



Commercial Real Estate Competitiveness Study

Prepared for New York City Economic Development Corporation

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EXECUTIVE SUMMARY

Introduction

The New York City economy has evolved significantly over the last decade. This shift is a result of both structural changes and the specific efforts of the Bloomberg Administration to diversify New York City's economy. In particular, the Administration's investments in supporting entrepreneurship, developing a talented workforce, and improving the quality of life for New Yorkers have translated in more and diverse high growth firms starting and staying in New York City. These changes carry important implications for the current and future local commercial real estate market: as the demand drivers evolve, so too must the stock of commercial office space.

While financial institutions and professional services firms continue to comprise the largest share of the New York City commercial office leasing market, high-tech and other high-growth industries (together, "HGI") have emerged as increasingly powerful drivers of office-using employment and commercial office space demand. In 2012, information, media, and tech accounted for 25 percent of leasing activity, up from 9 percent a decade earlier; by contrast, financial services accounted for only 16 percent, down from 25 percent a decade earlier. This sectoral shift has implications for the types of space that will increasingly be required to attract and retain the firms that are creating jobs and advancing the city's economic development.

In December 2012, New York City Economic Development Corporation ("NYCEDC") engaged Alvarez & Marsal ("A&M") and JRT Realty Group ("JRT") to study the New York City commercial office market in connection with the changing profile of the city's economy. In particular, A&M and JRT considered how the new generation of high-growth industries could impact the New York City office market through 2025, and whether the city's existing and future supply of office space is likely to meet projected demand.

Ensuring New York City's economic competitiveness in the 21st century requires not only the right kind of human capital but also the correlative commercial infrastructure. This study is intended to advance the public understanding of (i) the importance of a commercial office space stock that is affordable and attractive to the firms that will drive future job growth; and (ii) the current, and projected future, state of the New York City commercial office infrastructure.

Methodology

The Commercial Real Estate Competitiveness Study was conducted by A&M and JRT through a series of analyses, including performing interviews and surveys with more than 34 New York City real estate

market participants. The participants included tenants, owners and developers, technology incubators, architects, brokers, labor, and construction experts. The market research and data was applied to an A&M forecast model,¹ which projected New York City office space supply and demand between 2013 and 2025 and formed the basis of the Study's findings. A&M and JRT presented the model outputs to an Advisory Group, which also included prominent real estate developers, owners, brokers, construction managers, labor representatives, lawmakers and HGI tenants in the New York City market.

Key Findings

Supply: Since 2000, New York City's supply of B and C office stock has decreased by 1.6 msf.² The non-Manhattan boroughs experienced a net gain of 4.7 msf of office stock from 2000 to 2012 as a result of decay of Class A stock and the adaptive reuse of non-office assets. However, Manhattan's Class B and C office stock decreased by 6.2 msf, primarily due to the conversion of office stock to residential and hospitality uses.

Demand: HGI firms are projected to demand approximately 17 msf of office space throughout the five boroughs between 2013 and 2025.³ The 17 msf accounts for 60 percent of projected incremental growth in total office space demand between 2013 and 2025. HGI tenants demand space in close proximity to transportation, social amenities, clients, investors and residential neighborhoods and can generally afford rents below \$40/sf in 2013 dollars. This kind of office stock can be found in the city's current central business districts – Midtown Manhattan, Midtown South, Lower Manhattan, Downtown Brooklyn⁴ and Long Island City, Queens. HGI firms demand office space with physical attributes that reflect their culture and contribute to their ability to attract and retain clients and talent. This combination of pricing and physical attributes generally aligns with the characteristics of Class B and Class C buildings in New York City. This differs from traditional office users, who generally demand Class A space and can afford rents above \$40/sf.

Gap: Class B and C office stock in New York City is projected to decrease further by 7.8 msf between 2013 and 2025.⁵ This reduction is due to the conversion of existing space into residential, the high cost to develop commercial space, and incongruities between the required leasing terms of tenants and owners. Class B and C office space is likely to continue to be converted to residential product due to the higher

¹ The A&M model forecasted office space demand based on office-using employment growth between 2012 and 2025. The location of the employment growth reflects A&M's primary market research which was gathered through interviews and surveys with HGI firms and New York City real estate participants.

² CoStar/C&W market fundamentals data as of 4Q2012

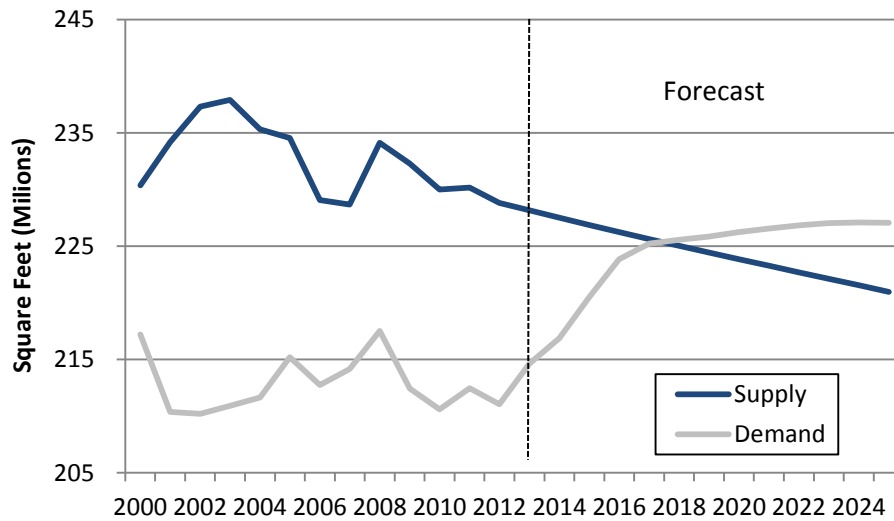
³ A&M forecast model dated 3Q2013

⁴ For purposes of this study, Downtown Brooklyn includes the Dumbo and N. Brooklyn submarkets

⁵ A&M forecast model dated 3Q2013

potential financial return. New stock is unlikely to be added as rental rates achievable for Class B and C do not justify the high costs of development. The combination of increasing demand for Class B and C space that is affordable to HGI firms and the continuing decline of B and C office stock will create a gap beginning in 2018, as shown in **Figure 1 - NYC Class B and C Office Space Supply and Demand, 2002 to 2025**. As the gap increases, office rental rates may rise and HGI firms may have fewer affordable options for New York City office locations and may have to consider alternative office markets.

Figure 1 - NYC Class B and C Office Space Supply and Demand, 2002 to 2025



Other cities, in the US and abroad, are also facing this challenge. While a full consideration of their efforts in response is beyond the scope of this study, a brief enumeration of some examples is included (e.g., regulatory and tax policy efforts). As New York City continues to consider and address this issue, some of these may provide helpful case studies.

NEW YORK CITY OFFICE MARKET

Introduction

New York City remains a premiere place to do business.⁶ It is the nation's largest office market, containing over 490 msf of office space, as seen in **Figure 2 - New York City Office Market by Borough**. The market is among the tightest in the nation, with a combined vacancy rate of 9 percent, far below the nationwide metropolitan market average vacancy of 15 percent.⁷ The low vacancy contributes to higher rental rates. The nationwide metropolitan market average asking rent is \$26.47 per square foot.⁸ In New York City, asking rents range from \$20 per square foot to above \$100 per square foot, with a majority of the space above \$40 per square foot.⁹

Figure 2 - New York City Office Market by Borough



Key Definitions

Office buildings are typically grouped into one of three categories: Class A, B or C. For purposes of this Study, office space supply and demand forecasts are organized into these building classes. Building

⁶ A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

⁷ Costar/C&W market fundamentals data as of 4Q2013; CBRE Office Vacancy Index as of April 2, 2013

⁸ CBRE Office Outlook Program accessed June 19, 2013

⁹ CoStar, JRT, C&W and CBRE

classifications are determined using a combination of factors including rent, age, finish, location and size, and indicate each building's relative desirability in a given market.¹⁰ Classifications differ between Manhattan and the non-Manhattan boroughs. However, the class designations follow the general principle that Class A buildings are the most prestigious and attractive in a given market and that Class C buildings tend to be smaller and of lower quality. The following are generally accepted industry definitions of Class A, B and C office space:¹¹

Class A properties represent the highest quality buildings in their market competing for premier office users with above-average rents for the area. Buildings have high-quality standard finishes, amenities and building services, state-of-the-art systems, and exceptional accessibility. The typical Class A building was built after 1960 and averages more than 500,000 sf.

Class B properties compete for a wide range of office users with average rents for the area. Building finishes, amenities and building services are fair to good and systems are adequate, but the buildings do not compete with Class A at the same price. Most buildings in this class were built prior to 1960 and range between 100,000 and 500,000 sf.

Class C properties compete for tenants requiring basic, functional space at below average rents for the area. These buildings are typically the oldest in the market, were primarily built prior to World War II and average less than 100,000 sf.

¹⁰ The Study relies on both CoStar and Cushman & Wakefield's building class definitions.

¹¹ C&W report on Manhattan's Class B&C Office Space dated October 2006

OFFICE SPACE DEMAND

Recent Trends in Office Space Demand and Usage

Over the last decade, there have been shifts in office space usage and in the types of industries driving leasing activity. A broad range of industries are moving towards more efficient office floor plans.¹² Ten years ago, the average space occupied per worker was approximately 250 square feet.¹³ Today, the average space per worker has decreased and ranges from approximately 135 to 240 square feet.¹⁴ There are a range of explanations for this trend including: economic uncertainty; advances in technology that have reduced tenants' need for on-site storage and server rooms; increased opportunities for employees to work remotely; and the growing practice of office space hoteling in which employees use workspaces on an as-needed basis.¹⁵

Until 2009, Financial Services, Legal Services and Accounting – collectively referred to as Traditional Office Users (“TOU”) – drove the city’s office space demand. Today, technology and media sectors are driving office demand in New York City. Leasing activity, summarized in **Figure 3 - New York City Leasing Activity by Square Feet**, illustrates that TOU drove 53 percent of the leasing activity in 2002. In 2012, TOU accounted for only 32 percent of leasing activity, a net 40 percent decrease. By contrast, Media and Technology industries, which accounted for 9 percent of activity in 2002, accounted for 25 percent in 2012 – a net 177 percent increase.

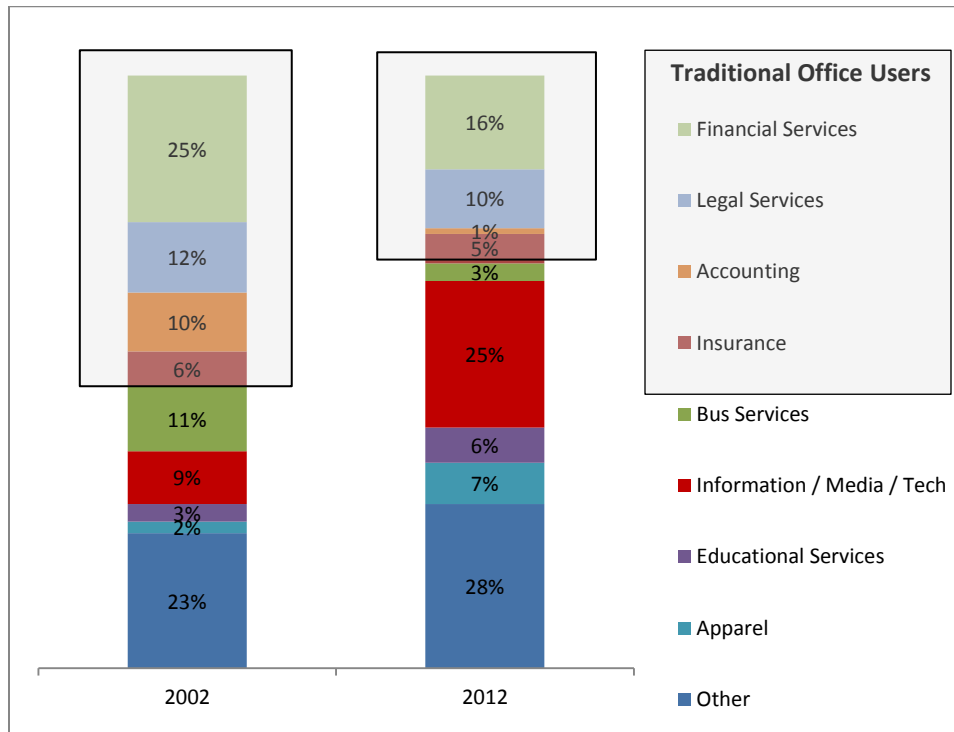
¹² Wymer, D. M. (2011). *The Metrics of Distributed Work: Financial and Performance Benefits of an Emerging Work Model*. Knoll, Inc.

¹³ CoStar report “Changing Office Trends Hold Major Implications for Future Office Demand” by Mark Heschmeyer dated March 2013, CBRE Economic Advisors, A&M analysis

¹⁴ CoStar report “Changing Office Trends Hold Major Implications for Future Office Demand” by Mark Heschmeyer dated March 2013, CBRE Economic Advisors, A&M analysis

¹⁵ A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

Figure 3 - New York City Leasing Activity by Square Feet¹⁶



These shifts in office space demand and usage have significant implications for the New York City office market.

¹⁶ C&W Leasing Data: 2002 vs. 2012

High-Growth Industries: Overview

A&M and JRT conducted an analysis to identify which industries are driving employment growth. Using historical labor employment data and independent resources,¹⁷ A&M and JRT identified 17 high-growth industries in New York City.

The 17 high-growth industries can be grouped into seven sectors: Healthcare, Education, Technology, Advertising, Business Services, Consulting, Non-profit, and R&D, as illustrated in **Table 1 - New York City High-Growth Industries by Sector**. Each HGI is identified by a North American Industry Classification System (NAICS) code, which is the standard used by Federal statistical agencies in classifying business establishments. The average projected compounded annual growth rate (“CAGR”) for HGI-firm employment is forecasted to be 3.0 percent between 2012 and 2025, notably higher than the non-HGI-firm employment CAGR projection of 0.7 percent.

Table 1 - New York City High-Growth Industries by Sector¹⁸

Industry	NAICS	Sector	2012 Employment ('000)	2025 Employment ('000)	CAGR ('12- 25)
Promoters of Performing Arts, Sports, and Other	7113	Advertising	10,775	15,296	2.7%
Business Support Services	5614	Bus. Srvc.	13,566	19,863	3.0%
Management, Scientific, and Technical Consulting	5416	Consulting	37,499	60,239	3.7%
Educational Support Services	6117	Education	12,835	24,020	4.9%
Other Schools and Instruction	6116	Education	20,943	29,398	2.6%
Offices of Other Health Practitioners	6213	Healthcare	14,416	19,651	2.4%
Specialty Hospitals ¹⁹	6223	Healthcare	14,537	24,774	4.2%
Outpatient Care Centers	6214	Healthcare	17,475	25,662	3.0%
Offices of Physicians	6211	Healthcare	52,487	59,090	0.9%
Home Health Care Services	6216	Healthcare	85,736	140,756	3.9%
Individual and Family Services	6241	Healthcare	122,727	174,786	2.8%
Social Advocacy Organizations	8133	Non-profit	14,626	18,653	1.9%
Grantmaking and Giving Services	8132	Non-profit	15,765	21,290	2.3%
Scientific Research and Development Services	5417	R&D	15,273	18,093	1.3%
Software Publishers	5112	Technology	1,888	3,323	4.4%
Other Information Services	5191	Technology	23,627	47,230	5.5%
Computer Systems Design and Related Services	5415	Technology	54,965	78,892	2.8%
Total HGI firms²⁰			529,139	781,016	3.0%

¹⁷ Henderson, R. (2012). Industry employment and output projections to 2020. *Monthly Labor Review*, 65 83., Franklin, D. S. (2012). Overview of projections to 2020. *Monthly Labor Review*, 3-19., Center for an Urban Future. (2012). *New Tech City*. New York City: Center for an Urban Future., Stangler, D. (2010). *High-Growth Firms and the Future of the American Economy*. Missouri: Ewing Marion Kauffman Foundation.

¹⁸ Moody's Economy.com Baseline Series Employment Forecast

¹⁹ Excludes Psychiatric and Substance Abuse

²⁰ Figures does not add up exactly to total due to rounding

Non-HGI firms				
Finance and Insurance	52	326,675	360,267	0.8%
Real Estate	53	117,920	116,955	0.0%
Other Non-farm Office Users ²¹	n/a	2,770,050	3,141,007	0.7%
Total Non-HGI firms		3,296,148	3,618,219	0.7%
Grand Total		3,853,708	4,433,702	1.0%

Healthcare: Within the Healthcare sector, seven industries are projected to demonstrate strong employment growth at an average of over 2.7 percent annually. Employment in home healthcare services, individual and family services, and offices of physicians and other healthcare practitioners is projected to grow as result of changing demographics. Outpatient care centers are expected to grow as a result of rising costs and evolving healthcare legislation. In order to both lower costs and decrease liability, hospitals are moving noncore services out of hospitals and into affordable office space as a way to extend patient care outside of hospitals. The increased demand for healthcare, coupled with pressure to reduce costs, will result in the healthcare sector reducing its footprint in hospital space and leasing more Class B and C office space.

Education: The industries within the Education sector that are expected to experience strong growth are educational support services, consisting of educational consultants, testing services, guidance counselor services, student exchange programs and testing evaluation services, and other schools and instruction, consisting of Fine Arts schools, sports and recreation instruction, language schools, and all other schools and instruction. From 2005 to 2012, the education sector's footprint of Manhattan office space has increased by 47 percent from 5.5 million square feet to 8.1 million square feet.²² The majority of this leasing activity occurred in the Midtown South and Lower Manhattan submarkets, which lease for lower rents compared to Midtown.

Technology: The industries within the Technology sector exhibiting above-average employment growth include Computer Systems Design and Related Services, Software Publishers and Other Information Services. Together these subsectors are projected to create approximately 49,000 jobs between 2013 and 2025. Computer Systems Design and Related Services are primarily engaged in designing and testing both software systems as well as on-site management of computer systems. Software Publishers engage in computer software publishing and assisting

²¹ Other Nonfarm Office Users includes non HGI companies in the following industries (listed in order of 2-12 employment): Education and Health Services industries, Professional and Business Services (excluding Business Support Services; Management, Scientific, and Technical Consulting), Trade & Transportation, Government, Leisure and Hospitality, Information (excluding Other Information services) Other Services, Construction, Manufacturing and Natural Resources and Mining per Moody's

²² "Taking the Office Market to School: Manhattan's Growing Education Sector" CBRE, January 2013.

with installation and providing support services to software purchasers. Other Information Services is comprised of an eclectic mix of information producers and distributors, including news syndicates, libraries and archives, internet publishing and broadcasting and web search portals, and all other information services. Media is represented within the Other Information subsector. Media is shifting toward new revenue and operating models many of which consist of new digital products, which are focused in the online and mobile space. These structural changes, fueled by new advancements in the technology sector, will increase both the number of tech-related jobs and demand for office space in New York City.

Advertising: Within the Advertising sector, Promoters of Performing Arts, Sports, and Similar Events are projected to demonstrate rapid employment growth, 2.7 percent annually. As this cohort deals primarily with promoting and advertising the events of entertainers and sporting teams, it has benefitted from New York City's growth as an international venue for entertainment and tourism. Since 2006, tourism to New York City has increased by 19% and location-based entertainment has continued to expand accordingly.²³

Business Services: The Business Support Services industry performs ongoing routine business support functions and activities that businesses and organizations traditionally do for themselves. For example, these services can include document preparation, account collection, fund raising, and even telemarketing services. As they mature, many businesses outsource non-core business functions to outside Businesses Support Services firms as a way to cut costs. As the overall New York City economy continues to grow and develop, so too will the employment growth within the Business Services sector.

Consulting: As businesses grow, so do their needs for independent expertise in areas such as expansion, financial management and process improvement. The Management, Scientific, and Technical Consulting Services industry provides advice and assistance to businesses and other organizations on management issues, such as strategic and organizational planning, financial planning and budgeting; environmental issues such as site remediation and sanitation; and scientific and technical issues, including economic, energy, security, biological, physics, and agricultural consulting. Employment in this subsector is projected to increase 3.7 percent annually.

Non-profit: Within the Non-profit sector, Grantmaking and Giving Services and Social Advocacy Organizations subsectors are expected to grow the most. Grantmaking and Giving Services

²³ "New York City Tourism: A Model for Success" NYC & Co, June 2013.

consist of grantmaking foundations or charitable trusts, which are primarily engaged in raising funds for a wide range of social welfare activities, such as health, educational, scientific, and cultural activities. Social Advocacy Organizations include organizations engaged in promoting a particular cause or working for the realization of a specific social or political goal to benefit a broad or specific constituency. Between 2000 and 2010, employment in the grantmaking and giving services and social advocacy subsectors grew by 20 percent in New York City. This trend is expected to continue, with these subsectors projected to grow in New York City by an average of over 2.1 percent annually over the next 12 years. Given the nature of their organizations, non-profits typically keep real estate costs to a minimum as a way to maximize their programmatic budgets. As such, non-profit organizations tend to occupy affordable B and C office space. Employment growth in these subsectors will therefore fuel strong demand for Class B and C office space.

Research & Development: The Scientific Research and Development Services industry conducts original investigation undertaken on a systematic basis to gain new knowledge (research) and/or applies research findings or other scientific knowledge for the creation of new or significantly improved products or processes (experimental development).²⁴ Some examples include research in biotechnology, the physical, engineering, and life sciences, social sciences and humanities. Employment in the Scientific Research and Development Services industry is projected to exhibit 1.3 percent annual growth.

²⁴ U.S. Census Bureau 2012 NAICS Definition, <http://www.census.gov/eos/www/naics/>. Last accessed June 19, 2013.

High-Growth Industries: Projected Office Space Demand

A&M analyzed office space utilization trends for each HGI sector to project the incremental office space demand for each high-growth industry through 2025. As of the fourth quarter of 2012, the New York City office market occupied 447 msf of space, pushing the vacancy rate down to approximately 9 percent.²⁵ Of the 447 msf absorbed, it is estimated that HGI firms accounted for approximately 46 msf. The demand model, shown in **Table 2 - High-Growth Industries Office Demand Forecast**, forecasts that HGI firms will demand 17.3 msf of office space between 2013 and 2025, representing about 60 percent of total growth in New York City office demand during this period.²⁶ The analysis used empirical data, leasing data, and other market research, and took into account the downward trend in office space utilization across all office-using industries. Additionally, the study considered the percentage of office users within each high-growth sector; for example, only 20 percent of Home Health Care Services workers use office space, compared to 90 percent of Business Support Services employees.

The largest incremental office space demand is projected to come from the Advertising, Business Services, and Consulting and Technology sectors. Together these HGI industries are estimated to demand 9.0 msf of incremental office space between 2013 and 2025. The space preferences of this cohort are outlined in the following section. The second largest increase in office space demand is expected to come from the Healthcare sector, which is projected to demand 6.3 msf of incremental office space by 2025, or 36 percent of the total incremental growth in demand from HGI firms. This sector's demand is expected to be widely dispersed across the five boroughs because healthcare industries prefer to be in close proximity to potential customers, choosing to locate near medical institutions, customers' residences and places of work.

²⁵ CoStar/C&W market fundamentals data as of 4Q 2012

²⁶ A&M and JRT Analysis, A&M forecast model dated 1Q 2013

Table 2 - High-Growth Industries New York City Office Demand Forecast

	Employment Growth '12-'25	% Office Users	Avg. Office Space Utilization (SF/ Employee)	Incremental SF Demand 2013 - 2025
Advertising				
Promoters of Performing Arts, Sports, and Other	4,521	75%	120	369,757
Business Services				
Business Support Services	6,296	90%	175	893,187
Consulting				
Management, Scientific, and Technical Consulting	22,740	80%	175	2,918,130
Education				
Educational Support Services	11,185	50%	120	632,197
Other Schools and Instruction	8,455	25%	130	246,688
Healthcare				
Home Health Care Services	55,020	20%	120	1,229,309
Individual and Family Services	52,059	50%	120	2,840,512
Offices of Other Health Practitioners	5,235	100%	175	807,803
Offices of Physicians	6,603	100%	200	964,575
Outpatient Care Centers	8,187	40%	150	449,646
Specialty Hospitals ²⁷	10,237	20%	120	229,651
Non-profit				
Grantmaking and Giving Services	5,525	70%	120	415,804
Social Advocacy Organizations	4,026	75%	120	317,073
R&D				
Scientific Research and Development Services	2,821	50%	175	196,975
Technology				
Software Publishers	1,435	75%	120	121,072
Computer Systems Design and Related Services	23,927	75%	135	2,179,185
Other Information Services	23,603	75%	150	2,511,962
Total HGI firm demand				17,323,529²⁸

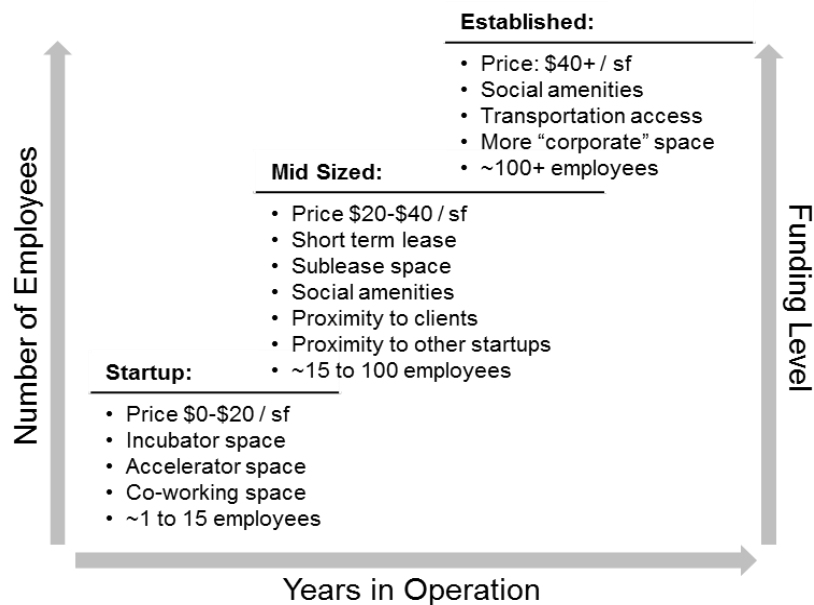
²⁷ Excludes Psychiatric and Substance Abuse

²⁸ Figures does not add up exactly to total due to rounding

Office Space Preferences of HGI Tenants

The type of space that is suited to the needs of HGI firms tends to be found in existing Class B and C buildings. For purposes of this study, HGI firms' office space preferences were considered according to three key segments: affordability, location and physical attributes. Preferences varied depending on the maturity of the firm, as can be seen in **Figure 4 - High-Growth Industry Firm Space Preferences by Maturity**.

Figure 4 - High-Growth Industry Firm Space Preferences by Maturity²⁹



Affordability

The funding level of an HGI tenant has a large bearing on the elasticity of its demand for space. Funding and the ability to borrow allows for more location options at higher price points. Market research shows that early to mid-stage HGI tenants consider asking rents of \$40 per square foot and below in the affordable range.³⁰ Rents in this range have historically fallen within the Class B and C classifications.

²⁹ A&M and JRT Analysis, A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

³⁰ A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

Location

While office location is an important factor for both TOU and HGI firms, HGI firms are particularly sensitive to location. Many HGI firms are looking for investors. Investors prefer their portfolio companies to be in close proximity to them, so HGI firms seek to locate near these sources of capital. Locating near clients is also a high priority of HGI firms as a substantial amount of HGI firms' work is external and entails meeting with and doing demonstrations of their product to prospective clients.

Proximity to employees' residential centers is a key factor in HGI firms' ability to attract and retain talent. This represents a substantial shift from the behavior of TOU firms, where location is more likely to be determined by proximity to executive level housing. Traditionally, workforces have followed corporate executive preferences; however, HGI firms may be more likely to follow their workforce.³¹

HGI firms prefer to be in live/work/play neighborhoods that have 24-hour access to social amenities such as restaurants, bars and coffee shops. These amenities complement flexible work hours and provide convenient and stimulating places to collaborate, which suits the social and entrepreneurial culture of HGI firms.

Physical Space Characteristics

TOU and HGI firms tend to prefer different physical space characteristics in their offices. HGI firms tend to prefer that their space project a less "corporate" image to prospective clients and talent. Likewise, they are more likely to seek spaces that foster collaboration and innovation. Broadly, TOU firms are associated with Class A space³² and HGI firms with Class B and C space.

HGI firms that have business lines focused on innovation and creativity, such as software publishers and advertising media, prefer bench seating with minimal physical barriers between employees. This layout fosters collaboration and communication.³³ HGI firms appear to be shifting away from the traditional 60 percent private office and 40 percent cubicle arrangement, with upper level management in offices and employees in cubicles. The new HGI firm space-use paradigm is characterized by 80 percent open, bullpen-style workspace with low-profile cubicles, and collaboration/breakout rooms.³⁴

³¹ A&M and JRT Analysis, A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

³² Cushman & Wakefield Leasing Data: 2002 vs. 2012

³³ Watner, Jonathan. "Manhattan's Tech Start-Ups Settle in the Flatiron District and Chelsea". April 19, 2011. New York Times. Last accessed April 15, 2013. <www.nytimes.com>

³⁴ A&M and JRT Analysis, A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

“Casual” and open meeting areas spread throughout the office have supplanted traditional enclosed office rooms. Private offices are rare; typically any enclosed spaces within the office serve as conference rooms. By creating open environments and utilizing bench seating, HGI firms can operate with fewer square feet per employee. Given that many early to mid-sized HGI firms are capitally constrained, the open layout of these spaces not only fosters collaboration but utilizes space much more efficiently.

HGI firms leverage physical attributes as a tool to attract clients. For example, an HGI tenant whose clients are primarily artists and other creative types is likely to have space that is more rugged and edgy; whereas an HGI firm whose clients are utility companies will desire a more corporate look. In this way, office space is a means by which HGI tenants can non-verbally relate to prospective clients.³⁵

Physical attributes of an office space are crucial to attracting and retaining talent. As the CEO of a successful startup tech firm explained, “one of the main pitches [to prospective talent] is the quality of office space.” HGI firms seek space that is both aesthetically and functionally pleasing. Preferred attributes include large contiguous floor-plates, bright arched windows, exposed brick, bike storage, and shower facilities.

³⁵ A&M and JRT Analysis, A&M Market Research: Tenant and Broker Survey and Stakeholder Interview findings, January – March 2013.

Current Central Business Districts and Growing Sub-Markets

HGI firms lease office space in all of New York City's major central business districts: Midtown, Midtown South, Lower Manhattan, Downtown Brooklyn, and Long Island City.

Midtown is the largest office market in Manhattan with 242 msf comprising more than half of the borough's office inventory. Midtown is defined as the area between 57th Street and 30th Street, bound by the Hudson and East Rivers. Grand Central Terminal and Penn Station offer tenants exceptional access to transportation networks serving New York City and the suburbs of New Jersey, Long Island, and Connecticut. Approximately 75%³⁶ of Midtown is Class A space with an average asking rent of \$73/sf.³⁷ Class B and C space represent a smaller, more affordable portion of the market's stock. As of the fourth quarter of 2012, Class B and C average asking rents ranged from \$38 to \$48/sf.³⁸ Class A vacancy was 10.9% in the fourth quarter of 2012 and the combined Class B and C vacancy rate stood at 8.5%.³⁹

Many large corporations are based in Midtown today. As more mature innovation economy firms move to Midtown – like Yahoo, which announced that it was moving its headquarters to the former New York Times Building in May 2013 – mid-sized HGI firms may choose to follow, the way many firms moved to Chelsea after Google bought 111 Eighth Avenue in 2010. Midtown has larger floor plate options than markets like Midtown South and Lower Manhattan, so it may be a suitable office market for HGI companies seeking to occupy one single floor rather than being split up among multiple levels. However, much of its stock is viewed as “traditional” from the perspective of the attributes HGI firms seek in addition to price.

Midtown South, with 65 msf of office space, represents approximately 16% of Manhattan's total inventory.⁴⁰ Midtown South is defined as the area bound by 30th Street to the north, the East River to the east, Canal Street to the south and the Hudson River to the west. As of the fourth quarter of 2012, the Midtown South vacancy rate of 7.1% was the lowest of the Manhattan central business districts, 320 basis points lower than Midtown and 170 basis points lower than Lower Manhattan.⁴¹ In contrast to the other Manhattan markets, Midtown South's office stock is predominately Class B and C space; collectively these two classes make up almost 80% of the sub-market.

³⁶ Cushman & Wakefield office fundamentals data as of 4Q2012

³⁷ Cushman & Wakefield office fundamentals data as of 4Q2012

³⁸ Cushman & Wakefield office fundamentals data as of 4Q2012

³⁹ Cushman & Wakefield office fundamentals data as of 4Q2012

⁴⁰ Cushman & Wakefield office fundamentals data as of 4Q2012

⁴¹ Cushman & Wakefield office fundamentals data as of 4Q2012

Midtown South has a number of features that make it attractive to HGI firms. First, rents have historically been lower than Midtown, though this relationship has been changing in recent years. In addition, many of the buildings in Midtown South have non-institutional owners that have provided some additional flexibility in leasing to traditional market terms. The physical attributes of the pre-war buildings – open floor plates, high ceilings, and exposed brick walls – that make up much of the Class B and C stock have further contributed to its appeal. Union Square, the West Village, Chelsea and SoHo are robust retailing hubs with the restaurants, bars, coffee shops and nightlife options that are desirable to HGI firm employees.⁴² Rents are increasingly rising above affordable levels for HGI firms.⁴³ As of February 2013, average asking rents for space in Midtown South were \$67/sf for Class A, \$54/sf for Class B and \$44/sf for Class C.⁴⁴

Lower Manhattan has 85 msf of office space in the area south of Chambers Street. Over the last decade, Lower Manhattan has experienced significant residential population growth and major public investment in the World Trade Center, Fulton Center, and the PATH Station. Between 2000 and 2013, the area's population increased over 250% from 24,000 to 60,000 residents.⁴⁵ Retail amenities have followed, transforming Lower Manhattan into a 24/7 community.

Lower Manhattan has increasingly become a hub for new media, tech and creative companies. The relocations of major tenants like Harper Collins and, next year, Condé Nast should continue to attract smaller media and creative companies to the area. Lower Manhattan rents are much less expensive than Midtown rents. As of February 2013, asking rents for space in Lower Manhattan ranged from \$45/sf for Class A to \$31-\$35/sf for Class B and Class C.⁴⁶ Lower Manhattan also has multi-modal transportation access to residential centers in New Jersey, Staten Island and Brooklyn.

Downtown Brooklyn contains 25 msf of office space, or 65% of the total Brooklyn inventory.⁴⁷ The neighborhood is bordered by the East River to the west and north, Atlantic Avenue to the south, and Washington Avenue to the east. Two-thirds of Downtown Brooklyn office space consists of Class B and C space. Dumbo asking rents reach as high as \$60/sf, but typical space ranges from the mid \$20's to the low \$30's/sf.⁴⁸ MetroTech asking rents are in the mid-\$30's/sf.⁴⁹ Fulton Mall and Lower Fulton Mall have asking rents in the high-\$20's/sf.⁵⁰

⁴² A&M and JRT research as of 2Q 2013

⁴³ A&M and JRT research as of 2Q 2013

⁴⁴ Cushman & Wakefield and JRT analysis as of 1Q2013

⁴⁵ "Lower Manhattan" Alliance for Downtown, May 2013

⁴⁶ Cushman & Wakefield fundamentals data as of 4Q2012, A&M analysis

⁴⁷ Cushman & Wakefield fundamentals data as of 4Q2012, A&M analysis

⁴⁸ A&M and JRT research as of 2Q 2013

Affordable rents, availability of underutilized industrial buildings for conversion, and proximity to the residential neighborhoods and retail amenities of downtown Brooklyn have fueled the growth of this neighborhood. Tech firms such as Etsy and Kickstarter have defined their corporate culture by locating in Brooklyn and rely on the popularity and desirability of the borough to attract clients and talent.⁵¹ Within Downtown Brooklyn and at the periphery of this market are a number of planned development projects that will add new commercial office space. Kushner Companies and RFR Realty have partnered to purchase a 1.2 msf portfolio of Watchtower Bible and Tract Society industrial properties for conversion to residential and commercial office space. In Crown Heights, Brownstoner, BFC Partners, and Goldman Sachs have begun leasing space at the 140,000 sf 1000 Dean Street for artistic, light industrial and professional office tenants.

In addition to Dumbo, there is commercial office activity in North and South Brooklyn. Two Trees Management plans to redevelop the former Domino Sugar Refinery in Williamsburg with 500,000 sf of office space to complement the 2.3 msf of planned residential development. Kickstarter recently moved its headquarters to a renovated former pencil factory in Greenpoint. In South Brooklyn, Jamestown Properties acquired a stake earlier this year in the 6 msf Industry City complex on the Sunset Park waterfront with plans to reposition the properties for new manufacturing and office uses.

Long Island City contains 9.4 msf of office space, approximately 40% of Queens' office inventory.⁵² Long Island City is bordered by Astoria to the north, Calvary Cemetery and 39th Street to the east, Newton Creek to the south and the East River to the west. Long Island City has excellent access to transportation and is a 10 minute subway ride from Midtown Manhattan.

Long Island City has served as a less expensive alternative to Midtown office space. As of 4Q 2012, the market's average asking rent of \$35/sf was substantially less than the Manhattan average asking rent of \$58/sf.⁵³ Long Island City's vacancy as of the fourth quarter of 2012 was 4.8%, well below the 10 year average vacancy rate of 6.3%.⁵⁴ The area is commonly referred to as the "next Brooklyn"⁵⁵ due to its burgeoning arts and cultural community as well as its office and residential market. It is anticipated that the market will strongly benefit from the opening of the Cornell-Techion Applied Sciences Campus on

⁴⁹ A&M and JRT research as of 2Q 2013

⁵⁰ A&M and JRT research as of 2Q 2013

⁵¹ A&M and JRT research as of 2Q 2013

⁵² Cushman & Wakefield fundamentals data as of 4Q2012, A&M analysis

⁵³ Cushman & Wakefield fundamentals data as of 4Q2012, A&M analysis

⁵⁴ Cushman & Wakefield fundamentals data as of 4Q2012, A&M analysis

⁵⁵ CREC Advisory Group Presentation, April 2013.

Roosevelt Island, as the new academic and research center is expected to attract complimentary HGI firms and social amenities to Long Island City.

Long Island City is home to a large inventory of industrial and warehouse buildings that are well-suited for office conversion, as the spaces possess the raw, physical qualities that HGI firms demand. While there are some examples of industrial buildings that have been converted to new manufacturing and office uses – such as Jamestown Properties’ Falchi Building and Acumen Capital Partners’ Standard Motor Products Building – the economics for new construction and rehab favor residential development. According to brokers active in the market, nearly 4,500 residential units are in the pipeline.

Opportunities in Other Business Districts

Other business districts with Class B and C office space and excellent transportation access are well positioned for growth over the long-term. Harlem’s 125th Street, Downtown Jamaica, 161st Street in the South Bronx, and Downtown Staten Island have all benefited from ongoing public investments that could make these districts more appealing to HGI firms as demand for affordable office space grows.

DEMAND, SUPPLY, AND GAP FORECAST

High-Growth Industries Demand

The office space demand model utilized employment forecasts with adjustments for office-using employment growth and space allocation per employee. Office-using employment growth and space allocation were determined using leasing data, interviews, surveys and other research.

In 2012, total office space demand in New York City was 447 msf. Users of Class A space comprised 53 percent, absorbing 236 msf, whereas Class B and C building tenants comprised 211 msf. Going forward, the A&M demand model projects that total New York City office space demand will grow by nearly 30 msf between 2013 and 2025.⁵⁶ Of this amount, 16.0 msf (55 percent of total growth in demand) is projected to be for space in Manhattan, 5.5 msf (19 percent of total) for space in Brooklyn, 5.5 msf (19 percent of total) for space in Queens, the Bronx and Staten Island are projected to receive the remaining 2.3 msf, or 8 percent, of total growth in demand (see **Table 3 - Office Demand Growth Forecast by Borough, 2013 to 2025**).

Table 3 - Office Demand Growth Forecast by Borough, 2013 to 2025

<i>(in msf)</i>	Manhattan	Brooklyn	Queens	Bronx	Staten Island	Total
Class A	8.4	0.8	3.7	0.2	0.2	13.2
Class B and C	7.6	4.7	1.8	1.3	0.6	16.0
Total	16.0	5.5	5.5	1.5	0.8	29.2

Table 4 - High-Growth Industries Office Demand Growth Forecast by Borough, 2013 to 2025

<i>(in msf)</i>	Manhattan	Brooklyn	Queens	Bronx	Staten Island	Total
Class A	3.8	0.3	1.6	0.1	0.1	5.9
Class B and C	7.0	2.6	0.7	0.6	0.5	11.4
Total	10.8	2.9	2.3	0.7	0.6	17.3

Between 2013 and 2025, the total incremental demand for commercial office space is projected to be about 29 msf. The A&M model projects HGI firms will comprise about 17 msf, or 60 percent, of the total incremental demand. Locations in Manhattan, Brooklyn and Queens are anticipated to account for 92 percent of the total HGI firm demand and an estimated approximately 66 percent of total HGI firm demand will be for Class B and C office space, as illustrated below in **Table 4 - High-Growth Industries Office Demand Growth Forecast by Borough, 2013 to 2025**. These projections account for the relative

⁵⁶ A&M and JRT Analysis, A&M forecast model dated 1Q 2013

desirability of each borough and market based upon the availability of the aforementioned HGI firm demand preferences.

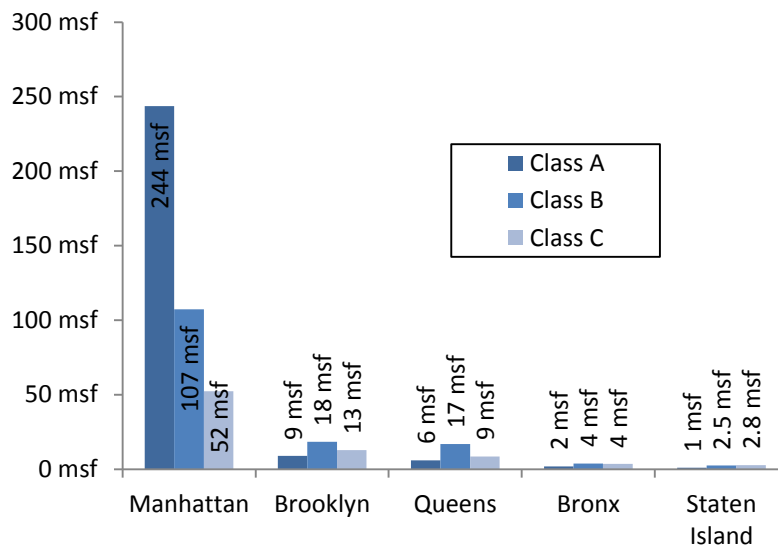
Manhattan is projected to absorb 10.8 msf, or 62 percent of HGI firm demand. Demand will be strongest in the Midtown, Midtown South and Downtown markets. In Brooklyn, HGI firms are forecasted to demand 2.9 msf, or 17 percent of total HGI firm demand. Within Brooklyn, the Downtown Brooklyn submarket is especially well positioned given its growing base of social amenities and good access to transportation to Manhattan. Queens will receive 2.3 msf of demand, or 13 percent of the total HGI firm demand. The Bronx is projected to absorb 0.7 msf, or 4 percent of total HGI firm demand. Staten Island is projected to receive 0.6 msf, or 4 percent of total HGI firm demand.

Class B and C Office Supply

Current Supply

As of the fourth quarter of 2012, the total New York City office market was 490 msf.⁵⁷ Of that 490 msf total market, a majority (53 percent) was Class A, while Class B and Class C accounted for 30 percent and 16 percent respectively.⁵⁸ The distribution of office space types by borough is shown in **Figure 5 - Office Space Distribution by Borough and Class**.

Figure 5 - Office Space Distribution by Borough and Class (4Q 2012)



In the fourth quarter of 2012, New York City's overall office vacancy was 9 percent, which is consistent with the 4-12 percent range observed since 1996.⁵⁹

Recent Trends in Commercial Office Space

Between 2000 and 2012, New York City's inventory of Class A office space grew by 10.9 msf, but Class B and C office space declined by 1.6 msf.⁶⁰ During this period, Manhattan's B and C office stock was reduced by 6.2 msf, while non-Manhattan boroughs added 4.7 msf (See **Table 5 - NYC Class A Office Stock, 2000 to 2012** and **Table 6 - NYC Class B and C Office Stock, 2000 to 2012**).

⁵⁷ The total stock includes medical office and government-owner occupied buildings

⁵⁸ CoStar/C&W market fundamentals data as of 4Q2012

⁵⁹ CoStar/C&W market fundamentals data as of 4Q2012

⁶⁰ CoStar/C&W market fundamentals data as of 4Q2012

Table 5 - NYC Class A Office Stock, 2000 to 2012⁶¹

<i>(in msf)</i>	Manhattan	Brooklyn	Queens	Bronx	Staten Island	Total
2000	237.6	6.7	4.0	1.4	0.8	250.5
2012	243.7	8.9	5.9	1.9	0.9	261.3
Change	6.1	2.2	1.9	0.5	0.2	10.9

Table 6 - NYC Class B and C Office Stock, 2000 to 2012⁶²

<i>(in msf)</i>	Manhattan	Brooklyn	Queens	Bronx	Staten Island	Total
2000	165.9	29.1	23.9	6.8	4.6	230.4
2012	159.7	31.0	25.4	7.4	5.3	228.4
Change	(6.2)	1.9	1.5	0.6	0.7	(1.6)

Manhattan's decline in Class B and C office stock was due to conversion of office to non-office product, such as residential and hospitality. Prior to 2006, programs such as the 421-g Tax Incentive and Liberty Bond programs promoted residential construction in Lower Manhattan. In Manhattan, between 2000 and 2012, 6.2 msf of Class B and C office space was also repurposed to residential using the J-51 and 421-a tax rules, which provide abatements for residential conversion.⁶³

Between 2000 and 2012, the non-Manhattan boroughs gained 4.7 msf of Class B and C stock as a result of decay of Class A stock and adaptive reuse of industrial and warehouse product. Examples of adaptive reuses include the Bank Note Building in the Bronx, a former currency printing factory, and the Dumbo Offices, formerly a Benjamin Moore & Company paint factory. Many of these buildings were converted to office, rather than residential, due to building size and configuration.

Looking Forward

Supply of Class A office stock is expected to remain robust across the near and longer-term, while supply of Class B and C office stock is projected to become even more constrained. The analysis shows a net decrease of over 7 msf of Class B and C office space. While 3.9 msf of Class A stock is projected to decay to Class B and C stock this is off-set by conversions to other uses. The A&M model projects 11.7

⁶¹ CoStar/C&W market fundamentals data as of 4Q2012

⁶² CoStar/C&W market fundamentals data as of 4Q2012

⁶³ NYC.gov. J-51 Exemption. Last accessed on April 16th 2013.

http://www.nyc.gov/html/dof/html/property/property_tax_reduc_j_51.shtml

msf of office inventory will be converted from office space to other uses, such as residential. **Table 7 - NYC Class B and C Office Stock, 2012 to 2025** illustrates the projected change in stock.

Table 7 - NYC Class B and C Office Stock, 2012 to 2025⁶⁴

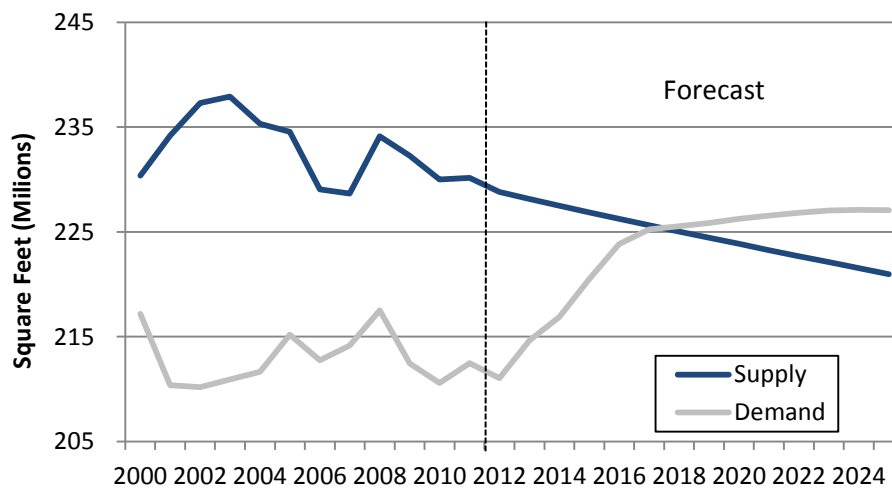
<i>(in msf)</i>	Manhattan	Brooklyn	Queens	Bronx	Staten Island	Total
2012 Stock	159.7	31.0	25.4	7.4	5.3	228.8
Decay (A to B/C)	3.6	0.2	0.1	0.0	0.0	3.9
Conversions	(8.2)	(1.6)	(1.3)	(0.4)	(0.3)	(11.7)
2025 Stock	155.1	29.6	24.2	7.1	5.1	221.0

⁶⁴ CoStar/C&W market fundamentals data as of 4Q2012

Gap Forecast and Analysis

The demand and supply forecast indicates that the supply of Class B and C office space will be insufficient to meet demand beginning in 2018. As of the fourth quarter of 2012, tenants demanded 211 msf⁶⁵ of Class B and C office product while the New York City market contained 228.8 msf of inventory.⁶⁶ The 2012 gap of 17.8 msf between supply and demand translates into an 8 percent vacancy rate, consistent with the structural vacancy rates of 5-9 percent that are typical for mature markets. By 2025, tenants are projected to demand 227.3 msf, while inventory for Class B and C space is projected to be 221 msf. The 2025 projected gap between supply and demand represents a structural deficit of 6.1 msf, which is 3 percent of the market.

Figure 6 - NYC Class B and C Office Stock, 2002 to 2025



⁶⁵ A&M and JRT Analysis, Cushman & Wakefield leasing data, CoStar market fundamentals as of 4Q 2012, A&M forecast model as of 3Q 2013

⁶⁶ CoStar market fundamentals as of 4Q 2012

Demand for Class B and C office space will exceed supply in all of the non-Manhattan boroughs. The gap will be largest in Brooklyn, where demand for office space is projected to exceed supply by 4.2 msf.

Table 8 - Forecasted 2025 Total Class B and C Office Supply, Demand and Gap

<i>(in msf)</i>	Manhattan	Brooklyn	Queens	Bronx	Staten Island	Total
Supply	155.1	29.6	24.2	7.1	5.1	221.0
Demand	154.2	33.8	25.8	7.7	5.6	227.3
Gap	1.0	(4.2)	(1.7)	(0.6)	(0.5)	(6.3)

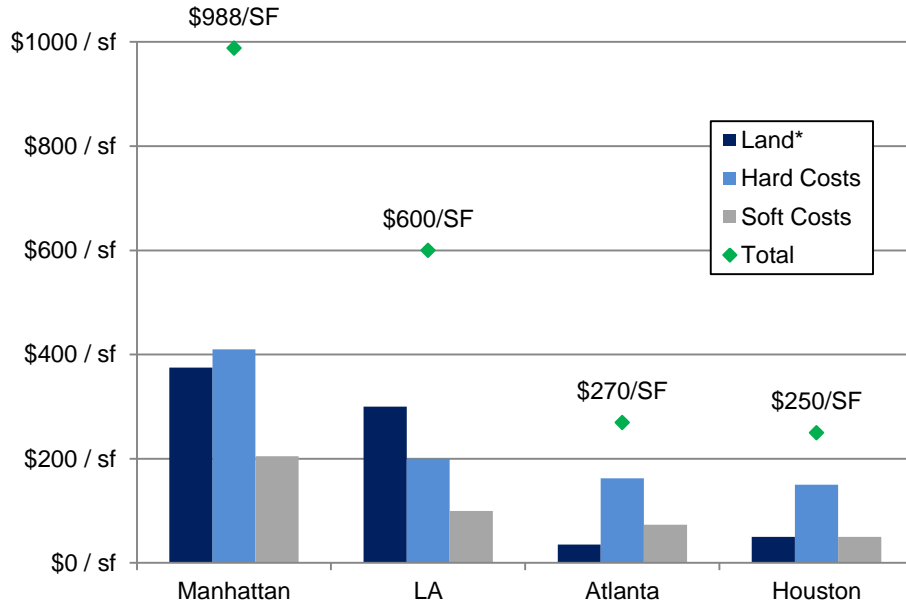
The Gap between supply and demand for Class B and C office space is primarily the result of four key factors: the cost of development, economics of the New York City market favor maintaining Class A building status, preference for credit tenants, and market inducements for residential conversion.

I. Cost of Development

The high cost of development for new ground-up development of commercial office buildings is often most feasible for Class A product that can be leased at higher rental rents. New York City’s development costs are driven by both high land prices and high construction costs. High land prices in key sub-markets are driven by a continuing decline in supply. New York City’s construction costs are among the highest in the nation.⁶⁷ The Building Cost Index (BCI) and Construction Cost Index (CCI) are two measures of prices for construction in the United States. New York City’s most recent BCI and CCI are both approximately 50% higher than the national average.⁶⁸ **Figure 7 - Ground Up Development Costs for Class A Office** demonstrates the high cost of construction in New York City compared to that other large American cities. Factors driving New York City’s construction costs include tight site conditions that require just-in-time material delivery and added transportation costs; strict local building codes that restrict flexibility on materials and methods; insurance premiums; union work rules and specialization of labor.

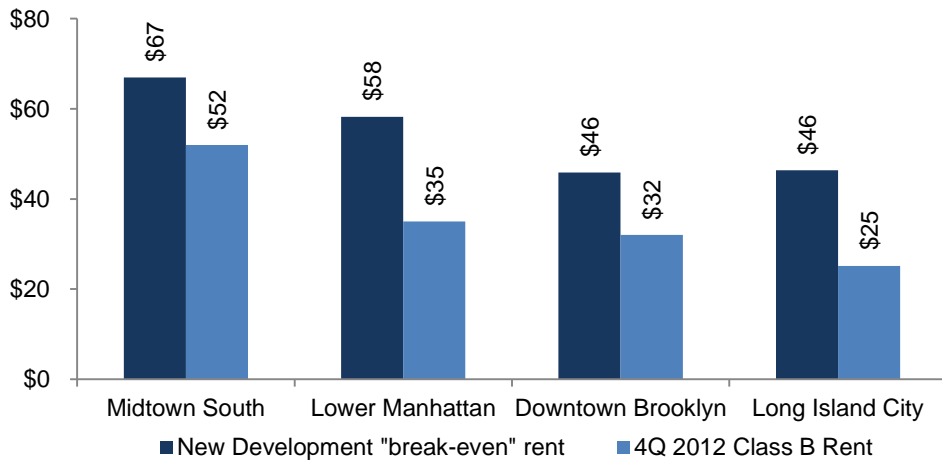
⁶⁷ A&M and JRT Market Research as of 1Q2013
⁶⁸ McGraw Hill Engineering News Record, November 2013

Figure 7 - Ground Up Development Costs for Class A Office



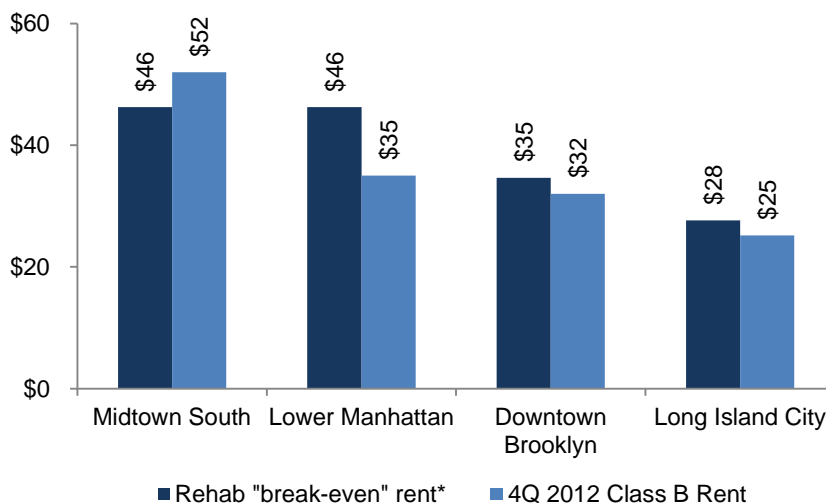
Rental rates priced at Class B and C rents typically do not justify these development costs. **Figure 8 - Ground Up Development Feasibility Analysis** illustrates that the “break-even” points for new development in certain Manhattan office markets is significantly higher than current Class B rents in those markets.

Figure 8 - Ground Up Development Feasibility Analysis



Renovating buildings, such as converting industrial and warehouse assets to office use, is more economically feasible. **Figure 9 - Office Rehab Feasibility Analysis** illustrates that in some New York City office markets, Class B rents are high enough to justify the cost of renovations. However, residential is often the highest and best use, as will be explained below, so owners have a greater incentive to convert non-residential buildings to residential uses.

Figure 9 - Office Rehab Feasibility Analysis



II. Economics Favor Maintaining Class A Building Status

The price differential between Class A rents to that of Class B and C rents in New York City incentivizes owners to maintain their assets as Class A status. Given New York City's supply constraints and high new developments costs, there is greater incentive for owners to spend more on capital expenditures to maintain Class A status rather than build new space or allow existing space to decay to Class B or C space. Moreover, New York City has a high concentration of institutional building owners, who possess the necessary resources to invest and finance capital expenditures to upkeep Class A status as compared to smaller and non-institutional owners. The analysis shows that these factors will limit the amount of space that decays into Class B and C space.

III. Preference for Credit Tenants

Owners prefer "credit tenants" who desire long term leases and have a strong credit history. Early to mid-stage high-growth tenants unsure of how quickly they will scale, however, prefer short-term leases with expansion and cancellation options, and generally lack the business and financial history to establish

credit. Leasing to tenants with low credit exposes an owner to higher risk of tenant default over the lease term. Short term leases are unattractive because owners incur significant upfront costs when signing a new office tenant, including brokerage fees, tenant improvement allowances and free rent. For a 20,000 sf space in Midtown Manhattan, renovation expenses and brokers fees can cost \$1.6 million.⁶⁹ Under this example, owners would not break even on upfront costs until 24 months after lease commencement.

IV. Market Inducements for Residential Conversion

In the New York City real estate market, the economics today favor residential development over office development. Residential projects allow for the highest risk-adjusted return to developers and in many instances the lowest risk of default to lenders. Every developer interviewed by A&M during the research process confirmed this observation. One New York City developer indicated that there is “much greater demand for residential than office. [They have] run the economics countless times, [which] always go towards residential redevelopment rather than maintaining a B or C [office space].”⁷⁰ Another said “the highest investment use of every single piece of dirt [in New York City] is residential.” The capital markets support this thesis, as banks are far more likely to lend for a residential project than an office project.⁷¹

Prices for Class B and C office product whose zoning allows residential use are very high because sellers assume that investors will convert office product to residential. This can make it economically infeasible to maintain current Class B and C office product for office use and incentivize the conversion of those buildings to residential use. **Table 19 - Rehab Land Prices by Zoning Use per Square Foot** shows the significant premium for land prices when zoning allows residential use.

Table 9 - Rehab Land Prices by Zoning Use per Square Foot⁷²

	Midtown South	Downtown Manhattan	Downtown Brooklyn	Long Island City
Office / Residential	\$450 - \$600	\$450 - \$600	\$450 - \$500	\$250-\$400
Office Only	\$300 - \$400	\$300 - \$400	\$200 - \$250	\$100 - \$150
Premium for residential zoning	\$150 - \$200	\$150 - \$200	\$250	\$150 - \$250

⁶⁹ Assumes ten year lease, base rent of \$40 in years 1-5, base rent of \$45 in years 6-10, escalations for taxes and operating expenses above a base year, two months free rent, \$60 in work allowance and brokers fee without referral

⁷⁰ Commercial Real Estate Competitiveness Study Advisory Meeting, April 2013.

⁷¹ A&M analysis, Commercial Real Estate Competitiveness Advisory Meeting, April 2013.

⁷² Jones Lang LaSalle, Massey Knakal, A&M and JRT Analysis, as of 1Q 2013.

PEER CITY ANALYSIS

As part of this study, A&M and JRT examined the commercial office markets in peer cities and found that other cities are also experiencing decreases in Class B and C office inventory, as can be seen in **Table 10 - Peer City Office Market Comparison**.

Table 10 - Peer City Office Market Comparison⁷³

City	Total RBA [1]	5-year		Class A Vacancy Rate	Class B&C Vacancy Rate
		5-year Growth Class A Inventory	5-year Growth Class B&C Inventory		
Boston	98.8	4.0%	-0.7%	11.7%	8.8%
Chicago	214.9	5.5%	-1.5%	16.3%	13.0%
San Francisco	114.6	4.2%	-2.5%	11.2%	10.8%
DC	150.3	12.0%	-3.1%	14.5%	12.4%
London	188.5	NA ^[2]	NA ^[2]	6.1%	NA ^[2]
New York City	490.0	1.4%	-2.7%	9.7%	7.8%

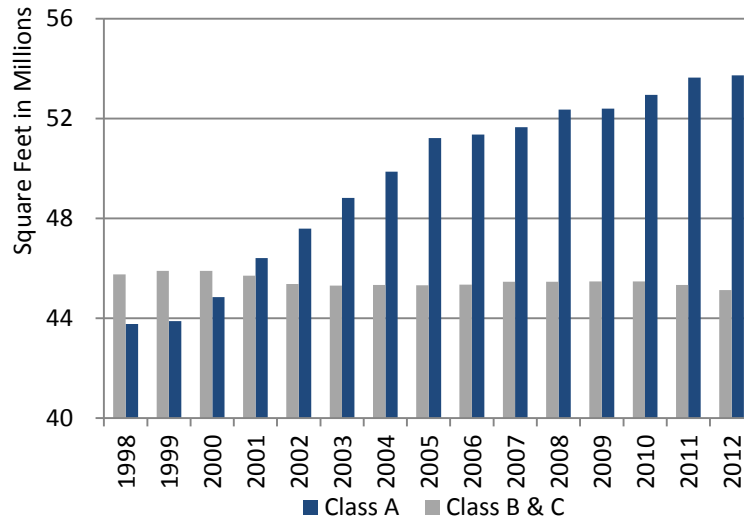
[1] Class A, B and C in millions

[2] UK office market data is not categorized as Class A, B and C

⁷³ CoStar/C&W market fundamentals as of 4Q 2012

Boston is the business capital of New England. Like New York City, it has access to a skilled labor force and venture capital for emerging companies. The city has a dynamic high-tech and biomedical research industry and further labor market stability from large healthcare and education sectors. Boston suffers from supply constraints in the Class B and C office market, while Class A inventory is on the rise.

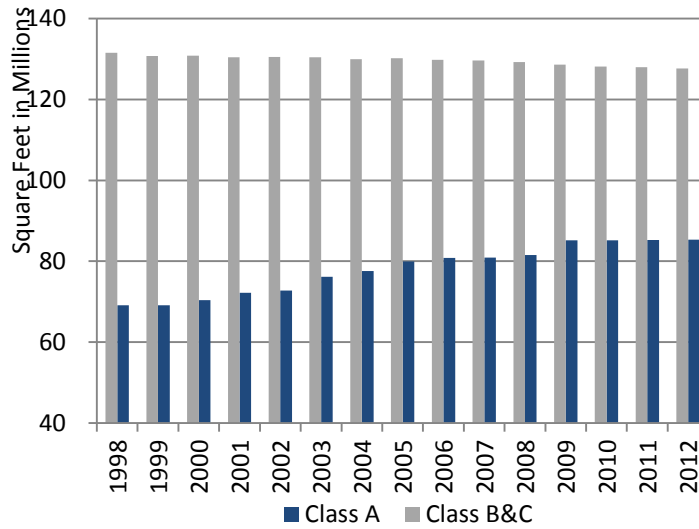
Table 11 - Boston Office Stock by Class⁷⁴



⁷⁴ CoStar market fundamentals data as of 4Q 2012

Chicago is the business and tourism center of the Midwest. It has a high per capita income and well-educated workforce. The Chicago Class B and C office inventories are declining on a lesser scale than that of New York City.

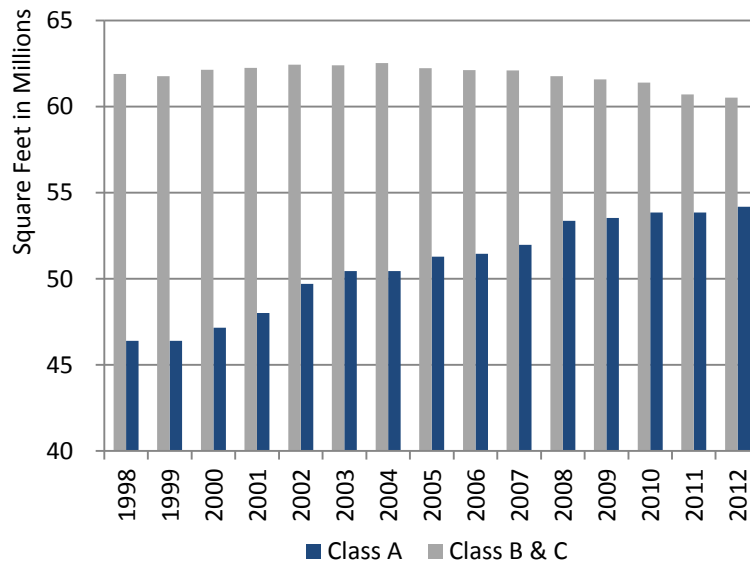
Table 12 - Chicago Office Stock by Class⁷⁵



⁷⁵ CoStar/C&W market fundamentals data as of 4Q2012

San Francisco's thriving economy is attributed primarily to its well-educated and skilled workforce, which supports income growth. A growing cluster of internet and other tech service companies and workers supports the office market. San Francisco's combined Class B and C inventory is still well above Class A, but the gap is narrowing as secondary space becomes scarcer and office product is converted to residential. Like New York, San Francisco's Class A office rent pricing will force high growth industries to the ever diminishing Class B and C space, creating a similar supply/demand gap.

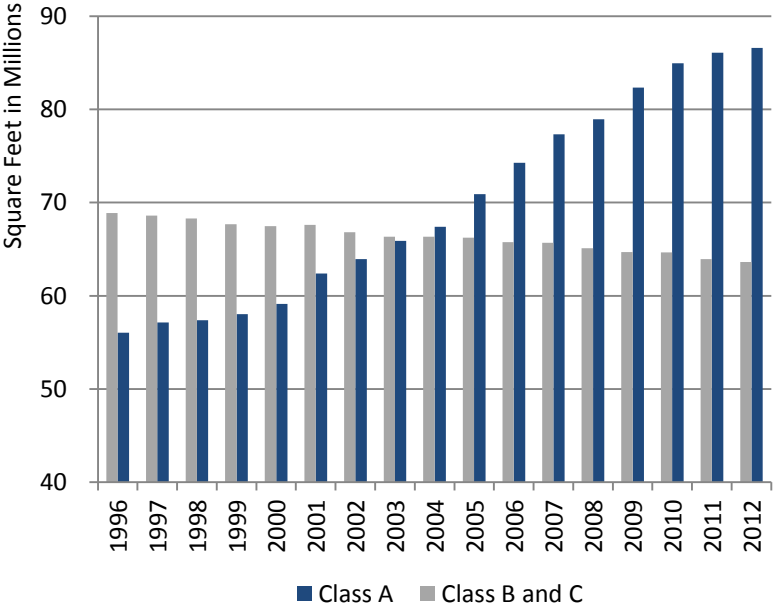
Table 13- San Francisco Office Stock by Class⁷⁶



⁷⁶ CoStar/C&W market fundamentals data as of 4Q2012

Washington D.C. benefits from a high per capita income and educated workforce. It is a major center for information technology and has strong population growth relative to other Northeast metro areas. Tourism also contributes significantly to the city’s GDP. DC faces supply side challenges similar to those of New York City. Class A inventory has increased rapidly since 2004 and Class B and C space has diminished due to absorption and conversion to residential product.

Table 14 - Washington D.C. Total Office Stock by Class⁷⁷



As in New York City, technology is driving absorption of office space in the Central **London** office market. The lack of “Grade A” supply and competition from non-traditional occupiers is forcing major tenants to seek space in less popular neighborhoods. London has attracted global corporations like Google, Facebook, and Intel to its “Tech City” entrepreneurial hub in East London. to draw emerging tech companies. Tech City area has grown from 200 companies to over 700 over the past three years.⁷⁸

⁷⁷ CoStar/C&W market fundamentals data as of 4Q2012

POLICY IMPLICATIONS

New York City is expected to experience strong office space demand from HGI firms between 2013 and 2025, representing roughly 17.3 msf of office space. The office space preferences of HGI firms, as described in this report, can frequently be met with existing Class B and C office space. However, New York City Class B and C office stock (approximately 229 msf as of the fourth quarter of 2012) is projected to decrease by 7.8 msf between 2013 and 2025. This projected increase in demand for Class B and C office space coupled with the projected decrease in Class B and C office stock is projected to result in a gap by 2018. As the gap between demand and supply increases, office prices may rise and businesses may be less inclined to enter and remain in the New York City market.

In April 2013, in connection with this study, Mayor Bloomberg convened 18 key stakeholders from the New York City real estate market to discuss the growing demand for office space from a new generation of HGI firms and the challenges of increasing the supply of affordable office space. The Advisory Group included some of the leading developers of commercial office space, building owners, brokers, construction managers, labor representatives, and top executives of HGI tenants.

There was general consensus amongst the Group that:

- There has been a shift in the type of firms, and their correlative needs, driving the leasing market for commercial office space;
- The supply of affordable office space is key factor in attracting and retaining higher growth firms;
- It is very difficult to create new affordable office space – absent subsidy -- in most New York City markets; and
- So-called “step-out space” is a particularly challenging market segment to address.

In terms of policy implications, for both the public parties and the private market participants, there was a range of topics discussed, including the:

- Role of zoning, tax, and building code policy in shaping the growth of new commercial office space, particularly at a range of price points;
- Limited public awareness and buy-in around the importance of office space to economic development and job growth; and
- Need for continuing collaboration amongst developers/owners, lenders, and labor to address private market frictions to the market for affordable and flexible commercial office space.

Other cities, in contemplating this issue, have tried the following policies:

- **Washington D.C. Technology Sector Enhancement Act of 2012:** provides five-year corporate income tax abatements to technology firms, sales tax exemptions on certain purchases and sales, and property tax abatements. The law is an expansion of an earlier program called the New E-economy Transformation Act, which authorized the Mayor to enter into master leases for office space facilities in the District of Columbia and sublease the space to qualified companies.⁷⁹
- **Cambridge Low-Cost Office Space Requirements:** earlier this year, Cambridge, MA relaxed zoning restrictions on a \$1 billion development plan from the Massachusetts Institute of Technology on the condition that the university will provide 10 percent of the space to small tenants at affordable rents. Spaces from 200 sf to 5,000 sf with leases as short as 30 days will be available. According to a Wall Street Journal article about the requirements for this project, Cambridge officials anticipate that other developers in the popular Kendall Square area will be required to develop low-cost office space as well.⁸⁰
- **San Francisco Mid-Market Street Tax Exemption:** in 2011, San Francisco implemented tax incentives to encourage businesses to relocate to a blighted section of Market Street. Companies with a payroll of more than \$1 million that move into the Market Street zone could have their payroll taxes capped for six years, and hiring more employees would not increase the tax bill. The tax exemption is widely credited with preventing Twitter from relocating outside of San Francisco; Twitter has since become a major corporate anchor, helping to revitalize the Mid-Market neighborhood and attract other high-growth technology firms.^{81 82}

The results of these efforts may be helpful case studies for New York City as it continues to consider the challenges of maintaining an office stock appropriate for the needs of HGI firms. Any specific policies for New York will need to be studied carefully, taking into account the unique aspects of the market, and in consultation with key stakeholders like elected officials, the real estate industry, urban planning leaders, the community and others.

⁷⁹ Government of the District of Columbia - Office of the Chief Financial Officer

⁸⁰ "City Mandates Low-Cost Office Space" Wall Street Journal, 4/10/13

⁸¹ "Prominent Start-Ups in San Francisco Resist a Payroll Tax" New York Times, 4/3/11

⁸² "Pay Off in San Francisco" Wall Street Journal, 8/29/12

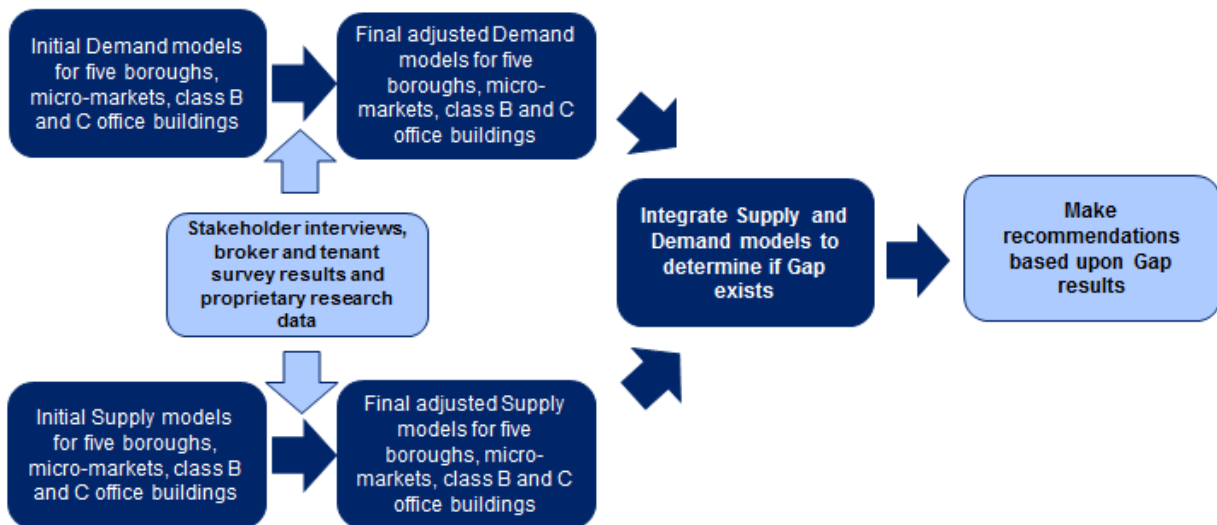
APPENDICES

Methodology

Overview

The future supply and demand analyses are based on real estate industry shift-share forecasting techniques. The shift share methodology, in conjunction with regression analysis, recognizes that certain market relationships, empirical data and community sentiments exist which influence the outcome of an analysis. The shift share methodology is a preferred means of analysis for study horizons which extend beyond a five year time period where future performance is less predictable and more volatile. Alternative methodologies, including a rolling average based on historical performance as well as a straight-line adjustment, place a greater emphasis on past market performance and less emphasis on changes in the marketplace over time.

Figure 10 - Forecasting Methodology



The A&M analysis includes three distinct but related phases. First, the supply analysis involves an understanding of how and why the stock of commercial office space has changed over time; this historical perspective is necessary to explain and validate future performance. The supply analysis also factors in activities that impact changes in supply such as the deterioration of buildings, conversion of buildings from one use to another (i.e. office to condominiums), renovation activity to maintain or modify a building

class designation without changing the zoned use of the building and existing or planned construction activity. Second, the demand analysis involves an understanding of the tenant cohorts who occupy space among the various classes of commercial office stock throughout New York City. The demand analysis factors in rental rates, building class, location preferences and other tangible and intangible considerations. Finally, the analysis consolidates the supply and demand results, producing a time series view of the relationship between supply and demand from 2013 through 2025.

Supply Analysis Methodology

The A&M supply analysis was a three step process of understanding known supply history through 2012, known future development activity over the following five years to 2017, and projections of supply beyond 2017 considering potential new stock, deterioration of existing stock, and conversion of existing stock to non-commercial office use. Historic stock was sourced from a combination of CoStar, an industry leading real estate data and information provider, and Cushman & Wakefield. CoStar was selected based on the comprehensive nature of its office supply data covering all major product types across each of the Boroughs. Cushman & Wakefield was selected because it is a leading provider of real estate services in the New York City area. Supply was forecasted using the current announced development pipeline for the next five years and a regression model for the subsequent period. The announced development pipeline includes projects currently in various stages of planning, permitting, and development. This data was obtained from several sources including F.W. Dodge and Cushman & Wakefield, and was reviewed and validated by A&M REAS, the NYCEDC and JRT Realty. A&M and JRT estimated completions for each known pipeline project. New supply beyond 2017 was modeled following the methodology utilized by CBRE Econometric Advisors. New office supply is a function of office levels with lags, rent levels with lags, vacancy rate with lags, and office employment with lags. *A priori*, we expect lags to be different for each borough due to their unique historical patterns and trends. Rents will initially be forecast as current rents (non-adjusted for inflation). We utilized inflation rates from the NYCOMB and other reputable third-party sources to forecast real rents (inflation adjusted), and to also forecast office construction inflation rates based on Engineering News Record and independent surveyed entities, e.g., Bovis Lend Lease. It was critical to relate office rental rates with construction costs per square foot to determine when reasonable new office supply may be delivered to the market from 2018 to 2025.

In addition to the assumptions implied from the preceding overview, other assumptions to the supply analysis which impact all boroughs include:

- The rate of office stock decay of Class A space to Class B or C was forecast to be 0.10 percent for the Study forecast period. This is in line with historical rate of decay between 1996 and 2012.

- The rate of conversion of office space to non-office product was forecast to be 0.40 percent for the forecast period. This is in line with historical rate of conversions between 1996 and 2012.
- The rate of Manhattan Affordable Vacant Stock was forecast to be 26.8 percent for the Study forecast period, based on leasing information provided by C&W and JRT Realty.

As indicated in the regression approach above, future rent projections and construction costs were used as independent variables to determine the development or conversion of stock within each borough. A&M utilized adjusted Marshall & Swift and ENR data to determine the relative feasibility of development by area. Irrespective of developer return on investment and developer cost of capital, construction / rehabilitation costs and market rents were compared to determine which markets justified rents or, in other words would garner a break-even investment. Breakeven scenarios were developed for ground-up construction, rehabilitation, or renovation considering relevant costs such as land, hard costs, soft costs, capitalization rate, net operating income, operating expenditures; where the sum of the required net operating income and operating expenditures equals the break-even point. A project break-even point above market rental rates indicates an environment which is not amenable to proceeding with the project. A project break-even point below market rental rates indicates an environment which is amenable to proceeding with the project.

Demand Analysis Methodology

The A&M demand analysis was a multi-step process of understanding total New York City projected demand through 2025 by extrapolating growth in employment by sector into a corresponding demand for office space. Employment data was obtained from Moody's Economy.com and the United States Bureau of Economic Analysis (BEA). Employment growth statistics for each industry were reviewed at the NAICS fourth digit or NAICS Industry Group level. For the purposes of this study, the high-growth industries were identified as those with a 2012 – 2025 CAGR of at least 2.6 percent. Additional candidates were identified through primary and secondary market research sources, including market participant interviews, and the NYCEDC. The final candidate industries include (in order of CAGR):

- Healthcare
- Technology
- Business Services
- Education
- Non-profit
- Advertising

- Research and Development

Based on empirical data and market research, adjustments were made to each Industry group to reflect their use of office space as a percentage of total employment as well as assign a square foot per office-using employee that reflects the nature of the business. For example, 90 percent of business services employees are office users and each employee occupies approximately 175 square feet. Conversely, 70 percent of non-profit employees are office users and each employee occupies approximately 120 square feet. The product of growth in employment per high-growth industry sector, percent of employees using office space, and the square footage per office user yielded an aggregate demand for office space. Our demand analysis accounts for a reduction in square footage per employee between 2012 and 2025. The average change was about six percent for the HGI industries over the forecast period. These reduction assumptions were confirmed by A&M's market research, including interviews with market participants, as well as proprietary industry data.

Demand from non-HGI industries was also forecasted using the same methodology. Employment was divided into FIRE (Finance, Insurance and Real Estate) and other non-farm employment. An office-using percentage was then applied to FIRE and other non-farm employment growth between 2013 and 2025 in order to predict the incremental demand from office-using employment. A square foot per employee assumption was then applied to the FIRE and other non-farm office-using employment growth in order to estimate office space demand between 2013 and 2025. The square feet per office-using employee decreased over the forecast period from 250 in 2012 to 235 in 2025.

While an overwhelming proportion of office space is concentrated in Manhattan, our analysis recognizes that High-Growth Industries are unique in their space and location requirements. Just as office occupants are stratified among each of the boroughs today, we anticipate that stratification to hold true in the future with some Boroughs and sub-markets attracting a lesser or greater share of new demand. Based on historic rental market data, our analysis further breaks demand down by price point as aligned with the typical Class A, B and C designations. For the purposes of this Study, 'affordable' space is defined as being below \$40 per square foot on a base rent basis.

Gap Analysis Methodology

At the conclusion of the supply and demand analyses, A&M compared the model outputs to identify differences in projected demand and supply. Taken alone, the difference between supply and demand will indicate a surplus or a deficit of space.

Historically, a Borough-specific 'vacancy' rate range has existed in New York City. Vacancy can vary by class of space and sub-market. *Ceterus paribus*, vacancy rates impact the price elasticity of space within

the market. When vacancy rates are low, there may be higher competition for space and, therefore, less attractive lease terms for the occupant. Conversely, when vacancy rates are high, there may be a 'renters market' whereby lease terms are more negotiable.

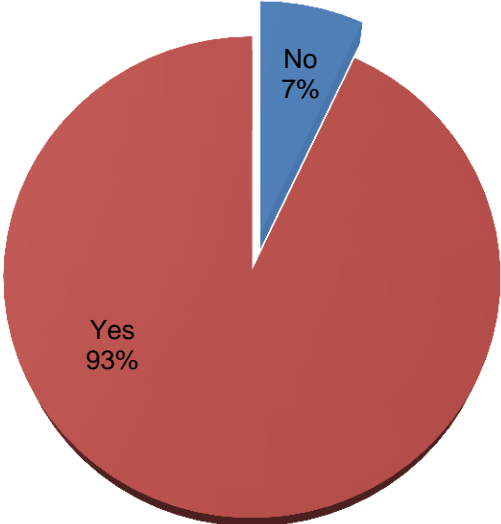
The gap analysis leverages each of the preceding methodologies to identify how the availability of space for High-Growth Industries will be impacted over time. Where negative vacancy exists (there is a projected lack of available space by class or price point), opportunities may exist to create the conditions necessary to close those gaps. Where positive vacancy exists (there is a projected surplus of space available by class or price point, or a lack of interest), opportunities may exist to attract occupants to those locations.

Survey Results

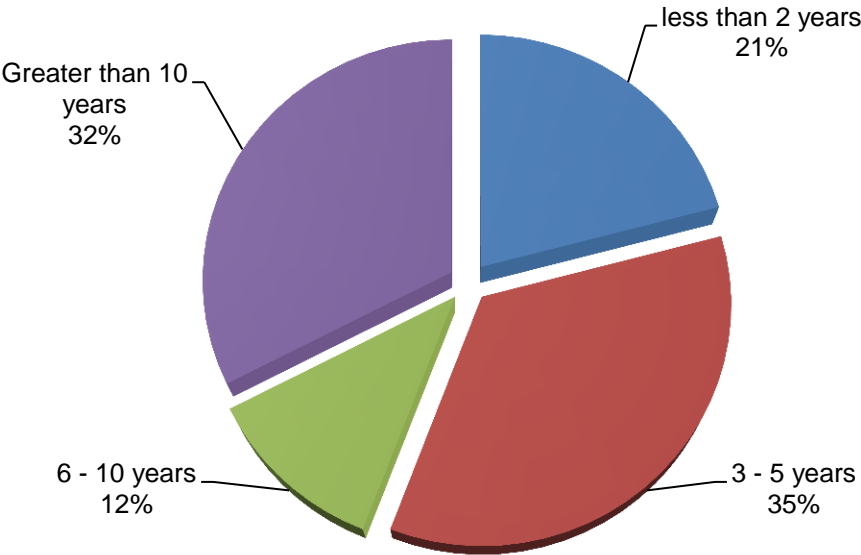
A&M and JRT distributed surveys to New York City real estate brokers and tenants via e-mail on January 2, 2013 and received responses through February 13, 2013. The broker survey received 125 responses and the tenant survey received 43 responses.

Tenant Survey Responses

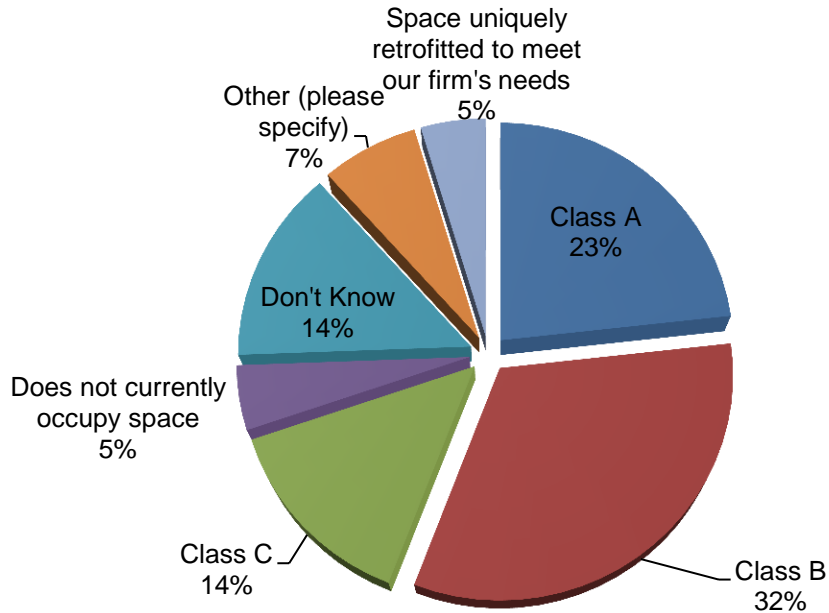
Do you consider this office a HQ location?



How old is your company?

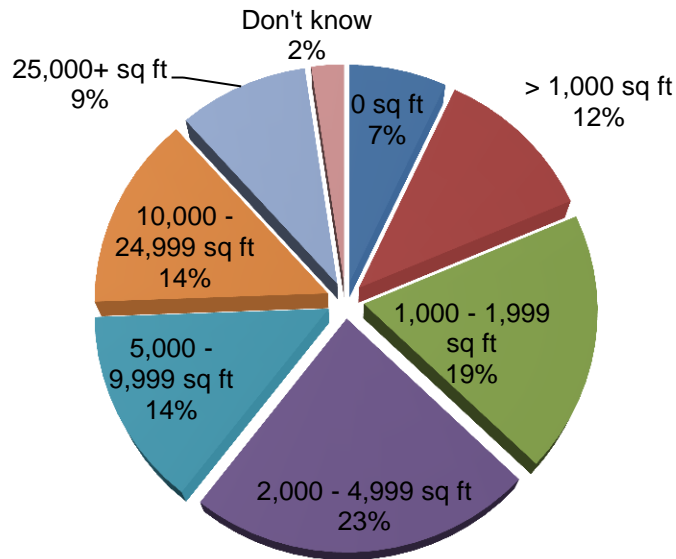


Which office space class type do you currently occupy?

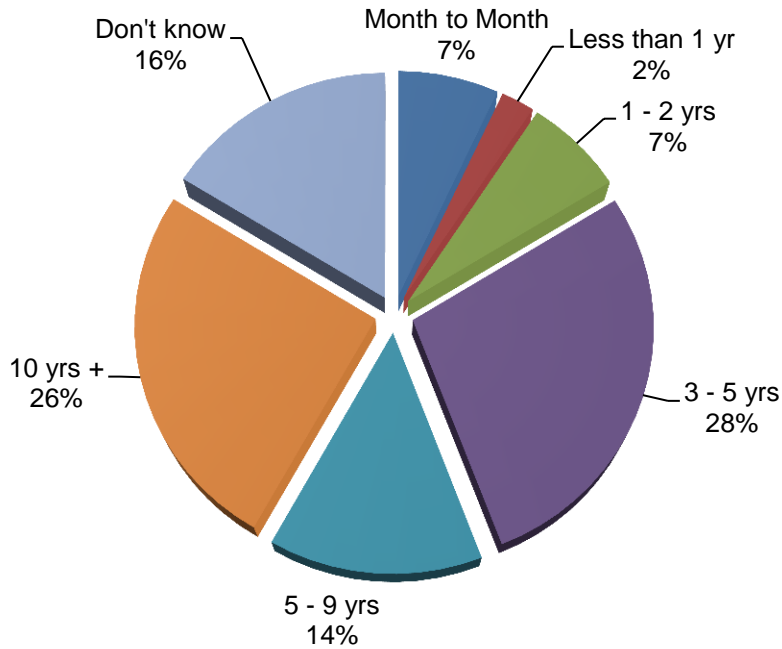


Note: Other answers included: home office and uniquely retrofitted space with low rent.

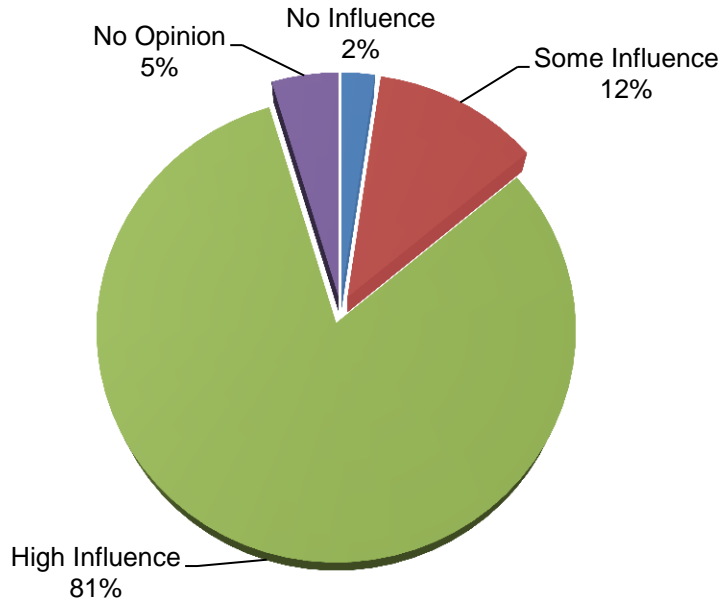
How many SQ ft of office space do you lease in your primary office locations?



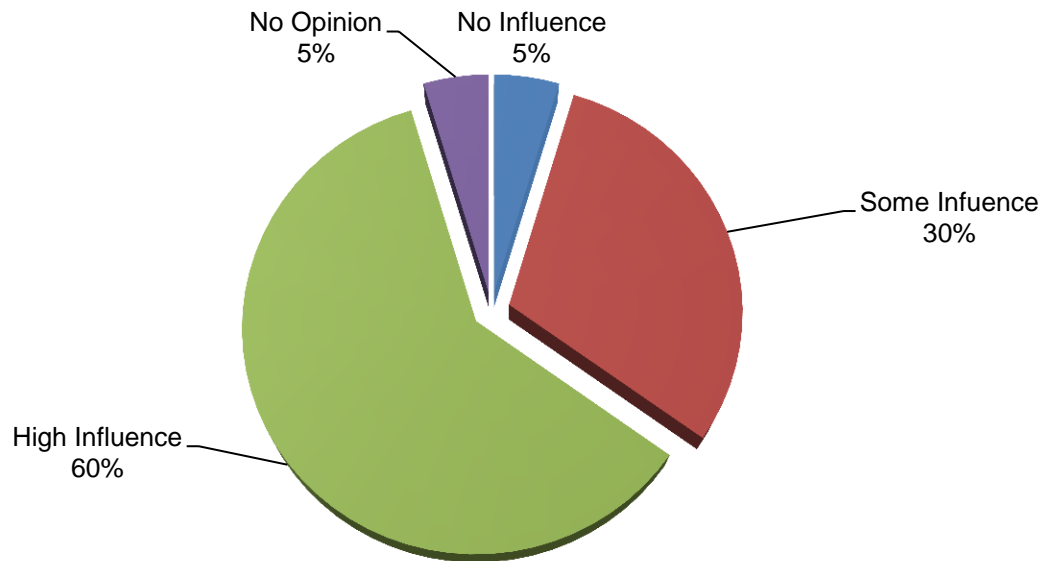
If you are leasing, what was the length of the original lease term?



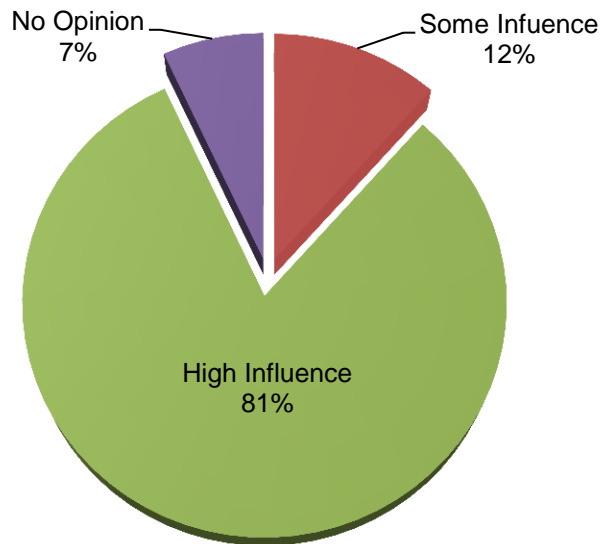
Please indicate how rents and TI costs influence your company's real estate demands.



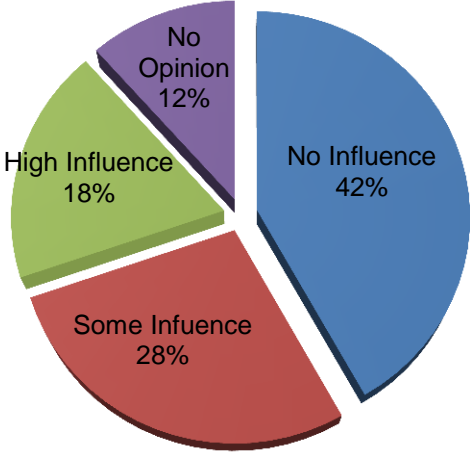
Please indicate how lease length, termination and expansion provisions influence your company's real estate demands.



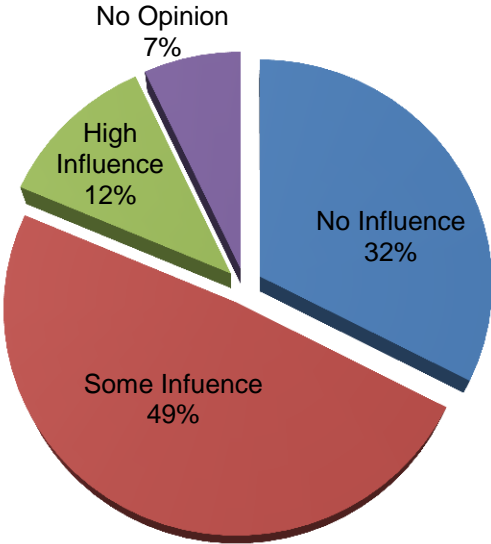
Please indicate how proximity to public transportation influences your company's real estate demands.



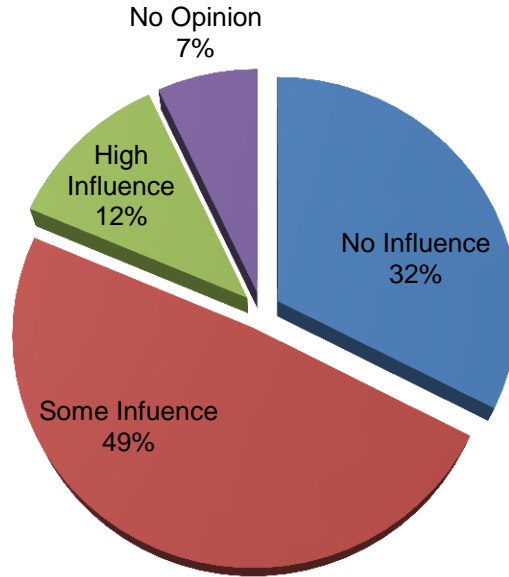
Please indicate how labor costs influence your company's real estate demands.



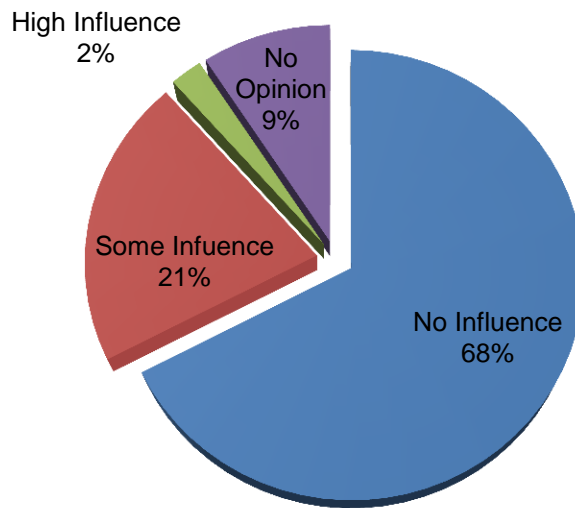
Please indicate how proximity to parks and recreational facilities influences your company's real estate demands.



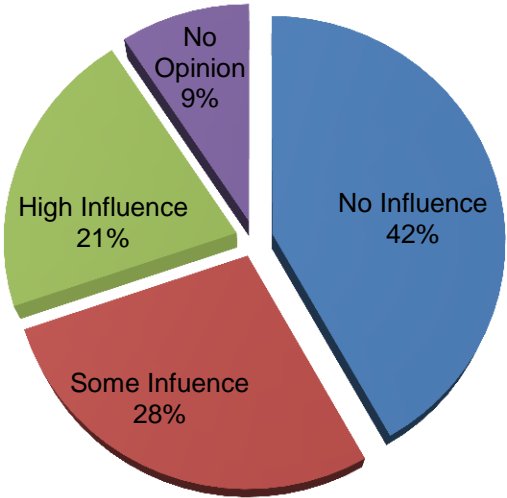
Please indicate how proximity to restaurants, nightclubs and shops influences your company's real estate demands.



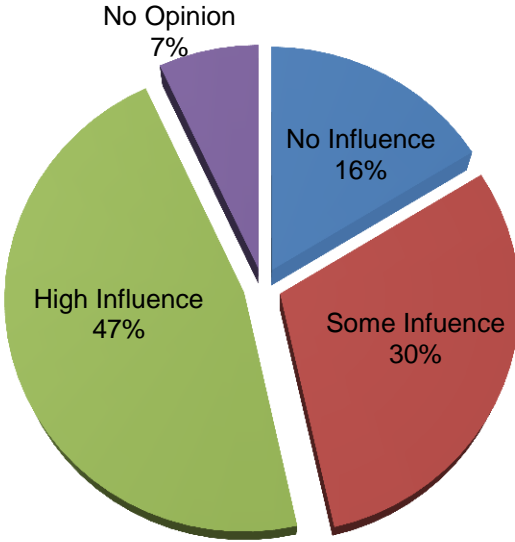
Please indicate how proximity to affordable housing influences your company's real estate demands.



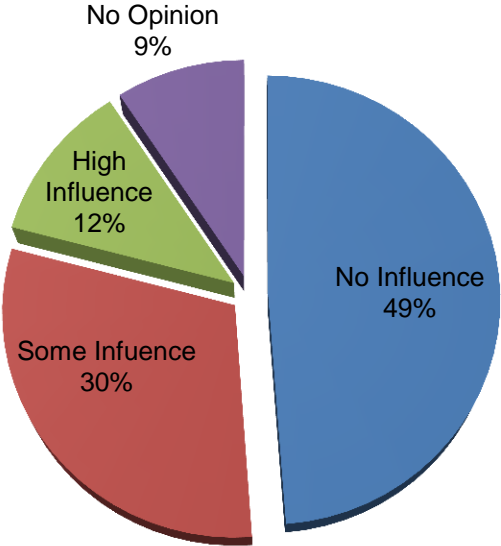
Please indicate how proximity to similar firms influences your company's real estate demands.



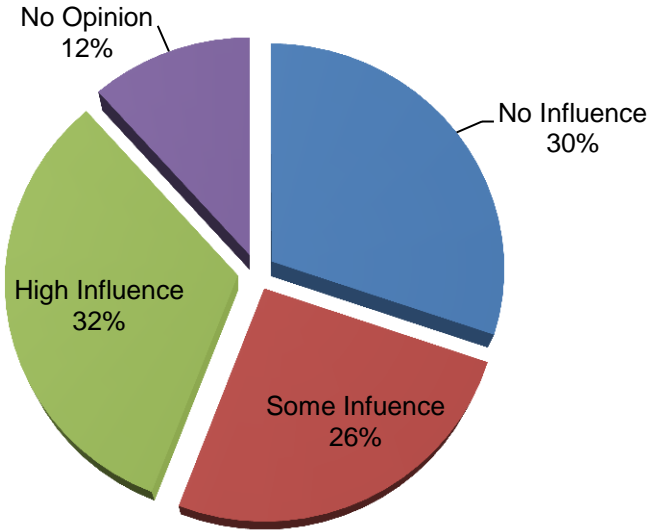
Please indicate how proximity to customers influences your company's real estate demands.



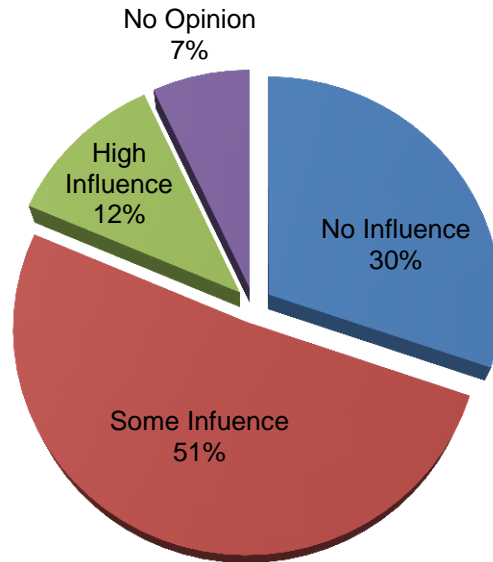
Please indicate how proximity to universities/higher education influences your company's real estate demands.



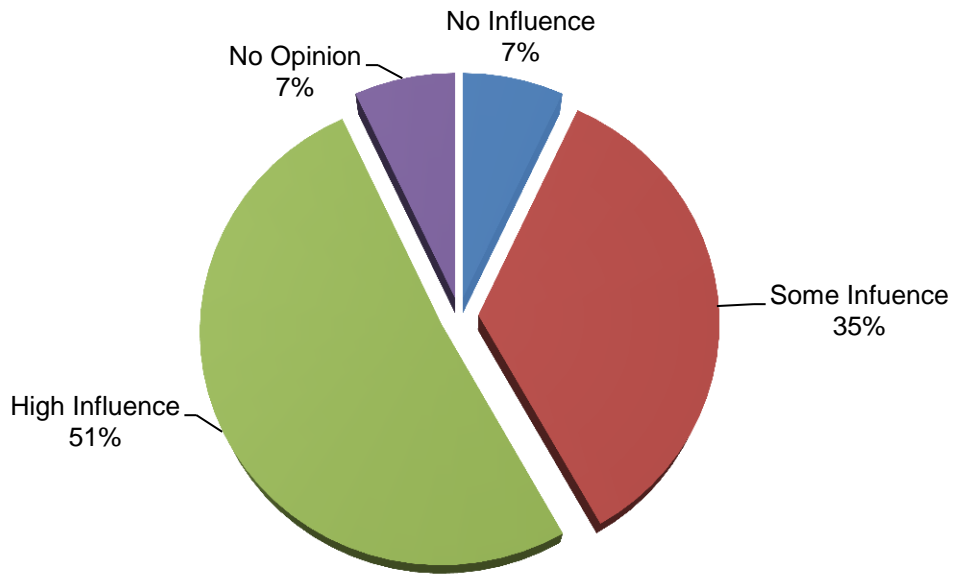
Please indicate how proximity to an educated workforce influences your company's real estate demands.



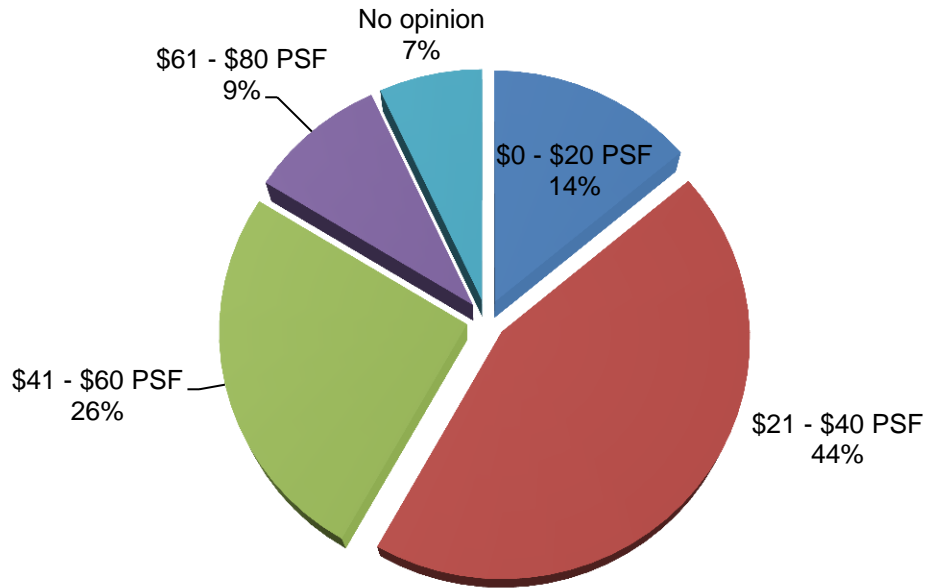
Please indicate how the regulatory and tax environment influences your company's real estate demands.



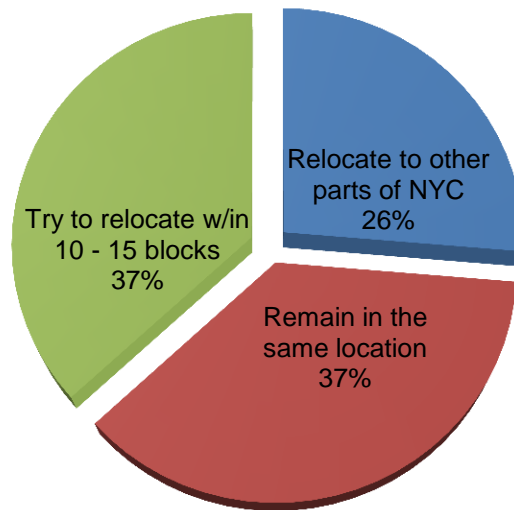
Please indicate how broadband capacity (high-speed fiber) influences your company's real estate demands.



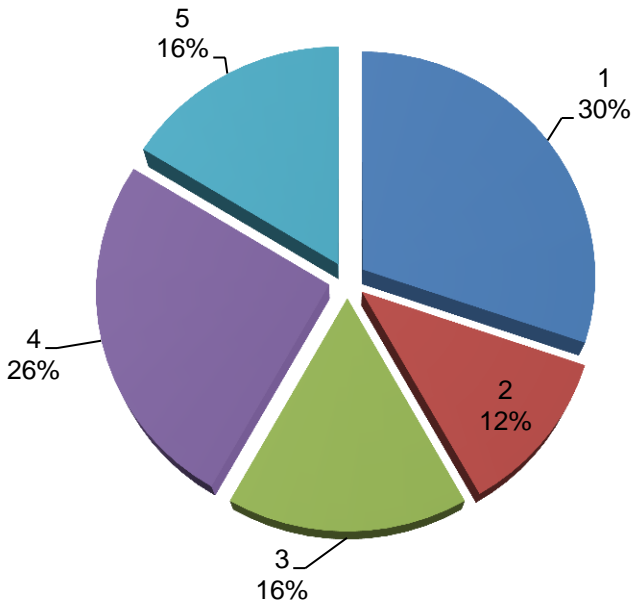
What do you consider "affordable" on a dollar per sq ft basis?



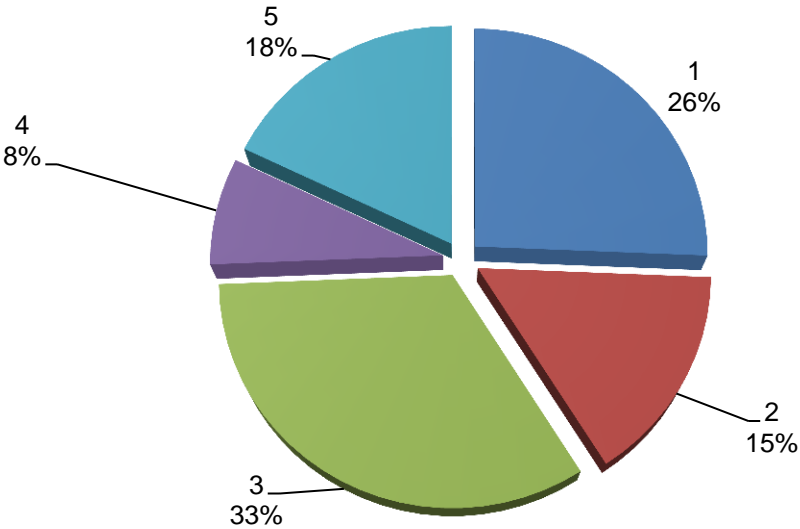
Assuming rents elsewhere remained stable, if your rent were to increase by 10-15% over the next 4 years would you?



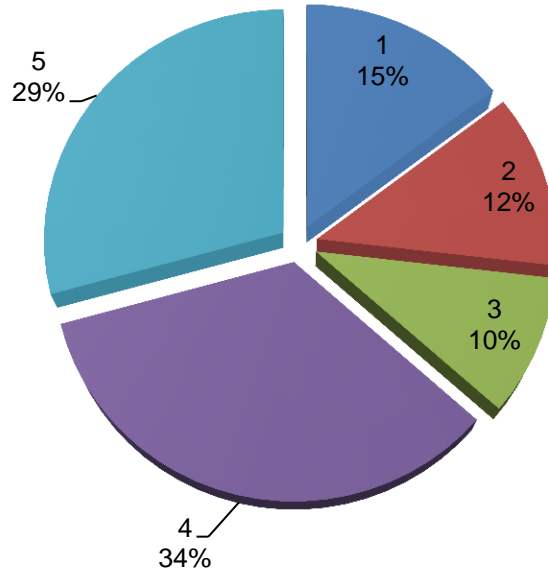
Please rate how important large floor plates are to your company. (1=low importance, 5=high importance)



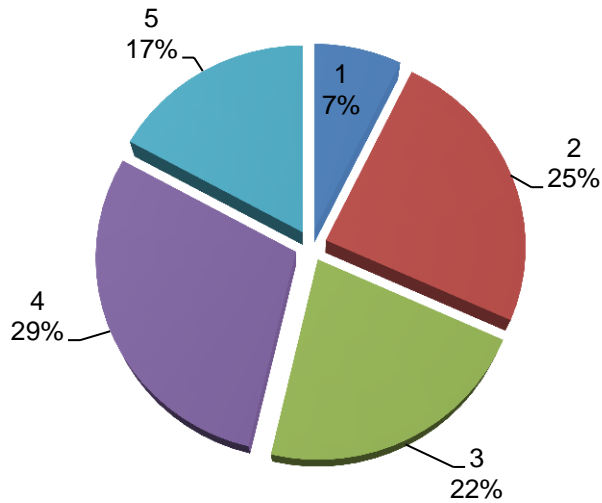
Please rate how important bike-friendly amenities are to your company. (1=low importance, 5=high importance)



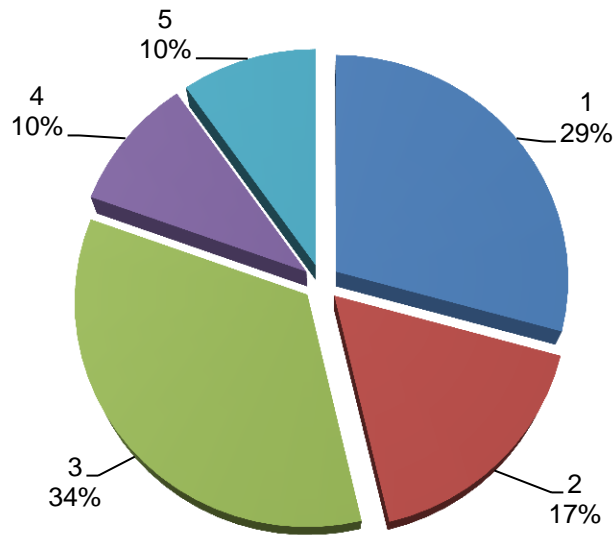
Please rate how important high ceilings are to your company. (1=low importance, 5=high importance)



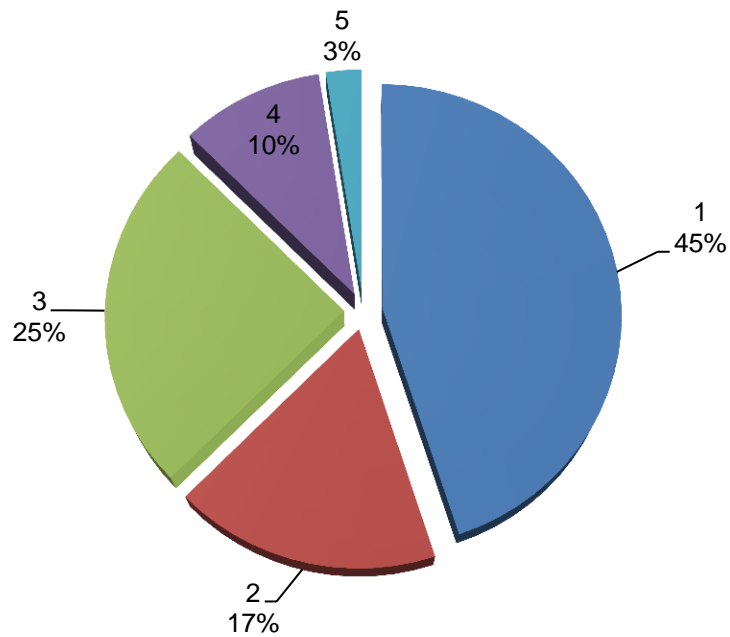
Please rate how important large common areas are to your company. (1=low importance, 5=high importance)



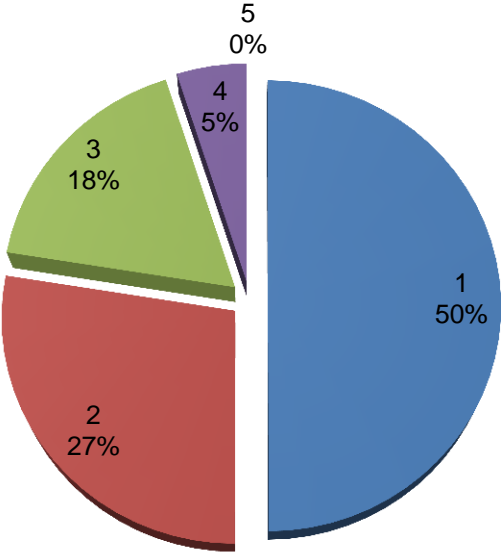
Please rate how important a large kitchen is to your company. (1=low importance, 5=high importance)



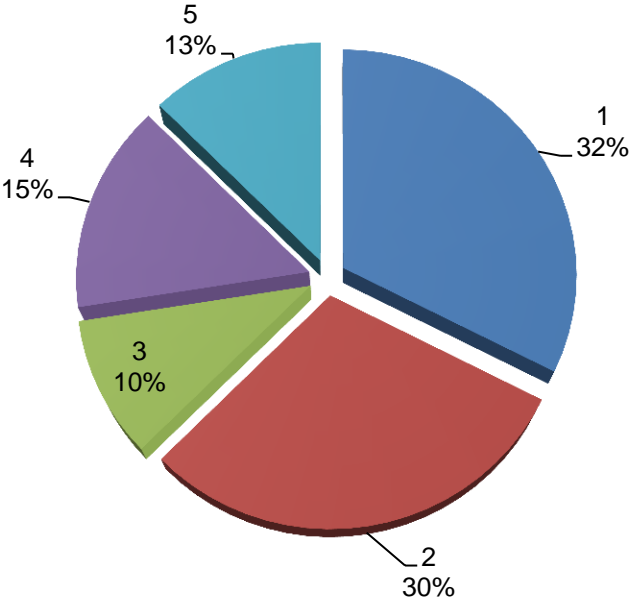
Please rate how important exposed brick is to your company. (1=low importance, 5=high importance)



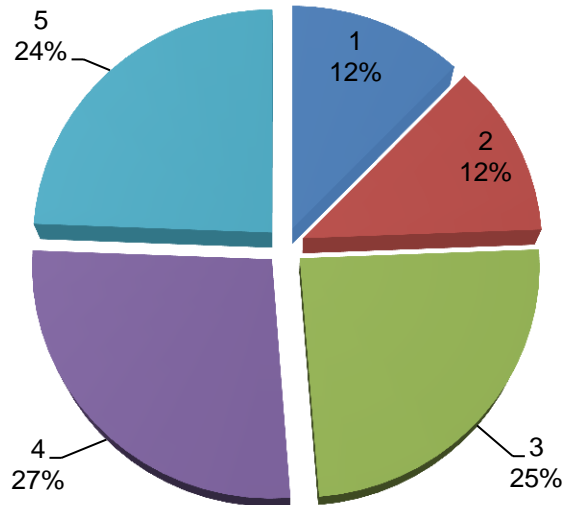
Please rate how important an in building gym is to your company. (1=low importance, 5=high importance)



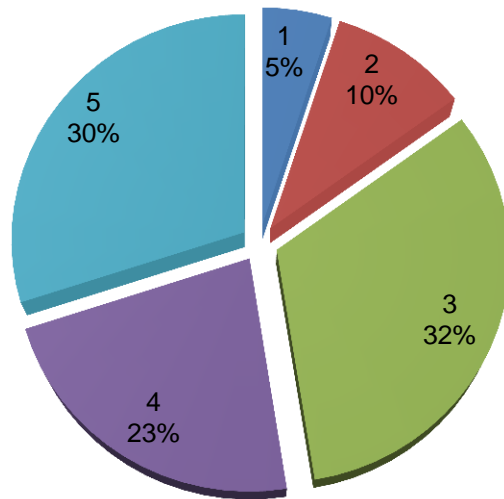
Please rate how important high-speed elevators are to your company. (1=low importance, 5=high importance)



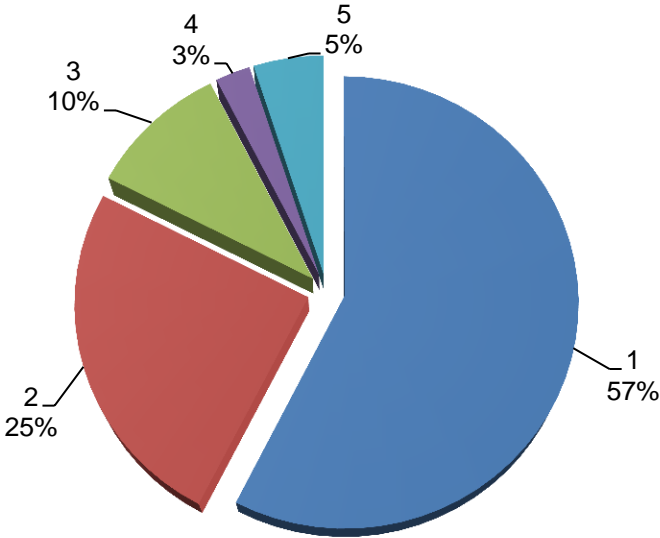
Please rate how important large conference rooms are to your company. (1=low importance, 5=high importance)



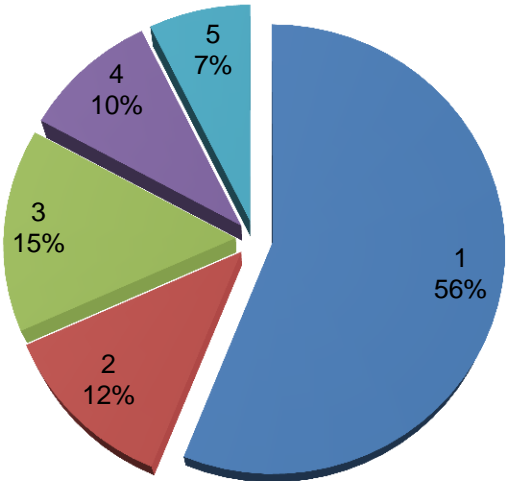
Please rate how important large windows are to your company. (1=low importance, 5=high importance)



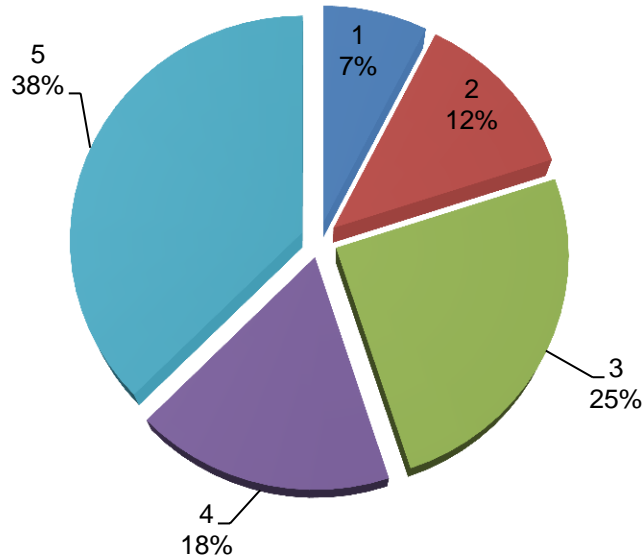
Please rate how important an in building cafeteria is to your company. (1=low importance, 5=high importance)



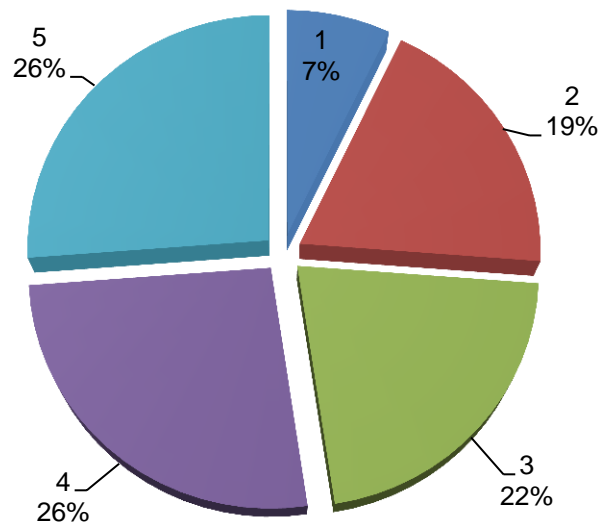
Please rate how important parking is to your company. (1=low importance, 5=high importance)



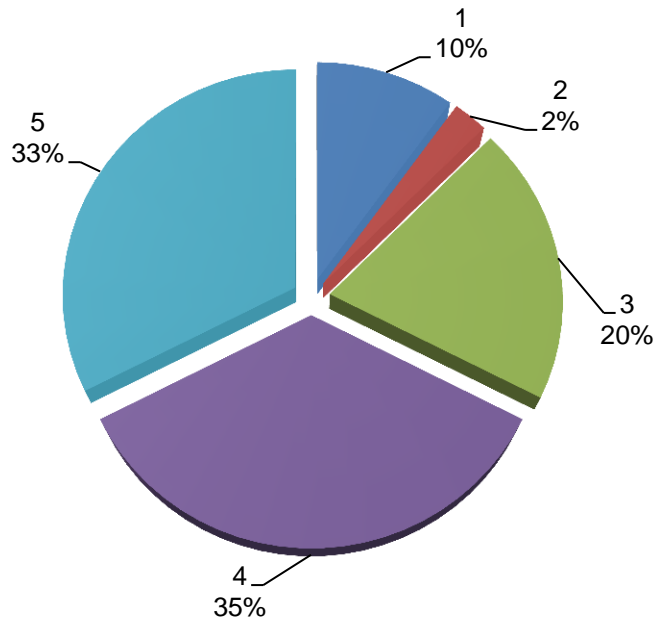
Please rate how important central air is to your company. (1=low importance, 5=high importance)



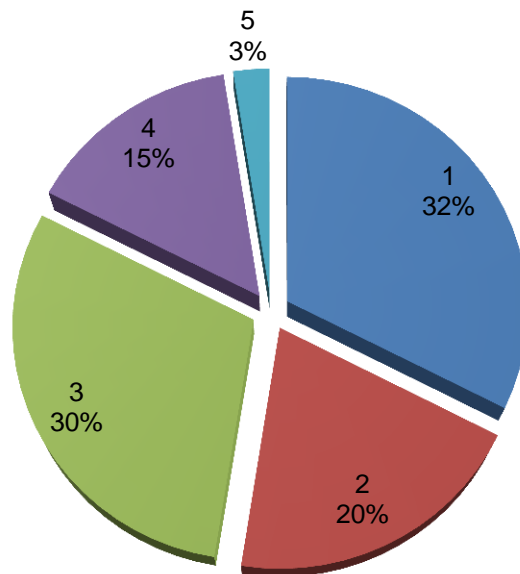
Please rate how important security is to your company. (1=low importance, 5=high importance)



Please rate how important redundant broadband service is to your company. (1=low importance, 5=high importance)

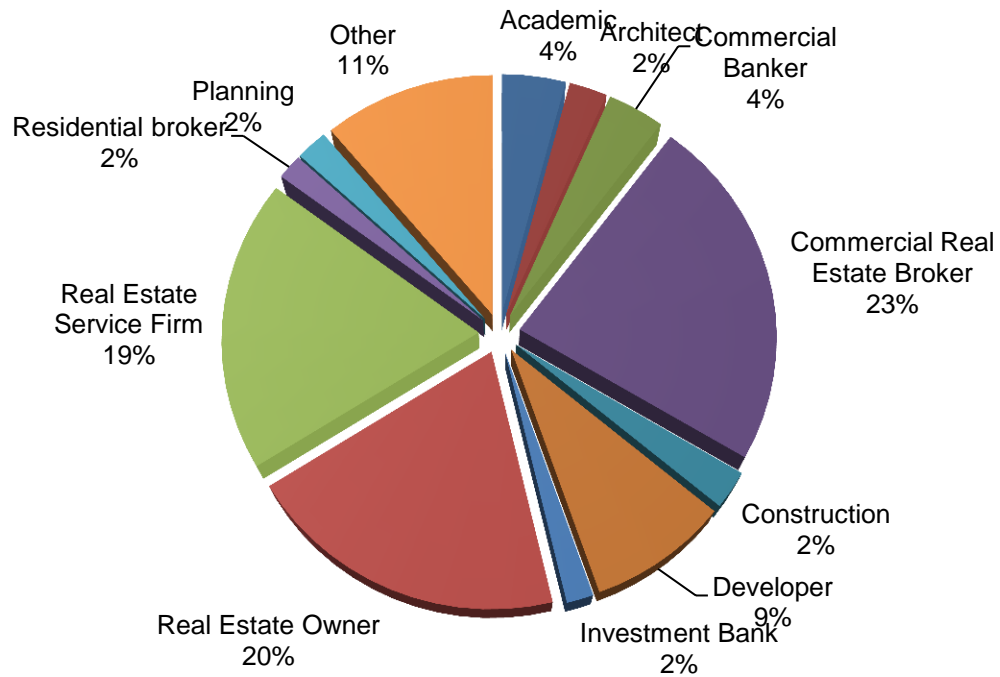


Please rate how important a separate lobby entrance is to your company. (1=low importance, 5=high importance)

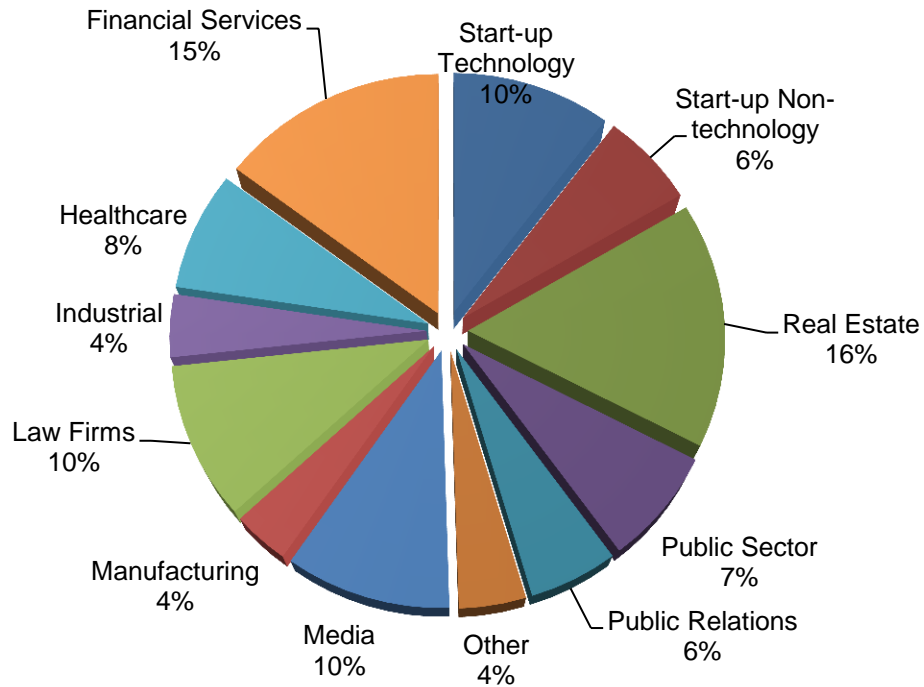


Broker Survey Responses

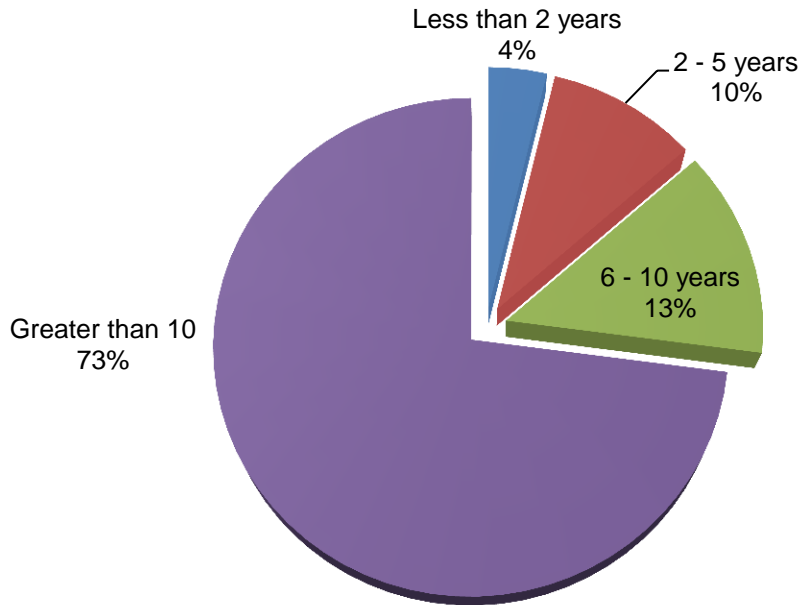
Which of the following best describe your industry experience?



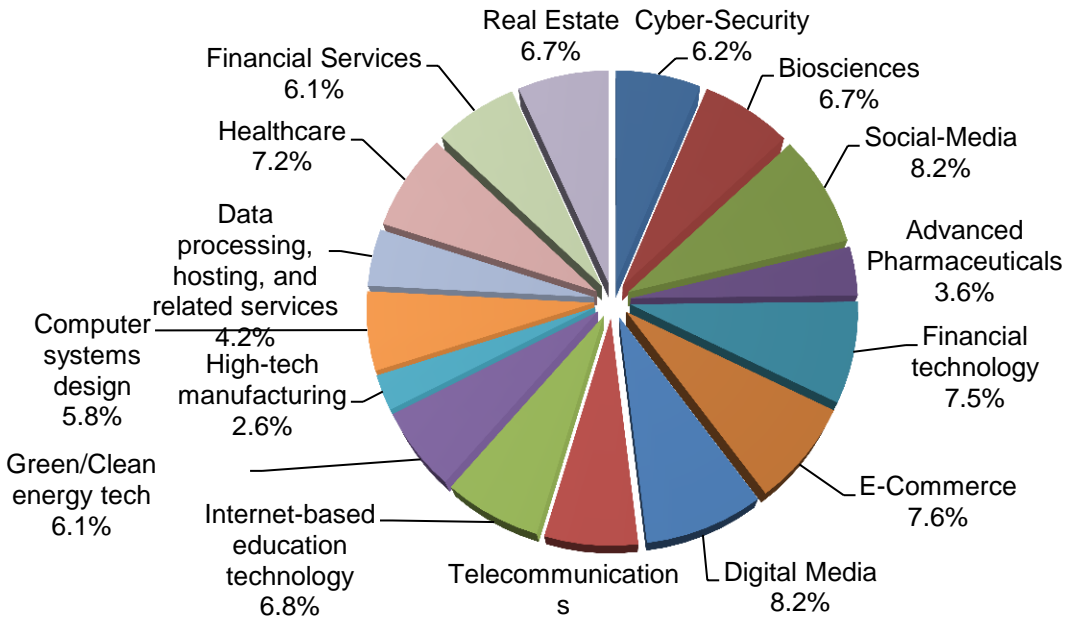
Type of clients you most frequently work with



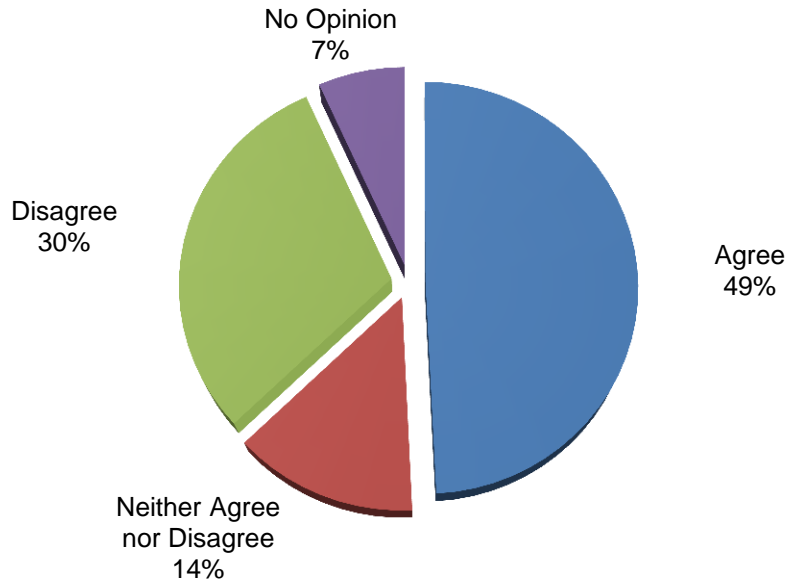
How many years of experience do you have in your industry?



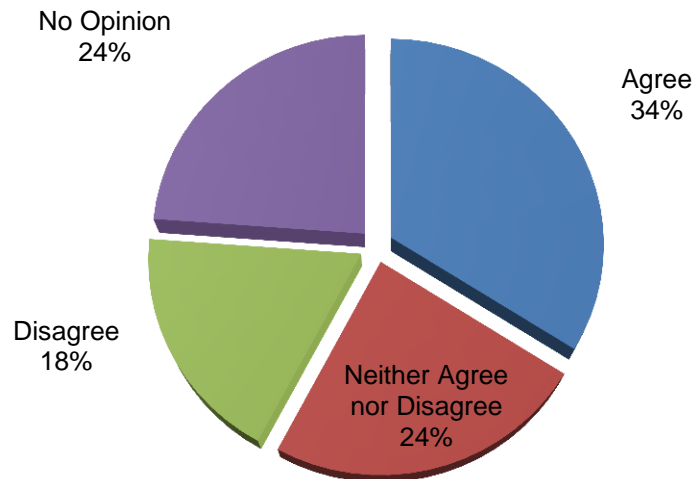
Which of the following industries do you expect will grow in Manhattan, Brooklyn, Queens, Staten Island and/or the Bronx in the next 10 years?



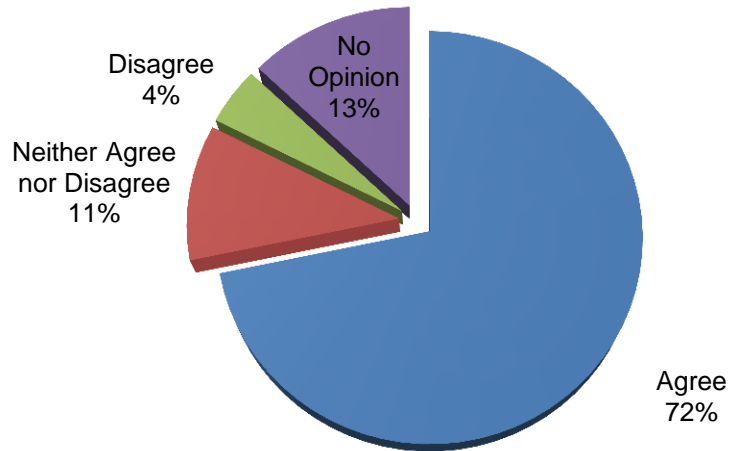
Do you agree or disagree with the following statement about the NYC area (all boroughs): There is currently sufficient supply of Class B office space for tenants who seek quality affordable space.



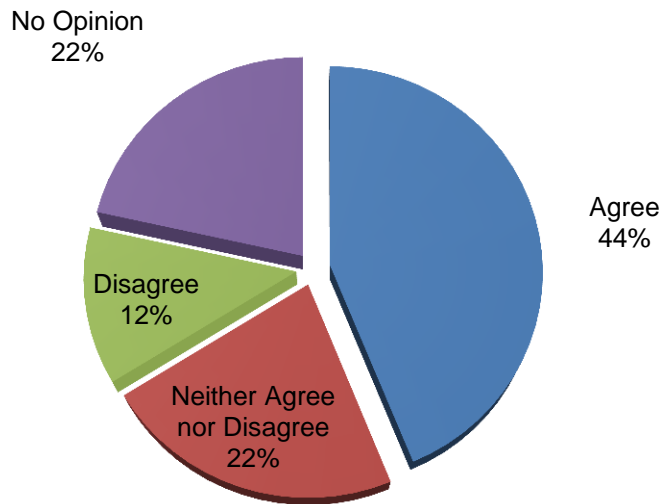
Do you agree or disagree with the following statement about the NYC area (all boroughs): There is currently sufficient supply of Class C office space for tenants who seek quality affordable space.



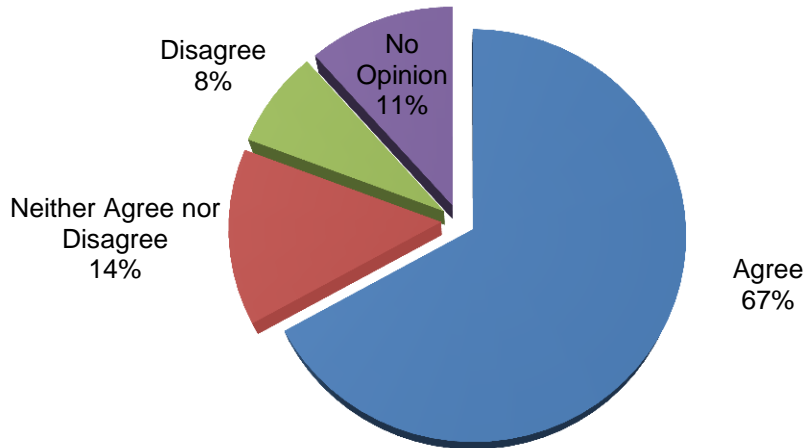
**Do you agree or disagree with the following statement:
I expect an increase in demand for class B office space in the
other boroughs (not including Manhattan) over the next ten
years.**



**Do you agree or disagree with the following statement:
I expect an increase in demand for class C office space in the
other boroughs (not including Manhattan) over the next ten
years.**



Do you agree or disagree with the following statement about the NYC area (all boroughs): I expect an increase in demand over the next 10 years for specialized space that the current A, B and C office space does not satisfy.



Do you agree or disagree with the following statement about the NYC area (all boroughs): There is a growing demand to create affordable office space for entrepreneurial startup firms that current, A, B and C office space does not satisfy.

