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Investment Returns from Responsible Property Investments: Energy Efficient, Transit-oriented and Urban Regeneration Office Properties in the US from 1998-2008

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Abstract

Responsible property investing (RPI) includes many facets such as investing in Energy Star labeled properties, transit-oriented development and redevelopment areas. This work shows that investors could have purchased a portfolio consisting solely of RPI office properties over the past 10 years and had performance that was better, at less risk, than a portfolio of properties without RPI features. Our paper breaks down the ways that various RPI features impact income, property values, capitalization rates, price appreciation and total returns. With few exceptions, RPI properties had incomes, values per square foot, price appreciation and total returns that were either higher or insignificantly different from conventional properties with lower or insignificantly different cap rates. Energy Star properties had 5.9% higher net incomes per square foot (due to 9.8% lower utility expenditures, 4.8% higher rents, and 0.9% higher occupancy rates), 13.5% higher market values per square foot, 0.5% lower cap rates, and appreciation and total returns similar to other office properties. Properties near transit in the suburbs had 12.7% higher net incomes, 16.2% higher market values, 0.3% lower cap rates, 1.1 percent higher annual appreciation and 0.9 percent higher annual total returns than other suburban office properties. Properties near transit in CBDs had 4.5% higher net incomes, 10.4% higher market values, and 0.2% lower cap rates but their appreciation and total returns were similar to other CBD office buildings. Properties in or near urban regeneration areas in CBDs had 2.4% lower net incomes, consistent with their economically distressed locations, but they still had 1.1% higher values per square foot, 0.5% lower cap rates, and appreciation and total returns on par with other CBD office properties. Regeneration properties in the suburbs were the only type of RPI property to not meet or beat market rate returns. They had 9.4% higher incomes and cap rates and market values on par with other suburban offices but their appreciation and total returns fell below other suburban offices by 1.4% and 2.1% per year respectively. Based on this evidence, we conclude that investors can be socially responsible while also earning competitive rates of return. Moreover, since RPI can produce social and environmental benefits while fulfilling fiduciary obligations, it would be economically irrational in social welfare terms and ethically unjustifiable for investors to not engage in Responsible Property Investing.

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Introduction

Investors are increasingly interested in corporate social responsibility and socially responsible investing (Hill *et al.* 2007, Schueth 2003). Since the 1970s, socially responsible investing, or efforts to maximize both financial return and social good, has grown into a global movement (Louche and Lydenberg 2006). Over 360 asset owners, investment managers and financial service providers, representing over $15 trillion in assets under management, have signed the UN Principles for Responsible Investment which "help investors integrate consideration of environmental, social and governance (ESG) issues into investment decision-making and ownership practices" (Principles for Responsible Investment 2008).

The application of responsible investing and corporate social responsibility to the property sector is increasingly referred to as Responsible Property Investing (Mansley 2000, McNamara 2000, Newell and Acheampong 2002, Boyd 2005, Lutzkendorf and Lorenz 2005, Newell 2008, Pivo 2005, Pivo and McNamara 2005). Recent surveys have documented its emergence around the world (Pivo 2007, Rapson *et al*. 2007, UNEP FI 2007).

Responsible Property Investing (RPI) has been defined as maximizing the positive effects and minimizing the negative effects of property ownership, management and development on society and the natural environment in ways that are consistent with investor goals and fiduciary responsibilities (Pivo and McNamara 2005). Specific strategies include energy conservation, green power purchasing, fair labor practices, urban regeneration, safety and risk management, and community development, among others (Pivo and UN Environment Programme Finance Initiative Property Working Group 2008). RPI goes beyond compliance with legal requirements to better manage the risks and opportunities associated with social and environmental issues. It encompasses a variety of efforts to address ecological integrity, community development, and human fulfillment in the course of profitable real estate investing. The goal is to reduce risk and pursue financial opportunities while helping to address the challenging public issues facing present and future generations.

Because so many factors contribute to the social and environmental performance of buildings, RPI touches on literally dozens of property location, design, management, and investment strategies. However, a recent effort to prioritize RPI criteria found that experts, giving consideration to both financial investment materiality and public general welfare, would emphasize "the creation of less automobile-dependent and more energy-efficient cities where worker well-being and urban revitalization are priorities" (Pivo 2008). Based on this finding, our paper examines the economic performance of 3 particular types of RPI properties: those close to transit stations, energy efficient properties, and properties in or near areas targeted for urban revitalization. Our study question was how did these properties perform financially compared to otherwise similar properties without these RPI attributes?

A survey of senior US property investment executives found that concerns about financial performance and fiduciary duty were potential impediments to RPI (Pivo 2007). Still, more than 85 percent of the executives agreed that they probably would increase their allocation to such investments if they met their risk and return criteria. This paper targets these impediments by examining the financial performance of RPI properties in the USA. In particular, it examines how energy efficient properties, properties near transit ("transit-oriented properties") and properties in areas targeted for urban regeneration ("regeneration properties") have performed financially over the past decade in comparison to those without such features.

If RPI enhances investment returns, there are both business and fiduciary reasons to pursue it. If it has a neutral effect, then it makes economic sense in social welfare terms and moral sense because social or environmental gains can be achieved without harming financial results. But if RPI harms risk adjusted investment returns, it will be difficult for investors to justify or defend absent government requirements or incentives unless investors are willing to trade-off lower returns for social or environmental gains. Findings are mixed on whether individual investors will sacrifice financial returns for social responsibility and the degree to which financial returns influence the decision to make socially responsible investments (Rosen *et al.* 2005, Nilsson 2007, Vivyan *et al.* 2007, and Williams 2007). But if RPI harms returns it will likely face legal and economic resistance. Therefore, if RPI is to become more common among institutional investors, it is important to find approaches to RPI that are neutral or positive for financial returns.

Salzmann *et al*. (2005) reviewed the business case for corporate social responsibility (CSR), which they found to be a topic in the literature since the 1960s. Although theorists agree there are non-economic reasons to pursue CSR, considerable theoretical and empirical work has focused on the relationship between financial performance and environmental/social performance. Theorists have argued whether the links are positive, neutral, or negative while empirical studies have been “largely inconclusive” due to research biases and ambiguities.

How RPI Can Affect Investment Returns

Just because properties produce more income or are worth more per square foot, does not mean they will automatically generate higher investment returns. This is important to understand for those trying to make the case for RPI investments by simply using evidence of higher incomes and valuations.

The three types of returns commonly monitored by investors are income returns, or net income relative to beginning property value, which is analogous to the capitalization rate, capital appreciation returns, or the change in property market value relative to beginning property value, and total returns which is the sum of income and appreciation returns. Assuming the same risk, for actual (*ex post*) returns to be higher for RPI properties than for non-RPI properties, income would have to increase more than was expected when the property was acquired or appraised due to rents or occupancy rates that were higher than expected or expenses that were lower than expected. This is because property values are generally a function of expected earnings, given a certain level of risk. Assuming that property values were adjusted in response to unexpected higher incomes using the same capitalization rate used to determine values before any higher incomes were recognized, unanticipated income gains would produce the same income returns, higher capital appreciation returns and higher total returns for RPI properties. If, however, property values were not adjusted to reflect the higher incomes or only adjusted upward at the previous rate of growth, then unanticipated income growth would produce higher income returns, the same capital appreciation returns and higher total returns for RPI properties. Thus, unanticipated income growth will produce higher total returns either by increasing income or capital returns depending on whether it is fully capitalized into property values. Another way for RPI properties to achieve higher returns would be for the capitalization rates used to assess values to decline as a result of the RPI properties being perceived as less risky than previously thought in comparison to otherwise similar investments. This would produce lower income returns, higher capital appreciation returns and higher total returns for RPI properties. So, overall, RPI properties can outperform as investments through either unexpected income gains or downward shifts in the cap rates used in valuation.

These three basic scenarios can be summarized as follows:

Table I: Relationships between Income, Value and Returns

	Changes to Income and Value		Impact on Returns		
Scenario	Income	Property Value	Income Returns	Capital Appreciation Returns	Total Returns
1	Increases faster than anticipated	Driven upward by higher income being capitalized using normal cap rates	Same	Higher	Higher
2	Increases faster than anticipated	Increases at same rate as anticipated	Higher	Same	Higher
3	Increase same as anticipated	Driven upward by declining cap rates due to perception of lower risk	Lower	Higher	Higher

Only certain investors would be the beneficiaries of better performance. Investors that own the affected properties when shifts in value occur are the ones who receive the gains. Those who acquire RPI properties after higher incomes have been capitalized into the price of properties or after capitalization rates have adjusted downward will not receive additional returns attributable to RPI features. Developers who create RPI properties via new construction or refurbishment can also obtain higher returns if they can create RPI properties without facing higher land or construction costs that offset any higher property values created by RPI features. If, however, they must pay a premium for land or buildings they intend to refurbish because, for example, they are located near transit or in a redevelopment zone, or if they must pay more for materials and labor to create an energy efficient or transit friendly building, then the additional costs could negate any additional profits they might otherwise have obtained by creating and selling more valuable RPI property. An examination of the development costs facing RPI developers is beyond the scope of this study. But readers should understand that any added value created by RPI features may or may not result in higher returns for the investors or developers who incurred the initial cost of adding RPI features to the property.

Based on this framework, we identify four practical pathways by which RPI attributes may have affected the income or appreciation of RPI properties in the recent past relative to other property investments:

1. Tenant Demand - Certain RPI attributes could have gained or lost favor among tenants, changing their willingness to pay or their demand for properties with RPI attributes. For example, rising gas prices may have caused demand to shift toward properties with good transit service, resulting in lower vacancies and higher rents for transit-oriented properties. Over the past several years, rising energy prices and growing traffic congestion should have, if anything, increased interest in energy efficient and transit-oriented properties. Concern about urban crime or terrorism could have harmed demand for urban regeneration properties, but there is no evidence to suggest it did. In fact, urban areas have generally outperformed other locations and seen something of a renaissance in the past decade.

2. Expenses - Certain operating expenses, such as utilities, taxes, or security, could have changed faster for RPI properties than for other properties, again affecting incomes. For example, in the face of rising energy prices, energy efficient buildings may have lost net operating income more slowly than less efficient properties. There is no reason to think that RPI properties have been disadvantaged by spikes in operating expenses relative to non-RPI properties. In fact, rising energy prices and tax incentives favoring urban regeneration have probably favored RPI properties. And while urban regeneration properties could have spent more than other properties on security, urban crime has been at historically low levels, so that seems unlikely.

3. Perceived Risk - Certain RPI attributes may have come to be viewed by investors as creating more or less risk. This could have changed their willingness to pay for a given income stream and thus the rate of appreciation or depreciation. For example, a spike in urban crime might have caused investors to assign more risk to properties in urban regeneration areas, slowing their appreciation rate in relation to other properties. But here again, there is no reason to expect slower appreciation caused by perceptions of greater risk. If anything, investors have been worried that future energy prices and traffic congestion will cause auto-dependent, energy inefficient properties to lose value relative to transit oriented and energy efficient buildings.

4. Capital Improvement and Management Programs - Certain management actions taken to alter the RPI attributes of properties could have improved or impaired their ability of properties to produce income, depending on the cost-effectiveness of the programs. For instance, a program to install water conservation features that pays for itself in just a few months by lowering water bills would probably improve total returns while a program composed of measures that take many years to yield dividends could harm returns. Whether or not a property is transit-oriented or promotes urban regeneration is mostly a function of location and not subject to alteration via capital improvement or management programs. But this is not so for energy efficiency where there are cost-effective strategies available for improving property performance (Urge-Vorsatz *et al.* 2007). Because there are options which are cost-effective and managers are rational actors, it is unlikely that such activities have been harmed returns.

   We can use these four pathways to hypothesize whether it is likely that investing in energy efficient, transit-oriented and urban regeneration properties has had negative, neutral, or positive effects on investment returns in the US over the past ten years. Our assessment of these issues suggests that RPI properties probably have performed at least as well as other property investments without RPI characteristics. The results of our assessment are summarized in Table 1.

Table II: Hypothesized Effects of RPI Features on Drivers of Investment Returns

RPI Feature	*Tenant Demand*	*Expenses*	*Perceived Risk*	*Capital Improvement & Management Programs*	*Overall Expected Effect*
Energy Efficient	Positive	Neutral or Positive	Positive	Positive	Neutral or Positive
Transit-oriented	Positive	Neutral	Positive	Not applicable	Neutral or Positive
Urban Regeneration	Neutral or Positive	Neutral or Positive	Neutral or Positive	Not applicable	Neutral or Positive

Previous Studies

There is a substantial literature on the relationship between corporate financial performance and responsibility. However, as noted above, Salzmann *et al*. (2005) found the work to be "inconclusive". Other reviewers, focused on equity investing, found mixed evidence that it pays to screen for ethical issues (Michelson *et al.* 2004). And a recent review of 167 studies on business results and social responsibility found that it neither harms nor improves financial returns (Margolis and Elfenbein 2008). The authors found that "companies can do good *and* do well, even if they don't do well *by* doing good."

While systematic attempts have been made to present the business case for more responsible buildings (Roper and Beard 2006), almost no studies have examined the relationship between investment returns and responsibility in the property sector. Two studies have been published which support the expectation that transit-oriented and urban regeneration properties have performed at least as well as other properties. Clower and Weinstein (2002) looked at changes in valuations for properties close to light rail stations in the Dallas area. They found that from 1997-2001, median valuations for office properties around transit stations increased by more than twice the rate of other properties. Meanwhile, McGreal *et al.* (2006) looked at properties in urban renewal locations in the UK and found that investment performance in regeneration areas matched national and local city benchmarks over a 22 year time period. They also found that regeneration properties had a lower level of risk per unit of return. Similar studies have not been published on energy efficient buildings. While recent papers have found a rent and transaction price premium that may compensate for any additional construction costs associated energy efficient buildings (Eichholtz *et al*. 2008, Fuerst and McAllister 2008, Wiley *et al.* 2008), they do not examine investment returns.

Hypothesis and Methods

The hypothesis to be tested was that energy efficient properties, properties near transit, and properties in or near urban regeneration areas have performed as well or better than other properties without such characteristics.

Two analytical methods were used to test this hypothesis.

Portfolio Analysis

We created an "RPI portfolio" that consisted of properties in the office property index produced by the National Council of Real Estate Investment Fiduciaries (NCREIF) with at least one of the RPI characteristics (see discussion of NCREIF data below). We also created a portfolio that consisted of the office properties in the NCREIF property index without any of the RPI characteristics considered in this study. We then compared the performance of the two portfolios. The question was whether a portfolio of just RPI properties could perform as well or better than a portfolio composed of all other properties in the NCREIF office index.

The number of properties in each portfolio varied over time due to acquisitions and dispositions. For the non-RPI portfolio, the number of properties started at 492 in the first quarter of 1998 and ended with 1,114 properties by the end of the 4th quarter of 2008. For the RPI portfolio, the number of properties started at only 156 and ended with 336 over the same time period. Thus there were significantly more non-RPI properties, which might suggest that this portfolio was more diversified.

Regression Analysis

We examined the impact of various RPI features on the financial characteristics of the properties including their market values, income, expenses, price appreciation, cap rates and total returns while controlling for other factors that might impact finances.

Data were cross-sectional and time-series with around 46,000 observations of quarterly property data, but the number of observations in any particular regression ranged from around 23,000 to 34,000 observations, depending on the specific variables used because of missing variables (null values) for some data points for some properties. For example, some properties did not have square foot information whereas others (not necessarily the same property) did not have age information or information about whether they had a particular RPI characteristic or not.

When examining returns, the return was based on the compound return over the current and prior 3 quarters (annualized return for each property). The log of 1 + return was used in the regressions as was the log of the market value.

Various models were examined with different dependent variables:

Total Return = *f* (RPI variables, office market index, property characteristics, office demand, office supply, location, Core Based Statistical Area (CBSA) characteristics)

Income Return = *f* (RPI variables, office market index, property characteristics, office demand, office supply, location, CBSA characteristics)

Capital Return = *f* (RPI variables, office market index, property characteristics, office demand, office supply, location, CBSA characteristics)

Market Value = *f* (RPI variables, office market index, property characteristics, office demand, office supply, location, CBSA characteristics)

NOI = *f* (RPI variables, office market index, property characteristics, office demand, office supply, location, CBSA characteristics)

RPI variables included nearness to transit, whether the property was in or near an urban regeneration zone, and whether the property was Energy Star labeled (see discussion of RPI Variables below). The NCREIF office market index was used to control for changes in the market for all office properties over time. Note that "appraisal smoothing" was not an issue for this study because the office index and the returns for the individual properties were appraisal based (Fisher and Geltner 2000), so it was an "apples to apples" comparison.

Data

The following is a summary of the variables used in the analysis.

Table III: Variables and Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
incret_yr	27130	1.078201	.0347113	.9267778	2.863781
appret_yr	27130	1.025487	.1707183	-.1931961	11.76985
totret_yr	27130	1.104575	.1795599	.1933573	12.35782
cemp123	20421	.8307215	1.742512	-6.827898	6.867455
lmsadens	20421	6.675177	.8135731	4.016593	8.807326
sta123	26748	2.095186	1.366475	.2190153	13.14651
officetotret	27130	.0231883	.0304863	-.0926425	.0581637
age	25622	19.13321	14.75845	0	128
sqft	27130	303264	840704.5	8022	1.18e+08
stype	27130	.1689642	.3747272	0	1
regensu	26522	.0322374	.1766333	0	1
regencb	26522	.0206621	.1422531	0	1
estar	26522	.0930548	.2905147	0	1
transitsu	27130	.0922964	.2894492	0	1
transitcb	27130	.1051972	.306813	0	1
noi	27130	1031309	1713927	1	1.35e+08
mv	27130	6.23e+07	1.04e+08	0	1.73e+09
inctotsf_yr	27130	26.26301	19.11132	-1.311061	849.7256
exptotsf_yr	27130	10.806	7.848138	.0067675	385.1041
occupancy	27130	.8906738	.1259602	.09	1
sqft2	27130	7.99e+11	8.46e+13	6.44e+07	1.39e+16
sqft3	27130	6.19e+19	9.97e+21	5.16e+11	1.64e+24
floors	27040	7.785392	9.90824	0	76

incret_yr - the income return (cap rate) for the current and prior three quarters
appret_yr - the capital return for the current and prior three quarters
totret_yr - the total return for the current and prior three quarters
cemp123 - the employment growth in the CBSA for the past three quarters
lmsadens - the population density of the CBSA
sta123 - the number of office construction starts in the CBSA in the past three quarters
officetotret - the quarterly return for all office properties in the NCREIF Property Index
age - the age of the property in years
sqft - the square feet of the property
sqft2 - the square of the number of square feet ($sqft^2$)
sqft3 - the cube of the number of square feet ($sqft^3$)
floors - the number of floors in the building
stype - a dummy variable where 1 = CBD
regensu - a dummy variable that is 1 if the property is in an urban regeneration zone in the suburbs
regencb - a dummy variable that is 1 if the property is in an urban regeneration zone in the CBD
estar - a dummy variable that is 1 if the property is Energy Star labeled
transitsu - a dummy variable that is 1 if the property is within ½ mile of a fixed rail transit station in the suburbs

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   transitcb  -  a dummy variable that is 1 if the property is within ½ mile of a fixed
                  rail transit station in the CBD
         NOI  -  The Net Operating Income for the property that quarter
          MV  -  The market value of the property at the end of the quarter
 inctotsf_yr  -  The total rental income per square foot for the property over the past
                  year including expense reimbursements
 tot expenses -  The total expenses for the property over the past year
    Occupancy -  The occupancy of the property during the quarter
```

Dependent Variables

Actual accounting data were provided by NCREIF for property investment returns, age, size, floors, suburban or CBD location, net operating income, market value, rental income, total expenses and occupancy rates. NCREIF is a non-partisan source of real estate performance information based on property-level data submitted by its data contributing members, which include institutional investors and investment managers. Properties owned by contributing members are included in the pool, added or removed as they acquire or sell holdings. Quarterly data for all stabilized office buildings in the NCREIF dataset for at least 1 quarter during the 1998-2007 period were collected for this study. Earlier data were not used because 1998 was the earliest year for which energy efficiency data were available (see RPI Variables). Only office properties were examined in order to control for the effect of property type on financial returns. A total of 4,460 properties were included in the final dataset, however because properties are added to and deleted from the dataset as they are bought and sold by data contributors, from 648 to 1,450 properties were in the database in any single quarter.

RPI Variables

NCREIF does not maintain information on energy efficiency, transit or urban regeneration areas in its database. Therefore, building level data on these topics were collected from three additional sources.

Whether or not a property was Energy Star labeled was used to define whether or not it was energy efficient. Data on whether or not a property was Energy Star labeled was collected from the US EPA Energy Star Program online database of labeled properties. To be labeled under the Energy Star program, a building must have earned 75 points on a 100 point scale in the Energy Star rating system. Buildings are labeled on a yearly basis, but only if a property owner applies. Therefore, buildings could be labeled for none, one, or more than one of the ten years studied. It was assumed that a building is energy efficient for the purposes of this study if it was labeled in any year between 1998 and 2007. However, since labeling is discretionary for owners, it is possible that unlabeled buildings in the study would have been labeled if the owner had applied. This would not influence any effects produced by the labeling itself, but it could confound observations of effects tied directly to energy efficiency, such as operating expenses. This problem could be eliminated by using Energy Star rating data instead of Energy Star labels to define energy efficient buildings; however those data are proprietary information and were not available for this study.

Data on whether properties were transit-oriented was collected from the U.S. Bureau of Transportation Statistics (BTS), National Transportation Atlas Database. Property addresses available from NCREIF were used to find the latitude and longitude for each property. This was possible for 71percent of the properties. Incomplete addresses made geo-coding infeasible for the other properties. The geographic data were then used to measure the straight line distance from each property location to the nearest rail transit station using GIS software. Properties that were equal to or less than ½ mile from a station were categorized as transit-oriented properties for this study. Supplemental data from Google Earth were used for the New York metropolitan area which is not included in the BTS database.

Data on urban regeneration came from the US Department of Housing and Urban Development (HUD). Urban regeneration properties were defined as those located in or near an Empowerment Zone, Renewal Community, or Enterprise Community as defined by the RC/EZ/EC Address Locator available online from HUD.

Controls

Employment growth was used as a measure of office demand and construction starts was used as a measure of office supply. Density of the CBSA was used as a proxy for traffic congestion. Dummy variables were used to control regional location, as well as whether the property was in a CBD or suburb. We also used CBSA dummy variables instead of regional dummy variables but the results were the same regardless of which variables were used in the regressions. Size and age were used to control for individual property characteristics.

Table IV gives the correlations between the property specific variables and the various RPI variables:

Table IV: Correlations

	age	sqft	stype	regensu	regencb	estar	transitsu	transitcb
age	1.0000							
sqft	0.0917	1.0000						
stype	0.3457	0.1879	1.0000					
regensu	0.2234	0.0296	0.3874	1.0000				
regencb	0.0790	0.0559	-0.0598	-0.0231	1.0000			
estar	-0.0355	0.0980	0.0686	0.1187	0.0451	1.0000		
transitsu	0.0842	0.0418	-0.1440	-0.0558	0.2395	0.0460	1.0000	
transitcb	0.3312	0.1875	0.7578	0.3249	-0.0453	0.0948	-0.1092	1.0000

Interpretation of RPI Dummy Variables

As indicated above, for two of the RPI characteristics (near transit and in or near urban regeneration zones), we used separate dummy variables to indicate whether a property had these characteristics and was in a CBD or whether a property had these characteristics and was in a suburb. For example, transitcb was 1 if the property was near transit in the CBD and 0 otherwise (meaning that it was not near transit in either a CBD or a suburb or near transit in a suburb). Similarly transitsu was 1 if it was near transit in a suburb and 0 otherwise. There is also a dummy variable (stype) indicating whether a property was in a CBD or suburb regardless of whether it had an RPI characteristic or not. If stype was 1, the property was in a CBD and if it was 0, it was in a suburb.

With this structure of dummy variables, what the stype variable captured was the difference that being in a CBD versus a suburb had on Energy Star and non-RPI properties because the relative impact of the transit and urban regeneration RPI variables caused by being in a CBD or suburb was already captured in the dummy variables already included for these characteristic. For example, if the only RPI variables in a regression were transitcb and transitsu, with the market value as the dependent variable, then stype would capture the difference in market value for the non-transit property in a CBD compared to the non-transit property in the suburb. Meanwhile, the transitcb variable would capture the marginal impact on market value of being near transit in a CBD relative to not being near transit in a CBD. Likewise, the transitsu variable would capture the marginal impact on market value of being near transit in a suburb versus not being near transit in a suburb.

This setup for the dummy variables allowed us to capture the impact of each RPI variable in the CBD relative to those properties that did not have this RPI characteristic in a CBD and similarly in a suburb. As we will see, the impact of some of the RPI characteristics is different in a CBD than in a suburb.

Although stype could be omitted and a dummy variable added to indicate whether a property did not have one of the RPI characteristics in say a CBD (with not having the RPI characteristic in the suburb being the omitted dummy variable), this would cause dependency problems among the independent variables when there is more than one RPI characteristic because the dummies for each set of RPI variables define whether the property is in a CBD or not.

Breakdown of Property Categories

Table V gives the breakdown of property categories used in the analysis. They are not mutually exclusive, so buildings can fall into two or three category. A total 4,460 properties were used in the analysis, 20 percent of which had at least one RPI features, though just 0.4 percent had three and 80% of the properties had none.

Table V: Properties in the Study

Total Properties = 4,460	Yes	No
Energy Star labeled	203 (4.6%)	4257 (95.4%)
In or near a CBD regeneration area	99 (2.2%)	4361 (97.8%)
In or near a suburban regeneration area	59 (1.3%)	4401 (98.7%)
Near a CBD transit station	408 (9.1%)	4052 (90.9%)
Near a suburban transit station	261 (5.9%)	4199 (94.1%)
Properties with at least 1 RPI feature	894 (20.0%)	3566 (80.0%)
Properties with two or three RPI features	140 (3.1%)	4320 (97.7%)
Properties with three RPI features	19 (0.4%)	4441 (99.6%)

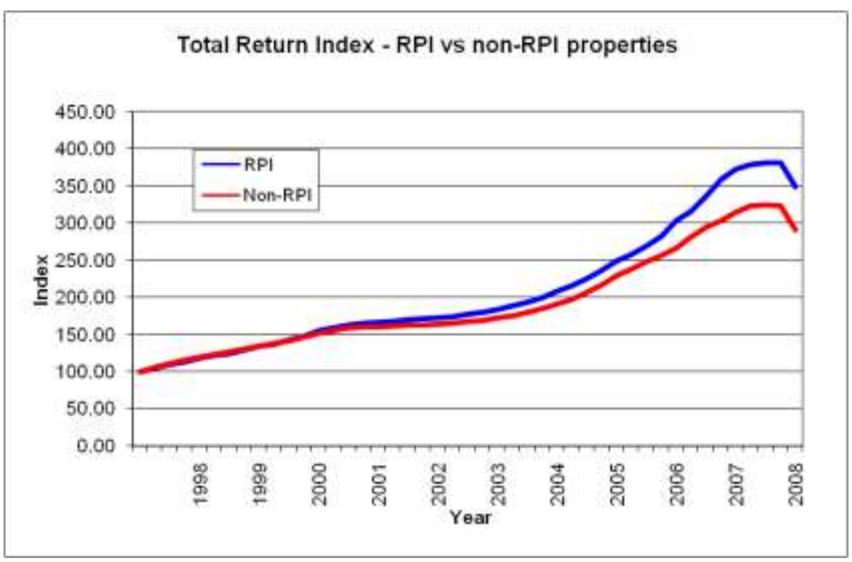
Analysis and Results

Portfolio Analysis

The RPI portfolio out-performed the non-RPI portfolio over the 1997 thru 2008 period. The geometric mean return for the RPI portfolio was 12.05 percent versus 10.18 percent for the non-RPI portfolio, which is statistically significant. The RPI portfolio did better than a portfolio of non-RPI properties and would have beaten the NCREIF office index benchmark (which would consist of both RPI and non-RPI properties) over the period. Most of the better years for RPI properties occurred recently suggesting a change is occurring in how the market views RPI properties. Since the start of 2006 the geometric mean return for the RPI portfolio was 11.63 percent, which is nearly double the geometric mean of 6.61 percent produced by the non-RPI portfolio.

We also examined whether investors would have been subject to more risk in an RPI portfolio because the RPI properties were somewhat constrained on location and the size of the portfolio was smaller. Results showed that the standard deviation of returns for the RPI portfolio was less (2.46 percent on a quarterly basis) than the non-RPI portfolio (2.50 percent). Thus, the RPI properties had a higher return and a lower risk (standard deviation) over the period studied.

The following graph compares an index starting at 100 in the 1st quarter of 1997 based on the total return for the two portfolios. We can see that the RPI portfolio performed similarly to the non-RPI portfolio up until recently when it showed significant separation that has been retained so far in the recent downturn.



What is interesting is that the source of total returns for the two portfolios was somewhat different. The average income return or implied cap rate for the RPI portfolio was 7.04 percent versus 7.32 percent for the non-RPI portfolio. This indicates that RPI properties were purchased at lower cap rates, suggesting their investors expected more income and price appreciation assuming they were seeking the same total return. And since they actually did earn the same (or slightly higher) total return, then they must have received more appreciation in value over this time period. So it appears that investors in RPI properties expected (*ex ante*) and received (*ex post*) more price appreciation.

Regression Analysis

We now proceed to a more formal statistical analysis, which will elaborate on the effects of different RPI characteristics on financial parameters while controlling for other non-RPI variables.

In this section, we look more closely to see if each of the RPI features affected financial returns. In all the regressions, the office market index, regional dummy variables, and property size and age variables were significant and had the expected sign. In most cases the supply and demand variables also were significant. Since the NPI office index is included in the regressions to control for changes in the market over time, the supply and demand variables will only capture differences across CBSAs. The R-squared varies depending on the regression. Our focus, however, is on the significance of the RPI variables and not the total explanatory value of the regressions.

Income and Market Value

If RPI features are desirable qualities in the marketplace, they should be associated with higher incomes and/or property values per square foot. In the following two models we see that RPI properties did have higher incomes and values, except in the case of CBD regeneration properties which had incomes that lagged other CBD properties, consistent with their location in economically distressed areas.

Net Operating Income per Square Foot

Table VI: Regression Results for Net Operating Income per Square Foot

Source	SS	df	MS
Model	40153.6613	15	2676.91075
Residual	121074.679	30686	3.94559992
Total	161228.34	30701	5.25156641

Number of obs =	30702
F(15, 30686) =	678.45
Prob > F =	0.0000
R-squared =	0.2490
Adj R-squared =	0.2487
Root MSE =	1.9864

NOISF	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cemp123	.0191214	.0069132	2.77	0.006	.0055712	.0326717
lmsadens	.6226615	.0167855	37.10	0.000	.5897613	.6555617
sta123	.026381	.0090079	2.93	0.003	.0087251	.0440369
_Iregion_2	-1.774763	.0404717	-43.85	0.000	-1.854089	-1.695437
_Iregion_3	-1.604762	.0372576	-43.07	0.000	-1.677789	-1.531736
_Iregion_4	-.6081452	.0299759	-20.29	0.000	-.6668993	-.5493912
officetotret	5.181361	.835425	6.20	0.000	3.543894	6.818829
age	-.0206354	.0008555	-24.12	0.000	-.0223123	-.0189586
sqft	-1.25e-07	1.70e-08	-7.33	0.000	-1.58e-07	-9.14e-08
stype	.8103213	.0419957	19.30	0.000	.728008	.8926345
regencb	-.1449517	.0724049	-2.00	0.045	-.2868682	-.0030351
regensu	.3173406	.0547152	5.80	0.000	.2100965	.4245847
transitcb	.1930263	.0460351	4.19	0.000	.1027956	.283257
transitsu	.5526621	.039	14.17	0.000	.4762205	.6291037
estar	.253748	.0336752	7.54	0.000	.1877433	.3197527
_cons	.409898	.1396423	2.94	0.003	.1361934	.6836026

Net operating income (NOI) per square foot was 32 cents (9.4 percent) higher for suburban regeneration properties compared to non-regeneration suburban properties. They were 14 cents (2.5%) lower for regeneration properties compared to other properties in the CBDs, again, consistent with their location in redevelopment zones. For Energy Star properties, NOI per square foot was 25 cents (5.9 percent) higher than for non Energy Star properties. For properties near transit, NOI was 55 cents (12.7 percent) higher in the suburbs and 19 cents (4.5 percent) higher in the CBDs.

Higher NOI can result from higher rents, higher occupancy rates, or lower operating expenses. To determine which of these might be driving the lower NOIs in RPI properties we examined whether each RPI feature could explain rents, occupancy rates and expenses by using them as dependent variables in separate regressions. The detailed results are given in the Appendices 1 - 3.

We found that rents were not significantly different near transit in the suburbs but \$2.10 (7.9 percent) higher near transit in the CBDs. Occupancy was significantly higher (1.6 percent) in the suburbs but not in the CBDs (0.6 percent). Expenses were significantly higher for properties near transit in the CBDs 40 cents (3.7 percent) but 57 cents (6.2 percent) lower for properties near transit in the suburbs. Overall, 12.7% higher NOI near transit in the suburbs was explained by 1.6% higher occupancy rates and 6.2% lower expenses while 4.5% higher NOI near transit in the CBDs could be explained by 7.9% higher rents.

For properties in urban regeneration zones we found no significant differences in rents in the suburbs but \$3.27 lower rents in CBD regeneration areas. There were no significant differences in occupancy rates. Expenses were significantly higher (1.25 cents per foot) for regeneration properties in the CBDs but not significantly different in the suburbs. Our finding of lower NOI for CBD regeneration properties can thus be explained by significantly lower rents and higher expenses and insignificantly lower occupancy rates. Our finding of higher NOI for suburban regeneration properties are consistent with their higher rents, higher occupancy rates and lower expenses, but these observations were not statistically significant.

The higher NOI generated by Energy Star properties could be explained by 4.8 percent (\$1.26 per square foot) higher rents and 0.9 percent higher occupancy rates. Wiley *et al.* (2008) found a 7.3 to 8.6 percent rent premium for Energy Star properties and 10 to 11 percent higher occupancy rates. Fuerst and McAllister (2008) found an 11.6 percent rent premium and Eichholtz *et al.* (2008) found an 8.9 percent "effective rent" premium.[3] Our results confirm the findings of higher rents and occupancy rates reported in these other studies, though our premiums are not as large.

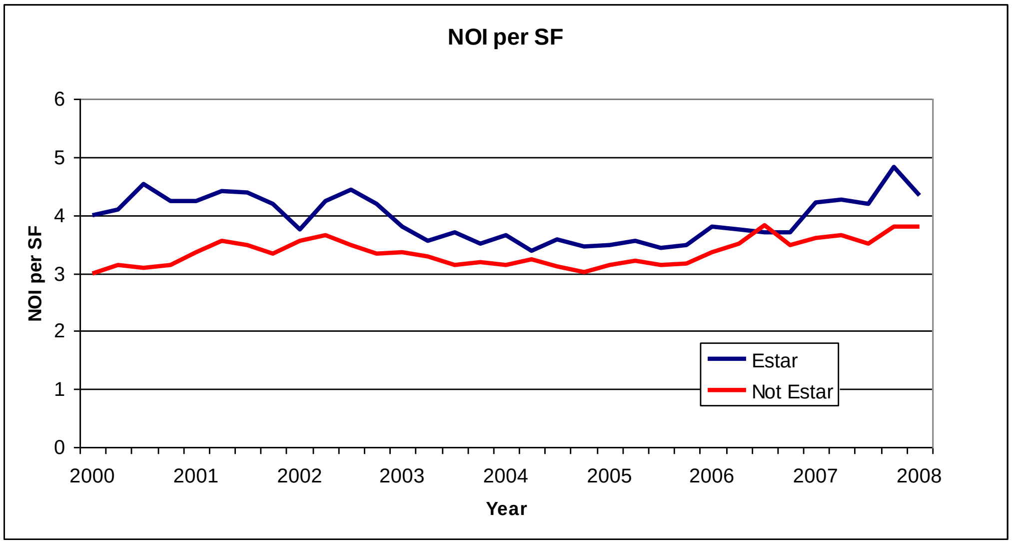
The Energy Star buildings did not have lower total operating expenses, contrary to our expectation. To further probe for expense related differences in the Energy Star properties, we did a regression of just the utility expenses per square foot against the Energy Star dummy variable and other control variables, assuming energy efficiency would more likely affect utility expenses than total expenses. Because utility costs can change over time and vary across CBSAs, dummy variables were used for the year and quarter as well as the CBSA. Even after controlling for the CBSA, utility expenses can vary regardless of whether the property is Energy Star or not due to different utility costs that can occur within CBSAs depending on the utility service provider. We used income per square foot as a proxy to capture these differences with the idea being that areas with higher utility costs could charge higher rents. The results of this regression are shown in Appendix 4.

We found that utility expenses per square foot were significantly lower for Energy Star properties. Control variables such as property age and size were of the expected sign, e.g., utility costs per square foot increased for older properties and decreased for larger properties. Utility savings in Energy Star properties averaged about 24 cents per square foot per year (or 9.8 percent). This finding compares to an estimated saving of 50 cents per square foot per

[3] The "effective rent" per square foot used by Eicholtz *et al.* was the asking rent for the building multiplied by the occupancy. This is analogous to the rent used in this study because we had the actual rent collected on the property which already reflects occupancy when divided by the total leasable area of the building. Both Eichholtz et al. and Wiley et al. used asking rent. Eicholtz *et al.* did not control for age, height and square footage in their regression as we did here. Wiley et al. (2008) only controlled for age and Fuerst and McAllister (2008) only controlled for age and height.

year for energy alone published by the Energy Star program (Kats and Perlman 2006), however that figure is an estimate based on observed energy savings of percent in Energy Star labeled office buildings rather than a direct observation of their actual energy expenditures.

The following is a comparison of the NOI per square foot for Energy Star and non Energy Star over time since the year 2000. It does not control for all the factors included in the regression, but is consistent with and illustrates the results.



Market Value per Square Foot

Because value is normally related to income, higher incomes should be reflected in higher property values, so long as the differences are recognized by buyers or appraisers and there is no change in perceived risk. That is what we found, which suggests that any effects RPI features may be having on incomes are being priced into the market.

Table VII: Regression Results for Market Value per Square Foot

Source	SS	df	MS
Model	5859.99013	15	390.666009
Residual	16138.994	34018	.474425127
Total	21998.9841	34033	.646401555

Number of obs	34034
F(15, 34018)	823.45
Prob > F	0.0000
R-squared	0.2664
Adj R-squared	0.2661
Root MSE	.68879

logvaluesf	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cemp123	-.0178611	.0026222	-6.81	0.000	-.0230008	-.0127214
sta123	.0343203	.0041402	8.29	0.000	.0262055	.0424352
lmsadens	.2526502	.0057134	44.22	0.000	.2414517	.2638488
_Iregion_2	-.4905822	.0130973	-37.46	0.000	-.5162534	-.464911
_Iregion_3	-.3694751	.0122115	-30.26	0.000	-.3934101	-.3455402
_Iregion_4	-.0475209	.0098591	-4.82	0.000	-.0668451	-.0281967
officetotret	10.50436	.2849239	36.87	0.000	9.945904	11.06283
age	-.0026786	.0002832	-9.46	0.000	-.0032338	-.0021235
sqft	-1.03e-07	5.72e-09	-18.08	0.000	-1.15e-07	-9.21e-08
stype	.2555634	.0136784	18.68	0.000	.2287532	.2823735
estar	.1266436	.0112292	11.28	0.000	.1046339	.1486533
regensu	.0231144	.0180916	1.28	0.201	-.0123458	.0585745
regencb	.010869	.024194	0.45	0.653	-.0365521	.05829

transitsu	.1501139	.0130452	11.51	0.000	.1245449	.1756829
transitcb	.0993227	.0150684	6.59	0.000	.0697882	.1288572
_cons	3.338575	.0483869	69.00	0.000	3.243735	3.433415

Consistent with their higher NOI, Energy Star properties had a 13.5 percent higher market value relative to non Energy Star properties.[4] This compare to a 10.4 percent premium found by Wiley *et al.* (2008) and a 10.3 percent premium found by Fuerst and McAllister (2008).

Market values for regeneration properties were 2.3% higher in the suburbs and 1.1% higher in the CBDs. This is consistent with the higher NOI results for properties in the suburbs but not for the properties in the CBDs where we found lower net incomes. However, neither of the market value differences which we found was statistically significant, so we cannot conclude with certainty that market values reflected differences in net incomes. Perhaps there is some uncertainty or inconsistency in how NOI is capitalized into value for properties in regeneration areas.

For properties near transit, we found that in the suburb they had a 16.2 percent higher market value than other suburban properties. In the CBDs the premium was 10.4%. Both results are consistent with our findings of higher net income near transit.

Investment Returns

Capital Appreciation Returns

Table VIII: Regression Results for Capital Appreciation Returns

Source	SS	df	MS
Model	150.642955	15	10.0428637
Residual	378.087992	26729	.014145235
Total	528.730947	26744	.019770077

Number of obs =	26745
F(15, 26729) =	709.98
Prob > F =	0.0000
R-squared =	0.2849
Adj R-squared =	0.2845
Root MSE =	.11893

logret_yr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cemp123	.017704	.0005147	34.40	0.000	.0166951	.0187129
sta123	-.0130267	.0008122	-16.04	0.000	-.0146186	-.0114348
lmsadens	.0143713	.0011161	12.88	0.000	.0121838	.0165588
_Iregion_2	-.039994	.0025376	-15.76	0.000	-.0449679	-.0350201
_Iregion_3	-.0304265	.0023777	-12.80	0.000	-.0350869	-.0257661
_Iregion_4	.0095664	.0019329	4.95	0.000	.0057779	.0133549
officetotret	3.158981	.05465	57.80	0.000	3.051864	3.266097
stype	.0297958	.0026782	11.13	0.000	.0245463	.0350452
age	-.000152	.0000573	-2.65	0.008	-.0002643	-.0000397
sqft	-5.51e-09	1.11e-09	-4.97	0.000	-7.68e-09	-3.34e-09
regencb	.0038312	.0046896	0.82	0.414	-.0053606	.013023
regensu	-.0144526	.003538	-4.08	0.000	-.0213873	-.0075179
estar	.0021517	.0021806	0.99	0.324	-.0021223	.0064257
transitsu	.0110026	.0025403	4.33	0.000	.0060234	.0159817
transitcb	.0046127	.002958	1.56	0.119	-.0011851	.0104105
_cons	-.1411462	.0094009	-15.01	0.000	-.1595724	-.1227199

[4] When we separated estar into having a dummy for the CBD and for the suburbs, we found higher value in both locations.

Capital Appreciation Returns are the quarterly percentage change in market value adjusted for capital expenditures and partial sales. Higher capital appreciation returns are not necessarily related to higher market values at any given point in time. They will only be higher if the *increase* in value over time is above the norm. In other words, capital appreciation returns measure the time series change in value as opposed to the cross-sectional comparison of value. RPI properties may have a high market value per square foot, as we found in the previous analysis, but their appreciation in value would be average or below average if their change in value is the same or less than that of other properties. What we found was that with one exception, capital appreciation returns for the RPI properties were greater or insignificantly different from similar properties without RPI features. Thus, by and large, RPI investing does not dilute capital returns.

Properties near suburban transit stations appreciated 1.1 percent per year more quickly than other suburban properties. Properties near CBD transit stations appreciated 0.5% more quickly per year than other CBD properties, though these results were statistically insignificant. These findings suggest that investors or appraisers had not fully anticipated the higher incomes they would obtain from properties near transit or that a decline was occurring in the perceived relative risk of investment in transit-oriented properties as congestion and commuting costs became greater threats to accessibility and property values.

For properties in or near regeneration zones, annual appreciation was 1.4 percent lower in the suburbs compared to other suburban office buildings. Even though these properties had significantly higher net incomes, it appears that the higher incomes were insufficient to justify higher valuations. This is a good example of how higher incomes and values do not necessarily produce higher investment returns.

Energy Star properties had slightly more capital appreciation (0.2 percent) than non Energy Star properties but the difference was statistically insignificant. Even though Energy Star properties produced higher incomes and were more valuable per square foot, they did not appreciate faster than non Energy Star buildings suggesting that their greater economic productivity was already priced in when they were developed or acquired. This is another example of higher incomes and values not necessarily producing higher investment returns.

Income Returns

Table IX: Regression Results for Income Returns

Source	SS	df	MS
Model	2.47930403	15	.165286935
Residual	13.7985987	26729	.000516241
Total	16.2779027	26744	.000608656

Number of obs	26745
F(15, 26729)	320.17
Prob > F	0.0000
R-squared	0.1523
Adj R-squared	0.1518
Root MSE	.02272

logret_yr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cemp123	-.0003513	.0000983	-3.57	0.000	-.000544	-.0001585
lmsadens	-.0024703	.0002132	-11.59	0.000	-.0028882	-.0020524
sta123	.0012325	.0001552	7.94	0.000	.0009283	.0015366
_Iregion_2	.0010984	.0004848	2.27	0.023	.0001482	.0020486
_Iregion_3	-.0020405	.0004542	-4.49	0.000	-.0029308	-.0011502
_Iregion_4	-.0055934	.0003692	-15.15	0.000	-.0063171	-.0048696
officetotret	-.4092401	.0104403	-39.20	0.000	-.4297035	-.3887766
age	-.0000454	.0000109	-4.14	0.000	-.0000668	-.0000239
sqft	-5.89e-10	2.12e-10	-2.78	0.005	-1.00e-09	-1.73e-10
stype	-.0007713	.0005116	-1.51	0.132	-.0017741	.0002316
regensu	-.0006788	.0006759	-1.00	0.315	-.0020036	.000646
regencb	-.0050332	.0008959	-5.62	0.000	-.0067892	-.0032772
transitsu	-.0030179	.0004853	-6.22	0.000	-.0039691	-.0020667
transitcb	-.0018763	.0005651	-3.32	0.001	-.0029839	-.0007687
estar	-.0050795	.0004166	-12.19	0.000	-.005896	-.004263

_cons	.1077123	.0017959	59.98	0.000	.1041922	.1112324

Income return measures the portion of total return attributable to each property's net operating income. It is analogous to capitalization (cap) rates. All types of RPI properties generated lower income returns and exhibited lower cap rates, suggesting relatively positive views about risk and future income growth and appreciation relative to non-RPI properties. These lower cap rates translate into an increase in value over and above any added value created by higher net incomes.

The RPI property with the lowest income returns were Energy Star properties (-0.5 percent). Investors or appraisers appear to have assigned a significant value premium for each dollar of income produced by Energy Star properties. This suggests they fear future energy regulations and price hikes, creating an advantage more energy efficient buildings.

Cap rates for properties in or near regeneration areas were also lower (-0.1 percent in the suburbs and -0.5 percent in the CBDs) but only the results for CBD properties were significant. This indicates optimism about the prospects for revitalizing areas as well.

Properties near transit in the CBDs and suburbs also had significantly lower income returns (-0.2 percent and -0.3 respectively). A premium was being paid for these properties which cannot simply be explained by their higher incomes and values. Worries about gas prices, growing congestion, and accessibility issues appear to be increasing what investors are willing to pay for less auto-depending properties.

Total Returns

Table X: Regression Results for Total Returns

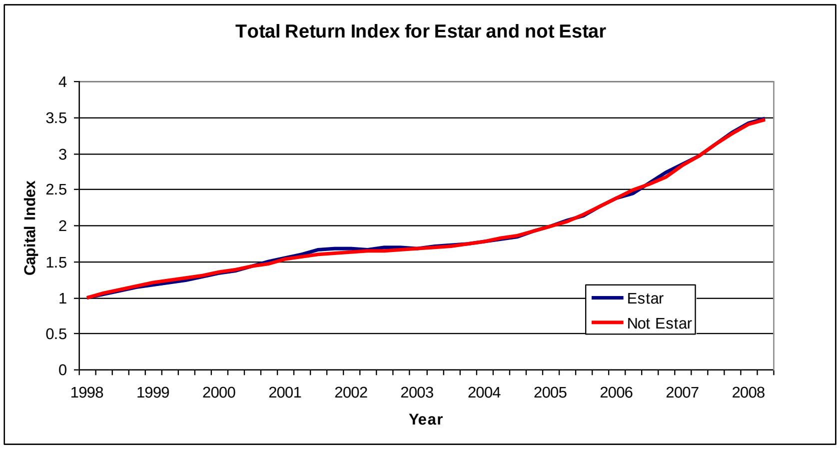
Source	SS	df	MS
Model	164.524182	15	10.9682788
Residual	757.203736	26729	.028328921
Total	921.727917	26744	.034464849

Number of obs	= 26745
F(15, 26729)	= 387.18
Prob > F	= 0.0000
R-squared	= 0.1785
Adj R-squared	= 0.1780
Root MSE	= .16831

ret_yr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cemp123	.0185703	.0007284	25.49	0.000	.0171426	.0199981
lmsadens	.0142378	.0015794	9.01	0.000	.011142	.0173335
sta123	-.0117818	.0011494	-10.25	0.000	-.0140346	-.009529
_Iregion_2	-.045286	.0035912	-12.61	0.000	-.0523249	-.0382471
_Iregion_3	-.0375218	.0033648	-11.15	0.000	-.0441171	-.0309266
_Iregion_4	.006874	.0027353	2.51	0.012	.0015126	.0122353
officetotret	3.344821	.0773392	43.25	0.000	3.193232	3.49641
age	-.0000993	.0000811	-1.23	0.220	-.0002583	.0000596
sqft	-9.02e-09	1.57e-09	-5.75	0.000	-1.21e-08	-5.94e-09
stype	.0358545	.0037902	9.46	0.000	.0284256	.0432834
regensu	-.0212603	.0050069	-4.25	0.000	-.031074	-.0114465
regencb	-.0024542	.0066366	-0.37	0.712	-.0154623	.0105538
estar	-.0046308	.0030859	-1.50	0.133	-.0106792	.0014177
transitsu	.0092997	.003595	2.59	0.010	.0022534	.016346
transitcb	.0023367	.0041861	0.56	0.577	-.0058682	.0105416
_cons	.9475264	.0133039	71.22	0.000	.92145	.9736028

Total returns includes appreciation (or depreciation), realized capital gain (or loss) and income. It is computed by adding the Income and Capital Appreciation return on a quarterly basis. As such, it measures the net result of RPI features on appreciation and income returns. Generally, our results for total returns showed that, with one exception, RPI features were either positive or neutral (on the basis of statistically insignificant differences) for returns.

Energy Star properties had lower total returns but the difference was insignificant. Their insignificantly higher capital appreciation returns were more than offset by lower income returns caused by premiums given by investors or appraisers to each dollar of income they produced. These findings are illustrated in the following graphic. Energy Star properties had higher NOI per square foot. But they also had a higher value per square foot. On balance they performed almost the same as other properties, as shown by the following graph of total return over time.



This does not mean that developers of new Energy Star properties or capital investments that reduced energy use did not or cannot earn a greater than market return. Since Energy Star properties have higher NOI, and since this is recognized in their higher market value, they have a higher value once built and operating. Depending on the cost of making the properties Energy Star compliant, developers could have made normal or above normal profits so long as the added value exceeded the added cost by the necessary amount. If the NOI and market values for Energy Star properties had not been above the norm for other properties, we could not say this.

Properties near transit had a different story. Annual total returns were 0.9 percent higher for properties near transit in the suburbs and 0.2 percent higher for properties near transit in the CBDs. Recall that capital appreciation was higher for transit properties compared to other office buildings. Even though investors had to pay a premium for the properties near transit, as indicated by their lower income returns and cap rates, the faster appreciation was more than enough to offset the lower income returns and produce higher total returns.

The only case of an RPI feature being associated with lower total returns was suburban regeneration properties where total returns were significantly lower (-2.1 percent) than for other properties. Even though they had higher incomes and values than other suburban properties, they appreciated more slowly than other suburban properties, perhaps because of disappointing income growth, which together with lower income returns left them with total returns significantly below other suburban properties. There was no significant difference in the CBDs where total returns for regeneration properties were on par with other CBD office investments.

Summary of Results

1. According to the portfolio analysis, investors in a portfolio of just RPI properties would have earned a higher return at lower risk compared to a portfolio of all non-RPI properties between 1998 and 2009.

2. Table XI summarizes the regression coefficients and percent changes for the RPI variables. With the exception of properties in or near CBD regeneration areas, all RPI properties had incomes and values per square foot that were either higher or insignificantly different from those produced by conventional properties. The biggest differences were found in Energy Star properties, with 5.9 percent higher incomes and 13.5 percent higher market values per square foot, and suburban transit-oriented properties with 12.7 percent higher incomes and

16.2 percent higher market values than other suburban offices. The higher Energy Star incomes were driven by 9.8 percent lower utility bills, 4.8 percent higher rents and 0.9 percent higher occupancy rates, confirming trends found in other studies. The higher incomes for suburban transit-oriented properties were explained by 1.6 percent higher occupancy rates and 6.2 percent lower expenses. The exception to this pattern was net incomes in or near CBD regeneration areas. It appears that the forces that depressed property values in these areas and which led to their designation as special economic zones in the first place have not been fully overcome by any special tax incentives and public investment programs, leaving them with property incomes still lagging other CBD locations. This is not the case in the suburbs, however, where regeneration properties had higher net incomes and market values than other suburban office properties. This could be the result of successful redevelopment programs and incentives or an indication that the designation of these areas as special incentive zones may have been unjustified in the first place.

3. RPI properties had capitalization rates that were lower than other buildings. In only one case (suburban regeneration) was this statistically insignificant. Here, the biggest differences were found in Energy Star and CBD regeneration properties which had cap rates that were 50 basis points lower that otherwise similar properties. This demonstrates that RPI properties were being purchased or appraised at a premium consistent with an expectation of more price appreciation, more income growth, or lower risk.

4. With one exception, RPI properties received price appreciation that was either greater than or not significantly different from other properties over the study period. Suburban transit-oriented properties led the way in this category by posting annual capital appreciation rates that were 1.1 percent higher than those for other suburban buildings. The one exception to this pattern was buildings in or near suburban regeneration areas which appreciated more slowly than other suburban properties, though their annual gains were still positive. This is interesting in light of the fact that these properties produced incomes that were significantly higher than other suburban properties. Perhaps the market was losing confidence that these higher returns could be sustained over the long term if these areas lost the incentives associated with their special status.

5. Annual total returns for RPI properties were either greater than or not significantly different than non-RPI properties. Here again, suburban transit properties demonstrated the greatest success. And as before, the one exception was properties in or near suburban regeneration areas whose total returns were impeded by their slower rate of capital appreciation.

Table XI: Regression Coefficients and Percentages (* = significant at .05 level)

	NOI	Market Value	Capital Appreciation Return	Income Return (Cap Rate)	Total Return
estar	.254* (5.9%)	.127* (13.5%)	.002 (0.2%)	-.005* (-0.5%)	-.005 (-0.05%)
regensu	.317* (9.4%)	.023 (2.3%)	-.014* (-1.4%)	-.001 (-0.1%)	-.021* (-2.1%)
regencb	-.144* (-2.4%)	.011 (1.1%)	.004 (0.4%)	-.005* (-0.5%)	.002 (0.2%)
transitsu	.553* (12.7%)	.150* (16.2%)	.011* (1.1%)	-.003* (-0.3%)	.009* (0.9%)
transitcb	.193* (4.5%)	.099* (10.4%)	.005 (0.5%)	-.002* (-0.2%)	.002 (0.2%)

Conclusion

These finding have three important implications for the practice of Responsible Property Investing.

First, real estate executives can invest in these types of RPI properties with greater confidence, knowing that over the past decade they have neither harmed total returns nor increased risk or, in the case of suburban regeneration areas, they can achieve normal returns if they pay prices more consistent with their slower rate of appreciation.

Second, it may be possible to develop more specialized portfolios or funds focused on energy efficient, transit-oriented, and urban regeneration properties capable of producing returns on par with or higher than more conventional portfolios. While some funds of this nature can already be found (e.g., the Morley igloo Urban Regeneration Fund in the UK), there is growing interest in the creation of more RPI-style funds among socially responsible investors and others committed to "less automobile-dependent and more energy-efficient cities where worker well-being and urban revitalization are priorities."

Third, the fact that most types of RPI properties have not significantly outperformed other properties suggests that capital will not flow disproportionately toward RPI in search of higher risk adjusted returns. Transit oriented development in the suburbs may be an exception. While investors may move toward RPI investing for other reasons with the knowledge that it will not dilute returns, there are few strong financial impulses for doing so. This may change if trends in demographics, energy prices and global warming shift tenant demand toward the types of properties in this study, if they increasingly put pressure on the cost of operating inefficient buildings, and if they all the more worry investors that conventional buildings may lose value relative to more responsible "future proofed" alternatives. But so far, we do not see substantial financial trends leading to significant shifts in capital flows. Faster transformation may depend on regulations and incentives being joined with the investment opportunities documented here. Nevertheless, we may be past the time when tenant and investor apathy about these issues allowed appraisers to ignore RPI features. If we move to a time when investors and tenants increasingly focus on these concerns, a greater economic difference in the appraisal and exchange value of RPI and non-RPI features may emerge (McNamara 2008).

Salzmann *et al*. (2005) found various shortcomings in prior empirical studies on the relationship between corporate financial and social or environmental performance including the use of a variety of sometimes poor measures, a lack of significance testing and control for interactions with other variables, inadequate sampling due to limited data availability, and pan-sector samples which mask sector specific differences. The methods used here avoid these problems. The measures for financial performance are based on the industry standard established by NCREIF, the measures used for responsible properties are not combined into an opaque composite index but rather represent specific and transparent examples of property types defined in terms of recognized government and professional criteria, statistical tests of significance and controls of potentially confounding variables are utilized, a large sample of all NCREIF properties is analyzed and only one property type is examined.

Hopefully, this will be the first of many studies on the relationship between investment returns and responsible property investing. Some productive study questions for future examination could include the following.

1) How do other RPI attributes affect office investment risks and returns? Do features matter like water efficiency, walkability, fair labor practices, green building certification, childcare services, affordability, handicapped access, indoor air quality, recycling, mixed use and other concerns of responsible property investors? And what effects do they have in other types of property beyond office buildings?

2) What are the most cost-effective methods for improving or creating RPI characteristics? Characteristics related to a property location cannot be altered, but others can be altered as properties are managed, maintained and refurbished. What are the best opportunities for maintaining or improving risk adjusted returns while upgrading the social or environmental performance of properties?

3) To what degree might the social or environmental performance of properties affect the level of institutional investment? Prior studies of equities suggest a positive relationship (Cox *et al.* 2004) but it is unclear whether such information may affect investment decisions in the property sector.

4) How can the data needed to address these questions be compiled? The data collections maintained by both for-profit and non-profit organizations were not designed to answer these kinds of questions. However, with some additional effort they could become quite useful for answering questions about the social, environmental and financial performance of buildings and the relationships among them.

Investors wanting proof that Responsible Property Investing does not harm returns should be comforted by the findings of this study. At least for US office buildings, the record shows that it is possible to invest in RPI properties without diluting returns. Since RPI can produce social and environmental benefits and fulfill fiduciary duties, it would be economically irrational and ethically unjustifiable to not engage in Responsible Property Investing.

Appendix 1: Rent Regression

Source	SS	df	MS
Model	1539659.33	139	11076.6858
Residual	8361870.71	25854	323.426577
Total	9901530.04	25993	380.930637

Number of obs	=	25994
F(139, 25854)	=	34.25
Prob > F	=	0.0000
R-squared	=	0.1555
Adj R-squared	=	0.1510
Root MSE	=	17.984

inctotsf_yr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
transitcb	2.104038	.6266488	3.36	0.001	.8757716	3.332305
transitsu	-.140788	.4406421	-0.32	0.749	-1.004471	.722895
regensu	.8159046	.8043956	1.01	0.310	-.7607555	2.392565
regencb	-3.274257	.9462067	-3.46	0.001	-5.128875	-1.419639
estar	1.263316	.428439	2.95	0.003	.4235514	2.10308
stype	3.284777	.5465009	6.01	0.000	2.213605	4.355949
sqft	-3.89e-06	6.26e-07	-6.22	0.000	-5.12e-06	-2.67e-06
sqft2	3.25e-13	1.49e-13	2.17	0.030	3.19e-14	6.17e-13
sqft3	-9.85e-21	6.29e-21	-1.57	0.117	-2.22e-20	2.48e-21
floors	.2016958	.0163183	12.36	0.000	.1697111	.2336805
age	-.1089226	.0089853	-12.12	0.000	-.1265343	-.0913109
_Imsa_10740	1.77791	5.902277	0.30	0.763	-9.790881	13.3467
_Imsa_11260	9.977001	6.592031	1.51	0.130	-2.943747	22.89775
_Imsa_11460	(dropped)					
_Imsa_12060	4.668463	4.841101	0.96	0.335	-4.820364	14.15729
_Imsa_12420	5.0123	4.864956	1.03	0.303	-4.523285	14.54788
_Imsa_12580	5.662941	4.925135	1.15	0.250	-3.990599	15.31648
_Imsa_13644	11.90906	4.894428	2.43	0.015	2.315711	21.50241
_Imsa_13820	4.01564	5.035728	0.80	0.425	-5.854668	13.88595
_Imsa_14484	15.5734	4.896143	3.18	0.001	5.976687	25.17011
_Imsa_14500	.5935308	4.999392	0.12	0.905	-9.205557	10.39262
_Imsa_14860	19.35508	4.986754	3.88	0.000	9.580768	29.1294
_Imsa_15764	11.98456	4.855981	2.47	0.014	2.466572	21.50256
_Imsa_15804	-.6896893	5.537689	-0.12	0.901	-11.54387	10.16449
_Imsa_15980	.9129388	8.328074	0.11	0.913	-15.41055	17.23643
_Imsa_16740	3.187038	4.932963	0.65	0.518	-6.481844	12.85592
_Imsa_16974	7.446329	4.833542	1.54	0.123	-2.027683	16.92034
_Imsa_17140	6.060805	5.020617	1.21	0.227	-3.779883	15.90149
_Imsa_17460	(dropped)					
_Imsa_17820	1.985176	5.493606	0.36	0.718	-8.782598	12.75295
_Imsa_18140	3.828695	4.925801	0.78	0.437	-5.826149	13.48354
_Imsa_18180	-.3437977	6.206332	-0.06	0.956	-12.50855	11.82096
_Imsa_19124	4.594701	4.837911	0.95	0.342	-4.887874	14.07728
_Imsa_19660	10.74356	13.60378	0.79	0.430	-15.9206	37.40771
_Imsa_19740	4.15217	4.846909	0.86	0.392	-5.348041	13.65238
_Imsa_19780	6.042382	8.78022	0.69	0.491	-11.16734	23.2521
_Imsa_19804	(dropped)					
_Imsa_20500	8.858955	7.077207	1.25	0.211	-5.012765	22.73067
_Imsa_20764	15.75298	4.901305	3.21	0.001	6.146148	25.35981
_Imsa_21340	-8.642394	6.41434	-1.35	0.178	-21.21486	3.930069
_Imsa_22744	8.163861	4.927312	1.66	0.098	-1.493945	17.82167
_Imsa_23104	-.0392612	5.377439	-0.01	0.994	-10.57934	10.50082
_Imsa_24660	-1.266778	5.569595	-0.23	0.820	-12.18349	9.649938
_Imsa_24860	-2.880522	9.390235	-0.31	0.759	-21.28591	15.52486
_Imsa_25420	1.977594	6.007823	0.33	0.742	-9.798074	13.75326
_Imsa_25540	4.410923	5.454435	0.81	0.419	-6.280073	15.10192

_Imsa_26180	9.347435	5.845278	1.60	0.110	-2.109635	20.80451
_Imsa_26420	3.799424	4.862813	0.78	0.435	-5.73196	13.33081
_Imsa_26900	.364591	5.140556	0.07	0.943	-9.711186	10.44037
_Imsa_27260	1.660532	5.340735	0.31	0.756	-8.807605	12.12867
_Imsa_27620	5.701269	8.782301	0.65	0.516	-11.51253	22.91507
_Imsa_27940	10.80452	5.824417	1.86	0.064	-.6116621	22.2207
_Imsa_28140	5.70551	4.978203	1.15	0.252	-4.052045	15.46307
_Imsa_28660	(dropped)					
_Imsa_28940	-.1334808	8.803177	-0.02	0.988	-17.3882	17.12124
_Imsa_29404	3.614274	4.894734	0.74	0.460	-5.979676	13.20823
_Imsa_29820	10.26001	6.156232	1.67	0.096	-1.806552	22.32656
_Imsa_30220	(dropped)					
_Imsa_30780	-7.538686	5.560428	-1.36	0.175	-18.43743	3.360062
_Imsa_31084	15.44933	4.848706	3.19	0.001	5.945594	24.95306
_Imsa_31140	1.493052	6.087452	0.25	0.806	-10.43869	13.4248
_Imsa_31700	5.00163	5.928469	0.84	0.399	-6.6185	16.62176
_Imsa_32820	3.42325	5.625349	0.61	0.543	-7.602748	14.44925
_Imsa_33100	(dropped)					
_Imsa_33124	6.768457	4.900868	1.38	0.167	-2.837517	16.37443
_Imsa_33340	4.244725	5.111113	0.83	0.406	-5.773341	14.26279
_Imsa_33460	6.363053	4.861576	1.31	0.191	-3.165907	15.89201
_Imsa_34100	(dropped)					
_Imsa_34940	14.57309	6.100667	2.39	0.017	2.615447	26.53074
_Imsa_34980	2.956124	5.063585	0.58	0.559	-6.968784	12.88103
_Imsa_35004	16.55202	5.198971	3.18	0.001	6.361747	26.74229
_Imsa_35084	9.468308	4.974824	1.90	0.057	-.2826248	19.21924
_Imsa_35644	24.76151	4.872715	5.08	0.000	15.21072	34.3123
_Imsa_36084	14.68125	4.85666	3.02	0.003	5.161926	24.20057
_Imsa_36540	14.68078	7.250817	2.02	0.043	.4687752	28.89279
_Imsa_36740	4.914472	4.949921	0.99	0.321	-4.787649	14.61659
_Imsa_37100	1.811105	5.377462	0.34	0.736	-8.72902	12.35123
_Imsa_37340	(dropped)					
_Imsa_37964	6.506425	4.902276	1.33	0.184	-3.102309	16.11516
_Imsa_38060	4.962653	4.850182	1.02	0.306	-4.543974	14.46928
_Imsa_38300	3.747127	4.918521	0.76	0.446	-5.893448	13.3877
_Imsa_38860	6.372342	5.748384	1.11	0.268	-4.89481	17.63949
_Imsa_38900	2.104382	4.893547	0.43	0.667	-7.487244	11.69601
_Imsa_39300	-3.241013	5.333507	-0.61	0.543	-13.69498	7.212958
_Imsa_39580	6.130561	5.075171	1.21	0.227	-3.817057	16.07818
_Imsa_39900	5.132656	5.419702	0.95	0.344	-5.490263	15.75557
_Imsa_40060	3.961698	5.398734	0.73	0.463	-6.62012	14.54352
_Imsa_40140	10.74817	5.391078	1.99	0.046	.1813557	21.31498
_Imsa_40900	7.82233	4.962698	1.58	0.115	-1.904834	17.54949
_Imsa_41180	6.729482	4.953944	1.36	0.174	-2.980524	16.43949
_Imsa_41500	6.216591	8.781109	0.71	0.479	-10.99487	23.42805
_Imsa_41540	21.2583	7.098521	2.99	0.003	7.344808	35.1718
_Imsa_41620	-3.61552	5.095483	-0.71	0.478	-13.60295	6.37191
_Imsa_41700	2.844774	5.066077	0.56	0.574	-7.08502	12.77457
_Imsa_41740	8.885643	4.858417	1.83	0.067	-.6371243	18.40841
_Imsa_41884	28.16336	4.850682	5.81	0.000	18.65575	37.67097
_Imsa_41940	13.83849	4.87443	2.84	0.005	4.284333	23.39264
_Imsa_42044	10.86385	4.855542	2.24	0.025	1.346717	20.38098
_Imsa_42060	10.79066	10.20352	1.06	0.290	-9.2088	30.79012
_Imsa_42220	4.849522	7.447652	0.65	0.515	-9.74829	19.44733
_Imsa_42644	8.55608	4.854174	1.76	0.078	-.9583714	18.07053
_Imsa_42680	7.189542	9.375358	0.77	0.443	-11.18668	25.56576
_Imsa_43780	-1.233792	6.490977	-0.19	0.849	-13.95647	11.48888

_Imsa_43900	6.218295	18.62585	0.33	0.738	-30.2894	42.72599
_Imsa_45220	6.264453	5.738077	1.09	0.275	-4.982497	17.5114
_Imsa_45300	5.243411	4.910852	1.07	0.286	-4.382132	14.86895
_Imsa_45820	-2.49169	6.10177	-0.41	0.683	-14.4515	9.46812
_Imsa_45940	15.39427	5.191905	2.97	0.003	5.217847	25.57069
_Imsa_46060	14.98198	9.375606	1.60	0.110	-3.394727	33.35869
_Imsa_46140	-.1612086	8.327306	-0.02	0.985	-16.48319	16.16077
_Imsa_46700	(dropped)					
_Imsa_47260	.9569514	5.555589	0.17	0.863	-9.932313	11.84622
_Imsa_47644	9.327826	5.005904	1.86	0.062	-.4840256	19.13968
_Imsa_47894	16.36444	4.827912	3.39	0.001	6.901461	25.82741
_Imsa_48424	14.22485	4.981269	2.86	0.004	4.461285	23.98841
_Imsa_48864	(dropped)					
_Imsa_49340	8.821964	5.220215	1.69	0.091	-1.409948	19.05388
_Iyyyy~20011	.5028362	1.275302	0.39	0.693	-1.996827	3.002499
_Iyyyy~20012	.9369465	1.248505	0.75	0.453	-1.510193	3.384086
_Iyyyy~20013	1.572581	1.242986	1.27	0.206	-.8637413	4.008903
_Iyyyy~20014	2.151026	1.214464	1.77	0.077	-.2293914	4.531444
_Iyyyy~20021	2.0544	1.211161	1.70	0.090	-.3195423	4.428342
_Iyyyy~20022	3.012599	1.197632	2.52	0.012	.6651742	5.360023
_Iyyyy~20023	3.757906	1.179709	3.19	0.001	1.445611	6.070201
_Iyyyy~20024	4.079673	1.159332	3.52	0.000	1.807317	6.352029
_Iyyyy~20031	4.149638	1.124304	3.69	0.000	1.94594	6.353336
_Iyyyy~20032	4.010178	1.122751	3.57	0.000	1.809523	6.210832
_Iyyyy~20033	3.446659	1.128742	3.05	0.002	1.234262	5.659056
_Iyyyy~20034	3.030319	1.122504	2.70	0.007	.8301487	5.230489
_Iyyyy~20041	3.347995	1.116124	3.00	0.003	1.16033	5.53566
_Iyyyy~20042	3.259075	1.116901	2.92	0.004	1.069887	5.448263
_Iyyyy~20043	2.861697	1.115431	2.57	0.010	.6753902	5.048003
_Iyyyy~20044	2.571931	1.116943	2.30	0.021	.3826607	4.761202
_Iyyyy~20051	2.736348	1.124798	2.43	0.015	.531681	4.941014
_Iyyyy~20052	2.477382	1.124698	2.20	0.028	.2729101	4.681853
_Iyyyy~20053	2.475652	1.125732	2.20	0.028	.2691539	4.682151
_Iyyyy~20054	2.506043	1.117009	2.24	0.025	.3166438	4.695442
_Iyyyy~20061	2.479931	1.126199	2.20	0.028	.272518	4.687345
_Iyyyy~20062	2.659738	1.1226	2.37	0.018	.4593795	4.860096
_Iyyyy~20063	3.680646	1.118668	3.29	0.001	1.487995	5.873297
_Iyyyy~20064	3.978307	1.11427	3.57	0.000	1.794276	6.162339
_Iyyyy~20071	4.204519	1.105666	3.80	0.000	2.037351	6.371686
_Iyyyy~20072	5.124014	1.111564	4.61	0.000	2.945287	7.302742
_Iyyyy~20073	5.488389	1.106233	4.96	0.000	3.32011	7.656667
_Iyyyy~20074	6.239613	1.101129	5.67	0.000	4.081339	8.397888
_Iyyyy~20081	6.830789	1.102486	6.20	0.000	4.669854	8.991724
_Iyyyy~20082	6.731845	1.094438	6.15	0.000	4.586686	8.877003
_Iyyyy~20083	8.123415	1.090398	7.45	0.000	5.986175	10.26066
_Iyyyy~20084	7.254427	1.091081	6.65	0.000	5.115848	9.393006
_cons	13.3331	4.900295	2.72	0.007	3.72825	22.93795

Appendix 2: Occupancy Regression

Source	SS	df	MS		
				Number of obs =	33080
				F(147, 32932) =	23.45
Model	64.8645235	147	.441255262	Prob > F =	0.0000

	SS	df	MS			
Residual	619.666046	32932	.018816532	R-squared	=	0.0948
				Adj R-squared	=	0.0907
Total	684.530569	33079	.020693811	Root MSE	=	.13717

occupancy	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
transitcb	.0064307	.004178	1.54	0.124	-.0017583	.0146197
transitsu	.016343	.0029756	5.49	0.000	.0105107	.0221753
regensu	.0060445	.0054464	1.11	0.267	-.0046307	.0167196
regencb	-.0022856	.0064091	-0.36	0.721	-.0148476	.0102764
estar	.0086163	.0029248	2.95	0.003	.0028836	.0143491
stype	.0225353	.0036222	6.22	0.000	.0154356	.029635
sqft	5.13e-09	4.31e-09	1.19	0.235	-3.33e-09	1.36e-08
sqft2	-1.67e-15	1.06e-15	-1.58	0.114	-3.75e-15	4.03e-16
sqft3	7.21e-23	4.52e-23	1.59	0.111	-1.66e-23	1.61e-22
floors	-.0007142	.0001108	-6.44	0.000	-.0009314	-.0004969
age	-.0009694	.0000601	-16.14	0.000	-.0010871	-.0008517
_Imsa_10740	-.1095929	.0408334	-2.68	0.007	-.1896278	-.029558
_Imsa_11260	-.0264278	.0443599	-0.60	0.551	-.1133748	.0605192
_Imsa_11460	(dropped)					
_Imsa_12060	-.138569	.0334887	-4.14	0.000	-.204208	-.07293
_Imsa_12420	-.0943264	.0336676	-2.80	0.005	-.160316	-.0283368
_Imsa_12580	-.0715989	.0340687	-2.10	0.036	-.1383748	-.004823
_Imsa_12940	.0473608	.0859342	0.55	0.582	-.1210734	.215795
_Imsa_13644	-.0547617	.0338545	-1.62	0.106	-.1211177	.0115942
_Imsa_13820	-.1109387	.0349189	-3.18	0.001	-.1793811	-.0424963
_Imsa_14484	-.083143	.0338615	-2.46	0.014	-.1495128	-.0167733
_Imsa_14500	-.0977195	.0345922	-2.82	0.005	-.1655215	-.0299175
_Imsa_14860	-.07801	.0344357	-2.27	0.023	-.1455052	-.0105149
_Imsa_15764	-.1220531	.0335919	-3.63	0.000	-.1878944	-.0562118
_Imsa_15804	-.128065	.0387359	-3.31	0.001	-.2039888	-.0521412
_Imsa_15980	-.1214278	.0546824	-2.22	0.026	-.2286073	-.0142483
_Imsa_16180	.0265783	.1025933	0.26	0.796	-.1745082	.2276648
_Imsa_16740	-.1080187	.0340717	-3.17	0.002	-.1748005	-.0412368
_Imsa_16974	-.124054	.0334483	-3.71	0.000	-.1896139	-.0584941
_Imsa_17140	-.1488034	.0346725	-4.29	0.000	-.2167627	-.080844
_Imsa_17460	(dropped)					
_Imsa_17820	-.1031905	.0376435	-2.74	0.006	-.176973	-.029408
_Imsa_18140	-.1774851	.0340768	-5.21	0.000	-.2442767	-.1106934
_Imsa_18180	.0120401	.043491	0.28	0.782	-.0732038	.097284
_Imsa_19124	-.1135516	.0334772	-3.39	0.001	-.1791682	-.0479351
_Imsa_19660	-.0570411	.0698287	-0.82	0.414	-.1939079	.0798257
_Imsa_19740	-.1141163	.0335382	-3.40	0.001	-.1798523	-.0483803
_Imsa_19780	-.1120778	.0517451	-2.17	0.030	-.2135	-.0106555
_Imsa_19804	(dropped)					
_Imsa_20500	-.050015	.0464052	-1.08	0.281	-.1409709	.0409409
_Imsa_20764	-.0716602	.0338908	-2.11	0.034	-.1380873	-.005233
_Imsa_21340	.0379426	.0452838	0.84	0.402	-.0508152	.1267004
_Imsa_22744	-.0961336	.0340602	-2.82	0.005	-.1628929	-.0293743
_Imsa_23104	-.1161875	.0369602	-3.14	0.002	-.1886308	-.0437442
_Imsa_23420	.0580356	.1026044	0.57	0.572	-.1430728	.259144
_Imsa_24340	.0050279	.0859434	0.06	0.953	-.1634241	.17348
_Imsa_24660	-.0728729	.0388385	-1.88	0.061	-.1489978	.003252
_Imsa_24860	-.0369214	.05894	-0.63	0.531	-.1524459	.0786031
_Imsa_25420	.0367919	.0422021	0.87	0.383	-.0459257	.1195095
_Imsa_25540	-.0907163	.0372808	-2.43	0.015	-.1637881	-.0176446

_Imsa_26180	-.147654	.0395748	-3.73	0.000	-.2252221	-.0700859
_Imsa_26420	-.1056749	.0336296	-3.14	0.002	-.1715902	-.0397596
_Imsa_26900	-.185814	.035364	-5.25	0.000	-.2551286	-.1164993
_Imsa_27260	-.1858395	.0367337	-5.06	0.000	-.2578389	-.1138401
_Imsa_27620	-.6111214	.0565889	-10.80	0.000	-.7220377	-.5002052
_Imsa_27940	.0014892	.0409722	0.04	0.971	-.0788177	.0817962
_Imsa_28140	-.1073397	.0344782	-3.11	0.002	-.1749182	-.0397612
_Imsa_28660	(dropped)					
_Imsa_28940	-.2182164	.0567294	-3.85	0.000	-.329408	-.1070247
_Imsa_29404	-.0693096	.0339091	-2.04	0.041	-.1357726	-.0028466
_Imsa_29820	-.0779522	.0397624	-1.96	0.050	-.1558878	-.0000165
_Imsa_30220	(dropped)					
_Imsa_30780	-.2227468	.038789	-5.74	0.000	-.2987747	-.1467189
_Imsa_31084	-.0781785	.0335335	-2.33	0.020	-.1439053	-.0124516
_Imsa_31140	-.1337447	.04272	-3.13	0.002	-.2174774	-.050012
_Imsa_31700	-.1558757	.0398995	-3.91	0.000	-.2340802	-.0776713
_Imsa_32820	-.1330355	.0390674	-3.41	0.001	-.209609	-.056462
_Imsa_33100	(dropped)					
_Imsa_33124	-.0795883	.0339087	-2.35	0.019	-.1460506	-.013126
_Imsa_33340	-.0931469	.0354089	-2.63	0.009	-.1625495	-.0237442
_Imsa_33460	-.1212909	.03364	-3.61	0.000	-.1872265	-.0553552
_Imsa_34100	(dropped)					
_Imsa_34940	-.0836921	.0411923	-2.03	0.042	-.1644304	-.0029537
_Imsa_34980	-.0362272	.0351077	-1.03	0.302	-.1050396	.0325852
_Imsa_35004	-.0364711	.0359074	-1.02	0.310	-.1068509	.0339088
_Imsa_35084	-.108144	.0343608	-3.15	0.002	-.1754925	-.0407956
_Imsa_35300	(dropped)					
_Imsa_35380	-.0607894	.0859766	-0.71	0.480	-.2293067	.1077279
_Imsa_35644	-.0413753	.0337004	-1.23	0.220	-.1074292	.0246786
_Imsa_36084	-.0926547	.0335945	-2.76	0.006	-.1585012	-.0268082
_Imsa_36540	-.0106479	.0470771	-0.23	0.821	-.1029206	.0816248
_Imsa_36740	-.1134801	.0341994	-3.32	0.001	-.1805121	-.0464482
_Imsa_37100	-.0511834	.0369163	-1.39	0.166	-.1235407	.0211738
_Imsa_37340	(dropped)					
_Imsa_37964	-.097645	.0338696	-2.88	0.004	-.1640306	-.0312593
_Imsa_38060	-.0802087	.0335538	-2.39	0.017	-.1459754	-.0144421
_Imsa_38300	-.1090953	.0340674	-3.20	0.001	-.1758686	-.042322
_Imsa_38860	-.0782461	.0391301	-2.00	0.046	-.1549425	-.0015496
_Imsa_38900	-.1041006	.0338376	-3.08	0.002	-.1704234	-.0377778
_Imsa_39300	-.0166711	.0370112	-0.45	0.652	-.0892144	.0558722
_Imsa_39580	-.0884937	.0349881	-2.53	0.011	-.1570717	-.0199157
_Imsa_39900	-.0309507	.0374547	-0.83	0.409	-.1043632	.0424618
_Imsa_40060	-.1267876	.0369184	-3.43	0.001	-.1991489	-.0544263
_Imsa_40140	-.1047377	.0366372	-2.86	0.004	-.1765479	-.0329275
_Imsa_40900	-.0739877	.034287	-2.16	0.031	-.1411915	-.0067838
_Imsa_41180	-.0895443	.0342	-2.62	0.009	-.1565777	-.022511
_Imsa_41500	-.0349646	.0565806	-0.62	0.537	-.1458646	.0759354
_Imsa_41540	-.2179946	.0487434	-4.47	0.000	-.3135334	-.1224559
_Imsa_41620	-.11157	.0350768	-3.18	0.001	-.1803218	-.0428182
_Imsa_41700	-.1259095	.0350452	-3.59	0.000	-.1945993	-.0572197
_Imsa_41740	-.0811134	.0335885	-2.41	0.016	-.146948	-.0152788
_Imsa_41884	-.0927581	.0335609	-2.76	0.006	-.1585387	-.0269775
_Imsa_41940	-.1259148	.033703	-3.74	0.000	-.1919739	-.0598556
_Imsa_42044	-.0876965	.0335756	-2.61	0.009	-.1535059	-.0218872
_Imsa_42060	-.0391909	.0616298	-0.64	0.525	-.1599876	.0816057
_Imsa_42220	-.0397411	.0505484	-0.79	0.432	-.1388177	.0593356
_Imsa_42644	-.0780885	.0335823	-2.33	0.020	-.143911	-.0122661

_Imsa_42680	.000112	.0588464	0.00	0.998	-.115229	.115453
_Imsa_43780	-.1697115	.0452537	-3.75	0.000	-.2584103	-.0810127
_Imsa_43900	.0167238	.0762726	0.22	0.826	-.1327732	.1662208
_Imsa_45220	-.0029519	.0403781	-0.07	0.942	-.0820945	.0761907
_Imsa_45300	-.0711262	.0339584	-2.09	0.036	-.137686	-.0045665
_Imsa_45820	-.0446851	.040579	-1.10	0.271	-.1242214	.0348511
_Imsa_45940	-.0328527	.0360936	-0.91	0.363	-.1035975	.0378921
_Imsa_46060	-.0005606	.0588481	-0.01	0.992	-.1159049	.1147838
_Imsa_46140	.0115151	.0546787	0.21	0.833	-.0956572	.1186873
_Imsa_46700	(dropped)					
_Imsa_47260	-.0981558	.0386477	-2.54	0.011	-.1739066	-.022405
_Imsa_47644	-.1611094	.0347222	-4.64	0.000	-.2291661	-.0930526
_Imsa_47894	-.0633353	.0334085	-1.90	0.058	-.1288171	.0021465
_Imsa_48424	-.1018314	.0343809	-2.96	0.003	-.1692191	-.0344437
_Imsa_48864	(dropped)					
_Imsa_49340	-.0783739	.0360394	-2.17	0.030	-.1490124	-.0077355
_Iyyyy~20002	-.0016969	.009034	-0.19	0.851	-.0194038	.01601
_Iyyyy~20003	.0108408	.0088434	1.23	0.220	-.0064925	.0281742
_Iyyyy~20004	.0102812	.0087647	1.17	0.241	-.0068979	.0274602
_Iyyyy~20011	.0113344	.0086045	1.32	0.188	-.0055308	.0281996
_Iyyyy~20012	.0073142	.0086072	0.85	0.395	-.0095563	.0241847
_Iyyyy~20013	-.008543	.0086149	-0.99	0.321	-.0254286	.0083425
_Iyyyy~20014	-.0148204	.0084968	-1.74	0.081	-.0314744	.0018337
_Iyyyy~20021	-.024177	.0083301	-2.90	0.004	-.0405043	-.0078498
_Iyyyy~20022	-.0445856	.0079848	-5.58	0.000	-.0602362	-.0289351
_Iyyyy~20023	-.0586317	.007972	-7.35	0.000	-.0742571	-.0430063
_Iyyyy~20024	-.0649702	.0080176	-8.10	0.000	-.080685	-.0492554
_Iyyyy~20031	-.0769606	.0079635	-9.66	0.000	-.0925694	-.0613518
_Iyyyy~20032	-.0794095	.0079188	-10.03	0.000	-.0949306	-.0638883
_Iyyyy~20033	-.0876049	.0079095	-11.08	0.000	-.1031078	-.072102
_Iyyyy~20034	-.0881025	.0079346	-11.10	0.000	-.1036545	-.0725505
_Iyyyy~20041	-.0933043	.0079121	-11.79	0.000	-.1088123	-.0777962
_Iyyyy~20042	-.0865073	.0079453	-10.89	0.000	-.1020804	-.0709342
_Iyyyy~20043	-.0823476	.0079275	-10.39	0.000	-.0978858	-.0668093
_Iyyyy~20044	-.0821555	.0079445	-10.34	0.000	-.0977271	-.0665839
_Iyyyy~20051	-.078831	.0079203	-9.95	0.000	-.0943551	-.0633069
_Iyyyy~20052	-.0731859	.0079175	-9.24	0.000	-.0887045	-.0576673
_Iyyyy~20053	-.0700361	.0079009	-8.86	0.000	-.0855223	-.05455
_Iyyyy~20054	-.0632756	.0078986	-8.01	0.000	-.0787572	-.047794
_Iyyyy~20061	-.0560701	.0079219	-7.08	0.000	-.0715974	-.0405428
_Iyyyy~20062	-.0487225	.0078595	-6.20	0.000	-.0641274	-.0333176
_Iyyyy~20063	-.0461927	.0078337	-5.90	0.000	-.061547	-.0308384
_Iyyyy~20064	-.0439543	.0077887	-5.64	0.000	-.0592205	-.0286881
_Iyyyy~20071	-.0398713	.0077664	-5.13	0.000	-.0550937	-.0246488
_Iyyyy~20072	-.0402887	.0078051	-5.16	0.000	-.0555869	-.0249904
_Iyyyy~20073	-.0384722	.0077828	-4.94	0.000	-.0537267	-.0232177
_Iyyyy~20074	-.0407079	.0077286	-5.27	0.000	-.0558563	-.0255595
_Iyyyy~20081	-.0411408	.0077768	-5.29	0.000	-.0563837	-.025898
_Iyyyy~20082	-.0409951	.0077948	-5.26	0.000	-.0562731	-.0257171
_Iyyyy~20083	-.0502797	.0078674	-6.39	0.000	-.0657	-.0348594
_Iyyyy~20084	-.0515592	.0078795	-6.54	0.000	-.0670032	-.0361152
_cons	1.046	.0339435	30.82	0.000	.9794696	1.112531

Appendix 3: Total Expenses Regression

Source	SS	df	MS
Model	995937.655	140	7113.84039
Residual	513635.844	24864	20.6578123
Total	1509573.50	25004	60.3732802

Number of obs	=	25005
F(140, 24864)	=	344.37
Prob > F	=	0.0000
R-squared	=	0.6597
Adj R-squared	=	0.6578
Root MSE	=	4.5451

exptotsf_yr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
IncSF	1.383436	.0074367	186.03	0.000	1.368859	1.398012
transitcb	.4047195	.1608131	2.52	0.012	.0895162	.7199228
transitsu	-.5698028	.1137337	-5.01	0.000	-.7927275	-.3468781
regensu	-.0395036	.2054517	-0.19	0.848	-.4422011	.3631939
regencb	1.248249	.24511	5.09	0.000	.7678192	1.728679
estar	.1485255	.1097275	1.35	0.176	-.066547	.363598
stype	.3395442	.140428	2.42	0.016	.064297	.6147914
sqft	-4.89e-07	1.61e-07	-3.04	0.002	-8.04e-07	-1.73e-07
sqft2	5.99e-14	3.81e-14	1.57	0.115	-1.47e-14	1.35e-13
sqft3	-2.12e-21	1.60e-21	-1.33	0.185	-5.26e-21	1.01e-21
floors	.0669676	.0042112	15.90	0.000	.0587133	.0752219
age	.0449633	.0023317	19.28	0.000	.040393	.0495336
_Imsa_10740	4.318541	1.491785	2.89	0.004	1.394553	7.242529
_Imsa_11260	2.578143	1.666191	1.55	0.122	-.6876901	5.843976
_Imsa_11460	(dropped)					
_Imsa_12060	4.339951	1.224006	3.55	0.000	1.940827	6.739075
_Imsa_12420	4.948268	1.230263	4.02	0.000	2.536879	7.359657
_Imsa_12580	4.323451	1.245913	3.47	0.001	1.881388	6.765513
_Imsa_13644	3.69709	1.237133	2.99	0.003	1.272236	6.121945
_Imsa_13820	4.587849	1.276014	3.60	0.000	2.086785	7.088912
_Imsa_14484	4.632331	1.238353	3.74	0.000	2.205086	7.059576
_Imsa_14500	4.053194	1.266026	3.20	0.001	1.571707	6.534681
_Imsa_14860	4.760459	1.261183	3.77	0.000	2.288464	7.232453
_Imsa_15764	5.086272	1.228475	4.14	0.000	2.678387	7.494156
_Imsa_15804	5.543352	1.399588	3.96	0.000	2.800077	8.286627
_Imsa_15980	5.071759	2.218555	2.29	0.022	.7232604	9.420258
_Imsa_16740	2.871162	1.247449	2.30	0.021	.4260873	5.316237
_Imsa_16974	5.747758	1.221862	4.70	0.000	3.352835	8.14268
_Imsa_17140	4.959111	1.27264	3.90	0.000	2.464661	7.453561
_Imsa_17460	(dropped)					
_Imsa_17820	3.427578	1.412448	2.43	0.015	.6590968	6.196059
_Imsa_18140	6.852139	1.248541	5.49	0.000	4.404925	9.299353
_Imsa_18180	4.056734	1.56853	2.59	0.010	.9823224	7.131146
_Imsa_19124	5.146753	1.22315	4.21	0.000	2.749307	7.544199
_Imsa_19660	8.55326	3.438171	2.49	0.013	1.81424	15.29228
_Imsa_19740	5.599314	1.225363	4.57	0.000	3.19753	8.001097
_Imsa_19780	6.229476	2.219051	2.81	0.005	1.880004	10.57895
_Imsa_19804	(dropped)					
_Imsa_20500	4.16845	1.78868	2.33	0.020	.6625311	7.674368
_Imsa_20764	3.700622	1.239975	2.98	0.003	1.270197	6.131047
_Imsa_21340	-.3706873	1.664895	-0.22	0.824	-3.633981	2.892606
_Imsa_22744	5.348969	1.245354	4.30	0.000	2.908002	7.789936
_Imsa_23104	4.413585	1.372301	3.22	0.001	1.723794	7.103376
_Imsa_24660	.5587356	1.407629	0.40	0.691	-2.200301	3.317773
_Imsa_24860	4.384172	2.37335	1.85	0.065	-.2677345	9.036078
_Imsa_25420	6.935831	1.518399	4.57	0.000	3.959679	9.911982
_Imsa_25540	6.600016	1.381719	4.78	0.000	3.891764	9.308267

_Imsa_26180	7.799839	1.477449	5.28	0.000	4.903951	10.69573
_Imsa_26420	5.523902	1.229794	4.49	0.000	3.113434	7.934371
_Imsa_26900	5.612102	1.302454	4.31	0.000	3.059214	8.164989
_Imsa_27260	5.406126	1.372039	3.94	0.000	2.716849	8.095404
_Imsa_27620	14.79331	2.578817	5.74	0.000	9.738671	19.84794
_Imsa_27940	3.57742	1.472168	2.43	0.015	.6918844	6.462957
_Imsa_28140	4.939927	1.258619	3.92	0.000	2.47296	7.406895
_Imsa_28660	(dropped)					
_Imsa_28940	7.893178	2.374977	3.32	0.001	3.238081	12.54827
_Imsa_29404	3.880495	1.237525	3.14	0.002	1.454873	6.306118
_Imsa_29820	2.377947	1.555939	1.53	0.126	-.6717855	5.42768
_Imsa_30220	(dropped)					
_Imsa_30780	5.305711	1.429572	3.71	0.000	2.503666	8.107757
_Imsa_31084	4.635019	1.225963	3.78	0.000	2.232059	7.037979
_Imsa_31140	2.637311	1.538744	1.71	0.087	-.3787178	5.65334
_Imsa_31700	7.148385	1.498343	4.77	0.000	4.211544	10.08523
_Imsa_32820	7.230441	1.432283	5.05	0.000	4.423082	10.0378
_Imsa_33100	(dropped)					
_Imsa_33124	5.529398	1.238852	4.46	0.000	3.101174	7.957623
_Imsa_33340	5.419168	1.293159	4.19	0.000	2.884499	7.953838
_Imsa_33460	5.993655	1.229665	4.87	0.000	3.583439	8.403872
_Imsa_34100	(dropped)					
_Imsa_34940	5.805024	1.541941	3.76	0.000	2.782728	8.82732
_Imsa_34980	3.369469	1.280739	2.63	0.009	.8591449	5.879792
_Imsa_35004	8.474463	1.315397	6.44	0.000	5.896205	11.05272
_Imsa_35084	6.464013	1.259409	5.13	0.000	3.995496	8.932531
_Imsa_35644	4.980579	1.232917	4.04	0.000	2.563988	7.397169
_Imsa_36084	4.964769	1.227901	4.04	0.000	2.55801	7.371527
_Imsa_36540	.8549665	1.883311	0.45	0.650	-2.836435	4.546368
_Imsa_36740	4.465316	1.251625	3.57	0.000	2.012058	6.918575
_Imsa_37100	2.144826	1.364084	1.57	0.116	-.5288594	4.818512
_Imsa_37340	(dropped)					
_Imsa_37964	3.7901	1.240322	3.06	0.002	1.358995	6.221204
_Imsa_38060	4.171981	1.226357	3.40	0.001	1.768249	6.575712
_Imsa_38300	5.008612	1.243488	4.03	0.000	2.571303	7.445922
_Imsa_38860	2.883822	1.452924	1.98	0.047	.0360049	5.73164
_Imsa_38900	2.441062	1.237735	1.97	0.049	.015027	4.867097
_Imsa_39300	2.216552	1.350069	1.64	0.101	-.4296632	4.862767
_Imsa_39580	3.253276	1.283754	2.53	0.011	.7370419	5.76951
_Imsa_39900	2.416226	1.369773	1.76	0.078	-.2686106	5.101063
_Imsa_40060	4.815046	1.367086	3.52	0.000	2.135476	7.494616
_Imsa_40140	5.196628	1.373335	3.78	0.000	2.504811	7.888446
_Imsa_40900	3.41908	1.254845	2.72	0.006	.9595091	5.87865
_Imsa_41180	4.974813	1.252373	3.97	0.000	2.520087	7.429539
_Imsa_41500	2.577388	2.219312	1.16	0.246	-1.772596	6.927371
_Imsa_41540	5.799362	1.79433	3.23	0.001	2.282368	9.316356
_Imsa_41620	2.857769	1.289121	2.22	0.027	.3310149	5.384524
_Imsa_41700	5.694525	1.282393	4.44	0.000	3.180959	8.208091
_Imsa_41740	2.926913	1.228194	2.38	0.017	.5195793	5.334247
_Imsa_41884	4.47929	1.227019	3.65	0.000	2.074259	6.884321
_Imsa_41940	2.857927	1.23287	2.32	0.020	.4414282	5.274427
_Imsa_42044	4.315266	1.227562	3.52	0.000	1.909172	6.721359
_Imsa_42060	1.374956	2.578847	0.53	0.594	-3.679737	6.42965
_Imsa_42220	5.551524	1.942406	2.86	0.004	1.744292	9.358755
_Imsa_42644	2.180589	1.227062	1.78	0.076	-.2245262	4.585704
_Imsa_42680	1.385011	2.369504	0.58	0.559	-3.259357	6.029378
_Imsa_43780	5.38084	1.663422	3.23	0.001	2.120435	8.641245

_Imsa_43900	.305208	4.707413	0.06	0.948	-8.9216	9.532016
_Imsa_45220	4.303686	1.450238	2.97	0.003	1.461134	7.146238
_Imsa_45300	4.610559	1.241401	3.71	0.000	2.177339	7.043779
_Imsa_45820	5.881288	1.602473	3.67	0.000	2.740345	9.02223
_Imsa_45940	3.15934	1.312471	2.41	0.016	.5868181	5.731861
_Imsa_46060	4.663986	2.369705	1.97	0.049	.0192234	9.308748
_Imsa_46140	2.0739	2.218506	0.93	0.350	-2.274504	6.422304
_Imsa_46700	(dropped)					
_Imsa_47260	4.047887	1.412784	2.87	0.004	1.278746	6.817027
_Imsa_47644	5.161242	1.270233	4.06	0.000	2.671509	7.650975
_Imsa_47894	2.629541	1.220638	2.15	0.031	.2370176	5.022064
_Imsa_48424	6.299564	1.260449	5.00	0.000	3.829009	8.770119
_Imsa_48864	(dropped)					
_Imsa_49340	5.076807	1.320665	3.84	0.000	2.488226	7.665389
_Iyyyy~20011	-.1547099	.3287675	-0.47	0.638	-.7991138	.4896939
_Iyyyy~20012	-.007643	.3217737	-0.02	0.981	-.6383386	.6230526
_Iyyyy~20013	.185721	.3201864	0.58	0.562	-.4418634	.8133053
_Iyyyy~20014	.496498	.3125717	1.59	0.112	-.1161612	1.109157
_Iyyyy~20021	.4492772	.3113619	1.44	0.149	-.1610105	1.059565
_Iyyyy~20022	.685344	.3081362	2.22	0.026	.0813788	1.289309
_Iyyyy~20023	1.066472	.3041249	3.51	0.000	.4703687	1.662575
_Iyyyy~20024	1.136219	.2994716	3.79	0.000	.549237	1.723201
_Iyyyy~20031	1.290888	.2903901	4.45	0.000	.7217064	1.86007
_Iyyyy~20032	1.547563	.2903021	5.33	0.000	.9785533	2.116572
_Iyyyy~20033	1.79597	.291369	6.16	0.000	1.224869	2.36707
_Iyyyy~20034	1.744405	.2901664	6.01	0.000	1.175662	2.313148
_Iyyyy~20041	1.812742	.2885574	6.28	0.000	1.247152	2.378331
_Iyyyy~20042	1.550898	.2889222	5.37	0.000	.984593	2.117202
_Iyyyy~20043	1.700914	.2888685	5.89	0.000	1.134714	2.267113
_Iyyyy~20044	1.737511	.2899185	5.99	0.000	1.169253	2.305768
_Iyyyy~20051	1.667975	.2913624	5.72	0.000	1.096887	2.239062
_Iyyyy~20052	1.772192	.2909921	6.09	0.000	1.201831	2.342554
_Iyyyy~20053	1.70457	.2914346	5.85	0.000	1.133341	2.275799
_Iyyyy~20054	1.634398	.2901094	5.63	0.000	1.065767	2.20303
_Iyyyy~20061	1.47206	.2916198	5.05	0.000	.900468	2.043652
_Iyyyy~20062	1.40118	.2905499	4.82	0.000	.8316849	1.970675
_Iyyyy~20063	1.619304	.2898023	5.59	0.000	1.051275	2.187334
_Iyyyy~20064	1.684829	.2887407	5.84	0.000	1.11888	2.250778
_Iyyyy~20071	1.612379	.2863979	5.63	0.000	1.051022	2.173735
_Iyyyy~20072	1.578213	.2876202	5.49	0.000	1.014461	2.141966
_Iyyyy~20073	1.940453	.2861987	6.78	0.000	1.379487	2.50142
_Iyyyy~20074	1.959078	.2852261	6.87	0.000	1.400018	2.518138
_Iyyyy~20081	1.868406	.285116	6.55	0.000	1.309562	2.427251
_Iyyyy~20082	1.942171	.2831528	6.86	0.000	1.387175	2.497168
_Iyyyy~20083	2.306405	.2824279	8.17	0.000	1.75283	2.85998
_Iyyyy~20084	2.424894	.2824754	8.58	0.000	1.871226	2.978563
_cons	-4.603383	1.239946	-3.71	0.000	-7.03375	-2.173015

Appendix 4: Utility Expense Regression

Source	SS	df	MS
Model	37562.0101	134	280.313508
Residual	30853.545	22828	1.35156584

Number of obs =	22963
F(134, 22828) =	207.40
Prob > F =	0.0000
R-squared =	0.5490
Adj R-squared =	0.5464

```
      Total |   68415.555 22962  2.97951202          Root MSE      =  1.1626

------------------------------------------------------------------------------
  utilsf_yr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      IncSF |   .2671705   .0019374   137.90   0.000     .2633732    .2709679
      estar |  -.2445381   .0282309    -8.66   0.000    -.2998726   -.1892036
      stype |  -.1345776   .0266867    -5.04   0.000    -.1868854   -.0822699
       sqft |  -1.69e-07   4.24e-08    -3.99   0.000    -2.52e-07   -8.59e-08
      sqft2 |   3.45e-14   9.87e-15     3.49   0.000     1.51e-14    5.38e-14
      sqft3 |  -1.34e-21   4.13e-22    -3.24   0.001    -2.15e-21   -5.30e-22
     floors |  -.0010477   .0010862    -0.96   0.335    -.0031767    .0010813
        age |   .0136695   .0006018    22.72   0.000       .01249     .014849
 _Imsa_11260 |  -1.215092   .3654969    -3.32   0.001     -1.93149   -.4986931
 _Imsa_11460 |  (dropped)
 _Imsa_12060 |  -.6601072   .2241369    -2.95   0.003    -1.099431   -.2207837
 _Imsa_12420 |   -.623248   .2265426    -2.75   0.006    -1.067287   -.1792091
 _Imsa_12580 |   .4164995   .2324568     1.79   0.073    -.0391315    .8721306
 _Imsa_13644 |   .0732307   .2290117     0.32   0.749    -.3756477    .5221091
 _Imsa_13820 |  -.1977965   .2461514    -0.80   0.422    -.6802698    .2846769
 _Imsa_14484 |  -.8014082   .2291971    -3.50   0.000     -1.25065   -.3521664
 _Imsa_14500 |  -.6463978   .2439592    -2.65   0.008    -1.124574   -.1682213
 _Imsa_14860 |  -.4682688    .236903    -1.98   0.048    -.9326149   -.0039228
 _Imsa_15764 |   .3933949    .226295     1.74   0.082    -.0501587    .8369485
 _Imsa_15804 |   .7234055   .3176412     2.28   0.023     .1008071    1.346004
 _Imsa_15980 |  -1.457607   .5238089    -2.78   0.005    -2.484308   -.4309063
 _Imsa_16740 |  -.8272863    .232531    -3.56   0.000    -1.283063   -.3715098
 _Imsa_16974 |  -1.189062   .2229993    -5.33   0.000    -1.626156   -.7519684
 _Imsa_17140 |  -.3956564    .240259    -1.65   0.100    -.8665804    .0752677
 _Imsa_17460 |  (dropped)
 _Imsa_17820 |  -.4299743   .2959455    -1.45   0.146    -1.010048     .150099
 _Imsa_18140 |  -.3717419   .2325977    -1.60   0.110    -.8276492    .0841653
 _Imsa_18180 |  -.0339118   .3366268    -0.10   0.920    -.6937231    .6258995
 _Imsa_19124 |  -.2413752   .2238754    -1.08   0.281    -.6801862    .1974357
 _Imsa_19660 |   1.281519   .8517999     1.50   0.132    -.3880668    2.951104
 _Imsa_19740 |  -.4877556   .2245697    -2.17   0.030    -.9279275   -.0475837
 _Imsa_19780 |  -1.665223   .7071133    -2.35   0.019    -3.051213   -.2792333
 _Imsa_19804 |  (dropped)
 _Imsa_20500 |  -.4922451   .4021784    -1.22   0.221    -1.280542    .2960519
 _Imsa_20764 |   .3609163   .2318603     1.56   0.120    -.0935456    .8153782
 _Imsa_22744 |  -.6511856   .2322774    -2.80   0.005    -1.106465   -.1959061
 _Imsa_23104 |  -.2770206   .2788848    -0.99   0.321    -.8236538    .2696125
 _Imsa_24660 |  -.7273502   .3656305    -1.99   0.047    -1.444011   -.0106897
 _Imsa_24860 |  -.0006358    .566059    -0.00   0.999     -1.11015    1.108878
 _Imsa_25420 |  -.3197663   .3208792    -1.00   0.319    -.9487113    .3091788
 _Imsa_25540 |   .6112887   .2776356     2.20   0.028      .067104    1.155473
 _Imsa_26180 |  -.1072794   .3070711    -0.35   0.727    -.7091596    .4946007
 _Imsa_26420 |  -.0728019   .2258466    -0.32   0.747    -.5154765    .3698728
 _Imsa_26900 |  -.2011111   .2578646    -0.78   0.435    -.7065433    .3043211
 _Imsa_27260 |  -.0885191   .2923734    -0.30   0.762    -.6615909    .4845527
 _Imsa_27620 |   -1.28432   .6222465    -2.06   0.039    -2.503965   -.0646743
 _Imsa_27940 |  -.5315102   .3090769    -1.72   0.086    -1.137322    .0743016
 _Imsa_28140 |  -.5527645   .2374656    -2.33   0.020    -1.018213   -.0873158
 _Imsa_28660 |  (dropped)
 _Imsa_28940 |   -1.48688   .5660632    -2.63   0.009    -2.596402   -.3773574
 _Imsa_29404 |  -1.381585   .2293143    -6.02   0.000    -1.831057   -.9321133
 _Imsa_29820 |  -.2992074   .3326613    -0.90   0.368    -.9512462    .3528314
```

_Imsa_30220	(dropped)					
_Imsa_30780	.2098757	.2887952	0.73	0.467	-.3561825	.7759338
_Imsa_31084	-.4421229	.2236949	-1.98	0.048	-.8805801	-.0036658
_Imsa_31140	-.4608946	.324411	-1.42	0.155	-1.096762	.174973
_Imsa_31700	.1792245	.3146842	0.57	0.569	-.4375779	.796027
_Imsa_32820	.4521397	.2940646	1.54	0.124	-.1242469	1.028526
_Imsa_33100	(dropped)					
_Imsa_33124	-.2999097	.229065	-1.31	0.190	-.7488925	.1490732
_Imsa_33340	-.636686	.2531565	-2.51	0.012	-1.13289	-.140482
_Imsa_33460	-.3227089	.226169	-1.43	0.154	-.7660154	.1205977
_Imsa_34940	-.6092481	.3414397	-1.78	0.074	-1.278493	.0599969
_Imsa_34980	-.3904952	.2467602	-1.58	0.114	-.8741621	.0931716
_Imsa_35004	.70704	.2551828	2.77	0.006	.2068644	1.207216
_Imsa_35084	.2744406	.2366087	1.16	0.246	-.1893285	.7382096
_Imsa_35644	-.2520749	.2267143	-1.11	0.266	-.6964504	.1923006
_Imsa_36084	-.6051616	.2254219	-2.68	0.007	-1.047004	-.1633193
_Imsa_36540	-1.162535	.4292826	-2.71	0.007	-2.003958	-.3211119
_Imsa_36740	-.3033962	.2352588	-1.29	0.197	-.7645194	.157727
_Imsa_37100	-.6895917	.2768009	-2.49	0.013	-1.23214	-.1470433
_Imsa_37340	(dropped)					
_Imsa_37964	-.195187	.2308125	-0.85	0.398	-.6475952	.2572211
_Imsa_38060	-.80688	.2256607	-3.58	0.000	-1.24919	-.3645697
_Imsa_38300	-.1533471	.2309093	-0.66	0.507	-.605945	.2992508
_Imsa_38860	-1.447953	.3001353	-4.82	0.000	-2.036239	-.8596678
_Imsa_38900	-.9791066	.2298784	-4.26	0.000	-1.429684	-.5285294
_Imsa_39300	.0318792	.4021411	0.08	0.937	-.7563447	.820103
_Imsa_39580	-.5051668	.2461844	-2.05	0.040	-.9877049	-.0226288
_Imsa_39900	-1.064767	.2738696	-3.89	0.000	-1.60157	-.5279638
_Imsa_40060	-.0037656	.2823608	-0.01	0.989	-.557212	.5496807
_Imsa_40140	-.2324431	.2748148	-0.85	0.398	-.7710987	.3062124
_Imsa_40900	-1.013959	.2354296	-4.31	0.000	-1.475417	-.552501
_Imsa_41180	-.6637981	.2370223	-2.80	0.005	-1.128378	-.1992182
_Imsa_41500	-.9805635	.5238332	-1.87	0.061	-2.007312	.0461851
_Imsa_41540	-.5218744	.4015601	-1.30	0.194	-1.308959	.2652107
_Imsa_41620	-.8250733	.2469512	-3.34	0.001	-1.309114	-.3410321
_Imsa_41700	-.3280212	.2457179	-1.33	0.182	-.809645	.1536026
_Imsa_41740	-1.236664	.2259276	-5.47	0.000	-1.679497	-.7938303
_Imsa_41884	-.7849406	.2239306	-3.51	0.000	-1.22386	-.3460215
_Imsa_41940	-.6379513	.2286307	-2.79	0.005	-1.086083	-.1898196
_Imsa_42044	-.4237659	.225649	-1.88	0.060	-.8660532	.0185214
_Imsa_42060	-.1866601	.6225624	-0.30	0.764	-1.406925	1.033604
_Imsa_42220	.1892991	.4464951	0.42	0.672	-.6858615	1.06446
_Imsa_42644	-.887051	.2251718	-3.94	0.000	-1.328403	-.445699
_Imsa_42680	-2.568638	.5653519	-4.54	0.000	-3.676766	-1.46051
_Imsa_43780	-.1685535	.3585306	-0.47	0.638	-.8712977	.5341908
_Imsa_43900	-1.046861	1.184071	-0.88	0.377	-3.367721	1.273999
_Imsa_45220	-.5765481	.2998194	-1.92	0.054	-1.164214	.0111183
_Imsa_45300	-.2019512	.2309418	-0.87	0.382	-.6546127	.2507103
_Imsa_45820	-.381555	.3465144	-1.10	0.271	-1.060747	.2976367
_Imsa_45940	-.2963687	.2539858	-1.17	0.243	-.7941981	.2014607
_Imsa_46060	1.503773	.5654161	2.66	0.008	.3955185	2.612027
_Imsa_46140	-1.537357	.5239836	-2.93	0.003	-2.5644	-.5103135
_Imsa_46700	(dropped)					
_Imsa_47260	-.2573143	.2850018	-0.90	0.367	-.8159371	.3013084
_Imsa_47644	-.2228968	.2404492	-0.93	0.354	-.6941935	.2483999
_Imsa_47894	-1.133253	.2229241	-5.08	0.000	-1.5702	-.6963069
_Imsa_48424	-.5333651	.2370952	-2.25	0.024	-.9980878	-.0686425

_Imsa_48864	(dropped)					
_Imsa_49340	-.0592183	.2575343	-0.23	0.818	-.564003	.4455664
_Iyyyy~20011	-.0465296	.0906097	-0.51	0.608	-.2241309	.1310716
_Iyyyy~20012	.0034733	.0880239	0.04	0.969	-.1690595	.1760061
_Iyyyy~20013	.0664309	.087242	0.76	0.446	-.1045693	.2374312
_Iyyyy~20014	.0919621	.0852105	1.08	0.280	-.0750563	.2589804
_Iyyyy~20021	.0895339	.0848413	1.06	0.291	-.0767608	.2558287
_Iyyyy~20022	.0723175	.0834753	0.87	0.386	-.0912998	.2359348
_Iyyyy~20023	.1544947	.0823834	1.88	0.061	-.0069823	.3159717
_Iyyyy~20024	.1456018	.0815741	1.78	0.074	-.014289	.3054926
_Iyyyy~20031	.1571373	.0784017	2.00	0.045	.0034647	.3108099
_Iyyyy~20032	.1984294	.0783307	2.53	0.011	.0448959	.3519629
_Iyyyy~20033	.2552405	.0786366	3.25	0.001	.1011075	.4093735
_Iyyyy~20034	.2569539	.0784193	3.28	0.001	.1032468	.410661
_Iyyyy~20041	.3075985	.0780571	3.94	0.000	.1546012	.4605958
_Iyyyy~20042	.2235476	.0780741	2.86	0.004	.070517	.3765782
_Iyyyy~20043	.2589686	.0780579	3.32	0.001	.1059699	.4119674
_Iyyyy~20044	.2800583	.0783622	3.57	0.000	.126463	.4336536
_Iyyyy~20051	.2786859	.0788178	3.54	0.000	.1241976	.4331743
_Iyyyy~20052	.325079	.078693	4.13	0.000	.1708354	.4793225
_Iyyyy~20053	.3750261	.0788032	4.76	0.000	.2205665	.5294857
_Iyyyy~20054	.4117385	.0784532	5.25	0.000	.2579648	.5655121
_Iyyyy~20061	.398226	.0790063	5.04	0.000	.2433682	.5530838
_Iyyyy~20062	.4333327	.0787873	5.50	0.000	.2789043	.5877611
_Iyyyy~20063	.54353	.0783965	6.93	0.000	.3898676	.6971924
_Iyyyy~20064	.6016267	.0781661	7.70	0.000	.4484158	.7548376
_Iyyyy~20071	.5494967	.0774756	7.09	0.000	.3976393	.7013541
_Iyyyy~20072	.5021589	.0778364	6.45	0.000	.3495943	.6547235
_Iyyyy~20073	.5369519	.0774159	6.94	0.000	.3852115	.6886923
_Iyyyy~20074	.5445034	.0772406	7.05	0.000	.3931066	.6959001
_Iyyyy~20081	.5000975	.0771658	6.48	0.000	.3488474	.6513476
_Iyyyy~20082	.5696612	.0766203	7.43	0.000	.4194803	.7198422
_Iyyyy~20083	.662492	.0763905	8.67	0.000	.5127614	.8122227
_Iyyyy~20084	.6766776	.0763744	8.86	0.000	.5269785	.8263767
_cons	.6244287	.2305371	2.71	0.007	.1725604	1.076297

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