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Designing Affordable and Viable Housing Solutions

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2023 Robert E. McNair Scholars Program

Abstract:

There is a consistent housing crisis that is affecting our society today. Nearly 582,462 are homeless alone in the United States, with San Diego having the 4th highest unhoused population in the country (Hud, 2022). My research this summer sought to understand the current living conditions of low-income families within our local community, with an emphasis on the El Cajon neighborhood in the Eastern part of San Diego County, and develop new architectural designs for sustainable and affordable housing. Through this lens I was able to see how a class in society just above homelessness lives day to day and incorporate their potential needs into my designs. Surrounding these neighborhoods are vacant lots in which new and more affordable low income housing could be built with the people it will serve in mind.

Introduction/Background:

As my 2022 McNair Research found while exploring the topic “What Housing Solutions do Haitian Migrants Develop in San Diego?,” many migrants are coming into the US legally but then are left struggling without many opportunities to support themselves in a new country because it is difficult to find employment when they rarely speak much English. This lack of employment leads to lack of income which ultimately causes families to seek whatever affordable housing they can find and put their government stipends together to cram into small living spaces. Many of these migrants simply can’t find housing because it is too expensive compared to whatever monthly income or financial support they are receiving. They often end up sharing an apartment with several other families, with one family per room. The kitchen and bathrooms are sometimes shared between 10-15 people.

Affordable housing has become a more prominent issue throughout the country as homelessness populations continue to rise not decrease. The state of California alone holds

171,000 unhoused people which equals 30% of the homeless population in the entire United States of America. San Diego is experiencing the worst of this impact and had a 22% increase in homelessness from the previous year (Brooks, 2023). There is more of a need now for low-income affordable and sustainable housing solutions as more urban cities grow and populations increase, especially due to the influx of immigrants coming from the Biden administration newly accepting up to 30,000 migrants per month from 4 nations including: Cuba, Nicaragua, Haiti and Venezuela for 2 years (Holland, 2023). This brought me to my summer research question: “How to maximize space and build affordable and sustainable housing solutions in neighborhoods confined by zoning?”

Housing is considered affordable by the U.S. Department of Housing and Urban Development when a family spends 30% or less of their income on the cost of housing (HUD). The bottom 25% of households in California make \$30,000 a year or less. 30% of their income for rent would equal about \$750 a month or \$1,500 a month for a 2 income household (Depietro, 2022).

Literature Review:

Studies have shown that the unaffordable housing crisis in the US has been developing for years and is not attributed to only one event. San Diego has already experienced a housing crisis independent of the new migrants. San Diego has very limited affordable housing options for the people who currently live here. The County of San Diego attributes this problem to “The root cause is the fact that housing development has not kept pace with population growth, resulting in housing costs that have increased at a much faster rate than income levels” (County of San Diego, 2021).

When it comes to the architects who actually design these buildings, unaffordable housing prices can be attributed to tight zoning policies that discourage dense population buildings and deter architects from those designs which in result lower the supply and abundance of available housing. Zoning restrictions in California have had a direct negative impact on reduced construction, failing to meet the high demand of housing, inflation in the prices of new and resale property, and an unstable housing market because home prices are rising at a faster rate than employment income rates. (Alvarez, 2018). A solution to this would be that smaller units should be built to maximize the lots that are being constructed and utilize them to create more units at lower prices. This would ensure more abundance of housing in the marketplace while also generating the same prices for owners with the value of their real estate in mind.

While considering the development of these smaller more affordable units, it should be recognized that construction is one of the highest factors contributing to environmental defects which is why it is significant that these new affordable housing also be sustainable. The construction industry in general, generates 40% of annual global CO2 emissions (Architecture 2030, 2023). CO2 emissions are what warms the planet 50% over the past 200 years and causes climate change (NASA, 2023). The construction sector also makes up “23% of air pollution, 50% of the climatic change, 40% of drinking water pollution, and 50% of landfill wastes” (Sikra, 2017).

Sustainable materials are another important aspect of designing low-income housing buildings. Using environmentally friendly materials not only reduces construction costs but also contributes to long-term energy savings and environmental conservation efforts (Kahachi, 2020). Incorporating features such as solar panels can further sustainability while reducing utility bills for residents.

Research Methodology:

To execute my research I first began by going into the field and observing what current apartment complexes that exist in the El Cajon neighborhood look like. I then studied their layouts and designs and requested permits in hopes of getting a better understanding of what current buildings are constrained to. I then identified vacant lots in the nearby neighborhood and started developing a design for a potential new building that could exist in that same area and be affordable and sustainable. Finally, I created a physical model to replicate my software design.

In order to conduct my research that was interactive with the community, I had to complete a CITI certification for research as well as IRB training to make sure my research was appropriate. A major part of my research consisted of surveying the everyday life environments of low income families and their surrounding communities. Doing the IRB training ensured sensitivity to their issues I may not be currently experiencing and gave me the opportunity to be empathetic towards them.

Results/Findings:

I began my research by exploring the current living conditions of low income families in the El Cajon neighborhood where I found that large size families often squeeze into housing with only 1-2 bedrooms. These houses are often farther away from the ocean and are able to include the luxury of townhomes and apartments with more open space for cheaper prices than the rest of San Diego County.

Design plays a crucial role in creating affordable housing that is functional, comfortable, and cost-effective. Efficient space utilization is one key principle that allows for maximum

occupancy within limited square footage. By utilizing innovative design strategies such as open floor plans or multi-functional spaces, architects can optimize space usage without compromising on quality or comfortability.

My results ended with my redesigning a hypothetical affordable residential unit and also recreating the physical model. I incorporated strategies into my design by developing 3 studios, 4 1-bedrooms, 4 2-bedrooms, and 4 3-bedrooms. I created a variety of open layout concepts as well as more traditional units. All units have washer and dryer in-unit for accessibility and balcony for luxury. To maximize space I limited the use of hallways. The complex has a pool, greenery, and playground for children to include all nearby amenities for leisure and cost efficiency. The building has the flexibility to add gates for additional security.

Analysis/Discussion:

Affordable housing has become a significant issue in many cities around the world. As urban areas continue to grow and populations increase, the demand for housing rises and prices skyrocket. This presents a significant challenge for low and middle-income families who struggle to find suitable and affordable accommodation. That is why it is crucial to address this issue head-on and develop viable solutions to ensure that everyone has access to safe and affordable housing. Without affordable housing options many families may be forced to live in inadequate or unsafe conditions, making it difficult for them to escape the cycle of poverty. By ensuring that adequate affordable housing is available we can help provide stability and security to those who need it most, giving them the opportunity to improve their lives and contribute positively to their communities. Also, affordable housing has a positive impact on overall health and well-being. Studies have shown that individuals who live in insecure or overcrowded

housing experience higher stress levels, leading to physical and mental health issues. “One of the leading causes of homelessness in the United States is the result of chronic mental health disorders suffered by the severely mentally ill” (Martin, 2015).. Affordable housing can help alleviate the stress caused by high housing costs, allowing individuals to prioritize their well-being.

First, governments need to work alongside architects with the community in mind to implement regulations that protect tenant interest and ensure fair and affordable rental prices. By providing affordable housing options, we can reduce housing inequality. By doing so can we create a more inclusive and equitable society where everyone has the opportunity to thrive.

Funding sources play a significant role in making affordable housing projects real. Government grants or partnerships with non-profit organizations can provide the necessary financial support to bring these projects to life. Understanding available funding sources is essential for architects involved in designing low-income housing buildings. It is important for architects to be aware of potential obstacles and think of strategies to overcome them effectively. Collaboration between designers, policymakers, and developers, is key to navigating these issues successfully.

Limitations:

One of the biggest challenges I had included completing my project while not having access to the full information of what I was trying to redesign. I began my research by attempting to request any public records for the existing low income buildings in El Cajon that I was observing such as: 542 Ballantyne St and 848 North Mollison in El Cajon, California. The city was only able to provide me with permits and code violations and reserved the building plans

and architectural drawings for the property owner. I then had to sketch out and imagine what the building floor plan would look like. I was able to talk to a property manager during one of my visits that let me know what kind of units were in the building but I still had to imagine the layout. From there I walked around the buildings and used my previous construction knowledge to determine where rooms such as the bathroom, living room, bedroom, and kitchen were placed.

Conclusion:

In conclusion, addressing affordable housing needs thorough and thoughtful designing solutions that prioritize the communities well-being and societies rise out of homelessness. Designing low-income housing buildings in San Diego requires an understanding of the specific needs of this population as well as integrating efficient space utilization practices and sustainable materials into the design process. Architects can play a crucial role in creating inclusive communities where everyone has access to safe and affordable housing by considering the human need for shelter and making it more abundant and cost effective with the spacing that is provided.

Future Scope:

In the future, I hope to continue my research by expanding my thesis into my Fall research program with McNair. As an aspiring architect one of my primary focuses for getting into this profession is a drive to build up communities and focus on urban planning to create more housing for everyone. Construction is something that will never end. People are always building new land and other properties will always need to be rebuilt as they age. Keeping into consideration the people that your design will serve in the community is an ethical way to practice.

I hope to further my research by not only designing and eventually developing some of my low income and sustainable housing plans but also by understanding why the housing market is currently the way it is and what other ways society can help combat this issue besides the architectural design.

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