

## Sublease Availability as an Indicator of Shifts in the Office Market

### Executive Summary

Houston's commercial real estate sector is seeing the highest levels of sublease availability over the past 10 years. As of March 1, 2015, sublease space accounts for 13% of total available space for Class A and B buildings, representing increases of 9.5% QoQ and 20.9% YoY. In light of recent declines in oil prices, we examine whether such increases in sublease availability are an indicator of a softening office market. Although sublease availability can soften an office market, it is not a good predictor of the office market or its asking rents. This is

because sublease availability can increase under both weakening and strengthening markets. For example, sublease availability increased as tenants contracted their businesses from 2008 - 2009 with the Great Recession. Yet, sublease availability also increased as tenants expanded their businesses from 2012 to 2014 with recovery from the recession.

We estimate that, of those office subleases >10,000 sq. ft., 65% are related to Houston's energy sector, thereby suggesting a key effect of the decline in oil

prices on current subleasing rates. However, caution is warranted in interpreting the extent to which the upward trend in sublease availability is softening Houston's overall office market. Sublease availability may be increasing not only due to the pullback in the energy sector, but also from continued growth in Houston's economy (despite oil prices). Nonetheless, increased sublease availability may aid tenants in their lease negotiations, depending on the building's occupancy, submarket, and other case-by-case situations.

**Table 1.** Summary of sublease availability as of March 1, 2015 in rentable building area (RBA) and percent (%) of total available space (sublease RBA/total available RBA). Direct availability is 100 minus % sublease availability. The quarter-over-quarter (QoQ) and year-over-year (YoY) percent change is for sublease availability as a percent of total availability.

Building Type	Sublease Availability		Percent Change in % Availability	
	RBA (sq. ft.)	% of total Availability	QoQ	YoY
Class A+B	5,571,676	13.2 %	9.5 %	20.9 %
Class A	3,922,963	19.4 %	10.4 %	14.9 %
Class B	1,648,713	7.5 %	2.5 %	18.5 %
Class A, ≥2012	219,310	9.2 %	-19.9 %	102.2 %

*Data InSight* is a monthly business-to-community (B2C) whitepaper series that uses data analytics to look at current and historical trends in commercial real estate (CRE). Indeed, like many other industries, CRE is undergoing a revolution in the volume, velocity, and variety of data being generated. At NAI Partners, we are embracing this data revolution through data science --- the process of using the scientific method and statistics to extract knowledge from data. Complementing its full CRE platform and more than 500 years of combined broker and professional experience, NAI Partners offers a data analytics consulting service to guide its clients in their business intelligence and decision making in CRE.

## Motivation

Given the nearly 50% drop in oil prices since June 2014, Houston's commercial real estate (CRE) industry is again asking important questions about how changes in the supply and demand of office space are driven by its energy sector. While a portion of Houston's economy is clearly built on the energy sector, Houston's economy, and those of Texas and the U.S. more generally, are poised for solid growth in 2015. This is in contrast to the Great Recession in which there was a downturn in both the economy and oil. The current pullback in oil is not anticipated to be accompanied by local, state or national recessions.

Shifts in Houston's office market due to oil pullbacks are anticipated to manifest through subleasing, with office spaces being vacated by business contractions in the energy sector. In this inaugural issue of *Data InSight*, we address the extent to which sublease availability can indicate the strength of the office market. We first present an alternative metric to describe sublease availability, that is sublease space as a percent of total availability, in contrast with the traditional CRE metric of percent of total rentable building area (RBA). We then describe market shifts in sublease availability over the past decade, with an emphasis on recent dynamics in the wake of the downturn in oil prices. Finally, we ask whether changes in asking rents occur as a result of shifts in sublease availability.

## How Best to Depict Sublease Availability?

Availability represents the amount of space that is being marketed as available for rent by prospective tenants, independent of whether it is vacant, sublet space, or soon to be available. Sublease availability is space being put back on the market that is already leased by a tenant, whereas direct availability is space being offered by the building's landlord. Direct availability plus sublease availability equals total availability, each measured as square feet (sq. ft.) of RBA. Total RBA of Houston is about 252,000,000 sq. ft., with direct and sublease availability about 36,700,000 and 5,500,000 sq. ft., respectively, as shown in Figure 1 for Class A and B buildings.

Sublease availability appears invariant, with little change over time, compared to direct availability (Figure 1). This is not the case, however, but rather an artifact of scale; depicting both on the same scale masks

Figure 1: Direct, Sublease and Total Availability, RBA

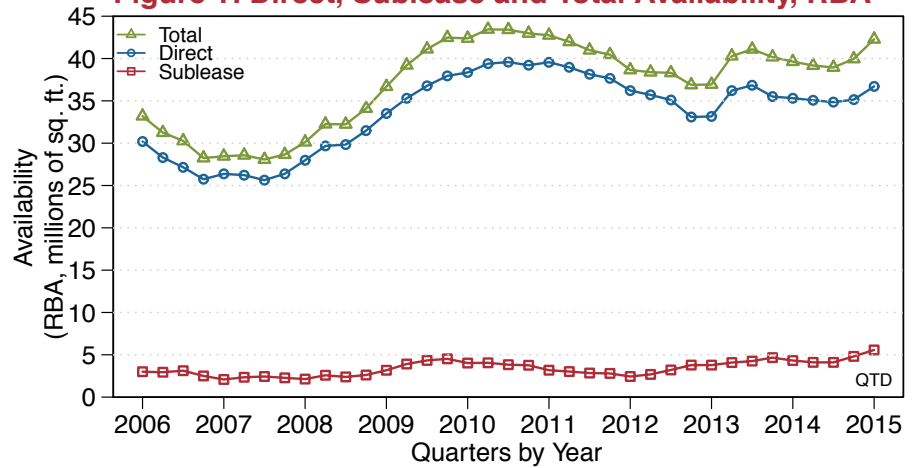
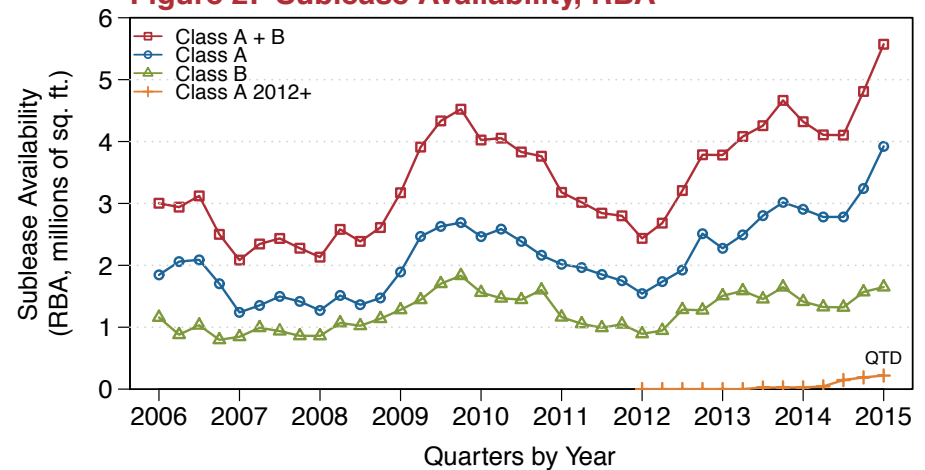


Figure 2: Sublease Availability, RBA



important variation in sublease availability. Figure 2 shows sublease availability on a smaller scale of RBA for four categories of office buildings: Class A and B buildings, Class A buildings, Class B buildings, and new Class A buildings constructed in 2012 or later. As seen in this graphic, changes in sublease availability through time can be quite pronounced, but what metric is best to express such changes relative to direct availability given differences in their magnitudes (36,700,000 vs. 5,500,000 sq. ft.).

Traditional CRE metrics have expressed sublease availability as a percent of total RBA of a metropolitan area, but this can produce incorrect conclusions about changes in direct and sublease availability. Currently, direct and sublease availability are ~14% and 2%, respectively, of Houston's total RBA for Class A and B buildings. Expressing direct and sublease availability as a percent of total RBA is misleading, as the denominator of total RBA can change independently (e.g., due to deliveries) and/or concurrently with direct and

sublease availability. This is like expressing free throw percentages of a basketball player as a percent of all players on a team, rather than as a percent of an individual's total throws.

Another metric that more clearly depicts market shifts between sublease and direct space is to express sublease availability as a percent of total availability. Percent sublease availability is sublease RBA divided by total available RBA. In this way, sublease availability is a fraction of total availability so that percent direct and sublease availability sum to 100. For example, percent sublease availability is about 13% for Class A and B buildings as of March 1, 2015, that is 5,500,000/42,200,000. Because the denominator is total availability, rather than total RBA, direct availability is readily deduced as 87% (i.e., 100 - 13). Also, the denominator of total availability changes in accord with changes in direct and sublease space. Ultimately, it is important to know the relative availability of sublease to direct space (e.g., 13 vs. 87%), as this is what can underlie shifts in market dynamics.

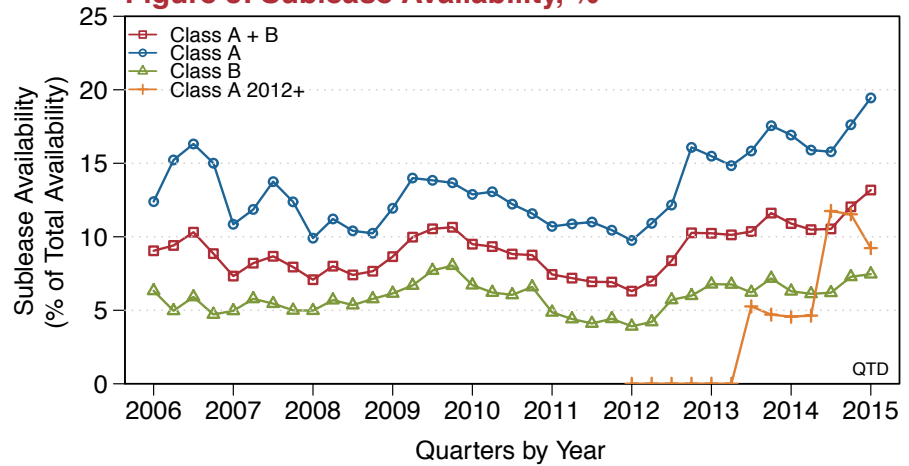
## Market Shifts in Office Sublease Availability

We are now seeing the highest levels of sublease availability in the past 10 years (Figures 2,3). Overall, sublease availability manifests most strongly in Class A over Class B buildings. As detailed in Table 1, sublease space as of March 1, 2015 accounts for 13.2% of Class A and B buildings, representing an increase of 20.9% YoY. Even more pronounced is the 19.4% sublease availability of Class A buildings, up 10.4% since Q4 2014 and 14.9% YoY. Class B buildings have lower subleasing at 7.5%, but still up 18.5% YoY. Sublease availability in new Class A buildings constructed in 2012 or later is down -19.9% since Q4 2014, but is up 102.2% YoY.

While current levels of sublease availability are high (Table 1), there have also been prior periods of increased sublease availability (Figure 3). Importantly, historical patterns indicate that sublease availability can increase under both weakening and strengthening office markets. For example, during 2008 - 2009 of the Great Recession, sublease availability increased from 10% to 15% for Class A buildings, followed by 2-3 years of steady declines in sublease availability to just less than 10%. In this case, the increase and spike in subleasing was likely attributable to tenants contracting their businesses with the economic recession. Then, from 2012 - 2014, subleasing again increased for Class A buildings, this time from 10% to 18% before settling down to 16-17%. In this case, subleasing increased as tenants expanded and relocated their businesses with the economic growth following the Great Recession.

Prior increases in sublease availability have included similar directional movement between the economy and oil prices. In contrast, the current increase in sublease availability is accompanied by strong economic growth at local, state and national levels, but yet a downturn in the energy sector with oil prices. In other words, the economy and oil are moving in opposite directions. For this reason, it is difficult to objectively interpret the current increase in sublease availability and its impact on the office market without thorough statistical analyses accounting for concurrent trends in oil versus economics. With that said, based on assigning sublease RBA to energy versus other sectors, we estimate that, of all office subleases >10,000 sq. ft., 65% are related to Houston's energy

Figure 3: Sublease Availability, %



sector. This suggests a modest quantitative effect of the decline in oil prices on Houston subleasing of about 25% above that null expectation of about 40%.

### Does Sublease Availability influence Asking Rents?

Figure 4 plots direct and sublease asking rents with percent sublease availability for Class A (Figure 4A) and Class B (Figure 4B) buildings from 2006 - 2015. These data show two patterns. First, an upward trend occurs for increases in both asking rents and sublease availability over the 2006 - 2015 time series.

In other words, the temporal data appears to have an inherent positive correlation between rents and sublease availability. Second, little correspondence occurs in the short term (quarterly) ups and downs of sublease availability with the ups and downs of asking rents, despite both having general upward trends from 2006 - 2015.

Using linear regression models, we tested for statistical effects of percent sublease availability on both direct and sublease asking rents for Class A (Figure 4A) and Class B (Figure 4B) buildings. There was a positive relationship between asking rents and percent

Figure 4A: Class A, Rent vs. Sublease Availability

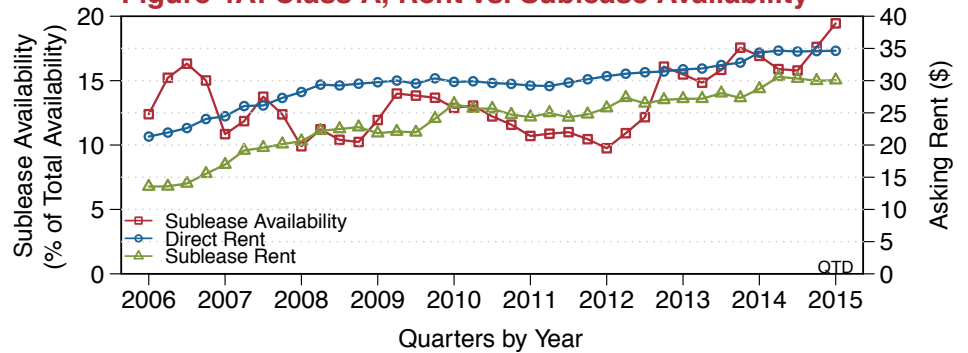
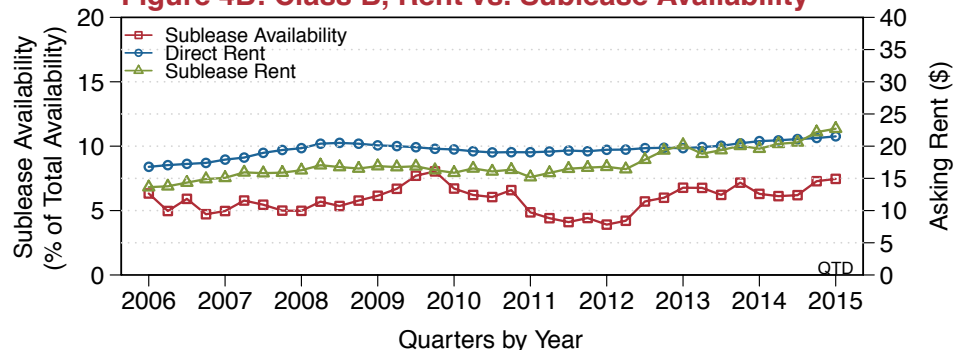


Figure 4B: Class B, Rent vs. Sublease Availability



sublease availability: asking rents increased with percent sublease availability. This makes sense for strengthening but not softening office markets. Importantly, the statistical relationships are likely spurious correlations, as both rent and sublease availability increase over the time series (Figure 4). In other words, a positive relationship could potentially emerge between asking rents and any other such variable that also has an upward trend in the time series.

We must always be aware that correlation does not mean causation, particularly when the individual samples are measured in time, as is the case here with sublease availability and rents measured each quarter from 2006-2015. Let's not forget the textbook example of the spurious correlation between the number of priests in American cities and the incidence of alcoholism. As cities get larger so do the number of priests and the number of alcoholics, but certainly priests do not cause alcoholism. Similarly, to suggest that greater sublease availability leads to increased rents may not be accurate, particularly given that some increases in sublease space arise from a softening office market with tenant contractions in business.

## Take Home

As a result of declines in oil prices, subleases are certainly increasing with the downsizing of energy related businesses. Yet, caution is warranted in interpreting sublease availability as an indicator of an overall softening of the office market. Upward trends could be due to the ongoing growth in Houston's economy extending from 2012 - 2014, the pullback in the energy sector of recent quarters, or the synergistic influence of both. Ultimately, multivariate times series statistics are needed to control for temporal autocorrelations in order to test the underlying variables responsible for changes in subleasing (declining oil vs. economic growth).

The limited relationship between asking rents and sublease availability may be due to the fact that the data are not actual negotiated rents, nor do they include concessions. Even in a softening market, sublease space must be relevant to a tenant's needs. For example, a large block of 250,000 sq. ft. of space vacated by an energy company is not pertinent to a smaller business requiring

5,000 sq. ft. Nevertheless, on a case-by-case basis, increased sublease availability may aid tenants in their lease negotiations, depending on the building's occupancy and submarket.

## Methodology

Data were obtained from CoStar on the last day of February for this March 2015 report. The statistical analyses and data visualization were performed using the R software and programming language:

R Core Team (2014). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.R-project.org/>.

We used linear regression to examine the effects of percent sublease availability on (1) direct asking rents for Class A buildings, (2) sublease asking rents for Class A buildings, (3) direct asking rents for Class B buildings, and (4) sublease asking rents for Class B buildings. For brevity, the detailed statistical output of these linear regression models are not included herein, but are available upon request.

Despite significant positive relationships between sublease availability and each of the four rent variables, there is an inherent upward trend over time among them. This indicates that the positive relationships are likely arising from spurious correlations associated with autocorrelation and partial autocorrelation of the time series data. Caution is warranted in accepting the alternative hypothesis of positive relationships between rent and sublease availability. We anticipate a forthcoming paper in which thorough multivariate time series analyses are performed to further illuminate the complex relationships among the office market, the economic environment, and the energy industry, each of which underlay the effects of subleasing on office rents.

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Dr. J. Nathaniel Holland is a research scientist with 20 years of experience in using the scientific method to extract information from complex multi-dimensional data. He joined NAI Partners in 2014 as Chief Research and Data Scientist. At NAI Partners, Nat leverages his sharp intellectual curiosity with his skills in statistical modeling to guide data-driven business decisions in commercial real estate. Like many data scientists in the private sector, Nat joined NAI Partners following a career in academia. Prior to taking up data analytics at NAI Partners, he held professorial and research positions at Rice University, University of Houston, and the University of Arizona between the years of 2001 and 2014. Nat is the author of more than 50 scientific publications, and he has been an invited expert speaker for more than 60 presentations. Trained as a quantitative ecologist, he holds a Ph.D. from the University of Miami, a M.S. from the University of Georgia, and a B.S. from Ferrum College.



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