

Enhanced Residential Design of Affordable Housing Developments in Los Angeles
A Discussion on Designed-Based Investment

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Enhanced Residential Design of Affordable Housing Developments in Los Angeles: A Discussion on Design-Based Investment

The purpose of this research is to explore the implications of investment in design for the future of affordable housing development in Los Angeles. Using interviews, document analysis, site visits, and an evaluation of four case studies by the Design Quality Indicators (DQI), the study determined the ways in which high-quality residential design can be utilized to promote investment in affordable housing development and achieve tangible improvements in the well-being of residents. Several design elements were identified as being particularly beneficial for both reducing costs of development, reducing strains on other systems like healthcare, and providing services to residents, making them particularly important to development of affordable housing in the future. Although the design of affordable housing is low on the list of priorities for development of affordable housing due to extreme levels of disinvestment and large chronic homeless populations, investment in high-quality residential design can promote investment in affordable housing development in general and contribute positively to the quality of life of vulnerable populations. therefore, the design of affordable housing should be carefully considered when providing affordable housing in Los Angeles in the future.

Part I: Introduction

The phrases “public housing,” “low-income,” and “affordable housing,” are rarely associated with architectural innovation. Dilapidated concrete slabs which verticalize ghettos, breed crime, and reproduce inequality are common descriptions of affordable housing in the United States (Davis, 1995). However, several recent residential developments in Los Angeles are challenging such depictions. In light of these recent developments, it's worth considering if low-income housing could lead the development of innovative and responsive architecture.

Affordable housing developments in Los Angeles have the opportunity to be more responsive to needs of their residents and become leaders in architectural innovation. Using The Center for Architecture and The Built Environment's (CABE's) 2009 Design Quality Indicators (DQI), it is possible to measure the efficacy of uplifting residential design according to the functionality, impact, and build quality of a residential development. The incorporation of certain design elements ultimately improves the quality of life for low-income individuals and families.

In this paper I investigate whether requiring the designs of affordable housing developments to meet the DQI will allow the structure of the built environment to function to improve quality of life outcomes, implicating housing as an important mechanism for reducing urban inequality.

Highlighting the impact that investment in CABE's DQI can have on communities constructs a right to not only housing, but high-quality design. In identifying how these design-based interventions will enhance residential life, it is possible to determine a future of affordable housing development that aims to disrupt and mitigate the effects of inequality through design. In comparing affordable housing developments distinguished by the American Institute of Architecture (AIA) with other developments with enhanced design elements, I have created a set of suggestions based on successful residential developments. Analysis of such developments reveal the need for design to be considered in the financing and development of affordable housing.

Part II: Background

Residential Realities: The Status of Low-Income and Affordable Housing

Types of Affordable Housing Development

Affordable housing developments can take several forms. Newly built housing developments can be planned specifically to provide affordable housing, or existing and already-affordable housing units, which are not renovated or converted, can be maintained and conserved to remain affordable. Additionally, existing housing units can be renovated or converted to become affordable, or a mixed-income development can provide newly built affordable housing units, either as individual houses or apartments. Specialized types of affordable housing exist as well, co-housing entails common areas with separate bedrooms and transitional housing provides temporary shelter for disenfranchised groups and may also involve a shared space or inclusion of social or supportive services nearby or on site. Lastly, categorical housing is designed to support specific groups of people such as seniors, the disabled, victims of domestic violence, those living with specific illnesses and other social groups.

The variety of housing types relates to the evolving process of determining how to house vulnerable populations. Effectively, none of these types of development can individually meet the demand for affordable housing, and at present such a categorical approach is failing to provide housing for individuals and families throughout the nation. It is necessary that the form of affordable housing development be reconsidered and adjusted to better meet the demand for affordable housing as well as provide adequate care to those in need of specialized services.

Approaches to Affordable Housing Development

Historically, the design of affordable housing developments relates to the pattern of failure of architectural intervention in social problems. Take for example how the decrepit status of the Jordan Downs development in Watts, Los Angeles symbolizes the deficiency of architectural design. However, Katharine G. Bristol in “The Pruitt-Igoe Myth” offers a different understanding of design’s contribution to the failure of affordable housing projects, one in which design is seen in context with other urban elements. Bristol explains that “by placing the responsibility for the failure of public housing on designers, the myth shifts attention from the institutional or structural sources of public housing problems,” (Bristol, 1991, pg. 1). Industrializing cities faced serious housing shortages and economic deprivation, and the Jordan Downs complex was situated in an urban landscape dominated by gang warfare, the crack cocaine epidemic, and environmental hazards. With this in mind, it is understandable how the design of one residential community was unable to disrupt systemic poverty for its residents. It is true that issues like urban poverty and inequality cannot be solved purely through design in the built environment, there is a need for institutional support in policy, financial regulation, and economic intervention to aid what has been historically referred to as “urban blight.”

The status of the affordable housing stock is highly influenced by the fact that beyond adjustment to the structure of federal housing programs, there has been no significant investment in new housing that is affordable to the lowest-income population in more than 30 years (National Low Income Housing Coalition, 2016). Section 8 programs marked the end of investment in the populations with the largest housing affordability burdens, the National Low Income Housing Coalition (NLIHC) studies’ show that the federal investment in housing has not increased at same rate as the overall increase in the federal budget, and expenditures on housing

go overwhelmingly to homeownership, not to rental housing for people with the greatest need (NLIHC, 2016). Disinvestment impacts the structure of affordable housing financing and prevents the actualization of projects for the most burdened population and influences the outcome of those which are constructed. The result is simply inadequate affordable housing provision. Public programs have never provided more than 5 percent of total U.S. Housing production (Wright, 2014). Architecture and design quality are crucial elements to achieving good and affordable housing, yet they usually play a minor role in deliberations concerning cost and value (Davis, 1995, Wright, 2014). Good-quality design is too often considered an expensive amenity and is usually one of the first components eliminated from projects in an effort to reduce costs. However, if investors conceived of design as an investment in both quality of life and the performance of the building, they might reconsider including enhanced design elements to produce housing that uplifts and empowers its residents.

State and Local Housing Programs

The devolution of authority in the 1970s provided more agency and responsibility to local governments to determine planning decisions and housing programs. In 1981, the U.S. Government Accountability Office (GAO) reported that HUD suffered from “high costs, program weaknesses, and possible fraud in the program,” (U.S. Government Accountability Office 1981, pg. i). The GAO’s report exposed the weaknesses of the public housing program, and major cuts to HUD funding for low-income housing followed. The drastic reduction necessitated an alternative source of funding for affordable housing production and therefore, justified a policy shift towards engaging the private sector in low-income housing production and management. As a result, policies promoting and incentivizing public-private partnerships are responsible for addressing the lack of affordable housing, government disinvestment, and a failing public housing system. Today, public-private financing systems typify affordable housing development financing approaches.

In comparison, localized rental assistance programs and housing development programs (often called housing trust funds) have the goal of meeting local housing needs that are a result of the gap in federal housing production and rental assistance. Local funding sources can target

specific income groups or other groups of people with definitive needs and can, therefore, provide more precise care through specific levy or bond measures and real estate transaction. However, local and/or statewide initiatives often fail due to federal disinvestment in affordable housing. So long as local and statewide affordable housing initiatives are dependent on federal contributions, localized and community-based development cannot succeed in meeting the demand for affordable housing.

Developing at the Local Level

At present, the expense of producing and operating affordable housing for low-income renters is further complicated by lack of financial resources. Even those with the specific intent of developing affordable housing, such as Public Housing Authorities (PHAs) who redevelop their housing stock, are forced to combine sources of funding to develop or preserve affordable housing. The sources of this funding usually come from local, state, or federal provisions but can also include private lending, grants, or a donation. Additionally, funding is often attached to requirements regarding income or population targeting as well as oversight requirements, environmental standards or goals, historic preservation, and transit-oriented development. The complexity of finding and securing sources of funding contribute to economic pressures that cause developers to include market-rate housing options in their development as a way to generate revenue. The goal is to cross-subsidize units set aside for lower-income tenants, but it must be considered whether this is entirely necessary. If acquiring funding can become a more secure and consistent process at both local and federal levels, market-based imperatives cannot dictate the status of affordable housing projects.

The Future of Affordable Housing

Historical disinvestment in affordable housing and the current housing crises is evidence of the need for affordable housing in general, but also the particular need for investment in housing for the lowest income population. The Urban Institute found in their study, “The Housing Affordability Gap for Extremely Low-Income Renters” that, nationwide, there are only 28 adequate and affordable units available for every 100 renter households with incomes at or

below 30 percent of the AMI (2014). This is because the number of existing affordable rental housing continues to decrease due to deterioration and withdrawal of private funds and owners from the affordable housing market. According to the National Housing Trust Inc., the United States loses two affordable apartments each year for every one that is created (2014). Since the majority of federal programs are appropriated, their funding levels not only change from year to year but also cease to exist. At present, federal housing assistance only serves a quarter of those who qualify for it (Urban Institute, 2014). What may seem like a localized issue, is actually a result of the status of federal housing provision.

State and local programs face similar issues as they too are dependent on volatile sources of funding such as revenue from fees or other market-driven sources. The future of affordable housing must ameliorate the issues caused by failing policy, assure the restoration of and maintenance of current units, and establish market stabilization for the future of affordable housing. To begin to further introduce solutions for the affordable housing market, it is first necessary to situate the conversation with respect to Los Angeles.

Affordable Housing In Los Angeles

Historical federal disinvestment coupled with localized restrictive zoning and permitting processes have impeded apartment construction and, therefore, had huge influences on housing affordability in Los Angeles. The high levels of architectural residential development, much of it low-slung and single family, prevents infill development from providing dense, multi-family apartment buildings. Still, homeownership rates in Los Angeles and Orange County are among the lowest in the country at about fifty percent (Gatto, 2017). Perhaps this is because the *LA Times* estimate that the median home is valued at over \$550,000 in the city of Los Angeles, that is more than three times higher than the national median (Khouri, 2017). Home prices in Los Angeles have risen ninety seven percent since 2000 according to a new report from Harvard University's Joint Center for Housing Studies (2017). The Harvard study also reports that only twelve percent of renters can afford to purchase a home (The State of the Nation's Housing 2017 | Joint Center for Housing Studies, Harvard University, n.d.). Additionally, there simply is not enough housing being constructed which contributes to the especially significant shortage of

housing for low and middle-income earners (Chiland, 2018). Due to the level of unaffordability in the city, current financing structures cannot adequately address the demand for affordable housing in Los Angeles. According to the LA Times, subsidies for affordable housing average around \$357,000 per unit (Gatto, 2017). Subsidizing affordable housing needs for Los Angeles for just one year is estimated to consume the entire state budget (Gatto, 2017). Acknowledging the degree to which affordable housing development has been stifled reveals the extreme need for investment in affordable housing in Los Angeles.

Need For Affordable Housing

The consensus among real estate experts in Los Angeles is that there is simply not enough homes being constructed to keep up with the growing population. Even though Los Angeles is the nation's second-largest city, a 2017 Harvard study found it had the fifth highest-rate of construction last year (The State of the Nation's Housing 2017 | Joint Center for Housing Studies, Harvard University n.d.). In 2016, Los Angeles generated 32,100 building permits, following behind Dallas (55,800), Houston (44,700), New York (43,200) and Atlanta (36,400) (Ibid). Low levels of construction are particularly problematic because Los Angeles has the nation's largest chronically homeless population- 13,000 people, according to the U.S. Department of Housing and Urban Development (2016). Ninety five percent of those individuals live outdoors in cars, tents, and encampments (HUD.Gov / U.S. Department of Housing and Urban Development (HUD)2016).

Additionally, a recent report from the U.S. Department of Housing and Urban Development estimated that roughly 567,000 people living in Los Angeles are in danger of falling into homelessness (Worse Case Housing Needs 2017 Report to Congress, HUD 2017). The report notes that these renters have "worst case needs," meaning that they qualify for public housing or rental assistance but will not necessarily be able to receive those benefits. Additionally, the Section 8 Voucher program, although became available in 2017 for the first time in 13 years, supplies only 20,000 vouchers to the over 600,000 expected applicants of the estimated 800,000 people who qualify (Smith, 2017). The lack of vouchers is particularly problematic because the program stands to be one of the few ways to guarantee affordable

housing that can disrupt the pattern of economic segregation of affordable housing development. KPCC Radio found that publicly-funded affordable housing developments in Los Angeles County have overwhelmingly been built in L.A.'s very poorest neighborhoods (Palta and Mendelson, 2017). Evidently, the demand for affordable housing is high. However, to adequately address both the housing and social needs of residents of Los Angeles, uplifting designs must come in tandem with construction.

There are several indicators which trigger the need for a different kind of provision of affordable housing. In Los Angeles, rising rents and stagnating incomes mean a higher demand for affordable housing in general. Additionally, a high chronically homeless population suggests that the most-burdened populations are not having many of their needs met. Effectively, high-quality residential design is a part of the solution for these issues, as it can help to promote investment in affordable housing in general as well as provide holistic healthcare. As previously mentioned, design has not been utilized in this way in the past development of affordable housing, which makes many weary about attempting to solve the housing crisis with this approach. However, as the case studies evaluated in this research demonstrate, attention to certain design elements can reduce costs while providing tangible benefits to vulnerable populations, signalling the need investment in affordable housing. Overall, design matters to the future of affordable housing because it is a strategic attempt to win tangible improvements in people's lives while promoting the investment in the provision of affordable housing, most development patterns hold these two qualities as mutually exclusive. It is often difficult to invest in vulnerable communities without gentrification and ultimately displacement, however investing in high-quality residential design of affordable housing developments allow for resources to be accessible to vulnerable populations and catalyzes further high-quality development of affordable housing due to cost reductions and increased quality of life outcomes.

Part III: Literature Review

Benefits of Design in Affordable Housing

The benefits of design for residential developments can be measured and evaluated according to the Design Quality Indicators (DQI). With respect to functionality, impact and build quality, residential design can improve the lives of its constituents. According to CABE:

Functionality is concerned with the way in which the building is designed to be useful and is split into use, access, and space. Build quality relates to the performance of a building fabric and is split into performance, engineering, and construction. Impact refers to the building's ability to create a sense of place, and to have a positive effect on the local community and environment. It is split into character and innovation, form and materials, internal environment and urban and social integration (Be Valuable – A Guide to Creating Value in the Built Environment, 2015, pg. 18)

DQI present a way to create a standardized design process that is still flexible and customizable. In this way, its an especially significant evaluation mechanism because current design process are failing to produce innovative and high-quality design elements. therefore, by illustrating the efficacy of DQI in the following paragraphs, the use of DQI will be legitimized and can then inform design in the future development of affordable housing in Los Angeles.

Functionality: Use, Access and Space

The famous design guideline, “form (ever) follows function,” is attributed to architect Louis Henry Sullivan and is a key principle of 20th century modernist architecture and industrial design (Sullivan, 1896). The maxim explains that the shape of a building or object should primarily relate to its intended function or purpose. In this way, a building's form can function to promote certain uses or behaviors within the building's spaces, and therefore, can be used to positively affect quality of life. For example, research shows that our common spaces have the potential to strengthen community bonds and expose people to difference (Wessel, 2009). Even indirect passive social interactions can foster a sense of belonging, making the provision of space a highly important element in housing (Gehl, 2015). Additionally, a building can function to promote democratic participation (Parkinson, 2012) and entrepreneurship (GRAFT, 2016), foster community (Gehl, 2015), as well as connect individuals to institutions (GRAFT, 2016). The

general point is that certain kinds of space encourage encounters while others do not (Gieryn, 2000, Sennett, 2002). Hyra (2015) introduces the benefits of having flexible spaces which can function according to need: “neutral spaces provide a place for people of different backgrounds to feel empowered and comfortable speaking about difference,” (pg. 2, 2015). When people feel connected to the place they live, they police themselves and reduce the need for militarization of vulnerable spaces by police (Barton, Samuels and Judd, 2005). Just as spaces promote certain behaviors, lack of attention to space can have the opposite results. The three social factors most often cited in the literature as major contributors to crime in and around public housing sites are a low degree of social organization, minimal social cohesion, and weak informal social controls (Huth, 1981).

Beyond the social implications of attention to space, there are direct economic benefits to housing vulnerable populations in developments which provide direct access to services or spaces otherwise unavailable or inaccessible. Dohler, Bailey, Rice, and Katch (2016) found that supportive services can help vulnerable people live and thrive in their communities due to housing stability and improved health outcomes; these improvements come while reducing the cost of caring for vulnerable populations. The Los Angeles Homeless Services Authority found that in 2009, the typical public cost for residents in supportive housing is \$610 a month. The typical public cost for similar homeless persons is \$2,897, five-times greater than their counterparts that are housed. The finding demonstrates that practical, tangible public benefits result from providing supportive housing to homeless individuals. The stabilizing effect of housing that provides supportive care is demonstrated by a 79 percent reduction in the public cost for these residents. Overall, residential developments with supportive services improve housing stability and health, and reduce use of emergency health services (Dohler et al., 2016).

Impact: Character and Innovation, Form and Materials, Internal Environment, Urban and Social Integration

The impact that a building has on its residents can be an important and significant mitigator of urban inequalities. Sandel, Sheward, Ettinger de Cuba, Coleman, Frank, Chilton, Black, Heeren, Pasquariello, Casey Ochoa and Cutts, found that housing instability, can affect

the mental and physical health of family members of all ages (2018). therefore, the internal environment is of utmost importance to reducing stressors and other burdens that are a result of housing instability. A concerted effort to empower residents through the internal environment signifies the right to high-quality design and can be achieved through the implementation of on-site supportive services. Partnerships between health centers and supportive housing providers employing a “Housing First” approach have shown reductions in emergency department utilizations, inpatient hospital stays, and costs to the health system, increased use of preventative primary and behavioral health care as well as high rates of housing retention (“Housing Is the Best Medicine: Supportive Housing and the Social Determinants of Health : CSH” 2014).

Daniel Garrett in “The Business Case for Ending Homelessness: Having a Home Improves Health, Reduces Healthcare Utilization and Costs” explains that, “Homelessness and healthcare are intimately interwoven. Poor health is both a cause and a result of homelessness,” (Garrett, 2012). The National Healthcare for the Homeless Council estimates that 70% of Healthcare for the Homeless clients do not have health insurance (2008). Innovative housing, such as those which integrate supportive services, is healthcare. high-quality and eco-friendly materials tend to produce better health outcomes and are more sustainable, increasing the performance of the building. Ending homelessness through housing improves the health of community members, the fiscal well-being of healthcare systems, and the quality of life for vulnerable communities (Garret 2012, CSH 2014, and NHHC 2008).

Although character and innovation can be subjective, they relate to the way a building can impact both its residents and the surrounding neighborhood. Buildings impact the future of its residents through urban and social integration, often achieved through maintaining neighborhood character. However, there is a balance between promoting integration through architectural cohesion and disrupting place-based inequalities through innovative design. Historical stigmatization of residents in affordable housing developments can be squandered through innovative design, yet for the same reason, also pose the risk of alienation. therefore, it is important to consider whether neighborhood cohesion and integration can be achieved through

an innovative design practice, instead promoting integration and cohesion through provision of public services and amenities.

Build Quality: Performance, Engineering, Construction

This evaluation of the performance of a building largely pertains to cost reduction and sustainability (CABE, 2006). Sustainable features reduce energy use and emissions, creating a more sustainable and healthy living environment. Attention to engineering and construction processes can make a building have a longer lifetime and require less maintenance, reducing costs for construction and occupancy. Engineering process considered at the planning level assure a participatory process that empowers residents. Attentive planning can yield a more livable and convenient arrangement of spaces and well-conceived details can create a sense of specialness that truly makes housing a home (Schmitz, 2005). Additionally,

investment in good masterplanning, systematic regulation (but not total standardisation) of building design and the strategic placing of urban spaces can produce both enduring use values and lasting streams of profits, rents and capital value growth for owners (Summerson, 1978).

For example, engineering can provide the base for flexible growth patterns. Modular add-ons allow for architectural diversity and flexible, but planned, densification. Effectively, details like engineering and construction processes can have a much more profound contribution than aesthetics.

Need For Design

There is an undeniable connection between the shape of cities and the shape of society, and in that way, design-based interventions need to be considered seriously in their attempt to solve urban issues in conjunction with policy, planning, and localized supportive services. However, good design may be the most viable strategy currently available to improve the quality, asset value, and acceptance of affordable housing (Evans, 2014). This is because the funds available for housing development are not likely to rise, land acquisition and construction costs are not likely to fall and regulations restricting the development of affordable housing are not likely to become less burdensome. So in the face of such constraints, attention to design can

be one way of improving the overall quantity and quality of affordable housing in the United States (Ibid).

Design is an important aspect for improving the acceptance of public and social-welfare programs and policy. Angela Glover Blackwell uses the example of the “curb-cut effect” to explain how laws and programs designed to benefit vulnerable groups end up benefiting all of society (2017). She explains how curb cuts, which allowed greater sidewalk accessibility to disabled residents, represent the promotion of equitable and fair conditions so that everyone can “participate, prosper, and reach his or her full potential” and illustrates the “outsized benefits that accrue to everyone from policies and investments designed to achieve equity” (Glover Blackwell, 2017). Glover Blackwell contends how policymakers tend to overlook the ways in which focusing on one group might help all groups (2017). Design interventions are critical mechanisms to support and connect affordable housing with other issues such as employment, urban revitalization, education, historic preservation and health care (Wright, 2014). In this respect, affordable housing with enhanced design elements must be considered a part of an investment in equitable infrastructure.

CABE in “The Value Handbook: Getting the most from your buildings and spaces” explains the implications of well-designed housing (2006). They find that residential communities with enhanced design elements that promote positive social interaction can “reinforce social identity and pride in an area, and encourage social inclusion,” (CABE, 2006, pg. 40). This is particularly valuable for disenfranchised groups who face de facto or de jure segregation, social isolation and/or stigmatization. A strong sense of social identity and a communal connection is very important to groups in transitional housing who seek services and support mechanisms in their transition back to society. CABE contends that “improved health, wealth, morale, goodwill and self-esteem” are often a result of a design which fosters social identity and inclusion (CABE, 2006, pg. 40). It's not hard to surmise that a strong social identity can translate into a larger sense of belonging. Design can help address community concerns regarding jobs and economic development, mixed-use commercial and retail spaces provide the possibility for small-scale workshops, job training, youth programs and opportunities for startups when physically and socially integrated into residential space (Wright, 2014). These factors are

important to supporting historically disenfranchised or marginalized groups become more self-sufficient and better connected to formal institutions, ultimately aiding in social integration. In these ways, design does more than just provide a dignified living environment, but actually contributes substantive change for vulnerable groups. therefore, it is important to identify the barriers to financing and implementing high-quality design.

Financing High-Quality Residential Design

Barriers to Realizing Enhanced Design Value

Stakeholder Influence

In general, the public sector has had a diminishing role in the provision of buildings and public spaces, effectively establishing a larger role for the private sector in development processes. Many attempts to define the value of “good” urban design, therefore, align definitions with the interests and decision-making logic of the private sector. Simmons (2012) argues that the structure of residential development and construction industry encourages builders, owners, and users to primarily think about their own requirements, with little consideration given to the wider urban environment, despite the fact that buildings are inherently ingrained in public spaces such as communities and neighborhoods at large. This precedent however, does not preclude the consideration of design. Sir John Bourn, Comptroller and auditor general National Audit Office in the UK contends that,

Good design is essential for achieving value for money in construction. But this is not just about buildings being completed on time and within budget; it is also concerned with ensuring that the costs of operating buildings over their whole life are optimised and that those who use and work in public buildings gain real value from them. In this way buildings can make a major contribution to improving public services (CABE, 2002).

Still, stakeholder influence is a key aspect preventing the proliferation of affordable housing; developers and investors have certain priorities, namely revenue, that would prevent them from realizing the value of an enhanced design. Scale is one of the crucial elements that determine the number of affordable housing units made available. Often, affordable housing in large developments is only made possible because of the revenue from market-rate and luxury units. In

this way, it's difficult to assure a significant number of affordable units, nevermind in a building with an enhanced design that may have higher construction costs.

However, CABE (2006) emphasize how key stakeholders are increasingly valuing urban design and its perceived dividends and provides a table which categorizes stakeholder interest in urban design.^[1] Although interest in design is usually regarding the economic benefit, determining stakeholder interest in urban design is an important process in removing the barriers in investment and to development patterns. Community interests may differ from private interests such as funders, investors, and developers, often amenity groups or local communities are highly concerned with an enhanced urban design but often prefer no development at all for reasons such as the contribution to further displacement (CABE, 2002). therefore, translating the competitive advantage of the quality urban design is one method that can be employed to discern interest by key stakeholders in investing in enhanced design.

Although some of the benefits of a well-designed built environment can be measured, there are certain social or environmental goals that cannot be measured with respect to the levels of investment used to achieve such goals. There are often other factors which are not considered in the terms of the long-term profitability of certain areas or developments. Street life in general, as well as in commercial areas, can be more flexible to changing needs of users or markets, providing a more flexible economic basis. The popularity of a street, for example, could enhance the value of a building in general; the integration of this marketplace into a development can provide more flexible and dynamic streams of revenue or even just increase neighborhood popularity. Short term funders of such projects may only be concerned with a better urban design if a higher risk is balanced by a higher return, but investors, who consider the long-term, might find that if a market exists, and if design adds to profits and reduces costs over time, investment in design can be lucrative or in the least beneficial to the performance of the building and quality of life of the residents.

Challenges of Implementing High-Quality Design

Discrepancies in Measurement Mechanisms

Determining value within the context of a market-based economy means relating the value of a commodity as consisting of its use-value, exchange-value, and its price (CABE, 2001). Macmillan (2006) and Brown (2013) have identified additional value types such as image value, social value, environmental value and cultural value which Brown (2013) contends may be less measurable with similar levels of objectivity. Ralph Horne in *Placing a Value on Good Design for Cities: Evidence and Prospects* provides a table which illustrates which elements and outcomes are typically measured or valued with respect to design in the built environment.^[2] Horne's findings show that typically, elements relating to economic circumstances such as private costs, property values, rent/capacity value are measured much more frequently than elements such as connectivity and accessibility (2014). However, much of what Horne reports is rarely or never measured, like stress, quality of life, equity, sense of place, and more, can be evaluated and measured using the DQI (2014).

Typically, approaches to measure enhanced design occurs according to three values, economic viability, social benefit and environmental support. Although there are other approaches to measuring enhanced design, the Triple Bottom Line (TBL) theory covers a majority of both motivations as well as barriers to realizing the value of design as it relates to social, environmental and economic values. CABE 2001 provides an analytical framework to assess and measure the value of good urban design that aligns with the TBL theory.^[3] Additionally, CABE has created 10 design principles for Nationally Significant Infrastructure project which take into account concerns of communities and stakeholders, geographical context, and have the goal of mitigating inequality or in the least providing better outcomes than current circumstances. The 10 design principles reveal a holistic planning and construction process which constitutes both an approach to and an outcome of better design. Additionally, CABE has created DQI which provide a measurement mechanism that combines an objective analysis of architectural development's qualities with social values of affordable housing developments (CABE, 2009).

Part IV: Methodology

Research Question

I used document analysis, site visits, and interviews with urban designers, architects and developers to answer my research question: **What is the significance of enhanced residential design and what is its place in the development of affordable housing in Los Angeles in the future?** Case studies of existing developments were used to answer my research question by using the DQI evaluation mechanism to prove the efficacy of design choices, innovative engineering and construction practices, as well as participatory planning processes. Together, I integrated expert opinion with a studied and tested evaluation mechanism (DQI) to compare four examples of enhanced residential design to create a set of recommendations for the development of affordable housing in Los Angeles in the future.

Participants

Case Studies

The case studies were chosen by geographic location, within Los Angeles County, and were chosen because of the inclusion or centralization of an enhanced design in its development with respect to aforementioned DQI. All of the case studies were developed by the Skid Row Housing Trust, a non-profit organization which consistently prioritizes design and providing healthcare services to the residents of their developments. Buildings that received an AIA/HUD Secretary's Awards were considered as they legitimized the selection of case studies. To be qualified for this award, projects must include traditional housing elements and must serve low- or mixed-income occupants and users. Additionally,

all projects must demonstrate design excellence, including sustainability, affordability, innovation, integration of natural and built contexts, and satisfaction of specific client needs, (AIA/HUD Secretary's Awards - AIA Dates Accessed: December, 12th 2017). I compared two award winning projects with two non-award winning developments that were considered to prioritize high-quality design and analyzed them according to the DQI. To

determine the enhanced design aspects within the developments, I assessed the architect's intention and used DQI to isolate several architectural indicators that constitute an enhanced design element. From that analysis, I created individual DQI evaluations as well as provided a comparative evaluation of all the developments. The significance of evaluating highly innovative developments was to present substantive findings on the efficacy of design based-interventions. Overall, the evaluation was somewhat subjective as it had not been utilized for residential developments before. However, the DQI directly relate to architectural qualities, like form and functionality, as well as relate to outcomes such as accessibility and impact. In this way, the DQI evaluation was derived from direct observation of case studies through document analysis and site visits as well as interpretation of interviews of the architect of the development.

Interview Participants

The majority of the interview participants were chosen because they are the architects of the case studies. Additionally, two interview participants are developers of affordable housing in Los Angeles. One interview participant is multi-disciplinary professional who works in the field of urban design. I coded the interviews with urban design professionals to determine firstly, the main barriers to affordable housing development, secondly, how to prioritize the implementation of high-quality design elements, and thirdly, suggestions for development of affordable housing with high-quality design in the future. Additionally, the interviews provided an examination of Los Angeles housing inequities and gauged the influence that urban design professionals conceive that they have in preventing and/or reproducing inequality. This kind of evaluation informed the recommendations for an improved design processes and inclusion of certain design elements.

Table 1: Interview Participants Summary

Name	Title	Employer	Date of Interview
Jim Sarratori	Board of Directors	Open Architecture Collaborative	11/11/17
Angie Brooks	Co-Founder, Lead Architect	Brooks + Scarpa	1/11/18
Wade Killefer	Co-Founder, Lead Architect	Killefer Flammang Architects	2/19/18
Matthew Lust, Cindy Kha	Senior Project Manager and Assistant Project Manager of Economic and Housing Development Unit	Community Development Commission of the County of LA	2/23/18

Design and Procedure

The Design Quality Indicators (DQI), created by the Construction Industry Council in 1999, was used to assess the developments. The DQI identify the attributes of buildings that constitute high-quality designs through three categories: functionality, impact and build quality. The benefits of this measurement system are that the DQI can be used by all stakeholders, including public and private clients, developments, financiers, design firms, contractors, building managers, and occupants. To measure the extent to which the developments meet the indicators, I ranked the design elements on a scale of 1 to 3 with respect to each other: (1) being satisfied the DQI minimally, or not at all; (2) meaning satisfies the DQI on par with that of the other developments; (3) meaning an exemplary or innovative satisfaction of DQI.

Inclusion of on-site supportive and social services were be considered towards the impact of the building as well as a case by case review of aspects which might promote accessibility, mobility, wealth generation, connectivity, integration with the community, and preservation as these are all qualities important to uplifting and empowering vulnerable populations. It was also worth considering whether the design process was participatory, and in that way a better reflection of community needs. Lastly, sustainable features (circulation of light and air, LEED certification, Energy Star utilities, resource management) and other environmentally conscious

engineering and construction choices were considered a part of the build quality. Overall the DQI represent an attempt to measure both social, economic, and environmental sustainability.

Case Study Introduction and Background

In order to begin to further introduce my research and its findings, it is necessary to demonstrate the ways in which affordable housing with enhanced residential design contributes to the wellbeing of its constituents and promotes investment in the affordable housing sector of housing development. therefore, my research centered on four case studies with enhanced residential design as a basis for utilizing design to promote investment in affordable housing. The case studies were chosen based on the inclusion of distinguished design elements and location within the city of Los Angeles. Each case study was analyzed with respect to the DQI and interviews from the architects. Two of the developments have received rewards from the AIA and two have received no award from the AIA (although, they have been distinguished for their high-quality design). The findings garnered from interviews, site visits and document analysis, found below, will be used to determine the elements of high-quality design most important to the construction of affordable housing developments in the future.

AIA Recipients: Star Apartments and The Six Overview

The Six

The Six, completed in 2016 and designed by Brooks + Scarpa, provides 52-units for veterans who are disabled and/were previously homeless in the Westlake neighborhood of Los Angeles. The name originates from the ubiquitous military expression ‘I got your six,” meaning, I’ve got your back. The approach to healing the target population is uniquely integrative. Healing is accomplished through both the form of and services provided by the development.

Star Apartments

The Star Apartments are a permanent supportive housing complex in the Skid Row neighborhood of Los Angeles. The 100-unit development was completed in 2013 by Michael Maltzan Architecture. It is a nationally recognized model studied by local governments and organizations grappling with the root causes of homelessness. Its design is predicated on creating health, wellness and community revitalization.

NO AIA Award: New Genesis and New Pershing Apartments Overview

New Genesis Apartments

The New Genesis Apartments is a permanent supportive housing complex that includes 106 units for individuals who were recently homeless as well as affordable housing units for low-income individuals in the Skid Row neighborhood. The mixed-income, mixed-use redevelopment was completed in 2012 by Killefer Flammang Architects. Supportive housing units are subsidized by the Department of Housing and Urban Development's Housing Choice Voucher Program, with residents paying no more than 30 percent of their monthly income in rent. Applicants for the remaining units, which are priced to be affordable but not subsidized by outside sources, must meet specific income-level requirements.

New Pershing Apartments

The New Pershing Apartments utilizes innovative design to promote a healthy living environment for homeless and low-income individuals in the Skid Row neighborhood. Completed in 2015 by Killefer Flammang Architects, the mixed-use redevelopment project provides housing to 69 units to low-income earners, seniors and other special need groups.

Image 1: Case Study Location Map

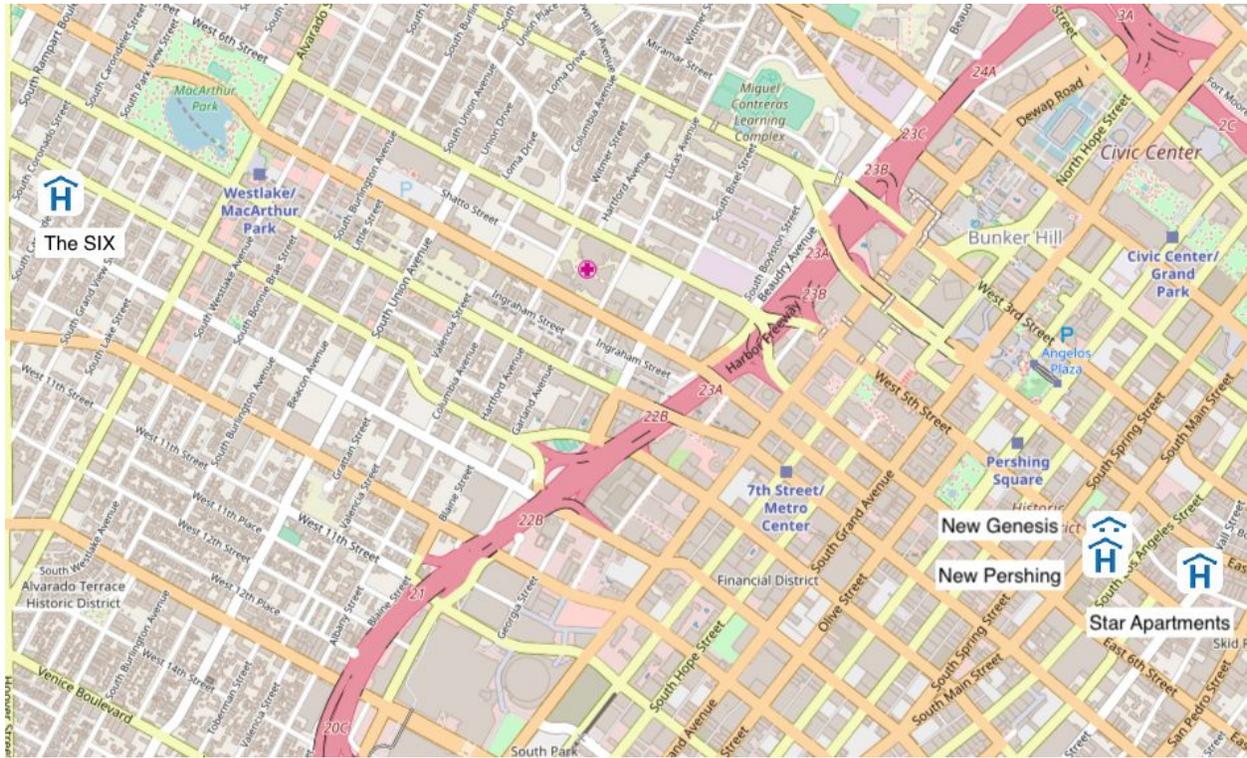


Table 2: Case Study Summary

Apartments	Star Apartments	The Six	New Genesis	New Pershing
Architect	Michael Maltzan Architecture, Inc.	Brooks + Scarpa Architects	Killefer Flammang Architects	Killefer Flammang Architects
Developer	Skid Row Housing Trust	Skid Row Housing Trust	Skid Row Housing Trust	Skid Row Housing Trust
Year Completed	2013	2016	2012	2015
Location	240 E. 6th St. 90013	811 S. Carondelet St. 90057	456 S. Main St. 90013	108 E. 5th St. 90013
Units	100	52	106	69
Model	Permanent supportive housing, space for supportive services, clinic operated by LA DHS, DHS's Housing for Health Division	Permanent supportive housing, supportive services, 24/7 property management	On-site health clinic, mixed-use: supportive services office, commercial space, affordable multi-family rental	SRO, affordable housing, Senior and Special Needs Housing, Historic Adaptive Reuse, commercial space
Award(s)	LEED for Homes Platinum AIA Design Awards Recipient 2015, MCHAP Finalist 2014-2015 U.S Green Building Council "Outstanding Affordable Project" 2015 TIME "25 Best Inventions of 2015"	LEED for Homes Platinum AIA 2017 Housing Awards, <i>category: Specialized Housing (category 4)</i> 2017 AIA LA Cote Awards <i>Honor</i>	LEED for Homes Platinum	LEED for Homes GOLD Homes Within Reach Award, The Southern California Association of NonProfit Housing (SCANPH)

Part V: Findings and Analysis

Case Study Evaluation Summary

The four case studies were evaluated with respect to CABE's DQI: functionality, impact, build quality. Whether the building's design elements met the DQI was determined by case study analysis, including site visit, interviews, and document analysis. Successful design elements that fulfill one or more DQI are legitimized by the demonstrated influence on residential life. A comparative analysis allows for the effectiveness of certain design choices to be evaluated and introduces a standard for meeting the DQI. All of the case studies demonstrate high-quality design, therefore, an assigned value between 1 and 3 is used to convey the degree to which the design elements comparatively fulfill the various DQI. The outer ring of the graph signifies a value of three, so the larger the area, the more the development met the DQI. *Figure 1* shows the comparative fulfillment of the DQI and *Figures 2-5* show the individual development's fulfillment of the DQI. *Table 3* shows the numerical totals of the DQI fulfillment, a detailed explanation of the DQI is included below.

Figure 1: DQI Evaluation of Case Studies

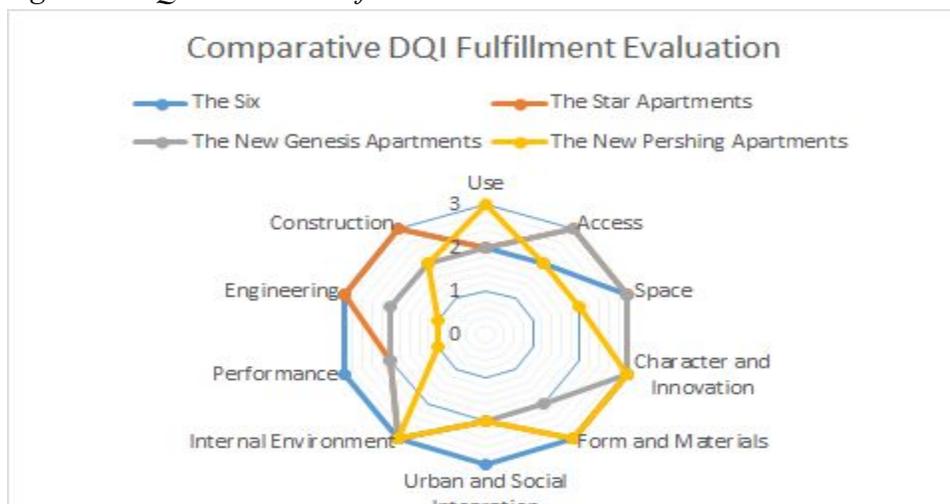


Figure 2 and 3: Individual DQI Evaluations

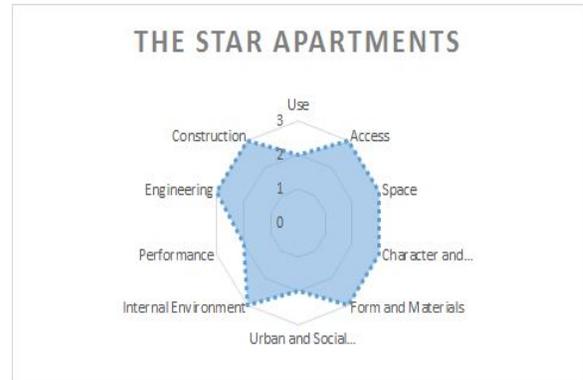
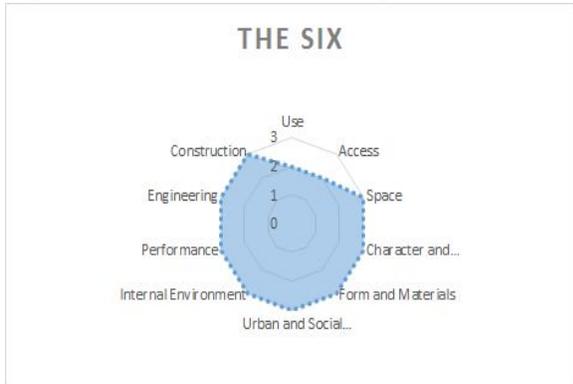


Figure 4 and 5: Individual DQI Evaluations

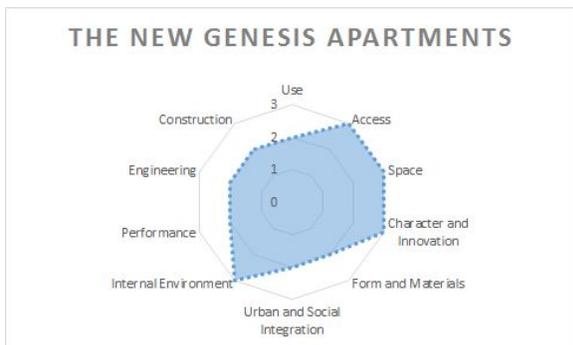


Table 3: Case Study Evaluation Findings Summary

	The Six	Star Apartments	New Genesis Apartments	New Pershing Apartments
Functionality (9)	7	8	8	7
Impact (12)	12	11	10	11
Build Quality (9)	9	8	6	4
TOTAL (30 possible)	28	27	24	22

DQI Evaluation Summary

Functionality

Functionality is concerned with the way in which the building is designed to be useful and is split into use, access, and space. (Be Valuable – A Guide to Creating Value in the Built Environment, 2015, 18).

The Star Apartments were considered to grant a higher level of access to supportive services due to the inclusion of the L.A. County Health Department and Housing for Health Division in the development. Additionally, both the Six and the Star Apartments had an exemplary use of space with respect to the creation of public and private space as well as because they are mixed-use models. The Exodus Recovery Clinic in the New Genesis Apartments is a significant resource that has proven to be beneficial to the residents. The Apartments are a mixed-use and supportive service model, providing access to an array of resources and services. Also, the space in the New Pershing Apartments is enhanced through the extent of historic preservation that is not found in the The Six, or the Star and New Genesis Apartments.

Impact

Impact refers to the building's ability to create a sense of place, and to have a positive effect on the local community and environment. It is split into character and innovation, form and materials, internal environment and urban and social integration (Be Valuable – A Guide to Creating Value in the Built Environment, 2015, 18).

Both the Star Apartments and The Six are highly innovative in form and therefore, have a distinct character. The use of engineering in the Six and construction in the Star ultimately bridged the benefits that the impact of the building had between the residents and the neighborhood at large. The form of the Six fosters urban and social integration while that of the Star Apartments does not. Additionally, elements of historic preservation in the Star Apartments provide architectural cohesion where the Six does not. However, the internal environment of both the Six and the Star Apartments are exemplary models of residential design that promote healing through more than the inclusion of on-site supportive services.

Architectural cohesion with the architecture of the neighborhood was a main factor defining the impact of New Genesis and New Pershing Apartments. They, however, have taken

two different approaches to neighborhood integration. The New Genesis Apartments purposely look like the surrounding market-rate apartments so that there is a kind of architectural cohesion. Wade Killefer of KFA mentioned that the New Genesis, “utilizes typical building typology... of the [historic] buildings around it...” meaning its form was intentionally un-innovative to assure an element of social and architectural cohesion between the development and the surrounding neighborhood (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018). Integration through architectural cohesion was also utilized for the New Pershing Apartments. Cultural preservation maintained the historic Victorian facade and preserved neighborhood character. The New Pershing Apartments focused on constructing improved facilities as opposed to investing in engineering a new space. The internal environment of the both of the apartments are on par with the quality of the other developments, although the Six and the Star Apartments have particular innovative engineering practices informing the impact of the internal environment.

Build Quality

Build quality relates to the performance of a building fabric and is split into to performance, engineering, and construction (Be Valuable – A Guide to Creating Value in the Built Environment, 2015, 18).

The performance of the Six is slightly more impressive than the Star and New Genesis Apartments although they all have received LEED Platinum status. High energy savings accomplished by the form of the Six is enhanced by high-quality and energy efficiency amenities and utilities. Although the engineering of the Six contributes to high-quality building performance as well social cohesion, the combination of historic preservation and prefabricated modular add ons in the Star Apartments are a particular innovative engineering practice. The construction of space in the Six promotes healing beyond the provision of supportive services, however, construction methodology in the Star Apartments is particularly innovative and ultimately beneficial to the performance of the building.

The performance of the New Genesis Apartments is more efficient than the New Pershing Apartments, particular construction details and planning processes result in higher energy performance. The engineering in the New Pershing apartments was not as significant as

in the other developments, certainly the extent of historic preservation prioritized construction practices as opposed to engineering processes. Additionally, the use of engineering to promote certain uses of space and use of eco-friendly materials in the New Genesis and New Pershing is tantamount to the other developments.

Case Study Analysis: Functionality

Use

The Six

The 40,250 square-foot building functions to promote certain uses. The use of space in the building creates public and private “zones” which deliberately provide a sense of security while also establishing community-oriented social spaces. *Although the creation of private and public zones do aid in the healing process of the target population, they also do so with other vulnerable populations. therefore, the diversity of uses afforded by the functionality of the building is similar to that of the other case studies and is assigned a value of (2).*

The Star

The base of the building was preserved during construction and now contains retail spaces, establishing a mixed-use model predicated on economic growth and also influenced by many health services. There is a Health and Wellness center on the second floor which includes a community kitchen, art rooms, running/walking track and space for supportive services. *The uses afforded by the functionality of the building are on par with the other case studies and are mostly concerned with the promotion of health-oriented spaces. therefore, the use of the Star Apartments is assigned a value of (2).*

New Genesis

The project transformed the former Genesis Hotel, a two-story, 30-unit single-room-occupancy property that was built in the 1920s. Now, 75 percent of the development houses people with a history of homelessness or chronic mental illness, and the remaining units provide affordable housing, including designated artists’ lofts. The most significant use afforded by the functionality is the promotion of social services and central courtyard area by design, meaning the design specifically promotes the use of such services. There is also a mixed-use

element, 2,400 sq ft of ground floor commercial space connect the community with Main Street corridor in Downtown Los Angeles. *The uses afforded by the functionality of the building is similar to that of other development in that it encourages healthy behavior and use of health services. therefore, use according to functionality is assigned a value of (2).*

New Pershing

The building itself is an adaptive reuse project. In that way the building itself could be considered a significant use-oriented design element. The building also includes 3,500 square feet of ground floor commercial space, constituting a mixed-use element. The building also promotes the use of public space with a central courtyard. *The extent of the adaptive reuse element of this projects makes the re-use of space and materials highly innovative, warranting a value of (3).*

Access

The Six

Born out of a cultural denominator, its name reflects how the building functions to serve the needs of its residents. Veterans make up three per cent of L.A.'s population, but account for 11 percent of the city's homeless demographic (DeZeen, 2017). The Six has on-site supportive services and 24-hour property managements on the ground floor. The ground level also contains offices, support spaces, bike storage, and parking while the second level open onto a large public courtyard. *The existence of on-site supportive services and property management is consistently present in the other case studies and therefore, the access afforded by the functionality of the Six is assigned a value of (2).*

The Star

The L.A County Health Department first storefront healthcare facility is located on site, a preventionsary action aimed at getting the residents as well as neighborhood locals adequate care and physical and psychological healthcare resources. It is also the headquarters for Department of Health Services' Housing for Health Division, a ground-breaking team committed to directing resources to housing. The existence of the Housing for Health Division existence in the residential development is a clear acknowledgement of housing as a critical determinant of health and the need for integrative supportive services. *The access to L.A. County Health*

Department and Housing for Health Division is a key resource made readily available to residents of the Star Apartments. Therefore, the accessibility afforded by the development warrants a value of (3).

New Genesis

Adjacent to the courtyard is the Exodus Recovery clinic which offers mental health and substance-abuse treatment services. Los Angeles Christian Health Centers also provides on-site medical care on a part-time basis. There Urban Land Institute asserts that there is a “focus on creative placemaking” in that affordable artists’ lofts are within walking distance of the largest concentration of museums, art galleries and theaters in the city of Los Angeles (New Genesis Apartments," ULI Case Studies, November 30, 2017, accessed March 31, 2018). Additionally, weekly art and meditation workshops and support group meetings are held in the building’s communal spaces. *The Exodus Recovery Clinic is one of the only health oriented spaces in the case studies which has had tangible improvements in health (explored further in the impact section). Additionally, the provision of supplemental care by the Los Angeles Christian Health Centers and array of other recreational services as well as commercial space makes a variety of healthcare improvements accessible. therefore, the access afforded by the functionality of the development is assigned a value of (3).*

New Pershing

Outdoor community space in the New Pershing Apartments feature a community garden; access to the garden’s fresh and healthy produce saves residents money and encourages food security. Additionally, on-site supportive services provide physical and mental health care. Of the 67 of the apartments, 52 of the units are supported by Section 8 funding, a federal rental subsidy. Overall, the services that are made accessible in the New Pershing apartments can be found in the other case studies. *The access afforded to the residents of the New Pershing apartments is similar to that of the other case studies, warranting an assigned value of (2).*

Space

The Six

The organization of the space is intended to transform the way the residents live, fostering community through interactive spaces that disrupt reclusive and isolating patterns of

behavior. The de-emphasis of private space, in favor of personal and group spaces, is a large component of the building's impact on the health of the residents. *The organization of space as a result of the functionality of the building is exemplary. The building functions to create a sense of place through innovative use of space, therefore, the space afforded by the functionality of the Six is assigned a value of (3).*

The Star

The Star Apartments is somewhat of an experiment with density, clustering residential units allowed for the creation of an expansive deck which includes gardens, a kitchen, a basketball court, and a peripheral jogging track. Most significantly, the on-site supportive services and resources define a healing residential space. Frequent users of health care services are however joined by neighbors who are simply looking for a less expensive place to live. Many of them reside in the five larger units or artist lofts. In this way, the mixed-use model fosters connections to formal institutions through promoting socio-economic diversity within a supportive residential community. *The mixed-income model and integration of many approaches to healing qualifies an innovative approach to the creation of space and therefore, warrants a value of (3).*

New Genesis

“We developed a variety of housing options for a diverse array of individuals using features that benefit all communities, including on-site health services, green space, and access to nearby transportation,” says Mike Alvidrez, chief executive officer of the Skid Row Housing Trust (ULI, Web Access 2018). Nearly all decisions about design and programming at New Genesis have been informed by a focus on creating safe and healthy spaces for those who have previously lacked housing. “We meet residents where they are with practices we know can achieve dramatic behavioral improvements,” notes Dana Trujillo, chief investment and finance officer at the Skid Row Housing Trust (ULI, Web Access 2018). *The space is the New Genesis Apartments is not profoundly different than that of the other developments, it meets with DQI to the same extent as the other developments which warrants an assigned value of (2).*

New Pershing

The transformation of the New Pershing apartments are quite significant in terms of the internal environment. The floors of the old structure were maze like and even had different

heights in the different buildings, connected through a series of staircases, Alvidrez stated that, “It looked like an Escher painting,” (Evans, 2013). Overall, the extent of historical preservation defines the kind of space which the building produces. Killefer Flamang’s concerted effort to preserve the outer facade, as well as interior elements such as handrails, window castings, wood planks, and more maintain the historical significance of the building. The space is transformed in this way, existing as tether between the past and future of affordable housing. *The construction of space in the New Pershing apartments is particularly symbolic, reflecting both the past and of affordable housing. therefore, the use and construction of space warrants an assigned value of (3).*

Case Study Analysis: Impact

Character and Innovation

The Six

Featuring small gardens, the patio is an example of the architects' aim to promote wellness through proximity to greenery. The green character is an innovative and alternative approach to healthcare not addressed by the supportive services. "Planting is strategically placed in the courtyard and the roof of the building so that everyone can view it and/or be adjacent to it at all times," said Brooks + Scarpa (DeZeen, 2017). *The Six is a highly recognizable and high-quality building in the MacArthur Park/Westlake neighborhoods. Its use of landscaping and overall form is a much needed and innovative building design for the lower- to middle-income neighborhood, warranting an assigned value of (3).*

The Star

The integration of social services, retail space, community recreational facilities and residential units constitutes a unique residential model. Additionally, Star Apartments is the first mixed-use residential project for formerly homeless individuals to employ a prefabricated construction method. The use of prefabricated units addresses the need for flexible, modular design. However, the historic preservation of the existing ground structure is an important integrative architectural precedent. *The character of the Star Apartments is unique and ultimately*

beneficial to the community. It is an innovative residential model that warrants a value of (3) due to the mixed-use and mixed-development practices.

New Genesis

There is evidence that the development has already produced positive health outcomes. A 2016 study by Exodus Recovery that tracked 83 New Genesis residents over a four-year span showed that emergency-room visits and hospitalization rates decreased significantly, and that incarcerations were eliminated entirely (New Genesis Apartments," ULI Case Studies, November 30, 2017, accessed March 31, 2018). The creation of housing for residents with a mix of incomes and the addition of ground-floor retail space constitutes a model for development that addresses housing access and affordability while also contributing to economic revitalization of a vulnerable section of Los Angeles (Vaillancourt, 2015). "Many of [the residents] expressed that they don't want to be identified as a 'Skid Row person,'" Alvidrez said. "They want to participate in a more diverse Downtown, which is what most other people who live in Downtown want," (Vaillancourt, 2015). *The impact of the Exodus Recovery clinic is profound and an essential component of the character of the New Genesis Apartments. therefore, the impact achieved by the clinic warrants a value of (3).*

New Pershing

The last of its kind in Downtown Los Angeles, the building's original Victorian facade was carefully preserved while the interior units were completely rebuilt. It is a model for historically preserved mix-used developments. *The character of the New Pershing Apartments is undeniable, it is particularly significant from a rhetorical standpoint in that history has a chance to be re-written while still preserved. therefore, the innovative historical preservation warrants an assigned value of (3).*

Form and Materials

The Six

The creation and use of space in The Six is deliberately healing. The apartments include balconies which provide a path for circulation and stack up in a "U" formation four levels above. This form maintains an element of visibility and consequentially a sense of security, but also utilizes landscaping to create privacy within public spaces. The formation also defines a central

open core. The volumetric form complements the site in that it utilizes to daylight, exposure to prevailing winds, and natural ventilation. Additionally, cellulose blown into the building's envelope provides insulation, while the white stucco across the exterior reflects light. *The form the building relates to the construction and engineering of space, its character, and defines its innovative design. Additionally, the use of eco-friendly materials enhances the impact of the form, warranting an assigned value of (3).*

The Star

The form of the apartments creates a contrast between spaciousness and compression, accentuating the virtues of both. The pre-fabrication method minimizes construction waste and contributes to the energy efficiency of the development. Permanent materials with lower impacts on human health and the environment were used as much as possible throughout the building process, according to the Skid Row Housing Trust ("Star Apartments." Skid Row Housing Trust. Accessed March 31, 2018). Star Apartments used low VOC (volatile organic compound) finishes to improve indoor air quality (Ibid). *The unique form that is a result of historic preservation and prefabrication benefits both the residents as well as the performance of the building, warranting an assigned value of (3).*

New Genesis

Permanent materials with lower impacts on human health and the environment were used as much as possible throughout the building process. Low VOC versions of products were used to improve air quality. The building components that were manufactured using recycled materials include the following: aluminum window framing, topping slab (fly ash), doors, and the insulation of the roof, floor, and wall. The building materials on the first floor in particular are meant to control the entrance of pests, concrete and masonry substituted wood which typically attracts pests such as insects and rodents. Building products that were fabricated locally include: aggregate for the foundation, doors, window framing and the gypsum board for the walls and ceilings. Moreover, light-colored, highly reflective materials were used to deflect the sun's heat, reducing the building's energy consumption and the air pollution associated with cooling systems ("New Genesis Apartments." Skid Row Housing Trust. Accessed March 31, 2018). Ultimately its outer facade mimics that of other market-rate apartments. Once inside, the ingenuity of form becomes clear. The open courtyard and exterior staircase provide highly

visible circulation tracks. *The form of the building is on par with that of other developments, prioritizing mostly health and visibility. The use of materials as well is compatible with that of the case studies. therefore, the form and materials of the New Genesis apartments warrants an assigned value of (2).*

New Pershing

The design and construction of the apartments reused many components of the preexisting two-story building, which eliminated sending unnecessary materials to the landfills. The extent of historic preservation of the outer facade as well as individual materials and fixtures has already been stated. Permanent materials with lower impacts on human health and the environment were used as much as possible throughout the building process. New Pershing used low VOC finishes to improve possible indoor air quality ("New Pershing Apartments." Skid Row Housing Trust. Accessed March 31, 2018). *The form and materials are assigned a value of (3) due to the extent of historic preservation.*

Urban and Social Integration

The Six

MacArthur Park has one of the highest densities in the USA with over 38,000 people per square mile and a total population of 120,000 people in 2.72 miles, therefore, a concerted effort to provide a connection to the surrounding neighborhood is important for neighborhood integration and cohesion ("The Six Disabled Veteran Housing." Brooks Scarpa. Accessed March 31, 2018). The areas that can be seen from the outside of the development are the most public of the common spaces offered to residents in the development. The placement of such spaces at the front suggests a shared relationship to the street and marks a powerful shift in dependence for the residents of The Six. The elevation from street level aims to strike a balance between privacy and connection with the surrounding neighbourhood. The building's public courtyard is lifted above the street by one level, which provides a pedestrian-oriented street edge and visual connection with a physical separation for the tenants. Additionally, the panoramic view of the city from the roof situates residents in their community, promoting urban integration and sense of place. *Due to the innovative form of the Six, neighborhood integration might be considered problematic due to the lack of architectural cohesion. However, space which fosters social integration within the*

building, also translates to integration with community members outside of the building. therefore, the urban and social integration of the Six is assigned a value of (3).

The Star

Dana Trujillo, the housing development director at Skid Row Housing Trust comments on the impact of The Six, “We like the idea of building iconic structures that give residents a sense of pride in their home, and this is an important building for the community,” (Kim, 2014). The location capitalizes on local public amenities, such as public transportation to connect the community to downtown and greater Los Angeles. Accessible public services are particularly important to serving the community and fostering urban and social integration. *The Star Apartments innovative form does less to integrate residents with each other and with the surrounding neighborhood than, for example, the orientation of the Six. The historic preservation is important to architectural cohesion, but is somewhat squandered as the preserved space is dedicated to commercial use which poorer residents and neighbors may feel excluded from. It does provide much needed health services to the area, but as do the other case studies. therefore, the assigned value for urban and social integration is (2).*

New Genesis

The design of the New Genesis intentionally mimics that of market-rate apartments which provides a sense of architectural cohesion. Still, unique design elements such as the exterior courtyard staircase promotes social integration within the development. Another interesting component of the development is the existence of Peddler’s Creamery, a bicycle-friendly organic ice cream shop. Although the revival of the bicycle for many both symbolizes and signifies gentrification, it's significant that the apartments integrate a variety of sustainable features. The creamery attempts to be inclusive by hosting a corral for bike parking and workshops on bicycle maintenance and repair for both the residents and the general public. *The evaluation of the integration of community is a little different in this case as the apartments intentionally mimic that of market-rate apartments. This can be particularly beneficial in the case of the New Genesis apartments due to the high prioritization of mental and physical health services. The community can, in this way, be particularly vulnerable to stigmatization. In an effort to disrupt narratives of the ill living in close quarters, the appearance of high-quality design can be particularly impactful. Although the innovative form of the Six provided means for*

social integration, it is the fact that the New Genesis form is uninnovative that allows for the extent of architectural and social cohesion. Therefore, the urban and social integration is assigned a value of (3).

New Pershing

The New Pershing Apartments most significant form of integration is undoubtedly accomplished through the extent of historical preservation. Oscar Zendejas, assistant superintendent of Westport Construction (the construction company used for the redevelopment), said he has worked jobs where the company wanted to preserve “cool stuff,” but not to the degree of the New Pershing, (Evans, 2013). Additionally, located across the street from the New Genesis building, residents may feel a larger sense of belonging knowing that a similar development exists within such close proximity. *The extent of historic preservation ultimately defines the means for urban and social integration and is therefore, assigned a value of (3).*

Internal Environment

The Six

The planning and design of The Six emerged from close consideration and employment of passive design strategies, highly informative to the pacifying internal environmental.

De-emphasising a reclusive, isolating layout in favour of a community-oriented, interactive space, a large courtyard orients tenants to social and public spaces and provides a secure circulation space from the street to their apartment (DeZeen, 2017), the firm said. Also provisions of spaces such as a TV room with couches, laundry facilities, and a small kitchen fills out the public common areas. *The Six proves that sustainable design and empowering design do not need to be mutually exclusive. therefore, the internal environment is assigned a value of (3).*

The Star

The six story, 95,000 sq feet building provides permanent supportive housing within the downtown core. The Star Apartments is organized around three principal spatial zones stacked one upon each other, a result of construction and engineering methodology. The first zone is dedicated to public health and is located at the street level, this is where the supportive services can be accessed. The second level contains spaces for community and wellness programs, and there are four terraced residential floors above this level. There is also a raised community

garden, art rooms, a library and multiple outdoor patio spaces for exercise and group activities. *Much like the Six, the internal environment is well thought out and a result of health-oriented decision making in both the engineering and construction processes. therefore, the internal environment is assigned the value of (3).*

New Genesis

The Exodus Recovery clinic provides a supportive environment that is enhanced by community amenities. A plant-filled atrium, courtyard, shared kitchen, community room, outdoor lounges, central outdoor staircase and weather protected balconies give residents high-quality spaces to spend time with each other. The outdoor staircase constitutes the most significant design element of the internal environment. It stands to foster community and promote security by making circulation a highly visible process. Floyd Cole, a resident of the New Genesis speaks to his experience living in the building. “I love it because I’m up on the sixth floor and once I close my windows I can’t hear the outside,” he said. “I don’t hear the yelling, the horns, nothing,” (Vaillancourt, 2015). The largest impact on the residents is however from the supportive services made available by the Exodus Recovery clinic. *The internal environment is entirely enhanced by the Exodus Recovery clinic. Additionally, certain engineering choices, like the outdoor staircase mutually reinforce a sense of community that is strengthened by the on-site supportive services. However, the prioritization of health and community is accomplished in the other case studies in similar manners. therefore, the internal environment warrants an assigned value of (2).*

New Pershing

The internal environment is on par with the other case studies, containing on-site supportive services and public spaces such as the communal courtyard. There is also a community kitchen which features high-efficiency appliances including a dishwasher which promotes water conservation. The community laundry room provides residents with high-efficiency appliances that exceed water conservation standards. There are also twenty-one bicycle spots located in the building’s garage. The individual units are slightly larger than in the other case studies, running 300-500 square feet (roughly three to four times larger than the original units). *The internal environment is on par with that of the other case studies; high-quality units, amenities and attention to form warrant a value of (2)*

Case Study Analysis: Build Quality

Performance

The Six

The Six employs several passive design strategies aimed at improving the performance of the building. The passive design strategies include: locating and orienting the building to control solar cooling loads, shaping and orienting the building for exposure to prevailing winds, shaping the building to induce buoyancy for natural ventilation, designing windows to maximize day lighting, shading south facing windows and minimizing west-facing glazing, designing windows to maximize natural ventilation, utilizing low flow fixtures and storm water management, and shaping and planning the interior to enhance daylight and natural air flow distribution ("The Six." Skid Row Housing Trust. Accessed March 31, 2018). These passive strategies alone make this building 50% more efficient than a conventionally designed structure (Ibid). Besides providing a private outdoor lounge for residents, the rooftop deck and garden help to alleviate solar gain; the solar panel array takes up roughly a third of the roof and creates energy for hot water (Ibid). "This residential building type uses more hot water than other building types, therefore, an efficient common boiler was utilised, commissioned and connected to roof-top solar hot water panels, which further reduce fossil fuel use," the architects said (DeZeen, 2017). The Six received an AIA Sustainability Honor Award as well as LEED Platinum status. *The performance of the building is highly effective due to the form of the building as well as eco friendly amenities, warranting an assigned a value of (3).*

The Star

The stack of prefabricated units results in improved insulation as the walls, floors and ceilings are doubled up. The Star Apartments has received LEED Platinum Certification, achieving a performance of 28.8% beyond Title 24 2008 Standards("Star Apartments" Skid Row Housing Trust. Accessed March 31, 2018). *The performance of the building is on par with that of the other case studies, therefore, its performance is assigned a value of (2).*

New Genesis

The building has been designed to exceed the baseline energy performance standard by at least 33.8% and has received LEED Platinum Certification. This is accomplished through energy saving and cost reducing designs and appliances such as, Energy Recovery Ventilation (ERV), solar electric power, solar thermal water heating, erosion control, stormwater dry well (Ninety-eight percent of stormwater is naturally managed on site through use of drought-tolerant plants), energy star appliances (toilet, faucet, shower, dishwasher, clothes washer), movement monitoring light switches and energy efficient and light bulbs ("New Genesis Apartments." Skid Row Housing Trust. Accessed March 31, 2018). The landscaping incorporated non-invasive plants, majority of which are drought tolerant, and uses high-efficiency sprinklers. The building has also been designed to mitigate the impacts of pests through specific use of building materials. Additionally, there was a waste management and indoor air quality management plan instituted by the contractor which made the construction process more sustainable and efficient and as a result, improved the performance of the building. (ULI, Web Access 2018) *The performance of the New Genesis Apartment is on par with that of the other case studies, therefore, it is assigned the value of (2).*

New Pershing

New Pershing Apartments is projected has received LEED Gold Certification, achieving a performance of 15.4% beyond Title 24, 2008 Standards ("New Pershing Apartments." Skid Row Housing Trust. Accessed March 31, 2018). *The performance of the New Pershing Apartments is on par with that of the other case studies, however it has a slightly lower LEED certification, gold as opposed to platinum, warranting a value of (1).*

Engineering

The Six

All the residential units orient themselves inwards towards the courtyard, this serves to reduce the impact of street noise and utilizes the cross breeze through the central cavity, but also promotes security through enhancing visibility.

Both exterior stairs have been designed to be special, not standard, and the elevator was tucked out of the way in favour of a more open pathway, which provides tenants with more options for socialising, Brooks + Scarpa said (DeZeen, 2017)

An elevator tucked in the south facade links the floors, while a prominent northeast staircase was integrated to encourage movement and interaction among residents. Large openings along the south and east facades, as well as a gap in the ceiling, bring natural light into the building. *The engineering of the building is what enhances the performance of the building and enhances the quality of life of the residents. therefore, the engineering of the Six has been assigned a value of (3).*

The Star

Prefabricated units were cantilevered over an existing two story concrete base which holds retail spaces. The building ultimately combines architectural preservation with one of its largest opponents, prefabricated and modular add ons. *The engineering process for the Star Apartments is quite innovative and ultimately beneficial to the performance of the building. The combination of prefabricated units and historic preservation is a feat of the engineering and construction processes. therefore, the engineering quality is assigned a value of (3).*

New Genesis

Killefer attests to how the way building is designed can create a sense of security in the New Genesis Apartments. You can see almost every front door from the courtyard and through the elevators. The visibility afforded by the arrangement of units, provides security and fosters community. The engineering of the building, aside from the courtyard staircase, is not particularly innovative, the redevelopment had a larger focus on construction as opposed to engineering processes. *The engineering of the New Genesis Apartments that promotes security and community through high visibility circulation patterns is a similar approach to that of the other case studies. therefore, the engineering of the development is assigned a value of (2).*

New Pershing

There was not any significant engineering processes utilized during the construction of the New Pershing Apartments. *The lack of engineering is certainly a reflection of the focus on historic preservation, therefore, it is not particularly problematic to have a lesser focus on engineering. However, this warrants an evaluation of (1) as the other case studies showed particular benefits due to engineering choices.*

Construction

The Six

Brooks said, “We made sure to construct a sequence of spaces that help you come into the site itself... Once you get onto the second level, you see the street again in another way,” She added that by pulling the elevator and reception desk deep into the building, the designers allow “people to have some space and time through which to walk into something, to contemplate something, to think about something, to say hello to neighbors,” (ArchPaper, 2017). Additionally, the project aims to promote exercise by accommodating only 19 parking spaces on the ground level. "This neighbourhood is a 'walker's paradise'... and is near excellent transit and some bike lanes," said the firm. "Most of the veterans that live here do not own cars and can accomplish their daily activities easily without one," (ArchPaper, 2017). *Although the construction process of the Six was not particularly groundbreaking, concerted design decisions influenced the construction of certain spaces that enhance the healing ability of the building. therefore, the construction quality of the Six has been assigned a value of (3).*

The Star

The last multi-family development to use prefabrication was Dworsky Associates’ project on Bunker Hill nearly 50 years ago (ArchPaper, 2015). The design and construction of the apartments reused most of the preexisting two-story building, which eliminates sending unnecessary materials to landfills. *The combination of prefabricated units and historic preservation is a feat of the engineering and construction processes. therefore, the construction quality is assigned a value of (3).*

New Genesis

Construction materials that were permanent materials with lower impacts on human health and the environment, such as low VOC materials, materials with recycled content, locally extracted, processed, and manufactured materials, were used whenever possible throughout the building process ("New Genesis Apartments." Skid Row Housing Trust. Accessed March 31, 2018). *There were not any notable construction elements other than the implementation of sustainable building materials and therefore, warrants a value of (2).*

New Pershing

The notable construction elements relate to the extent of historic preservation. It is rare to have the outer facade preserved in its entirety and is certainly a notable feature of the construction process. *The extent of historic preservation warrants a construction value of (2) as this was the single important construction design element.*

Evaluation Conclusion:

While the evaluation of the case studies is interpretive, the DQI provide a framework from which a standardized measurement mechanism can depart. Ultimately, the evaluation of the case studies by DQI reveals how it is necessary to conceive of design as a much more meaningful element of affordable housing developments. Attention to the DQI can empower residents of affordable housing developments, improve the performance of buildings, and reduce costs on healthcare systems and other public services. Overall, the DQI also provides a mechanism for which to measure the value of residential design, and can therefore, be used to promote investment in affordable housing in general, as well as prove how enhanced residential design benefits individuals and communities alike.

Interview Findings and Analysis

Interview Participants

Table 3: Interview Participants Summary

Name	Title	Employer	Date of Interview
Jim Sarratori	Board of Directors	Open Architecture Collaborative	11/11/17
Angie Brooks	Co-Founder, Lead Architect	Brooks + Scarpa	1/11/18
Wade Killefer	Co-Founder, Lead Architect	Killefer Flammang Architects	2/19/18
Matthew Lust, Cindy Kha	Senior Project Manager and Assistant Project Manager of Economic and Housing Development Unit	Community Development Commission of the County of LA	2/23/18

Most Significant Identified Design Elements

Table 4: Prioritization of Design Elements (Top 4)

Identified Design Elements	Associated Values/Principles	Frequency of Occurrence (out of 4)
Space (Green, Open, Private, Non-Specific)	Sustainability, Community	4
On-Site Supportive Services	Welfare, Access, Community	3
Participatory Planning	Transparency, Participation, Integration, Non-hierarchical development, Cost Reduction	3
high-quality Individual Units	Right to have good design	3

The four most important design elements identified by the urban design professionals include: attention to space (open, green, etc.), on-site supportive services, participatory planning and high-quality individual units. The four priorities reflect a holistic approach to instituting high-quality design. On-site supportive services provide a social welfare net and reflect the need to prioritize access to services as well as foster community. It is a non exclusionary approach to providing individualized care. The prioritization of participatory planning reflect several concerns. The need for transparency and participation in the design process reflects not only the need for inclusion, but also, according to Lust, can be an important cost reduction tool (Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018). Essentially, participatory planning can yield a more livable and convenient arrangement of spaces, material choices can reduce energy consumption, and these well-conceived details create a sense of specialness that translates housing into home (Schmitz, 2005). Lastly, the call for high-quality individual units promotes the importance of individuality, privacy, and right to high-quality design within a communal setting. It could also be considered that prioritizing high-quality design in individual units is a strategy to equally distribute the benefits that are a result of high-quality design in residential developments.

Explanation of Values and Principles Associated with Interview Identified Design Elements

Many of the designers alluded to certain values and principles when discussing design elements, some more explicitly than others. therefore, it was necessary not just to report the identified design elements, but the values and principles associated with such elements in order to best create recommendations for the design of affordable housing. Lust and Kha provided the CDC's NOFA where there are explicit design requirements. There are five "Fundamental Design Requirements" that go beyond the California Building Code design requirements. The requirements include: site planning, interior and exterior building design, unit design, and crime prevention through environmental design (Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018). NOFA is competitive, described as a "menu of items/options" by Lust, in which there are requirements as well as options to include elements that increase "accessibility, usability, and functionality," (Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018). These requirements and additional design elements explicitly support many of the identified design elements and their corresponding values.

It was necessary to extrapolate the associated value or design principle from other interview responses. For example, Killefer speaks to how the way building is constructed can create a sense of security in the New Genesis Apartments,

You can see almost every front door from courtyard...[that kind of visibility] builds community if you know the people you live with, you keep your eyes on the door so if there's someone who shouldn't be there you'll know about it, and you can do something about it... you can see what's going on when you go up into the elevators... you can see and be seen and that creates an element of safety... people get to know each other more quickly that way, and we can hopefully build community... (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018).

Killefer prioritizes high build quality in individual units themselves, commenting, "We take a lot of time to make sure every inch in the unit work well, no dead spaces, all places that we could live in happily ourselves," (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018). It speaks to the importance of good design and the right to high-quality design. Killefer believes that architects can fill that role, "It's our job as architects to

design great places to live no matter who they are,” (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018). Still, a variety of difficulties surrounding the process of developing high-quality affordable units emerged.

CABE explains that the tradition of building with respect to the built environment has been “to manage for cost minimization rather than for value optimization,” (1999). They claim that optimizing value (the product of benefits sought over sacrifices required) is far more rewarding strategy for all stakeholders (1999). They question the precedent of the built environment as a physical artifact and intend to present it as working assets. Brooks stated that she takes a similar approach. She mentions that when Brooks + Scarpa design affordable housing projects,

There are certain principles we always use to bring the costs down but also make the spaces better. So, we don't spend a lot of money on the structure, or the steel, but we spend a lot of money making sure natural light get into the units, that the ceilings are a little higher, that people will have opportunities to talk to other people but they're not forced to be social. So we have different types of social places which are scattered throughout the project. So, some of the landscaping and circulation is looked at [with respect to high-quality design], (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018).

Brooks’ discussion relates to the compromises designers often face when creating projects with enhanced design elements. Her comments ultimately relate to the strategy which Brooks + Scarpa use to create meaningful living environments. Additionally, Brooks spoke specifically to the importance of individual unit design, affirming the right to good design (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018). What then, are the identified barriers to realizing high-quality design in affordable housing projects?

Barriers to Realizing Affordable Housing and with high-quality Design.

Table 5: Barriers According to Interview Participants

Barriers	Frequency of Occurrence
Financing	4
Zoning Code	4
Balancing Costs	3
Pressure to Produce Housing	2

Que of Projects	2
Public Process	2
Entitlement Industry/Consultant	1

Financing

Financing was the largest and most reported pressure on architects and developers hoping to create affordable housing, in general, as well as with respect to high-quality design. Lust reported that there is,

pressure to get housing done faster and cut costs on those [developments]. So, we have to balance the desire by everybody, the board of supervisors, all the political folks, us as well, and the developers to put projects out there faster, but maintain some sort of, some level of quality and sustainability measures without unduly increasing costs... so that's kind of a fine balancing act that we have to follow... (Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018).

Lust' comment maintains the sentiment that design often comes secondary to the actualization of the project, this is partially because of high costs that prevent the value of high-quality design from being realized. "Good" design is often hard to implement because key evidence of a wider value of benefits of high-quality design has mostly been derived from anecdotal evidence (Bishop, 2011). The UK in particular, although there are other countries as well, has over the last decade grappled immensely with conceptualizing, measuring, and translating such anecdotal evidence of enhanced design elements into more quantifiable measurements (Bishop, 2011, Carmona et al., 2002).

This work, although important, may not be entirely necessary for the promotion of high-quality design residential developments. Killefer states,

A lot of the, or, some of the hard work has been done. The money is going to start to roll in. And the providers are amping up and were amping up, and we all got to get to work and get it done, (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018).

Killefer mentioned that he had about half a dozen affordable projects which KFA is "trying to move forward in the que," (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018). He maintains, however, that the

hardest thing is the funding and now that's slowly coming into place... Measure HHH and well measure JJJ doesn't do that much for the funding but it gives a lot more density to the city so that's good, (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018).

Killefer comments about what Measure JJJ and HHH can accomplish recognizes the limitations of even the most prominent sources of funding for affordable housing in Los Angeles. Financing remains the most pressing issue relating to the development of affordable housing. Acknowledgement of this by architects and urban designers means that it is a widely recognized barrier and requires immediate remedy.

Implementing and Measuring Good Design

It has also become clear to researchers in this field that there is unlikely to be a straightforward correlation between improved design and increased value for all stakeholders (CABE, 2001). This becomes increasingly relevant as value may change across time and throughout the planning processes, often forcing high-quality design aspects to become add-ons rather than part of a standard approach (Eden, 2013). Lust explains how barriers have influenced the planning process itself and created a need for a strategic approach to gaining sources of funding.

We went from requiring a lot of things to making them menu options. So developers can choose what they think they can afford to get included and what they can fit in the overall budget and potentially what's also gonna be a requirement, or a desire of other funding services...(Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018).

Those who choose not to invest in enhanced design projects do so mostly under the assumption and/or perception that “good” design costs more and that this additional cost is often not outweighed by the benefits. However, Macmillan (2006) found that good design, considered as including enhanced design elements, does not cost more when considered across the lifetime of a building.

It is a continuous challenge to measure value in general as well as with respect to “good” design in an uncontroversial and robust way (Bole and Reed, 2009, Gann and Whyte, 2003, Abdul Samad and Macmillan, 2004.) However, Brown (2013) states “if we can establish the financial value of urban design, and find ways to make non-financial value relevant to developers, then we can start to influence behavior,” (pg. 7, 2013). Killefer believes that there is

now much more of a precedent for investment in design, and in that way a non-financial value has emerged.

Political and Social Barriers

Another important barrier worth exploring are the political and social barriers to affordable housing development. Typically approaches to measure enhanced design occurs according to three values, economic viability, social benefit and environmental support (CABE, 1999). However, as Brooks illustrates,

some of the other developers only think of design as a political tool, to get their projects built, because when you go through the public process, a lot of people on the public say we don't want that in our neighborhood. We don't want them to bring the property prices down. But if we give them a great design, it's hard for them to say anything about the design... so some of the developers think of design in that way, but it's it's much bigger and deeper issue I think, (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018).

To Brooks, the much “bigger and deeper” implications of this issue are the entitlement and discretionary review processes required of affordable housing developments that require a variance in one or more zoning ordinances. Brooks maintains that because there is,

no one in the city with a design background who is connecting the dots between the existing code and how we need to build and the impediments to it, (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018).

Consequently, developments are subject to public processes and consequently to “Not In My Backyard” (NIMBY) pressures. Additionally, Brooks maintains that because each development has its own entitlement process (which is a discretionary review) it,

adds like a year to a year and half to everything project, costs hundreds of thousands of dollars, and created industries of people called entitlement consultants and permit expeditors who charge fees to basically figure out what the city wants you to do and tell the architect what the codes actually say, or write a report or if you need to do something that's not in the code they write a report telling the city why it's good to do something that should just be allowed by right, (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018).

Brook’s discussion of development and design “by right” makes clear that zoning codes and subsequent processes are a large barrier to the construction of affordable housing developments in general and in particular, those with an enhanced design aspect that require an ordinance variation. Lust supports this conception of major impediments and comments that,

...most developers would be fine including a lot of sustainability measures, a lot of quality of life measures, healthy design measures that we talk about it, I don't think there would be an issue if costs were not rising so much and so quickly... (Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018).

These costs, are partially due to zoning code. Essentially, because affordable housing developments need to be subsidized either by the tenants or financiers, the investment needs to be considered viable. A viable investment is likely not going to be in a neighborhood with high crime and poverty due to the inherent risk and instability. therefore, because more desirable land is more costly of an investment, it eventually influences what kind of construction is possible and limits the funding appropriated for high-quality design. Additionally, one might consider the fact that its an undue burden to place already vulnerable populations in deteriorating neighborhoods, making location a priority for many stakeholders.

Solutions Posed By Urban Design Experts

Alter Zoning Code and Related Development Processes

The urban design professionals all identified similar barriers, but had unique solutions. Brooks had one of the most innovative approaches, suggesting a 100% affordable housing project pipeline. In response to “waisted time and money dealing with antiquated zoning code” this pipeline, which would substitute zoning codes with a design review process, would open the “floodgates overnight,” for affordable housing development (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018). The hypothetical process signifies human-scale planning as opposed to land-use planning; Brooks comments how the design review process would mimic a lot of what zoning code does, but with concern for people-first planning. For example the process would consider things like height but with relation to the surrounding neighborhood as opposed to uniform code.

Brooks is concerned that the public process has deferred participation in the affordable housing market. She explains that developers are,

all going under the radar, try to find parcels where they can do something by right where they don't have to ask for a variance or entitlement, because once you ask for something like that it kick you into a public process, and then, the public says I don't want poor

people near me and then, your project gets derailed, and you waste time and money, (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018).

Brooks envisions “some major major structural changes to the way projects are developed in the cities,” like requiring private developers to provide a higher percentage of affordable units in their projects. She suggested an 80:20 ratio of affordable to market rate housing, inclusionary zoning code, and linkage fees from for-profit developers that would pool to a source of funding for non-profit developers (Brooks, Angie. Interview by Katya Zirulnik. Personal Interview. Los Angeles, January 11, 2018).

Lust mentioned that one of the “best outcomes” occur when developers,

...can meet our needs and somebody else's, then, they don't have to layer disparate needs in the project and pay for everything, but everything can be on top of each other and meet everybody's needs, (Lust, Matthew and Kha, Cindy. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 23, 2018).

That way there is less of a need to balance the increasing construction and labor costs with the design features the CDC like to see. Lust suggestion for a uniform design process picks up where Brooks’ design review process leaves off. Together Lust and Brooks suggest an alternative way to determine location, funding, and restrictions of affordable housing developments with high-quality design.

Institute Participatory Planning and Design Processes

Additionally, there needs to be a better understanding of how the public sector can modify institutional barriers and the regulatory context in which decisions about design are made, CUBE suggests “eliminating legal and institutional barriers to good design and introducing incentives to encourage its delivery” (2001, pg. 16). They emphasize how design-led projects begin in the planning stages, and they, as well as the urban design professionals interviewed, believe that good design is a key aspect of sustainable development, and in that way is indivisible from good planning. Additionally, McIndoe et al. (2005) found eight ‘core elements of urban design,’ two of which are concerned with the process by which the urban design takes place: integrated decisions making and user participation. The other six identified elements are about attributes of design, including preservation of identity and local character; connectivity, permeability, and ease of access; density and social connectedness; mixed-use

neighborhoods offering a variety of opportunities; adaptability of buildings and spaces to changing needs; and high-quality in the public realm (McIndoe et al. 2005). The significance of these core elements is the interconnectedness between planning and developing processes. Fortunately such elements can be found in the designs of one or more of the case studies.

Overall, the findings of my interviews present expert suggestions for solutions to address the lack of construction of affordable housing as well as the implementation of design in future developments. A series of recommendations, which incorporate these expert findings and is presented at the end of this paper, will be used to support the case for using design to promote investment in affordable housing development.

Part VII: Discussion

Design Disclaimers

It is absolutely necessary to insert several disclaimers into the discussion of prioritizing design in affordable housing developments. Modernist architecture and planning has historically aimed to eliminate social ills through the use of design. The main mechanism used to meet this goal is the practice of zoning. In an effort to make urban life more efficient and productive, planners compartmentalized or zoned the uses of the cities, often creating deflated urban centers that became both uncomfortable and dangerous spaces. Del Rio and Gallo (2000) refer to this reality as the “trademark of our modernist generation: the abuse of the pencil stroke as the only method to solve spatial problems.” therefore, it is with great hesitancy that I approach the issue of housing inequality from the perspective of design. As Killefer explains, “Urban inequality does not occur on the design level,” (Killefer, Wade. Interview by Katya Zirulnik. Personal Interview. Los Angeles, February 19, 2018). It is not entirely the responsibility of architects or other urban designers to solve issues of inequality such as urban poverty and housing insecurity. However, there is an opportunity for design to mitigate some of the compounding factors of poverty through enhanced residential design while also promoting investment in affordable housing development.

The case studies all present enhanced design elements that are aimed to address issues surrounding health and housing. However, the solutions do not exist in a vacuum. Even some of the most innovative practices can be undermined by urban realities. For example, for developers, market forces and zoning code make it harder to build affordable units in high-income areas, revealing a key dilemma in the journey to provide affordable housing. Building quickly to meet the soaring demand means stepping down from challenging economic and political obstacles which prevent housing from being built in wealthier neighborhoods where low-income residents may find greater opportunities. As Dreier, Mollenkopf and Swanstrom (2001) contend, place matters, and it is therefore, significant whether affordable housing building patterns perpetuate economic segregation or disrupt it.

The Inadequacy of Socio-Economic Diversity

As a result of the barrier to development in certain locations, mixed-income living is often considered a viable solution to fostering economic diversity. Mixed-income living, compared to concentrated poverty, is hypothesized to benefit low-income individuals in a variety of ways by scholars such as Harvard University Professor William Julius Wilson and National Initiative on Mixed-Income Communities director Mark Joseph (Hyra, 2015). These scholars suggest that middle- and upper-income individuals can broaden the social networks of those living in disadvantaged areas by improving access to jobs, serving as mentors, and also exposing low-income individuals to an array of norms and cultural expectations (Hyra, 2015). Additionally, the integration of civic, advocacy and community improvement organizations might reduce pre-existing structural inequalities such as the distribution of public resources (Ibid). Lastly, there is the idea that a more affluent constituency will attract new business and increase the quality of services in products for the neighborhood at large (Ibid). However, Hyra (2015) also found that such benefits to low-income populations, “rest on a tenuous assumption,” which is that the physical proximity would close the social distance between the different classes, racial and ethnic groups. Scholarly research has consistently demonstrated that mixed-income living is not facilitating as much interaction across race, ethnicity, and income as was expected. This highly influences the degree to which developers might prioritize location or

focus on mixed-income developments as opposed to fostering economic growth and security in other manners.

Financial Failures

The example of mixed-income living shows how developers attempt to provide benefits to target populations in the midst of a much larger crisis, the demand for affordable housing. Last year the Department of City Planning launched its Priority Housing Project (PHP), offering streamlined processing services to qualified affordable housing projects (i.e. minimum 20 percent rent-controlled). Twenty developments—for a total of 1,883 units—were led last year and are now being monitored through PHP. The Mayor’s Executive Directive 13 Quarterly Report tracks progress. However a recent estimate from the California Housing Partnership Corporation indicated the city needs more than 500,000 new affordable units to satisfy demand (Chilland, 2018). Unfortunately, two of the major funding sources for affordable housing, measure HHH and JJJ fall short of this demand. Proposition HHH authorizes the City to issue up to \$1.2 billion in general obligation bonds to finance up to 10,000 affordable housing units to end chronic homelessness (“Housing And Development” 2017). The funds target supportive housing for the homeless, affordable units for very low-income Angelenos at risk of becoming homeless, temporary shelters, storage and shower facilities, and related infrastructure (Ibid). Additionally Proposition JJJ sets affordable housing mandates and hiring restrictions that favor local laborers on residential projects that require a zoning change or an amendment to the city’s General Plan (Ibid). It also creates incentive, such a reduced parking requirements, for developers to build affordable housing near transit stops (Ibid).

However, a recent report from the City Controller’s office found that in the past, an incentive program has not been effective in producing the amount of affordable units needed to address the city’s demand (Chandler, 2017). From 2008, when the program began, to 2014, only 329 units were built by developers using the incentives. Unfortunately measure JJJ also engages with another stigmatized aspect of urban poverty. By encouraging transit-oriented development as a means for addressing the affordable housing shortage, JJJ further relegates the public transit system to that of the poor. Los Angeles once had one of the finest rail transit systems in the

nation, after its systematically dismantling, public transit in Los Angeles is mainly used by lower-income and minority racial and ethnic populations (L.A Times,1994). Transit oriented development, although can provide a key aspect for urban mobility, must also contend with the need to address social mobility. Moreover, both funding mechanisms do little to assure that affordable housing is met in the near future. Knowing that the main funding mechanisms for affordable housing are not equipped to meet the demand, it is with great consideration that funding be secured for ensuring high-quality design.

Part VIII: Recommendations

Initial Recommendation: Institute Main Findings and DQI

I recommend prioritizing four design elements and processes in affordable housing developments: **a concerted provision of space (green, open, neutral), high-quality individual units, on-site supportive services, and a participatory planning process.** Additionally, I found that an assessment of properties by DQI would allow for such design conditions to be met, therefore, **the DQI evaluation system should be adopted and transformed into an enforcement mechanism.** Farooqui and Ahmed (2009) found that,

Implementing the DQI dramatically decreases the amount of time spent on design and rework by creating a common language to discuss design between technical & non-technical groups and common metrics by which procurement teams can evaluate whether a proposed design is “good” or what aspects of a design are “not good”. It takes the guesswork out of designing a building by converting individual subjective perceptions into objective measurable results. (pg 6, 2009)

Farooqui and Ahmed’s finding support the use of DQI as an evaluation and enforcement mechanism for the efficacy for affordable housing developments. Additionally, Summerson found that, masterplanning and systemic regulation of building design, and attention to the placement of space can produce enduring values and lasting profits, rent, and capital growth for owners (1978). therefore, I recommend the DQI be instituted as both a guideline and an evaluative mechanism for the design of affordable housing developments in Los Angeles.

Recommendation 1: Implement High-Quality Design in Individual Units

The significance of prioritizing high-quality design in individual units is the attempt to secure high-quality design for residents knowing that implementing design on a larger scale will likely be more costly. This recommendation is ultimately somewhat of a strategic way to prioritize high-quality design in a way that is both standardized, yet maintains a higher degree of flexibility than other standardized design processes.

Recommendation 2: Provide Attention to the Provision of Space

The prioritization of high-quality individual units relates to another recommendation, which is concerned with the provision of space. The benefits of green and open space with respect to improving health is well explored, (World Health Organization 2016, Lee, Jordan and Horsley 2015, and Hassen 2016), and the provision of neutral space is believed to be an important component for empowering vulnerable populations (Hyra, 2015). The provision of such spaces relate to the need to include the specific needs of vulnerable groups. This can be best accomplished through a participatory planning process.

Recommendation 3: Implement A Participatory Planning and Design Process

A participatory planning and design process for affordable housing developments is extremely important for improving the agency of and empowering of residents. Architects should be responsible for large-scale designs such as plans relating to form and function, but potential residents should contribute largely to the provision of space, amenities, and services. Participatory planning is not only important because of the systematic exclusion of minority narratives from urban planning and design practices, but also because residents can begin to

partake in empowerment projects, allowing individuals to be involved in their community and receive benefits from civic and community participation.

Recommendation 4: Institute On-Site Support Services

The inclusion of on-site supportive services has had the largest measurable impact compared to the other design elements, and therefore, it is the finding I recommend the most strongly. As evidenced by the Exodus Recovery clinic, onsite supportive services provide tangible benefits to not only residents but also the health care system at large. One study found that providing benefits to a particularly high-need group more than offset the cost of supportive housing, resulting in \$6,000 in annual savings per person (Anirban Basu et al., 2017). Although this study focused on a specific population, meaning that the same results cannot be guaranteed with a different group, it illustrates the potential cost savings of providing a high-needs group with supportive housing. Demonstrating the improved health outcomes through health and housing partnerships is a strategic attempt to encourage partnerships with groups who have a vested interest in improving health outcomes, such as hospitals and other healthcare organizations. Forming partnerships is an important way of introducing new streams of revenue into addressing issues which housing alone cannot fix. Mike Alvidrez, the Skid Row Housing Trust Chief Executive Officer, attest to such a strategy, “Permanent supportive housing reduces residents’ reliance on expensive public health care, decreasing emergency room and inpatient admissions by 77%.” He continues, “a home, when paired with appropriate support services, is the most effective and compassionate solution to homelessness, and ultimately reduces public costs,” (Skid Row Housing Trust, 2017). The impact of housing on health outcomes shows the value of supportive housing, which can increase community support and investment in supportive and affordable housing in general. Overall, implementation of on-site supportive services show how coalitions can achieve improved health outcomes, reduce costs, and promote investment in affordable housing.

Suggestions For Further Research

Overall, these recommendations reflect tools and strategies that, when employed, can be used to promote investment in both the design and development of affordable housing as well as improve quality of life. In order to measure the efficacy for these recommendations, they would need to be implemented in an affordable housing development to have their impact studied and measured. This would entail a several decade long study on a vulnerable, low-income population and would need to be evaluated with respect to an affordable housing development that does not include enhanced designs, but houses a similar population. I would recommend that, in future research, the measurements go beyond a DQI evaluation to specifically measure the mitigation of social inequalities, such as: decreased use of emergency services, decreased rates of recidivism, increased rate of employment etc. I would suggest that the next steps taken to research the design of affordable housing developments cover other ways in which design can explicitly impact mobility, wealth accumulation, and health outcomes.

Additionally, because this is but one approach to promoting investment in affordable housing, future research should address how to provide quality of life improvements in other capacities which may not relate directly to the design of an affordable housing development. It is worth considering other ways in which quality of life improvements and investment in affordable housing can be achieved in tandem. Integration of job services and training, access to higher education education, providing opportunities for entrepreneurship, and more, can be considered as ways to improve quality of life through the provision of services in affordable housing developments. Overall, further research should be directed towards investigating affordable housing outcomes to best determine how to build housing that most highly benefits the housed population. Effectively, any improvements to the future of affordable housing development will be contingent on increased investment in affordable housing. Future research must investigate how best to promote investment in housing for our most burdened populations, however the best approach may change over time according to social, political and economic realities. Therefore, it is important to identify and investigate the investment patterns in affordable housing development for decades to come.

Part IX: Conclusion: The Case for Design Based Investment

The design of affordable housing developments should be considered when planning for the future of affordable housing in Los Angeles. Moreover, design should be considered with respect to more than aesthetics, but as mechanism to improving the performance of residential developments and the lives of residents. Affordable housing with enhanced design elements must be considered a part of an investment in equitable infrastructure. Design interventions are critical mechanisms to support and connect affordable housing with other issues such as employment, urban revitalization, education, historic preservation and health care (Wright, 2014). Such a large chronic homeless population suggests that housing solutions are failing to meet the needs of vulnerable populations who are struggling to find housing in a statewide housing crisis. By introducing certain design standards, conditions of poverty can be addressed holistically and in a healing environment, the home. In conclusion, designing for quality produces good design that is about providing buildings and spaces that are fit for purpose, built to last and lift the spirits of users.

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Glossary

Architecture Terms

Architectural Cohesion

Cohesion, in general, as well as in the field of architecture, relates to the compatibility of two different components. Architectural cohesion can be accomplished through aesthetic choices. The choice to use historic preservation, can, for example, provide compatibility between new and old developments. Due to the stigmatization of affordable housing developments, architectural cohesion can be an important tool to minimize further disenfranchisement.

Innovative Architecture/Uplifting or empowering design

Innovative architecture is a subjective description. However, with respect to this project, it relates to buildings which empower and uplift residents. An example of an empowerment mechanism of a building is how the inclusion of on-site services provide quality care in a dignified manner. Additionally, engineering and construction processes can promote healthy behavior. When there is increased visibility as a result of engineering or construction processes, the building functions to foster community.

Urban blight

Urban blight has historically referred to the social, political and economic ills of urban communities. The Vacant Properties Research Network, a project of Virginia Tech's Metropolitan Institute, released a literature review study on the "multiple meanings of blight" in 2015 that further explains how blight became an urban problem. "There was no singular discovery of something called 'blight' in U.S. cities," the report states. And there's still no common understanding of the term across cities. Some jurisdictions might view graffiti as a sign of blight; another thinks that the term refers to a concentration of abandoned buildings. It is typically a pretext for drastic projects which typically end up displacing large populations (Mock, 2017).

Low-slung

Low-slung, or low rise, includes typically single-family, single-story developments. It can refer to low-rise apartments, which may be several stories, however is significantly shorter than high-rise developments. Popular styles of low-slung housing in Los Angeles include the adobe and bungalow and dingbat style housing.

In-fill development

Infill development is the process of developing vacant or under-used parcels within existing urban areas that are already largely developed. Most communities have significant vacant land within city limits, which, for various reasons, has been passed over in the normal course of urbanization. ("MRSC - Infill Development" n.d.)

Real Estate Terms

Not In My BackYard-ism or N.I.M.B.Y.ism

“Used to express opposition by local citizens to the locating in their neighborhood of a civic project, as a jail, garbage dump, or drug rehabilitation center, that, though needed by the larger community, is considered unsightly, dangerous, or likely to lead to decreased property values.” (“Nimbyism | Define Nimbyism at Dictionary.Com” n.d.)

Housing Trust Funds

Housing trust funds are distinct funds established by city, county or state governments that receive ongoing dedicated sources of public funding to support the preservation and production of affordable housing and increase opportunities for families and individuals to access decent affordable homes (“[Https://Housingtrustfundproject.Org/](https://Housingtrustfundproject.Org/)” n.d.).

Section 8 Voucher Program

Section 8 vouchers, administered by PHAs, ensure that a housing subsidy is paid directly to the landlord and the family then pays the difference between the rent charged and the amount subsidized by the program, no more than 40 percent of a families monthly adjusted gross income can go towards rent and utilities. However, since demand for housing assistance often exceeds the limited resources of HUD and local housing agencies, long waiting periods are common and waiting lists frequently close entirely (Vale and Freemark 2012).

Theory

Triple Bottom Line Theory

The phrase “the triple bottom line” was first coined in 1994 by John Elkington, the founder of a British consultancy called SustainAbility. It aims to measure the financial, social and environmental performance of the corporation over a period of time. (*The Economist* 2009)

Appendix

[1] Stakeholders and their Motivations, CABA (2006)

Table 1: Stakeholders and their Motivations

Stakeholder	Primary Motivations	Concern for Better Urban Design
(commercial property)		
1. Private Interests		
Landowners	Maximising returns	Only in-so-far that profits are not diminished and other holdings are protected
Funders (short-term)	Good financial security, risk against return	Only if higher risk is balanced by a higher return
Developers	Buildable, marketable, profitable, quickly delivered,	If better urban design adds to either marketability or profitability
Design professionals	Meets brief, satisfies client, individually designed, innovative	Depends on training, but too often concerned for building design at the expense of urban design
Investors (long-term)	Good liquidity, easy/cost effective to maintain, profitable over the long-term	If a market exists and therefore if design adds to profits and reduces running costs over time
Management agents	Management efficiency	Only that increased costs are reflected in higher fees
Occupiers	Value for money, flexible, secure, functional, correct image	In-so-far as better urban design creates a more efficient work environment and is affordable
2. Public Interests		
Planning authorities	Protects local amenities, meets planning policies, respects broad public interest, low environmental impact	Highly concerned, but frequently unable to articulate requirements or concerned to the extent that wider economic and social goals are not compromised
Highways authorities	Safe, efficient, adoptable (roads)	As long as functional requirements are met first
Fire and emergency services	Accessible in emergencies	Little direct concern
Police authority	Designed to prevent crime	As far as better design improves image and reduces crime
Building control	Designed to protect public safety	Little direct concern
3. Community Interests		
Amenity groups	Contextually compatible in design and uses	Highly concerned, but often broadly conservative in outlook
Local communities	Reflecting local preferences and protecting property values	Highly concerned but would often prefer no development at all

[2] Ralph Horne *Placing a Value on Good Design for Cities: Evidence and Prospect* (2014)

Table 1: Design in the built environment elements and outcomes which are typically measured or valued, and those which are not.

Typically measured/ valued	Occasionally measured/ valued	Rarely or never measured/ valued
Private costs	"Lifetime" energy costs	Stress
Cultural/heritage/ aesthetics	Mobility/traffic/travel costs	Quality of life
Property values	Connectivity	Equity
Rent/capacity value	Accessibility	Civic pride
Vacancy rate	Productivity (occupants)	Sense of place
Take-up rates	Corporate image	Satisfaction
Energy and water costs	Uplift to surrounding property values	
Maintenance costs		
Safety/security/crime		
Pollution		
Health		

[3] Analytical Framework to Assess and Measure the Value of Good Urban Design (2001)

Table 8: Analytical Framework to Assess and Measure the Value of Good Urban Design

Dimensions of Value	Possible Indicators	Quantitative Assessment	Qualitative Assessment	Comments
Economic Viability	<ul style="list-style-type: none"> Rental values Capital Values Vacancy rates Take-up rates Investment availability 	<ul style="list-style-type: none"> Comparison of rental values, capital values, vacancy rates and take-up rates of selected developments with average for similar types of property 	<ul style="list-style-type: none"> Interview questions to developers, investors and, occupiers, addressing their views on the economic performance of the development 	<ul style="list-style-type: none"> Average figures for rents and capital values from the Investment Property Databank (IPD) or local property firms Average figures for vacancy and take-up rates possibly from local property firms
Operational performance of good urban design	<ul style="list-style-type: none"> Management costs Security expenditure Energy consumption Accessibility Productivity of occupier Health and satisfaction of workforce Corporate imaging 	<ul style="list-style-type: none"> If available, data for individual developments on energy consumption, management costs, productivity, etc., which could be compared within cases or on a broader basis if information is available 	<ul style="list-style-type: none"> Interview questions to occupiers addressing the running costs of the development and the influence of urban design on their corporate performance 	<ul style="list-style-type: none"> Quantitative information might be possible for individual developments, but there are problems in finding comparators
Production of good urban design	<ul style="list-style-type: none"> Production costs Infrastructure costs Duration of planning approval process Prestige and reputation 	<ul style="list-style-type: none"> Comparison of production and infrastructure costs and duration of planning negotiation for the selected developments, within sample of cases and with average for similar types of property 	<ul style="list-style-type: none"> Interview questions to developers addressing production costs, the planning process, infrastructure costs, and the impact of the development on their standing in the marketplace Interview questions to local authority officials on infrastructure costs and the planning process 	<ul style="list-style-type: none"> Average figures for production costs from construction industry publications Average duration of planning process from local authorities
Area regeneration/viability impact of good urban design	<ul style="list-style-type: none"> Local property values Place-marketing Area revitalisation 	<ul style="list-style-type: none"> Evolution of land and property values around the selected developments compared to the average in the locality 	<ul style="list-style-type: none"> Interview questions to local authority officials and local economic development partnerships on impact of development on the local economy 	<ul style="list-style-type: none"> Average figures for property values in surrounding area from local estate agents
Social Benefit	<ul style="list-style-type: none"> Identity/civic pride Place vitality Inclusiveness Connectivity Safety Facilities and amenities 	<ul style="list-style-type: none"> If available, data on football for mixed use cases with retail, compared to average for locality (vitality) 	<ul style="list-style-type: none"> Interview questions to local authority officials and sample of local community addressing issues of place-identity, vitality and inclusiveness 	<ul style="list-style-type: none"> Quantitative information on vitality might be possible for individual developments, but difficulties with comparators
Environmental Support	<ul style="list-style-type: none"> Energy consumption Accessibility Traffic generation Greenery/ecology 	<ul style="list-style-type: none"> If available, data for individual developments on energy consumption, modes of transport, traffic generation, commuting times, etc., for comparison between cases or on a broader basis 	<ul style="list-style-type: none"> Interview questions to occupiers, local authority officials and sample of local community addressing the environmental impacts of the development 	<ul style="list-style-type: none"> Average figures for energy consumption (and possibly traffic generation, modes of transport for users/occupiers) by type of development are available from specialised research institutions