



National Center for Real Estate Research

Who are Your Future Tenants? □
Office Employment in the United States 2004-2014 □

□

John Burns Consulting Company □
John Burns, RPA and John McDonald, PhD □
January 2007

**Who are Your Future Tenants?
Office Employment in the United States
2004 – 2014**

**Report prepared for the
National Association of Realtors[®]**

by

**John Burns Consulting Company
John Burns, RPA
John McDonald, PhD**

January 2007

Acknowledgements

We extend our thanks to the National Association of Realtors®, especially Paul Bishop, Scott MacIntosh, and the Subcommittee for Commercial Real Estate Research, for sponsoring this research project. We particularly thank the real estate industry experts who kindly responded to our survey:

Robert Bach, Grubb & Ellis,
Steven Dunn, CB Richard Ellis,
Ross Moore, Colliers International,
Walter Page, Equity Office,
Faith Ramsour, Cushman and Wakefield, and
John Wickes, Jones, Lang, LaSalle.

We also thank the participants in a panel discussion of this research that took place on January 16, 2007 under the sponsorship of CCIM/Illinois and the Northern Illinois Commercial Association of Realtors® (NICAR).

Theodore Buenger, Jr., CB Richard Ellis,
Chang Lee, Eastdil Secured,
William Novelli, Jr., CB Richard Ellis, and
John Rutledge, Rutledge Co., LLC.

All of these experts provided valuable feedback and information.

Executive Summary

In March 2006 the National Association of Realtors® issued a request for proposals to undertake research that would identify the primary drivers of the demand for office space. The request stipulated that analysis of office-using industries should be conducted at a low level of industry aggregation, using the North American Industry Classification System (NAICS). Short, medium, and long-term prospects for office demand should be investigated, including impacts of technological changes. Lastly, the research should examine specific geographic markets.

This report has been completed to fulfill that request. However, at the outset it was noted that the Bureau of Labor Statistics of the U.S. Department of Labor had just issued a complete enumeration of detailed occupations data for each industry in the nation for the base year of 2004 and projections for 2014. It was decided that use of data on occupations would provide a reasonably comprehensive enumeration of employment that takes place in offices. This research begins with a listing of all of the office-based occupations, which then produces data on the amount of office-based employment for each major industry category. The report concentrates on those major industries that consist of office-based employment that is above the national average of 41.5 percent of total employment. Each of these major industries is broken down into its component parts to see how the amount of office-based employment varies within the major industry categories. For example, the percentage of office-based employment is uniformly high in all parts of the Finance and Insurance industry, but this percentage varies a great deal within the Information industry category.

The Bureau of Labor Statistics projections for 2014 are used to make projections of office-based employment for 2014, and forecasts from Moody's Economy.com (2006) were used to project the intermediate year 2009. The basic projection is that office-based employment is to increase from 60.04 million in 2004 to 63.96 million in 2009 (an increase of 6.5 percent), and to 68.10 million in 2014 (a further increase of 6.5 percent). Total employment in the nation is projected to increase by 6.4 percent and 6.3 percent over these same five-year intervals, so office-based employment is not projected to increase much more rapidly than total employment. The basic reason for this outcome is that, while many office-based occupations will increase rapidly, the largest office-based occupation group is Office Support Staff, and these jobs are expected to increase relatively slowly because of technical change. The BLS projection for Office Support Staff is an increase of 5.8 percent over the ten years from 2004 to 2014. The shift of office occupations away from support staff towards higher-level occupations would suggest that the amount of office space per employee may increase. However, the trends towards more efficient use of office space and less space needed for storage of paper may offset this effect.

This report provides data on office employment by major industry category for the top 23 metropolitan areas in the nation for the base year 2004. The overall average for office-based employment in the 23 metropolitan areas is 42.6 percent, which is only slightly higher than the national average of 41.5 percent. This average varies from a high of 45.5 percent in metropolitan Tampa and 45.2 percent in the New York metropolitan area to a low of 40.7 percent in metropolitan Houston.

The final sections of the report contain the results of two small surveys that were conducted. One survey solicited the opinions of a select group of office industry experts regarding some of the findings of this research (and a few other questions), and the other survey is of some of the professional literature produced in the industry that pertains to the demand for office space. The survey of industry experts generally confirms the empirical findings of this research, while the examination of the professional literature indicates that the analysis of the demand for office space typically is confined to three major industry categories – Professional, Technical, and Scientific Services; Information; and Finance and Insurance. The findings in this report strongly suggest that a more comprehensive definition of office space demand may be useful.

Contents

Introduction.....	8
Office Occupations.....	11
The Bureau of Labor Statistics Projections.....	14
Office Employment by Industries.....	15
Office Employment Projections by Industry for the U.S.....	18
The Top Twenty-Three Metropolitan Areas in 2004.....	23
Reconciliation with CoStar Group Office Supply Data.....	27
Demand for Office Space in Professional Reports.....	28
Survey of Real Estate Experts.....	32
Conclusions and Recommendations for Further Research.....	38
References.....	40
Tables	41 and ff
Table 1	Total Employment in the United States
Table 2	4200 Wholesale Trade
Table 3	5100 Information
Table 4	5200 Finance and Insurance
Table 5	5300 Real Estate and Rental and Leasing
Table 6	5400 Professional, Scientific, and Technical Services 5500 Management of Companies and Enterprises 0067 Self Employed
Table 7	6200 Health Care and Social Assistance
Table 8	9900 Government
Table 9	6100 Private Educational Services
Table 10	Phoenix Office Employment, 2004 Los Angeles Office Employment, 2004 San Diego Office Employment, 2004 San Francisco-Oakland Office Employment, 2004 Denver Office Employment, 2004 Washington, DC Office Employment, 2004 Miami Office Employment, 2004 Tampa Office Employment, 2004 Atlanta Office Employment, 2004

Chicago Office Employment, 2004
Baltimore Office Employment, 2004
Boston Office Employment, 2004
Detroit Office Employment, 2004
Minneapolis-St. Paul Office Employment, 2004
St. Louis Office Employment, 2004
New York Office Employment, 2004
Philadelphia Office Employment, 2004
Dallas-Ft. Worth Office Employment, 2004
Houston Office Employment, 2004
Seattle Office Employment, 2004
Cincinnati Office Employment, 2004
Cleveland Office Employment, 2004
Pittsburgh Office Employment, 2004

Introduction

This report examines office employment in the U.S. for the benchmark year of 2004, and provides projections for 2009 and 2014. It is generally agreed that the demand for office space depends primarily upon two variables – office employment and rent (occupancy cost). The purpose of this report is to implement a better method for projecting office employment. The basic method is to begin with an enumeration of the occupations that involve working in an office – rather than beginning with a list of industries which are thought to comprise the vast majority of office demand. A recent survey of the literature on the estimation of office market demand by Joseph Rabianski and Karen Gibler (to appear in the *Journal of Real Estate Literature*, Vol. 15, No. 1, 2007) concludes that the use of office occupations as the basis for demand analysis is the preferred method. This report is one of the first times the method will have been applied to both national office and local office markets.

Real estate professionals are aware that improved methods of office employment analysis are needed. A recent article by Monica Finnegan and Johanna Buurman of Trammell Crow Company in *Key Notes* (August, 2006), the newsletter of Lambda Alpha International, discusses “ghost workers” and the demand for office space. They state that:

“In our view (the) most important factor (that is not captured in traditional demand studies) is the increasing reliance on contingent workers. These ‘ghost workers’ are not employed by the firm whose site they work in – rather they may be traditional agency temp workers, independent contractors, or employees of

another firm that has contracted to fulfill certain technical or administrative functions on-site.”

They go on to state that:

“Importantly, independent contractors do not show up in the traditional (industry) employment statistics at all.”

The size of the discrepancy Finnegan and Buurman are describing in part can be enormous. The CoStar Group reports on office markets do a good job of enumerating the supply of office space, and also include charts showing office employment and office employment growth. Office employment is defined by CoStar Group as jobs in the Information, Financial Activities, and Professional and Business Services industries. The precise definitions of these industries are discussed below, but a basic comparison is illuminating. Total employment in the U. S. in these industries in 2004 was 27.6 million. In contrast, the total for office employment estimated for 2004 in this report is 60.0 million. By our estimate, the CoStar Group method enumerates only 46 percent of office employment. Furthermore, our occupational analysis suggests that only 69 percent of the workers in the Information, Financial Activities, and Professional and Business Services industries actually work in offices. As our data show, one major discrepancy is the omission of self-employed persons from the traditional industry studies.

The method used in this report, starting with occupations that involve work in offices, will capture these workers – whether they are temp workers sent by a temp service, employed by other firms, or are self-employed independent contractors.

The method used is as follows:

1. Use the occupation categories established by the U. S. Department of Labor, Bureau of Labor Statistics (BLS) to identify the people who work in offices.
2. Use the BLS occupation-industry matrix for 2004 to compute the percentage of employment in each industry that is office-based employment.
3. Use the BLS projection of employment by industry for 2014, coupled with the BLS projection of the occupation-industry matrix, to project office-based employment by industry for 2014.
4. Use the employment projection from Moody's Economy.com (2006) for 2009 to make office employment projections for this intermediate year.

Each of these steps is described in turn. The data are attached as spreadsheets.

This report also examines office employment in the top 23 metropolitan areas for 2004, and describes a method for making office demand projections at the metro level.

The next section is a reconciliation of estimated office employment with data by the CoStar Group on the stock of office space in metropolitan Chicago. The remaining sections of the report summarize the results of our survey of current professional reports on the state of the office market and present the results of our small survey of industry experts who were asked to comment on the basic empirical findings described herein.

This research project relies heavily on data provided by the Bureau of Labor Statistics of the U.S. Department of Labor. BLS is known chiefly for its official monthly reports on employment and unemployment and the monthly consumer price and producer price indexes. BLS provides very detailed monthly data on employment by industry for all states and metropolitan areas as well. BLS also provides detailed data on occupations

and makes employment projections for occupations that are published in the *Occupational Outlook Handbook*. Other BLS publications include *The Monthly Labor Review* and *Employment and Earnings* (also published monthly). The BLS web site is the electronic home for all who wish to track employment and employment conditions.

Office Occupations

The BLS occupation codes include over 700 detailed occupations. This list was reviewed carefully, and a list of office occupations was developed. This list is as follows:

Office Occupations

- 11. Management occupations
- 13. Business and financial operations occupations
- 15. Computer and mathematical science occupations
- 17. Architecture and engineering occupations
- 19. Life, physical, and social science occupations
- 21. Community and social services occupations
- 23. Legal occupations
- 25-1000 Post-secondary teachers
- 27-1020 Designers
- 27-3000 Media and communication occupations
- 29-1000 Health diagnosing and treating practitioners
- 41-3000 Sales representatives, services
- 41-4000 Sales representatives, wholesale and manufacturing
- 41-9020 Real estate brokers and sales agents
- 43. Office and administrative support occupations

These occupations vary in number of workers and in the extent to which they use office space. Managers use offices most of the time, while post-secondary teachers and sales representatives carry out their duties in other locations as well (i.e., classrooms and offices of clients, respectively). Nevertheless, it is important that the study of the demand for office space should begin with a reasonably complete accounting of office occupations.

The number of workers in each of these occupations is shown in the next table. In 2004 there were 60.035 million office workers in total, which was 41.2 percent of all employed persons. The largest occupational category by far was Office Support Occupations, with 23.907 million workers. The next-largest office occupations (in order) are Management Occupations, Business and Financial Operations Occupations, and Health Diagnosing and Treating Occupations.

Office Occupations

Code	Occupation	2004 (1000s)	2014 (1000s)	Percent Change	Change (1000s)
11	Management	9155	10147	11.32	1032
13	Business & Financial Operations	5873	6996	19.12	1123
15	Computer & Math	3153	4120	30.67	967
17	Architects & Engineers	2520	2835	12.49	315
19	Life, Physical, Social Science	1316	1532	16.41	216

Code	Occupation	2004 (1000s)	2014 (1000s)	Percent Change	Change (1000s)
21	Social Services	2317	2800	20.85	483
23	Legal Services	1220	1414	15.90	194
25-1000	Post-Secondary. Teachers	1628	2153	32.25	525
27-1020	Designers	572	645	12.93	74
27-3000	Media & Communication	710	821	15.58	111
29-1000	Health diagnosing & treating	4190	5330	27.21	1140
41-3000	Sales Rep, Services	1318	1467	11.27	149
41-4000	Sales Rep, Wholesale & Manufacturing	1851	2095	13.20	244
41-9020	Real Estate Brokers	460	520	13.03	60
43	Office Support	23907	25287	5.77	1380
Total, office		60035	68097	13.43	8062
Total, all		145612	164540	13.00	18928

The table also displays the BLS projections for these occupations for the year 2014. Total employment is projected to increase by 13.00 percent from 2004 to 2014.

The total for employment in office occupations is projected to increase by 13.43 percent (8.062 million workers) in ten years. However, the occupational projections vary widely. Post-Secondary Teachers and Computer and Mathematical Science Occupations are both projected to increase by over 30 percent, while Office Support Occupations are projected to increase by only 5.77 percent in ten years. Indeed, this latter projection is an important consideration in projecting the demand for office space. BLS is expecting that the demand for Office Support Occupations will grow significantly more slowly than total employment or total office employment. This projection reflects the increasing use of computer and internet technology in the office.

The Bureau of Labor Statistics Projections

It is important to understand the basic methods used by BLS to make the employment projections. The methods are described in detail in the November 2005 issue of the *Monthly Labor Review*. This section is a brief summary of their procedures.

BLS begins the task of employment projections on the supply side by projecting the size of the labor force. The civilian labor force is projected to increase by 9.97 percent from 2004 to 2014, an increase that is less than the 12.5 percent growth that was recorded for the previous ten years (1994 to 2004). The projected labor force growth is affected by the aging of the baby-boom generation, the persons born from 1946 to 1964. Baby boomers were age 40 to 58 in 2004, and will be age 50 to 68 in 2014. In this age range the labor-force participation rates decline as people age. Many of the boomers will be retired by 2014, although a critical factor for future projections is the extent to which they actually do retire. Is retirement obsolete? No, but it may become less prevalent.

The aging of the baby-boom generation means that the composition of the labor force by age will change. The share of workers aged 55 and over is expected to increase from 15.6 percent in 2004 to 21.2 percent in 2014, while the shares of younger workers (age 16 to 24) and prime-age workers (age 25 to 54) will decline. The share of younger workers is expected to fall from 15.1 percent to 13.7 percent, and prime-age workers will decline from 69.3 percent to 65.2 percent. Designers of office space (and other facilities for workers) will need to keep these trends in mind.

The number of women in the labor force is projected to increase by 10.9 percent, which is faster than the 9.1 percent growth projected for men. The share of women in the labor force is expected to increase from 46.4 percent to 46.8 percent from 2004 to 2014.

BLS uses a long-run macroeconomic model of the economy to project the demand for workers. Economic growth is expected to be strong, but it will be constrained by the growth of the labor force. As noted above, BLS projects that total employment will increase by 13 percent, while projecting that the labor force will grow by only 10 percent. BLS is suggesting therefore that there may be some shortages of labor in the long run.

Office Employment by Industries

The next step is to compile office employment in each industry. The results of this work are shown in Table 1, the first attached spreadsheet table, for the major industry categories. The top employers of office workers, in terms of the percentage of employment that is office-based, are:

Finance and Insurance	96.3 percent
Professional Services	89.0 percent

Management of Enterprises	83.9 percent
Information	67.3 percent
Wholesale Trade	58.8 percent
Educational Services (private)	56.5 percent
Health Care and Social Assistance	48.9 percent
Real Estate and Leasing	46.2 percent

The top industries on this list are no surprise, but perhaps the appearance of Wholesale Trade as number five on this list is a bit unexpected.

The largest employers of office workers in absolute terms are:

Government	9.499 million
Health Care and Social Assistance	6.939 million
Professional Services	6.105 million
Finance and Insurance	5.747 million
Self Employment	5.313 million

It is no surprise that Government employs a large number of office workers. Government also houses many of them in public office buildings, but many government office workers are located in rental space as well. The major surprise on this list is Self Employment. Self Employment numbered 12.134 million in 2004, and 5.313 million of that was in office occupations. The self-employed are a major component of the demand for office space.

The above two lists of industries contain the ten major industries that are the major employers of office workers (including Self Employment). Total employment and office employment in each of these ten industries are broken down to the four-digit

NAICS level in Tables 2 – 9, the accompanying spreadsheet tables. The “office-intensity” of employment can vary widely within a major industry category. For example, while the overall average for office employment in Wholesale Trade is 58.8 percent in 2004, that percentage varies from a high of 75.8 percent in Drugs and Sundries to a low of 36.1 percent in Farm Product Raw Materials. On the other hand, the “office intensity” of employment in Finance and Insurance is uniformly high. All sectors within this major industry are close to the overall average of 96.3 percent. The tables for the ten industries make it clear that disaggregation can produce greater accuracy if a particular market’s composition of the sector differs from the national average. We observe the following:

- 4200 Wholesale Trade: The office intensities of wholesalers of durable goods and wholesalers of nondurable good are the same, but there is variation within these two broad categories. Disaggregation is more useful the larger is the Wholesale Trade sector.
- 5100 Information: This sector is highly office intensive, except for Motion Picture, Video, and Sound Recording. Disaggregation is needed if this industry is a large part of the Information sector.
- 5200 Finance and Insurance: All portions of this major industry are highly office intensive, so no disaggregation appears to be needed.
- 5300 Real Estate and Rental and Leasing: Real Estate is office intensive, but Rental and Leasing is not. Disaggregation is useful here.

- 5400 Professional, Scientific, and Technical Services: All sectors within this major industry are office intensive, so disaggregation may not be necessary here.
- 6100 Private Educational Services: The main distinction is between Elementary and Secondary Schools and Colleges and Universities. The former is not office intensive, and the latter is office intensive.
- 6200 Health Care and Social Assistance: Office intensity varies within this very large major industry. The main distinction is between Ambulatory Health Care and Hospitals (office intensive) versus Nursing and Residential Care and Social Assistance (less office intensive).
- 9900 Government: Federal Government and State Government are office intensive, but Local Government is not (except for Hospitals) – mainly because school teachers generally do not have their own offices.

Further disaggregation cannot be done for 5500, Management of Companies and Enterprises and 0067, Self Employment.

Office Employment Projections by Industry for the U. S.

BLS projections for office occupations for 2014 are displayed above. This section describes the office employment projections by industry.

The BLS projections for the major (two-digit) industries are shown in Table 1 below. Total employment is projected to increase by 13 percent from 2004 to 2014, and office employment is projected to increase by 13.4 percent – just slightly more than total employment. As noted above, this result for office employment is a combination of

relatively rapid employment growth in several office occupations, which is offset by relatively slow growth in Office Support Occupations. The industries with the largest absolute increases in office employment are projected to be:

6200 Health Care and Social Assistance	1,925,000
5400 Professional Services	1,721,000
9900 Government	981,000
5600 Administration and Support	884,000
6100 Educational Services	514,000
5200 Finance, Insurance	479,000
5100 Information	315,000

The projections are broken down to the four-digit level in Tables 2 – 9. The main facts to note from these tables are as follows:

Table 3, 5100 Information

The largest source of the increase in office employment is 5112 Software Publishing.

Table 4, 5200 Finance and Insurance

The largest source of office employment growth is in 5240 Insurance, especially 5242 Insurance Agencies and Brokers.

Table 6, 5400 Professional, Scientific, and Technical Services

Big increases in office employment are projected for

5411 Legal Services

5412 Accounting Services

5413 Architectural, Engineering Services

5415 Computer Systems Design Services

5416 Management Consulting

Table 7, 6100 Private Education Services

The big increase in office employment is in 6112-3 Colleges and Universities.

Table 8, 6200 Health Care and Social Assistance

This huge sector is expected to grow rapidly, and providing office space will be a major component of office growth. All sectors show increases in office employment, especially

6211-13 Offices of Health Practitioners

6216 Home Health Care Services

6221 General Medical, Surgical Hospitals

6233 Community Care, Elderly

6241 Individual and Family Services

Table 9, 9900 Government

Growth of office occupations is concentrated in 92611 State Educational Services (i.e., state colleges and universities).

Table 1 also includes projections by major industry for the intermediate year 2009. These projections are based on the employment projections for 2009 provided by Moody's Economy.com (2006). Their projection is that 48.66 percent of the employment increase from 2004 to 2014 will have occurred by 2009. This percentage has been used to move the employment figures for 2004 forward to 2009. For example, employment in

22 Utilities is projected to decline from 570,000 in 2004 to 563,000 in 2014, so employment for 2009 is projected to be 566,600; 48.66 percent of the change takes place from 2004 to 2009.

Top Twenty-Three Metropolitan Areas in 2004

BLS provides employment data for the metropolitan areas for broad industry categories in Employment and Earnings. These broad industry categories, the NAICS industries included, and the percentage of office employment for 2004 and 2014 are:

Broad Industry Category	NAICS Codes	Office	
		2004	2014
Construction,	23	.20075	.19505
Manufacturing,	31-33	.29337	.29831
Trade, Transportation, and Utilities,	42, 44, 45, 48, 49, 22	.32545	.31365
Information,	51	.67336	.69332
Financial Activities,	52, 53	.83346	.82476
Professional and Business Services,	54, 55, 56	.62300	.61883
Education and Health Services	61, 62	.50156	.49408
Leisure and Hospitality Services,	71, 72	.08887	.08929
Other Services,	81	.40913	.40126
Government	99	.43940	.44052

Employment and Earnings does not include Self Employment, so an estimate of Self Employment was computed from the Current Population Survey of the Census Bureau for 2003. This source provided a percentage of total employment that was Self Employment for each of the twenty-three metropolitan areas. This percentage was applied to the figure for total employees from Employment and Earnings to estimate the

total number of self-employed persons, and then multiplied by 0.43786, the fraction of self-employed persons who were in office occupations in 2004.

The percentages of office employment for each of the 23 largest metropolitan areas are computed in Table 10 (listed in state alphabetic order). The following table is a summary of these results. The top 23 metropolitan areas are listed in order by size. Obviously New York is at the top of the list. Office employment in the New York metropolitan area (including Northeast New Jersey) is estimated to be 4.04 million. New York is also a leader in the percentage of total employment that is office-based employment (45.21 percent). Only Tampa has a (slightly) higher percentage of 45.46 percent. The percentage of office employment varies from a low of 40.71 percent in Houston to the 45.46 percent in Tampa. The average for the top twenty metropolitan areas is 42.64, which is greater than the national average of 41.51 percent.

These benchmark figures for 2004 can serve as a base for making projections of office employment for these metropolitan areas. The first step is to obtain employment projections for the metropolitan area for the broad employment categories listed above. Such projections are available from commercial services such as Moody's Economy.com, or they can be made using conventional methods starting with national employment projections. The idea is to base the projection on the metropolitan area's share of national employment in each broad employment category, with an adjustment for the change in the share that is likely to take place over the projection period. This change in share could be based on the change in share from the recent past, for example. The next step is to apply the percentages of office employment in each broad employment category, starting with the percentages listed above for 2004. An adjustment in these

percentages should be made based on the changes projected by BLS shown in the table below.

	Total Employment (1000s)	Office Employment (1000s)	Percent Office: 2004
New York	8944	4044	45.21
Los Angeles	7636	3206	41.99
Chicago	4833	2013	41.66
Washington, DC	3049	1368	44.86
Philadelphia	2922	1282	43.87
Dallas – Fort Worth	2877	1210	42.07
Boston	2604	1143	43.90
Houston	2471	1006	40.71
Miami	2460	1059	43.04
Atlanta	2416	1030	42.64
Detroit	2182	918	42.07
San Fran - Oakland	2186	952	43.05
Minn. – St. Paul	1899	811	42.69
Phoenix	1771	731	41.28
Seattle	1735	732	42.18
St. Louis	1408	579	41.15
Baltimore	1355	578	42.65
San Diego	1394	584	41.87
Tampa	1351	614	45.46
Denver	1266	546	43.11
Cincinnati	1100	453	41.15
Cleveland	1136	480	42.24
Pittsburgh	1121	511	41.82
Average			42.64

Table 10 also includes an index of the extent to which each local economy specializes in particular industry groups. The index used is called the location quotient, and it equals employment in the industry as a percentage of total employment in a local economy divided by the same percentage for that industry of total non-agricultural employment in the nation. The national percentages for each industry group for the nation are:

Construction	.04851
Manufacturing	.09983
Trade, Transportation, Utilities	.17771
Information	.02186
Financial Activities	.05609
Professional & Business Services	.11435
Education & Health Services	.11810
Leisure & Hospitality Services	.08693
Other Services	.03783
Government	.15060
Self Employment	.08453

For example, the location quotient for manufacturing in Phoenix is computed as follows. There were 132,000 employees in manufacturing in 2004 out of a total of 1,771,000 workers, for a ratio of 0.07453. The national employment ratio for manufacturing is 0.09983, so the location quotient for manufacturing in Phoenix is $0.07453/0.09983 = 0.7466$, as shown in Table 10.

The industries in which each metropolitan area concentrates are shown in the next table. Industries are listed if the location quotient equals 1.2 or more, which means that the industry at the local level employs 20 percent more workers than it would if it were at the national average. Many of these large urban areas specialize in the same industries. Twelve specialize in Financial Activities, 11 in Professional and Business Services, and 9 in Information. Also, six specialize in Education and Health Services, and six specialize in Construction. Only two of the top 23 urban areas in the nation specialize in Manufacturing (Detroit and Cleveland). Given that the urban areas vary considerably in the degree to which they specialize in particular industries, it is perhaps somewhat surprising that they do not vary a great deal in the percentage of office workers (as shown

Metropolitan Area	Industries of Specialization
New York	Information, Financial Activities, Professional & Business Services Education & Health Services
Los Angeles	Information
Chicago	Financial Activities, Professional & Business Services, Leisure & Hospitality Services
Washington, DC	Construction, Information, Professional & Business Services, Other Services, Government
Philadelphia	Financial Activities, Education & Health Services
Dallas – Fort Worth	Information, Financial Activities
Boston	Information, Financial Activities, Professional & Business Services, Education & Health Services
Houston	Construction
Miami	Financial Activities, Professional & Business Services
Atlanta	Trade, Transportation, Utilities Information, Professional & Business Services
Detroit	Manufacturing, Other Services

Metropolitan Area	Industries of Specialization
San Francisco - Oakland	Information, Financial Activities, Professional & Business Services
Minneapolis – St. Paul	Financial Activities
Phoenix	Construction, Financial Activities, Professional & Business Services
Seattle	Information
St. Louis	Construction
Baltimore	Construction, Education & Health Services
San Diego	Construction, Professional & Business Services Leisure & Hospitality Services
Tampa	Financial Activities, Professional & Business Services
Denver	Construction, Information, Financial Activities, Professional & Business Services
Cincinnati	(none)
Cleveland	Manufacturing, Financial Activities, Education & Health Services
Pittsburgh	Education & Health Services, Other Services

in the previous table). As noted above, the percentage of office workers for the urban areas varies from a high of 45.46 in Tampa and 45.21 in New York to a low of 40.71 in Houston and 41.15 in St. Louis.

A simple projection of office employment for metropolitan Chicago can be made using an employment projection provided by Moody's Economy.com (2006). Total employment in metropolitan Chicago is projected to increase by 5.97 percent from 2004 to 2009. Total employment in 2004 was 4,833,000, so total employment is projected to increase by 288,500. Office employment in metropolitan Chicago is 41.66 percent of

total employment, so if this fraction does not change, the increase in office employment is projected to be 120,000 over this five-year period. If each office worker requires 250 square feet of office space, then the demand for office space is projected to increase by 30 million square feet.

Reconciliation with CoStar Group Office Supply Data

This report has provided what we believe are improved methods for estimating and projecting office employment. However, are the estimates of office employment generated consistent with what is known about the supply of office space?

The most complete enumeration of the stock of office space is provided by the CoStar Group, and their data for metropolitan Chicago can be used to compare demand with supply. CoStar Group covers all classes and sizes of buildings used for offices; office buildings, office condominiums, office lofts, and office medical. They include both multi-tenant and single-tenant buildings, including owner-occupied (including government) buildings. The CoStar Group estimate of the stock of office space in the Chicago metropolitan area (excluding the portions in Indiana and Wisconsin) for the second quarter of 2004 is 355.0 million square feet. Of this total, 296.9 million square feet were occupied at that time.

CoStar Group also provides reports on the supply of industrial and warehouse space. Their estimate for metropolitan Chicago for the second quarter of 2004 is 908.9 million square feet of industrial space. Of this total 813.4 million square feet were occupied (89.5 percent). Industrial and warehouse buildings contain office space. A study of 419 industrial buildings in metropolitan Chicago by McDonald and Yurova

(2006) found that 15.5 percent of the space in these buildings is devoted to office space. If this figure is used, then the amount of office space in these buildings in metropolitan Chicago is estimated to be 140.9 million square feet in 2004. If the same occupancy rate is used (89.5 percent), then the industrial and warehouse buildings contained 126.1 million square feet of occupied office space at that time.

The total for occupied office space in office buildings and industrial buildings is estimated to be 423.0 million square feet for metropolitan Chicago in 2004. However, this figure leaves out office space located in other types of buildings, such as home offices and offices in retail establishments, hotels, apartment buildings, hospitals, and other types of commercial structures other than office buildings or industrial and warehouse buildings. Therefore the figure from CoStar Group of 423 million square feet is very much a lower-bound estimate of the total amount of office space in metropolitan Chicago. The estimate for office employment in metropolitan Chicago (with the same geographic boundaries) in Table 10 is 2,013,000. If each office worker requires 225 square feet of gross space, then the total demand for office space is estimated to be 453 million square feet. This preliminary estimate suggests that the estimate of office employment in this report is approximately consistent with the estimate of office space provided by CoStar Group.

The Demand for Office Space in Professional Reports

A survey of literature, as represented by current reports prepared by major commercial industry research groups, was undertaken to determine the approaches to office space demand that are used by the professionals.

The most thorough reports were provided by Equity Office (2006), which currently owns 585 office buildings in twenty major markets. These office buildings contain 108.5 million square feet. Equity Office forecasts net absorption in each of the twenty markets using an econometric model that relates net absorption to the change in office jobs, measured as the change in employment in two industry categories – Finance and Insurance and Professional and Business Services. The correlation between these two variables for the total of the 20 markets is 0.84. However, since 2002 Equity Office has adjusted its projection of office space absorption upwards by 10 percent to account for the expansion of small firms that are not included in the BLS establishment survey.

Equity Office provided data on their lease distribution by size. A summary of that distribution is as follows:

Square feet	Percentage of Total Occupied Space
0 – 5000	13.0%
5001-10,000	11.9%
10,001-20,000	14.9%
20,001-40,000	15.6%
40,001-60,000	9.6%
60,001-100,000	9.9%
Over 100,000	25.0%

Over one-third (34.9 %) of the space leased by Equity Office is occupied by the largest tenants (over 60,000 square feet), but smaller tenants are a major factor as well. Tenants who occupy 10,000 square feet or less lease 24.9% of the Equity Office portfolio.

Equity Office also tracks their tenants' industries. Those industries, and their shares of the Equity Office leased space are as follows:

Industry		Share of Leased Space
5400	Prof., scientific and technical services	33.9%
5200	Finance and insurance	27.0%
5100	Information	7.9%
310-330	Manufacturing	4.8%
9900	Government	4.2%
5300	Real estate	2.6%
6200	Health care and social assistance	1.6%
Other		18.0%

The two major industries are Professional, Scientific, and Technical Services (5400) and Finance and Insurance (5200), and these two occupy 60.9% of the Equity Office portfolio of leased space. However, 29.1% percent of the leased space is occupied by firms in other industries (including government). Note that Health Care and Social Assistance is only 1.6% of the Equity Office leased space. This small figure for Health Care and Social Assistance is due to the nature of the property characteristics and locations of the Equity Office portfolio, which consists primarily of large multi-tenant buildings in major markets. The average size of the office building owned by Equity Office is 185,000 square feet.

Data on tenants' industries were also obtained for the nation from CoStar Group, Inc. (2006). CoStar Group surveys office buildings of all types and sizes in 45 metropolitan areas. CoStar Group includes 33.6 billion square feet of office space in 1.2

million properties – an average of 28,000 square feet per property. A summary of the CoStar Group tenant survey is as follows:

Industry	Share of Total Square Feet
Prof., technical, and business services	26.1%
Finance, insurance, real estate	23.7%
Other services	13.0%
Manufacturing	11.4%
Government	5.5%
Medical	4.3%
Other office demand	16.0%

These data confirm that the same two major industry groups Professional, Technical, and Business Services and Finance, Insurance, and Real Estate occupy the bulk (49.8%) of the office space covered by CoStar Group. But this means that half (50.2%) of the office space is occupied by firms (including government) that are not in these two industry groups. Consequently, the data from the Equity Office tenant rosters and the CoStar Group tenant survey strongly suggest that projections based on employment in these two major industry groups may not capture the demand for office space as well as a more comprehensive approach to demand estimation, such as the one outlined in this report.

The CoStar Group (2006) tenant survey also provided data on square feet per employee by industry category. These data refer to total leased square feet, including conference rooms, storage rooms, and so on. The highest average is for law firms at 383 square feet per employee, and the overall average is 280 square feet per employee.

Other professional reports surveyed provide only brief comments on the demand for office space. Transwestern and Delta Associates (2006) use total employment growth figures to explain office market demand. ULI-the Urban Land Institute and PricewaterhouseCoopers LLP (2006) recommend investing in office buildings in higher job growth markets, but note that corporations continue to reduce space per employee. They also note that outsourcing to offshore firms dampens demand. Principal Real Estate Investors, Real Estate Research Corporation, and CBRE/Tortoise Research (2006) use the Tortoise-Wheaton approach to demand, which consists of tracking employment in the two major industry categories – Professional, Technical, and Business Services and Finance and Insurance. They warn that job growth may be slowing down, and note that several of the major metropolitan areas have yet to reach or surpass their prior employment peaks in these industries. Grubb and Ellis (2007) is now making forecasts of office markets, both at the national and metropolitan levels. Their forecasts are based on “office-related jobs,” which are defined as a sort of office-intensive industries. This very brief survey of professional reports also suggests that a more comprehensive approach to office market demand is useful.

Survey of Real Estate Experts

A survey was conducted of a small number of highly qualified real estate experts – generally the leading researcher in a national firm. The respondents are listed in the acknowledgements. This section presents the survey questionnaire and representative responses to each question.

Survey Questionnaire

The National Association of Realtors® is seeking to develop improved methods for analyzing and forecasting the demand for office space. We are seeking your views about factors to include in an improved method.

Trends have been uncovered using data from the U. S. Department of Labor, Bureau of Labor Statistics on occupations and industries. We wish to know whether you are seeing the same trends – and whether you are seeing other trends that are important.

1. Office occupations are diverse. Big *increases* are expected in
Health care
Management
Business and financial operations
Computer science (e.g., programmers, systems analysts)

Also, the largest office occupation category is Office Support Occupations (e.g., secretaries, administrative support, customer service representatives, clerks). However, this category is expected to grow at a relatively *slow* rate.

Are you seeing these trends?

Yes.

Yes, however it may slow in 2007.

Yes, but IT growth has been uneven.

Do you agree or disagree?

Agree.

What do you think are the reasons for the trends?

Strong corporate profits. Outsourcing to smaller professional services companies.

High/low growth rates reflect changes in the broader economy.

Aging baby boomers need health care. Outsourcing.

What other office occupations are growing rapidly?

Legal and legal support staff. Telecom workers.

Professional services.

Consensus: The respondents basically agree with the trends we have identified.

2. All industries employ office workers – not just Finance and Insurance and Professional and Business Services. The biggest employers of office workers are:
Government
Health Care
Professional Services (legal, accounting, architectural & engineering, computer

systems design, advertising, R&D, market research)
Finance and Insurance
Self Employment (in any occupation)

Do you agree?

Yes.

What other industries are big employers of office workers?

Educational services (e.g., for-profit schools).

Residential real estate (but slowing down) and business support industries.

Information-software industry.

Temporary labor agencies and political parties (during campaigns).

Is government a big part of the office rental market?

Yes, in Washington, DC and state capitals.

Yes, also in LA, New York, Dallas.

Yes, mostly as owner-occupant, but also rental.

What are you seeing in health care regarding demand for office space?

Yes, extremely strong – mostly in medical office buildings but also in multi-tenant general office buildings.

Yes, support space for medical payment processing and vendors of medical supplies.

Modest growth.

Health care is not a big driver of the multi-tenant office market.

Mixing of doctor's offices with corporate users is generally not a good idea because of the differences in the types of visitors to these offices.

Are self-employed office workers a big factor?

Not really, except in smaller properties (10 to 20,000 square feet).

My guess is no.

No.

A huge factor; about 80% of our in-place leases are under 5000 square feet.

Consensus: Respondents think that government is an important component of office demand, but is still largely confined to owner-occupied buildings.

Health care does rent some space in the multi-tenant market, but is still mostly located in specialty buildings. Self-employed people use small offices, and are a factor in that market.

3. The largest *increases* in office employment are projected in these *industries*
Health care
Professional Services (legal, accounting, and so on, defined above)

Government

Business support [such as employment services (including temporary workers), support services for buildings and other facilities, security services, telephone call centers, collection agencies, investigation agencies]

Education (private colleges, training programs)

Finance and Insurance

Information (e.g., publishing, telecommunications, internet services, broadcasting)

Do you agree with this assessment, or disagree?

Yes.

What other industries should be watched?

Mining and construction.

Computer/telecom/electronics and security services.

Biotech

Private equity firms driving up rents in markets such as New York.

Consensus: Respondents basically agree with our projections. Our more detailed projections include the additional industries that were mentioned.

4. Real estate professionals have noticed a phenomenon they call “ghost” office workers – workers who are employed by a variety of firms (or are self employed), but who actually work in the offices of other firms. For example, a firm may hire a consultant to work on computer technology, and that person will be housed in the firm’s office space – but will not be on the firm’s own payroll.

Are you seeing this trend?

Yes.

Hard to measure, only in certain industries.

Firms will use consultants and temporary workers as they expand.

Shortage of talent will continue this trend.

Is it a sizable factor?

No, not in the big picture.

No.

About 5% to 10% of office space is allocated to “ghost” employees.

Yes.

In what occupations and/or industries are you seeing this trend?

Information technology consulting.

Office support and training for large companies.

Management consulting and real estate.

Accounting, marketing, IT, office services.

Consensus: Respondents do not see that “ghost” employees are a huge factor, but they exist as, for example, IT consultants, trainers, and management consultants.

5. Now we wish to turn to office square foot standards. Our estimate is typical office space is 175 to 225 square feet per employee.

What is the typical square footage for an office worker in your area? How does it vary by the person’s occupation (e.g., support staff versus manager, and so on)?

Legal is 400 square feet, but the average is about 150 square feet.

Our estimate is 215 to 230 square feet.

On average, 150 square feet. It varies a lot. Law firms have the greatest square feet per employee. Managers have more space. Support staff are located in cubicles.

More like 225 than 175.

Have the standards for office space been changing?

Yes.

If so, how have they been changing?

The average is getting smaller. Cubicles and open office arrangements are more popular and acceptable than they used to be.

Better lighting, air quality and privacy.

Tenants need efficient space with ability to handle new technologies. Also, they desire flexible lease terms or are willing to pay a premium for short-term leases of 12 months or less.

With rents currently favorable for tenants, some companies are signing up for future expansion space that they intend to occupy within the next few years, but for now is vacant.

Is the “paperless” office becoming a reality, so that office workers require less space? Or is this really not happening?

Yes, but it is happening more slowly than some have predicted.

No, there is as much paper as ever.

Paper consumption is up, requiring more office space.

Electronic files are replacing storage space for paper, although legal documents still require paper documentation.

Not really, it will probably take another generation for it really to materialize.

Yes, many offices are adopting alternatives to the traditional office, allowing workers to work at home. Work stations are shared. Common areas are changing; accommodating more informal meetings and video conferences.

Consensus: Office space varies, but our average figure is reasonable. Standards for office space require greater efficiency and flexibility, and tenants are willing to pay for these features. The “paperless” office is not a reality, and change is coming more slowly than some had predicted.

6. Changes in technology are affecting the office-using sector, reducing the need for office space and support staff. For example, large libraries of documents (e.g., law libraries) partly can be replaced by access to electronic data bases. What do you think is the importance of these changes? What is the future likely to be in this regard?

We’re about 50% to 75% of the way there, so there will continue to be an impact.

This will continue to happen, but conversion will be slower than expected (by some).

With fewer support staff and more higher-level staff, the demand for office space increases.

Administrative support people now work with 20 or more employees, and libraries are becoming a thing of the past.

People are still using hard copies, so it will take a while for this trend to materialize.

Law libraries are declining, but law offices are getting bigger, and seeking trophy buildings.

Consensus: Decline in support staff clearly is happening, but the extent to which technology reduces the demand for space varies from very little to a large amount (i.e., no consensus).

7. From your perspective, what have we not discussed that is really important to know about the demand for office space?

Nothing I can think of. This is a great project that will benefit the industry in a big way.

New construction is on the rise in certain markets, and may begin to outpace demand (again). Excess supply and low rents mean that tenants will lease more space than otherwise.

Continued shift to a service economy means that the demand for office space will outpace overall employment growth.

Office demand continues to grow around the world because of employment growth. Supply of capital will spur new office development.

Consensus: Demand for office space continues to grow, and we like your project.

Conclusions and Suggestions for Further Research

This report develops a method for analyzing the demand for office space that is based on the occupations that take place in offices, in contrast to the standard method of beginning with a short list of key industries. This short list usually is specified as Professional, Scientific, and Technical Services and Finance and Insurance. The report documents the fact that this standard method captures only about one-half of office employment. Our estimate is that 41.5 percent of total employment in the nation takes place in offices.

The report provides national data for the base year of 2004, as well as projections for 2009 and 2014, for office employment by occupation and by industry. These projections indicate that future demand for office space will be driven by Health Care and Social Assistance, Government, and other industries in addition to Professional, Scientific, and Technical Services and Finance and Insurance.

The report also contains estimates for the base year 2004 of office employment by industry for the 23 largest metropolitan areas.

Additional research that can follow from this project perhaps falls into seven categories:

- Tests to determine whether the expanded enumeration of the demand for office space based on occupations provides a higher level of explanatory power (compared to standard demand models) for office space absorption, vacancy rates, rents, and office space development.
- Use of the baseline data for the year 2004 for the major metropolitan areas to develop forecasts of office space demand for those metropolitan areas.

- Research to determine whether marketing efforts by the multi-tenant commercial office industry to a wider range of potential tenants would be effective.
- Research to determine if office space design is, or should be, tailored to firms in industries other than Professional, Scientific, and Technical Services and Finance and Insurance.
- More systematic investigation of office space requirements by type of employee and by industry.
- Research on the impact of changes in technology on the demand for office space.
- Research of comparable nature (based on occupations) on the demand for industrial real estate.

References

- Bureau of Labor Statistics, "BLS Releases 2004-14 Employment Projections," BLS press release, Dec. 7, 2005.
- Bureau of Labor Statistics, *Employment and Earnings*, Vol. 52, No. 8 (August 2005).
- Bureau of Labor Statistics, "Employment Projections: Industry-Occupation Employment Matrix," web site <http://www.bls.gov/emp/nioem/empioan.htm>.
- CoStar Group, "The CoStar Group Industrial Report: Chicago Industrial Market, First Quarter 2006," CoStar Group, Inc., 2006.
- CoStar Group, "The CoStar Group Office Report: Chicago Office Market, First Quarter 2006," CoStar Group, Inc., 2006.
- CoStar Group, "The CoStar Office Report," CoStar Group, Inc. 2006.
- Equity Office, "Third Quarter 2006 Supplemental Operating and Financial Data," Chicago: Equity Office, 2006.
- Finnegan, M., and J. Buurman, "Ghost Workers and Demand for Office Space," *Key Notes*, August 2006.
- Grubb and Ellis, "Office Market Forecasts, 2007," Grubb and Ellis web site.
- McDonald, J., and Y. Yurova, "Are Property Taxes Capitalized in the Selling Price of Industrial Real Estate?" *Appraisal Journal*, Vol. LXXIV, No. 3 (2006), pp. 250-256.
- Moody's Economy.com, Inc., "Economic Forecasts, February 2006," West Chester, PA: Moody's Economy.com 2006.
- Principal Real Estate Investors, Real Estate Research Corporation, and CBRE/Torto Wheaton Research, "Expectations and Market Realities in Real Estate, 2007," DesMoines, IA: Principal Real Estate Investors, 2006.
- Rabianski, J., and K. Gibler, "Office Market Demand Analysis and Estimation Techniques: A Literature Survey, Synthesis and Commentary," *Journal of Real Estate Literature*, Vol. 15, No. 1 (2007), forthcoming.
- Transwestern and Delta Associates, "TrendLines: Gauging an Improving Market," Chicago: Transwestern, 2006.
- ULI-the Urban Land Institute and PricewaterhouseCoopers LLP, "Emerging Trends in Real Estate, 2007," Washington, DC: ULI-the Urban Land Institute, 2006.
- U. S. Bureau of the Census, Current Population Survey, 2003.

Tables

Table 1 Total Employment in the United States

Table 2 4200 Wholesale Trade

Table 3 5100 Information

Table 4 5200 Finance and Insurance

Table 5 5300 Real Estate and Rental and Leasing

Table 6 5400 Professional, Scientific, and Technical Services
5500 Management of Companies and Enterprises
0067 Self Employed

Table 7 6200 Health Care and Social Assistance

Table 8 9900 Government

Table 9 6100 Private Educational Services

Table 10 Phoenix Office Employment, 2004
 Los Angeles Office Employment, 2004
 San Diego Office Employment, 2004
 San Francisco-Oakland Office Employment, 2004
 Denver Office Employment, 2004
 Washington, DC Office Employment, 2004
 Miami Office Employment, 2004
 Tampa Office Employment, 2004
 Atlanta Office Employment, 2004
 Chicago Office Employment, 2004
 Baltimore Office Employment, 2004
 Boston Office Employment, 2004
 Detroit Office Employment, 2004
 Minneapolis-St. Paul Office Employment, 2004
 St. Louis Office Employment, 2004
 New York Office Employment, 2004
 Philadelphia Office Employment, 2004
 Dallas-Ft. Worth Office Employment, 2004
 Houston Office Employment, 2004
 Seattle Office Employment, 2004
 Cincinnati Office Employment, 2004
 Cleveland Office Employment, 2004
 Pittsburgh Office Employment, 2004

Table 1

Total Employment in the United States (1000s)

Code	Industry	2004			2009			2014		
		Total	Office	Percent	Total	Office	Percent	Total	Office	Percent
11	Agriculture	1081	283	0.261794635	1054	282	0.267552182	1025	280	0.273170732
21	Mining	523	152	0.290630975	501	145	0.289421158	477	137	0.28721174
22	Utilities	570	285	0.5	567	280	0.49382716	563	274	0.486678508
23	Construction	6964	1398	0.200746697	7350	1454	0.197823129	7757	1513	0.195049633
31-33	Manufacturing	14330	4204	0.293370551	13952	4126	0.295728211	13553	4043	0.298310337
42	Wholesale	5655	3326	0.588152078	5887	3401	0.577713606	6131	3480	0.567607242
44-45	Retail	15034	3543	0.235665824	15836	3686	0.232760798	16683	3836	0.229934664
48-49	Transp, Wareh'se	4250	1148	0.270117647	4496	1190	0.264679715	4756	1234	0.259461733
51	Information	3138	2113	0.673358827	3315	2266	0.683559578	3502	2428	0.693318104
52	Finance, Insurance	5966	5747	0.963291988	6207	5980	0.963428387	6462	6226	0.963478799
53	Real est., leasing	2086	964	0.462128476	2258	1038	0.459698849	2440	1116	0.457377049
54	Professional serv	6762	6015	0.889529725	7697	6852	0.890216968	8684	7736	0.890833717
55	Management	1718	1441	0.838766007	1807	1515	0.838406198	1900	1593	0.838421053
56	Admin & support	7934	2770	0.349130325	9132	3200	0.350416119	10396	3654	0.351481339
61	Educational serv	2766	1564	0.565437455	3203	1814	0.566344052	3664	2078	0.567139738
62	Health & social ass't	14187	6939	0.489109748	16277	7876	0.48387295	18482	8864	0.479601775
71	Arts, entertainment	1833	320	0.174577196	2057	355	0.172581429	2293	391	0.170518971
72	Accomm & food serv	10646	789	0.074112343	11500	853	0.074173913	12401	921	0.074268204
81	Other services	5431	2222	0.409132756	5802	2350	0.405032747	6193	2485	0.401259487
99	Government	21618	9499	0.43940235	22675	9976	0.439955899	23790	10480	0.440521227
67	Self employment	12134	5313	0.437860557	12286	5320	0.439955899	12446	5328	0.428089346
	Total	144626	60035	0.415105168	153859	63959	0.415698789	163598	68097	0.41624592

Growth
Total
Office

2004-09
0.063840527
0.065361872

2009-14
0.063298215
0.064697697

2004-14
0.131179733
0.134288332

Table 2

4200 Wholesale trade

Employment (1000s)

		<i>2004</i>			<i>2014</i>		
		<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
4200		5651	3325	0.588391	6131	3478	0.567281
4230	Wholesalers, durable goods	2949	1823	0.618176	3268	1881	0.575581
4231	Motor vehicles & parts	340	138	0.405882	379	152	0.401055
4232	Furniture	110	67	0.609091	117	68	0.581197
4233	Lumber	240	107	0.445833	269	119	0.442379
4234	Prof & comm. Equipment	643	462	0.718507	746	540	0.723861
4235	Metal & mineral	121	55	0.454545	130	58	0.446154
4236	Electrical & electronic	340	240	0.705882	395	279	0.706329
4237	Hardware, plumbing, heating	234	141	0.602564	259	155	0.598456
4238	Machinery & equipment	652	343	0.526074	676	362	0.535503
4239	Misc durable goods	268	134	0.5	298	148	0.496644
4240	Wholesalers, nondurable goods	2007	1026	0.511211	2077	1061	0.510833
4241	Paper & paper products	150	98	0.653333	156	100	0.641026
4242	Drugs & sundries	219	166	0.757991	254	190	0.748031
4243	Apparel, et al.	146	94	0.643836	144	93	0.645833
4244	Grocery	688	273	0.396802	722	282	0.390582
4245	Farm product raw material	72	26	0.361111	54	18	0.333333
4246	Chemical & allied products	132	73	0.55303	146	80	0.547945
4247	Petroluem & petrol products	101	40	0.39604	70	27	0.385714
4248	Beer, wine, alcoholic beverages	143	71	0.496503	153	76	0.496732
4249	Misc nondurable goods	357	186	0.521008	378	194	0.513228
4250	Wholesale electronic markets	699	476	0.680973	785	536	0.682803
4251	Wholesale electronic markets	699	476	0.680973	785	536	0.682803

Table 3

5100 Information

Employment (1000s)

		2004			2014		
		<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
5100		3138	2113	0.673359	3502	2428	0.693318
5110	Publishing	910	685	0.752747	1115	877	0.786547
5111	Newspapers, books	671	459	0.684054	715	496	0.693706
5112	Software	239	226	0.945607	400	380	0.95
5120	Motion picture, video, sound	389	98	0.251928	451	116	0.257206
5121	Motion picture, video	368	86	0.233696	430	104	0.24186
5122	Sound recording	21	12	0.571429	21	12	0.571429
5150	Broadcasting	327	220	0.672783	461	211	0.457701
5151	Radio and TV	241	169	0.701245	236	136	0.576271
5152	Cable	86	51	0.593023	125	75	0.6
5160	Internet publ. & broadcast.	31	30	0.967742	45	42	0.933333
5161	Internet publ. & broadcast.	31	30	0.967742	45	42	0.933333
5170	Telecommunications	1043	666	0.638543	975	623	0.638974
5171	Wired telecom. Carriers	548	348	0.635036	380	243	0.639474
5172	Wireless	189	149	0.78836	247	196	0.793522
5173	Telecomm. Resellers	150	98	0.653333	143	93	0.65035
5175	Cable program distrib.	130	71	0.546154	166	90	0.542169
5180	Internet service providers, etc.	388	367	0.945876	496	471	0.949597
5181	Internet service providers	118	109	0.923729	136	128	0.941176
5182	Data process., hosting	270	257	0.951852	360	343	0.952778
5190	Other information serv.	51	32	0.627451	59	31	0.525424
5191	Other information serv.	51	32	0.627451	59	31	0.525424

Table 4

5200 Finance and Insurance

Employment (1000s)

		2004			2014		
		<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
5200		5966	5747	0.963292	6462	6226	0.963479
5210	Monetary authorities	22	19	0.863636	20	17	0.85
5211	Monetary authorities	22	19	0.863636	20	17	0.85
5220	Credit intermediation	2832	2708	0.956215	2986	2853	0.955459
5221	Depository credit int	1761	1728	0.981261	1732	1700	0.981524
5222	Nondepository credit int	768	699	0.910156	877	801	0.913341
5223	Activities related to cr int	303	281	0.927393	377	351	0.931034
5230	Securities, investments	767	745	0.971317	888	863	0.971847
5240	Insurance	2260	2193	0.970354	2476	2404	0.970921
5241	Insurance carriers	1403	1360	0.969351	1452	1407	0.969008
5242	Agencies, brokerages	857	834	0.973162	1024	996	0.972656
5250	Funds, trusts	85	80	0.941176	93	88	0.946237
5251	Insurance, empl benefit	46	44	0.956522	51	49	0.960784
5259	Other investment pools	38	36	0.947368	42	40	0.952381

Table 5

5300 Real estate and rental and leasing

Employment (1000s)

		2004			2014		
		<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
5300		2086	964	0.462128	2440	1116	0.457377
5310	Real estate	1417	793	0.559633	1675	926	0.552836
5311	Lessors of real estate	601	240	0.399334	690	274	0.397101
5312	Agents and brokers	332	268	0.807229	345	276	0.8
5313	Activities related to re	485	285	0.587629	640	376	0.5875
5320	Rental & leasing serv	644	147	0.228261	737	165	0.223881
5321	Auto, equipment rental	198	42	0.212121	230	48	0.208696
5322	Consumer goods rental	281	53	0.188612	311	57	0.18328
5323	General rental centers	60	15	0.25	67	16	0.238806
5324	Commercial, indust equip rental	105	37	0.352381	129	44	0.341085
5330	Lessors of intangible assets	25	21	0.84	28	23	0.821429
5331	Lessors of intangible assets	25	21	0.84	28	23	0.821429

Table 6

5400 Professional, scientific, and technical services

Employment (1000s)

	2004			2014		
	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
5400	6762	6015	0.88953	8684	7736	0.890834
5410	6762	6015	0.88953	8684	7736	0.890834
5411 Legal services	1162	1148	0.987952	1340	1323	0.987313
5412 Accounting services	816	761	0.932598	1100	1026	0.932727
5413 Architectural, engineering	1261	1134	0.899286	1460	1313	0.899315
5414 Specialized design serv	121	93	0.768595	155	119	0.767742
5415 Computer systems serv	1147	1091	0.951177	1600	1526	0.95375
5416 Mgmt, consulting serv	779	682	0.875481	1250	1098	0.8784
5417 Scientific research serv	548	488	0.890511	613	549	0.895595
5418 Advertising	425	330	0.776471	520	404	0.776923
5419 Other	503	286	0.568588	646	375	0.580495

5500 Management of companies and enterprises

Employment (1000s)

	2004			2014		
	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
5500	1718	1441	0.838766	1900	1593	0.838421
5511	1718	1441	0.838766	1900	1593	0.838421

0067 Self employed

Employment (1000s)

	2004			2014		
	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
0067	12134	5304	0.437119	12446	5319	0.427366

Table 7

6200 Health care and social assistance

Employment (1000s)

		2004			2014		
		<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
6200		14187	6938	0.489039	18482	8864	0.479602
6210	Ambulatory health care	4946	2896	0.585524	7031	3922	0.557815
6211-13	Offices of health practitioners	3337	2144	0.642493	4561	2825	0.619382
6214	Outpatient care services	446	319	0.715247	643	459	0.713841
6215	Medical laboratories	189	102	0.539683	240	122	0.508333
6216	Home health care serv	773	265	0.34282	1310	426	0.325191
6219	Other ambulatory health care	201	66	0.328358	277	90	0.32491
6220	Hospitals, private	4294	2573	0.599208	4982	3011	0.604376
6221	General medical, surgical	4051	2426	0.598864	4699	2838	0.603958
6222	Psychiatrice, substance abuse	92	53	0.576087	78	44	0.564103
6223	Speciality hospitals	150	94	0.626667	205	129	0.629268
6230	Nursing, residential care	2815	672	0.238721	3597	880	0.244648
6231	Nursing care	1575	308	0.195556	1756	356	0.202733
6232	Residential mental health	491	189	0.384929	727	276	0.379642
6233	Community care, elderly	583	103	0.176672	902	159	0.176275
6239	Other residential care	166	72	0.433735	211	89	
6240	Social assistance	2132	811	0.380394	2872	1064	0.370474
6241	Individual & family services	853	437	0.512309	1160	584	0.503448
6242	Community food, housing, relief	131	88	0.671756	160	108	0.675
6243	Vocational rehab serv.	381	184	0.48294	490	236	0.481633
6244	Child care services	767	102	0.132986	1062	136	0.12806

Table 8

9900 Government

Employment (1000s)

		2004			2014		
		<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
9900		21618	9499	0.439402	23790	10480	0.440521
919999	Federal (excl. postal service)	1943	1428	0.734946	1993	1453	0.729052
9200	State government	4985	3473	0.69669	5534	4133	0.746838
92611	State education serv	2249	1717	0.76345	2691	2306	0.856931
92622	State gov't hospitals	350	191	0.545714	326	181	0.555215
9292	Other state gov't	2386	1565	0.655909	2517	1646	0.653953
9300	Local government	13906	3889	0.279663	15485	4191	0.270649
93611	Local education serv	7763	1310	0.168749	8546	1347	0.157618
93622	Local gov't hospitals	657	373	0.567732	690	397	0.575362
9393	Other local gov't	5486	2206	0.402114	6249	2447	0.391583

Table 9

6100 Private Educational Services

Employment (1000s)

	2004			2014		
	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Total</u>	<u>Office</u>	<u>Percent</u>
6100	2766	1564	0.565437	3664	2078	0.56714
6110	2766	1564	0.565437	3664	2078	0.56714
6111 Elementary, secondary schools	829	160	0.193004	1050	192	0.182857
6112-3 Colleges, universities	1462	1169	0.79959	1965	1576	0.802036
6114-7 Other educational services	475	233	0.490526	650	310	0.476923

Table 10

Phoenix

Office Employment, 2004 (1000s)

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1660	682	0.410843	
Construction	141	40.97883		1.641239
Manufacturing	132	26.499		0.746615
Trade, Transportation, Utilities	338	99.15906		1.073962
Information	36	11.71634		0.9299
Financial Activities	138	115.0171		1.389241
Professional & Business Services	272	169.456		1.343126
Education & Health Services	173	88.32775		0.827142
Leisure & Hospitality Services	159	14.13033		1.032789
Other Services	64	26.18451		0.955273
Government	206	90.5164		0.772371
Self Employment	111.9898	49.03583		69.72906
Total Workers	1770.99	731.0212	0.412776	

Los Angeles

Office Employment, 2004 (1000s)

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	6915	2887	0.417498	
Construction	361	72.47075		0.974618
Manufacturing	833	244.3772		1.092804
Trade, Transportation, Utilities	1345	437.7356		0.991217
Information	259	174.4002		1.551701
Financial Activities	444	370.0562		1.036707
Professional & Business Services	983	612.409		1.125838
Education & Health Services	740	371.1544		0.820616
Leisure & Hospitality Services	689	61.23143		1.038025
Other Services	244	99.82772		0.844718
Government	1010	443.794		0.878324
Self Employment	727.5729	318.5751		1.12726
Total Workers	7635.573	3206.032	0.419881	

San Diego**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1269	529	0.416864	
Construction	88	17.666		1.301148
Manufacturing	105	30.80385		0.754403
Trade, Transportation, Utilities	214	69.64716		0.863728
Information	36	24.24096		1.181211
Financial Activities	82	68.34372		1.048585
Professional & Business Services	205	127.715		1.285858
Education & Health Services	123	61.69188		0.747017
Leisure & Hospitality Services	150	13.3305		1.237647
Other Services	48	19.63824		0.910081
Government	218	95.7892		1.038261
Self Employment	125.1991	54.81967		1.062345
Total Workers	1394.199	583.6862	0.418653	

San Francisco-Oakland**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1969	856	0.434738	
Construction	112	22.484		1.056415
Manufacturing	144	42.24528		0.660008
Trade, Transportation, Utilities	357	116.1871		0.919187
Information	75	50.502		1.569852
Financial Activities	155	129.1863		1.264428
Professional & Business Services	323	201.229		1.292451
Education & Health Services	217	108.8385		0.840732
Leisure & Hospitality Services	197	17.50739		1.036918
Other Services	74	30.27562		0.895041
Government	312	137.0928		0.947932
Self Employment	219.5073	96.11346		1.18819
Total Workers	2185.507	951.6614	0.435442	

Denver**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1180	508	0.430508	
Construction	88	17.666		1.43326
Manufacturing	72	21.12264		0.56983
Trade, Transportation, Utilities	233	75.83078		1.0359
Information	52	35.01472		1.879433
Financial Activities	99	82.51254		1.394516
Professional & Business Services	186	115.878		1.28514
Education & Health Services	116	58.18096		0.776036
Leisure & Hospitality Services	124	11.01988		1.127005
Other Services	45	18.41085		0.939831
Government	165	72.501		0.865631
Self Employment	85.68701	37.51891		0.800899
Total Workers	1265.687	545.6563	0.431115	

Washington, DC**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2877	1292	0.449079	
Construction	180	36.135		1.21715
Manufacturing	66	19.36242		0.216863
Trade, Transportation, Utilities	402	130.8325		0.742022
Information	109	73.39624		1.635607
Financial Activities	158	131.6867		0.924005
Professional & Business Services	619	385.637		1.775649
Education & Health Services	299	149.9664		0.83047
Leisure & Hospitality Services	252	22.39524		0.950897
Other Services	166	67.91558		1.439377
Government	624	274.1856		1.359134
Self Employment	173.5779	76.00281		0.673575
Total Workers	3048.578	1367.516	0.448575	

Miami**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2291	985	0.429943	
Construction	128	25.696		1.072638
Manufacturing	102	29.92374		0.415349
Trade, Transportation, Utilities	511	166.307		1.168916
Information	58	39.05488		1.07858
Financial Activities	170	141.6882		1.232077
Professional & Business Services	381	237.363		1.354451
Education & Health Services	292	146.4555		1.005096
Leisure & Hospitality Services	239	21.23993		1.117642
Other Services	99	40.50387		1.063833
Government	312	137.0928		0.842178
Self Employment	167.946	73.53684		0.807669
Total Workers	2459.946	1058.862	0.430441	

Tampa**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1267	578	0.456196	
Construction	72	14.454		1.098243
Manufacturing	73	21.41601		0.541077
Trade, Transportation, Utilities	221	71.92445		0.920191
Information	33	22.22088		1.11702
Financial Activities	95	79.1787		1.253244
Professional & Business Services	327	203.721		2.115967
Education & Health Services	148	74.23088		0.582197
Leisure & Hospitality Services	112	9.95344		0.953335
Other Services	49	20.04737		0.958423
Government	138	60.6372		0.678034
Self Employment	83.45832	36.54306		0.73056
Total Workers	1351.458	614.327	0.454566	

Atlanta**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2263	963	0.425541	
Construction	127	25.49525		1.083402
Manufacturing	178	52.21986		0.737864
Trade, Transportation, Utilities	516	167.9343		1.201587
Information	93	62.62248		1.760557
Financial Activities	152	126.6859		1.121439
Professional & Business Services	370	230.51		1.339007
Education & Health Services	220	110.3432		0.770886
Leisure & Hospitality Services	218	19.37366		1.037777
Other Services	94	38.45822		1.028274
Government	294	129.1836		0.807867
Self Employment	154.4768	67.6392		0.756257
Total Workers	2416.477	1030.466	0.426433	

Chicago**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	4588	1906	0.415432	
Construction	222	44.5665		0.946895
Manufacturing	505	148.1519		1.046671
Trade, Transportation, Utilities	911	296.4886		1.060685
Information	96	64.64256		0.908659
Financial Activities	327	272.5414		1.206264
Professional & Business Services	690	429.87		1.248513
Education & Health Services	544	272.8486		0.953079
Leisure & Hospitality Services	528	46.92336		1.256737
Other Services	199	81.41687		1.088421
Government	566	248.7004		0.777627
Self Employment	245.0349	107.291		0.599787
Total Workers	4833.035	2013.441	0.4166	

Baltimore**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1276	544	0.426332	
Construction	81	16.26075		1.232308
Manufacturing	77	22.58949		0.56924
Trade, Transportation, Utilities	244	79.41078		1.013313
Information	22	14.81392		0.742742
Financial Activities	82	68.34372		1.078932
Professional & Business Services	181	112.763		1.168175
Education & Health Services	204	102.3182		1.274811
Leisure & Hospitality Services	116	10.30892		0.984813
Other Services	55	22.50215		1.072981
Government	216	94.9104		1.058508
Self Employment	76.98484	33.70858		0.67214
Total Workers	1354.985	577.9299	0.426521	

Boston**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2421	1062	0.438662	
Construction	106	21.2795		0.839039
Manufacturing	233	68.35521		0.896195
Trade, Transportation, Utilities	426	138.6434		0.920461
Information	73	49.15528		1.282272
Financial Activities	185	154.1901		1.266467
Professional & Business Services	379	236.117		1.272655
Education & Health Services	420	210.6552		1.365548
Leisure & Hospitality Services	217	19.28479		0.958512
Other Services	86	35.18518		0.87291
Government	294	129.1836		0.749601
Self Employment	185.3085	81.1392		0.841767
Total Workers	2604.309	1143.188	0.43896	

Detroit**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2080	873	0.419712	
Construction	91	18.26825		0.859758
Manufacturing	298	87.42426		1.368111
Trade, Transportation, Utilities	386	125.6252		0.995501
Information	37	24.91432		0.775743
Financial Activities	119	99.18174		0.972362
Professional & Business Services	364	226.772		1.45892
Education & Health Services	256	128.3994		0.993474
Leisure & Hospitality Services	190	16.8853		1.001729
Other Services	100	40.913		1.211518
Government	239	105.0166		0.727343
Self Employment	101.8945	44.61551		0.552467
Total Workers	2181.894	918.0156	0.420742	

Minneapolis - St. Paul**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1766	752	0.425821	
Construction	89	17.86675		0.966164
Manufacturing	204	59.84748		1.076122
Trade, Transportation, Utilities	339	110.3289		1.00457
Information	44	29.62784		1.059973
Financial Activities	141	117.5179		1.323811
Professional & Business Services	250	155.75		1.15132
Education & Health Services	216	108.337		0.963155
Leisure & Hospitality Services	162	14.39694		0.981381
Other Services	77	31.50301		1.071881
Government	244	107.2136		0.853212
Self Employment	132.9247	58.20242		0.828108
Total Workers	1898.925	810.5918	0.426869	

St. Louis**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1337	549	0.410621	
Construction	83	16.66225		1.215351
Manufacturing	146	42.83202		1.038836
Trade, Transportation, Utilities	253	82.33986		1.011262
Information	30	20.2008		0.974824
Financial Activities	78	65.00988		0.987789
Professional & Business Services	182	113.386		1.130551
Education & Health Services	195	97.8042		1.172843
Leisure & Hospitality Services	144	12.79728		1.176651
Other Services	59	24.13867		1.107824
Government	167	73.3798		0.787674
Self Employment	70.81299	30.7885		0.595055
Total Workers	1407.813	579.3393	0.411517	

New York**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	8364	3790	0.453132	
Construction	339	68.05425		0.78137
Manufacturing	505	148.1519		0.565612
Trade, Transportation, Utilities	1590	517.4719		1.0004
Information	291	195.9478		1.488439
Financial Activities	773	644.2646		1.540928
Professional & Business Services	1237	770.651		1.209545
Education & Health Services	1354	679.1122		1.323948
Leisure & Hospitality Services	636	56.52132		0.602137
Other Services	350	143.1955		0.450181
Government	1290	566.826		0.957752
Self Employment	578.5853	253.3393		0.765323
Total Workers	8943.585	4043.536	0.452116	

Philadelphia**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2766	1213	0.438539	
Construction	127	25.49525		0.895862
Manufacturing	239	70.11543		0.819229
Trade, Transportation, Utilities	532	173.1415		1.024397
Information	56	37.70816		0.87661
Financial Activities	221	184.1947		1.348265
Professional & Business Services	406	252.938		1.21495
Education & Health Services	484	242.755		1.402374
Leisure & Hospitality Services	220	19.5514		0.866007
Other Services	124	50.73212		1.121641
Government	357	156.8658		0.81117
Self Employment	156.3455	68.45743		0.632911
Total Workers	2922.345	1281.955	0.438673	

Dallas - Fort Worth**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2700	1133	0.41963	
Construction	159	31.91925		1.139385
Manufacturing	295	86.54415		1.027225
Trade, Transportation, Utilities	589	191.6924		1.152147
Information	95	63.9692		1.510699
Financial Activities	215	179.1939		1.33247
Professional & Business Services	368	229.264		1.118707
Education & Health Services	272	136.4243		0.800615
Leisure & Hospitality Services	257	22.83959		1.027704
Other Services	109	44.59517		1.001601
Government	342	146.8548		0.789416
Self Employment	175.7056	76.93446		0.722569
Total Workers	2876.706	1210.231	0.4207	

Houston**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	2296	929	0.404617	
Construction	232	46.574		1.935454
Manufacturing	209	61.31433		0.847249
Trade, Transportation, Utilities	472	153.6143		1.074871
Information	38	25.58768		0.703493
Financial Activities	138	115.0175		0.99568
Professional & Business Services	314	195.622		1.11127
Education & Health Services	252	126.3931		0.863529
Leisure & Hospitality Services	210	18.6627		0.977633
Other Services	97	39.68561		1.037675
Government	333	146.3202		0.89484
Self Employment	176.0069	77.06638		0.842645
Total Workers	2471.007	1005.858	0.407064	

Seattle**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1602	673	0.4201	
Construction	96	19.272		1.140852
Manufacturing	164	48.11268		0.947049
Trade, Transportation, Utilities	309	100.5653		1.002389
Information	76	51.17536		2.004255
Financial Activities	104	86.67984		1.068901
Professional & Business Services	204	127.092		1.028451
Education & Health Services	177	88.77612		0.863998
Leisure & Hospitality Services	153	13.59711		1.014638
Other Services	62	25.36606		0.944811
Government	256	112.4864		0.979951
Self Employment	133.6446	58.51764		0.911444
Total Workers	1734.645	731.6405	0.421781	

Cincinnati**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1034	424	0.410058	
Construction	55	11.04125		1.030545
Manufacturing	126	36.96462		1.147216
Trade, Transportation, Utilities	209	68.01989		1.068981
Information	16	10.77376		0.665282
Financial Activities	66	55.00836		1.069533
Professional & Business Services	146	90.958		1.160519
Education & Health Services	130	65.2028		1.000528
Leisure & Hospitality Services	110	9.7757		1.150161
Other Services	44	18.00172		1.057187
Government	133	58.4402		0.802717
Self Employment	65.18146	28.54035		0.700888
Total Workers	1100.181	452.7267	0.411502	

Cleveland**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1083	457	0.421976	
Construction	47	9.43525		0.852572
Manufacturing	152	44.59224		1.339822
Trade, Transportation, Utilities	200	65.0908		0.990336
Information	20	13.4672		0.80509
Financial Activities	82	68.34372		1.28645
Professional & Business Services	136	84.728		1.046567
Education & Health Services	162	81.25272		1.207062
Leisure & Hospitality Services	96	8.53152		0.971776
Other Services	45	18.41085		1.046744
Government	143	62.8342		0.835556
Self Employment	53.41133	23.38669		0.556016
Total Workers	1136.411	480.0732	0.422447	

Pittsburgh**Office Employment, 2004 (1000s)**

	<u>Total</u>	<u>Office</u>	<u>Percent</u>	<u>Location Quotient</u>
Total Employees	1153	480	0.416305	
Construction	63	12.64725		1.063485
Manufacturing	104	30.51048		0.853089
Trade, Transportation, Utilities	235	76.48169		1.082874
Information	24	16.16064		0.899049
Financial Activities	70	58.3422		1.021962
Professional & Business Services	141	87.843		1.009729
Education & Health Services	212	106.3307		1.469968
Leisure & Hospitality Services	112	9.95344		1.055044
Other Services	60	24.5478		1.298784
Government	131	57.5614		0.712309
Self Employment	69.17511	30.28901		0.670133
Total Workers	1221.175	510.6676	0.418177	

The NATIONAL ASSOCIATION OF REALTORS® National Center for Real Estate Research supports original, high quality research which contributes to a greater understanding of the real estate industry, the real estate business, housing and homeownership.

Topics of primary interest include, but are not limited to:

- Real estate brokerage
- Real estate brokerage business models
- Real estate markets
- Housing policy
- Housing markets
- Real estate wealth effect
- New economy / technology
- Cost and impact of regulation
- Land use controls
- Multifamily
- Retail
- Office
- Industrial
- Commercial property finance

For further information, contact Paul C. Bishop, Director, National Center for Real Estate Research, NATIONAL ASSOCIATION OF REALTORS® at 202-383-1246 or via e-mail at ncrer@realtors.org



NATIONAL ASSOCIATION
OF REALTORS®

The Voice For Real Estate®

