E	10,481,196	10%	1,691,874	10%	42,137	8%
SIC 96		**USA**		**Cities**		**Boston**	
Specialty sectors		**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**	**Sector Emp.**	**% Total Emp.**
4500	Air transportation	755,746	1%	280,680	2%	11,028	2%
6000	Depository institutions	2,061,206	2%	529,465	3%	15,520	3%
6100	Nondepository institutions	539,822	1%	81,442	0.5%	-	0%
6200	Security & commodity brokers	567,909	1%	283,931	2%	-	0%
6300	Insurance carriers	1,536,984	2%	384,215	2%	18,175	4%
6400	Insurance agents, brokers & srv	695,139	1%	129,891	1%	4,092	1%
6500	Real estate	1,421,648	1%	395,877	2%	12,048	2%
6700	Holding & other investment offices	303,496	0.3%	88,790	1%	-	0%
7300	Business services	7,224,569	7%	1,556,903	9%	39,958	8%

APPENDIX TABLE G: Employment Composition: 2000							
		USA		Cites		Boston	
Total Employment 00		114,064,976		19,438,605		550,896	
NAICS 00		USA		Cities		Boston	
Knowledge based sector		Sector Emp.	% Total Emp.	Sector Emp.	% Emp. Comp	Sector Emp.	% Emp. Comp
5110	Publishing industries	1,080,664	1%	201,797	1%	10,303	2%
5120	Motion pictures & sound recording	304,204	0.3%	76,230	0.4%	1,034	0.2%
5130	Broadcasting & telecommunications	1,631,832	1%	310,800	2%	10,934	2%
5140	Information & data processing srv	529,031	0.5%	99,668	1%	4,139	1%
52	Finance & insurance	5,963,426	5%	1,554,447	8%	89,964	16%
5310	Real Estate	1,279,547	1%	335,080	2%	10,519	2%
54	Professional, scientific & technical services	6,816,216	6%	1,765,681	9%	60,639	11%
55	Management of companies & enterprises	2,873,521	3%	645,892	3%	16,052	3%
61	Educational services	2,532,324	2%	677,305	3%	41,598	8%
6210	Ambulatory health care srv	4,566,196	4%	760,356	4%	21,056	4%
6220	Hospitals	5,014,641	4%	727,349	4%	54,986	10%
	Total knowledge based	32,591,602	29%	7,154,605	37%	321,224	58%
NAICS 00		USA		Cities		Boston	
Blue collar sector		Sector Emp.	% Total Emp.	Sector Emp.	% Total Emp.	Sector Emp.	% Total Emp.
23	Construction	6,572,800	6%	870,577	4%	15,240	3%
31	Manufacturing	16,473,994	14%	1,530,481	8%	16,486	3%
42	Wholesale trade	6,112,029	5%	1,079,804	6%	10,413	2%
48	Transportation & warehousing	3,790,002	3%	859,471	4%	19,755	4%
	Total blue collar	32,948,825	29%	4,340,333	22%	61,894	11%
NAICS 00		USA		Cities		Boston	
Food, travel & entertainment sector		Sector Emp.	% Total Emp.	Sector Emp.	% Total Emp.	Sector Emp.	% Total Emp.
7110	Performing arts, spectator sports & related industry	351,919	0.3%	102,617	1%	3,488	1%
7120	Museums, historical sites & like institutions	110,380	0.1%	42,849	0.2%	1,545	0.3%
7130	Amusements, gambling & recreation industry	1,279,198	1%	134,676	1%	3,821	1%
7210	Accommodation	1,767,782	2%	346,219	2%	8,605	2%
7220	Food services & drinking places	8,113,141	7%	1,219,961	6%	33,801	6%
	Total T&E	11,622,420	10%	1,846,322	9%	51,260	9%
NAICS 00		USA		Cities		Boston	
Specialty sectors		Sector Emp.	% Total Emp.	Sector Emp.	% Total Emp.	Sector Emp.	% Total Emp.
3340	Computer & electronic product mnfg	1,557,087	1%	205,149	1%	2,477	0.4%
3350	Electrical equip, appliance & component mnfg	589,406	1%	33,789	0.2%	1,102	0.2%
4810	Air transportation	615,605	1%	192,469	1%	11,973	2%
5220	Credit intermediation	2,753,190	2%	574,750	3%	-	0%
5230	Security, commodity contracts	866,222	1%	428,637	2%	49,812	9%
5240	Insurance carriers	2,290,162	2%	362,374	2%	21,932	4%
5610	Admin & support services	8,846,617	8%	1,623,989	8%	39,754	7%

APPENDIX H: 1992 SIC		Total	Knowledge based industries			Blue collar industries			Food, travel & entertainment industries		
City	State	Employment	Employment	% City Total	LQ	Employment	% City Total	LQ	Employment	% City Total	LQ
USA		92,800,870	25,387,349	27%		32,121,282	35%		9,267,809	10%	
Total Cities		16,723,877	6,192,553	37%	1.35	4,557,439	27%	0.79	1,526,959	9%	0.91
Anaheim	CA	144,694	26,229	18%	0.66	59,841	41%	1.19	23,635	16%	1.64
Atlanta	GA	316,444	124,264	39%	1.44	74,983	24%	0.68	34,101	11%	1.08
Austin	TX	247,323	77,398	31%	1.14	61,163	25%	0.71	27,783	11%	1.12
Baltimore	MD	292,149	127,750	44%	1.60	76,908	26%	0.76	22,699	8%	0.78
Boston	**MA**	**450,318**	**249,374**	**55%**	**2.02**	**72,662**	**16%**	**0.47**	**34,322**	**8%**	**0.76**
Charlotte	NC	313,187	78,539	25%	0.92	120,806	39%	1.11	30,885	10%	0.99
Chicago	IL	1,165,344	470,647	40%	1.48	318,049	27%	0.79	98,501	8%	0.85
Columbus	OH	335,028	103,016	31%	1.12	86,045	26%	0.74	29,558	9%	0.88
Dallas	TX	694,202	218,138	31%	1.15	215,490	31%	0.90	61,319	9%	0.88
Denver	CO	338,753	126,801	37%	1.37	93,598	28%	0.80	30,918	9%	0.91
Detroit	MI	264,717	102,203	39%	1.41	84,576	32%	0.92	18,722	7%	0.71
Honolulu	HI	265,069	80,592	30%	1.11	65,326	25%	0.71	48,295	18%	1.82
Houston	TX	1,066,896	289,667	27%	0.99	348,253	33%	0.94	92,014	9%	0.86
Indianapolis	IN	450,892	130,905	29%	1.06	121,404	27%	0.78	42,198	9%	0.94
Las Vegas	NV	112,176	24,983	22%	0.81	17,905	16%	0.46	37,439	33%	3.34
Los Angeles	CA	1,424,999	517,337	36%	1.33	423,792	30%	0.86	130,777	9%	0.92
Memphis	TN	325,270	80,543	25%	0.91	129,118	40%	1.15	26,514	8%	0.82
Miami	FL	203,410	78,862	39%	1.42	53,946	27%	0.77	21,102	10%	1.04
Minneapolis	MN	277,885	98,666	36%	1.30	88,642	32%	0.92	21,570	8%	0.78
Nashville-Davidson	TN	322,822	105,093	33%	1.19	88,161	27%	0.79	38,585	12%	1.20
New Orleans	LA	207,842	69,015	33%	1.21	46,339	22%	0.64	32,566	16%	1.57
New York	NY	2,903,647	1,296,451	45%	1.63	733,894	25%	0.73	159,781	6%	0.55
Orlando	FL	142,614	47,198	33%	1.21	37,545	26%	0.76	21,570	15%	1.51
Philadelphia	PA	575,186	276,335	48%	1.76	126,347	22%	0.63	40,464	7%	0.70
Phoenix	AZ	497,531	139,527	28%	1.03	170,779	34%	0.99	49,262	10%	0.99
Pittsburgh	PA	299,691	148,945	50%	1.82	54,544	18%	0.53	22,040	7%	0.74
Portland	OR	293,073	92,111	31%	1.15	96,232	33%	0.95	27,643	9%	0.94
Raleigh	NC	147,315	46,781	32%	1.16	37,167	25%	0.73	14,745	10%	1.00
San Antonio	TX	380,866	125,420	33%	1.20	90,227	24%	0.68	45,473	12%	1.20
San Diego	CA	490,345	160,668	33%	1.20	132,593	27%	0.78	60,078	12%	1.23
San Francisco	CA	462,896	186,950	40%	1.48	94,669	20%	0.59	57,621	12%	1.25
San Jose	CA	269,395	55,107	20%	0.75	114,300	42%	1.23	22,980	9%	0.85
Seattle	WA	370,838	130,037	35%	1.28	107,723	29%	0.84	37,110	10%	1.00
St. Louis	MO	263,668	93,292	35%	1.29	88,771	34%	0.97	21,100	8%	0.80
Washington	DC	407,392	213,709	52%	1.92	25,641	6%	0.18	43,589	11%	1.07

APPENDIX I: 1996 SIC		Total	Knowledge based industries			Blue collar industries			Food, travel & entertainment industries		
City	State	Employment	Employment	% City Total	LQ	Employment	% City Total	LQ	Employment	% City Total	LQ
USA		102,198,864	27,619,254	27%		33,620,458	33%		10,481,196	10%	
Total Cities		17,506,608	6,372,476	36%	1.35	4,615,587	26%	0.80	1,691,874	10%	0.94
Anaheim	CA	159,961	29,448	18%	0.68	61,497	38%	1.17	28,815	18%	1.76
Atlanta	GA	356,044	130,265	37%	1.35	82,958	23%	0.71	43,169	12%	1.18
Austin	TX	322,007	86,755	27%	1.00	86,815	27%	0.82	35,799	11%	1.08
Baltimore	MD	286,876	127,998	45%	1.65	69,326	24%	0.73	23,914	8%	0.81
Boston	**MA**	**498,906**	**272,850**	**55%**	**2.02**	**74,923**	**15%**	**0.46**	**42,137**	**8%**	**0.82**
Charlotte	NC	358,405	101,321	28%	1.05	124,043	35%	1.05	29,041	8%	0.79
Chicago	IL	1,152,696	442,796	38%	1.42	299,624	26%	0.79	102,742	9%	0.87
Columbus	OH	363,114	114,254	31%	1.16	93,161	26%	0.78	35,580	10%	0.96
Dallas	TX	756,513	247,827	33%	1.21	211,914	28%	0.85	65,469	9%	0.84
Denver	CO	357,543	130,589	37%	1.35	93,394	26%	0.79	35,247	10%	0.96
Detroit	MI	264,512	93,721	35%	1.31	88,645	34%	1.02	18,042	7%	0.67
Honolulu	HI	242,939	74,760	31%	1.14	55,955	23%	0.70	44,564	18%	1.79
Houston	TX	1,119,104	299,712	27%	0.99	366,439	33%	1.00	96,090	9%	0.84
Indianapolis	IN	473,893	126,213	27%	0.99	165,870	35%	1.06	49,896	11%	1.03
Las Vegas	NV	168,549	45,509	27%	1.00	34,367	20%	0.62	38,081	23%	2.20
Los Angeles	CA	1,314,053	470,716	36%	1.33	376,664	29%	0.87	121,916	9%	0.90
Memphis	TN	348,912	87,603	25%	0.93	129,819	37%	1.13	28,103	8%	0.79
Miami	FL	192,142	75,271	39%	1.45	49,905	26%	0.79	20,548	11%	1.04
Minneapolis	MN	283,171	115,143	41%	1.50	64,394	23%	0.69	24,979	9%	0.86
Nashville-Davidson	TN	372,763	112,490	30%	1.12	100,138	27%	0.82	44,312	12%	1.16
New Orleans	LA	203,696	71,104	35%	1.29	38,724	19%	0.58	35,773	18%	1.71
New York	NY	2,950,408	1,302,576	44%	1.63	705,059	24%	0.73	213,421	7%	0.71
Orlando	FL	159,468	54,184	34%	1.26	37,094	23%	0.71	23,817	15%	1.46
Philadelphia	PA	580,490	288,611	50%	1.84	116,260	20%	0.61	43,046	7%	0.72
Phoenix	AZ	595,418	156,560	26%	0.97	208,707	35%	1.07	58,458	10%	0.96
Pittsburgh	PA	303,308	158,516	52%	1.93	51,601	17%	0.52	21,297	7%	0.68
Portland	OR	341,428	106,800	31%	1.16	111,431	33%	0.99	31,817	9%	0.91
Raleigh	NC	171,810	51,570	30%	1.11	40,740	24%	0.72	17,565	10%	1.00
San Antonio	TX	452,637	147,941	33%	1.21	104,836	23%	0.70	56,252	12%	1.21
San Diego	CA	512,915	164,545	32%	1.19	132,889	26%	0.79	65,078	13%	1.24
San Francisco	CA	489,281	189,859	39%	1.44	91,161	19%	0.57	64,923	13%	1.29
San Jose	CA	310,262	62,760	20%	0.75	125,970	41%	1.23	26,119	8%	0.82
Seattle	WA	385,583	130,972	34%	1.26	114,835	30%	0.91	38,924	10%	0.98
St. Louis	MO	270,778	103,797	38%	1.42	84,485	31%	0.95	22,924	8%	0.83
Washington	DC	387,023	197,440	51%	1.89	21,944	6%	0.17	44,016	11%	1.11

APPENDIX J: 2000 NAICS		Total	Knowledge based industries			Blue collar industries			Food, travel & entertainment industries		
City	State	Employment	Employment	% City Total	LQ	Employment	% City Total	LQ	Employment	% City Total	LQ
USA		114,064,976	32,591,602	29%		32,948,825	29%		11,622,420	10%	
Total Cities		19,438,605	7,154,605	37%	1.29	4,340,333	22%	0.77	1,846,322	9%	0.93
Anaheim	CA	193,517	35,181	18%	0.64	79,088	41%	1.41	18,991	10%	0.96
Atlanta	GA	416,749	202,318	49%	1.70	60,835	15%	0.51	44,328	11%	1.04
Austin	TX	392,402	137,460	35%	1.23	91,601	23%	0.81	43,323	11%	1.08
Baltimore	MD	298,378	98,038	33%	1.15	59,584	20%	0.69	26,331	9%	0.87
Boston	**MA**	**550,896**	**321,224**	**58%**	**2.04**	**61,894**	**11%**	**0.39**	**51,260**	**9%**	**0.91**
Charlotte	NC	409,711	136,967	33%	1.17	110,443	27%	0.93	34,490	8%	0.83
Chicago	IL	1,249,249	531,512	43%	1.49	272,348	22%	0.75	111,032	9%	0.87
Columbus	OH	414,264	141,910	34%	1.20	97,740	24%	0.82	37,227	9%	0.88
Dallas	TX	814,396	312,176	38%	1.34	200,810	25%	0.85	69,954	9%	0.84
Denver	CO	411,303	131,413	32%	1.12	94,034	23%	0.79	41,230	10%	0.98
Detroit	MI	258,090	89,409	35%	1.21	71,091	28%	0.95	23,032	9%	0.88
Honolulu	HI	237,478	71,064	30%	1.05	45,306	19%	0.66	43,187	18%	1.78
Houston	TX	1,268,550	404,580	32%	1.12	352,562	28%	0.96	105,024	8%	0.81
Indianapolis	IN	564,665	166,286	29%	1.03	175,638	31%	1.08	51,235	9%	0.89
Las Vegas	NV	209,731	60,400	29%	1.01	35,540	17%	0.59	44,574	21%	2.09
Los Angeles	CA	1,426,628	502,985	35%	1.23	399,718	28%	0.97	140,156	10%	0.96
Memphis	TN	370,829	127,370	34%	1.20	105,208	28%	0.98	28,409	8%	0.75
Miami	FL	214,515	83,292	39%	1.36	40,963	19%	0.66	23,131	11%	1.06
Minneapolis	MN	298,949	131,687	44%	1.54	58,860	20%	0.68	26,979	9%	0.89
Nashville-Davidson	TN	398,547	135,688	34%	1.19	103,222	26%	0.90	40,543	10%	1.00
New Orleans	LA	208,525	73,917	35%	1.24	34,962	17%	0.58	40,096	19%	1.89
New York	NY	3,279,382	1,187,638	36%	1.27	596,621	18%	0.63	212,141	6%	0.63
Orlando	FL	214,091	49,170	23%	0.80	42,484	20%	0.69	35,961	17%	1.65
Philadelphia	PA	606,509	290,053	48%	1.67	108,054	18%	0.62	48,777	8%	0.79
Phoenix	AZ	691,175	207,310	30%	1.05	212,643	31%	1.07	64,257	9%	0.91
Pittsburgh	PA	316,083	175,894	56%	1.95	41,102	13%	0.45	23,681	7%	0.74
Portland	OR	360,171	121,898	34%	1.18	103,855	29%	1.00	34,666	10%	0.94
Raleigh	NC	200,039	73,792	37%	1.29	40,803	20%	0.71	19,956	10%	0.98
San Antonio	TX	512,374	169,883	33%	1.16	113,360	22%	0.77	60,555	12%	1.16
San Diego	CA	618,771	221,243	36%	1.25	136,641	22%	0.76	76,058	12%	1.21
San Francisco	CA	555,647	229,637	41%	1.45	81,072	15%	0.51	79,205	14%	1.40
San Jose	CA	364,653	96,744	27%	0.93	126,822	35%	1.20	30,092	8%	0.81
Seattle	WA	433,777	173,565	40%	1.40	104,067	24%	0.83	45,505	10%	1.03
St. Louis	MO	263,578	89,862	34%	1.19	62,529	24%	0.82	23,285	9%	0.87
Washington	DC	414,983	173,039	42%	1.46	18,833	5%	0.16	47,651	11%	1.13