The Determinants of Office Tenant Renewal

by

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Abstract

This study empirically examines the historical probability of renewal for nearly three-hundred properties across forty-one Metropolitan Statistical Areas throughout the United States. It then investigates the factors that affect the office tenant renewal decision using linear and probit regression models.

Through statistical analysis, several factors emerge as influential in the renewal decision, including the size of the occupied space, the level of employment in the market, as well as location. Logical building characteristics such as the age of the space and the size of the building did not appear to have as large of an impact on renewal probability. For the more than 15,000 individual leases in this study, the overall renewal probability was lower than expected. However, the regression analysis has revealed some explanation of the difference between the actual results and the industry accepted renewal probability rate of 75%.

Thesis Supervisor: William C. Wheaton

Title: Professor, Department of Economics

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Chapter 1: Introduction

Context Overview

Most office building investors underwrite using a 70 to 75% renewal probability factor for market rents as the "accepted" standard. Unfortunately there is little to no research to back up this figure. In this study I will empirically examine the historical probability of renewal for nearly three-hundred properties across 41 Metropolitan Statistical Areas (MSA's) throughout the United States.

Additionally this study will contain an investigation of the factors that affect whether a tenant renews a lease. Analysis will be performed on the property level looking at the influence of building characteristics and external economic factors on renewal probability. Characteristics such as building height, size, age, location, employment and vacancy will be included as independent variables in a standard linear regression. Then, a probit regression will be conducted on over 15,000 individual leases to determine predictive measures for tenant renewal such as lease square footage and year, combined with the previous factors of building characteristics and economic variables. Analysis of these factors will provide a better understanding of the issues that affect renewal probability in hopes that more accurate predictions of lease risk and thus value can be made.

The average office lease term today is five years, meaning that in any given year, approximately twenty percent of leases in a building will be up for renewal.[1] This fact demonstrates the magnitude of the importance of retention. The costs and risks associated with renewal probability can be quite high. In the present market conditions with peak tenant improvement allowances and high vacancy rates, retaining tenants can be a key factor in the profitability of a property. With an average deal square footage of nearly 12,500 for this study's data, assuming an annual office rent of $25 per square

[1] C. Kusbit & J. Sutton, "Tenant Retention: Making it Hard to Leave." Journal of Property Management 56.1 (1991): 18

foot with six months vacancy, non renewal could result in a loss of over $150,000 in rent alone.

The following chart illustrates a simplified cash flow for an individual lease of 12,500 square feet, an annual rent of $25 per square foot, tenant improvements equal to one year's rent and a projected vacancy of 6 months in the event of non renewal, under three different scenarios. As you can see, with a 100% renewal probability, the cash flow is four times that of a property with a renewal probability of 50%. If you can increase the probability from 50% to 75%, the projected cash flow is 2.5 times greater. This provides clear evidence that these are in fact significant costs that can greatly alter the value of a property.

Renewal Probability:	50%	75%	100%
Rent	$312,500	$312,500	$312,500
Vacancy	($78,100)	($39,100)	$0
Tenant Improvements	($156,300)	($78,100)	$0
Cash Flow	$78,100	$195,300	$312,500

Furthermore, if you were to look at the effect of renewal probability from the overall building perspective, you would see the ramifications of renewal. For instance, as stated previously, approximately 20% of leases in a building are up for renewal each year. If a 50% renewal probability were applied, 10% of leases would vacate per year. For clearer illustration, assume that this equates to 10% of the building. For the 10% who vacate, under average market conditions there is six months of vacancy which equates to 5% of the annual rent roll. Additionally, to replace the 10% who vacate, an owner will most likely have to pay one year's rent in tenant improvements for the new occupant. This would then equate to 10% of the yearly rent, for a total 15% loss in income per year. Even with a 75% renewal probability, this would still equate to 5% of tenants vacating resulting in a loss of 7.5% of the annual rental revenue. For large facilities, this can equate to a substantial amount of money, and for smaller properties this could be the difference between making a profit and incurring a loss.

Therefore, it is imperative that owners and managers of office space have a clear understanding of what factors are most conducive to tenant renewal and additionally,

that analysts apply accurate forecasts of renewal probabilities in their valuations. As real estate professionals continue to refine cash flow analyses into more precise measures, the improved accuracy of this small component will have significant consequences.

Literature Review of Related Issues

There is no formal research on this topic, however there is a small amount written on what professionals in the field feel are important factors in tenant retention. In many cases tenants will choose not to renew based purely on organizational needs; in this case if a tenant chooses not renew it is through no fault of the property or management. On the other hand, there is plenty of turnover that is due to deficient building maintenance, non responsive management or just overall poor customer service. This type of turnover is avoidable and should be addressed to maximize the retention of tenants. There are more quantifiable factors such as rent, occupancy costs, economic conditions and maintenance issues that can be tracked to boost understanding of their relationship to tenant turnover. However there are also qualitative aspects that some fervently deem as key components in the tenants' decisions to renew.

Robert Chapman, a senior executive at Duke Realty in Duluth, Georgia believes strongly that regular visits with tenants can help increase retention through management's enhanced awareness of tenants' needs and expectations as well as higher levels of tenant satisfaction. Chapman also believes that a simple requisite is to hire amiable front line employees who understand the value of customer service.[2]

David Agnew, founder of Amstar Group feels that amenities are an important element of the building that influences tenant satisfaction. Agnew believes that the quality amenities his organization provides has led to a more stable tenant base. Services such as day care, banking, and food on-site can increase the contentment of tenants.[3] These variables are important but their effect on tenant renewal is harder to justify than

[2] J.J. Madsen, "Office Tenants: Unlocking the Secrets," Buildings 98.1 (2004): 33.
[3] S.E. Roulac, "Interview with David B. Agnew founder of Amstar Group, LTD.," Briefings in Real Estate Finance December 2.3 (2002): 271.

the larger items such as rent. This is also reflected by the fact that the people who enjoy the amenities are not necessarily the people making the real estate decisions for the organization.

Another important issue that has been seen through research is that tenants tend to move to nearby space rather than out of the area.[4] This is an indication of tenant dissatisfaction with the space, the lease or management, rather than a move due to business objectives. There are organizational risks connected with any move for the tenant, such as increased employee turnover and disruption of work. These risks and associated costs increase with longer distance moves. Therefore, it is often in the best interest for the tenant to renew their lease. However, tenants will not choose to renew unless they feel they have quality space with responsive management.

Experienced professionals believe that the keys to tenant renewal are tenant contact, excellent service and value for money.[5] Customer service can be enhanced through tenant contact; some suggest a tenant liaison that offers personal communication and a single source for all tenant issues. By assigning a single representative, tenants not only feel as if they are more cared for, but also have someone who understands their space and can be most responsive to their needs. Furthermore, with the technology boom, many property managers are using web-based programs to improve communication with their tenants. These applications increase management's speed of response while enabling virtually effortless recording and tracking of maintenance patterns and recurring issues, augmenting the level of customer service.[6] Other ways to increase service is to send holiday gifts, provide a suggestion box so that all inhabitants of the space can have input, or, produce a newsletter. Encouraging interaction between tenants in a building can also boost tenant satisfaction through the establishment of a community attitude amongst tenants.[7]

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[4] Kusbit and Sutton 19.
[5] Kusbit and Sutton 18
[6] R. Giordanella, "Better Tenant Retention: Streamlined Service Request Processing Key," Buildings 97.8 (2003): 14.
[7] P. M. Ching, "Initiating a Tenant Retention Program," Journal of Property Management 53.4 (1988): 32.

Tenant surveys are a proactive approach to meeting the needs of tenants. They serve as a "report card" for management; a check to easily see how they are doing from the tenant perspective.[8] Surveys should be specific, yet simple in order to maintain the highest possible response rate. However, it is crucial to note that if you are to question tenants about issues, it is just as important to respond to their complaints and suggestions for improvements, even if it is just to explain why the issue cannot be corrected. While market circumstances can affect tenant renewal, overall tenant retention is a strong indicator of the worth of a management team, their ability to maintain relationships with tenants and either keep them in their space or move them within the organization's portfolio.[9]

While all these factors are relevant to a tenant's decision to renew, a large factor will always be the cost of the space. A tenant should feel that they are getting a good value. After all, the costs associated with replacing them are high, so offering a fair deal is in the best interest of both parties. Rental packages should be competitive with other buildings in order for tenants to renew their lease.[10] Additionally, owners and managers should attempt to maintain competitive operating costs and taxes. These additional costs can vary greatly from building to building, but for an educated tenant they can make or break a deal.[11]

Real estate is more than just a cost to firms these days, it is a strategic asset to the organization and landlords must be conscious of this. The ones that are, will do better than average, while those who ignore this concept will find that tenants do notice.

[8] B. Birkland & L. Bettini, "Finetuning Tenant Surveys," Journal of Property Management, 60.3 (1995): 26.
[9] B. Lavin, "Rethinking Resident Retention," Journal of Property Management 59.6 (1994): 48.
[10] Kusbit and Sutton 20.
[11] J. Dismukes, "Tenant Retention: Job One From Day One," National Real Estate Investor 44.1 (2002): 64.

Important Data Characteristics and Assumptions

The data in this study was supplied by Equity Office Properties, the largest developer of commercial space in the United States. It includes all office leases since 1997. The data was delivered under the following headings:

Field	Description
Record ID#	Record ID number from Lease Database.
Business Unit	Building ID number. Company and Business Unit is the same for stand alone buildings. However, for those buildings located in office parks the last digit changes.
Company	Property ID number.
Business Unit Name	Building Name.
Sub / CBD	Self explanatory.
MSA	Self explanatory.
Submarket	Self explanatory.
Lease ID	Self explanatory.
Tenant Name	Self explanatory.
Suite #	Suite ID number.
Lease Type	Lease type description: New, Renewal or Vacate. New leases can either be existing tenant expansions or new leases. Vacates can be a partial reduction in leased space (i.e. Reduction) or a full vacate (Vacate).
Recon Date	Date when lease was entered into EOP's information systems.
Rptg Qtr	Quarter when tenant moves in or out of the space.
Rptg Year	Year when tenant moves in or out of the space.
Term	Lease Term in months. MTM means month to month.
Deal SF	Lease square footage.
New Face Rate	Self explanatory.
New Avg Rent Rate	Self explanatory.
Old Face Rate	Self explanatory.
Old Avg Rent Rate	Self explanatory.
TI PSF	Self explanatory.
Commission PSF	Total leasing commissions (for the life of the lease).
Annual Net Effective	Self explanatory.
OutBrokerComm	Leasing commissions paid to third party brokers.
HouseComm	Leasing commissions paid to EOP employees.
NAICS	Industry Code.

Some of the variables presented that seem useful as independents could not be applied due to the data collection methodology. For instance rents would be a logical explainer of renewal probability, however, the rents offered for vacated properties were not recorded. Additionally, lease term would also be a logical determinant but was not useable due to the data collection process. Since the data only goes back to 1997,

many of the leases (especially the longer term ones) do not have the previous lease data available, hence the original lease term is unknown.

While there are limitations to this study, overall it offers a reasonable benchmark and provides a beginning understanding of the determinants of renewal probability. For instance, while many leases were vacated at the same time due to large tenants such as Andersen going out of business, that might have skewed data, these are external factors that are present at any point in time. Additionally, while a major drawback is that all of the data came from a singular ownership and management, this has likely not skewed the data too much beyond the true value. While there may be differences in management across organizations that might influence renewal probability, the vastness of the data repair some of the sample bias allowing this to be a useful study.

Chapter 2: Methodology

Calculating Renewal Probability

The raw data consisted of 26,389 leases over a seven year period from 1997 to through May 2004. The data was reduced to a final count of 15,822 according to the following criteria:

- *Industrial properties* that had office space components were eliminated as renewal of space might be different than that of more traditional office space and influenced by different economic conditions and building characteristics.
- *Retail space* leased within office facilities was also eliminated based on tenant name and suite location.
- *Parking agreements* listed as separate leases were unnecessary as they were likely correlated with the actually office space lease decision.
- *Storage space* leased to office tenants was eliminated. These leases are also more correlated with customary office leases, so incorporating them would lead to double counting of the renewal decision.
- *Month to month leases* were also deleted as it is likely that these types of leases have a disparate renewal probability from a more typical office lease. A tenant choosing a month to month lease probably is unsure of their immediate needs or convinced that their needs are about to change, this makes them obvious candidates for non renewal.
- *Leases with incomplete recording of data* were also removed because they would disrupt regression results.
- *Double counting* of expansions and reductions was deleted as well. This was accomplished by sorting data by lease number and by date to eliminate all overlaps. The reason for this necessity of removal was the disparity in the method of which the raw data for this study was recorded. For instance, some offices recorded a lease renewal and expansion as one case, as it should be. However, at other times, this occurrence was recorded separately, once as a renewal and once as an expansion for just the new portion of the lease. These

double counts were eliminated so as not to inflate the probability of renewal. It is important to note that while one might think of the renewal and an expansion as two different leases, particularly if the space is not adjacent in the building, the decision to renew is essentially the same and thus only registered as one data point. This is logical as the amount of space is not the issue in this study, only the decision to stay or vacate. In either case, it is important for the data to be consistent. For this reason alone, this process was necessary.

- *All properties with less than 10 recorded leases* were removed so as to eliminate any skewing of results due to sample size.

Once the final data set was arrived at, the probability of renewal was calculated across building, property (a facility may include more than one building), MSA and year. This was done in Excel using pivot tables to sort and count the data and the following simple equation to calculate the probability:

$$\text{Probability of Renewal} = \frac{\text{\# Renewals + \# Expansions + \# Reductions}}{\text{\# Renewals + \# Expansions + \# Reductions + \# Vacates}}$$

Linear Regressions

A regression enables researchers to look at how one or more independent variables explain a dependent variable. In this case, the dependent variable is the renewal probability on the property level. This is a percentage value between 0 and 100%. In order to best understand what characteristics affect renewal probability, Excel was used to perform a linear regression of building characteristics and general economic conditions to determine their significance.

The following independent variables will be included:

Variable	Description
Year Built	The year the building was built. If the property in question contains more than one building and was built over a range of years, the average of the beginning and ending dates was applied.
Renovated	This is a dummy variable. A value of 0 was assigned if the facility has not yet been renovated, 1 is for renovated buildings.
Update YR	This value was used to replace the combination of the variables "year built" and "renovated." It uses the year built if the building has not been renovated, and the year renovated if applicable.
#Buildings	The number of buildings on the property, most applicable to suburban campuses.
CBD	A dummy variable for context, this assigns a value of 1 if the facility is located in a central business district and a value of 0 if it is a suburban structure.
Class	This represents the quality of the space. It is a dummy variable that assigns a value of 1 for Class A spaces and 0 for all others. (All buildings in this study are either Class A or Class B)
Building SF	The number of square feet in the facility.
# Stories	The number of floors in each facility. If there is a range, the highest floor was used.
Vacancy	This is an economic variable. It is the vacancy rate assigned by submarket. 2004 vacancy rates were used on the property level. This is <u>not</u> the individual building vacancy.
Employment	These are the employment statistics by MSA. They are taken from either May 2004, or if not available, 1st quarter 2004 numbers were used. (Numbers are seasonally adjusted and in thousands.)
EmpGrowth	This represents the percent change in employment from 1990 to 2004.
Dummy MSA's	A dummy variable was created for each MSA, where a value of 1 was assigned if the property was located in that MSA or 0 if it wasn't. Chicago was used as the benchmark.

In order to perform the complex linear regression with more than 16 independent variables, as was necessary in applying the dummy variables to control for MSA, a statistical package other than Excel must be used. In this case STATA was employed.

Probit Regressions

The study of standard econometrics expounds that if in a regression analysis, the dependent variable is a dichotomous dummy variable, then a standard linear probability model will have at least two imperfections. First of all, the results will not be restricted to the two possibilities of the dichotomous variable, namely 1 and 0, but instead may be in between, less, or more, when in fact these are not possible outcomes. Secondly, the residuals (the difference of the observed value of the response variable and the value predicted by the regression line[12]), from such an equation would be heteroskedastic.[13] Heteroskedastic denotes random variables in the series that have changing (non-constant) variances.[14]

To counter these effects logit and probit models can be applied to permit the use of both categorical and continuous independent variables in conjunction with a categorical dependent variable, such as in the case of this study where the dependent variable is to renew or not to renew a lease, equated to a dummy variable of 0 for non renewal and 1 for renewal occurrences. Both logit and probit usually lead to the same conclusions for the same data.[15] However, the logit regression is the natural log of the odds ratio, which is essentially the ratio of two odds and is a summation measure of the relationship between two variables[16]. In contrast, the function used in a probit regression is the inverse of the standard normal cumulative distribution function, the S-shaped curve which results when you add up the bell-shaped normal curve, moving from a z score of negative infinity to z score of positive infinity. A z value is a measure that quantifies the difference between the mean of the data set and the data point (measured in standard deviations); in essence it is a standardized observation.[17] The probit model is a nonlinear model that allows us to estimate models with binary dependent variables. The probit model is a slightly more difficult model to estimate (it

[12] D.S Moore, The Basic Practice of Statistics (New York: W.H. Freeman and Company, 1997) 129.
[13] E.R. Berndt, The Practice of Econometrics: Classic and Contemporary. (Reading, Addison Wesley Publishing Company, Inc., 1991) 654-657.
[14] Wikipedia, The Free Encyclopedia. (2004). Heteroskedasticity, Retrieved July 10, 2004, from encyclopedia.thefreedictionary.com/Heteroskedasticity.
[15] Berndt 654-657.
[16] Garson, G.D. (2004). *Log-Linear, Logit, and Probit Models*, Retrieved July 10, 2004, from **www2.chass.ncsu.edu/garson/pa765/logit.htm**
[17] Moore 129.

cannot be done in Microsoft Excel, instead a more complex statistical package must be used), but the predicted probabilities of the probit model will lie in the range [0,1] as long as the values of the independent variables are chosen between the relevant ranges.[18]

Additionally, while logistic regression is based on the assumption that a dependent categorical variable reflects an underlying qualitative variable and uses the binomial distribution, probit regression assumes the dependent categorical variable suggests an underlying quantitative variable and, it uses the cumulative normal distribution.[19]

Probit models tend to come to the same conclusions as logistic regression, as pointed out previously. Yet, they have the drawback that probit coefficients are more difficult to interpret, hence it is rarer to utilize a probit analysis. However, in the case of this analysis, it is the most appropriate choice because it will best allow the determination of the effects of the independent variables on a quantitative, yet dichotomous variable such as office tenant renewal.

As mentioned above, probit coefficients are much more difficult to interpret because they are not equal to a linear change in the dependent variable but rather they are equal to the effect of the independent variable on the z scores of the dependent variable. Because the probability of the dependent variable is not a linear function, the effect of a unit change in the independent variable on the probability of the dependent variable depends on the level of the independent variables. Therefore to measure the effect of a probit coefficient it is necessary to select some level of the independent variable as a reference point. The standard point that is typically used is when all independents are at their sample means.[20] While using regression coefficients to determine predicted values of the dependent variable can be easily done by hand for a linear regression, employing the assistance of statistical software is highly recommended due to the complexity of a probit regression.

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[18] Zillante, A. (2003). *Linear Probability and Probit Models*, Retrieved July 10, 2004, from garnet.acns.fsu.edu/~alz9794/metricch11.pdf.
[19] Garson, July 10, 2004
[20] Garson, July 10, 2004

Furthermore, some assumptions about the data must be addressed in a regression analysis. Adequate sample size must be considered, but is not an issue in any of the regressions that will be performed with regard to this analysis. Well over 15,000 leases will be used on the lease level and nearly 300 buildings on the property level, with at least 10 leases used to calculate the property level renewal probability. There should be no large outliers in the data set which will be controlled for using a min/max analysis. However, this is also not a large consideration in this analysis as the majority of the independent variables are categorical. It is imperative that there be independence across all data points. If data are not independent, research cannot tell if association is due to correlated observations or correlated variables.[21] As mentioned previously, double counted leases were removed in order to correct for any correlation between data points.

Using a probit model, the dependent variable on the lease level will be either 1 or 0, according to whether the lease is a renewal or vacate. The independent variables used above in the linear regression will be applied along with the following additional independent variables, applicable to the lease level regression:

Variable	Description
abdealsf	Absolute value of the lease in square feet: this variable represents the square footage of the initial lease before the decision to renew or vacate is made.
Dummy Year	A dummy variable was created for each year (1997-2003), 2004 represents the year value for which these variables are being benchmarked against.
deal	The deal variable represents the deal as a percentage of the square foot of the property. It is equal to the variable "abdealsf" divided by "buildingsf."
d5,d10,d20	These are dummy variables that control for "deal" size, for instance for the d5 variable, a lease that is greater than 5% of the building sf would receive a value of 1, if not a value of 0 will be assigned. The d10 and d20 variables represent deals greater than 10% or 20% respectively.

[21] Garson, July 10, 2004

Chapter 3: Renewal Probability

Summary Statistics

The following section details some of the statistics associated with the data on the property level in order to provide a general understanding of the relevant means, ranges and standard deviations. Chart 3.1 below outlines the general statistics of the renewal probability, specifying a mean value of just over 57%, this value is only three quarters of the industry standard of 75%, a significant difference. The median is slightly higher at 58%, with the probabilities ranging from 14% to 90%. This data does not adjust for square footage which is likely a key influence on renewal probability.

Chart 3.1: Renewal Probability Statistics by Property

	Renewal%
Mean	**0.572918**
Standard Error	0.006983
Median	0.581395
Mode	0.5
Standard Deviation	0.11871
Sample Variance	0.014092
Kurtosis	1.053297
Skewness	-0.47522
Range	0.757143
Minimum	**0.142857**
Maximum	**0.9**
Sum	165.5733
Count	289
Confidence Level(95.0%)	0.013744

The histograms on the next page chart this data with bins of 10% increments. The first charts (see Chart 3.2) the data by property, illustrating that over 80% of the properties have renewal probabilities between 50 and 80%, and over 90% have probabilities between 50 and 90%.

Chart 3.3 graphs the data by MSA, revealing that 85% of the MSA's have renewal probabilities between 60 and 80%. The data in both cases appears to be fairly normally distributed.

Chart 3.2: Frequency of Renewal Probability by Property

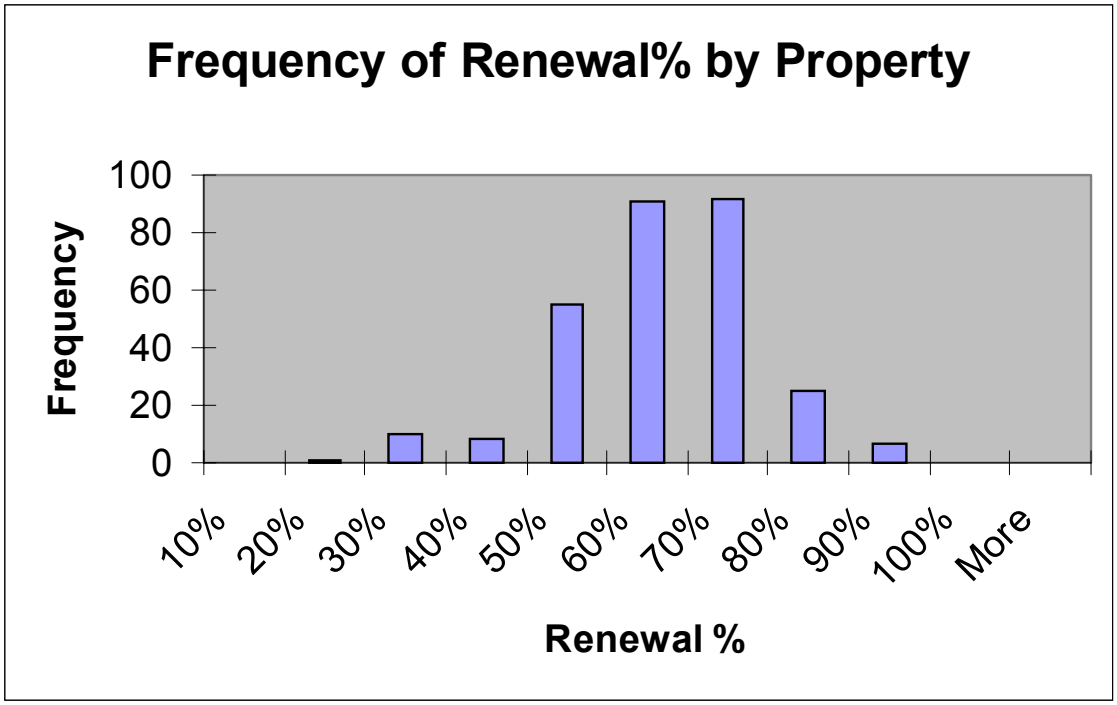
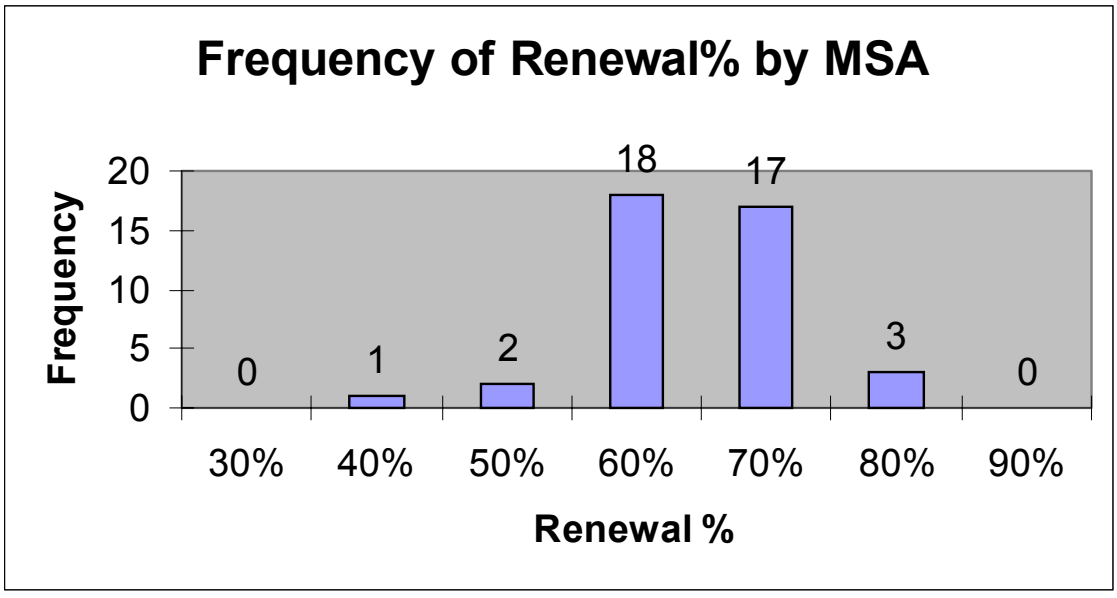


Chart 3.3: Frequency of Renewal Probability by MSA



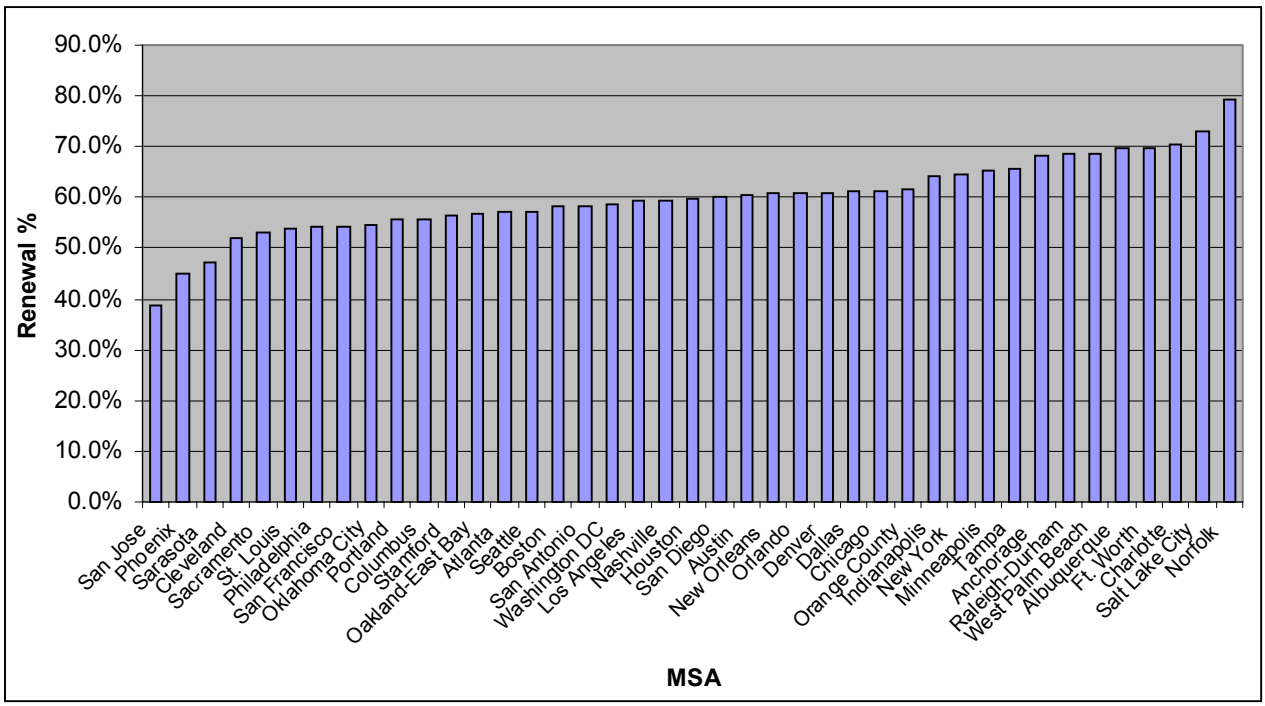
Probability of Renewal

Chart 3.4 shows the overall renewal probability for all of the office leases in the historical data. The overall rate of 58.5% is lower than expected but can perhaps be better understood as it is broken out using alternative modes to best perceive what variables influence renewal most. These factors can be combined in order to attain a closer estimate for renewal probability of a given lease, based on its characteristics, rather than applying an unexplained industry standard. Additionally, in Chart 3.5, the data is presented by MSA. Norfolk obtained the highest renewal probability with a value of 79.2% while San Jose received the lowest value of 38.6%. This data shows that there is a definite difference in renewal across location, however, we will need to wait for the regression to determine whether these differences seem to be consistent or whether they constantly change over time. Exhibit A in the Appendix lists the exact probabilities for each MSA.

Chart 3.4: Total Renewal Probability by Lease Type

Year	Expansion	Reduction	Renewal	Vacate	Total	Renewal
Grand Total	3557	1359	4341	6565	15822	58.5%

Chart 3.5: Renewal Probability by MSA



An alternative perspective, Chart 3.6, looks at the renewal probabilities across time. The future years have renewal rates of 100%, however this is likely due to the system that records future renewals, but not vacates. Furthermore, these leases are only a small portion of the total and therefore have little effect on the overall renewal rates. The lowest rate was in 2001 with a percentage of 52.7, while the first half of 2004 has a renewal rate of 78.3%. These rates are not adjusted seasonally, so there is a possibility that 2004 is higher only because the year is not complete. This is likely since the rate is much higher than any other of the analyzed years, although, the graph shows that the rate has been rising consistently since the low in 2001. This variation may be a result of an over abundance of space being occupied as companies grew at record speed during the internet boom. Perhaps after the current recession commenced in 2001, lowering renewal rates radically, the space market began to readjust and return to its usual rate, around 60%, with 2004 being somewhat of an idiosyncrasy, as it is incomplete.

Chart 3.6: Renewal Probability by Year

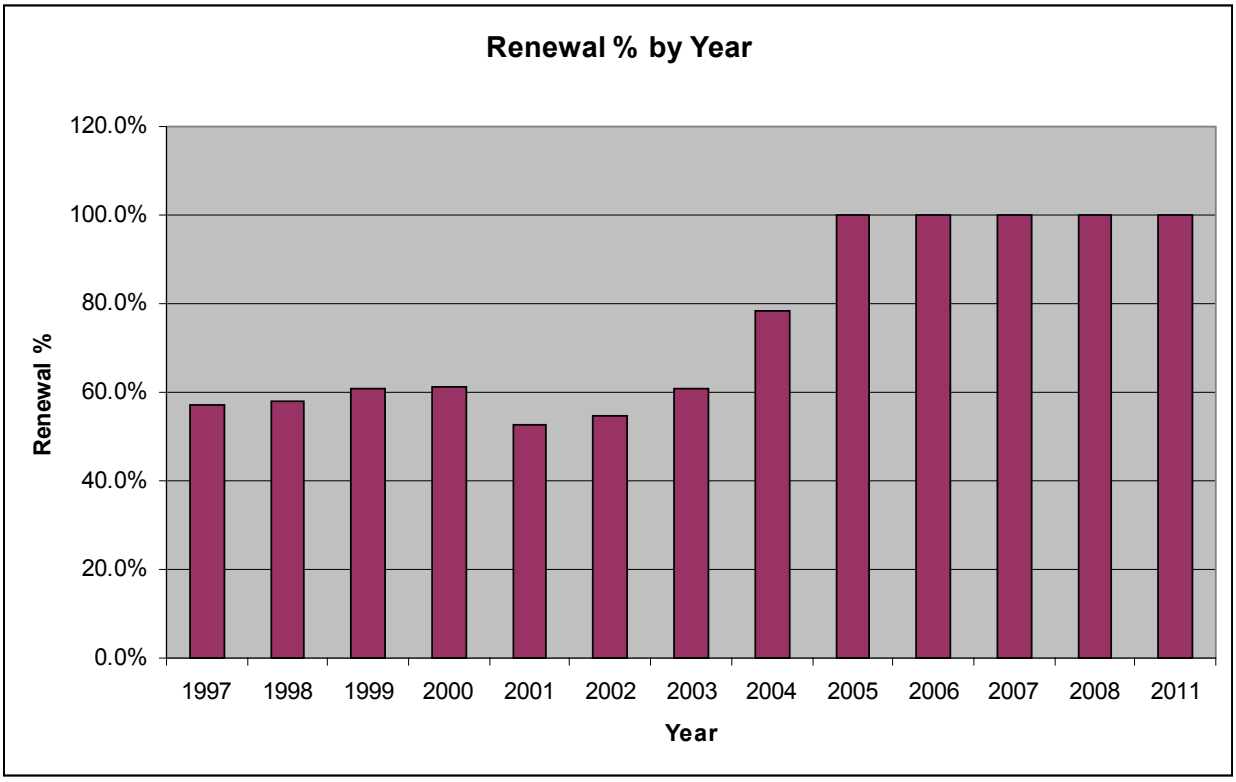


Chart 3.7: Weighted Renewal Probability by MSA

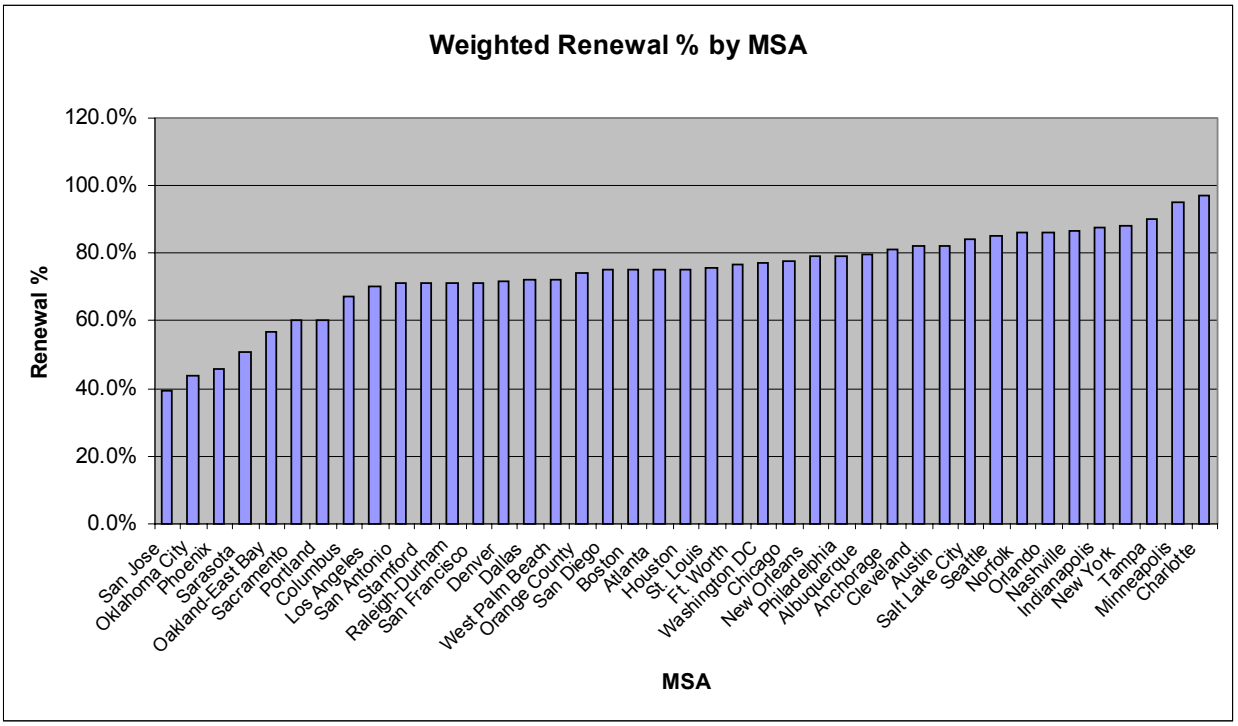
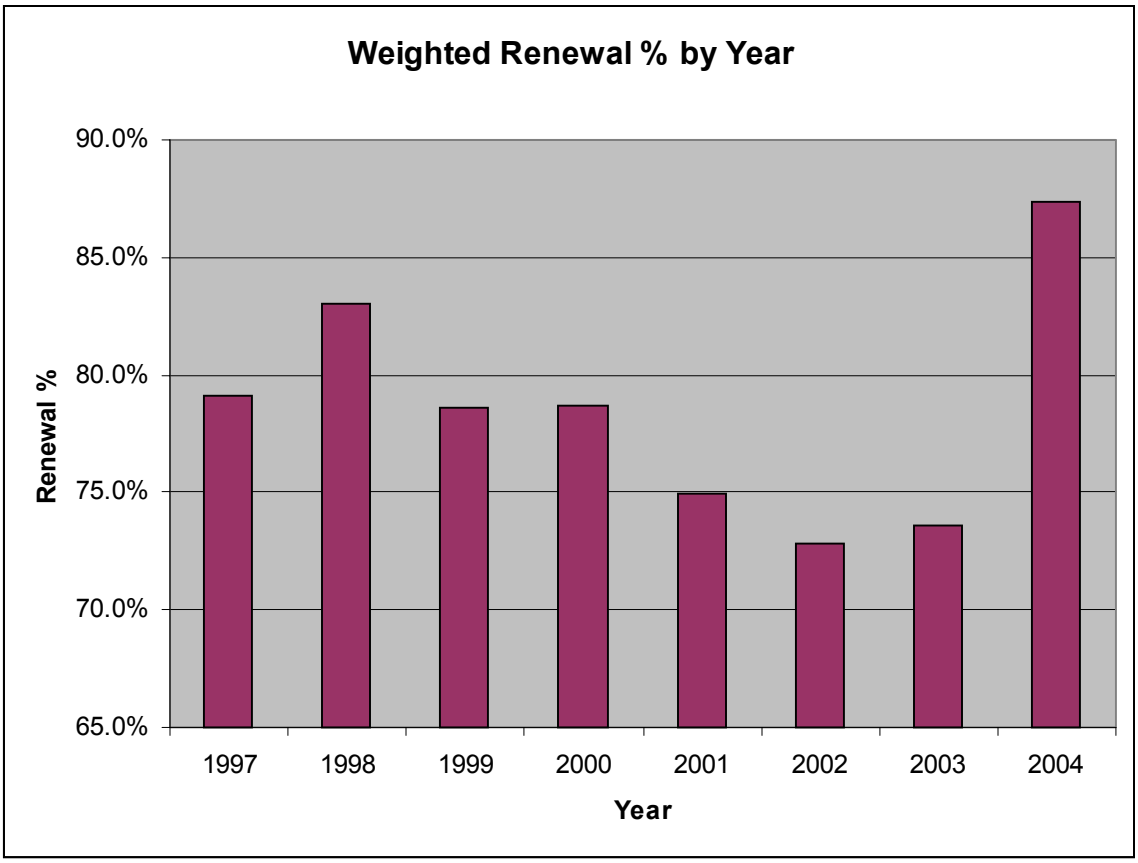


Chart 3.7 above, illustrates the weighted renewal probabilities by MSA. Essentially it is showing the average probability of renewal for each square foot of space in the analysis. As you can see this drastically alters the rankings. The weighted values result in a towering renewal probability of 97.3% for Charlotte, however, San Jose still receives a below average score of 39.5%. The overall renewal percentage becomes much higher with a weighted value of 76.6% which can be seen in Chart 3.8, below where the weighted renewal probability is broken out by year. Here the renewal probability rankings are also altered from the non-weighted values with 2002 earning the lowest renewal rates with a probability of 72.9%, while 2004 remains strong at 87.4%. This evidence is consistent with the argument that the larger the space a tenant occupies, the more likely they are to renew. When broken out on a per square foot basis, renewal is higher because on the non weighted version, each lease counts equally, whereas on the weighted version, larger square footage leases, which are postulated to have higher renewal rates, carry more weight and bring up the average. While this number is not necessarily relevant to a pro forma analysis, it does strongly

support applying higher renewal chances in an analysis for a larger lease. Appendix Exhibit E & F list the exact weighted probabilities by MSA and Year, respectively.

Chart 3.8: Weighted Renewal Probability by Year



As we can see the square footage of a lease affects renewal probability. The data shows that as predicted, that larger leases tend to have higher renewal probabilities. This is clearly illustrated in Chart 3.9, which looks at leases below 5,000 square feet versus those greater than 5,000 square feet. There is significant deviation in renewal probability percentage, as the larger leases have renewal probabilities that are over 30% higher. This characteristic becomes stronger as the bar on lease size is raised. With the frontier set at 20,000 square feet the difference is 25 points, an increase of 45% over the smaller leases' average renewal probability. This strengthens the argument even further that lease size plays a tremendous role in the decision to renew.

Chart 3.9: Renewal Probability by Square Footage

SF	Expansion	Reduction	Renewal	Vacate	Total	Renewal %
<5,000	1,303	402	2,794	4,139	8,638	52.1%
5,000+	2,149	927	1,365	2104	6,545	67.9%
SF	**Expansion**	**Reduction**	**Renewal**	**Vacate**	**Total**	**Renewal %**
<10,000	1,965	662	3,461	5,191	11,279	54.0%
10,000+	1,487	667	698	1,052	3,904	73.1%
SF	**Expansion**	**Reduction**	**Renewal**	**Vacate**	**Total**	**Renewal %**
<20,000	2,556	895	3,855	5,807	13,113	55.7%
20,000+	896	434	304	436	2,070	78.9%
SF	**Expansion**	**Reduction**	**Renewal**	**Vacate**	**Total**	**Renewal %**
<20,000	2,800	1,014	3,996	6,000	13,810	56.6%
20,000+	652	315	163	243	1,373	82.3%

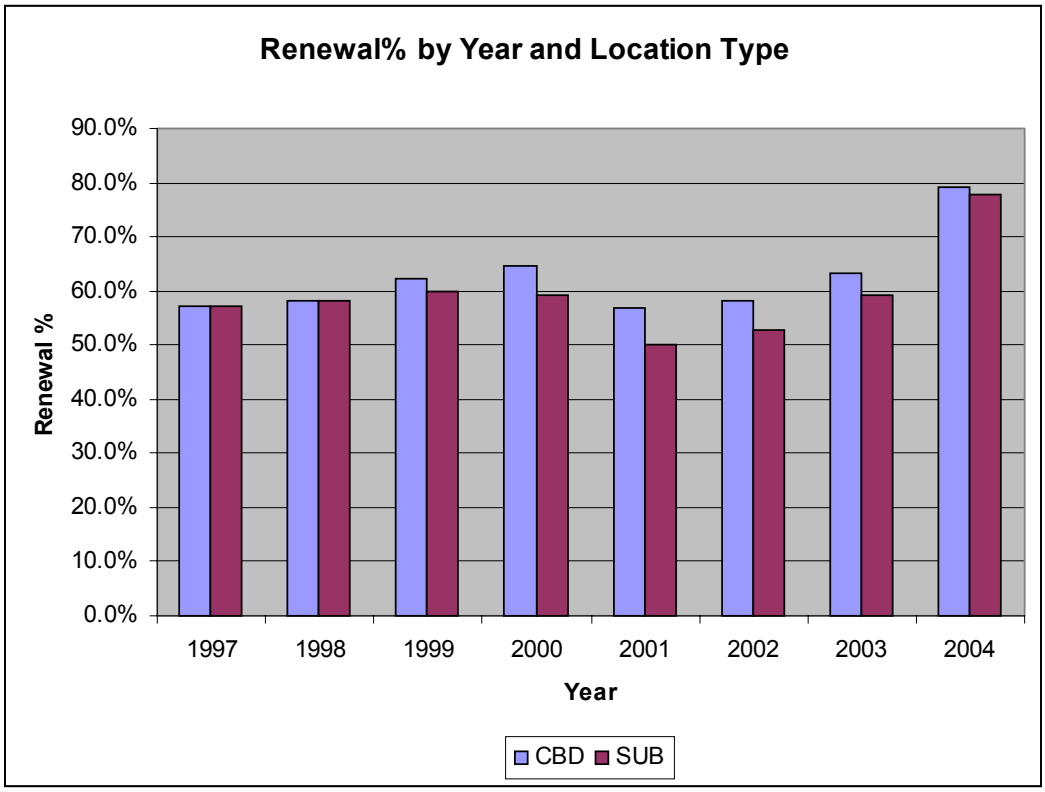
Chart 3.10: Renewal Probability by Location Type

Location type	Total	%Renewal
CBD	5834	**61.3%**
SUB	9988	**56.9%**
Grand Total	**15822**	**58.5%**

Another way to present the data is by location type. Chart 3.10 breaks out the renewal probability between properties located in the central business district versus more suburban properties. As is evident, the CBD's have a slightly higher renewal probability, though its not very substantial, not even 10%. However, when broken out by year, as in Chart 3.11, it is evident that while not very significant, CBD's consistently have higher renewal rates than suburban facilities. There are many rationales that might explain this phenomenon. For instance, space is perhaps tighter, there is lower vacancy, or, the cost of moving may be higher for an urban location, which encourages tenants to stay. Turnover cost is definitely greater for the owner as rents tend to be higher in urban locations. As a result, perhaps urban landlords are more willing to negotiate to keep their tenants in urban locations. One other potential reason stems from the employee side. In an urban location, employees tend to rely on public transportation. A change in location could disrupt their commute greatly. People tend to live on a train line that gets them to and from work easily. A short locational move of the workplace may cause them to need to make transfers, greatly increasing their

commute time. On the other hand, in suburban locations, employees tend to commute by car. A change in location alters their route, but not necessarily their difficulty in getting to work, as long at the new location is in the vicinity of the original office. Appendix Exhibit G lists the exact probabilities that are illustrated in Chart 3.11.

Chart 3.11: Renewal Probability by Year and Location Type



Chapter 4: Linear Regression Statistics and Results

Lease Level Data Statistics

The chart below details the descriptive statistics associated with some of the variables used in the probit regressions on the lease level. The average age of the buildings in question is nearly 25 years old while the average deal size is approximately 12,500 square feet. This is much larger than what others in the industry consider the average lease size, which according to the study would suggest that the findings are higher than average.

As you can see from the "Buildings" statistics below most of the properties in question consist of only one building rather than a campus setting. The "Deal" statistics as stated above looks at the square footage of the deal as a percentage of the total building square footage. The mean deal percentage is 2.77%, however a median value of .9% indicates a skewed distribution with the majority of deals being a very small portion of the building.

Chart 4.1 Independent Variable Statistics on the Lease Level

Year Built		ABDealSF		BuildingSF	
Mean	**1980.554**	**Mean**	**12495.31**	**Mean**	**647821.8**
Standard Error	0.112908	Standard Error	266.8979	Standard Error	5036.235
Median	1984	Median	3658.5	Median	462890
Mode	1987	Mode	2000	Mode	3065624
Standard Deviation	13.97421	Standard Deviation	33032.86	Standard Deviation	623314.2
Sample Variance	195.2785	Sample Variance	1.09E+09	Sample Variance	3.89E+11
Kurtosis	16.07349	Kurtosis	97.56095	Kurtosis	6.678021
Skewness	-3.77395	Skewness	8.297911	Skewness	2.500872
Range	104.5	Range	646481	Range	3046732
Minimum	1895.5	Minimum	6	Minimum	18892
Maximum	2000	Maximum	646487	Maximum	3065624
Sum	30338127	Sum	1.91E+08	Sum	9.92E+09
Count	15318	Count	15318	Count	15318

Chart 4.1 continued

Stories		Buildings		Deal	
Mean	**20.09322**	**Mean**	**3.069722**	**Mean**	**2.775545**
Standard Error	0.122749	Standard Error	0.047796	Standard Error	0.047388
Median	16	Median	1	Median	0.918535
Mode	6	Mode	1	Mode	1.20408
Standard Deviation	15.19208	Standard Deviation	5.915498	Standard Deviation	5.865021
Sample Variance	230.7993	Sample Variance	34.99311	Sample Variance	34.39847
Kurtosis	1.238975	Kurtosis	14.45929	Kurtosis	45.33317
Skewness	1.105525	Skewness	3.895617	Skewness	5.588141
Range	75	Range	29	Range	102.5476
Minimum	1	Minimum	1	Minimum	0.00048
Maximum	76	Maximum	30	Maximum	102.5481
Sum	307788	Sum	47022	Sum	42515.8
Count	15318	Count	15318	Count	15318

Linear Regression Results (Property Level)

This section presents the results of the linear regressions done both in Excel and STATA. Chart 4.2 is the most basic regression that looks solely at building characteristics. For this and all linear regressions in this section, the dependent variable is the renewal probability by property. The results show an R-Squared of approximately 5% which is fair considering the small number of independent variables and the 273 observations. This regression is unique in that in order to correct for the year built limitations, it uses a dummy variable for renovations. In Chart 4.3, these two variables are combined into one variable “Update YR”, which provides a slightly higher R-Squared of 5.5%, indicating that the importance of the year built lies in more of a reflection of the quality of the facility rather than the age of the building. Therefore “Update YR” will be used in the remainder of the regressions for the study as it seems to be more valuable in explaining renewal probability. Still, some of the significance is probably depleted by the premium some place on historical structures, causing older structures to be more valued.

In both regressions, it is evident through the “test of two” performed on the t stat value that the number of stories of the facility is a significant explanatory variable in predicting renewal. It is also interesting to note that the number of buildings variable, the CBD dummy variable, and the Class dummy variable have negative coefficients indicating

that they decrease likelihood of renewal. This is surprising as logic would suggest that a better quality building would have higher renewal rates. Perhaps, there is another factor in play here; for instance, landlords might be more willing to bargain or accept lower rent for a less desirable building because they feel it would be harder to get new tenants to move in, and are thankful to keep the present tenants. The other consideration is that an older building might have had its tenants longer, so they are settled and more likely to stay than a newer building with less settled tenants, that might have more dynamic needs. The CBD variable contradicts the previous findings that CBD facilities have higher renewal probability, so there is likely another factor in play here as well.

Chart 4.2: Linear Regression (Year Built and Building Characteristics)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.2743
R Square	0.0753
Adjusted R Square	0.0508
Standard Error	0.1126
Observations	273.0000

*The dependent variable is the renewal probability by property.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.0000	0.2734	0.0391	3.0807	0.0039
Residual	265.0000	3.3597	0.0127		
Total	272.0000	3.6331			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.9402	1.3683	0.6871	0.4926	-1.7539	3.6343	-1.7539	3.6343
Year Built	-0.0002	0.0007	-0.2902	0.7719	-0.0016	0.0012	-0.0016	0.0012
Renovated	0.0127	0.0202	0.6312	0.5285	-0.0270	0.0524	-0.0270	0.0524
#Buildings	-0.0003	0.0039	-0.0766	0.9390	-0.0079	0.0073	-0.0079	0.0073
CBD	-0.0060	0.0214	-0.2826	0.7777	-0.0481	0.0360	-0.0481	0.0360
Class	-0.0118	0.0173	-0.6807	0.4967	-0.0459	0.0223	-0.0459	0.0223
Building SF	0.0000	0.0000	-0.5165	0.6060	0.0000	0.0000	0.0000	0.0000
# Stories	0.0029	0.0011	2.6271	0.0091	0.0007	0.0050	0.0007	0.0050

Chart 4.3: Linear Regression (Update YR and Building Characteristics)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.2755
R Square	0.0759
Adjusted R Square	0.0551
Standard Error	0.1123
Observations	273.0000

*The dependent variable is the renewal probability by property.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6.0000	0.2758	0.0460	3.6422	0.0017
Residual	266.0000	3.3573	0.0126		
Total	272.0000	3.6331			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.7864	2.3411	-0.7631	0.4461	-6.3959	2.8230	-6.3959	2.8230
Update YR	0.0012	0.0012	0.9967	0.3198	-0.0011	0.0035	-0.0011	0.0035
#Buildings	-0.0006	0.0038	-0.1467	0.8835	-0.0081	0.0070	-0.0081	0.0070
CBD	-0.0008	0.0200	-0.0381	0.9696	-0.0402	0.0387	-0.0402	0.0387
Class	-0.0191	0.0170	-1.1198	0.2638	-0.0526	0.0145	-0.0526	0.0145
Building SF	0.0000	0.0000	-0.4390	0.6610	0.0000	0.0000	0.0000	0.0000
# Stories	0.0027	0.0011	2.5205	0.0123	0.0006	0.0048	0.0006	0.0048

Chart 4.4: Linear Regression (Update YR, Building Characteristics & Employment)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.3010
R Square	0.0906
Adjusted R Square	0.0665
Standard Error	0.1117
Observations	273.0000

*The dependent variable is the renewal probability by property.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.0000	0.3291	0.0470	3.7702	0.0006
Residual	265.0000	3.3040	0.0125		
Total	272.0000	3.6331			

Chart 4.4 Continued

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.7836	2.3269	-0.7665	0.4441	-6.3650	2.7979	-6.3650	2.7979
Update YR	0.0012	0.0012	0.9933	0.3215	-0.0011	0.0035	-0.0011	0.0035
#Buildings	-0.0003	0.0038	-0.0871	0.9306	-0.0079	0.0072	-0.0079	0.0072
CBD	-0.0036	0.0200	-0.1783	0.8586	-0.0429	0.0357	-0.0429	0.0357
Class	-0.0206	0.0169	-1.2163	0.2250	-0.0540	0.0128	-0.0540	0.0128
Building SF	0.0000	0.0000	-0.5752	0.5657	0.0000	0.0000	0.0000	0.0000
# Stories	0.0027	0.0011	2.5230	0.0122	0.0006	0.0048	0.0006	0.0048
Employment	0.0000	0.0000	2.0664	0.0398	0.0000	0.0000	0.0000	0.0000

Chart 4.4 shows the regression results as we begin to add in external economic factors. While the employment variable has a significant t stat score, its coefficient is practically 0. Vacancy (see Chart 4.5), on the other hand, has less significance than employment with a fairly low, yet slightly negative coefficient indicating that the higher vacancy in a particular submarket, the less likely renewal will be. However its low coefficient absolute value indicates that the effect will not be great. This is logical, as higher vacancy equates to more options for tenants. With more options that might perhaps better meet their organizational needs or financial goals, tenants are more likely to vacate their current space and take advantage of the increased market choices. The low absolute value however, is likely the result of landlords' dealings. While vacancy tends to lower rents and create more options for tenants that decrease renewals, landlords will respond with adjustments to the rent or work harder to resign tenants.

Chart 4.5: Linear Regression (Update YR, Building Characteristics & Vacancy)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.3029
R Square	0.0917
Adjusted R Square	0.0666
Standard Error	0.1126
Observations	261.0000

*The dependent variable is the renewal probability by property.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.0000	0.3238	0.0463	3.6502	0.0009
Residual	253.0000	3.2058	0.0127		
Total	260.0000	3.5296			

Chart 4.5 Continued

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.8794	2.3722	-0.7923	0.4289	-6.5511	2.7923	-6.5511	2.7923
Update YR	0.0012	0.0012	1.0316	0.3033	-0.0011	0.0036	-0.0011	0.0036
#Buildings	-0.0006	0.0039	-0.1587	0.8740	-0.0082	0.0070	-0.0082	0.0070
CBD	0.0004	0.0205	0.0198	0.9842	-0.0400	0.0408	-0.0400	0.0408
Class	-0.0220	0.0175	-1.2623	0.2080	-0.0564	0.0123	-0.0564	0.0123
Building SF	0.0000	0.0000	-0.3450	0.7304	0.0000	0.0000	0.0000	0.0000
# Stories	0.0028	0.0011	2.5318	0.0120	0.0006	0.0049	0.0006	0.0049
Vacancy	-0.0013	0.0008	-1.7259	0.0856	-0.0028	0.0002	-0.0028	0.0002

Chart 4.6: Linear Regression (Update YR, Building Characteristics, Vacancy, & Employment)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.3918
R Square	0.1535
Adjusted R Square	0.1232
Standard Error	0.1091
Observations	261.0000

*The dependent variable is the renewal probability by property.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	9.0000	0.5419	0.0602	5.0590	0.0000
Residual	251.0000	2.9876	0.0119		
Total	260.0000	3.5296			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.8781	2.2997	-0.8167	0.4149	-6.4073	2.6511	-6.4073	2.6511
Update YR	0.0012	0.0012	1.0294	0.3043	-0.0011	0.0035	-0.0011	0.0035
#Buildings	0.0006	0.0038	0.1556	0.8765	-0.0068	0.0080	-0.0068	0.0080
CBD	-0.0002	0.0199	-0.0121	0.9903	-0.0395	0.0390	-0.0395	0.0390
Class	-0.0143	0.0172	-0.8338	0.4052	-0.0481	0.0195	-0.0481	0.0195
Building SF	0.0000	0.0000	-0.8373	0.4032	0.0000	0.0000	0.0000	0.0000
# Stories	0.0027	0.0011	2.5498	0.0114	0.0006	0.0048	0.0006	0.0048
Vacancy	-0.0014	0.0007	-1.8516	0.0653	-0.0029	0.0001	-0.0029	0.0001
Employment	0.0000	0.0000	3.5774	0.0004	0.0000	0.0000	0.0000	0.0000
EmpGrowth	0.1793	0.0493	3.6344	0.0003	0.0821	0.2764	0.0821	0.2764

Combining all of the external economic variables into one regression in Chart 4.6, we can see that employment and employment growth have much higher and positive significance values. It is counterintuitive to note that in larger markets (those with higher

level of employment), renewal is more likely. One would think that a larger market would have more options for tenants, decreasing renewal. However, this is not the case. It is probable that there is another element at work. For instance, perhaps in larger markets there is a greater dispersal of the workforce's residences. Changing locations alters the commute for employees and threatens organizational continuity. With a move, there might be increased chance of employee turnover which leads to added cost for the employer in replacing workers or encouraging them to stay through retention programs. This risk may persuade tenants to stay put in larger markets therefore supporting the above results.

One might expect that areas with higher rates of employment growth would have lower renewal because higher growth would equate to changing tenant needs that would require relocation. However, the employment growth coefficient shows that as employment rises, tenants are more likely to renew. This finding conceivably indicates that the employment growth is not the result of growing organizations, but instead, the growing of the number of organizations in the area. Or, other potential grounds for these results might be sustained by the assumption that even as companies grow, they may keep their current space and find additional space to meet their needs. This is financially sound, if not organizationally beneficial.

Despite these justifications, the results do fit logically with urban economic theories that connect employment into the real estate cycle. Employment equates to office space demand; as demand increases, since supply cannot increase instantaneously, it becomes an owners' market and renewal increases.[22] Essentially, the more office workers, the more space they need overall (even if perhaps the space per worker decreases). Because options are perhaps more limited as a result of the increased demand, tenants are more likely to renew.

[22] D. DiPasquale & W.C. Wheaton. Urban Economics and Real Estate Markets (Englewood Cliffs: Prentice Hall, 1996) 12.

Chart 4.7 incorporates the dummy variables for each MSA, with Chicago omitted as the benchmark. Employment and Employment Growth are removed from the analysis because the differences in economic factors by MSA are being accounted for by the dummy MSA variables. However, vacancy is by submarket so it remains part of the model. As you can see, MSA has a significant impact on renewal probability. Some MSA's have negative coefficients, signifying that a property in these locations will be less likely to renew than a property in Chicago. For instance, San Jose has a coefficient of -16.2 indicating that it has a strong negative effect on renewal probability. If a property is located in San Jose, the predicted renewal probability will be decreased by 16% as result of this characteristic alone.

Others locations have extremely high coefficients such as Nashville, indicating a much higher renewal probability than in Chicago. It has a coefficient of 25, predicting that renewal probability will be 25% higher if the property is located in Nashville. It is important to note that some of these MSA's have a significantly lower number of properties which could skew the relative magnitude of the results. For instance, Nashville has only one property in the study, while Chicago has fifteen. Chart 4.8 shows the breakout of properties by MSA, that demonstrates the range of data points by MSA of 1 to 24. It is important to note this chart represents the properties used in the study after 12 have been removed because the relevant vacancy data is not available.
With all of these variables, the R-Squared has increased to a substantial 28.8%, showing that these factors combined explain much of the differences in renewal probabilities across properties. As you can see from the large jump in R-Squared from 15% in Chart 4.6 to almost 29% in Chart 4.7, the MSA seems to play a sizeable role in renewal. This is substantiated by the 50% range in renewal probability across MSA's shown in Chart 3.5. Additionally, when contrasted to the use of the vacancy and employment variables that differ by submarket and MSA, the large jump in R-Squared, shows that the difference in MSA goes way beyond these factors. Considerations such as traffic, weather and population are examples of other elements that may affect renewal that differ across MSA, beyond the basic economic factors included in this model.

Chart 4.7: Linear Regression (Update YR, Building Characteristics, Vacancy, & Dummy MSA's)[23]

Linear Regression

Source	SS	df	MS
Model	10143.6541	35	289.82
Residual	25134.4121	225	111.71
Total	35278.0662	260	135.68

*The dependent variable is the renewal probability by property.

Number of Observations	261
F(35,225)	2.59
Prob > F	0
R Squared	0.2875
Adj R-Squared	0.1767
Root MSE	10.569

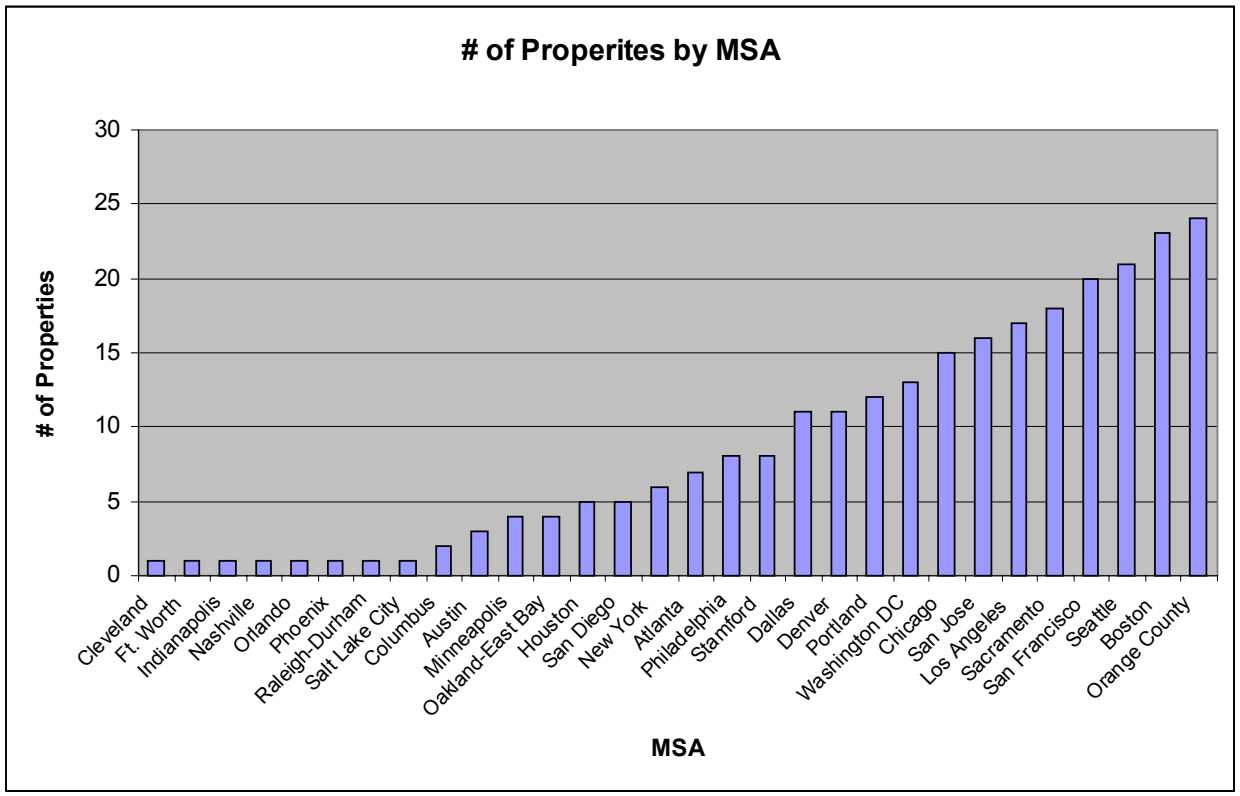
rv	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
updateyr	0.0270267	0.12136	0.22	0.824	-0.212129	0.2661823
cbd	1.273764	2.43312	0.52	0.601	-3.520847	6.068375
class	-2.931954	1.78229	-1.65	0.101	-6.44407	0.5801626
buildingsf	-1.45E-06	2.54E-06	-0.57	0.568	-6.47E-06	3.56E-06
stories	0.1661012	0.09337	1.78	0.077	-0.017891	0.3500932
vacancy	-0.273173	0.13305	-2.05	0.041	-0.535361	-0.0109845
atlanta	3.296893	4.99249	0.66	0.51	-6.541114	13.1349
austin	1.662931	6.92297	0.24	0.81	-11.97922	15.30508
boston	2.104854	3.77329	0.56	0.578	-5.330644	9.540352
cleveland	-9.041848	11.0287	-0.82	0.413	-30.77454	12.69085
columbus	-0.1820498	8.14755	-0.02	0.982	-16.23731	15.87321
dallas	4.664233	4.44143	1.05	0.295	-4.087891	13.41636
denver	-0.0662822	4.34707	-0.02	0.988	-8.632452	8.499888
ftworth	9.064175	11.1173	0.82	0.416	-12.84316	30.97151
houston	-1.359787	5.56712	-0.24	0.807	-12.33014	9.610569
indianapolis	0.0405042	11.032	0	0.997	-21.69879	21.7798
losangeles	0.0291974	3.9285	0.01	0.994	-7.712167	7.770562
minneapolis	6.98423	6.03515	1.16	0.248	-4.908412	18.87687
nashville	25.99325	17.5493	1.48	0.14	-8.588703	60.5752
neworleans	(dropped)					
newyork	2.29405	5.37909	0.43	0.67	-8.305784	12.89388
oaklandeas~y	0.2805529	6.11169	0.05	0.963	-11.76291	12.32402
orangecounty	3.602401	3.79958	0.95	0.344	-3.884917	11.08972
orlando	-0.2394231	11.0042	-0.02	0.983	-21.92398	21.44513
philadelphia	-9.550062	4.746	-2.01	0.045	-18.90236	-0.197768
phoenix	-12.72226	11.4442	-1.11	0.267	-35.27377	9.829252

[23] New Orleans and San Antonio were dropped from the regression due to the absence of vacancy data for these locations.

Chart 4.7 Continued

rv	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
portland	-1.833708	4.34613	-0.42	0.673	-10.39804	6.730624
raleighdur~m	11.88304	11.0573	1.07	0.284	-9.905986	33.67207
sacramento	-6.062706	4.05443	-1.5	0.136	-14.05221	1.926801
saltlakecity	7.359521	11.0623	0.67	0.507	-14.43941	29.15845
sanantonio	(dropped)					
sandiego	-0.6339202	5.67564	-0.11	0.911	-11.81813	10.55029
sanfrancisco	-4.257493	3.91369	-1.09	0.278	-11.96966	3.454675
sanjose	-16.27115	4.00885	-4.06	0	-24.17083	-8.371462
seattle	-3.131588	3.76332	-0.83	0.406	-10.54746	4.28428
stamford	-2.023287	4.90206	-0.41	0.68	-11.6831	7.636526
washingtondc	0.841055	4.22684	0.2	0.842	-7.488203	9.170313
_cons	8.923095	240.994	0.04	0.97	-465.9702	483.8164

Chart 4.8: Frequency of Properties by MSA



Chapter 5: Probit Regression Results

Probit Regression Results (Lease Level)

As explained in the methodology section, the probit regression is a more complicated calculation and is performed in STATA. This analysis looks at the data on the lease level, and therefore can go beyond building characteristics to the more specific qualities of the lease. Additionally, as the data point becomes the lease rather than the property, the number of observations is greatly increased, in this case to well over 15,000. The large number of points results in an R-Squared that is much lower and therefore not comparable, to the previous analysis. Additionally, as you can see below, the applicable term is “Pseudo R-Squared” as an actual R-Squared is not calculated in a probit regression. This value provides an appropriate comparison tool for general understanding of the success of the regression.

Chart 5.1 begins as before with a general regression of independent variables of Year Built and Building Characteristics. For this and all regressions in this section, the dependent variable is a dichotomous value of 0 or 1. A value of 0 indicates that the tenant vacated the space, while a value of 1 indicates a renewal. In Chart 5.2, the “Update Yr” independent variable is again applied and shown to be a slightly more effective explanatory variable, reinforced by the higher Pseudo R-Squared as well as the higher z score. The results are very similar, building SF, still has little effect, Class A has a slightly negative effect, and “stories” receives a fairly high z score indicating significance. The “CBD” coefficient has become slightly positive, but the change is still relatively small as the value remains very close to 0. It is likely that the reason building characteristics have less effect than one would have logically guessed, is because tenants are already in the building and used to both its charms and flaws, therefore canceling each other out. It is the changes in their business or external economic factors that thus play a more substantial role.

In Chart 5.3, we are able to add one of the key factors of the renewal decision, the square footage of the lease. As we have shown previously, there is a definite link

between the size of the lease and the renewal probability. The Pseudo R-Squared is over ten times larger with the addition of the absolute value of the lease size. Additionally, the z score of this variable is 17.84, designating it an extremely notable independent variable. This is logical as we said before due to the hefty costs for both parties in the event of a decision to vacate such a large space.

Chart 5.1: Probit Regression (Year built & Building Characteristics)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10385.52	*LR chi2(12)*	43.77
Iteration 2	log likelihood=	-10385.52	*Prob > chi 2*	0
Log likelihood=	-10385.52		*Pseudo R2*	0.0021

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
yearbuilt	0.0005366	0.000952	0.56	0.573	-0.00133	0.002403
renovated	0.0199568	0.029612	0.67	0.5	-0.03808	0.077995
buildingsf	-2.62E-08	4.33E-08	-0.61	0.545	-1.11E-07	5.87E-08
stories	0.0042668	0.001304	3.27	0.001	0.001711	0.006823
buildings	0.0022135	0.004549	0.49	0.627	-0.0067	0.011129
cbd	0.0280106	0.030233	0.93	0.354	-0.03124	0.087266
classa	-0.0553785	0.027318	-2.03	0.043	-0.10892	-0.00184
_cons	-0.9016334	1.883829	-0.48	0.632	-4.59387	2.790603

Chart 5.2: Probit Regression (Updated Year & Building Characteristics)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10384.95	*LR chi2(12)*	44.9
Iteration 2	log likelihood=	-10384.95	*Prob > chi 2*	0
Log likelihood=	-10384.95		*Pseudo R2*	0.0022

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	0.0023209	0.001789	1.3	0.194	-0.00119	0.005827
buildingsf	-2.56E-08	4.33E-08	-0.59	0.555	-1.10E-07	5.93E-08
stories	0.0041806	0.001301	3.21	0.001	0.00163	0.006731
buildings	0.0024311	0.004553	0.53	0.593	-0.00649	0.011355
cbd	0.0277478	0.028552	0.97	0.331	-0.02821	0.083709
classa	-0.0566014	0.025096	-2.26	0.024	-0.10579	-0.00741
_cons	-4.44212	3.550667	-1.25	0.211	-11.4013	2.51706

Chart 5.3: Probit Regression (Updated Year, Building Characteristics & Lease Size)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10205.60	*LR chi2(12)*	474.16
Iteration 2	log likelihood=	-10171.28	*Prob > chi 2*	0
Iteration 3	log likelihood=	-10170.32	*Pseudo R2*	0.0228
Iteration 4	log likelihood=	-10170.32		
Log likelihood=	-10170.32			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	0.0023584	0.001805	1.31	0.191	-0.00118	0.005897
buildingsf	-6.23E-08	4.38E-08	-1.42	0.155	-1.48E-07	2.36E-08
stories	0.0037013	0.001317	2.81	0.005	0.00112	0.006283
buildings	0.004544	0.004601	0.99	0.323	-0.00447	0.013562
cbd	0.0140585	0.028829	0.49	0.626	-0.04245	0.070563
classa	-0.0821347	0.025271	-3.25	0.001	-0.13167	-0.0326
abdealsf	9.91E-06	5.55E-07	17.84	0	8.82E-06	0.000011
_cons	-4.569125	3.583348	-1.28	0.202	-11.5924	2.454108

Chart 5.4: Probit Regression (Updated Year, Building Characteristics, Lease Size, & Employment)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10189.32	*LR chi2(12)*	507.56
Iteration 2	log likelihood=	-10154.61	*Prob > chi 2*	0
Iteration 3	log likelihood=	-10153.62	*Pseudo R2*	0.0244
Iteration 4	log likelihood=	-10153.62		
Log likelihood=	-10,153.62			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	0.0015377	0.00181	0.85	0.396	-0.00201	0.005086
buildingsf	-9.10E-08	4.41E-08	-2.06	0.039	-1.78E-07	-4.52E-09
stories	0.0038709	0.001318	2.94	0.003	0.001288	0.006453
buildings	0.0040144	0.004613	0.87	0.384	-0.00503	0.013055
cbd	0.0199336	0.028894	0.69	0.49	-0.0367	0.076565
classa	-0.0589758	0.025667	-2.3	0.022	-0.10928	-0.00867
abdealsf	9.97E-06	5.58E-07	17.89	0	8.88E-06	1.11E-05
employment	0.0000319	1.22E-05	2.62	0.009	8.05E-06	5.58E-05
empgrowth	0.0043056	0.00075	5.74	0	0.002836	0.005775
_cons	-3.094427	3.591562	-0.86	0.389	-10.1338	3.944905

In Charts 5.4 and 5.5 we begin to add the external economic variables of employment, employment growth and vacancy to the equation. Again we see that employment is a noteworthy factor, this time with a positive coefficient. Vacancy, however, remains less significant with a slightly negative coefficient. This is a result of the landlord/tenant negotiation, as the majority of landlords look to the current vacancy rate in making their negotiating decisions.

Chart 5.5: Probit Regression (Updated Year, Building Characteristics, Lease Size, Employment & Vacancy)

Probit Estimates

Iteration 0	log likelihood=	-7366.38	*Number of Estimates*	10820
Iteration 1	log likelihood=	-7209.84	*LR chi2(12)*	354.97
Iteration 2	log likelihood=	-7189.41	*Prob > chi 2*	0
Iteration 3	log likelihood=	-7188.90	*Pseudo R2*	0.0241
Iteration 4	log likelihood=	-7188.89		
Log likelihood=	-7188.89			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	0.0033259	0.0020428	1.63	0.104	-0.000678	0.0073297
abdealsf	8.74E-06	6.19E-07	14.11	0	7.53E-06	9.95E-06
buildingsf	-9.73E-08	5.10E-08	-1.91	0.056	-1.97E-07	2.55E-09
stories	0.0044207	0.0015376	2.88	0.004	0.001407	0.0074344
buildings	0.0046085	0.0052555	0.88	0.381	-0.005692	0.0149091
cbd	0.0376465	0.0353875	1.06	0.287	-0.031712	0.1070047
classa	-0.0815427	0.030784	-2.65	0.008	-0.141878	-0.0212072
employment	0.0000595	0.0000144	4.13	0	0.0000313	0.0000878
vacancy	-0.0000411	0.0014117	-0.03	0.977	-0.002808	0.0027258
empgrowth	0.0052873	0.0009308	5.68	0	0.0034629	0.0071116
_cons	-6.709918	4.052812	-1.66	0.098	-14.65328	1.233448

In Chart 5.6 we insert the variable of “Deal”, the lease square footage as a percent of total building square footage. A z score of 3.9, and a positive coefficient, show that as the lease square footage becomes a more significant portion of the building, the probability of renewal increases up to a certain percentage. This is evident in Exhibit I of the Appendix, where the dummy variable for leases greater than 5% has a positive coefficient, but that becomes negative for “d10” and “d20” (see Appendix Exhibits J & K). Landlords are perhaps not as concerned in filling these larger spaces. This is

probably due to the difficulty in finding large blocks of available space. Larger adjacent space available in anything but a new facility, especially occupying more than 20% of a building is hard to come by, especially where there is an opportunity for a tenant to put their name on the building. This is a desirable characteristic for tenants looking to increase branding and upgrade their image. Additionally, this larger area offers more options to landlords where they could perhaps choose to subdivide the space or find one large tenant.

The graph below further illustrates this point. Using STATA, predicted values for renewal probability were determined for different lease square footages, holding all other independent variables constant. As you can see, there is a strong positive connection between renewal probability and lease size. From 1000 square feet to 100,000 square feet, the regression analysis predicts that renewal probability will rise from just over 50% to 87%. Exhibit L shows the exact predicted values in 5,000 sf increments.

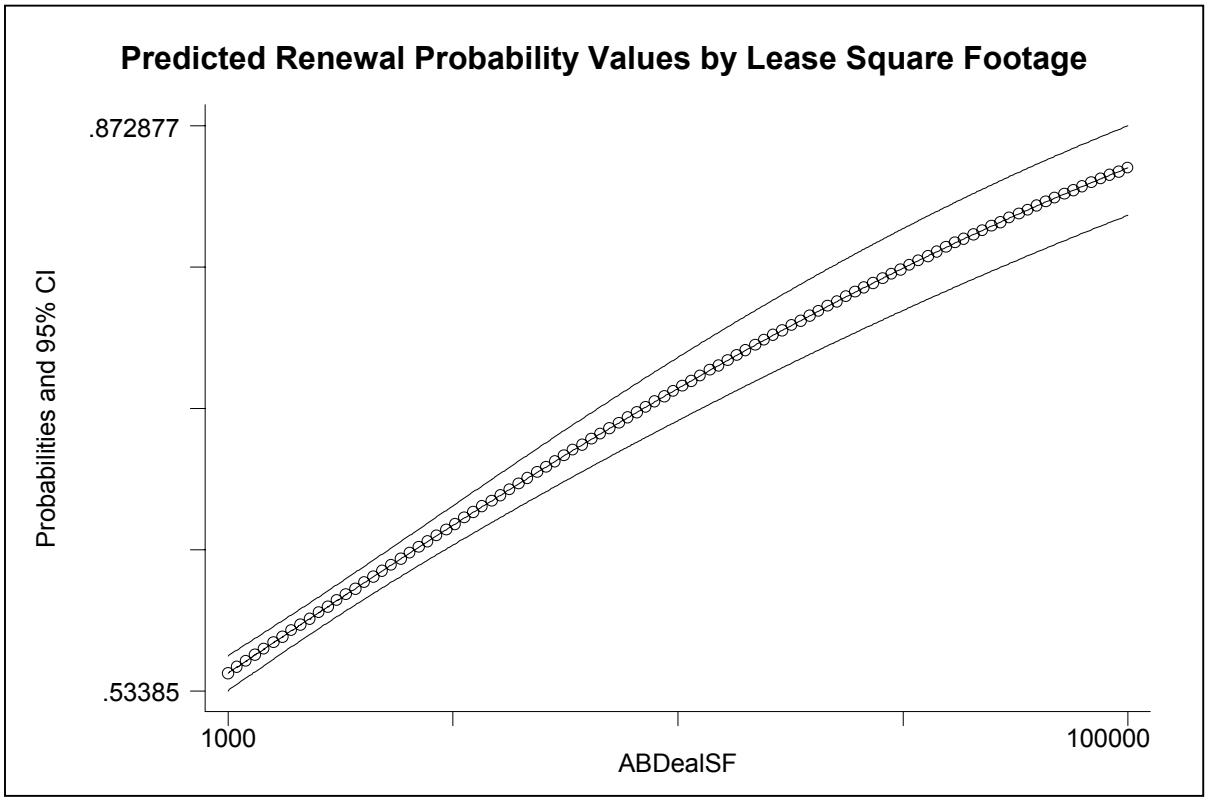


Chart 5.6: Probit Regression (Updated Year, Building Characteristics, Lease Size, Employment, Vacancy & Deal %)

Probit Estimates

Iteration 0	log likelihood=	-7366.38	*Number of Estimates*	10820
Iteration 1	log likelihood=	-7195.06	*LR chi2(12)*	371.1
Iteration 2	log likelihood=	-7181.30	*Prob > chi 2*	0
Iteration 3	log likelihood=	-7180.83	*Pseudo R2*	0.0252
Iteration 4	log likelihood=	-7180.82		
Log likelihood=	-7180.83			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	0.003356	0.0020437	1.64	0.101	-0.0006496	0.0073616
abdealsf	5.92E-06	9.23E-07	6.41	0	4.11E-06	7.73E-06
buildingsf	-6.94E-08	5.14E-08	-1.35	0.177	-1.70E-07	3.13E-08
stories	0.0050006	0.0015433	3.24	0.001	0.0019757	0.0080254
buildings	0.0043931	0.0052508	0.84	0.403	-0.0058983	0.0146844
cbd	0.0376171	0.0354381	1.06	0.288	-0.0318403	0.1070745
classa	-0.0773647	0.0308268	-2.51	0.012	-0.1377841	-0.016945
employment	0.0000613	0.0000144	4.25	0	0.0000331	0.0000896
vacancy	0.0000305	0.0014137	0.02	0.983	-0.0027402	0.0028013
empgrowth	0.0053673	0.0009317	5.76	0	0.0035412	0.0071934
deal	0.016242	0.0041365	3.93	0	0.0081346	0.0243493
_cons	-6.819218	4.054712	-1.68	0.093	-14.76631	1.127871

Chart 5.7: Probit Regression (Updated Year, Building Characteristics, Lease Size, Vacancy, & MSA)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10133.74	*LR chi2(12)*	622.71
Iteration 2	log likelihood=	-10097.11	*Prob > chi 2*	0
Iteration 3	log likelihood=	-10096.05	*Pseudo R2*	0.0299
Iteration 4	log likelihood=	-10096.05		
Log likelihood=	-10096.05			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	-0.0017593	0.0020466	-0.86	0.39	-0.0057705	0.002252
abdealsf	0.0000103	5.61E-07	18.27	0	9.15E-06	0.0000114
buildingsf	-1.41E-07	5.23E-08	-2.69	0.007	-2.43E-07	-3.83E-08
stories	0.0039799	0.00161	2.47	0.013	0.0008243	0.0071354

Chart 5.7 Continued

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
buildings	0.0119683	0.0053391	2.24	0.025	0.0015039	0.0224327
cbd	0.0884289	0.0395285	2.24	0.025	0.0109546	0.1659033
classa	-0.0406952	0.0296785	-1.37	0.17	-0.098864	0.0174735
atlanta	-0.0542869	0.0660702	-0.82	0.411	-0.183782	0.0752083
austin	-0.1173892	0.0889189	-1.32	0.187	-0.291667	0.0568886
boston	-0.1157819	0.0554759	-2.09	0.037	-0.2245127	-0.007051
cleveland	-0.4408299	0.1630437	-2.7	0.007	-0.7603896	-0.121270
columbus	-0.0565052	0.1193367	-0.47	0.636	-0.2904008	0.1773904
dallas	0.0497577	0.0549342	0.91	0.365	-0.0579113	0.1574267
denver	-0.0292123	0.0574347	-0.51	0.611	-0.1417823	0.0833577
ftworth	0.3152374	0.1238156	2.55	0.011	0.0725633	0.5579115
houston	-0.0323613	0.0683687	-0.47	0.636	-0.1663614	0.1016388
indianapolis	0.0027394	0.113666	0.02	0.981	-0.2200418	0.2255206
losangeles	-0.0328217	0.0642541	-0.51	0.609	-0.1587574	0.0931141
minneapolis	0.0503188	0.1054759	0.48	0.633	-0.1564102	0.2570478
nashville	-0.1447835	0.2326764	-0.62	0.534	-0.6008209	0.311254
neworleans	0.0159631	0.0690855	0.23	0.817	-0.119442	0.1513683
newyork	-0.134038	0.1174603	-1.14	0.254	-0.3642559	0.09618
oaklandeas~y	0.0080358	0.0993402	0.08	0.936	-0.1866675	0.202739
orangecounty	0.0729601	0.0591999	1.23	0.218	-0.0430695	0.1889897
orlando	-0.0690696	0.1408037	-0.49	0.624	-0.3450399	0.2069007
philadelphia	-0.2017161	0.0771323	-2.62	0.009	-0.3528926	-0.050539
phoenix	-0.4080502	0.2349805	-1.74	0.082	-0.8686036	0.0525031
portland	-0.0793055	0.0705647	-1.12	0.261	-0.2176098	0.0589988
raleighdur~m	0.2729115	0.1668966	1.64	0.102	-0.0541997	0.6000228
sacramento	-0.1249701	0.0809017	-1.54	0.122	-0.2835345	0.0335943
saltlakecity	0.0746903	0.3253412	0.23	0.818	-0.5629667	0.7123474
sanantonio	-0.0433406	0.099798	-0.43	0.664	-0.2389411	0.1522599
sandiego	0.0451258	0.0830196	0.54	0.587	-0.1175896	0.2078412
sanfrancisco	-0.2350721	0.0607054	-3.87	0	-0.3540526	-0.116092
sanjose	-0.5270309	0.0701966	-7.51	0	-0.6646138	-0.389448
seattle	-0.2061563	0.0549047	-3.75	0	-0.3137675	-0.098545
stamford	-0.1152086	0.0916734	-1.26	0.209	-0.2948851	0.0644679
washingtondc	-0.0990692	0.0724766	-1.37	0.172	-0.2411207	0.0429824
_cons	3.644137	4.067667	0.9	0.37	-4.328344	11.61662

As you can see above, the addition of the dummy MSA variables has again made a substantial impact. The R-Squared has increased to nearly .03; While seemingly not very impressive, this model offers a useful beginning in understanding the determinants

of renewal. The z scores of the dummy variables show that there is a definite difference across MSA, beyond that of employment or vacancy rates in these markets. Adding the dummy variables for Year (see Chart 5.8), further expands the model and increases the Pseudo R-Squared to 3.87%. These year variables have negative coefficients, but high absolute value z scores reinforcing that year is important, as we have already seen in the probability analysis in Chapter 3. This is logical, since there is a definite cycle in real estate that consists of many factors not included in this model. The negative value of the coefficients is consistent with the demonstration that 2004 (the benchmark year) had the highest renewal probability both in the weighted and un-weighted analysis.

Chart 5.8: Probit Regression (Updated Year, Building Characteristics, Lease Size, MSA & Year)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10044.53	*LR chi2(12)*	805.09
Iteration 2	log likelihood=	-10006.00	*Prob > chi 2*	0
Iteration 3	log likelihood=	-10004.86	*Pseudo R2*	0.0387
Iteration 4	log likelihood=	-10004.86		
Log likelihood=	-10004.86			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	-0.0016973	0.0020592	-0.82	0.41	-0.005733	0.0023386
abdealsf	0.0000103	5.64E-07	18.34	0	9.24E-06	0.0000114
buildingsf	-1.49E-07	5.25E-08	-2.84	0.004	-2.52E-07	-4.65E-08
stories	0.0041026	0.0016181	2.54	0.011	0.0009311	0.007274
buildings	0.0123932	0.0053624	2.31	0.021	0.0018831	0.0229034
cbd	0.0868037	0.0396971	2.19	0.029	0.0089989	0.1646086
classa	-0.0389779	0.0298091	-1.31	0.191	-0.097403	0.0194468
atlanta	-0.0416571	0.066351	-0.63	0.53	-0.171703	0.0883884
austin	-0.1038597	0.0898438	-1.16	0.248	-0.279950	0.0722309
boston	-0.1190412	0.0557211	-2.14	0.033	-0.228253	-0.009830
cleveland	-0.4307894	0.1639839	-2.63	0.009	-0.752192	-0.109387
columbus	-0.0407581	0.1202793	-0.34	0.735	-0.276501	0.194985
dallas	0.0570972	0.0553094	1.03	0.302	-0.051307	0.1655016
denver	-0.0327863	0.0577317	-0.57	0.57	-0.145938	0.0803658
ftworth	0.3355803	0.1241722	2.7	0.007	0.0922072	0.5789534
houston	-0.0353925	0.0687798	-0.51	0.607	-0.170198	0.0994133
indianapolis	0.0101798	0.1142702	0.09	0.929	-0.213786	0.2341453

Chart 5.8 Continued

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
losangeles	-0.032558	0.0645971	-0.5	0.614	-0.159166	0.09405
minneapolis	0.0487219	0.1061607	0.46	0.646	-0.159349	0.2567932
nashville	-0.0955155	0.2338915	-0.41	0.683	-0.553935	0.3629035
neworleans	0.0316054	0.0697123	0.45	0.65	-0.105028	0.168239
newyork	-0.1189832	0.1177961	-1.01	0.312	-0.349859	0.1118928
oaklandeas~y	-0.0032414	0.1003653	-0.03	0.974	-0.199954	0.1934709
orangecounty	0.0792567	0.0596421	1.33	0.184	-0.037640	0.1961532
orlando	-0.045903	0.141579	-0.32	0.746	-0.323393	0.2315868
philadelphia	-0.2033283	0.0774261	-2.63	0.009	-0.355081	-0.051576
phoenix	-0.3837176	0.2358326	-1.63	0.104	-0.845941	0.0785058
portland	-0.0878692	0.0713288	-1.23	0.218	-0.227671	0.0519327
raleighdur~m	0.3035936	0.1676772	1.81	0.07	-0.025048	0.6322348
sacramento	-0.1602033	0.081763	-1.96	0.05	-0.320456	0.0000492
saltlakecity	0.1561415	0.3245059	0.48	0.63	-0.479878	0.7921613
sanantonio	-0.0135813	0.1003597	-0.14	0.892	-0.210282	0.1831201
sandiego	0.0412523	0.083417	0.49	0.621	-0.122242	0.2047466
sanfrancisco	-0.2428582	0.0610402	-3.98	0	-0.362495	-0.123222
sanjose	-0.5389359	0.0709842	-7.59	0	-0.678062	-0.399809
seattle	-0.2215783	0.0551339	-4.02	0	-0.329639	-0.113518
stamford	-0.1067274	0.0921276	-1.16	0.247	-0.287294	0.0738395
washingtondc	-0.0839093	0.0726759	-1.15	0.248	-0.226351	0.0585328
y97	-0.7100248	0.083073	-8.55	0	-0.872845	-0.547205
y98	-0.6946743	0.0738202	-9.41	0	-0.839359	-0.549989
y99	-0.5996604	0.07205	-8.32	0	-0.740876	-0.458445
y00	-0.5862424	0.0707015	-8.29	0	-0.724815	-0.44767
y01	-0.814085	0.0703942	-11.6	0	-0.952055	-0.676115
y02	-0.720884	0.0689076	-10.5	0	-0.855940	-0.585828
y03	-0.5573512	0.0691518	-8.06	0	-0.692886	-0.421816
_cons	4.164915	4.093317	1.02	0.309	-3.857839	12.18767

This final regression analysis in Chart 5.9 combines most of the variables for a result of a Pseudo R-Squared of 4%. It creates a worthwhile predictive tool of renewal probability using the factors described above. It offers the most logical combination of variables to create the most effective model with the given data. However, it is only a starting point to begin to determine renewal probability. Further study is required to develop a more comprehensive tool.

Chart 5.9: Probit Regression (Updated Year, Building Characteristics, Lease Size, MSA, Year & Deal %)

Probit Estimates

Iteration 0	log likelihood=	-10407.40	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10011.67	*LR chi2(12)*	849.07
Iteration 2	log likelihood=	-9983.77	*Prob > chi 2*	0
Iteration 3	log likelihood=	-9982.87	*Pseudo R2*	0.0408
Iteration 4	log likelihood=	-9982.86		
Log likelihood=	-9982.86			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	-0.0017261	0.0020612	-0.84	0.402	-0.005766	0.0023137
abdealsf	6.08E-06	8.41E-07	7.23	0	4.43E-06	7.73E-06
buildingsf	-1.14E-07	5.28E-08	-2.16	0.03	-2.18E-07	-1.08E-08
stories	0.0052537	0.0016296	3.22	0.001	0.0020598	0.0084476
buildings	0.0126585	0.0053597	2.36	0.018	0.0021538	0.0231633
cbd	0.0864017	0.0398236	2.17	0.03	0.0083488	0.1644545
classa	-0.0308754	0.029882	-1.03	0.301	-0.0894432	0.0276923
atlanta	-0.0465607	0.0662579	-0.7	0.482	-0.1764238	0.0833025
austin	-0.1057137	0.0899507	-1.18	0.24	-0.2820138	0.0705863
boston	-0.1061902	0.0557722	-1.9	0.057	-0.2155018	0.0031214
cleveland	-0.4220743	0.1627782	-2.59	0.01	-0.7411138	-0.1030349
columbus	-0.0535278	0.1205253	-0.44	0.657	-0.2897531	0.1826975
dallas	0.0708971	0.0553763	1.28	0.2	-0.0376385	0.1794327
denver	-0.0327193	0.0577689	-0.57	0.571	-0.1459442	0.0805057
ftworth	0.3616881	0.1243401	2.91	0.004	0.117986	0.6053901
houston	-0.0421302	0.0688668	-0.61	0.541	-0.1771067	0.0928462
indianapolis	-0.0061122	0.1141111	-0.05	0.957	-0.2297659	0.2175414
losangeles	-0.0279863	0.0646308	-0.43	0.665	-0.1546603	0.0986877
minneapolis	0.0574004	0.1061733	0.54	0.589	-0.1506955	0.2654963
nashville	-0.1021046	0.2343053	-0.44	0.663	-0.5613345	0.3571253
neworleans	0.0359598	0.069757	0.52	0.606	-0.1007613	0.1726809
newyork	-0.132269	0.1179507	-1.12	0.262	-0.3634482	0.0989102
oaklandeas~y	0.0045882	0.1004227	0.05	0.964	-0.1922366	0.201413
orangecounty	0.0805549	0.0597008	1.35	0.177	-0.0364566	0.1975663
orlando	-0.0409093	0.1415375	-0.29	0.773	-0.3183177	0.2364991
philadelphia	-0.2339184	0.0776296	-3.01	0.003	-0.3860697	-0.0817672
phoenix	-0.4888124	0.2368009	-2.06	0.039	-0.9529337	-0.0246911
portland	-0.0732347	0.0714252	-1.03	0.305	-0.2132254	0.0667561
raleighdur~m	0.2895174	0.1678261	1.73	0.085	-0.0394158	0.6184506
sacramento	-0.1757258	0.0818707	-2.15	0.032	-0.3361895	-0.0152621

Chart 5.9 Continued

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
saltlakecity	0.0559289	0.3294147	0.17	0.865	-0.589712	0.7015698
sanantonio	-0.0298025	0.1006997	-0.3	0.767	-0.2271704	0.1675653
sandiego	0.0428943	0.0835583	0.51	0.608	-0.120877	0.2066657
sanfrancisco	-0.2508	0.061067	-4.11	0	-0.3704891	-0.1311109
sanjose	-0.5318995	0.0710411	-7.49	0	-0.6711375	-0.3926615
seattle	-0.2392513	0.0552877	-4.33	0	-0.3476133	-0.1308894
stamford	-0.1674381	0.093174	-1.8	0.072	-0.3500557	0.0151796
washingtondc	-0.0892806	0.0729869	-1.22	0.221	-0.2323323	0.0537711
y97	-0.7013742	0.0830826	-8.44	0	-0.8642131	-0.5385353
y98	-0.688782	0.0737896	-9.33	0	-0.833407	-0.5441569
y99	-0.5941676	0.0720079	-8.25	0	-0.7353004	-0.4530347
y00	-0.5831946	0.0706568	-8.25	0	-0.7216793	-0.4447098
y01	-0.8116683	0.0703439	-11.54	0	-0.9495397	-0.6737968
y02	-0.7193214	0.0688587	-10.45	0	-0.8542819	-0.5843608
y03	-0.5561963	0.0691063	-8.05	0	-0.6916421	-0.4207505
deal	0.0253871	0.0039569	6.42	0	0.0176318	0.0331424
_cons	4.150759	4.097307	1.01	0.311	-3.879814	12.18133

Summary of Results

- The overall renewal probability for all leases was 58.5%.
- In contrast, the weighted renewal probability was 76.7%.
- There is strong evidence that the larger the square footage of occupied space, the more likely tenants are to renew. However, this seems to taper off when tenants occupy a substantial portion of the building.
- Central Business Districts seem to have slightly higher renewal rates than suburban properties although the regression analysis, slightly contradicts this finding.
- Employment and Employment Growth appear to be significant variables, but high levels or high increases have only modest influence on renewal rates.
- The location in the United States of the property has a sizeable effect on renewal rates. The results show a range of approximately 40 to 80% demonstrating a considerable difference across location.
- The examination shows that the vacancy rates and building characteristics studied were surprisingly less important in determining renewal than originally speculated.

Chapter 6: Conclusions

Further Investigations

As stated before, there has been very little research done related to this topic. However, as we have seen, the savings associated with an increased rate of renewal combined with the benefits of more accurate valuation demonstrate the merit of further study. A more intricate version of the model developed here might enable improved explanation of the determinants of renewal. Advanced study looking at additional attributes that might affect renewal includes the tenant's level of customization of the space or the inclusion of more tenant characteristics. The former might be quantified by tenant improvements. Specific tenant characteristics might enlighten owners and managers as to what aspects to look for in selecting occupants, if augmented renewal rates are desired. For instance, the change in size of the organization over the past year or past five years, would force dynamic space needs that might strongly influence renewal, or the amount of time the tenant has been in business might be relevant as well.

Rent is the most logical area to investigate as, for many organizations, real estate is still just a cost and the bottom line is in fact, the chief basis for decisions on office space. Comparing the rent offered/accepted would be useful, or looking at the difference between the old lease rate and the MSA average, would likely prove to be an excellent explanatory variable. Unfortunately this data is difficult to acquire, as most organizations do not track this information. Average commissions and tenant improvements along with any other costs associated with a move would also be relevant in determining the overall net effective lease rate.

Attempting to add more building characteristics to the regression is expected to be useful. The ones we have studied, for the most part, are not things that will change much, if at all, during the course of the lease. If these items were not priorities for tenants when they moved in, chances are they are not a main concern at the time of renewal. Other characteristics that might be considered include amenities that could be

quantified with dummy variables in an analysis, highway access, technological capacities, the shape or flexibility of the floor plate, access to outdoor space, and availability of parking. All would all offer an enhanced glimpse into the determinants of renewal. Also, looking at the data by individual building rather than property might provide more accurate results as, for a given property, there might be stark differences, from age to amenities to layout. This method of analysis would doubtlessly lead to greater explanation of renewal through building characteristics.

External economic factors, such as unemployment, labor pool statistics and inflation might also be worthwhile to incorporate. Companies need to locate where they can attract the best employees and they need to be in areas with adequate labor supply. Additionally, while employment tells us about demand for space, unemployment might offer insight into the state of the economy, which might influence renewal decisions. If the forecast is for a down-turning economy, tenants might be less likely to renew or add space because they are unsure of what their needs will be.

Currently the analysis by year was done according to "reporting year." This variable is equivalent to the year in which the tenant will occupy or vacate the space. However, there may be substantial lag time between when the renewal decision was made and when the results were evident. Additionally, because economic variables or even building characteristics might have changed between the time of the decision and time of inhabitation, the regression may not be as effective as it could be. Therefore using the actual year (or even quarter to be more precise) as an independent variable would presumably result in a much more useful model.

The above results represent preliminary findings of the determinants of renewal probability. The stronger conclusions drawn should be further investigated as they are inclined to be accurate and therefore could be very useful to owners, managers and the investment community. Most notable is the link between lease size and renewal. The above results offer convincing evidence that larger leases are considerably more likely to renew. This leads to the postulation that these leases should be valued, more so

than smaller ones, by owners. If this is the case, perhaps tenants should be paying less, which is already true in most cases. However, it also means that buildings that have fewer larger tenants should be valued more than buildings of the same size with a larger number of tenants This may not be the case, especially if these tenants are paying more in rent. There are additional advantages in that not only are larger leases more likely to renew, however if they choose to vacate, only one tenant is needed to replace them. Furthermore, owners have the added flexibility to break up the space if necessary in order to fill it faster, which may or may not be to their advantage depending on the market. Additionally, larger tenants often have space scattered that make them attractive clients. If owners establish a favorable report, then perhaps tenants will expand in their current building or look no further then buildings under the same management. It is easy to see that the same percentage growth of a larger tenant equates to a much greater increase in space than the same percentage growth for a smaller tenant. Therefore it is likely that larger tenants should be highly valued. However, as the literature states, smaller tenants should not be ignored and should be given the same amount of attention.

Finally, further research over time should be conducted. While renewal probability may be fairly constant, as past industry members seem to think by applying a steady number, it may also be that renewal is just part of the real estate cycle. Renewal probability might easily be predicted when it is better understood exactly how it fits together with other factors such as new construction, price and demand. However, this data is limited in that it only extends back 7 years. It is likely that it will take upwards of twenty years to begin to understand its piece in the puzzle.

Final Discussion

The regressions and probability calculations have begun to provide a clearer understanding of the true probability that a standard office lease will renew, as well as what factors will alter that probability and in what direction. It is clear that the size of the space is one of the strongest indicators, suggesting that it might provide a more accurate prediction of cash flows to adjust the renewal probability according to lease

characteristics. However, one could argue that the larger the space, the more risk involved in renewal, thus using similar renewal probabilities for space of different sizes provides a more conservative estimate, although perhaps this is accounted for in the discount rate applied in the analysis.

Renewal probability across years also proved to be a significant variable. However, this data is taken over a fairly short time period. A longer stretch of time over more real estate cycles would better determine whether renewal is predictable by the point in the cycle or whether there are in fact significant differences by year. From the charts, it appears that the probability is more constant then the regression suggests. The values seem to hover around 60% by year, and the overall rate of the study is around that as well. This might be a true value under the circumstances provided.

The location of the property, both whether it is suburban or in the central business district as well as its MSA, are influential factors. The significances of these variables imply that perhaps there are cultural issues or other constraints that affect renewal probability beyond the already assessed economic basis of employment and vacancy. An interesting feature to utilize as an independent variable would be the total commercial space per MSA. This would likely prove significant as it would limit the options of tenants. The space per worker should be looked at if possible because this might counter some of the effects of total square footage. Although, it seems in more central locations people tend to have a lower space per worker. Additionally the average rent of the MSA might be a feature that explains some of the difference by location. As for CBD versus suburban locations, the transportation issue offers a strong argument for why CBD's have higher renewal, however space constraints and rents are also worthwhile suppositions as well.

Overall, the above research indicates that the 75% renewal rate that many apply may not be the right number. While this study contains bias due to its single ownership and management of properties as well as the short time frame, the evidence is strong that the renewal probability is likely lower than expected. However, the addition of adjusting

the renewal probability in cash flow forecasts based on more predictable lease characteristics offers a valuable option to professionals. By expanding our understanding of tenant turnover, we can heighten accuracy and limit the uncertainty associated with pro forma's. This reduced risk can offer owners a better piece of mind combined with more precise predictions of building volatility.

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Appendix

Exhibit A: Renewal Values by MSA

MSA	Expansion	Reduction	Renewal	Vacate	Total	Renewal
Albuquerque	28	6	37	31	102	69.6%
Anchorage	12	1	19	15	47	68.1%
Atlanta	257	96	262	462	1077	57.1%
Austin	83	33	59	115	290	60.3%
Boston	232	89	330	467	1118	58.2%
Charlotte	5	2	5	5	17	70.6%
Chicago	345	171	529	663	1708	61.2%
Cleveland	18	8	10	33	69	52.2%
Columbus	36	11	32	63	142	55.6%
Dallas	238	106	330	430	1104	61.1%
Denver	220	69	280	364	933	61.0%
Ft. Worth	26	12	52	39	129	69.8%
Houston	134	52	137	219	542	59.6%
Indianapolis	51	12	33	54	150	64.0%
Los Angeles	169	51	184	277	681	59.3%
Minneapolis	50	21	51	65	187	65.2%
Nashville	10	2	7	13	32	59.4%
New Orleans	134	44	161	219	558	60.8%
New York	46	12	39	53	150	64.7%
Norfolk	18	7	32	15	72	79.2%
Oakland-East Bay	20	19	70	83	192	56.8%
Oklahoma City	8	3	13	20	44	54.5%
Orange County	227	70	261	350	908	61.5%
Orlando	23	8	25	36	92	60.9%
Philadelphia	68	25	101	165	359	54.0%
Phoenix	5	1	8	17	31	45.2%
Portland	76	44	168	230	518	55.6%
Raleigh-Durham	19	3	24	21	67	68.7%
Sacramento	40	13	124	156	333	53.2%
Salt Lake City	6	3	10	7	26	73.1%
San Antonio	54	13	46	81	194	58.2%
San Diego	70	20	104	129	323	60.1%
San Francisco	195	87	207	415	904	54.1%
San Jose	43	29	127	316	515	38.6%
Sarasota	5	2	2	10	19	47.4%
Seattle	407	136	236	582	1361	57.2%
St. Louis	11	5	19	30	65	53.8%
Stamford	54	23	65	110	252	56.3%
Tampa	12	3	8	12	35	65.7%
Washington DC	93	45	123	183	444	58.8%
West Palm Beach	9	2	11	10	32	68.8%
Grand Total	**3557**	**1359**	**4341**	**6565**	**15822**	**58.5%**

Exhibit B: Renewal Values by Year

Year	Expansion	Reduction	Renewal	Vacate	Total	Renewal
1997	229	30	170	320	749	57.3%
1998	449	106	360	660	1575	58.1%
1999	510	125	565	769	1969	60.9%
2000	578	183	703	921	2385	61.4%
2001	511	222	515	1122	2370	52.7%
2002	566	323	875	1472	3236	54.5%
2003	626	330	890	1199	3045	60.6%
2004	85	38	245	102	470	78.3%
2005	2		8		10	100.0%
2006	1	1	7		9	100.0%
2007		1	1		2	100.0%
2008			1		1	100.0%
2011			1		1	100.0%
Grand Total	**3557**	**1359**	**4341**	**6565**	**15822**	**58.5%**

Exhibit C: Renewal Values by Property (Broken out by MSA)

MSA	Building	Total Leases	%Renewal
Albuquerque	10110	49	77.6%
	11810	53	62.3%
Albuquerque Total		102	69.6%
Anchorage	11570	47	68.1%
Anchorage Total		47	68.1%
Atlanta	10520	105	55.2%
	10600	160	56.3%
	11290	75	56.0%
	11300	607	56.2%
	12230	34	64.7%
	12760	65	66.2%
	12970	31	61.3%
Atlanta Total		1077	57.1%
Austin	10200	95	58.9%
	10370	99	58.6%
	10610	96	63.5%
Austin Total		290	60.3%
Boston	10450	28	71.4%
	10910	19	68.4%
	11030	39	61.5%
	11040	35	65.7%
	11050	45	46.7%
	11060	108	61.1%
	11070	90	61.1%
	11080	89	65.2%
	11090	94	51.1%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
	11100	16	56.3%
	11120	116	53.4%
	11140	194	56.7%
	11180	17	52.9%
	11190	11	54.5%
	11200	14	42.9%
	11420	41	63.4%
	11690	39	35.9%
	11700	23	56.5%
	12750	21	57.1%
	12790	24	75.0%
	12830	13	69.2%
	12980	20	55.0%
	16400	22	81.8%
Boston Total		1118	58.2%
Charlotte	10590	17	70.6%
Charlotte Total		17	70.6%
Chicago	10290	71	59.2%
	10350	28	78.6%
	10580	56	53.6%
	10750	104	54.8%
	10790	145	66.2%
	10920	44	52.3%
	10930	87	65.5%
	10940	368	64.1%
	10950	87	51.7%
	10960	145	55.2%
	10970	125	61.6%
	11340	40	62.5%
	12220	311	65.9%
	12810	55	56.4%
	12820	42	45.2%
Chicago Total		1708	61.2%
Cleveland	10700	69	52.2%
Cleveland Total		69	52.2%
Columbus	10150	82	59.8%
	10380	45	48.9%
	10390	15	53.3%
Columbus Total		142	55.6%
Dallas	10080	116	61.2%
	10240	104	61.5%
	10480	181	60.8%
	11490	50	66.0%
	11520	72	61.1%
	11960	148	49.3%
	11970	19	73.7%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
	12110	27	40.7%
	12120	57	59.6%
	12260	155	63.2%
	12270	175	69.7%
Dallas Total		1104	61.1%
Denver	10170	43	58.1%
	10250	65	56.9%
	11710	59	55.9%
	11750	203	73.4%
	11760	100	70.0%
	11770	152	52.0%
	11790	20	55.0%
	11800	45	53.3%
	11820	63	50.8%
	11830	39	51.3%
	11850	144	61.8%
Denver Total		933	61.0%
Ft. Worth	10040	129	69.8%
Ft. Worth Total		129	69.8%
Houston	10010	274	64.6%
	10060	29	58.6%
	10100	42	52.4%
	11530	58	55.2%
	11550	139	54.0%
Houston Total		542	59.6%
Indianapolis	12250	150	64.0%
Indianapolis Total		150	64.0%
Los Angeles	10660	37	56.8%
	10980	51	64.7%
	10990	56	60.7%
	11640	75	53.3%
	12140	75	64.0%
	12240	80	62.5%
	12630	29	48.3%
	12640	28	67.9%
	12690	12	41.7%
	12700	22	40.9%
	12860	18	55.6%
	14800	20	80.0%
	14850	22	63.6%
	14910	23	43.5%
	15300	15	46.7%
	15310	26	57.7%
	15340	77	62.3%
	15620	15	73.3%
Los Angeles Total		681	59.3%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
Minneapolis	11670	59	71.2%
	11910	100	62.0%
	12920	11	63.6%
	58660	17	64.7%
Minneapolis Total		187	65.2%
Nashville	10440	32	59.4%
Nashville Total		32	59.4%
New Orleans	10410	90	57.8%
	10420	198	59.6%
	10430	112	55.4%
	11460	83	73.5%
	11470	75	61.3%
New Orleans Total		558	60.8%
New York	10560	29	65.5%
	11920	23	65.2%
	11980	17	64.7%
	12780	24	70.8%
	12840	40	57.5%
	13330	17	70.6%
New York Total		150	64.7%
Norfolk	10090	72	79.2%
Norfolk Total		72	79.2%
Oakland-East Bay	12480	16	56.3%
	12510	28	53.6%
	12520	60	56.7%
	14670	88	58.0%
Oakland-East Bay Total		192	56.8%
Oklahoma City	10030	44	54.5%
Oklahoma City Total		44	54.5%
Orange County	10490	67	61.2%
	10510	105	61.0%
	10540	93	49.5%
	10550	59	72.9%
	12600	38	60.5%
	12610	23	82.6%
	12660	42	64.3%
	13370	53	64.2%
	14300	31	51.6%
	14410	17	58.8%
	14450	19	68.4%
	14500	22	68.2%
	14620	20	65.0%
	14680	32	75.0%
	14780	21	42.9%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
	14860	10	70.0%
	14920	17	47.1%
	15050	26	61.5%
	15090	11	63.6%
	15270	25	64.0%
	15280	40	75.0%
	15320	50	56.0%
	15540	35	48.6%
	16470	52	61.5%
Orange County Total		908	61.5%
Orlando	12280	92	60.9%
Orlando Total		92	60.9%
Philadelphia	10640	126	57.1%
	10800	62	48.4%
	10820	12	25.0%
	10840	17	35.3%
	10870	36	50.0%
	10880	12	58.3%
	10890	17	47.1%
	11540	77	64.9%
Philadelphia Total		359	54.0%
Phoenix	10690	31	45.2%
Phoenix Total		31	45.2%
Portland	11630	104	63.5%
	14170	32	62.5%
	16020	40	32.5%
	16030	38	65.8%
	16080	16	62.5%
	16100	15	66.7%
	16120	32	50.0%
	16150	16	37.5%
	16170	23	78.3%
	16180	79	59.5%
	16210	32	40.6%
	16230	91	48.4%
Portland Total		518	55.6%
Raleigh-Durham	10180	67	68.7%
Raleigh-Durham Total		67	68.7%
Sacramento	12430	46	60.9%
	12470	18	44.4%
	13560	13	46.2%
	13580	16	62.5%
	13630	12	41.7%
	13640	11	45.5%
	13690	16	50.0%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
	13700	17	70.6%
	13710	25	44.0%
	13740	14	57.1%
	13990	21	52.4%
	14000	11	54.5%
	14040	16	50.0%
	14290	16	68.8%
	14520	17	47.1%
	14790	14	57.1%
	14980	36	55.6%
	15200	14	28.6%
Sacramento Total		333	53.2%
Salt Lake City	12440	16	62.5%
	58450	10	90.0%
Salt Lake City Total		26	73.1%
San Antonio	10280	51	51.0%
	10360	81	56.8%
	10680	62	66.1%
San Antonio Total		194	58.2%
San Diego	10460	182	62.6%
	10770	49	55.1%
	12670	42	69.0%
	15150	15	60.0%
	15160	35	42.9%
San Diego Total		323	60.1%
San Francisco	10020	18	44.4%
	10530	189	47.1%
	10630	54	66.7%
	10760	79	58.2%
	10780	38	71.1%
	11370	13	46.2%
	11730	67	53.7%
	12770	10	40.0%
	12870	15	66.7%
	12880	19	36.8%
	12890	36	44.4%
	12900	40	47.5%
	12910	37	51.4%
	12940	30	56.7%
	12950	100	55.0%
	13980	13	61.5%
	14550	10	60.0%
	14710	17	29.4%
	14740	26	73.1%
	14960	14	64.3%
	15210	11	63.6%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
	15390	26	53.8%
	15600	25	72.0%
	15610	17	47.1%
San Francisco Total		904	54.1%
San Jose	11000	21	57.1%
	11010	21	14.3%
	12200	16	56.3%
	12460	10	40.0%
	12550	88	48.9%
	12590	15	53.3%
	13400	26	50.0%
	13420	29	44.8%
	13430	32	25.0%
	13450	15	46.7%
	13470	25	28.0%
	14010	27	48.1%
	14530	57	29.8%
	14720	39	20.5%
	14730	17	47.1%
	15260	77	33.8%
San Jose Total		515	38.6%
Sarasota	10160	19	47.4%
Sarasota Total		19	47.4%
Seattle	11580	188	61.7%
	11590	61	62.3%
	11600	128	60.2%
	11610	127	47.2%
	11620	66	45.5%
	11940	20	70.0%
	12070	19	89.5%
	12080	127	48.8%
	12400	36	61.1%
	12490	23	56.5%
	12930	62	74.2%
	13290	237	59.5%
	13310	18	83.3%
	15650	15	26.7%
	15710	19	68.4%
	15720	10	60.0%
	15770	10	60.0%
	15860	54	57.4%
	15880	17	52.9%
	15890	10	50.0%
	15900	17	23.5%
	15920	12	41.7%
	16240	85	52.9%
Seattle Total		1361	57.2%

Exhibit C Continued

MSA	Building	Total Leases	%Renewal
St. Louis	10470	65	53.8%
St. Louis Total		65	53.8%
Stamford	10220	32	56.3%
	10260	42	59.5%
	10270	25	60.0%
	10310	26	65.4%
	10320	47	44.7%
	10330	36	61.1%
	10500	15	26.7%
	10730	29	69.0%
Stamford Total		252	56.3%
Tampa	10050	16	56.3%
	10400	19	73.7%
Tampa Total		35	65.7%
Washington DC	10210	46	54.3%
	10300	18	83.3%
	10720	85	47.1%
	11220	18	66.7%
	11230	49	63.3%
	11240	25	60.0%
	11270	28	82.1%
	11280	29	48.3%
	11510	58	72.4%
	11660	27	63.0%
	11890	10	50.0%
	12960	38	42.1%
	13300	13	46.2%
Washington DC Total		444	58.8%
West Palm Beach	10130	32	68.8%
West Palm Beach Total		32	68.8%
Grand Total		**15822**	**58.5%**

Exhibit D: Renewal Values by Location Type (Broken out by MSA)

MSA		Total	%Renewal
Albuquerque	CBD	49	77.6%
	SUB	53	62.3%
Albuquerque Total		102	69.6%
Anchorage	CBD	47	68.1%
Anchorage Total		47	68.1%
Atlanta	CBD	65	63.1%
	SUB	1012	56.7%
Atlanta Total		1077	57.1%

Exhibit D Continued

MSA		Total	%Renewal
Austin	CBD	290	60.3%
Austin Total		290	60.3%
Boston	CBD	689	59.5%
	SUB	429	56.2%
Boston Total		1118	58.2%
Charlotte	CBD	17	70.6%
Charlotte Total		17	70.6%
Chicago	CBD	1116	63.7%
	SUB	592	56.4%
Chicago Total		1708	61.2%
Cleveland	CBD	69	52.2%
Cleveland Total		69	52.2%
Columbus	CBD	15	53.3%
	SUB	127	55.9%
Columbus Total		142	55.6%
Dallas	SUB	1104	61.1%
Dallas Total		1104	61.1%
Denver	CBD	658	63.8%
	SUB	275	54.2%
Denver Total		933	61.0%
Ft. Worth	CBD	10	50.0%
	SUB	119	71.4%
Ft. Worth Total		129	69.8%
Houston	SUB	542	59.6%
Houston Total		542	59.6%
Indianapolis	CBD	150	64.0%
Indianapolis Total		150	64.0%
Los Angeles	CBD	112	54.5%
	SUB	569	60.3%
Los Angeles Total		681	59.3%
Minneapolis	CBD	87	69.0%
	SUB	100	62.0%
Minneapolis Total		187	65.2%
Nashville	CBD	32	59.4%
Nashville Total		32	59.4%
New Orleans	CBD	158	67.7%
	SUB	400	58.0%
New Orleans Total		558	60.8%
New York	CBD	150	64.7%
New York Total		150	64.7%

Exhibit D Continued

MSA		Total	%Renewal
Norfolk	CBD	72	79.2%
Norfolk Total		72	79.2%
Oakland-East Bay	SUB	192	56.8%
Oakland-East Bay Total		192	56.8%
Oklahoma City	SUB	44	54.5%
Oklahoma City Total		44	54.5%
Orange County	SUB	908	61.5%
Orange County Total		908	61.5%
Orlando	CBD	92	60.9%
Orlando Total		92	60.9%
Philadelphia	CBD	203	60.1%
	SUB	156	46.2%
Philadelphia Total		359	54.0%
Phoenix	CBD	31	45.2%
Phoenix Total		31	45.2%
Portland	CBD	152	55.9%
	SUB	366	55.5%
Portland Total		518	55.6%
Raleigh-Durham	SUB	67	68.7%
Raleigh-Durham Total		67	68.7%
Sacramento	CBD	46	60.9%
	SUB	287	51.9%
Sacramento Total		333	53.2%
Salt Lake City	CBD	10	90.0%
	SUB	16	62.5%
Salt Lake City Total		26	73.1%
San Antonio	SUB	194	58.2%
San Antonio Total		194	58.2%
San Diego	SUB	323	60.1%
San Diego Total		323	60.1%
San Francisco	CBD	613	54.5%
	SUB	291	53.3%
San Francisco Total		904	54.1%
San Jose	CBD	15	53.3%
	SUB	500	38.2%
San Jose Total		515	38.6%
Sarasota	CBD	19	47.4%
Sarasota Total		19	47.4%
Seattle	CBD	696	62.1%

Exhibit D Continued

MSA		Total	%Renewal
	SUB	665	52.2%
Seattle Total		1361	57.2%
St. Louis	SUB	65	53.8%
St. Louis Total		65	53.8%
Stamford	SUB	252	56.3%
Stamford Total		252	56.3%
Tampa	SUB	35	65.7%
Tampa Total		35	65.7%
Washington DC	CBD	171	54.4%
	SUB	273	61.5%
Washington DC Total		444	58.8%
West Palm Beach	SUB	32	68.8%
West Palm Beach Total		32	68.8%
CBD Total		**5834**	**61.3%**
SUB Total		**9988**	**56.9%**
Grand Total		**15822**	**58.5%**

Exhibit E: Weighted Renewal Values by MSA

MSA	Expansion	Reduction	Renewal	Vacate	Total	Renewal
Albuquerque	148,782	75,478	187,285	106,626	518,171	79.4%
Anchorage	69,592	5,256	92,476	38,673	205,997	81.2%
Atlanta	6,944,215	2,768,525	2,700,200	4,081,710	16,494,650	75.3%
Austin	1,710,625	961,455	533,081	687,370	3,892,531	82.3%
Boston	6,134,018	3,578,542	2,456,862	4,011,944	16,181,366	75.2%
Charlotte	1,118,309	137,396	377,048	44,559	1,677,312	97.3%
Chicago	7,433,303	3,631,624	3,658,403	4,289,420	19,012,750	77.4%
Cleveland	1,282,621	883,977	63,403	482,445	2,712,446	82.2%
Columbus	328,196	158,977	208,299	339,788	1,035,260	67.2%
Dallas	3,399,022	1,580,915	1,860,048	2,618,184	9,458,169	72.3%
Denver	2,885,412	1,089,685	1,490,623	2,157,769	7,623,489	71.7%
Ft. Worth	171,105	67,658	148,953	118,287	506,003	76.6%
Houston	2,808,437	1,280,844	1,338,096	1,776,887	7,204,264	75.3%
Indianapolis	1,033,837	416,097	164,016	228,251	1,842,201	87.6%
Los Angeles	3,297,783	1,064,614	1,492,520	2,496,480	8,351,397	70.1%
Minneapolis	5,033,699	883,529	738,104	329,279	6,984,611	95.3%
Nashville	140,451	193,527	25,961	55,985	415,924	86.5%
New Orleans	1,711,196	1,062,035	920,784	967,822	4,661,837	79.2%
New York	4,740,400	1,274,178	408,075	863,047	7,285,700	88.2%
Norfolk	146,336	97,223	178,515	67,984	490,058	86.1%
Oakland-East Bay	147,082	194,874	403,788	564,773	1,310,517	56.9%
Oklahoma City	10,302	2,462	16,474	37,261	66,499	44.0%
Orange County	3,478,849	1,023,532	1,472,961	2,064,492	8,039,834	74.3%

Exhibit E Continued

MSA	Expansion	Reduction	Renewal	Vacate	Total	Renewal
Orlando	699,312	130,681	205,375	165,842	1,201,210	86.2%
Philadelphia	1,801,836	835,572	998,858	946,396	4,582,662	79.3%
Phoenix	8,139	1,580	7,922	20,953	38,594	45.7%
Portland	589,461	525,054	686,524	1,179,212	2,980,251	60.4%
Raleigh-Durham	115,044	29,424	89,360	95,438	329,266	71.0%
Sacramento	344,054	133,262	306,113	518,780	1,302,209	60.2%
Salt Lake City	34,650	90,312	118,517	45,441	288,920	84.3%
San Antonio	538,182	272,011	262,352	438,721	1,511,266	71.0%
San Diego	867,489	351,798	472,154	562,488	2,253,929	75.0%
San Francisco	5,347,395	2,547,635	1,217,095	3,643,003	12,755,128	71.4%
San Jose	342,373	839,055	541,284	2,639,857	4,362,569	39.5%
Sarasota	8,358	38,808	5,704	51,062	103,932	50.9%
Seattle	15,292,505	4,824,678	2,508,325	4,010,539	26,636,047	84.9%
St. Louis	292,261	169,979	134,874	190,889	788,003	75.8%
Stamford	1,146,505	541,822	862,942	1,041,428	3,592,697	71.0%
Tampa	190,986	137,583	61,398	43,076	433,043	90.1%
Washington DC	3,204,082	1,185,505	1,669,242	1,787,676	7,846,505	77.2%
West Palm Beach	90,800	25,448	32,412	56,645	205,305	72.4%
Grand Total	**85,087,004**	**35,112,610**	**31,116,426**	**45,866,482**	**197,182,522**	**76.7%**

Exhibit F: Weighted Renewal Values by Year

Year	Expansion	Reduction	Renewal	Vacate	Total	Renewal
1997	4,390,011	445,331	1,016,291	1,541,223	7,392,856	79.2%
1998	9,766,496	3,332,364	2,404,673	3,176,316	18,679,849	83.0%
1999	10,784,675	3,137,702	4,069,594	4,905,708	22,897,679	78.6%
2000	14,865,909	3,577,498	5,780,705	6,562,488	30,786,600	78.7%
2001	15,174,551	7,196,811	3,072,032	8,493,438	33,936,832	75.0%
2002	15,063,865	8,471,903	5,218,286	10,709,991	39,464,045	72.9%
2003	12,449,425	8,167,283	6,434,324	9,729,625	36,780,657	73.5%
2004	2,295,992	668,131	2,204,520	747,693	5,916,336	87.4%
Grand Total	**84,790,924**	**34,997,023**	**30,200,425**	**45,866,482**	**195,854,854**	**76.6%**

Exhibit G: Renewal Values by Year and Location Type

Year	District	Renewal	Reduction	Expansion	Vacate	Total	%Renewal
1997	CBD	80	9	45	100	234	**57.3%**
	SUB	149	21	125	220	515	**57.3%**
1998	CBD	196	48	130	269	643	**58.2%**
	SUB	253	58	230	391	932	**58.0%**
1999	CBD	237	64	255	337	893	**62.3%**
	SUB	273	61	310	432	1076	**59.9%**
2000	CBD	282	74	301	362	1019	**64.5%**
	SUB	296	109	402	559	1366	**59.1%**

Exhibit G Continued

Year	District	Renewal	Reduction	Expansion	Vacate	Total	%Renewal
2001	CBD	230	86	187	382	885	**56.8%**
	SUB	281	136	328	740	1485	**50.2%**
2002	CBD	202	103	276	416	997	**58.3%**
	SUB	364	220	599	1056	2239	**52.8%**
2003	CBD	224	127	264	356	971	**63.3%**
	SUB	402	203	626	843	2074	**59.4%**
2004	CBD	30	16	96	37	179	**79.3%**
	SUB	55	22	149	65	291	**77.7%**

Exhibit H: Linear Regression of Building Characteristics, Vacancy & Employment

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.3302
R Square	0.1090
Adjusted R Square	0.0807
Standard Error	0.1117
Observations	261.0000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	8.0000	0.3847	0.0481	3.8536	0.0003
Residual	252.0000	3.1448	0.0125		
Total	260.0000	3.5296			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.9789	2.3546	-0.8404	0.4015	-6.6161	2.6583	-6.6161	2.6583
Update YR	0.0013	0.0012	1.0719	0.2848	-0.0011	0.0036	-0.0011	0.0036
#Buildings	-0.0005	0.0038	-0.1271	0.8989	-0.0081	0.0071	-0.0081	0.0071
CBD	-0.0021	0.0204	-0.1054	0.9161	-0.0423	0.0380	-0.0423	0.0380
Class	-0.0242	0.0174	-1.3935	0.1647	-0.0584	0.0100	-0.0584	0.0100
Building SF	0.0000	0.0000	-0.4436	0.6577	0.0000	0.0000	0.0000	0.0000
# Stories	0.0027	0.0011	2.4739	0.0140	0.0005	0.0048	0.0005	0.0048
Vacancy	-0.0012	0.0008	-1.5840	0.1144	-0.0027	0.0003	-0.0027	0.0003
Employment	0.0000	0.0000	2.2102	0.0280	0.0000	0.0000	0.0000	0.0000

Exhibit I: Probit Regression of Building Characteristics, MSA, Year, Deal% & 5% Deal Dummy

Probit Estimates

Iteration 0	log likelihood=	-10407.4	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10000.7	*LR chi2(12)*	858.27
Iteration 2	log likelihood=	-9979.2	*Prob > chi 2*	0
Iteration 3	log likelihood=	-9978.27	*Pseudo R2*	0.0412
Iteration 4	log likelihood=	-9978.27		
Log likelihood=	-9978.27			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	-0.0017977	0.00206	-0.87	0.383	-0.005838	0.002243
abdealsf	5.83E-06	8.34E-07	6.99	0	4.20E-06	7.47E-06
buildingsf	-1.13E-07	5.28E-08	-2.13	0.033	-2.16E-07	-9.17E-09
stories	0.005239	0.00163	3.22	0.001	0.0020453	0.0084327
buildings	0.0125653	0.00536	2.34	0.019	0.0020602	0.0230703
cbd	0.0887909	0.03983	2.23	0.026	0.0107338	0.1668481
classa	-0.0310708	0.02989	-1.04	0.299	-0.089649	0.027508
atlanta	-0.0448524	0.06628	-0.68	0.499	-0.174766	0.0850614
austin	-0.1098051	0.09006	-1.22	0.223	-0.286313	0.0667031
boston	-0.1055099	0.0558	-1.89	0.059	-0.214868	0.0038487
cleveland	-0.4227934	0.1627	-2.6	0.009	-0.741687	-0.103899
columbus	-0.0590278	0.12055	-0.49	0.624	-0.295303	0.1772475
dallas	0.0729527	0.0554	1.32	0.188	-0.035622	0.1815275
denver	-0.0310781	0.05777	-0.54	0.591	-0.144300	0.0821442
ftworth	0.3653399	0.12442	2.94	0.003	0.1214785	0.6092013
houston	-0.038535	0.06889	-0.56	0.576	-0.173553	0.0964834
indianapolis	-0.0052141	0.11407	-0.05	0.964	-0.228790	0.2183623
losangeles	-0.024915	0.06465	-0.39	0.7	-0.151631	0.1018011
minneapolis	0.061315	0.1062	0.58	0.564	-0.146835	0.2694656
nashville	-0.0943635	0.23406	-0.4	0.687	-0.553121	0.3643945
neworleans	0.0386764	0.06978	0.55	0.579	-0.098085	0.1754378
newyork	-0.129297	0.11803	-1.1	0.273	-0.360626	0.1020324
oaklandeas~y	0.0065042	0.10044	0.06	0.948	-0.190349	0.2033579
orangecounty	0.0823857	0.05972	1.38	0.168	-0.034658	0.1994296
orlando	-0.0467823	0.14182	-0.33	0.741	-0.324738	0.2311742
philadelphia	-0.2308301	0.07762	-2.97	0.003	-0.382959	-0.078700
phoenix	-0.519232	0.23727	-2.19	0.029	-0.984267	-0.054197
portland	-0.0711311	0.07145	-1	0.319	-0.211162	0.0689003
raleighdur~m	0.290471	0.16781	1.73	0.083	-0.038424	0.619366
sacramento	-0.1773053	0.08188	-2.17	0.03	-0.337795	-0.016814

Exhibit I Continued

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
saltlakecity	0.0320541	0.3282	0.1	0.922	-0.611201	0.6753098
sanantonio	-0.0358844	0.10083	-0.36	0.722	-0.233516	0.1617475
sandiego	0.0464508	0.08357	0.56	0.578	-0.117347	0.2102494
sanfrancisco	-0.2510254	0.06108	-4.11	0	-0.370739	-0.131311
sanjose	-0.532045	0.07104	-7.49	0	-0.671275	-0.392814
seattle	-0.2370777	0.05529	-4.29	0	-0.345437	-0.128718
stamford	-0.1729406	0.09328	-1.85	0.064	-0.355771	0.0098903
washingtondc	-0.0918769	0.07299	-1.26	0.208	-0.234939	0.0511848
y97	-0.7039005	0.0831	-8.47	0	-0.866778	-0.541023
y98	-0.6917515	0.07381	-9.37	0	-0.836416	-0.547086
y99	-0.5960852	0.07202	-8.28	0	-0.737241	-0.454929
y00	-0.5855955	0.07067	-8.29	0	-0.724108	-0.447082
y01	-0.8146892	0.07037	-11.6	0	-0.952603	-0.676774
y02	-0.7232888	0.06889	-10.5	0	-0.858301	-0.588276
y03	-0.5591272	0.06913	-8.09	0	-0.694612	-0.423642
deal	0.0175408	0.00459	3.82	0	0.0085469	0.0265346
d5	0.155666	0.05119	3.04	0.002	0.0553293	0.2560026
_cons	4.296539	4.09818	1.05	0.294	-3.735751	12.32883

Exhibit J: Probit Regression of Building Characteristics, MSA, Year, Deal% & 10% Deal Dummy

Probit Estimates

Iteration 0	log likelihood=	-10407.401	*Number of Estimates*	15318
Iteration 1	log likelihood=	-10012.421	*LR chi2(12)*	851.29
Iteration 2	log likelihood=	-9982.6919	*Prob > chi 2*	0
Iteration 3	log likelihood=	-9981.7575	*Pseudo R2*	0.0409
Iteration 4	log likelihood=	-9981.7567		
Log likelihood=	-9981.76			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
updateyr	-0.0017029	0.002061	-0.83	0.409	-0.0057423	0.0023365
abdealsf	6.00E-06	8.43E-07	7.12	0	4.35E-06	7.65E-06
buildingsf	-1.13E-07	5.28E-08	-2.13	0.033	-2.16E-07	-9.11E-09
stories	0.0053452	0.0016311	3.28	0.001	0.0021483	0.0085421
buildings	0.0127803	0.0053609	2.38	0.017	0.002273	0.0232875
cbd	0.0861561	0.0398311	2.16	0.031	0.0080885	0.1642237
classa	-0.0308529	0.0298844	-1.03	0.302	-0.0894252	0.0277195
atlanta	-0.0476944	0.0662585	-0.72	0.472	-0.1775586	0.0821698

Exhibit J Continued

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
austin	-0.107831	0.0899784	-1.2	0.231	-0.2841854	0.0685234
boston	-0.1067885	0.0557734	-1.91	0.056	-0.2161024	0.0025253
cleveland	-0.4222568	0.1627683	-2.59	0.009	-0.7412767	-0.103237
columbus	-0.0545782	0.1204668	-0.45	0.651	-0.2906887	0.1815324
dallas	0.0715025	0.0553806	1.29	0.197	-0.0370414	0.1800465
denver	-0.0329461	0.0577757	-0.57	0.569	-0.1461844	0.0802922
ftworth	0.3610089	0.1243597	2.9	0.004	0.1172683	0.6047495
houston	-0.0438562	0.0688943	-0.64	0.524	-0.1788866	0.0911743
indianapolis	-0.0078837	0.1141605	-0.07	0.945	-0.231634	0.2158667
losangeles	-0.0290635	0.0646361	-0.45	0.653	-0.155748	0.097621
minneapolis	0.059628	0.1060992	0.56	0.574	-0.1483226	0.2675787
nashville	-0.1027707	0.2343403	-0.44	0.661	-0.5620693	0.3565279
neworleans	0.0364853	0.0697672	0.52	0.601	-0.1002559	0.1732264
newyork	-0.1360105	0.1179342	-1.15	0.249	-0.3671574	0.0951363
oaklandeas~y	0.0041216	0.100439	0.04	0.967	-0.1927353	0.2009784
orangecounty	0.0789072	0.0597108	1.32	0.186	-0.0381238	0.1959381
orlando	-0.0424088	0.141618	-0.3	0.765	-0.3199749	0.2351574
philadelphia	-0.2355172	0.0776398	-3.03	0.002	-0.3876884	-0.083346
phoenix	-0.4931548	0.2367361	-2.08	0.037	-0.9571491	-0.029161
portland	-0.0733234	0.0714341	-1.03	0.305	-0.2133317	0.0666849
raleighdur~m	0.2848698	0.1677993	1.7	0.09	-0.0440109	0.6137504
sacramento	-0.1787701	0.0818926	-2.18	0.029	-0.3392766	-0.018264
saltlakecity	0.0415325	0.3294154	0.13	0.9	-0.6041099	0.6871749
sanantonio	-0.0287836	0.1006887	-0.29	0.775	-0.2261298	0.1685626
sandiego	0.043526	0.0835803	0.52	0.603	-0.1202884	0.2073405
sanfrancisco	-0.2524862	0.0610774	-4.13	0	-0.3721957	-0.132777
sanjose	-0.5336175	0.0710508	-7.51	0	-0.6728745	-0.394361
seattle	-0.2405094	0.0552969	-4.35	0	-0.3488893	-0.132130
stamford	-0.1670109	0.0931222	-1.79	0.073	-0.349527	0.0155052
washingtondc	-0.0903572	0.0730111	-1.24	0.216	-0.2334564	0.0527419
y97	-0.7020391	0.0830964	-8.45	0	-0.8649051	-0.539173
y98	-0.6887399	0.0737956	-9.33	0	-0.8333767	-0.544103
y99	-0.5942846	0.0720114	-8.25	0	-0.7354243	-0.453145
y00	-0.5833444	0.0706597	-8.26	0	-0.7218348	-0.444854
y01	-0.8124024	0.0703494	-11.55	0	-0.9502847	-0.674520
y02	-0.7195425	0.0688612	-10.45	0	-0.854508	-0.584577
y03	-0.5565646	0.0691093	-8.05	0	-0.6920164	-0.421113
deal	0.0307392	0.005393	5.7	0	0.020169	0.0413093
d10	-0.1269289	0.0852418	-1.49	0.136	-0.2939998	0.040142
_cons	4.096721	4.096908	1	0.317	-3.933072	12.12651

Exhibit K: Probit Regression of Building Characteristics, MSA, Year, Deal% & 20% Deal Dummy

Probit Estimates

Iteration 0	log likelihood=	-10407.401	*Number of Estimates*	15318
Iteration 1	log likelihood=	-9988.8195	*LR chi2(12)*	888.44
Iteration 2	log likelihood=	-9963.7101	*Prob > chi 2*	0
Iteration 3	log likelihood=	-9963.1815	*Pseudo R2*	0.0427
Iteration 4	log likelihood=	-9963.1809		
Log likelihood=	-9963.18			

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
updateyr	-0.0017936	0.0020616	-0.87	0.384	-0.0058342	0.002247
abdealsf	5.29E-06	8.17E-07	6.48	0	3.69E-06	6.90E-06
buildingsf	-9.83E-08	5.29E-08	-1.86	0.063	-2.02E-07	5.25E-09
stories	0.0053521	0.0016303	3.28	0.001	0.0021568	0.0085474
buildings	0.0125966	0.0053608	2.35	0.019	0.0020896	0.0231036
cbd	0.091958	0.039875	2.31	0.021	0.0138044	0.1701116
classa	-0.0311378	0.029897	-1.04	0.298	-0.0897348	0.0274592
atlanta	-0.0521192	0.066325	-0.79	0.432	-0.1821139	0.0778755
austin	-0.1225477	0.0902597	-1.36	0.175	-0.2994534	0.0543581
boston	-0.1101874	0.055841	-1.97	0.048	-0.2196337	-0.0007411
cleveland	-0.4274619	0.1625778	-2.63	0.009	-0.7461085	-0.1088153
columbus	-0.0835469	0.1209075	-0.69	0.49	-0.3205214	0.1534275
dallas	0.0740206	0.0554226	1.34	0.182	-0.0346058	0.1826469
denver	-0.0350952	0.0577959	-0.61	0.544	-0.1483731	0.0781827
ftworth	0.3657793	0.124478	2.94	0.003	0.1218068	0.6097517
houston	-0.037085	0.0689193	-0.54	0.591	-0.1721643	0.0979943
indianapolis	-0.006691	0.1142112	-0.06	0.953	-0.2305408	0.2171588
losangeles	-0.0301265	0.0647185	-0.47	0.642	-0.1569725	0.0967194
minneapolis	0.0542044	0.1063615	0.51	0.61	-0.1542602	0.2626691
nashville	-0.1035668	0.2345388	-0.44	0.659	-0.5632545	0.3561209
neworleans	0.037423	0.0698523	0.54	0.592	-0.0994849	0.174331
newyork	-0.1420236	0.1177544	-1.21	0.228	-0.3728179	0.0887707
oaklandeas~y	0.0119218	0.1004191	0.12	0.905	-0.1848961	0.2087396
orangecounty	0.0719436	0.0597702	1.2	0.229	-0.0452039	0.189091
orlando	-0.0447578	0.1418354	-0.32	0.752	-0.3227501	0.2332345
philadelphia	-0.2354939	0.0774742	-3.04	0.002	-0.3873405	-0.0836474
phoenix	-0.5645674	0.2382441	-2.37	0.018	-1.031517	-0.0976176
portland	-0.0732362	0.0714832	-1.02	0.306	-0.2133407	0.0668683
raleighdur~m	0.2735048	0.1680208	1.63	0.104	-0.0558099	0.6028194
sacramento	-0.1954533	0.0819722	-2.38	0.017	-0.3561158	-0.0347909

Exhibit K Continued

rv	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
saltlakecity	0.0682725	0.3248838	0.21	0.834	-0.568488	0.7050331
sanantonio	-0.0447816	0.1008871	-0.44	0.657	-0.2425167	0.1529535
sandiego	0.0441675	0.0836802	0.53	0.598	-0.1198427	0.2081777
sanfrancisco	-0.2613438	0.0611321	-4.28	0	-0.3811606	-0.141527
sanjose	-0.5408235	0.071083	-7.61	0	-0.6801436	-0.4015034
seattle	-0.237405	0.0552903	-4.29	0	-0.345772	-0.1290381
stamford	-0.1778832	0.0933947	-1.9	0.057	-0.3609334	0.0051669
washingtondc	-0.103264	0.0731057	-1.41	0.158	-0.2465485	0.0400206
y97	-0.6973114	0.0831207	-8.39	0	-0.860225	-0.5343977
y98	-0.6884857	0.0738172	-9.33	0	-0.8331646	-0.5438067
y99	-0.5922903	0.0720162	-8.22	0	-0.7334393	-0.4511412
y00	-0.583094	0.0706666	-8.25	0	-0.7215981	-0.4445899
y01	-0.8105826	0.0703519	-11.5	0	-0.9484697	-0.6726955
y02	-0.7206889	0.0688711	-10.5	0	-0.8556738	-0.585704
y03	-0.5567216	0.0691199	-8.05	0	-0.692194	-0.4212491
deal	0.0447481	0.004997	8.95	0	0.0349541	0.054542
d20	-0.8280419	0.1301962	-6.36	0	-1.083222	-0.5728621
_cons	4.249264	4.098081	1.04	0.3	-3.782827	12.28135

*Exhibit L: Predicted Renewal Probability by Lease Square Footage**

abdealsf	Predicted %
1,000	54.4%
5,000	55.9%
10,000	57.7%
15,000	59.5%
20,000	61.3%
25,000	63.1%
30,000	64.8%
35,000	66.5%
40,000	68.1%
45,000	69.8%
50,000	71.4%
55,000	72.9%
60,000	74.4%
65,000	75.9%
70,000	77.3%
75,000	78.7%
80,000	80.0%
85,000	81.3%
90,000	82.5%
95,000	83.6%
100,000	84.8%

*These results are predicted using the complete regression model and hold all other independent variables constant at their mean values.