

The Exclusionary Benefit in Multifamily Housing

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Abstract

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The history of housing discrimination in the United States is examined with attention on exclusion through pricing in multifamily housing. A hypothesis, applying the concept of club goods and the economic theories developed by Thorstein Veblen to multifamily housing, is developed. The hypothesis – that exclusion through unit size delivers additional value to the unit – is tested in three ways: examining the products of Seattle’s incentive zoning programs to determine if build or fee payment options are favored, examining the historical vacancy rates of larger apartments to determine if they attain a higher “natural” vacancy rate, and examining condominium sale prices and unit square footage to determine if increased area, ceteris paribus, correlates with increased price above expected values. The results of the analyses are mixed. Only two residential buildings have been built with the incentive zoning programs – not enough for a thorough analysis. The largest apartment units have a statistically significant higher vacancy rate than other apartments. Finally, an anomaly in condominium pricing suggests an exclusionary benefit beginning around \$350 per square foot. Further research with larger data sets and advanced statistical tests will improve the internal validity of the hypothesis.

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INTRODUCTION

Despite the housing bust, where Seattle area homes lost 33% of their value since the peak of July 2007, housing remains unaffordable for a significant proportion of the population. Growing income inequality will only compound the problem for future generations of renters and homebuyers as all residents compete for scarce resources. The situation is likely to be exacerbated even more as interest rates return to long-term averages.

Many arguments and policies have been offered to address the problem of housing unaffordability. This thesis seeks to examine a possible explanation for a narrow segment of the housing market; if exclusive multifamily housing is pushing up multifamily housing costs and thereby creating more exclusion. Since the hypothesis that economic exclusion occurring specifically in multifamily housing is somewhat novel, three fundamental assumptions will be built up to support the logic of the hypothesis. Briefly, these are:

1. There is demand for exclusion in multifamily housing,
2. Price is an effective means of exclusion, and
3. Besides location, unit area – square footage – is the component of housing with the greatest value to the most people.

The implication of these assumptions is the exclusionary benefit hypothesis. The hypothesis draws from the work of Thorstein Veblen and Harvey Leibenstein, who proposed that products that are exclusive because of their price confer status leading to increasing demand at some sufficiently exclusive price.¹ I employ a simplified version that may be applied to housing discrimination: products that are exclusive because of their price confer exclusion.

¹ Leibenstein, “Bandwagon, Snob, and Veblen Effects,” 189.

Following the explication of the exclusionary benefit, three opportunities to compare units under potential Veblen effects with those less likely to be are presented. These opportunities are statistically tested for significance. The opportunities are:

1. Seattle's incentive zoning programs, which seek to mix middle- and low-income housing with market-rate housing through density bonuses,
2. The natural vacancy rate of larger versus smaller apartments, and
3. The relationship of price per square foot and unit area in recent King County condo sales.

The results from the analysis of these three opportunities are mixed. However, the analysis does demonstrate the importance of sufficient data and serviceable definitions of control and experimental groups when testing for potentially subtle differences in real estate prices. Further research is, ultimately, recommended.

BACKGROUND

FROM CONGESTION TO UNAFFORDABILITY

Jacob Riis' photo essay, *How the Other Half Lives: Studies Among the Tenements of New York*, brought the condition of the slums of Manhattan at the end of the 19th Century to public attention.² The connection between overcrowding and disease had, for the first time, a scientific basis in the novel germ theory of disease. This led to more than a half century of efforts to relieve congestion and bring housing up to modern standards. Plazas, parks, height restrictions, slum clearance, building codes, and sewer systems were among the manifestations of a society responding to the poor state of its housing stock.

² "Matters We Ought to Know," *The New York Times*.

Concerns over the state of housing were addressed by the United States Housing Act of 1937 (later amended). The act was one of the federal governments earliest forays into public housing and the progenitor of the Department of Housing and Urban Development. It states at its very beginning,

“It is the policy of the United States to promote the general welfare of the Nation by employing its funds and credit, as provided in this Act, to assist the several States and their political subdivisions to remedy the unsafe and unsanitary housing conditions and the acute shortage of decent, safe, and sanitary dwellings for families of lower income”³

Congestion relief was first addressed on a grand scale by the GI Bill which financed low-interest homes to World War II veterans. The end of congestion relief is generally marked by the failure of modernist projects like the Bijlmermeer in Amsterdam and the Pruitt-Igoe in St. Louis that had become the slums they were designed to replace.

But these weren't the kinds of slums Jacob Riis recorded in 1890. The acute shortage of decent, safe, and sanitary dwellings described in the Housing Act of 1937 had been largely remedied with the construction of new buildings and indoor plumbing by the time HUD was formed in 1965. Eventually, crowding and sanitation problems were replaced by social and economic problems which proved much more difficult to solve through housing policy alone. Cost relief replaced congestion relief as the primary objective of housing policy. Housing affordability has remained a primary concern of housing agency policy since the 1960s although this mission is often now shared with others like public health, socio-economic integration, and environmental stewardship.

What is clear from the evolution of housing agency policies since the turn of the last century is that while housing quality went up, housing costs also rose. For many households, rising costs led to economic problems related to housing affordability. The Department of Housing and Urban Development regularly measures the number of

³ 42 U.S.C. 1437. Section 2.

“Worst Case Needs” – households in either severely inadequate housing or who spend more than 50% of their income on housing. In the most recent survey 93.8% of these Worst Case Needs households were due to spending more than 50% of income on housing. In addition, 2.9% suffered from “Severely Inadequate Housing;” 3.4% suffered from both.⁴

The proportion of housing unaffordability to housing inadequacy hasn’t always been so lopsided. As recently as 1974, there were only about twice as many households living under severely unaffordable versus severely inadequate conditions.⁵ Nearly every year since HUD began recording these two housing problems, unaffordability has gone up while inadequacy has trended down moderately.⁶ If national housing surveys were available for Jacob Riis’s time we would likely see a reversal of current conditions, one where housing inadequacy was the dominant problem.

The housing affordability crisis persists as a major urban planning problem that dominates local election debates and vexes policymakers. Despite the attention it receives, policy makers have not been able to create a grand solution to the problem. Even in the more planned economies of Europe, the cost of housing has outpaced average income in four of the five countries with the largest public housing sectors.⁷ The complexity of the problem is beyond the scope of this thesis which sets its sights narrowly by seeking to examine one possible contributing factor to housing unaffordability: exclusionary pricing in multi-family housing. Before expounding on the narrow topic of exclusionary pricing, it is useful to provide some context by examining the larger topic of discrimination in American housing.

⁴ U.S. Department of Housing and Urban Development, “Worst Case Housing Needs,” 2.

⁵ Green and Malpezzi, *Primer on U.S. Housing Markets*, 157.

⁶ U.S. Department of Housing and Urban Development, “Trends in Worst Case Housing Needs,” Appendix A-4.

⁷Denmark, Sweden, the United Kingdom, and France showed housing prices outpacing GDP per capita in the period 2002-2010. In the Netherlands, with the largest share of public housing in Europe, the reverse was true. Housing price data was not available for Austria. See Whitehead and Scanlon, “Social Housing in Europe,” 9, **OECD, “House Prices,” and OECD, “Gross Domestic Product.”**

HOUSING DISCRIMINATION AND EXCLUSION

Serious national efforts to end discrimination in housing begin in 1948 when the Supreme Court ruled that restrictive covenants based on race or color violated the Equal Protection Clause of the Fourteenth Amendment. This landmark case had a dramatic impact and reversed the rulings of Missouri's and Michigan's supreme courts.⁸ However, the opinion of the court also found that restrictive covenants voluntarily agreed to between private parties were legal and states simply could not enforce them. This limitation led to two decades of discriminatory covenants that remained in effect indirectly through agent steering and redlining.⁹

Thus, individuals and the states were able to and did discriminate by way of deed covenants. The Federal Housing Association (FHA) also had a history of discrimination employing redlining beginning with its inception in 1934. In a particularly egregious example, the FHA denied insurance applications in a mixed-race Detroit neighborhood in adherence with guidelines to separate "inharmonious racial and nationality groups." A concrete wall was subsequently built between the black and white parts of the neighborhood and, upon reapplying for FHA insurance, the white residents were approved.¹⁰

It wasn't until the much broader protections brought in the form of the Fair Housing Act of 1968 were racially-restrictive covenants outlawed. The Fair Housing Act, expanding legislation in the Civil Rights Act of 1964, explicitly prohibited "discrimination in the sale, rental, and financing of dwellings based on race, color, religion, sex or national origin."¹¹ The Act has since been amended a number of times to include additional

⁸ Shelley v. Kraemer, 334 U.S. 1, Section III (1948)

⁹ The Fair Housing Center of Greater Boston, "Unenforceable Restrictive Covenants."

¹⁰ The Fair Housing Center of Greater Boston, "FHA Mortgage Insurance."

¹¹ U.S. Department of Housing and Urban Development, "Title VIII: Fair Housing and Equal Opportunity."

protected classes like disability status and family status, but also to restrict the family status class in buildings housing older populations.¹²

Since the Fair Housing Act, housing discrimination has occurred in less conspicuous forms. These forms are primarily racial steering, mortgage finance discrimination, and the design of the built environment. It is the design – or, the physical characteristics – of multi-family housing where we will later find the mechanism for the exclusionary benefit.

Racial steering, where real estate agents withhold information from black customers available to white customers or direct black residents away from suitable white neighborhoods to non-white neighborhoods. It should be noted that most studies on steering have looked at the steering of black prospective buyers from white neighborhoods, so the results cannot be extended to other minority classes.¹³ However, such findings have been documented across the country.¹⁴

Mortgage finance discrimination, which was outlawed for the protected classes defined by the Fair Housing Act, did not receive much attention in the post-Civil Rights Era. This changed when the *Atlanta Journal Constitution* began publishing a series of articles called “The Color Money” beginning in 1989. The articles, primarily relying on data collected under the Home Mortgage Disclosure Act (1975), examined the geographic pattern of mortgage rejections and race in the Atlanta area. The results suggested discriminatory lending had been practiced on a large scale. Of home mortgage applicants Blacks were rejected 34% of the time, Hispanics 22% of the time, and Whites 14% of the time.¹⁵ But these are overly simplistic tabulations from the HDMA data. Due to the limited number of demographic variables available in the data, researchers have had

¹² U.S. Department of Housing and Urban Development, “Title VIII: Fair Housing and Equal Opportunity.”

¹³ Yinger, *Closed Doors, Opportunities Lost*, 56.

¹⁴ *Ibid.*

¹⁵ Green and Malpezzi, *Primer on U.S. Housing Markets*, 174.

difficulty determining the persistent correlations between mortgage lending and applicant characteristics.

The apparent racial pattern of mortgage lending could be the result of higher rates of poverty and low credit scores within some minority groups. An alternative to viewing the mortgage patterns as outright discrimination is offered by Edmund Phelps. He identified the theoretical basis for “statistical discrimination:” using broad indicators instead of more sensitive methods of predicted performance in hiring decisions.¹⁶ Lending institutions, like employers, rely on limited data to make investment decisions. Acquiring additional data and the analysis required to make sense of it is costly and the cost may simply outweigh the benefit of a more accurate, individualized decision. Statistical discrimination, then, falls under the rubric of institutional discrimination – discriminatory behavior attributed not to an individual but to a process. The central hypothesis of this thesis – exclusion through pricing through unit area – may also occur as the result of a process rather than the intentional and conscious interventions of people.

Despite the number of subtle ways discrimination in housing can occur in addition to the overt methods common prior to the Fair Housing Act – e.g., racist covenants and redlining – progress has been made for blacks and Hispanics. A 2000 HUD study found declining rates of discrimination for these groups over the course of the 90s when the first Housing Discrimination Study was published, in part due to “The Color of Money.”¹⁷

The third common type of exclusion is design. There are the tangible examples like gated communities and Robert Moses’ design of shortened overpasses to prevent public transportation from reaching suburban Long Island,¹⁸ a hypothesis since challenged.¹⁹ And then there are the designs-by-policy which often rely on the authority of zoning

¹⁶ Phelps, “The Statistical Theory of Racism and Sexism.”

¹⁷ U.S. Department of Housing and Urban Development, “Discrimination in Metropolitan Housing Markets,” Exhibit ES-1, p.iii. (Although rental and sales discrimination declined for blacks, only discrimination in sales declined for Hispanics; rental discrimination showed a slight increase for Hispanics.)

¹⁸ Winner, “Do Artifacts Have Politics,” 123-124.

¹⁹ Joerges, “Do Politics Have Artefacts?”

regulations to enforce discrimination. For example, the *Euclid v. Ambler* Supreme Court ruling of 1926, which protected zoning regulations from the due process and equal protection provisions of the Fourteenth Amendment, referred to the “evils of overcrowding” and the “mere parasite” of the apartment in neighborhoods with detached housing. Harkening back to a time when the ills of overcrowding outweighed the ills of unaffordability, *Euclid v. Ambler* served to justify exclusionary zoning policies. In the *Euclid* decision, apartments were presented as *a priori* nuisances to the “health, morals, safety, and general welfare” of communities with detached housing. The decision allowed future policymakers to enact exclusionary zoning with little to no judicial oversight.²⁰

At the outset of the Fair Housing Act exclusionary residential zoning had been identified as a serious national problem. A federal report from 1969 remarked that

“[i]n recent years, communities across the nation have amended their ordinances to require larger and larger lots. ‘Acreage’ zoning, the extreme situation, is now common, and lot sizes in community after community are being raised across the board.”²¹

The determination of whether a zoning law is primarily exclusionary or primarily serves the health, safety, and general welfare of a community as is permissible under most

²⁰ The fear of apartments in the *Euclid* decision, anachronistic in our time, was also outmoded to educated people in the 1920s. The majority opinion mentions the disturbance of the “free circulation of air” to houses as a reason to exclude apartments. The importance of the “free circulation of air” in a neighborhood mixed with apartments and detached houses – a silly complaint to make about apartments – only makes sense in light of some holdover of the miasma theory of disease in the Justices’ minds. The miasma theory used stale, noxious gas to explain the origin of disease. The theory was replaced in the late 19th Century by germ theory which was present enough within the popular culture to serve as the twist ending to H.G. Wells’ 1898 *The War of the Worlds*: the mighty inter-planetary invaders from Mars, ignorant of germ theory, succumbed, ironically, to the tiny pathogens of Earth.

²¹ National Commission on Urban Problems, *Building the American City*, 206.

zoning legislation, has been largely left to the state courts.²² A patchwork of court opinions populate the country with some finding economic discrimination in minimum lot zoning legislation²³ while others have shown skepticism about exclusionary impacts, allowing up to 3-acre minimums in one case.²⁴ The exclusionary effect, if not exclusionary intent, of minimum lot zoning, in economic research, is well documented.²⁵ Generalizing about the intent behind zoning restrictions has proved difficult, although at least one quantitative study suggests that zoning minimums reflect a community's desire to "break even" on new local tax collections and tax expenditures.²⁶ Zoning laws, therefore, tend, in the study area,²⁷ to restrict the groups of lower-income residents that diminish net municipal benefits. This is the corollary to Tiebout's final assumption, which states that "communities below the optimum size seek to attract new residents to lower average costs;"²⁸ they also seek to exclude new residents who increase average costs.

The minimum lot zoning challenges in recent decades represent a development of discriminatory practices. Outright racism in restrictive covenants and bias in mortgage financing have been addressed with legislation and are relatively non-existent or inactive in the case of the former and in decline in the case of the latter.²⁹ Minimum lot zoning has been a popular tool with uncertain intentions (definitions of "general welfare," "health," and "safety" have generally been given wide berths by the courts). Discrimination on the basis of race, ethnicity, or national origins is often indistinguishable from the more easily identifiable economic discrimination minimum lot size zoning sometimes leads to. On the other hand, poverty is not a protected class in the United States the way race or national origin are. The Supreme Court in 1973 found that income was not a suspect class under

²² *Warth v. Seldon*, 422 U.S. 490 (1975)

²³ *Southern Burlington County NAACP v. Township of Mount Laurel*, 67 N.J. 151, 336 A.2d 713, (1975)

²⁴ *Johnson v. Town of Edgartown*, 425 Mass. 117, 680 N.E.2d 37 (1997)

²⁵ Rolleston, "Determinants of Restrictive Suburban Zoning," 1.

²⁶ Rolleston, "Determinants of Restrictive Suburban Zoning," 18-19.

²⁷ Nine counties in northeastern New Jersey since 1970

²⁸ Tiebout, "Pure Theory of Local Expenditures," 419.

²⁹ U.S. Department of Housing and Urban Development, "Discrimination in Metropolitan Housing Markets," Exhibit ES-1, p.iii.

the Fourteenth Amendment and, additionally, that there was no constitutional right to education.³⁰ In the absence of protected class-status for income it is not surprising that discrimination through design would find a foothold in the ambiguities of zoning law.

A more precise way of measuring the extent of income discrimination in housing is through an examination of the acceptance of Section 8 vouchers. The Section 8 voucher programs originated in the 1970s as a demand-side approach to provide subsidized housing in the United States. Previously, subsidized housing had largely been supply-side -- government agencies funded the construction of housing complexes in order to raise the poor quality of housing that marked the first half of the 20th Century. Eligibility for Section 8 vouchers is largely based on income limits with higher limits for larger families.

As an income-based program and different levels of protection from “income source” discrimination among the states, it is possible to indirectly observe discrimination based on income. This can be achieved by looking at how Section 8 voucher holders (who have the ability to pay) are treated compared to non-Section 8 voucher holders in states with little protection from “income source” discrimination. As of March 2011 twelve states, the District of Columbia, and even more municipalities offer some form of legal protection on the basis of “source of income.”³¹ Most of these laws are designed to specifically protect Section 8 voucher holders and, where the state courts have ruled “source of income” protection does not extend to voucher holders, often legislatures respond by rewriting the laws to clearly include vouchers.

Difficulty arises about where to ascribe the cause of discrimination against voucher holders that were the impetus for these laws. Defendants (multi-family property owners) will often make the case that it is not exclusion of the individual voucher holders they are

³⁰ *San Antonio Independent School District v. Demetrio P. Rodriguez*, 411 U.S. 1 (1973)

³¹ Poverty & Race Research Action Council, “Keeping the Promise,” Appendix B.

after but a legitimate concern over the administrative burden required by vouchers.³² Generally, courts have not found the administrative burden of the voucher programs to rise to the standard of a property taking, a term with an elaborate legal definition, but which usually connotes a significant loss.³³ We cannot, therefore, rule out administrative burden as a cause of voucher discrimination.

In a 2007 study only 9% of 415 New York City landlords surveyed were willing to accept Section 8 vouchers.³⁴ Anecdotal evidence supports a number of explanations for the observed reluctance to accept voucher participants but consensus among housing researchers has not been reached.³⁵ Whether the housing discrimination that has led to source of income laws is due to widespread income discrimination or widespread bureaucratic burden or something else entirely does not change the effect: many of those with vouchers who are willing to pay for housing are discriminated against.

The use of lot size minimum zoning and the source of income discrimination exhibited by Section 8 vouchers demonstrate that, after the Fair Housing Act, housing discrimination has often occurred through economic terms. Unfortunately, because poverty is not a protected class, economic discrimination remains a legally viable means of exclusion and may be used as direct discrimination against income classes or indirect discrimination against classes protected by the Fair Housing Act (e.g., as a proxy for race).³⁶ Source of income laws present in some jurisdictions offer protection for voucher holders. These protections are limited and do not help those who qualify, but, due to limited funds, aren't granted vouchers. Wait times for Section 8 vouchers of over a year are common. Or wait

³² National Housing Law Project, "Courts Consider Landlord Defenses to Source of Income Laws," 239.

³³ National Housing Law Project, "Courts Consider Landlord Defenses to Source of Income Laws," 243-244.

³⁴ Cited in: Daniel, Tamica. "Bringing Real Choice to the Housing Choice Voucher Program: Addressing Voucher Discrimination Under the Federal Fair Housing Act," *Georgetown Law Journal*. Vol. 98: 771. (The study cited no longer exists in its original form. The original source of the study, ACORN New York, is defunct and is no longer hosting any of their material.)

³⁵ Fernandez, "Bias Is Seen as Landlords Bar Vouchers."

³⁶ Beck, "Fighting Section 8 Discrimination," 156.

lists may simply be closed entirely, like in Florida where a 2001 survey revealed that 67% of public housing authorities were not accepting new voucher applicants.³⁷

The increasing income inequality in the United States adds importance to this issue and elevates concern over economic discrimination as the major form of discrimination in the future. Social mobility rankings – the measurement of the change in income between a son and a father – place the United States towards the bottom of OECD countries, next to Italy and the United Kingdom.³⁸ Not only is income relatively immobile between the generations, but it is also becoming more immobile over time according to a number of studies performed across generations from the 1970s through the 1990s.³⁹ The argument often used to justify income inequality, and to a greater extent, wealth inequality, in the United States is its economic dynamism. A motivated and talented individual no matter his or her station can rise to prominence while movement in the opposite direction awaits the nogoodnik offspring of the wealthy. The data suggests this belief is becoming less and less valid.

Finally, the use of racial categories, particularly the narrow focus of housing discrimination research on white and black Americans, has become less effective. This is doubtlessly due to a greater percentage of mixed race people in the United States, the influx of immigrants who do not see themselves falling into the limited racial categories common to past research, and, perhaps most telling, to the declining relative importance of race and ethnicity over income class in determining residential location.⁴⁰ The trend is reflected in the increasing number of options for race and ethnicity in the decennial censuses.

³⁷ Ray, "Public Housing Authority Waiting List Characteristics," 9.

³⁸ Organisation for Economic Co-operation and Development. "Economic Policy Reforms," Part II, Chapter V, p. 6.

³⁹ The Economist, "Ever Higher Society."

⁴⁰ Fischer, "Relative Importance of Income and Race," 684.

To the extent that segregation indicates some form of discrimination,⁴¹ the western region of the United States offers the best region to study the effects of class discrimination on housing outcomes. Compared to the Northeast, Midwest, and South, the West has the lowest rate of racial and ethnic residential segregation and the highest rate of residential class segregation.⁴²

VEBLEN EFFECTS, CLUB GOODS, AND THE EXCLUSIONARY BENEFIT

With the history of discrimination in American housing and increasing economic segregation established, the mechanics of price discrimination in housing can be examined. The Law of Demand tells us that as prices increase, demand decreases. Economist Gary Becker hypothesized that discrimination exacts a price on those practicing it. One's "taste for discrimination" is personal.⁴³ Early research on the existence of price discrimination found that whites pay more to live in white neighborhoods, controlling for the quality and locational values of housing.⁴⁴ Subsequent research has looked at larger sets of racial and ethnic groups and found additional, although more complicated, evidence for price discrimination.⁴⁵

This thesis explores an alternative view of price discrimination in housing, distinct from mortgage bias and agent steering in that it does not require human actors. It differs from minimum lot size zoning in that it does not require regulation, but which may still find itself in the category of discrimination by design. This type of price discrimination is the result of a benefit from exclusion that is induced by price itself. That is, rather than discrimination creating price differentials, price differentials create discrimination. This is possible if multifamily housing can behave as a Veblen good, a good that violates the Law of Demand by having more demand as price increases, not less.

⁴¹ Iceland and Wilkes, "Does Socioeconomic Status Matter?" 248-273.

⁴² Fischer, "Relative Importance of Income and Race," 685, Table 3.

⁴³ Becker, *The Economics of Discrimination*.

⁴⁴ Yinger, "Black-White Differential in Housing," 203.

⁴⁵ Ihlanfeldt and Mayock, "Price Discrimination in the Housing Market," 134.

Thorstein Veblen first identified what we now call Veblen goods in women's fashion. In a vivid introduction to the concept of conspicuous consumption, Veblen seeks to explain the economic irrationality of women's clothing in the late 19th Century:

“Herein lies the secret of the persistence, in modern dress, of the skirt and of all the cumbrous and otherwise meaningless drapery which the skirt typifies. The skirt persists because it is cumbrous. It hampers the movements of the wearer and disables her, in great measure, for any useful occupation. So it serves as an advertisement (often disingenuous) that the wearer is backed by sufficient means to be able to afford the idleness, or impaired efficiency, which the skirt implies.”⁴⁶

Veblen would later apply his idea of conspicuous consumption, in *The Theory of the Leisure Class*, to a much larger set of leisure activities that convey a person's ability to waste and, therefore, indicate a high social status.

In Veblen's and subsequent economists' use of conspicuous consumption, the conveyance of status, like a debilitating Victorian-era dress, is the ultimate goal. Although housing may certainly be used as a status object, I wish to contract Veblen's interpretation of Veblen effects (a term coined later by economist Harvey Leibenstein to describe the demand for a good due solely for its “conspicuous consumption utility”)⁴⁷ while remaining consistent with the fundamental features of his hypothesis.

For Veblen, exclusion is a means to conspicuous consumption which is itself a means to status. In order to apply Veblen's fundamental hypothesis to housing, I offer a simplification on this relationship by eliminating the status of conspicuous consumption. The Veblen effect is, at its core, *the benefit of exclusion through price*. Leibenstein offered a similar interpretation when he wrote,

⁴⁶ Veblen, “The Economic Theory of Women's Dress,” 203.

⁴⁷ Leibenstein. “Bandwagon, Snob, and Veblen Effects,” 203.

“The essential economic characteristic with which we are concerned is the fact that the utility derived from a unit of a commodity employed for purposes of conspicuous consumption depends not only on the inherent qualities of that unit, but also on the price paid for it.”⁴⁸

The reasons why exclusion may have value differs by good and consumer. Veblen identified the clothing of the bourgeoisie. Movie theaters and Disneyland would suffer from overcrowding without a means of exclusion – admission price. Any club good – excludable and non-rivalrous – in fact, that is subject to congestion effects will, at some point, benefit from exclusion. Any private good which conveys status will also be subject to Veblen effects. The reason exclusion has value to the consumer is different for designer clothing than it is for the line to Space Mountain, but we can observe the fundamentals of Veblen effects in both.

	Excludable	Non-excludable
Rivalrous	Private goods – housing, cars, TVs, clothing	Common goods – natural resource commodities (timber, gold, fish)
Non-rivalrous	Club goods – swimming pools, movie theaters, Disneyland, multifamily common areas	Public goods – air, oceans, parks, sidewalks, national defense

Table 1 – Types of Goods

Housing is naturally considered a private good – an owner can exclude others from entering *and* the use of a housing unit. However, while an owner can prevent its use by another person, the public property surrounding a house is a public good – non-excludable and non-rivalrous. Gated communities developed in order to better control this non-housing neighborhood property by moving them into the ‘Excludable’ column to

⁴⁸ Ibid.

become club goods.⁴⁹ A recent national study of gated communities found residents pay a premium to live in them and that a number of significant tradeoffs like unit size and home ownership are made compared to people living in traditional communities.⁵⁰ That is, the value of the non-housing space is higher as a club good than as a public good. And, the difference in utility between the non-housing space in a gated community versus a traditional neighborhood is its excludability.

The issue being addressed in this thesis focuses on multifamily housing. As sidewalks and streets are the club goods in a gated community, hallways, parking garages, and other common areas are the club goods of multifamily housing. This is the most intimate “neighborhood” space – collective but exclusive to building occupants. It is where apartment and condo neighbors come into contact with one another. The cost of a condo or apartment, then, is the cost of the unit itself and the cost of entry into the club. Unlike some other mixed private/club goods like housing development along a golf course, the goods are intertwined and cannot be separated. You pay for your home and you pay a little for who your neighbors are, too.

If the practice of source of income discrimination and increasing economic segregation is occurring, it should be possible to see exclusion in condos and apartments. For these types of housing units, there is demand for economic exclusion, economic discrimination is legal outside the patchwork of “source of income” laws and, because they are part club good, exclusion is feasible through pricing.

EXCLUSION THROUGH UNIT AREA

Developers and landlords could theoretically make a building more exclusive by selling or renting all units at a higher price than comparable properties. In a housing market with

⁴⁹ Cséfalvay, “Searching for Economic Rationale behind Gated Communities.”

⁵⁰ Plaut, “Characteristics and Tradeoffs of Households Choosing to Live in Gated Communities.” 772.

a multifamily housing monopoly this would be feasible. Housing consumers who value exclusion would have no choice than to simply pay the exclusionary prices, receiving no benefit, beside the exclusion itself, for the extra cost. However, in a competitive multifamily housing market, producers may compete to offer more “house” at higher, exclusionary prices. Whereas a single-family housing consumer can seek exclusion through location (e.g., buying property in a sufficiently expensive neighborhood or a sufficiently distant suburb), multi-family housing is only able to induce exclusion through non-locational components of housing.⁵¹ Any non-locational component could induce economic exclusion if the component cost enough: Italian marble counter tops, gold-plated toilets, 30-foot ceilings – anything to drive up the cost of the unit. But, producers seeking to appeal to a many consumers will find more success offering components that suit more widely-held tastes.

Housing components that may occur more often or in higher quality include parking spaces, balconies, views, and high-end fixtures, but these can’t compete with the universal appeal of unit area. Unit area is the *sine qua non* of housing. It is so essential that the three most popular consumer real estate listing services include not just square feet but also price/square feet in their listings. In a recent survey of hedonic housing models, unit area was the second most common variable following age.⁵² One can live in a house without bedrooms, bathrooms, and kitchens,⁵³ but one can’t live in a house without area. Unlike bedrooms or kitchens or parking spots, unit area scales easily. An extra 100 square feet can always be put to use but an extra bedroom is only conditionally useful (for instance, in the case of an extra family member or the need for an office space). Unit area’s value is smooth above some basic consumption level, it is a *ratio*

⁵¹ Since multifamily housing contains its units within one building (or a coherent site), there are no (or very minute) locational differences within multifamily housing. The value of the whole building is strongly influenced by location, like all housing, but the concern of this analysis is exclusion within buildings.

⁵² Sirmans et al., “The Composition of Hedonic Pricing Models,” 9.

⁵³ For instance, Hiro Protagonist, in Neal Stephenson’s novel *Snow Crash*, makes his home in a “spacious 20-by-30 in a U-Stor-It in Inglewood, California. The room has a concrete slab floor, corrugated steel walls separating it from the neighboring units, and—this is a mark of distinction and luxury—a roll-up steel door that faces northwest, giving them a few red rays [...] when the sun is setting over LAX.”

variable,⁵⁴ and has a slowly declining intrinsic utility.⁵⁵ Outside location, area is the most utility-maximizing component of housing. To summarize, in a competitive multifamily housing market, where location is restrained within individual buildings, area is likely the most effective component by which to induce price exclusion.

THE EXCLUSIONARY BENEFIT HYPOTHESIS

Three assumptions necessary to explain the mechanism of price discrimination through unit area in multifamily housing:

1. There is demand for economically exclusive multifamily housing.
2. Economic exclusion is feasible in multifamily housing through Veblen effects.
3. Unit area is the most utility-maximizing component in housing outside location.

Figure 1 illustrates how the assumptions fit into the larger model of exclusive multifamily demand and supply. The model assumes a competitive housing market.

⁵⁴ A ratio variable is one where the difference between values is meaningful and consistent and has a natural '0' value. The importance of ratio variables is that they allow for more statistical interpretations than lesser variables. See Stanley Stevens, 1946.

⁵⁵ Palmquist, "Estimating the Demand for Characteristics of Housing," 401-402.

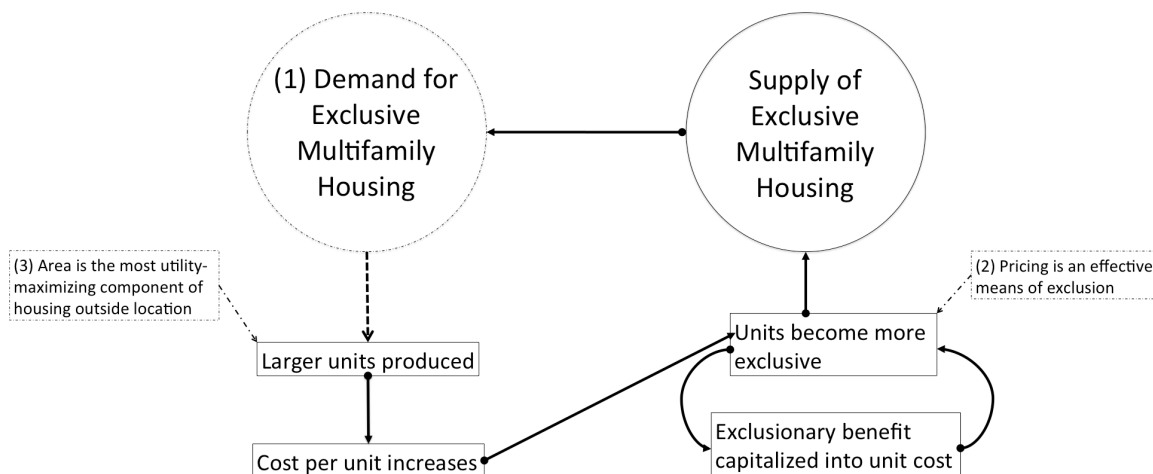


Figure 1 – Exclusionary Benefit Model

As units become more expensive through size, exclusionary (Veblen) effects begin to kick in, further increasing the value of the unit beyond the intrinsic value of the additional area. Eventually the income constraint or the declining marginal value of exclusion (i.e., additional exclusion is not desired) kills the feedback loop, preventing the model from predicting runaway housing costs.

The dashed line between “Demand for Exclusive Multifamily Housing” and “Larger units produced” indicates the ambiguity of intentionality in the model. Whether consumers consciously seek larger, more exclusive units or whether consumers find themselves unwittingly attracted to larger, more exclusive units does not affect the model. Like electricity following the least resistant path, nature finds a way. A conscious awareness of the exclusionary benefit would, presumably, speed up the process, but the extent to which consumers or producers are aware of what they are doing is a question better left to psychologists and communications experts.

In traditional economic literature, the demand curve slopes downward as it moves from left to right, indicating that as price decreases the demand for a good increases and vice-versa. Veblen goods, however, violate this principle of the Law of Demand by generating additional demand as price increases.

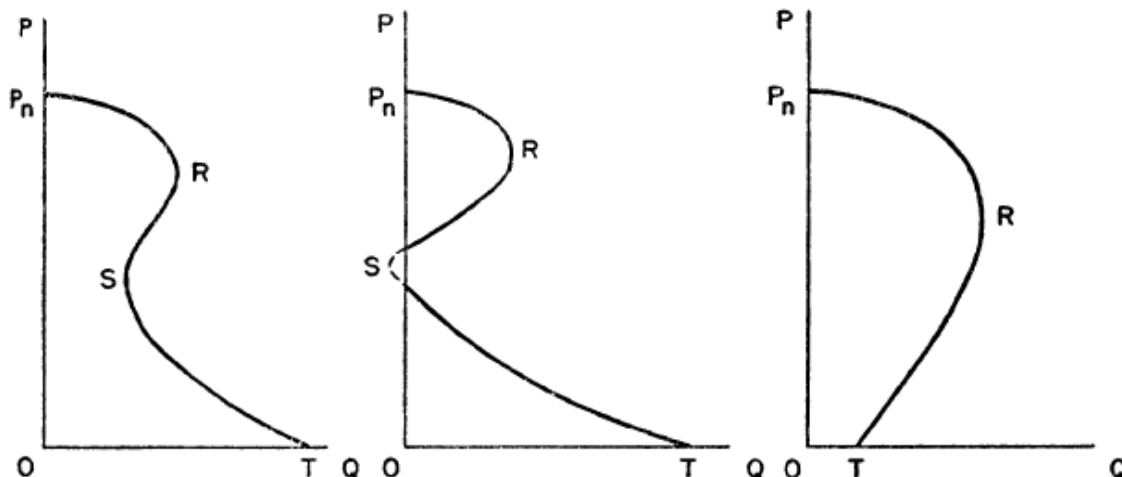


Figure 2 – Veblen Curve A Figure 3 – Veblen Curve B Figure 4 – Veblen Curve C

Source: Leibenstein, 1950

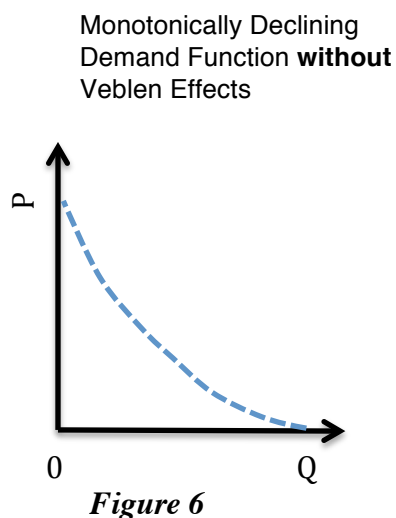
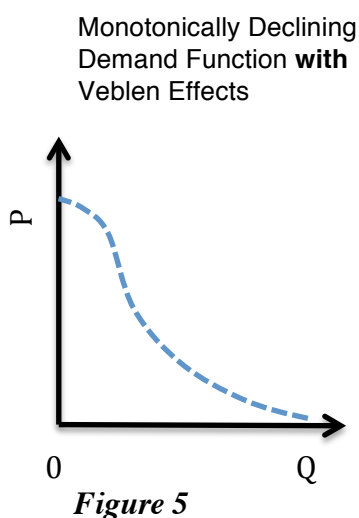
Section SR in **Figure 2** shows Veblen effects overcoming the inherent utility of the good by bending the slope positive. Above point R, the demand curve bends back as Veblen effects recede. Below point S, the exclusionary effect of price is no longer functional; increases in prices result in decreases in demand.

Figure 3 shows the same dynamic at work in **Figure 2** but with Veblen effects so strong that demand is entirely segmented into two populations: TS shows traditional demand without Veblen effects while SR shows very strong Veblen effects that begin at point S, after normal consumers have ceased demanding the good due to its cost.

Figure 4 assumes that the Veblen effects begin at a price of 0 – effectively excluding no one. This isn't sensible for Veblen's conspicuous consumption or the subject at hand, multi-family housing with its many fixed costs, but it helps to illustrate **Figures 2** and **3** by simplifying the demand curve into two areas: TR showing Veblen effects dominating and RP_n showing income limits dominating.

The demand curve may also be monotonically decreasing (unchanging in slope sign) if the Veblen effects do not overcome the normal relationship between utility and price. In real estate, subject to uncountable factors small and large, price discrimination has much

to overcome in order to switch the sign of the slope. And, although the United States has some of the highest wealth disparities in the OECD group,⁵⁶ the types of disparities needed to see demand functions like **Figure 2** and **3** require extremely unequal housing markets. While not common in the United States, this likely occurs in markets like Hong Kong and Dubai as well as regions with persistent class systems like those found in India and Latin America.



A hypothetical supply side examination of multifamily housing under the influence of Veblen effects (the exclusionary benefit) exhibits a similar pattern of price premium. The traditional relationship between unit price and unit square feet is linear which is why, within a real estate market segment, prices are so often quoted in dollars per square foot. Each additional square foot is priced just as much as all previous square feet. A more nuanced understanding of this relationship brings the economies of scale of development into consideration. The marginal cost of a square foot of unit area declines over time as fixed costs diminish and other economies of scale take effect.

⁵⁶ Income distribution and Poverty Income distribution - Inequality. OECD.StatExtracts. stats.oecd.org

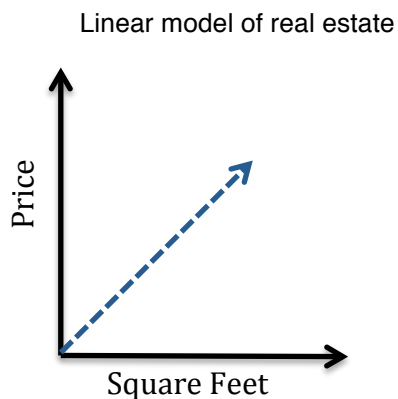


Figure 7

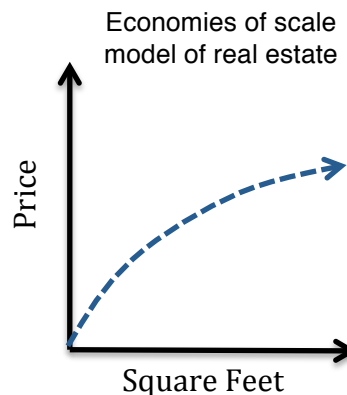
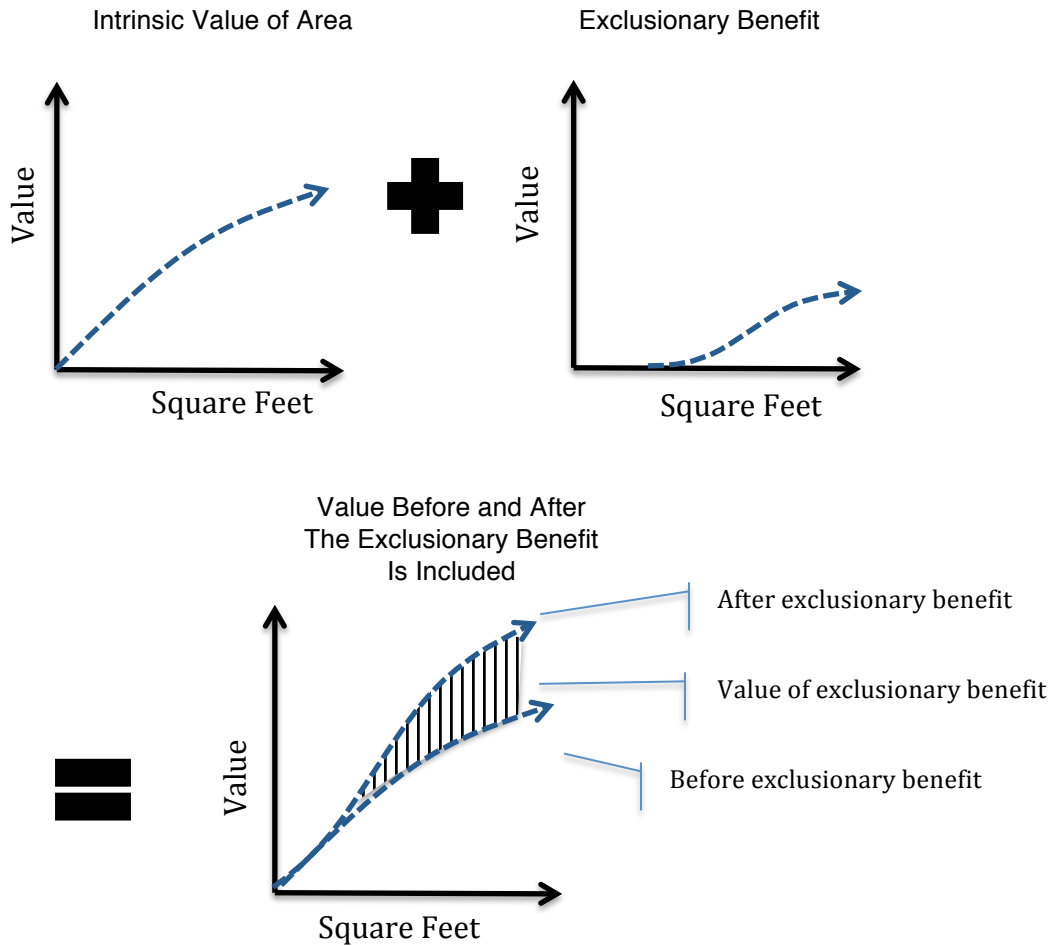


Figure 8

Figure 7 shows the linear relationship between price and square feet while **Figure 8** shows this same relationship but with economies of scale.

Like the supply-side relationship of price and square feet, the demand-side relationship traditionally has declining marginal returns after some point of autonomous housing consumption. When Veblen effects are included, however, as square footage is added to units, costs could go up, resulting in exclusion based on ability to pay. The effect of exclusion continues to increase as area and price rise, delivering both the intrinsic value of area and the extrinsic value of exclusion to the property. The result is increasing marginal returns to utility in square footage when coupled with increasing exclusion. Eventually, the intrinsic marginal utility of area plus the marginal utility of price exclusion falls below the marginal cost of additional area: the value curve flattens and returns to a traditional slope.



Figures 9, 10, and 11

In order to test the hypothesis that the exclusionary benefit can and does occur in multifamily housing through unit area, it is necessary to first identify a data source and a control group – a class of multifamily housing that ought not to benefit from exclusion.

TEST 1: INCENTIVE ZONING

Three tests have been identified that rely on data with the potential to distinguish between control and test units. Seattle's incentive zoning programs, which distinguishes between build and payment options, offers the first of these tests.

The Seattle City Council enacted incentive zoning legislation for downtown Seattle 2006. The program was later expanded in 2008 to include neighborhoods outside downtown. Incentive zoning is seen as a policy tool available to the city to increase the quantity of affordable housing for middle- and low-income workers. The Seattle Department of Planning and Development summarizes policy the tool:

“Incentive zoning programs for affordable housing operate by **allowing a development density bonus**, such as increasing floor area ratios (FAR) or allowing other modifications to zoning requirements that would increase development potential **in exchange for the production of affordable housing** on or off site (performance option). This requirement **may also be met by payment into a fund** administered by the City for the purpose of supporting the construction of affordable housing units within a specified area (payment in-lieu option). Incentive zoning can also be used to provide for other public benefits in addition to housing, such as open space or other public amenities.”⁵⁷ (author’s emphasis)

The options available to developers come in two types:

1. the performance option – where affordable housing is included with market rate units in the same building or at a nearby site, and
2. the payment in-lieu option – where a fee based on the square footage of the density bonus is charged and placed in a trust fund for future affordable housing development

Seattle’s incentive zoning programs have the potential to produce two sets of data that could be used to test the Veblen effects of multifamily housing. Developers that choose the performance option would not show an interest in economic exclusion while those

⁵⁷ Seattle Department of Planning and Development. “Workforce Housing Incentive,” 2.

who choose the payment in-lieu option may show an interest in economic exclusion. The motivations for the payment in-lieu option will remain uncertain as long as the payment fee plus transaction costs (which are relatively small) is set below the subsidy required of the performance option plus transaction costs (which are relatively high). Under these circumstances, profit-maximizing developers will naturally choose the less expensive payment option.

Unfortunately, very few projects have used the incentive zoning programs available to developers in Seattle due in part to the real estate market crash. A number of commercial properties (i.e., office and retail towers) have used the program and chosen to pay the in-lieu fee, which should be expected because the developers of these buildings had no plans for including any housing, market or workforce.⁵⁸ However, two residential developments have applied for increased density. These two projects – Olive 8 and Fifteen Twenty One, both downtown condo towers – are the extent of residential projects completed under Seattle’s incentive zoning programs.⁵⁹ Further, developers of all residential projects currently in the pipeline or under review for the incentive zoning programs, according to the Office of Housing official who manages the programs, intend to exercise the payment option.⁶⁰

⁵⁸ Telephone conversation with Laura Hewitt-Walker, Seattle Office of Housing. April 26, 2012.

⁵⁹ Telephone conversation with Laura Hewitt-Walker, Seattle Office of Housing. April 26, 2012.

⁶⁰ Telephone conversation with Laura Hewitt-Walker, Seattle Office of Housing. April 26, 2012.



Fifteen Twenty-One By Opus NWR	Option		Olive 8 By Olive 8 LLC	
	Payment Option	Payment Option		
	Bonus Gross Square Feet			
	121,834	37,635		
	Payment Fee			
	\$1,887,254	\$570,246		
	Units in Building			
	143	229		
	Average Appraised Value			
	\$1,386,280	\$485,175		
Average Unit Area				
1,902 sf	1,005 sf			

Table 2 – Incentive Zoning Properties

Source: Email correspondence with Laura Hewitt-Walker, Seattle Office of Housing

The universal preference for the payment option in Seattle’s incentive zoning programs indicates an imbalance between the choices. The intention of the programs is to favor workforce housing development, if not within the site, then near the site to accommodate more middle-income families in dense parts of the city.⁶¹ The payment option, generally (there are exceptions in the municipal code), comes to \$18.94 per net square foot of additional area allowed under the bonus.⁶²

The Olive 8 project paid \$570,246 into Seattle’s affordable housing trust fund for 37,635 bonus gross square feet. The value of those additional square feet, by applying the averaged assessed price of the residential units in the tower, is \$14,534,974 (\$483/net sf). To achieve a \$0 net income on this exchange of density for payment, Olive 8 LLC, which developed the building, would need to have a net income of about 4% on the other units

⁶¹ Seattle Department of Planning and Development. “Workforce Housing Incentive,” 7.

⁶² Net square feet is calculated assuming an 80% efficiency of gross square feet. See SMC 23.58A.004.

to break even on the additional units. According to National Association of Homebuilders benchmarks, net income for mixed-use condo developments (ground-floor retail and condos above) is approximately 7.3%. If the objective of the incentive program were to bring the in-lieu fee to the point of no additional net income, it would have to be raised to \$34.56. Above that level, the in-lieu fee exceeds the net income a developer (or investor, as the case may be) could expect from bonus square feet.

The same calculation can be performed for the Fifteen Twenty One building. Opus NWR, the developer, paid \$1,888,254 for 121,834 bonus square feet. The value of the bonus square feet is \$65,914,884 (quite a bit pricier at \$676/net sf). A net income of 2.9% on the other units zeroes out the net income for the project. Again, assuming a 7.3% project net income, the in-lieu fee would have to be raised to \$48.26 for it to consume all net profit on the bonus units. Were Opus NWR presented with a \$48.26 per gross square foot in-lieu fee, they could not find investors to finance a project like Fifteen Twenty One. Opportunity costs – alternative investments – would draw investors elsewhere. Real estate investment is also risky – less so than equity securities (stocks), but more so than debt securities (bonds) – and returns must reflect that risk. Understanding what reward is tolerable to investors for the risk of multifamily housing development will be key in maximizing affordable housing (either through the performance option or the trust fund) with Seattle's incentive zoning program. Set the in-lieu fee too low and the city effectively loses affordable housing to market-rate housing. Set the in-lieu fee too high and the use of the incentive program is discouraged altogether, losing density and affordable housing.

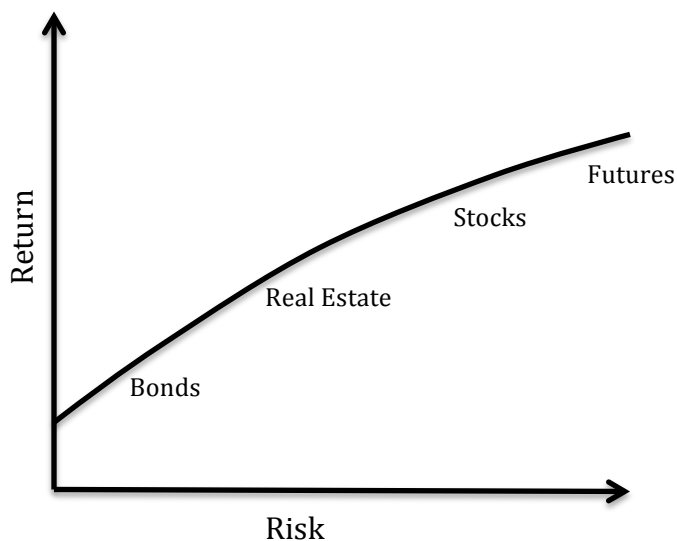


Figure 12 – Capital Asset Pricing Model

Setting the ideal rate for the in-lieu fee to induce desired market responses is further complicated by the provision in the municipal code for the performance option which prevents residents from paying with housing subsidies, private or public.⁶³ The performance option in owner-occupied units require residents to earn less than 100% of Area Median Income (\$86,800 for a family of four and \$69,500 for a family of two in FY 2011).⁶⁴ The cost of developing most units available for workforce housing – even at the 100% level – often exceeds the payment mandated in the code requiring a subsidy from the developer. This subsidy is not as easily calculated as the relative cost of the payment option because workforce units are subject to a different set of regulations and the input of the Office of Housing director. They are also somewhat dependent on the costs of market-rate units. There is an economic incentive to continue the unit patterns established in the market-rate units by saving on design and construction expenses. Calculating the ideal (workforce housing maximizing) rate for the in-lieu fee is not possible with the current incentive zoning programs.

⁶³ SMC 23.58A.014.B.6. May 30, 2012.

⁶⁴ SMC 23.58A.004.B. May 30, 2012.

Seattle's incentive zoning programs are evolving. For instance, new legislation will remove the payment option for building heights below 85 feet.⁶⁵ Once the provisions settle and more residential buildings take advantage of the bonuses, a comparison between projects that use the payment option and projects that use the performance option will allow more precise testing of the exclusionary benefit. With only two condominiums to examine and neither fully sold, statistical analysis is not feasible. The most that can be said at this point is that the results of Seattle's incentive zoning programs do not provide contradictory evidence of the exclusionary benefit in multifamily housing, nor do they provide anything more than weak anecdotal support.

TEST 2: HISTORICAL APARTMENT VACANCIES

Vacancy patterns in apartments can also be used to examine the existence of the exclusionary benefit in multifamily housing. If the exclusionary benefit is present in some apartment buildings, the benefit of the exclusion goes to both the consumer (apartment dweller) and the producer (landlord). The value of exclusion to the consumer represents the consumer surplus while the value of exclusion to the producer represents the producer surplus, or profit above the profit of a unit without the exclusionary benefit. This is why when surpluses are shared between producer and consumer, both the demand and supply curves, theoretically, show the distinctive anomaly of Veblen effects.

⁶⁵ Telephone conversation with Laura Hewitt-Walker, Seattle Office of Housing. April 26, 2012.

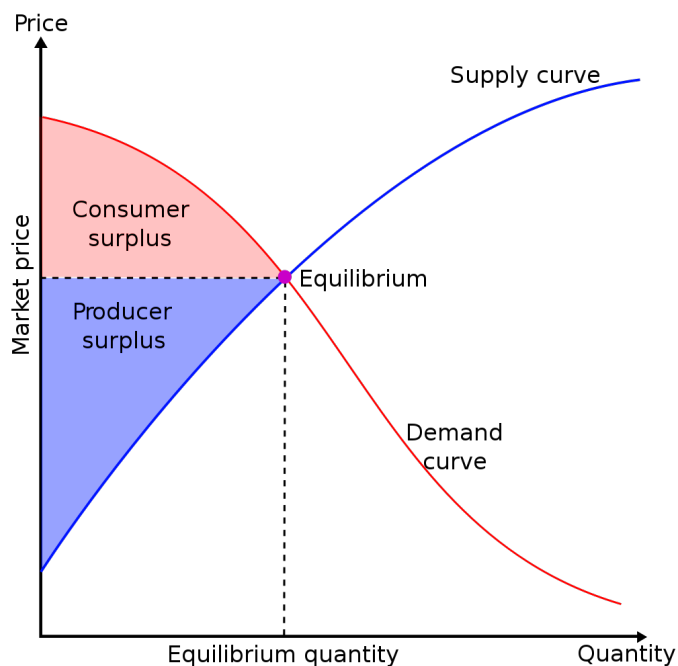


Figure 13 – Producer and Consumer Surplus

Source: Wikimedia Commons

The additional benefit to producers moves housing under Veblen effects up the Capital Asset Pricing Model (**Figure 12**). Competing with investments at a higher return will compel producers into riskier territory, to match opportunity costs. In relatively inefficient markets like housing, where lengthy construction and permitting schedules means supply lags behind demand, supply and demand are often mismatched.⁶⁶ Greater risk in housing translates into production above the current demand. I.e., profits are higher, on average, under scenarios of overproduction than underproduction. Producers are able to tolerate periods of higher vacancies in anticipation of higher profits.

The producer surplus of the exclusionary benefit will be inversely proportional to the elasticity of demand. Elasticity of demand, a measurement of the willingness to consume the same good at different prices, can tell us how much of the exclusionary benefit producers are able to capture through price increases and, therefore, the level of vacancies they can tolerate. Research on housing demand elasticity generally finds this

⁶⁶ Rosen and Smith. "Price-Adjustment Process for Rental Housing," 780.

level to be between (-)0.8 and (-)1.0.^{67,68} At this level, consumer and producer split the exclusionary benefit – to the producer in profit and to the consumer in utility. If the exclusionary benefit exists and is significant enough among other contributions to price of multifamily housing, we should expect to see persistently higher vacancies in such units.

Due to the inefficiencies of the housing market some vacant stock is required to facilitate the search process, but the proportion of uninhabited stock required for long-term equilibrium –the “natural” vacancy rate – has been found to fundamentally differ between cities.⁶⁹ So we turn to examining the natural vacancy rate in the Seattle area. A study of vacancies in the King County apartment market from 1989-2005 found a natural vacancy rate of approximately 5% for the area.⁷⁰ The study, using the same data source used to produce **Figure 14** below, found no significant vacancy differences between two-bedroom and one-bedroom units. Although number of bedrooms may appear to be a good proxy for area – and therefore an appropriate variable by which to examine natural vacancy rates and Veblen effects – surveys of regressions of housing characteristics against price find ambiguity in the value of number of bedrooms. Of 40 regressions to include number of bedrooms, 21 reported a positive coefficient (i.e., increasing number of bedrooms had a positive effect on price), nine reported a negative coefficient, and 10 reported no significance.⁷¹ The number of bathrooms in a unit, on the other hand, shows positive effects of price more consistently: 34 regressions reported a positive coefficient, 1 – negative, and 5 – not significant. The pattern is repeated in a meta-regression of housing characteristics.⁷²

In the limited variables available in the Dupre + Scott surveys (the most comprehensive surveys of apartment vacancies in the region, covering approximately 80% of the

⁶⁷ Kain and Quigley, “Housing Markets and Racial Discrimination,” 156.

⁶⁸ Green and Malpezzi, *Primer on U.S. Housing Markets*, 9-10.

⁶⁹ Rosen and Smith. “Price-Adjustment Process for Rental Housing,” 785.

⁷⁰ Hagen and Hansen. “Rental Housing and the Natural Vacancy Rate,” 430.

⁷¹ Sirmans et al. “Composition of Hedonic Pricing Models,” 10

⁷² Sirmans, et al. “Value of Housing Characteristics.”

population) the number of bedrooms and number of bathrooms may be a better proxy for unit area. Both bedrooms and bathrooms are necessarily constituted by unit area (like all rooms), are fundamental features of modern housing, and number of bathrooms show similar proportions of positive coefficients as unit area in the Sirmans et al. survey.⁷³ A full disaggregation of apartment variables of the Dupre + Scott vacancy surveys from 1986-1995 found positive correlation between progressively larger number of rooms (1 bedroom/1 bath, 2 bedroom/1 bath, and 2 bedroom/2 bath) and unit area at the .01 significance level.⁷⁴

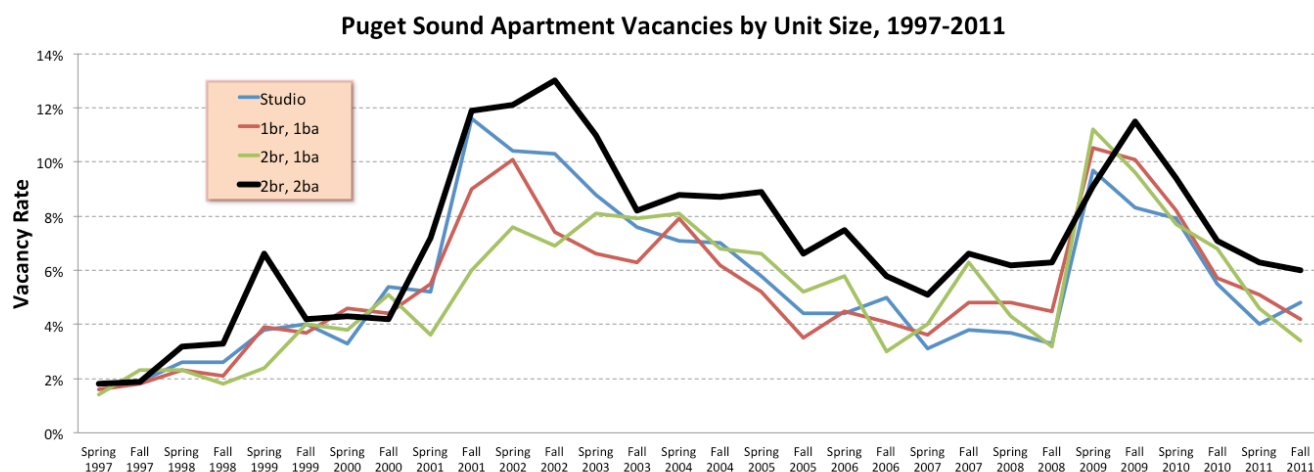


Figure 14 – Apartment Vacancies by Type

More recent data from the Dupre + Scott survey of apartment vacancies, covering a 15 year period from 1997-2011, was collected by unit type. Four unit types are measured – from studio to 2 bedroom/2 bathroom units – across the Puget Sound region. The results over time are shown in **Figure 14**.

It is apparent from the graph that the largest units – 2 bedroom/2 bathroom – tends to have the highest vacancies. This impression is correct: 2/2 units have higher vacancies than 2/1 and 1/1 units during 27 out of 30 surveys and 2/2 units have higher vacancies

⁷³ Sirmans et al. “Composition of Hedonic Pricing Models,” 10.

⁷⁴ Wolverton, et al. “Disaggregation of Local Apartment Markets by Unit Type,” 248-249.

than studio units during 26 out of 30 surveys. The significance of these differences is demonstrated in two one-way ANOVA tests.

Analysis of Variance (One-Way)						
Summary						
<i>Groups</i>	<i>Sample size</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>		
<i>Studio</i>	~4141	1.671	0.0557	0.00073		
<i>1Br/1Ba</i>	~9086	1.622	0.05407	0.00059		
<i>2Br/1Ba</i>	~2284	1.598	0.05327	0.0006		
<i>2Br/2Ba</i>	~2740	2.128	0.07093	0.00088		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p-level</i>	<i>F crit</i>
Between Groups	0.00628	3	0.00209	2.98853	0.03397	2.68281
Within Groups	0.08131	116	0.0007			
<i>Total</i>	0.08759	119				^{75,76}

Table 3 – Inclusive ANOVA

The first ANOVA test measures the variation of vacancies over time between the four unit types. The results show that the groups are not samples of the same population at the 95% confidence level ($p=.034$).

An additional ANOVA test was run on the unit types believed to be least susceptible to the exclusionary benefit due to their correlation with smaller unit area.

⁷⁵ Mean is the measurement of the average vacancy rate of a unit type expressed as a proportion of 1.

⁷⁶ The sample size varies moderately per survey of unit type. See Appendix C.

Analysis of Variance (One-Way)

Summary

Groups	Sample size	Sum	Mean	Variance
Studio	~4141	1.671	0.0557	0.00073
1Br/1Ba	~9086	1.622	0.05407	0.00059
2Br/1Ba	~2284	1.598	0.05327	0.0006

ANOVA

Source of Variation	SS	df	MS	F	p-level	F crit
Between Groups	0.00009	2	0.00005	0.07206	0.93053	3.1013
Within Groups	0.05571	87	0.00064			
<i>Total</i>	0.0558	89				

Table 4 – Exclusive ANOVA

The results show very little variation among the three smallest unit types ($p=.931$). These three unit types appear to belong to the same class of apartments that produce very similar long-term vacancy rates. The ANOVA tests and the persistence of relatively high vacancy rates for the largest unit types provide evidence that the largest units come from a different market segment – one where suppliers tolerate higher vacancies in the long term.

In their examination of Seattle’s natural vacancy rate, Hagen and Hansen’s decision to test natural vacancy rates of unit type via bedrooms instead of bedrooms *and* bathrooms may have led them to miss a significant difference within these broader categories.⁷⁷ Wolverton et al. found significant difference between the three unit types (the ‘studio’ type was not broken out in his data) across a number of variables indicating segmentation for not just number of bedrooms but number of bedrooms and bathrooms.⁷⁸

The results from the tests of the vacancy surveys should be taken with caution. Although 15 years is a long period to find a trend in most markets, it may not be sufficient for

⁷⁷ Hagen and Hansen’s Dupre + Scott vacancy survey data was not available to test independently for a significant difference of the 2/2 group, but summary statistics for the period 1988-2005 show 2/2 units had the highest mean vacancy rate during this period as well. See p. 422 of Hagen 2010 for details.

⁷⁸ Wolverton, et al. “Disaggregation of Local Apartment Markets by Unit Type.”

apartments. Buildings remain productive for many decades and are prohibitively expensive to move. Patterns present in the housing stock of 50 years ago can still have a large, lingering effect on the market today. Future study should attempt to find vacancy data as thorough as Dupre + Scott's but over a longer period of time to overcome the influence of historical inertia on the housing market. Further, differences in natural vacancy rates among unit types may simply be attributable to mobility of renter populations with a preference for each unit type.⁷⁹ Hagen and Hansen suggested that a lower natural vacancy rate in northern Seattle could be explained by the influence of University of Washington students on the market who were less willing to look outside the area, lowering search costs, and, therefore, the need for available housing stock. A kind of consumer mobility segmentation might illuminate the significant vacancy difference of 2 bedroom/2 bathroom units. The author, though, knows of none.

Lacking a competing theory to explain the persistently higher vacancy rates in the Puget Sound region's largest apartment units – and, undergirded with caution due to the limited span of the surveys – the largest rental multifamily housing appears to be under the influence of Veblen effects. Specifically, the price exclusion larger units induce are resulting in greater profits to suppliers of these apartments who, in order to maximize profit, tolerate higher vacancies than the apartment market as a whole.

TEST 3: CONDO SALES AND SQUARE FEET

The exclusionary benefit hypothesis predicts the class of multifamily housing which can exclude through price should capitalize the value of the benefit into the price of the housing unit. This bending of the demand curve under Veblen effects discussed earlier is indicated by a bending of the supply curve that is influenced by the additional producer surplus. If area is the value-maximizing characteristic of housing (i.e., the component by which an exclusionary price is most ably induced), a comparison of price per unit area by

⁷⁹ Hagen and Hansen. "Rental Housing and the Natural Vacancy Rate," 427.

unit area should reveal a difference, all other characteristics held equal, between units under Veblen effects and those that are not. Holding other characteristics equal would require hedonic analysis – beyond the scope of this paper. Instead, just the two dimensions of price/sf and square feet will be examined thoroughly.

Condo unit, complex, and sale price files were pulled from the King County Tax Assessor’s Database. The three files were matched, cut to sales after and including November 18, 2008 (the day the first unit in Fifteen Twenty-One sold), and adjusted to the November 2008 housing prices for the Seattle metro area with the Case Shiller Housing Index for the Seattle region.⁸⁰ A number of other units were cut for unusual sale conditions, miscoded data, and other measures intended to clean the data.⁸¹ Outliers have not been excluded except where indicated in Appendix A. 9,570 sales are included in the following analysis.

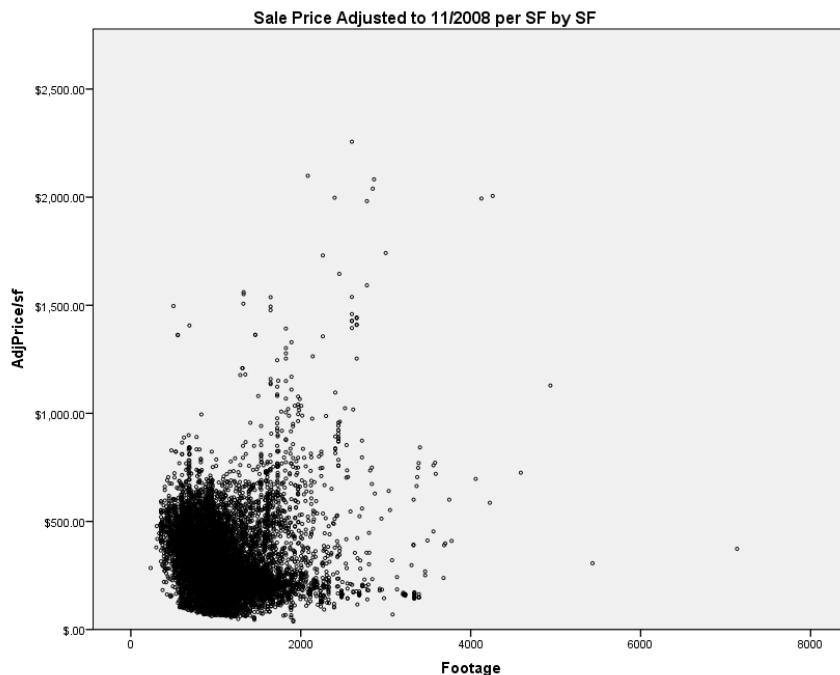
	N	Minimum	Maximum	Mean	Std. Deviation
Adjusted SalePrice	9570	\$58,705	\$8,540,109	\$368,068	\$365,716.
AdjPrice/sf	9570	\$36.90	\$2,256.50	\$330.9624	\$183.07613
Footage	9570	233	7135	1106.10	472.934
NbrBedrooms ⁸²	9190	0	8	1.86	.697
BathTotal	9570	.75	5.00	1.6589	.59773
YrBuilt	9570	1900	2010	1989.47	19.534

Table 5 -- Condo Data Summary

⁸⁰ Case Shiller does not publish condo indices specifically for Seattle. The two west coast regions for which it does publish condo indices – San Francisco and Los Angeles – showed declines of 18 and 19 percent for the time period covered. Seattle housing prices fell 29 percent over the same period according to Case Shiller.

⁸¹ See Appendix A for a list of steps taken to scrub the data.

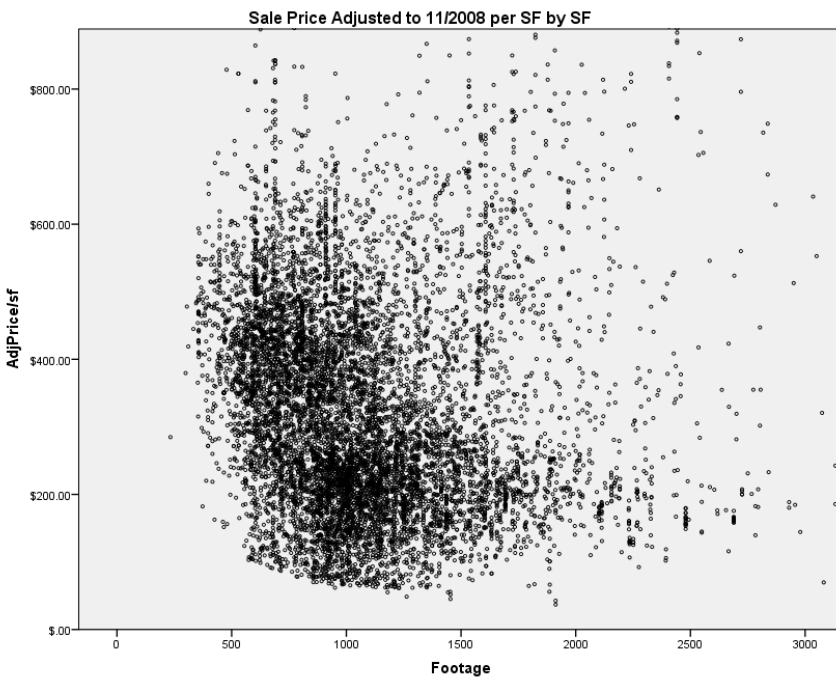
⁸² Studio units are coded as ‘0’ bedrooms.



Most condos sold for less than \$1000/sf and are smaller than 3,000sf. At this level, outliers are apparent and so is a horizontal tail extending from the middle of the pack at around \$200/sf.

Figure 15 – Price/sf by sf

A closer look at the pack reveals a number of interesting features. The densest area is around \$200/sf and 1,000sf. A histogram of unit area better reveals the varying density along the

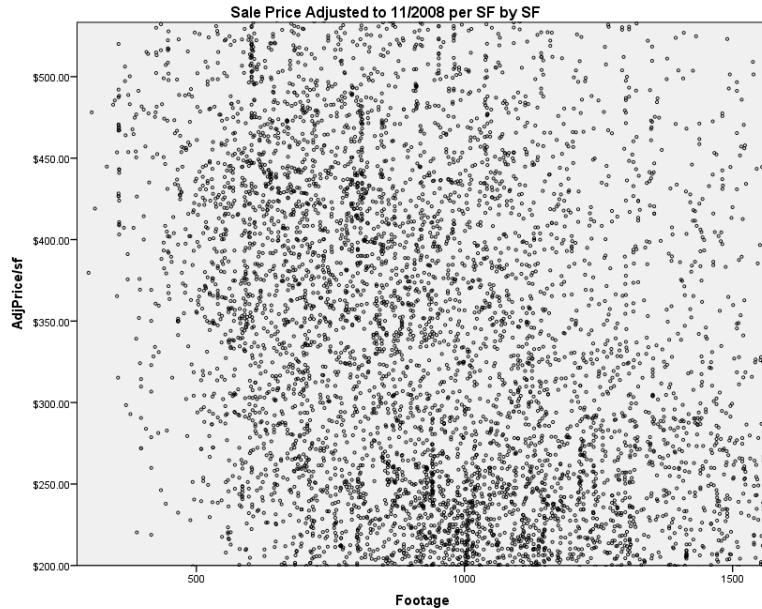


x-axis.

There is a second center, more nebulous, vaguely around \$400/sf and 800sf. The first, denser, center extends far to the right – the feature visible in the overview scatterplot. The second center extends upward into higher prices per square foot.

Figure 16 – Price/sf by sf, detail

A number of closely arranged vertical data points are visible, especially between \$400 and \$600/sf. These lines usually represent units within the same complex with the same unit area – presumably built to a pattern with varying amenities or fixtures indicated by the different sale price.

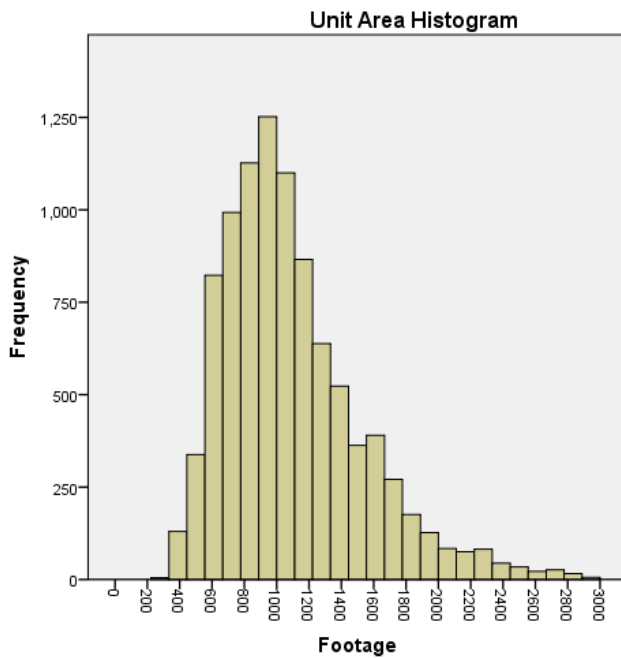


The relationship between the two centers is unclear at this detail. Is there something of a gap, indicating a distinct class of property correlated with price per square foot, or is the transition continuous?

A close detail of the space between the two centers

Figure 17 – Price/sf by sf, fine detail

doesn't offer much more insight.



A histogram of the y-axis shows that there is indeed a modest gap between the two centers at \$300-\$350/sf. Additionally, the second center isn't a center at all, but more of a plateau when viewed in the single dimension of the histogram.

Without controlling for other characteristics of housing, including location, it is unclear whether the interruption of the leeward slope of the histogram can be attributed to any particular cause of or correlation with

Figure 18 – Unit Area Histogram

unit area. It could be segmentation of household type or a very sizable and very wealthy second urban center.

The plateau, however, is consistent with Veblen effects (refer back to Leibenstein's double-banded demand curve in **Figure 2**; rotate it and flip it along its vertical axis). The histograms and scatter plots strongly suggest the value of sensitive price analysis a hedonic model is better suited towards. Unfortunately, hedonic analysis is outside the

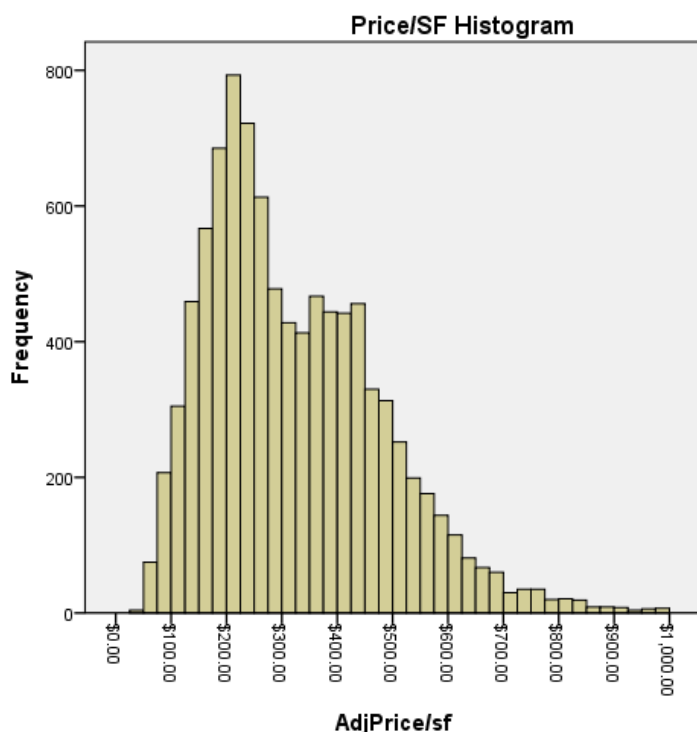


Figure 19 – Price/sf Histogram

scope of this paper. In the future, particular attention should be paid to the range, implied here, where the exclusionary benefit appears present: 350 to 450 dollars per square foot.

Frequency charts and scatter plots can only reveal so much about the relationship of unit area and price per square foot. An ordinary least squares regression was performed to give more information about the nature of this relationship. In setting up the regression, the data was separated into two groups: a traditional group and a Veblen group. The traditional group – equal to or less than 1200 square feet or equal to or less than \$350/sf – represents condo sales less likely to fall under Veblen effects because of their lower price per square foot and lower size. The remainder – above 1200 square feet and above \$350/sf – represents the condo sales more likely to show Veblen effects because of their size and price per square foot. Recall that the Veblen demand curves described by Leibenstein show a kink in the curve where Veblen effects are present. Because of the elasticity of housing demand, changes in demand are met by near-proportional changes in supply. The sale prices, then, should reflect the meeting of these two curves. A regression of the Veblen

In the future, particular attention should be paid to the range, implied here, where the exclusionary benefit appears present: 350 to 450 dollars per square foot.

Frequency charts and scatter plots can only reveal so much about the relationship of unit area and price per square foot. An ordinary least squares regression was performed to give more information about the nature of this relationship. In setting up the regression, the data was separated into two groups: a traditional group and a Veblen group. The traditional group –

group of sales is expected to show the distinctive Veblen hump or kink while the traditional group is expected to resemble a traditional demand curve. In order to produce more accurate regressions, data with values for adjusted dollars per square foot above \$1200 or footage above 3,000 were excluded as outliers for the following analysis.

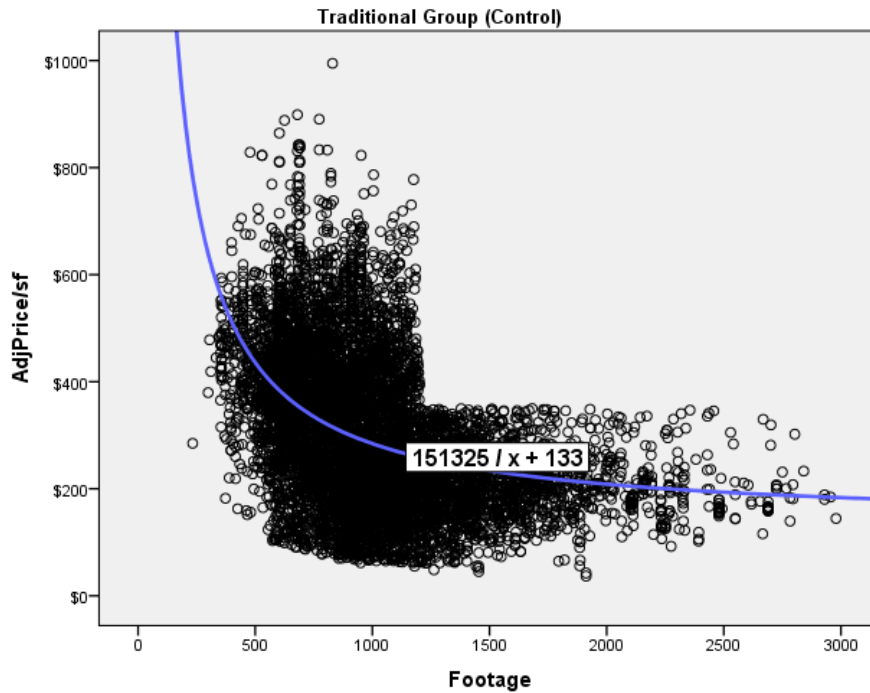


Figure 20 – Traditional Group Regression

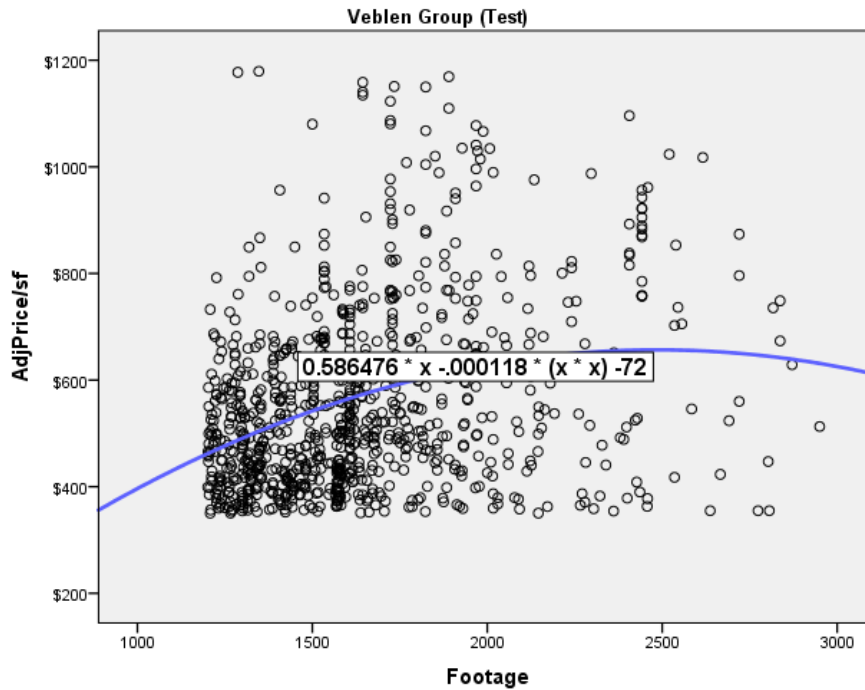


Figure 21 – Veblen Group Regression

A regression of the traditional group shows the expected demand curve while a regression of the Veblen group shows the expected positively sloping kink, supporting the hypothesis. The kink is also relatively flat suggesting mild Veblen effects within this test group.

CONCLUSIONS

Within the scope of this master's thesis, efforts have been made to synthesize Veblen, Leibenstein, and others' work on the economics of exclusive goods, the social and economic patterns of discrimination and segregation in housing, and principles of real estate to test the exclusionary benefit hypothesis.

The literature reveals that the intersection of real estate, sociology, and microeconomics has received little attention prior to this study. In an effort to fill this void, this thesis explored the concept of discrimination in housing – moving it away from racial categories, to a kind of economic discrimination that remains a proxy for race but also stands ready to capture the potential for class discrimination. The results suggest that by examining the effects of economic exclusion through price and the physical properties of housing, researchers can avoid the troublesome mortgage application and paired-testing data that forms a large basis of the research on housing discrimination.

As noted, testing the exclusionary benefit hypothesis with available data in the Puget Sound region has presented its own problems. For example, the modern incentive zoning programs have not produced enough data for rigorous analysis. Only two residential buildings have used the program. In both instances the developers chose to pay a fee rather than include affordable housing, suggesting that the fee has been set too low to fulfill the purpose of the programs. Further research into Seattle's incentive zoning will benefit from more participation by developers or a change to the municipal code to make the build option relatively more favorable.

ANOVA tests of four unit types that provide a proxy for size show the largest units of two bedrooms and two bathrooms have persistently higher vacancies than the other units. A submarket segmentation by unit size and vacancy – consistent with the hypothesis – may be at work but the evidence for this argument can be improved with data over a greater period of time or replication in other housing markets.

The comparison of price and square footage was the most direct approach to test the hypothesis and also the most difficult to fulfill. Selecting an appropriate sample that is free from observer biases, market biases, and data biases is the first problem, followed by the sheer volume of the data available on housing prices and housing characteristics through sources like tax assessor's offices.

After returning to the problem of how to manage and analyze so much housing data, the original intention to produce a hedonic regression was dropped in favor of simply examining the relationship of price per square foot and unit area during a narrower time frame. Careful consideration was taken to account for the unusual market conditions between 2008 and the present, the details of which may be found in Appendix A.

As noted, the results tentatively support the exclusionary benefit hypothesis. There appears to be a segment of the condo market from \$350-\$450/sf that bucks the overall trend of increasing price and declining quantity. Naturally, unit area represents an important but not overwhelming piece of housing's cost. A hedonic regression on similar data may reveal just how much effect unit area has on increasing unit price.

Future research will benefit from larger data sets of condo sales, going back decades rather than years. Due to the idiosyncratic nature of tax assessor's data, care should be taken when applying the methods used here in other regions. The use of standardized MLS data may help in achieving greater external validity, although at the cost of losing some locally important features like views. The size and the quality of the data allows for deeper statistical analyses than were presented here. For example, condos appear to be segmented into more than just two categories in King County based on analysis on the same data provided by Dr. Terry Grissom. Veblen and Leibenstein used two classes of consumers to explain conspicuous consumption. Yet, in multifamily housing, there may be more than one class of consumer who is able to exclude based on unit area. For these reasons, more data and advanced analysis of the relationship between unit area and price is recommended.

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APPENDIX A – KING COUNTY TAX ASSESSOR’S DATA SCRUBBING PROCEDURES

- Delete all Sales \leq \$50,000
- Deleted all units \leq 200sf
- Deleted all units with Sale Warnings \neq 1 (See Appendix B)
- Deleted Unit Type 3 - Condo Penthouse because of likelihood of private access (See Appendix B)
- Deleted all Major = 094290, 064260, 679130, 159900, 256000, 689996, 409090 properties - sale variable erroneously listed sale of whole site for each individual unit
- Deleted 050600-0010 for bad record - 15,000 sf unit
- Deleted 434020-0230 for bad record - 12,000 sf unit
- Deleted 954060-0960 - love and affection/partial interest quit claim deed, highly undervalued at sale
- Deleted 108565-0090 - love and affection/partial interest quit claim deed, highly undervalued at sale
- Deleted 894560-0720 – love and affection/partial interest quit claim deed, highly undervalued at sale
- All properties with AdjustedSalePrice $>$ \$2000/sf individually examined for sale or documentation irregularity
- All properties with AdjustedSalePrice $<$ \$60/sf individually examined for sale or documentation irregularity
- All properties with SF $>$ 4500 individually examined for sale and documentation irregularity
- April, May, and June 2012 price adjustment factors are equal to March 2012 price adjustment factor.

APPENDIX B – KING COUNTY TAX ASSESSOR’S DATA DICTIONARY

(Sources: King County Tax Assessor’s Lookup file, Condominium Complex Record Description file, Condominium Unit Record Description file, and Real Property Sale Record Description file.)

Condominium Complex Record Description

Notes: This file contains one record for each condominium complex. The unique identifier is Major. The file can be matched to the condominium unit file on the Major number. It can also be matched to the Parcel extract on the Major number where the Parcel extract minor number is 0000.

Numeric fields are not zero-filled.

The file is not in any particular sequence.

The Length column is the maximum size of the field.

The Look Up column refers to the Look Up record description.

Record Count: Approximately 3,446

Field Name	Format	Length	Look Up	Description
Major	character	6		
Complex Type	number	1	143	1 Condo,Residential 2 Condo,Residential(Apt Use) 3 Condo,Commercial 4 Condo,Residential+Commercial 5 Condo,Residential(Apt Use)+Commercial 6 Condo,Mobile Home 7 Condo,Floating Home 8 Commercial 9 Condo,Residential+Residential(Apt Use)
Complex Description	character	50		
Number Buildings	number			
Number Stories	number			
Number Units	number			
Average Unit Size	number			
Land Per Unit	number			
Project Location*	number	1	98	1 SUBSTANDARD 2 BELOW AVERAGE 3 AVERAGE 4 ABOVE AVERAGE 5 EXCELLENT
Project Appeal*	number	1	99	1 SUBSTANDARD 2 BELOW AVERAGE

				3 AVERAGE 4 ABOVE AVERAGE 5 EXCELLENT
Percent With View	number	3		
Construction Class	number	1	97	1 STRUCTURAL STEEL 2 REINFORCED CONCRETE 3 MASONRY 4 WOOD FRAME 5 PREFAB STEEL
Building Quality*	number	1	96	2 LOW COST 3 LOW/AVERAGE 4 AVERAGE 5 AVERAGE/GOOD 6 GOOD 7 GOOD/EXCELLENT 8 EXCELLENT
Condition*	number	1	83	1 Poor 2 Fair 3 Average 4 Good 5 Very Good
Year Built	number	4		
Effective Year	number	4		
Percent Complete	number	3		
Elevators	character	1		
Security System	character	1		
Fireplace	character	1		
Laundry	number	1	89	1 COMMON 2 PRIVATE
Apartment Conversion	character	1		
Land Type	number	1	145	1 Fee Simple 2 Leased Land 3 Air Rights 4 Land Only 5 Bldg Only
Situs Address Building Number Fraction Direction Prefix Street Name Street Type Direction Suffix Zip code	Character	5 + blank 3 + blank 2 + blank 25 + blank 4 + blank 2 + blank 10 Total to 57		
Building Number	Character	5		
Fraction	Character	3		
Direction Prefix	Character	2		

Street Name	Character	25		
Street Type	Character	4		
Direction Suffix	Character	2		
Zip code	Character	10		

Condominium Unit Record Description

Notes: This file contains one record for each condominium unit. The unique identifier is Major + Minor. The file can be matched to the condominium complex on the Major number.

Numeric fields are not zero-filled.

The file is not in any particular sequence.

The Length column is the maximum size of the field.

The Look Up column refers to the Look Up record description.

Record Count: Approximately 98,915

Field Name	Format	Length	Look Up	Description
Major	character	6		
Minor	character	4		
Unit Type	number	2	150	1 Flat 10 Leased Land 11 Development Rights 12 Unassigned Parking 13 Unassigned Storage 14 Unassigned Moorage, Open 15 Floating Home, Flat 16 Mobile Home 17 Marina 18 Hotel 19 Warehouse 2 Townhouse 20 Hangar 21 Retail 22 Office 23 Other Commercial 24 Moorage, Covered 25 Unassigned Moorage, Covered 26 Floating Home, Townhouse 3 Penthouse, Flat 4 Penthouse, Townhouse 5 Parking 6 Storage 7 Dock 8 Moorage, Open 9 Land Only

Building Number	character	5		
Unit Number	character	10		
Percent Ownership	number	7		nnn.nnnn
Unit Quality*	number	1	151	1 Fair 2 Average 3 Good 4 Excellent
Unit Location*	number	1	152	1 Fair 2 Standard 3 Good 4 Excellent
Floor Number	character	2		
Top Floor	character	1		
Unit Of Measure	number	1	40	1 SqFt 2 LinearFt
Footage	number			
Number Bedrooms	character	1		
Bath: Full Count	number			
Bath: Half Count	number			
Bath: 3qtr Count	number			
Fireplace	character	1		
End Unit*	character	1		
Condition*	number	1	155	1 Fair 2 Standard 3 Good 4 Excellent
Other Room	number	1	156	1 Den 2 Loft
View: Mountain*	number	1	157	1 Fair 2 Average 3 Good 4 Excellent
View: Lake / River*	number	1	157	1 Fair 2 Average 3 Good 4 Excellent
View: City / Territorial*	number	1	157	1 Fair 2 Average 3 Good 4 Excellent
View: Puget Sound*	number	1	157	1 Fair 2 Average 3 Good 4 Excellent
View: Lake Wa / Lake Samm*	number	1	157	1 Fair

				<ul style="list-style-type: none"> 2 Average 3 Good 4 Excellent
Parking: Open	number			
Parking: Carport	number			
Parking: Basement	number			
Parking: Basement Tandem	number			
Parking: Garage	number			
Parking: Garage Tandem	number			
Parking: Other Type	number	1	159	<ul style="list-style-type: none"> 1 Hydraulic 2 Other
Mobile Home: Length	number			
Mobile Home: Width	number			
Mobile Home: Year Built	number	4		
Mobile Home: Grade	number	1	146	<ul style="list-style-type: none"> 1 Poor 2 Fair 3 Average 4 Good 5 Very Good 6 Excellent
Mobile Home: Description	character	50		<ul style="list-style-type: none"> 1 DUWAMISH 2 ELLIOTT BAY 3 PUGET SOUND 4 LAKE UNION 5 SHIP CANAL 6 LAKE WASH 7 LAKE SAMM 8 OTHER LAKE 9 RIVER/SLOUGH
KCA Number	number			May be present for floating home units.
Personal Property Account Number	number	8		May be present when the unit is personal property.
Situs Address Building Number Fraction Direction Prefix Street Name Street Type Direction Suffix Unit Description Zip code	Character	<ul style="list-style-type: none"> 5 + blank 3 + blank 2 + blank 25 + blank 4 + blank 2 + blank 25 + blank 10 Total to 83 		
Building Number	Character	5		
Fraction	Character	3		
Direction Prefix	Character	2		
Street Name	Character	25		
Street Type	Character	4		
Direction Suffix	Character	2		

Unit Description	Character	25		
Zip code	Character	10		

Real Property Sale Record Description

Notes: This file contains one or more records for each sale of real property. The number of records per sale depends upon the number of properties involved in the sale. The unique identifier is Excise Tax Number + Major + Minor.

Numeric fields are not zero-filled.

The file is not in any particular sequence.

The Look Up column refers to the Look Up record description.

Record Count: Approximately 1,382,760

Field Name	Format	Length	Look Up	Description
Excise Tax Number	number	7		
Major	character	6		
Minor	character	4		
Document Date	character	10		MM/DD/YYYY
Sale Price	number	9		
Personal Property Price	number	7		
Recording Number	character	14		
Recording Volume	character	3		
Recording Page	character	3		
Plat Number	character	6		
Plat Type	character	1		
Plat Lot	character	14		
Plat Block	character	7		
Seller: Name	character	300		
Buyer: Name	character	300		
Property Type	number	1	1	The type of property as reported on the Excise Tax affidavit.
Principal Use	number	2	2	The primary use of the property as reported on the Excise Tax affidavit.
Sale Instrument	number	2	6	The type of document as reported on the Excise Tax affidavit.
Forest Land	character	1		Indicates whether or not the property was reported on the Excise Tax affidavit as classified or designated forest land.
Current Use Land	character	1		Indicates whether or not the property was reported on the Excise Tax affidavit as classified current use land.
Non Profit Use	character	1		Indicates whether or not the property was reported on the Excise Tax affidavit as exempt from property tax as a nonprofit organization.
Historic Property	character	1		Indicates whether or not the property was reported on the Excise Tax affidavit as receiving special valuation as historic property.
Sale Reason	number	2	5	1 None 10 Property Settlement 11 Divorce Settlement

				12 Tenancy Partition 13 Community Prop Established 14 Partial Int - love,aff,gft 15 Easement 16 Correction (refiling) 17 Trade 18 Other 19 Quit Claim Deed - gift/full or part interest 2 Assumption 3 Mortgage Assumption 4 Foreclosure 5 Trust 6 Executor-to admin guardian 7 Testamentary Trust 8 Estate Settlement 9 Settlement
Property Class	number	2	4	
Sale Warning	number	25	7	A list of two-character warning codes separated by blanks e.g. 32 15 46

*Further definitions for ratings (Source: King County Appraiser's Handbook):

Project Location:

This code is for site location and how it relates to other projects in the neighborhood. Consider external nuisances, appearance of neighboring properties (homogeneity), proximity to amenities, etc.

Location Code	Description	Example
1	Substandard	Rarely used: Extreme level of traffic noise (freeway). Neighborhood in declining economic state (older buildings, in poor repair etc.).
2	Below Average	High Traffic noise. Congested area with minimal off street parking.
3	Average	Located on a typical street. Moderate traffic noise. Adequate off street parking. Typical mixed use zoning. Close proximity to amenities.
4	Above Average	Side residential street. Minimal traffic noise. Good off street parking. Still close to amenities. Or Typical with better than average amenities and market draw.
5	Excellent	Reserved primarily for projects on golf courses, waterfront or in a highly desirable area. Typically the most sought after location in the market (e.g. Highland Drive on Queen Anne).

Project Appeal:

This code is for appearance of the project site as whole and relates to how that influences the interest of potential buyers.

Appeal	Description	Example
--------	-------------	---------

Code		
1	Substandard	Rarely used: Project (site) in poor state of repair, minimal or no landscaping etc.
2	Below Average	Plain or undesirable architectural style (or lack of style). In need of maintenance (site, not just building).
3	Average	Expected architecture. Well maintained common areas. Well kept landscaping.
4	Above Average	Better than average maintenance. Interesting architecture. Interesting and/or extensive landscaping. Superior on-site amenities (e.g. daycare, full service health care).
5	Excellent	Rarely used. Very interesting architecture. Possibly an historic building. Garden-like landscaping.

Building Quality:

Building quality is the overall 'grade' of the building. Consider exterior construction, interior finishes on common areas, ceiling height, soundproofing etc.

Code		Description
2	Low-Cost.	Inexpensively made. Will have minimal common areas with basic finishes. Roofs will be minimal overhang or block roofs. Siding is inexpensive and windows are minimal legal size.
3	Low-Average	Similar to low-cost, but will have larger windows, better siding and more attention to common area finish.
4	Average	Typical manufacturing. Average ceiling height, roofs have better overhang and better materials. Siding is more typical for design. More common area with normal finishes.
5	Average-Good	Like Average, but will have slightly superior grade finishes, including better carpeting, larger decks/rails, siding etc.
6	Good	Good quality exterior siding. Large decks or patios. Large, open common areas and hallways. Better soundproofing between units.
7	Good/Excellent	Overall impression is very good. Open hallways, mezzanines and meeting areas. Units have large decks and patios. Interior finishes are high quality and soundproofing is maximized.
8	Excellent	Top of the line. All common area finishes are luxury quality. Units have large or multiple decks and patios.

Building Condition:

Building condition for condominiums is relative to year built. Consider the actual age of the project and the amount of work done to maintain it. Typical maintenance would be considered average condition. Newer projects are always average condition.

Code		Description
1	Poor	Older building with minimal repairs. Many repairs needed.
2	Fair	Could use some work. Paint and common area finishes need some upkeep.
3	Average	Project has been maintained enough to keep the project attractive to the general market.
4	Good	Older project that has had better than average upkeep. Examples would be an apartment conversion with all interior finishes replaced.
5	Excellent	Old project that has been completely updated, including but not limited to: mechanical, electrical, plumbing, interior finishes, walls, siding,

		roofs etc.
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Unit Quality:

This refers to the interior finish of the unit.

Code		Description
1	Fair	Standard ceiling heights. Low cost interior finishes (low-cost carpeting, laminate counters exposed appliances etc.)
2	Average	Standard ceiling heights. Typical interior finish.
3	Good	Ceiling heights above normal. Better quality counters and appliances. Hardwood floors, superior carpeting etc.
4	Excellent	Ceiling heights up to two stories. Top of the line appliances. More exotic and higher quality finishes (Imported tile, marble etc.)

Unit Location:

This coding recognizes the impacts of proximity to external influences within the project on unit value. These include but are not limited to:

- 1) Nuisances such as exposure to noise from traffic, basement garage entry, elevators and garbage dumpsters. Security issues for units at street level or below grade in urban areas.
- 2) Positive influences such as facing a greenbelt. Ground floor units that open up to private yard area, or desirable common areas such as gardens or courtyards.

End Unit:

This is entered prior to appraisal but should be reviewed by appraisal staff. An end unit is one that has two or more walls exposed to the outside (Corner units)

Unit Condition:

Typical is standard, particularly in new construction. However, in conversions particularly, some units might sell to a previous tenant 'as-is'. In this case, we would review what the tenant has done to the unit to see if its interior condition is comparable with the remainder of the project and code accordingly.

Views:

View coding considers the quality and different types of views available from the unit. Views are coded from the main viewing room, looking straight out of the available windows and not from decks or patios.

Views are coded using a degree of horizontal expanse and level of obstruction as follows:

Code	Definition
Fair	Horizontal expanse of less than 45 degrees or with significant foreground obstructions.
Average	Horizontal expanse of 45 to 90 degrees or with minor foreground obstructions.
Good	Horizontal expanse between 90 to 180 degrees with very little obstruction.
Excellent	Horizontal expanse of 90 to 180 degrees with no obstruction.

APPENDIX C – APARTMENT VACANCIES DATA

STUDIO											ONE BEDROOM					
Survey	Mkt Vac	Gross Vac	Rent	\$ nrsf	Bldgs	Units	Survey	Mkt Vac	Gross Vac	Rent	\$ nrsf	Bldgs	Units			
Spring 1997	1.76%	1.80%	\$519	\$1.16	100	3,246	Spring 1997	1.62%	1.60%	\$659	\$1.01	139	7,147			
Fall 1997	1.79%	1.90%	\$544	\$1.22	108	3,479	Fall 1997	1.76%	1.80%	\$681	\$1.05	141	7,211			
Spring 1998	2.59%	2.60%	\$582	\$1.27	100	3,161	Spring 1998	2.28%	2.30%	\$718	\$1.09	136	7,239			
Fall 1998	2.61%	2.60%	\$601	\$1.30	87	2,721	Fall 1998	1.72%	2.10%	\$739	\$1.11	121	6,638			
Spring 1999	3.58%	3.80%	\$610	\$1.37	103	3,458	Spring 1999	3.76%	3.90%	\$750	\$1.15	136	7,090			
Fall 1999	3.09%	4.00%	\$661	\$1.43	95	3,266	Fall 1999	2.67%	3.70%	\$786	\$1.19	128	6,659			
Spring 2000	2.72%	3.30%	\$635	\$1.39	94	2,926	Spring 2000	3.23%	4.60%	\$804	\$1.21	131	7,125			
Fall 2000	2.31%	5.40%	\$661	\$1.45	105	3,416	Fall 2000	2.31%	4.40%	\$818	\$1.24	147	7,857			
Spring 2001	4.37%	5.20%	\$685	\$1.51	97	2,962	Spring 2001	4.20%	5.50%	\$877	\$1.30	129	6,984			
Fall 2001	5.14%	11.60%	\$750	\$1.56	111	3,539	Fall 2001	4.75%	9.00%	\$919	\$1.34	153	8,399			
Spring 2002	7.69%	10.40%	\$734	\$1.55	118	3,847	Spring 2002	8.36%	10.10%	\$895	\$1.33	157	8,292			
Fall 2002	8.28%	10.30%	\$718	\$1.52	122	3,820	Fall 2002	6.29%	7.40%	\$889	\$1.32	160	8,502			
Spring 2003	7.96%	8.80%	\$724	\$1.52	127	3,946	Spring 2003	6.09%	6.60%	\$887	\$1.33	167	8,838			
Fall 2003	7.43%	7.60%	\$746	\$1.52	122	3,864	Fall 2003	6.27%	6.30%	\$902	\$1.32	158	8,651			
Spring 2004	6.58%	7.10%	\$735	\$1.48	123	3,852	Spring 2004	6.90%	7.90%	\$879	\$1.29	158	8,967			
Fall 2004	5.37%	7.00%	\$723	\$1.46	131	3,902	Fall 2004	5.24%	6.20%	\$869	\$1.29	166	9,089			
Spring 2005	5.47%	5.80%	\$732	\$1.49	120	4,025	Spring 2005	5.05%	5.20%	\$893	\$1.30	157	9,013			
Fall 2005	4.44%	4.40%	\$736	\$1.53	124	4,261	Fall 2005	3.45%	3.50%	\$906	\$1.32	161	8,926			
Spring 2006	3.83%	4.40%	\$761	\$1.54	128	4,109	Spring 2006	3.94%	4.50%	\$923	\$1.33	166	9,234			
Fall 2006	4.14%	5.00%	\$797	\$1.64	143	4,717	Fall 2006	3.46%	4.10%	\$950	\$1.39	183	9,854			
Spring 2007	2.67%	3.10%	\$829	\$1.70	129	4,314	Spring 2007	3.23%	3.60%	\$1,001	\$1.45	168	9,176			
Fall 2007	2.80%	3.80%	\$891	\$1.80	128	4,419	Fall 2007	3.50%	4.80%	\$1,095	\$1.56	164	9,142			
Spring 2008	3.25%	3.70%	\$917	\$1.86	140	4,376	Spring 2008	3.49%	4.80%	\$1,103	\$1.60	179	9,693			
Fall 2008	3.02%	3.30%	\$950	\$1.94	141	4,542	Fall 2008	3.42%	4.50%	\$1,150	\$1.66	179	9,966			
Spring 2009	6.38%	9.70%	\$922	\$1.93	157	5,277	Spring 2009	6.25%	10.50%	\$1,138	\$1.65	197	11,087			
Fall 2009	5.67%	8.30%	\$885	\$1.84	160	5,349	Fall 2009	6.53%	10.10%	\$1,107	\$1.60	203	11,642			
Spring 2010	5.51%	7.90%	\$871	\$1.83	175	5,854	Spring 2010	5.13%	8.20%	\$1,088	\$1.58	218	12,327			
Fall 2010	4.34%	5.50%	\$891	\$1.84	176	5,944	Fall 2010	3.90%	5.70%	\$1,125	\$1.61	222	12,736			
Spring 2011	3.64%	4.00%	\$897	\$1.85	177	6,057	Spring 2011	3.79%	5.10%	\$1,133	\$1.62	223	12,725			
Fall 2011	4.49%	4.80%	\$968	\$1.92	171	5,568	Fall 2011	3.86%	4.20%	\$1,182	\$1.68	216	12,367			

TWO BEDROOM 1 BATH						TWO BEDROOM 2 BATH							
Survey	Mkt Vac	Gross Vac	Rent	\$ nrsf	Bldgs	Units	Survey	Mkt Vac	Gross Vac	Rent	\$ nrsf	Bldgs	Units
Spring 1997	1.37%	1.40%	\$783	\$0.95	88	2,110	Spring 1997	1.81%	1.80%	\$908	\$0.98	68	1,876
Fall 1997	2.24%	2.30%	\$802	\$1.00	88	1,884	Fall 1997	1.93%	1.90%	\$984	\$1.04	63	1,972
Spring 1998	2.35%	2.30%	\$835	\$1.02	91	2,087	Spring 1998	3.19%	3.20%	\$1,018	\$1.11	63	1,914
Fall 1998	1.77%	1.80%	\$861	\$1.06	80	1,917	Fall 1998	1.96%	3.30%	\$1,030	\$1.09	56	1,851
Spring 1999	2.41%	2.40%	\$899	\$1.11	86	2,004	Spring 1999	6.58%	6.60%	\$1,036	\$1.13	63	1,885
Fall 1999	3.76%	4.00%	\$936	\$1.15	84	2,026	Fall 1999	3.92%	4.20%	\$1,096	\$1.18	58	1,781
Spring 2000	3.03%	3.80%	\$949	\$1.15	88	2,182	Spring 2000	3.51%	4.30%	\$1,120	\$1.19	62	1,818
Fall 2000	2.57%	5.10%	\$982	\$1.19	95	2,292	Fall 2000	1.91%	4.20%	\$1,168	\$1.26	70	2,016
Spring 2001	3.18%	3.60%	\$1,004	\$1.22	83	2,001	Spring 2001	5.11%	7.20%	\$1,247	\$1.28	65	2,026
Fall 2001	4.05%	6.00%	\$1,046	\$1.27	95	2,222	Fall 2001	5.51%	11.90%	\$1,367	\$1.35	82	2,486
Spring 2002	6.45%	7.60%	\$1,022	\$1.25	100	2,257	Spring 2002	9.43%	12.10%	\$1,284	\$1.33	87	2,439
Fall 2002	6.90%	6.90%	\$1,027	\$1.25	98	2,294	Fall 2002	9.16%	13.00%	\$1,268	\$1.34	90	2,730
Spring 2003	8.10%	8.10%	\$1,019	\$1.26	104	2,259	Spring 2003	8.34%	11.00%	\$1,309	\$1.36	92	2,690
Fall 2003	7.94%	7.90%	\$995	\$1.24	96	2,090	Fall 2003	8.07%	8.20%	\$1,404	\$1.36	90	2,685
Spring 2004	7.95%	8.10%	\$884	\$1.21	97	2,033	Spring 2004	7.67%	8.80%	\$1,304	\$1.30	93	2,842
Fall 2004	5.34%	6.80%	\$997	\$1.23	100	2,165	Fall 2004	7.17%	8.70%	\$1,306	\$1.33	96	2,945
Spring 2005	6.56%	6.60%	\$976	\$1.23	95	2,000	Spring 2005	8.60%	8.90%	\$1,311	\$1.32	98	3,028
Fall 2005	5.24%	5.20%	\$1,034	\$1.26	95	1,992	Fall 2005	5.89%	6.60%	\$1,353	\$1.34	97	2,997
Spring 2006	4.34%	5.80%	\$1,034	\$1.26	101	2,263	Spring 2006	5.76%	7.50%	\$1,403	\$1.37	95	2,919
Fall 2006	2.93%	3.00%	\$1,078	\$1.29	112	2,390	Fall 2006	4.85%	5.80%	\$1,448	\$1.44	97	2,959
Spring 2007	3.10%	4.00%	\$1,093	\$1.34	101	2,263	Spring 2007	4.37%	5.10%	\$1,472	\$1.48	97	2,953
Fall 2007	5.36%	6.30%	\$1,194	\$1.43	98	2,267	Fall 2007	4.58%	6.60%	\$1,584	\$1.56	92	2,909
Spring 2008	3.87%	4.30%	\$1,191	\$1.45	104	2,229	Spring 2008	5.12%	6.20%	\$1,609	\$1.58	104	3,046
Fall 2008	3.14%	3.20%	\$1,225	\$1.49	107	2,124	Fall 2008	5.68%	6.30%	\$1,662	\$1.63	104	3,141
Spring 2009	5.72%	11.20%	\$1,255	\$1.54	120	2,552	Spring 2009	6.99%	9.10%	\$1,650	\$1.65	117	3,378
Fall 2009	6.73%	9.60%	\$1,230	\$1.49	125	2,747	Fall 2009	6.32%	11.50%	\$1,641	\$1.56	121	3,597
Spring 2010	6.10%	7.70%	\$1,196	\$1.47	133	2,873	Spring 2010	5.17%	9.40%	\$1,651	\$1.56	130	3,828
Fall 2010	3.77%	6.80%	\$1,228	\$1.49	138	2,962	Fall 2010	4.51%	7.10%	\$1,697	\$1.59	131	3,895
Spring 2011	4.17%	4.60%	\$1,238	\$1.50	138	3,016	Spring 2011	4.37%	6.30%	\$1,727	\$1.61	133	3,860
Fall 2011	3.17%	3.40%	\$1,303	\$1.56	137	3,010	Fall 2011	5.92%	6.00%	\$1,799	\$1.67	126	3,735