Spring 6-18-2023

Proxies of Design: A Case Study and Analysis of Place and Commercial Real Estate in Seattle

Nicholas Miranda
Portland State University

Recommended Citation
Miranda, Nicholas, "Proxies of Design: A Case Study and Analysis of Place and Commercial Real Estate in Seattle" (2023). *University Honors Theses.* Paper 1386.
https://doi.org/10.15760/honors.1417

Proxies of Design:

A Case Study and Analysis of Place and Commercial Real Estate in Seattle

By

Nicholas Miranda

An undergraduate honors thesis submitted in partial fulfillment of the

requirements for the degree of

Bachelor of Science

in

University Honors

and

Urban and Public Affairs

Thesis Advisor

Dr. Julia Freybote

Portland State University

2023

Abstract

What kinds of relationships exist between individual buildings and greater society in Seattle? Focusing on the role of design in shaping the value and desirability of commercial properties, the study examines and utilizes a large temporal and spatial dataset to test price analogs between common building attributes and metrics. By employing a hedonic pricing model, the study seeks to identify the impact of these attributes on property values and ultimately relate them to architectural and contextual design, from a micro to a macro level. The empirical findings are not necessarily novel or groundbreaking, but rather, they shed light on the significance of building attributes not ordinarily thought of as proxies for design. The goal of this study is to inform commercial real estate practitioners, investors, planners, architects, and community members involved in the shaping of built environments. The research contributes to the existing literature on building valuation and offers insights of a unique place and its intriguing market for commercial real estate.

I. Introduction

Seattle and its greater metropolitan area are a captivating case study for commercial real estate in the United States. Bound by the Salish Sea and the Olympic Range to the west, and the Cascade Range and high desert to the east, these unique geographical features and mild climate shape the city of Seattle and the region in more ways than physical. A two-and-a-half-hour drive from the Canadian border and just about three hours from the Pacific Ocean, Seattle is on the geographical doorsteps of the global east. With that comes unprecedented economic investment into the region that supports high tech manufacturing, domestic and intercontinental trade, and notable business operations among a diverse multitude of sectors. To support these industries, the region attracts and maintains a highly educated and wealthy population, which in turn, demands a dynamic market for residential, commercial, and industrial spaces.

The city's unique geographic and economic contexts paradoxically make for a real estate development market prone to challenges. In the wake of globalization and the rise of the American west, economic supply forces have struggled to keep up with demand forces, causing a complex array of scarcity-induced urban social issues, including gentrification, housing insecurity, homelessness, and an unstable business climate. The city is situated on a narrow isthmus between Puget Sound and Lake Washington. Its landscape is a chaotic collection of hills, valleys, cliffs, bluffs, forests, and wetlands. The city's natural and manmade topographies[1], in addition to additional environmental and geotechnical standards can complicate and impose time consuming barriers to the development process.[2] Other logistical factors in the development process like labor and material costs in the Pacific Northwest make buildings more expensive to plan, construct, and maintain once they are completed.[3] These issues can be further exacerbated by land use, zoning, and design regulations.

Known for its progressive politics, the city of Seattle maintains a culture of sustainability and social justice in its urban development programs, policies, and goals. In accordance with this vision[4], planners, architects, and developers have abided by housing justice programs and embraced 'green' building practices. Seattle based news publication *theurbanist.org* reports an uptick in projects utilizing LEED certification and locally sourced timber.[5] These types of choices

[1] The city's CBD has been extensively regraded throughout the late 1800s and early 1900s. Several hills were leveled, and their contents transported to lower lying areas to make construction and growth possible. This was in addition to infilling parts of Elliot Bay with unconventional fill materials like trash and rubbish. In total, there were 60 regrades that created several waterfront neighborhoods, industrial districts, and the largest man-made island in the world, Harbor Island.

[2] Many sites on uneven or slushy terrain typically require extra site preparation, planning, and engineering work.

[3] A 2022 report by Mortenson, a nationwide builder/developer, indicated that Seattle was one of five U.S. cities that experienced year over year increases in overall construction costs, although the city's average construction price increased at a slower rate than the national average and its construction sector employment maintained steady growth in that time. This was repeated in the Q1 2023 edition of the report as well. (Mortenson 2022, 2023)

[4] Both the Urban Villages Plan and the Seattle2035 Comprehensive Plan emphasize dense, mixed use, and walkable infill development in neighborhoods with the potential.

[5] In 2018, the Seattle city council approved zoning code changes that allow for wood construction up to 75 feet, removing the more expensive concrete requirement (Fesler, 2018). Also in 2018, the Washington State Building Code Council approved code changes to allow for mass timber buildings up to 18 stories, the first state to do so in the nation (Lewis & Bronsdon, 2019).

are mostly the result of perceived profits induced by 'green' price premiums (Krause and Bitter, 2012; Eichholtz, Kok, Quigley, 2010), but the city also plays a role by requiring certain energy and water performance standards in its codes. Additionally, the city directly and indirectly mandates a design language for new and re-development projects. It is not often referred to as "contextual design"[6] in existing literature, but for the purposes of this thesis, that term fits elegantly. Indirectly, Seattle's land use zoning regulations, like virtually all North American cities, create the basis for de facto building forms (Lemar, 2015). Directly, the city maintains a multilevel program for design review – a methods which guide the physical design of structures, via a panel or committee of reputable individuals – typically of architects, urban designers, landscape architects, real estate, and planning professionals, as well as community members.

Despite these challenges to the development process, the city has managed to build over 6,700 rental units in 2022, the 7th highest of any city in the nation that year according to a report by RentCafé and Yardi Matrix (2022). The Seattle Times reported that the period between 2015 and 2018 saw a building boom with a record number of building cranes gracing the city's skyline (Rosenberg, 2018). At the same time, real estate prices have soared to all-time highs. This could signify that commercial real estate demand eclipsed supply enough to make external development constraints (geographical, geotechnical, regulatory, etc.) and longer development time frames worth the added cost. Note that this has been the case for decades in Seattle. In light of recent global events and the externalities they induce, this cost-benefit analysis may no longer favor current development strategies if market rates no longer align with the higher costs associated with external constraints.

While there is a notable lack of scholarship on the economics of design regulations generally, there are several examples that provide insights into the effects of design on real estate values (Rong et al. 2020; Hamidi, 2020; Egedy et al., 2022; Smith and Moorehouse, 1993), in addition to zoning regulations' effects on design and society (Kraus, 2015; Kok, Monkkonen, and Quigley, 2014). This paper will not cover the effects of explicit design regulations, like the design review process, or design adjacent regulations found in zoning codes and overlay districts. While those topics are ripe for new scholarly investigation, a comprehensive analysis would require more complex data and analysis than is readily available. This paper will instead focus on unique and quantifiable characteristics of individual buildings to theorize the extent of *place*, a la contextual design in Seattle proper. The city, as a hotbed for urban studies, is an optimal candidate for research into this topic. Using a hedonic price model for the analysis component, this thesis will explore and identify trends in Seattle's real estate. Using valuation as a metric[7], we will observe static building attributes as indicators of quality and/or utility of *place*. With this, we will discuss how they may contribute to larger scale urban issues – gentrification, neighborhood monotony, and harmful feedback loops.

---

[6] 'Contextual design' will be defined as the physical design of a building or structure that is based on the contexts of its immediate surroundings – be it built or natural environments.

[7] Real estate is a commodity that reflects the health and condition of a city and its residents. As assets, real estate has the goal of producing income. On the opposite side of that same coin, real estate assets that produce the most income are those that provide safe, secure, and healthy spaces to live, work, and/or play, and ideally, integrate harmoniously into their built environments. Real estate valuation is a tool that helps both public and private interests identify potential shortfalls or areas of improvement in the built environment.

II. Analysis

Methods

To investigate the relationship between building features and society in Seattle, this thesis will firstly introduce a hedonic price model and analysis.[8] While discussing the analysis before existing literature is less in the field of urban and real estate economics, it is worth looking at first due to the nature of the post-analysis discussion. Hedonic pricing is a commonly used method in real estate research that estimates the value of a building based on various features that affect its price in relation to a larger collection of buildings. It allows for the understanding of how individual attributes affect building values while controlling for external factors. In this case, the model will be used to analyze separate qualities for buildings in three categories of commercial real estate: Multifamily (MF), Retail and Commercial (Comm), and Office (O). These categories are the most relevant to the topic of this thesis, which pertains to real estate in dynamic urban submarkets of Seattle. Industrial, institutional, and civic buildings operate on much different economics and social dynamics, and thus would benefit from their own separate studies. Incorporating a hedonic pricing model into this thesis can help provide quantitative insights into an otherwise qualitative study, which could in turn fill in gaps on the scholarship and contribute new perspectives in the debate.

Through the analysis of the influence of these characteristics on value, policymakers may develop a deeper understanding of these dynamics. This understanding can enable them to effectively navigate the interplay between market forces and the need to establish policies that strike a balance between competing interests. Furthermore, hedonic pricing models can incorporate environmental factors that ultimately inform discussions on sustainable development, green spaces, and the potential trade-offs between economic development and environmental impacts. In the same way, individual community members can better understand the factors that influence their own neighborhoods, fostering informed discussions and inclusive decision making. This information driven community empowerment can help shape policies that better align with their interests and goals.

Data

The data for this analysis is sourced from CoStar, a highly reputable and prominent source for real estate data. It contains transaction metadata for MF, Comm, and O properties throughout the Puget Sound region between January of 2005 and December of 2022. In total there are over 18,800 individual building data points recorded in this timeframe. The dataset contained more data than necessary for this analysis, so it was filtered to only contain the most relevant data for the buildings as described in Table 1. It is important to acknowledge that the manual data filtering

[8] A hedonic price model is a type of multiple linear regression that estimates the relationship between the price of real estate and its individual characteristics, providing insights into the relative impact of each attribute on the final price. The term "hedonic" derives from the word "hedonism," which relates to the pursuit of pleasure or satisfaction. In the context of pricing, the hedonic approach recognizes that consumers derive different levels of satisfaction, value, or utility from different real estate features.

process introduces potential biases, as the determination of relevance is inherently subjective. Findings should be interpreted with consideration for these inherent limitations and potential biases. The trimmed dataset contains a total of 2,791 buildings, broken down between 645 Comm, 601 O, and 1,725 MF buildings. Figure 1 below illustrates the geographic contexts of the data, categorized by color.

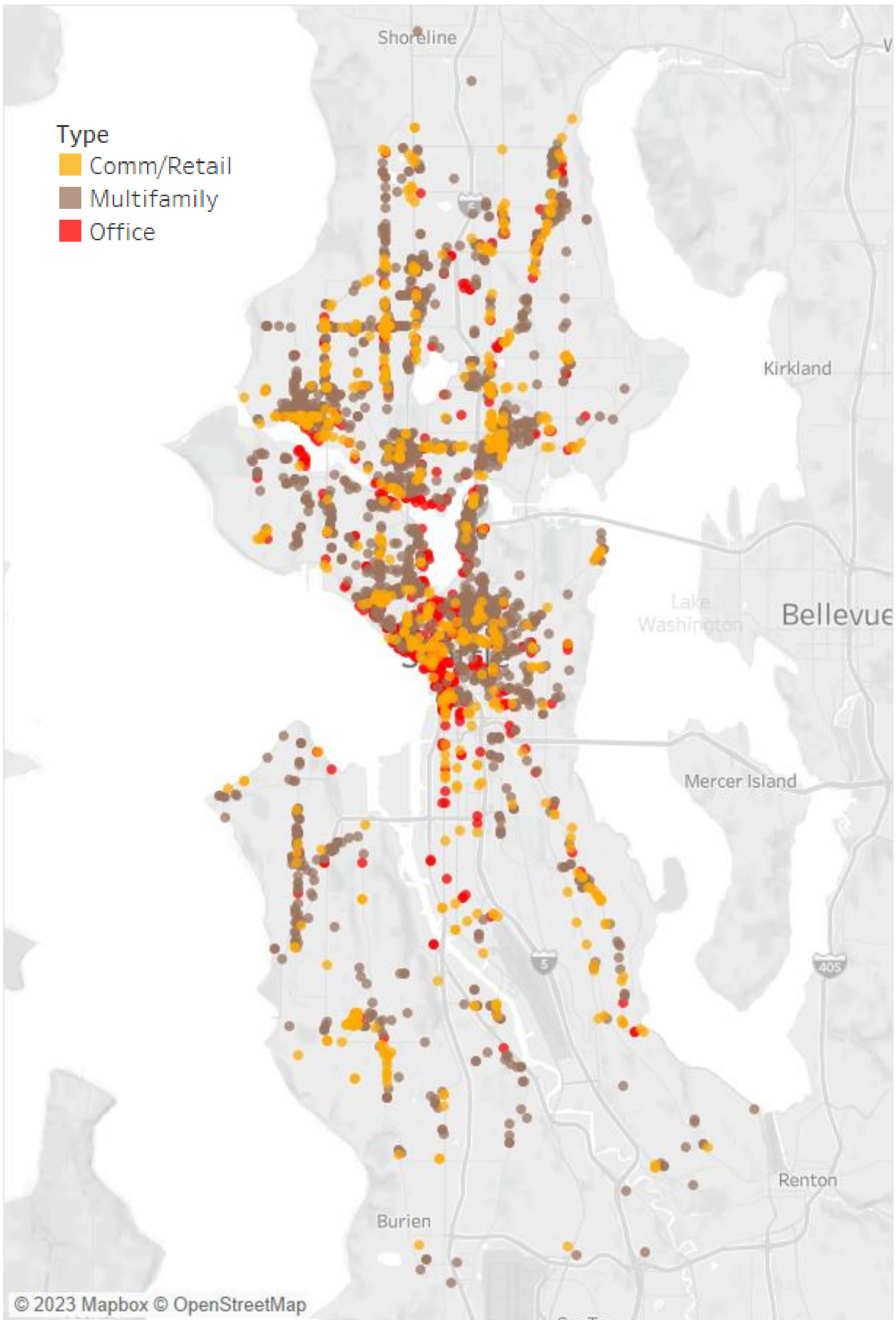

Figure 1: *Map of subject properties*

Table 1 – Description of Variables

Term	Type	MF	Comm	O	Description
Age (Years)	Covariate	X	X	X	Age of the building in years
Binary Distance	Factor	X	X	X	A binary variable that indicates whether two properties are within 1 kilometer of each other; 1 if yes, 0 if no
Building Class	Factor	X	X	X	Class of the building; A-C
Building Condition	Factor	X	X	X	Condition of the building; 'Adequate', 'Excellent', 'Good', 'Needs Improvement', 'Poor'
Building Materials	Factor	X	X	X	Type of building materials; 'Wood-frame', 'Masonry', 'Steel', 'Metal', 'Reinforced Concrete'
Buyer Origin	Factor	X	X	X	Type of buyer; 'Local', 'National', 'Foreign'
Location Type	Factor		X	X	Type of location; 'CBD', 'Urban', 'Suburban'
Log FAR	Covariate	X	X	X	Logarithm of the buildings Floor Area Ratio
Log n Floors	Covariate	X	X	X	Logarithm of the number of floors in the building
Log n Tenants	Covariate		X	X	Logarithm of the number of tenants in the building
Log n Units	Covariate	X			Logarithm of the number of units in the building
Log Sale Price ($)	Dependent Variable	X	X	X	Logarithm of the building's sale price
*Log Sale Date**	Covariate	X	X	X	Date the building was sold, expressed numerically and log transformed
Log SF	Covariate	X	X	X	Logarithm of the building's square footage
Quadratic Age	Covariate	X	X	X	Quadratic term of Age (Age squared)
Sale Type	Factor	X	X	X	Type of transaction; 'Investment', 'Owner or User', 'User'
Seller Origin	Factor	X	X	X	Type of seller; 'Local', 'National', 'Foreign'
Star Rating	Factor	X	X**	X	Number of stars the building has: 1-5

Note: all covariates are continuous variables, and all factors are categorical variables.

* Dates represented by the number of days elapsed since January 1st, 1900
** Star rating: 1-4

Limitations

It is worth noting that this analysis is limited by the data currently available. A stronger model could be produced with accurate zoning information. The existing dataset's zoning datum is non-uniform and messy. For the sake of simplicity and replicability, it was not included in the model. Additionally, the dataset does not include information on building aesthetics or form beyond FAR. A more comprehensive analysis would benefit from using the provided geographical coordinates to create variables to identify any design overlay districts. Together, accurate zoning and design overlay district data, and/or an analysis using GIS to cross reference the City's zoning and overlay district maps with the data would make for a more holistic analysis for examining the valuation impact of design more directly.

While metadata pertaining to a building's individual qualitative attributes may not paint a complete picture of its design and aesthetics, they can still provide valuable insights into the impact of zoning and other socio-economic forces that shape Seattle's built environments. The sample may not be representative of all buildings in Seattle, and the results may not be generalizable to other cities. While key building characteristics are controlled for, the dataset lacks neighborhood and design related data and several other unobservable factors that cannot be accounted for in the model. For example, distances to urban amenities would be valuable data for this analysis, as it has immense impacts on marginal utility according to contemporary spatial economic theory illustrated by Krause and Bitter (2012) and Lee et al. (2020). This analysis only examines the relationship between these building characteristics and their associated prices and does not provide a comprehensive analysis of the broader impacts of design on real estate and the built environment.

Lastly, the CoStar dataset does not include data on buildings with multiple uses, even though many buildings constructed in Seattle during this period were in fact mixed-use. As a result, the analysis assumes that each building is single use, which is highly unfortunate, given the prevalence of mixed-use construction over the past 30 years in the city.[9] Although the absence of explicit identification for mixed-use buildings limits our ability to directly control for their influence, their presence within the dataset adds an additional layer of complexity to the overall real estate landscape. Future research could explore methodologies to more effectively capture and analyze the dynamics of mixed-use properties in the context of hedonic pricing.

Model

As the literature on quantitative real estate analysis is rich with hedonic pricing analyses, the model used in this paper will draw from various works similar in scope. Won and Lee (2017) utilize a hedonic pricing model in their analysis of small form residential housing development in Seoul, South Korea. Based on the original model by Anselin and Rey (1998) which includes a term to represent spatial attributes, ρWy, where ρ is a matrix defining spatial weights, and Wy is a vector of building prices. Utilizing this approach allows the model to mitigate the influence of neighboring observations on the dependent variable, capturing spatial dependencies and allowing for the examination of spatial spillover effects. These factors are important to consider when analyzing a city as large and heterogeneous as Seoul as well as Seattle in the case of this thesis.

[9] See Delisle and Grissom (2013).

Rong et al. (2020) also use a hedonic pricing model in their analysis of design features of New York City office buildings. Using publicly available 3D spatial data from the City, the authors were able to compile a dataset and test variables like envelope curvature, setbacks, podium extrusion, and diagonality to gauge the price premium of design. Their model, which utilized two key terms, βX_i and δG_i was useful in delineating covariates and categorical factors. Their model also benefited from log transforming the dependent variable, P_i, to account for variance extremes that would otherwise skew the results.

The following model will be used for this analysis pertaining to commercial real estate in Seattle. It is based on the semi-log model used by Rong et al. (2020) and includes a spatial lag term derived from Fonner and Berrens (2014) as well as Anselin and Rey (1998):

$$\ln(P_i) = \alpha + \ln(\beta X_i) + Q_i + Q_i^2 + \delta C_i + \rho\sum W_{ij} \times \ln(P_j) + \varepsilon_i$$

where $\ln(P_i)$ represents the logarithm of the price of the *i-th* observation, α represents the intercept term, $\ln(\beta X_i)$ represents a vector of log transformed continuous variables (e.g., number of floors), Q_i represents Age, the singular unchanged variable, ρ represents a spatial autoregressive parameter, capturing the strength and direction of spatial dependence, $\sum W_{ij} \ln(P_j)$ represents the summation of the weighted logarithm spatial lag effect, W_{ij}, accounting for the influence of neighboring property prices $\ln(P_j)$ on the price of the *i-th* observation $\ln(P_i)$, and ε_i represents the error term.

This model varies from Rong et al. (2020) firstly due to the inclusion of age and the quadratic term of age, denoted by Q_i. Utilizing the quadratic term of age is important in this instance because nonlinearities that exist in the relationship between *Building Age* and the $LogP_i$ can be accounted for, and thus, make for a more robust model. Secondly, the application of the spatial lag term $\rho\sum W_{ij} \times \ln(P_j)$, differs from Won and Lee (2017) as well as Anselin and Rey (1998), in addition to Fonner and Berrens (2014) by incorporating logarithmic transformation, quadratic age term, categorical factors, and a weighted summation of spatial lag effects which better captures the strength and importance of the spatial influence from each neighboring observation.

III. Results

The model is employed separately for MF, Comm, and O properties. It estimated about 90% of the variation of the logarithm of prices for MF buildings, about 63% for Comm buildings, and for O buildings, the model estimated about 92% of the variation in logarithmic prices.

Multifamily

The model for yielded an R^2 value of 0.909, indicating that approximately 90.9% of the variation in the logarithm of prices can be explained by the included factors. The adjusted R^2 value of 0.907 considers the model's complexity and provides a conservative estimate of its explanatory power. Among the predictors, variables *Log n Units*, *Log Sale Date*, *Log n Floors*, and *Log SF* demonstrated significant associations with the *Log Sale Price*. However, factors including *Star Rating*, *Sale Type*, *Building Class*, and certain categorical variables did not have a significant impact. The Durbin-Watson (DW) statistic, which measures autocorrelation, yielded a value of 1.70 and a p-value of <0.001, indicating little to no autocorrelation.

Commercial/Retail

For commercial/retail buildings, the adjusted R^2 value was calculated to be 0.633, indicating that approximately 63.3% of the variation in the dependent variable is explained by the independent variables, considering model complexity. The R^2 value of 0.649 suggests a substantial degree of variability explained by the predictors. The regression analysis revealed significant associations between the logarithm of sale price and variables such as log floor area ratio (FAR), log number of tenants, log building square footage, and log sale date. On the other hand, predictors such as age, quadratic age, log number of floors, and certain categorical variables did not reach statistical significance. The DW statistic for commercial/retail buildings was calculated at 1.77, with a p-value of 0.004, indicating the presence of positive autocorrelation in the model.

Offices

For office buildings, the model achieved an R^2 value of 0.927, indicating that approximately 92.7% of the variance in the dependent variable can be explained by the independent variables. The adjusted R^2 value of 0.923 provides a more conservative estimate, considering the number of predictors in the model. The intercept was estimated to be -25.96, representing the average logarithm of sale price when all other predictors are zero or at their reference levels. Significant associations were found between the logarithm of sale price and the buyer's and seller's origin and location type. However, variables such as age, quadratic age, log FAR, log n tenants, star rating, building class, and others did not reach statistical significance. The DW statistic yielded a value of 1.58, indicating the presence of positive autocorrelation, and the associated p-value of less than 0.001 confirmed its statistical significance.

IV. Discussion

The Value of Real Estate Valuation

The role of building price extends beyond valuation -- it plays a crucial role in understanding community development and shaping urban landscapes. It has been shown that property prices influence investment decisions and economic development initiatives, especially in dense urban areas.[10] High prices in certain areas can attract investment, spur economic growth, and encourage infrastructure development. Conversely, low prices may indicate underutilized resources or areas with untapped potential. Analyzing price patterns and their spatial distribution can inform strategies for targeted investment and revitalization efforts. By incorporating the variable *Log Sale Date*, temporal effects and biases such as seasonal fluctuations, cyclical patterns, and long-term trends that influence property values can be controlled for. This allows for the identification of gentrification or neighborhood stability or decline over time.

[10] See Ding and Knaap (2002) study on economic investment of inner-Cleveland.

Understanding the relationship between property prices and community development is crucial for promoting social equity and sustainable urban planning. Price disparities between neighborhoods can signal inequalities in access to amenities, services, and opportunities. By examining the influence of building price on community development, we can identify areas requiring targeted interventions to enhance livability, address housing affordability challenges, and foster inclusive communities.[11]

Building Mass and Form

Building FAR is an important factor to discuss when considering building form, valuation, and broader contextual design. FAR, a zoning regulation that establishes the maximum allowable floor area relative to the size of the land underneath the building, influences the intensity of development and plays a significant role in shaping the physical form of buildings and their relationship to surrounding contexts. Developers must work within the limitations set by the FAR regulations to optimize the use of available floor area while complying with the permitted FAR. More relevantly, this dichotomy has implications for land value, as higher FAR allowances

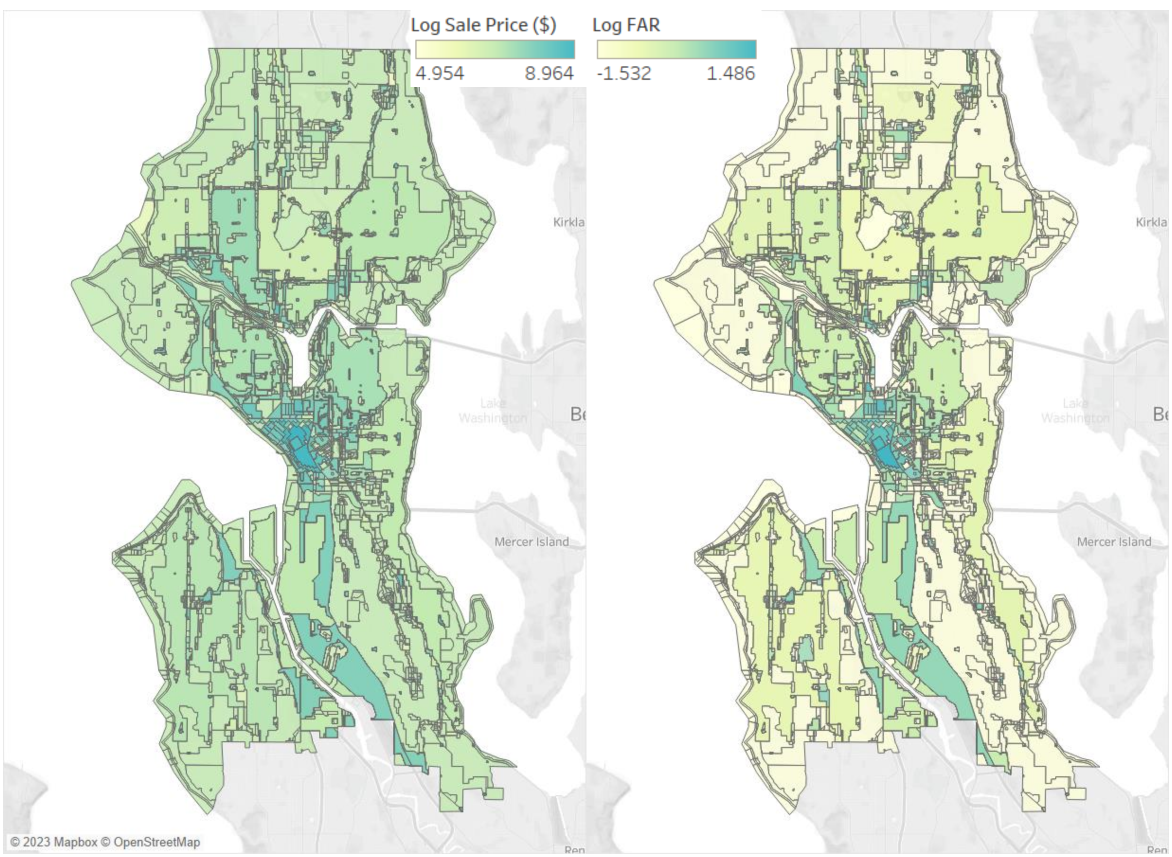

***Figure 2**: Map of FAR and a Log of Sales Price by land use zone averages*

[11] See the qualitative study by Carmona, De Magalhães, and Edwards (2010) which investigated the effects of the process of privatization limits the involvement of marginalized populations in the design and implementation processes of built environments, leading to a situation where only a specific group, often detached from the marginalized communities, determines what constitutes a 'quality' built environment.

increase the revenue-generating capacity of properties. Figure 2 illustrates the relationships between a Log of FAR and the Log of Sales Price by spatial distributions about Seattle.

This relationship highlights the importance of FAR as a tool for guiding and regulating urban development, as it directly impacts the scale, volume, and spatial utilization of buildings. In theory, they foster community stability by minimizing unwanted externalities that come with density. The city of Seattle, like many others, operates inclusionary zoning programs that mandate affordable housing units in new developments in exchange for density bonuses, a la FAR. Seattle's program, dubbed Mandatory Housing Affordability (MHA), requires developers to opt into providing affordable units or paying a fee in exchange for increased FAR. The payment goes towards a city run affordable housing fund. This can be observed by several high-rise mixed-use towers in Seattle's U-District. The Standard, a 25-story, 402-unit residential tower paid a $12 million fee as part of the MHA requirement. This is one example among a half dozen completed, and dozens in the pipeline. In 2021, *theurbanist.org* reported on the U-Districts building boom highlighting the trend among developers to circumvent the Mandatory Housing Affordability (MHA) requirements by opting to pay the associated fee instead. This trend suggests that there are financial advantages of paying the fee rather than incorporating affordable units, and potentially, increased flexibility and profitability. Figure 3-1 and Figure 3-2 illustrate FAR's relationship to formal attributes by building type: red crosses are office buildings, orange circles are comm/retail buildings, and brown squares are multifamily buildings.

Figure 3-1*: The relationship between the Log of FAR and the Log of Building SF show a positive correlation, suggesting that that higher density and development potential are often utilized to create larger and more expansive buildings.*

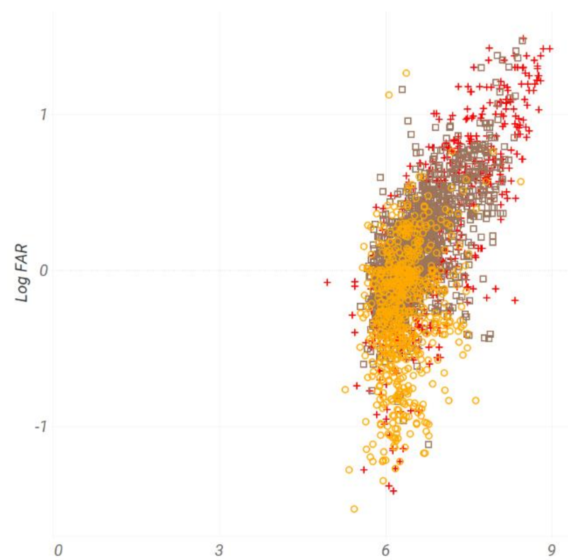

Figure 3-2*: The relationship between the Log of FAR and the Log of Sales Price show a positive correlation, suggesting that buildings with greater development intensity, allowing for more FAR to the size of the lot, command higher prices in the market.*

Additionally, it is important to mention building height when discussing mass. As an analog for building height, the analysis tested for the number of floors each building had. While the number of floors was only a statistically significant price contribution factor for multifamily buildings, it is still worth noting that height plays a role in valuation. For each additional floor in a MF building, its average price is estimated to increase by 0.168 logarithmic dollars. With this being said, vertical dimension is a powerful tool in shaping architectural mass and establishing a visual dialogue in between buildings. By varying heights, designers by virtue of developers, planners, and approving officials can create a composition that captures attention and contributes to the overall feel and sense of place in the built environment. Height, form, and mass have the potential to enrich the urban composition and create a visual dialogue between buildings, so long as the styles clash elegantly.

Aesthetics

By considering both FAR and the building height in valuation, larger buildings are worth more monetarily. It is often the case that larger buildings can derive some of that value from features that are not tested for, or even quantitively attained. This of course is architectural value, and the value of context. Increased urban density generally equates to altered building forms, implicitly relating, and responding to one another. The relationship between buildings is one angle to view valuation from, the other angle is from the perspective of the users.

There exist notable pieces of research that investigate the effects of 'good' design on real estate values. Hough and Kratz (1983) conducted a novel study in Chicago using a hedonic price analysis to investigate the relationship between office rents and architectural quality, using a building status as a landmark or award-winning as vectors of design, in addition to measurable attributes like distance from the CBD, building age, total gross floor area, number of floors, and the presence of a restaurant. Based on these factors, they found that tenants were willing to pay higher rents for buildings with better perceived architectural 'quality'. Their research revealed that tenants showed more demand for buildings with 'quality' architectural design when they were new, but not when they were old.

***Figure 4**: An ai-generated rendition of a medium density Seattle neighborhood. Source: dream.ai*

Additionally, the aforementioned study by Rong et al. (2020) also utilized hedonic pricing techniques to ascertain the value of design by examining the price performance of four architectural form features: diagonality, curvature, setbacks, and podiums, which set them apart from other studies which used architects' individual judgements as variables. Controlling for other factors affecting transaction prices, the analysis found that diagonality and podiums have a positive pricing impact, increasing the transaction price by 12.4% and 9.7% respectively compared to rectilinear control buildings. On the other hand, buildings with setbacks have a negative pricing impact, decreasing the transaction price by 10%.

More quantitative research by Ahlfedt and Maennig (2010) explored the role of stadium design in promoting economic growth and social welfare. They found that iconicism, or a building's ability to be symbolized via distinctive design, increases the value of stadiums and nearby real estate, and contributes to a sense of geographic identity. The authors suggest that 'good' design in this context includes unconventional physical and programmatic elements that create a unique identity for the stadium and its surrounding area. The stadiums' external effects on real estate prices varied by geographical context. Their findings indicated that some suburban football stadiums in the US had less impact on nearby real estate prices when compared to urban European soccer stadiums. These spatially diminishing effects are likely attributed of further physical distances between American stadiums from the communities they aim to connect with. Stadium development is an expensive, time consuming, and political process in the US (Saito, 2018). In the case of Seattle's urban development market, projects similarly tend to stick to the safest and most profitable styles due to the nature of the development process. This process makes for thin margins, and therefore, it is reasonable to assume that price premiums associated with aspects of iconism are not enough to overcome costs in modern, growing American cities like Seattle.

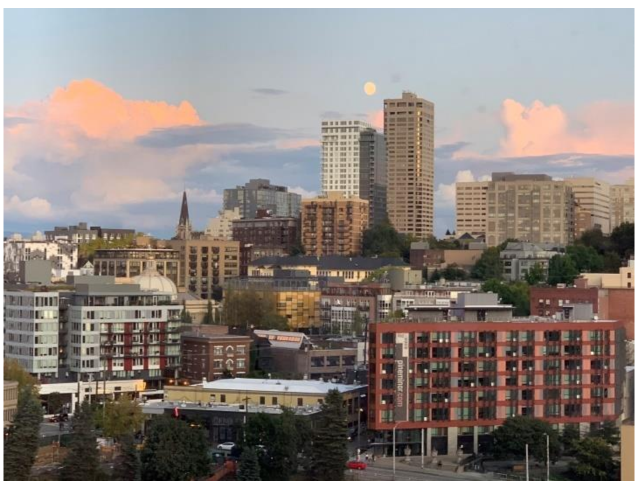

Figure 5*: Varying building forms, masses, and styles in Seattle's First Hill neighborhood. Source: https://imgur.com/2CyMOmO*

Simply put, iconism is not for the risk adverse. Seattle's collection of urban infill projects does little to differentiate it amongst Seattle submarkets, and even other national markets.[12] When strictly omitting the various bodies of water, mountains, ecologies, topographies, and the humans that inhabit it, the urban fabric of Seattle can be said to be a visually homogenous. This homogeneity is made of a buildings style that has swept the nation. Most referred to as the "5 over 1" style, these buildings are the culmination of several cost saving features. Their use of concrete podiums and wood framed upper floor construction makes them less risky during the land use approval and/or design review process thanks to local, national, and international building code changes during the late 1990s and early 2000s (Fox, 2019; Sisson, 2018). When discussing neighborhood and districtwide design, it is imperative to acknowledge the effects of design regulations, even though they were not considered in the analysis of this paper. As there are 38

[12] It is important to note that Seattle possesses a rich tapestry of historic and iconic architecture that contributes significantly a unique urban fabric. However, the focus of this statement is specifically on the new wave of urban projects and their ability to distinguish between Seattle neighborhoods and their national comparables.

unique established zones in the city in addition to a multilevel design review program, the challenges of including these regulations in the study are logistical. Such a study that incorporates these variables will undoubtedly benefit the literature on design regulations' effects on valuations of real estate assets and urban design, especially in a market such as Seattle.

The 'lack of diversity' in buildings, neighborhoods, and overall district designs as a result of homogenous development practices can contribute to a sense of *placelessness* among residents. When discussing the concept of *place,* it is important to note that all places are inherently subjective. Seattle does have a distinct sense of place because of environmental, economic, and social factors at work during all times. However, in Seattle, a core component of the city has been its urban spheres, which have been dominated by some of the fastest

***Figure 6**: Examples of new "5 over 1" style residential and mixed-use buildings in Seattle. More 'ordinary' examples of commercial and office developments also shown. Source: CAST Architects and Google Streetview.*

development seen in recent history. Hence it is understandable for longtime residents to feel apprehensive about the extent of development and redevelopment occurring in their neighborhoods, particularly in the context of gentrification, homelessness, climate change, work from home, and others.

This issue, if it were, of homogeneity has the potential to extend beyond aesthetics and become an identity problem, which can have negative economic impacts. A sense of place is important for attracting investment, fostering a sense of community, and creating a distinctive identity that can help drive tourism and other economic activity. Without a strong sense of place, a city risks becoming interchangeable with any other urban fabric, leading to a loss of economic and cultural influence that has helped make the city and region so iconic, and potentially instilling a cycle of "induced" placelessness. This can make it difficult for residents to connect with their neighborhoods and can contribute to social isolation and a lack of community cohesion (McCarthy and Saegert, 1978; Cresswell, 2014). While sentiment towards contemporary architecture and development projects lacks extensive data, in Seattle and in general, it is not uncommon to encounter instances of criticism and opposition on social media platforms[13], political demonstrations[14], local town halls, and public hearings. It is possible that, to critics, these structures are unwanted, eyesores, and extensions of an oppressive and unjust socioeconomic system. The city should be active in addressing misconceptions about new development and change while at the same time, taking steps to provide material assistance to those who bear the weight of its externalities.

Implications of Community Development

The age of commercial real estate properties emerges as a significant factor with implications for community development. As structures age, they can contribute to the historical character and identity of neighborhoods and districts. Simultaneously, the benefits of newer buildings should not be overlooked, as they typically offer modern amenities that can enhance the community's appeal to business, investment, and economic growth (Kim, 2021). As such, it is necessary to explore the potential consequences that may arise from neglecting older buildings within the neighborhood, as well as from inhibiting new development altogether. This of course, assumes that economic growth is the goal of the community. Achieving a balance between preserving historical buildings and accommodating the demand for urban infill and upgraded infrastructure is key for fostering sustainable development as per the Seattle 2035 comprehensive plan. Noting this, a lack of financial input can contribute to building deterioration due to insufficient maintenance, which has shown extensively throughout modern American history to undermine community vitality.[15] While Community Development does not hinge exclusively on financial investments, preserving their tangible structures requires some form of capital infusion in markets like Seattle's. Such investments can be initiated by either individual community members reinvesting in their said communities, or external stakeholders like businesses, non-profit organizations like community development corporations/organizations, for-profit developers, or a combination of them. While the existing development arena resembles a mix of the three, research indicates that all approaches can inadvertently exacerbate issues of gentrification and displacement (Bruey, 2019).[16] This ultimately warrants the need for

[13] The term "gentrification building" The term "gentrification building" has gained significant attention on social media platforms, especially TikTok and Twitter. The term is likely the culprit for a surge in attention to the topic over recent years. Many posts reflect a sense of animosity towards the prevalent contemporary architectural style characterized by disproportionate, and bland designs. This sentiment has also been echoed in mainstream media, as evidenced by the popularity of videos like "In Defense of the Gentrification Building" and "Why So Many New Buildings are Covered in Rectangles" on the Vox YouTube channel, each garnering millions of views.

[14] It is important to note the politics of place in the context of urban development. An understanding of what gives design value or utility can be influenced by hierarchical power structures. Different stakeholder groups will have varying preferences and motivations, making it challenging to appease all parties involved in shaping the built environment. In the case of political demonstrations, the racial justice protests of 2020, sparked by the killing of George Floyd and other incidents of police brutality were especially energetic in Seattle. The events brought attention to systemic racism and socio-economic inequities that are the result of past urban development policy failures.

[15] See the effects of systemic racism in the Portland neighborhood of Albina as recited by Gibson (2007), and chapters 1 and 3 of "Streets of Hope: The Rise and Fall of an Urban Neighborhood" by Medoff and Sklar (1994).

[16] Also see Research conducted by Mathew Carmona et al. (2010) that aimed to understand the preferences and concerns of different stakeholder groups involved in the planning and design process in several UK cities. Responses from different stakeholders are compiled to provide representative statements, highlighting the varying perspectives.

considerate, if not completely revolutionary urban development methods that turn scarcity on its head.

While only a statistically significant factor for the valuation of office buildings, the geographical origins of buyers and sellers are linked to community development – there are dynamics at play between local, domestic, and foreign interests (Rogers & Koh, 2017; Sheng, 2011). The involvement of local buyers and sellers fosters a sense of local ownership and community engagement, fostering a connection between businesses and residents. Conversely, foreign buyers or sellers theoretically introduce diversification to the local economy, bringing new investment opportunities and stimulating economic growth. Similarly, building class and star ratings bear significant implications for community development as well, even though less prevalent in the analysis. In theory higher-rated properties attract upscale businesses, contributing to the overall image and desirability of a neighborhood, but there is a lack of research on this subject. This would be beneficial from the perspective of property owners and external viewers with a financial or political interest, but from the perspective of rent burned residents, however, the narrative changes.

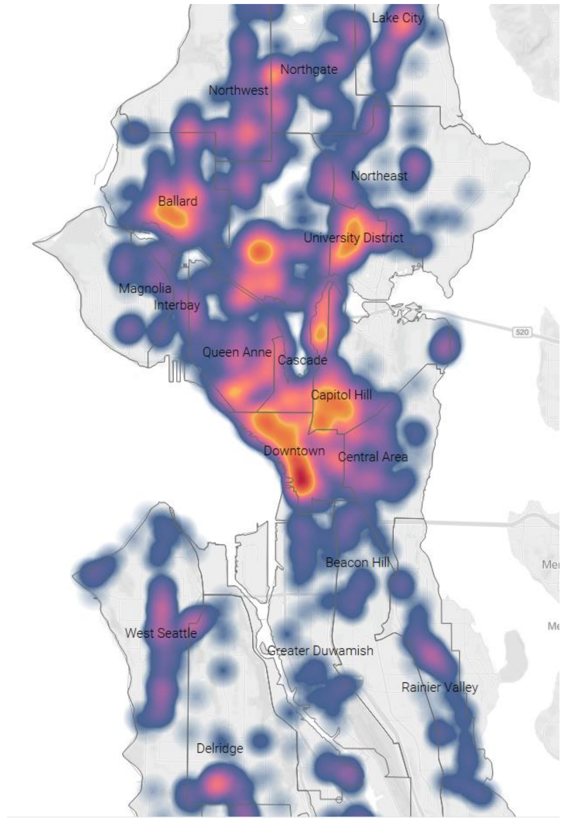

Figure 7*: General development map, indicating agglomerations of construction and transactions for all building types.*

V. Conclusion

This thesis sought to identify potential relationships between specific features of commercial real estate and society in the city of Seattle. By analyzing the separate qualities of buildings in three categories of commercial real estate, Multifamily, Retail/Commercial, and Office, the study aimed to provide quantitative insights, via the use of a hedonic price analysis, into real estate valuation and its chemistry with place, community, and development in the city.

In the Multifamily category, the analysis revealed that a building's sale price tended to be related to the number of units and the number of floors present. Similarly, in the Commercial/Retail category, a building's sale price tended to follow its floor area ratio, and the number of tenants leasing space within it. Office building prices were largely dependent on the buyer/seller origin and location type. All building types showed statistically significant

The collected responses from stakeholders often appear contradictory, making it challenging to satisfy the preferences of all stakeholders simultaneously. For example, local communities may desire no development, while developers seek profitable and marketable land for construction. It becomes paradoxical to appease all stakeholders.

relationships with building square footage and the date the building was transacted. These findings emphasize the influence of architectural mass and form suggesting that the layout, size, and functionality of the space have an impact on values, in line with recent design-valuation research. Interestingly, factors that were expected to have a high impact on price such as age, building condition, building materials, and the number of floors were largely found not to bear statistical significance for either property type. These results indicate a need for further analyses of commercial real estate properties in Seattle, using more complex models capable of controlling for externalities not controlled for in this study.

Ultimately, by using these building features as proxies of design, the concepts of *place* and *placelessness* were theorized in a unique Seattle context. The city is enduring challenges as it grows, making for an evolving commercial real estate market characterized by demand for larger and more valuable buildings. The social effects of this change clash with the ideas of their causes, and there is no certainty as to what induces what. To a layperson on the street or online, development may seem like a controversial topic in the city. They may not realize how minute or even substantial building details play into these dynamics. As more research is conducted, the academic discourse will change, and thus prompt the commercial real estate industry to adapt and respond. Though the city's rapid, social, cultural, and economic changes throughout the past several decades have shown that sense of place has not been solely defined by its architecture or physical environments, but rather by the collective experiences, cultural heritage, and community interactions that have shaped its identity in Seattle. The changes have highlighted the dynamic nature of the city and the place of form, function, and design in its environment. It is crucial to recognize that the essence of *place* goes beyond mere physical structures, despite its intimate connection to the concepts of money, value, and scarcity -- it encompasses the intangible qualities that make Seattle a unique and treasured place to live, work, and play.

VI. Appendix

Table of Descriptives

	Type	N	Mean	Median	SD	Variance	Minimum	Maximum
Sale Price ($)	Comm/Retail	645	4.16E+06	1850000	1.24E+07	1.54E+14	190000	271000000
	Multifamily	1725	9.44E+06	2550000	2.24E+07	5.04E+14	352905	293000000
	Office	601	4.93E+07	6500000	1.09E+08	1.19E+16	89989	920443361
Log Sale Price ($)	Comm/Retail	645	6.334	6.2672	0.4125	0.1702	5.2788	8.43
	Multifamily	1725	6.54	6.4065	0.5223	0.2728	5.5477	8.47
	Office	601	6.947	6.8129	0.8137	0.6622	4.9542	8.96
Building SF	Comm/Retail	645	10787.899	5000	23578.8715	5.56e0+8	346	333479
	Multifamily	1725	28063.597	9695	53469.5115	2.86e0+9	1487	567403
	Office	601	104049.421	22685	196593.7049	3.86E+10	893	1548769
Log Building SF	Comm/Retail	645	3.747	3.699	0.4326	0.1872	2.5391	5.52
	Multifamily	1725	4.106	3.9865	0.4775	0.228	3.1723	5.75
	Office	601	4.403	4.3557	0.7721	0.5961	2.9509	6.19
Floor Area Ratio	Comm/Retail	645	0.832	0.5654	1.1166	1.2467	0.0294	18.29
	Multifamily	1725	1.747	1.1427	2.0569	4.2308	0.0765	29.6
	Office	601	3.695	1.4233	4.9603	24.6046	0.0383	30.64
Log FAR	Comm/Retail	645	-0.267	-0.2477	0.4103	0.1683	-1.5317	1.26
	Multifamily	1725	0.115	0.0579	0.3006	0.0904	-1.1164	1.47
	Office	601	0.233	0.1533	0.5624	0.3163	-1.4169	1.49
Number Of Tenants	Comm/Retail	645	8.478	1	38.5037	1482.5325	1	284
	Multifamily	1725	0	0	0	0	0	0
	Office	601	16.691	4	41.7502	1743.0774	1	517
Log n Tenants	Comm/Retail	645	0.306	0	0.4702	0.2211	0	2.45
	Multifamily	1725	0	0	0	0	0	0
	Office	601	0.709	0.6021	0.6217	0.3865	0	2.71
Number of Units	Comm/Retail	645	0	0	0	0	0	0
	Multifamily	1725	33.599	12	57.1531	3266.4758	2	743
	Office	601	0	0	0	0	0	0
Log n Units	Comm/Retail	645	0	0	0	0	0	0
	Multifamily	1725	1.214	1.0792	0.4654	0.2166	0.301	2.87
	Office	601	0	0	0	0	0	0
Number Of Floors	Comm/Retail	645	1.65	1	2.2578	5.0975	1	34
	Multifamily	1725	3.434	3	3.0252	9.1518	1	40
	Office	601	6.634	3	9.7686	95.4258	1	76
Log n Floors	Comm/Retail	645	0.133	0	0.2126	0.0452	0	1.53
	Multifamily	1725	0.47	0.4771	0.21	0.0441	0	1.6
	Office	601	0.576	0.4771	0.4207	0.177	0	1.88
Sale Date	Comm/Retail	645	42810.71	43059	1552.6106	2.41e0+6	39042	44910
	Multifamily	1725	42332.039	42445	1627.27	2.65e0+6	38895	44922
	Office	601	42536.413	42676	1540.4176	2.37e0+6	38473	44910
Log Sale Date	Comm/Retail	645	4.631	4.6341	0.0159	2.54e0-4	4.5915	4.65
	Multifamily	1725	4.626	4.6278	0.0168	2.82e0-4	4.5899	4.65
	Office	601	4.628	4.6302	0.0159	2.52e0-4	4.5852	4.65
Age	Comm/Retail	645	74.121	75	28.8538	832.5413	4	135
	Multifamily	1725	57.824	57	29.6249	877.6321	0	123
	Office	601	65.331	59	36.3193	1319.0918	2	135
Quadratic Age	Comm/Retail	645	6325.163	5625	4134.8056	1.71e0+7	16	18225
	Multifamily	1725	4220.779	3249	3875.745	1.50e0+7	0	15129
	Office	601	5585.052	3481	5141.7105	2.64e0+7	4	18225

Model Fit Measures for MF

Model	R	R^2	Adjusted R^2
1	0.953	0.909	0.907

Model Coefficients - Log Sale Price ($)

Predictor	Estimate	SE	t	p
Intercept [a]	-27.83572	1.13101	-24.611	< .001
Star Rating:				
2 Star – 1 Star	-0.05852	0.11319	-0.517	0.605
3 Star – 1 Star	-0.04242	0.11359	-0.373	0.709
4 Star – 1 Star	0.09027	0.1167	0.774	0.439
5 Star – 1 Star	0.1447	0.12422	1.165	0.244
Log Sale Date	6.92955	0.23957	28.925	< .001
Sale Type:				
Investment or Owner User – Investment	0.02802	0.04511	0.621	0.535
Owner User – Investment	0.26574	0.09242	2.875	0.004
Buyer Origin:				
Local – Foreign	-0.09596	0.02521	-3.807	< .001
National – Foreign	-0.04821	0.02522	-1.912	0.056
Seller Origin:				
Local – Foreign	-0.06084	0.03567	-1.706	0.088
National – Foreign	-0.05155	0.036	-1.432	0.152
Building Class:				
B – A	-0.00464	0.02497	-0.186	0.853
C – A	-0.00834	0.02824	-0.295	0.768
Log n Floors	0.16868	0.03351	5.034	< .001
Quadratic Age	3.01E-06	5.60E-06	0.538	0.591
Age	-8.20e−5	8.06E-04	-0.102	0.919
Building Condition:				
Excellent – Adequate	0.07188	0.02749	2.614	0.009
Good – Adequate	0.03819	0.01451	2.632	0.009
Needs Improvement – Adequate	-0.0375	0.02086	-1.798	0.072
Poor – Adequate	-0.08306	0.03375	-2.461	0.014
Building Materials:				
Metal – Masonry	-0.04217	0.16201	-0.26	0.795
Reinforced Concrete – Masonry	-0.00488	0.01801	-0.271	0.786
Steel – Masonry	-0.14538	0.04316	-3.368	< .001
Wood Frame – Masonry	-0.04315	0.00988	-4.369	< .001
Log FAR	0.05347	0.02227	2.401	0.016
Binary Distance:				
1 – 0	-0.00386	0.01668	-0.231	0.817
Log n Units	0.34074	0.02547	13.379	< .001
Log SF	0.49109	0.02669	18.402	< .001

[a] Represents reference level

Model Fit Measures for Comm

Model	R	R^2	Adjusted R^2
1	0.806	0.649	0.633

Model Coefficients - Log Sale Price ($)

Predictor	Estimate	SE	t	p
Intercept [a]	-29.61017	3.28345	-9.018	< .001
Age	5.21E-04	0.00198	0.263	0.793
Quadratic Age	-5.42e−6	1.33E-05	-0.406	0.685
Log n Floors	-0.08697	0.06228	-1.396	0.163
Log FAR	-0.19405	0.03738	-5.191	< .001
Log Building SF	0.72103	0.0351	20.544	< .001
Log Sale Date	7.25019	0.70666	10.26	< .001
Sale Type:				
Investment or Owner User – Investment	-0.05862	0.08266	-0.709	0.478
Owner User – Investment	-0.07715	0.02455	-3.142	0.002
Star Rating:				
2 Star – 1 Star	-0.00499	0.03083	-0.162	0.871
3 Star – 1 Star	0.13617	0.05014	2.716	0.007
4 Star – 1 Star	0.19854	0.11274	1.761	0.079
Buyer (True) Origin:				
Local – Foreign	-0.20703	0.05208	-3.975	< .001
National – Foreign	-0.13521	0.05291	-2.556	0.011
Seller (True) Origin:				
Local – Foreign	0.03241	0.06186	0.524	0.601
National – Foreign	0.02368	0.06458	0.367	0.714
Building Class:				
B – A	-0.11699	0.12962	-0.903	0.367
C – A	-0.05109	0.13736	-0.372	0.71
Building Condition:				
Excellent – Adequate	0.02495	0.12675	0.197	0.844
Good – Adequate	-0.05728	0.03769	-1.52	0.129
Needs Improvement – Adequate	-0.12862	0.03776	-3.406	< .001
Poor – Adequate	-0.05597	0.09219	-0.607	0.544
Building Materials:				
Metal – Masonry	0.04183	0.07571	0.553	0.581
Reinforced Concrete – Masonry	0.03556	0.03243	1.097	0.273
Steel – Masonry	0.02507	0.08188	0.306	0.76
Wood Frame – Masonry	-0.01014	0.02431	-0.417	0.677
Binary distance:				
1 – 0	0.00437	0.03311	0.132	0.895
Location Type:				
Suburban – CBD	-0.37703	0.05818	-6.481	< .001
Urban – CBD	-0.14761	0.03513	-4.202	< .001
Log n Tenants	-0.07215	0.03071	-2.349	0.019

[a] Represents reference level

Model Fit Measures for O

Model	R	R^2	Adjusted R^2
1	0.963	0.927	0.923

Model Coefficients - Log Sale Price ($)

Predictor	Estimate	SE	t	p
Intercept [a]	-25.96125	2.92101	-8.888	< .001
Sale Type:				
Investment or Owner User – Investment	-0.16603	0.13264	-1.252	0.211
Owner User – Investment	-0.04515	0.0256	-1.764	0.078
Buyer (True) Origin:				
Local – Foreign	-0.15498	0.03771	-4.11	< .001
National – Foreign	-0.05705	0.03469	-1.644	0.101
Seller (True) Origin:				
Local – Foreign	-0.09629	0.04509	-2.136	0.033
National – Foreign	-0.09761	0.0444	-2.199	0.028
Location Type:				
Suburban – CBD	-0.39153	0.16943	-2.311	0.021
Urban – CBD	-0.10556	0.02692	-3.921	< .001
Quadratic Age	2.41E-06	1.00E-05	0.241	0.81
Age	-9.10e−4	0.0015	-0.606	0.544
Log FAR	-0.13152	0.03722	-3.533	< .001
Log n tenants	-0.03537	0.02142	-1.651	0.099
Star Rating:				
2 Star – 1 Star	-0.03386	0.04701	-0.72	0.472
3 Star – 1 Star	-0.04353	0.05404	-0.806	0.421
4 Star – 1 Star	0.11531	0.07975	1.446	0.149
5 Star – 1 Star	0.23297	0.10248	2.273	0.023
Building Class:				
B – A	-0.07434	0.05152	-1.443	0.15
C – A	-0.06874	0.05955	-1.154	0.249
Building Condition:				
Excellent – Adequate	0.05435	0.05184	1.048	0.295
Good – Adequate	0.00846	0.03071	0.275	0.783
Needs Improvement – Adequate	-0.12184	0.06718	-1.814	0.07
Poor – Adequate	-0.02543	0.10474	-0.243	0.808
Building Materials:				
Metal – Masonry	0.06621	0.09481	0.698	0.485
Reinforced Concrete – Masonry	-0.00279	0.02608	-0.107	0.915
Steel – Masonry	0.0108	0.04756	0.227	0.82
Wood Frame – Masonry	-0.00326	0.02829	-0.115	0.908
Log n Floors	0.01122	0.05106	0.22	0.826
Log sale date	6.34712	0.62501	10.155	< .001
Log Building SF	0.89137	0.03644	24.463	< .001
Binary distance:				
1 – 0	0.06287	0.02518	2.497	0.013

[a] Represents reference level

References

Ahlfeldt, Gabriel, and Wolfgang Maennig. “Stadium Architecture and Urban Development from the Perspective of Urban Economics.” International Journal of Urban and Regional Research 34, no. 3 (2010): 629–46. https://doi.org/10.1111/j.1468-2427.2010.00908.x.

Anselin, Luc, and Serge Rey. “Properties of Tests for Spatial Dependence in Linear Regression Models.” Geographical Analysis 23, no. 2 (2010): 112–31. https://doi.org/10.1111/j.1538-4632.1991.tb00228.x.

Bruey, Veronica Fynn. “Development-Induced Displacement and Homelessness in Seattle, Washington.” Artha - Journal of Social Sciences 18, no. 2 (2019): 1–25. https://doi.org/10.12724/ajss.49.1.

Carmona, Matthew, Claudio De Magalhães, and Michael Edwards. “Stakeholder Views on Value and Urban Design.” Journal of Urban Design 7, no. 2 (2002): 145–69. https://doi.org/10.1080/1357480022000012212.

Cresswell, Tim. Place: An introduction. Chichester, West Sussex: Wiley, Blackwell, 2015.

DeLisle, James, and Terry Grissom. “An Empirical Study of the Efficacy of Mixed-Use Development: The Seattle Experience.” Journal of Real Estate Literature 21, no. 1 (2013): 25–57. https://doi.org/10.1080/10835547.2013.12090352.

Ding, Chengri, and Gerrit-Jan Knaap. “Property Values in Inner-city Neighborhoods: The Effects of Homeownership, Housing Investment, and Economic Development.” Housing Policy Debate 13, no. 4 (2002): 701–27. https://doi.org/10.1080/10511482.2002.9521462.

Egedy, Tamás, Balázs Szabó, Hlib Antypenko, and Melinda Benkő. “Planning and Architecture as Determining Influences on the Housing Market: Budapest–Csepel’s Post–War Housing Estates.” Urban Planning 7, no. 4 (2022). https://doi.org/10.17645/up.v7i4.5771.

Eichholtz, Piet, Nils Kok, and John M Quigley. “Doing Well by Doing Good? Green Office Buildings.” American Economic Review 100, no. 5 (2010): 2492–2509. https://doi.org/10.1257/aer.100.5.2492.

Fesler, Stephen. “City Council Allows Taller Wood Buildings, Reforms Street Vacation Process and Advances Waterfront Lid.” The Urbanist, May 23, 2018. https://www.theurbanist.org/2018/05/23/city-council-allows-taller-wood-buildings-reforms-street-vacation-process-advances-waterfront-lid/.

Fonner, Robert C., and Robert P. Berrens. “A Hedonic Pricing Model of Lift Tickets for US Alpine Ski Areas: Examining the Influence of Crowding.” Tourism Economics 20, no. 6 (2014): 1215–33. https://doi.org/10.5367/te.2013.0338.

Fox, Justin. “Why America’s New Apartment Buildings All Look the Same.” Bloomberg.com, February 13, 2019. https://www.bloomberg.com/news/features/2019-02-13/why-america-s-new-apartment-buildings-all-look-the-same#xj4y7vzkg.

Gibson, Karen J. “Bleeding Albina: A History of Community Disinvestment, 1940-2000.” Transforming Anthropology 15, no. 1 (2007): 3–25. https://doi.org/10.1525/tran.2007.15.1.03.

Grecu, Veronica. “The Best of Times for New Apartment Construction in Half a Century: New York Takes the Lead in 2022.” RentCafé, September 2022. https://www.rentcafe.com/blog/rental-market/market-snapshots/apartment-construction-2022/.

Hough, Douglas E., and Charles G. Kratz. “Can ‘Good’ Architecture Meet the Market Test?” Journal of Urban Economics 14, no. 1 (1983): 40–54. https://doi.org/10.1016/0094-1190(83)90028-1.

Kim, Minjee. “How Do Tax-Based Revitalisation Policies Affect Urban Property Development? Evidence from Bronzeville, Chicago.” Urban Studies 59, no. 5 (2021): 1031–47. https://doi.org/10.1177/0042098021995148.

Kok, Nils, Paavo Monkkonen, and John M. Quigley. “Land Use Regulations and the Value of Land and Housing: An Intra-Metropolitan Analysis.” Journal of Urban Economics 81 (2014): 136–48. https://doi.org/10.1016/j.jue.2014.03.004.

Krause, Andy, and Christopher Bitter. “Spatial Econometrics, Land Values and Sustainability: Trends in Real Estate Valuation Research.” Cities 29 (2012). https://doi.org/10.1016/j.cities.2012.06.006.

Krause, Andy. “Piece-by-Piece: Low-Rise Redevelopment in Seattle.” Journal of Property Research 32, no. 3 (2015): 258–78. https://doi.org/10.1080/09599916.2015.1048705.

Kuo, Shaun. “A Skyline by UW – U District Development Spree Part 2 - the Urbanist.” The Urbanist - Examining urban policy to improve cities and quality of life., September 30, 2021. https://www.theurbanist.org/2021/07/02/a-skyline-by-uw-u-district-development-spree-part-2/.

L. Krause, Andy, and Christopher Bitter. “Spatial Econometrics, Land Values and Sustainability: Trends in Real Estate Valuation Research.” Cities 29, no. 2 (2012). https://doi.org/10.1016/j.cities.2012.06.006.

Lee, Jinhyung, Nicholas Irwin, Elena Irwin, and Harvey J. Miller. “The Role of Distance-dependent versus Localized Amenities in Polarizing Urban Spatial Structure: A Spatio-temporal Analysis of Residential Location Value in Columbus, Ohio, 2000–2015.” Geographical Analysis 53, no. 2 (2020): 283–306. https://doi.org/10.1111/gean.12238.

Lemar, Anika Singh. "Zoning as taxidermy: Neighborhood conservation districts and the regulation of aesthetics." Ind. Lj 90 (2015). 1525.https://heinonline.org/HOL/LandingPage?handle=hein.journals/indana90&div=47&id=&page=.

Lewis , Andrew, and Conor Bronsdon. “Seattle Should Lead on Mass Timber–and Solve Our Housing Crisis.” The Urbanist, February 17, 2019. https://www.theurbanist.org/2019/02/14/seattle-should-lead-on-mass-timber-and-solve-our-housing-crisis/.

McCarthy, Dennis, and Susan Saegert. “Residential Density, Social Overload, and Social Withdrawal.” Human Ecology 6, no. 3 (1978): 253–72. https://doi.org/10.1007/bf00889026.

Medoff, Peter, and Holly Sklar. Streets of hope: The fall and rise of an urban neighborhood. Boston, MA: South End, 1994.

Mortenson. 2022. "Report on Construction Costs in U.S. Cities." Accessed May 23, 2023. https://www.mortenson.com/cost-index/seattle.

Mortenson. 2023. "Report on Construction Costs in U.S. Cities." Accessed May 23, 2023. https://www.mortenson.com/cost-index/seattle.

Rogers, Dallas, and Sin Yee Koh. “The Globalisation of Real Estate: The Politics and Practice of Foreign Real Estate Investment.” International Journal of Housing Policy 17, no. 1 (2017): 1–14. https://doi.org/10.1080/19491247.2016.1270618.

Rong, Helena, Juncheng Yang, Minkoo Kang, and Andrea Chegut. “The Value of Design in Real Estate Asset Pricing.” Buildings 10, no. 178 (2020). https://doi.org/10.2139/ssrn.3582530.

Rosenberg, Mike. “Seattle Tops the Nation in Tower Cranes for Third Straight Year as Construction Reaches New Peak.” The Seattle Times, July 18, 2018. https://www.seattletimes.com/business/real-estate/seattle-tops-the-nation-in-tower-cranes-for-third-straight-year-as-construction-reaches-new-peak/.

Roulac, Stephen, Alastair Adair, Stanley McGreal, Jim Berry, and Suzanne Allen. “Real Estate Value: Creation and Destruction.” Journal of Property Investment & Finance 24, no. 6 (2006): 474–89. https://doi.org/10.1108/14635780610708293.

Saito, Leland. “Urban Development and the Growth with Equity Framework: The National Football League Stadium in Downtown Los Angeles.” Urban Affairs Review 55, no. 5 (2018): 1370–1401. https://doi.org/10.1177/1078087417751216.

Sheng, Li. “Foreign Investment and Urban Development: A Perspective from Tourist Cities.” Habitat International 35, no. 1 (2011): 111–17. https://doi.org/10.1016/j.habitatint.2010.04.005.

Sisson, Patrick. “Why Do All New Apartment Buildings Look the Same?” Curbed, December 4, 2018. https://archive.curbed.com/2018/12/4/18125536/real-estate-modern-apartment-architecture.

Smith, Margaret Supplee, and John C. Moorhouse. “Architecture and the Housing Market: Nineteenth Century Row Housing in Boston’s South End.” Journal of the Society of Architectural Historians 52, no. 2 (1993): 159–78. https://doi.org/10.2307/990783.

Won, Jaewoong, and Jae-Su Lee. “Investigating How the Rents of Small Urban Houses Are Determined: Using Spatial Hedonic Modeling for Urban Residential Housing in Seoul.” Sustainability 10, no. 2 (2017): 31. https://doi.org/10.3390/su10010031.