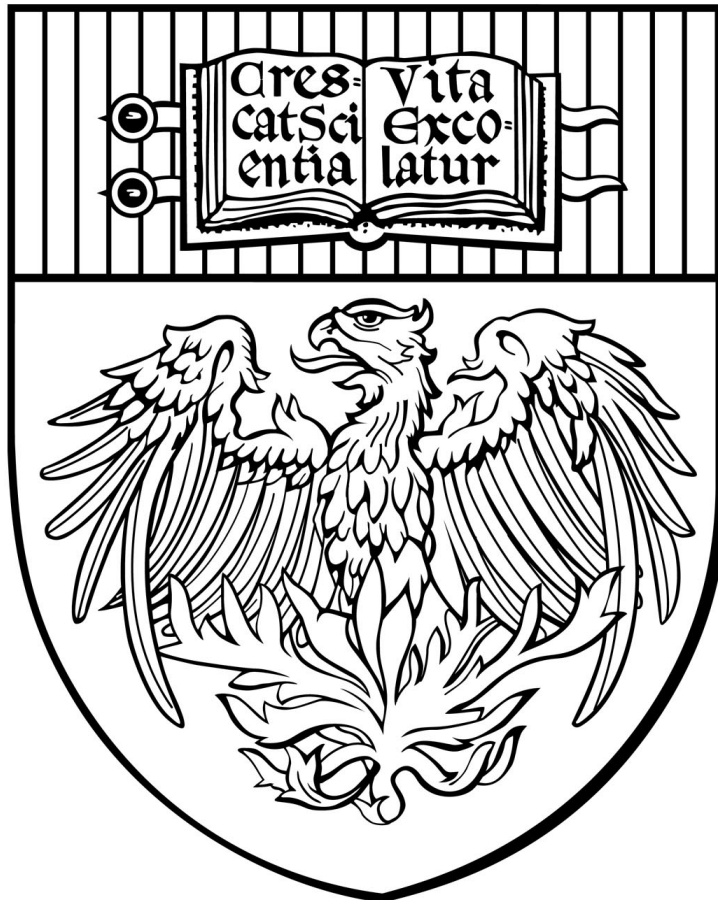


HIGH RISE LIVING: THE CHANGE IN CHICAGO DWELLING PATTERNS

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Submitted in partial fulfillment of the requirements for the degree of:
BACHELOR OF ARTS
IN ENVIRONMENTAL AND URBAN STUDIES AND PUBLIC POLICY
at THE UNIVERSITY OF CHICAGO

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April 17, 2020

Abstract

According to the UN, 55% of people worldwide lived in urban areas as of 2018. Because of this boom in urban growth, it has become paramount to consider housing and provide dwelling solutions for a growing urban population. In most instances, developers look to high-rises in order to house the greatest number of people the most efficiently. There has been a boom in high-rise construction in the city of Chicago that has occurred within a single generation. However, developers do not give enough consideration to the social position of the high-rise. The city and its unique features are cultural objects that at once shape man and are shaped by man. It is because of this that I investigated the current distribution and social role of high-rises in the city, in order to better identify their location and the populations they currently serve.

To create the maps, I first locate the shapefile of Chicago's census tracts and merge it with the American Community Survey (ACS) 2019 data set using ArcGIS Online software. I use age, ethnicity, educational attainment, income and marriage status to better understand the populations that live in these buildings. I then calculate a diversity index based on the ACS's 2019 data set that accounts for a range of 0-1 in the overall diversity of the tract. Next, I map the city's high-rise apartments and condominiums using the Council on Tall Buildings and Urban Habitat's (CTBUH) classification in order to better visualize their distribution in the city. This dataset includes building name, ranking, height, address, use and construction material. I then overlay the population variables onto the datasets from the CTBUH's Skyscraper Center to generate maps of population characteristics versus high-rise density.

I found that within Chicago, the population of high-rise dwellers is, as a majority, Caucasian, well-educated, unmarried young individuals. High-rises built in desirable areas of the

city cater to the wealthy and have multiple amenities. Others provide for mixed income living. However, only few modern projects cater to low-income tenants.

These results indicate that high-rise housing distribution poses a unique problem, as the demand for these homes is more diverse, but low-income and minority groups seem to be excluded. This pattern of high-rise dwelling therefore appears to reinforce the legacy of segregation in Chicago. I therefore propose integral changes to the high-rise, including an increase in mixed-income housing to address the needs of more people while catering towards diversity. There is promise in a public-private housing model, taking advantage of the super voucher system, which is currently underutilized. Further research is needed to best reshape the high-rise such that it becomes a vector for social change and integration.

Acknowledgements

I would first like to thank my family. Without their infinite love and support of my academic pursuits, I could not be here today.

Thank you to my Father for showing me other perspectives and challenging my beliefs—you didn't change my mind, but you did help me to learn how to develop an argument. I love you.

Thank you to my Brother, who's been a constant guiding light and inspiration for me to achieve more. Thanks, Arthur, for challenging me to be the best version of myself.

Thank you to my Mother. You have been my rock along this whole process and have unwaveringly been there for me through countless life experiences. Thank you for all the sacrifices you made for me and Arthur. Without you, I would not be the woman I am today; I am forever indebted to you.

Thank you to my friends and classmates who patiently listened to me nerd out about skyscrapers this past year.

This project could not have been possible without the help of the many people who educated me over the years. Thank you all for investing your time in me and recognizing my potential.

A special thank you to Professor Linda Waite, my thesis advisor. The edits and comments you provided shaped this paper and provided perspective into a field I was generally unfamiliar with.

Finally, thank you to my excellent preceptors. Without your insights and support, this process would be infinitely harder.

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I. Introduction

Rushing down State and Lake Streets during my sophomore summer to make it to my office on a day I was particularly delayed by the CTA, I felt compelled to stop and look around me (hey, I was already late, what was an additional 5 minutes delay going to do to me?). The bustling streets teeming with cars, the people walking in and out of coffee shops for a little liquid fuel before they start their mornings, and the tall buildings that are home to man and business alike captivated me. There was such beauty in the city, and I was privy to it, a lucky bystander who took the time to slow down and stop to observe.

The elegant style of Chicago is undeniable; buildings of different designs surround you, marking the people and time periods that touch the city and leave their mark. This is the beauty common to all well-planned urban spaces. It is a type of architecture marked by the strategic, artful and planned-out distribution of buildings. The ability to gaze upon these buildings is truly universal; everyone is given the luxury of getting lost in the landscape to ponder the teamwork between architects and urban planners, construction workers and brick layers, passersby and photographers. The city and the high-rises are truly incredible structures that do much more than house man and business.

It is because of the long history of segregation in the city of Chicago that I ask: does segregation manifest itself within the high-rise buildings throughout the city? To answer my question, I investigate patterns of dwelling within high-rises in Chicago and compare them to historical data to better understand the past and present populations that make high-rises their residence. I first perform a historical analysis of the high-rise in the city of Chicago and its changing role throughout time. I then identify who predominantly resides in these high-rises currently. Finally, I ask whether the high-rise is another entity that shows proof as to whether

segregation is perpetuated in the modern era. I argue the contemporary make-up of these buildings is indeed a repetition of historic trends of segregation.

In *The Social Rules of Buildings*, Lauren Dean argues that there is a transitive relationship between buildings in the city: society both constitutes and changes a building type and its materiality. This means that the building's form is socially defined. Additionally, the materiality of a building constitutes and changes the practices within the building and the meaning of the type of building. Thus, buildings can change and shape how humans interact with the city. Finally, she argues that the purpose of a building affects and changes its materiality and neighborhood-value. As a result, the placement of the building can define and possibly change the on-the-ground understanding of the space. Therefore, buildings both define the city and its social interactions, and in turn are defined by the city and the localized interactions.

The residential high-rise fits an interesting societal role, as it can efficiently house the multitude of people interested in moving into the city. By 2050, 66% of the total global population is estimated to be living in urban areas (Arslan and Sev, 2014). In the 1950's the urban population was a mere 30% of the total, showing a predicted greater than two-fold increase in just a century (Arslan and Sev, 2014). With this increase in population comes a greater need for housing within the city. The most economically feasible choice on the part of developers is to build high-rises to meet the demands for the growing population. According to the Council on Tall Buildings and Urban Habitat (CTBUH), there were only 17 residential high-rises in Chicago by the turn of the century (CTBUH, 2020). Ten years later, 21 additional buildings were built (CTBUH, 2020). Now, the city of Chicago has a total of 324 residential high-rises, with more buildings in the construction or design phase to be erected by 2025 (CTBUH, 2020).

Chicago is an interesting city to base this case study for the high-rise because of its history of rapid urbanization. Chicago's population almost doubled between 1870 and 1880, growing to over half a million strong by the 1880's and necessitating an increase in housing and changes in dwelling patterns (American Architecture Series, 2018). A few years earlier, specifically in 1871, the Great Chicago Fire scorched the city, thereby requiring the construction of new buildings for dwelling and commerce and the use of materials that were resistant to the intense heat of fire (American Architecture Series, 2018). With these specifications in mind, and with the development of the elevator, the first skyscraper was created (American Architecture Series, 2018). This forever changed the potential for housing. In 1891, the first residential skyscraper was constructed, standing 224 feet high (CTBUH, 2020). This building, The Manhattan, was erected in the modern Central Business District (CBD), the only area in which high-rise buildings could be constructed according to the building code (City of Chicago, 2019). These laws were socially driven, as explained by the theory of Park and Burgess, which provided the earliest analysis of the structure of the city using Chicago as an example. Though many of their findings are artefacts of a previous era and therefore no longer applicable, they argued that society is a living organism that extends outward (Park and Burgess, 1984). The CBD thus expanded outward to satisfy the growing needs of the most urban area. This broadened the public's perception of the city and therefore resulted in changes to the building codes. Areas where developers would not have formerly been allowed to build high-rises have now become expansive residential developments.

The Chicago School of Sociology champions the socially driven phenomenon described by Park and Burgess. They argue that we ought to focus on human behavior as shaped by social structures, and the way in which humans inadvertently shape these structures (Lutters and Ackerman, 1996). Understanding Chicago housing and its distribution has the potential of helping

to discern dwelling patterns not only in Chicago, but throughout the country as a result of this recognition of the relationship between man and the built environment. Unfortunately, Chicago housing includes a number of negatives, such as adverse neighborhood effects¹, racist housing policies², and redlining. It is because of this long and interesting history that Chicago may provide an interesting case study on the transformative effects—for better and for worse—of high-rise dwelling.

There are numerous benefits of residential high-rises in cities. First, the high-rise concentrates populations, decreasing urban sprawl. When cities are widespread, there is a greater need for private transportation, which increases pollution as well as traffic congestion (Tsiattalos, 2014). The high-rise has the benefit of concentrating people in a relatively small area near their workplace and cultural landmarks, diminishing the need for private transportation. Additionally, urban sprawl increases infrastructural costs, net energy consumption, and water usage (Tsiattalos, 2014). The high-rise has the ability to house as many people as efficiently and sustainably as possible (American Architecture Series, 2018). Relative to alternate forms of urban housing, these structures reduce per-unit energy consumption due to the communal pooling of resources by those within the building (Arslan and Sev, 2014).

¹ The Neighborhood Effect is an economic and social phenomenon initially explored by William Julius Wilson in Chicago. There are multiple positives of neighborhoods, but the negatives kept poor people, especially those of color and who lived in slum neighborhoods, in cyclical poverty. He explained their inability to overcome poverty as a function of their disenfranchisement and lack of community-wide institutions that offered a way out of poverty, such as role models, after-school programs and access to parks (Wilson, 1987).

² Because of housing discrimination in the city of Chicago after the 1890-1910 Great Migration, people of color were disallowed from residing in areas designated for white families. By the 1930's, the US government lent support to these racist policies by upholding racially restrictive covenants (Corrigan v. Buckley, 1926), and by redlining and passing the National Housing Act of 1934, which was supposed to make housing mortgages more attainable. However, brokers would not give black people mortgages in white-dominated areas. Further, provisions for black families to improve their homes or move out of their neighborhoods were often restricted. This act caused ghettoization in many cities, and this legacy is especially evident in the city of Chicago (Edwards, 2017)

Despite these multiple benefits, there are still significant disadvantages to residential high-rises. First, wind, sunlight, natural light, air, and noise are all physical factors significantly altered by the presence of the high-rises (Arslan and Sev, 2014). Skyscrapers can greatly affect the vertical geography of a city, especially when many are clumped together. While these negatives are unavoidable in building the vertical city, architects are constantly experimenting with ways to lessen the ills of the high-rise. The CTBUH reports quarterly advances in the architectural sciences that develop the technology to make the skyscraper as minimally detrimental to the city as possible.

There are also negative psychological factors associated with high-rise living. Foremost, it has been reported that children of families that live in high-rises often have developmental delays compared to their peers who live in traditional neighborhoods (Verhaeghe *et al.*, 2016). Next, individuals who live in these structures often report lower self-rated mental health than those in traditional neighborhoods, complaining of social isolation, low access to green space and limitations of natural light access (Verhaeghe *et al.*, 2016). Additionally, the high population density within these buildings seems to correlate with a higher crime rate when compared to areas in which people are more spread out (Austen, 2018).

Despite these multiple negatives, high-rises are growing in popularity throughout cities around the world, and in Chicago particularly. Perceptions of high-rise dwelling used to be generally negative in the United States. Residents did not see high-rises favorably until the turn of the millennium; this change in perception occurred as a result of technological advances and an improvement in amenities provided to residents. Attitudes changed a great deal in the last 20 years, commencing a new period of skyscraper growth and expansion in Chicago (Du *et al.*, 2017). This growth is currently manifesting itself throughout the United States and is projected to expand even further (Gerrity, 2019).

In order to investigate the current distribution and social role of high-rises in the city of Chicago, I explore the population breakdown of the city and use demographic indicators to assess what populations these buildings predominantly serve. I find that the current (as of 2019) population living in high-rises is relatively homogenous, predominantly favoring highly educated, middle- to upper-middle class, Caucasian, unmarried individuals.

The high-rise is a uniquely futuristic technology, as it is becoming more prevalent and is continuously being improved upon through the technology of the twentieth century. In recent years, countless strides have been made in the architectural sciences, making it possible to build taller and more durable buildings (CTBUH, 2020). Yet, according to my findings, the diversity indices of dwellers in these skyscrapers are comparatively low when compared to the 2019 average diversity index score for Chicago as a whole. Rather than combatting segregation, the high-rise is perpetuating this phenomenon. Therefore, I have used the findings from my data based on GIS analysis and case studies to propose recommendations for how to best proceed in developing a better high-rise framework that is more diverse and equitable.

The field of urbanism strives to understand how the built environment affects the way in which people behave just as much as how patterns of human behavior can affect how cities are built (Wirth, 1938). I believe the skyscraper occupies a unique space in the built environment because it is a response to the problem of housing as many people as possible in a small place. With improved design features and some degree of government intervention, high-rise inequity can be mediated effectively to enhance access and public amenities, and to decrease isolation due to design features.

II. Literature Review

In order to understand the social stature of the high-rise, it is necessary to appreciate the theory and history of urban planning and Chicago's central role therein. The following section explores this topic with regard to Chicago housing, the economy of choice and how this has led to changes in dwelling patterns and local economic conditions, all of which are ultimately reflected in the design and prevalence of the high-rise.

(i) Theory and Classic Sources

In this section, I will be discussing the sources classic to the field of urbanism. It is important to recognize these sources because they have changed the way social scientists approach questions of urban growth and population. The majority of these theories come from the Chicago School of Sociology, in which the city was studied to explain the larger pattern of urbanism.

Theories of modernization use the city as a case study because of its well-documented transformation. Robert Park and Earnest Burgess were two University of Chicago sociologists who

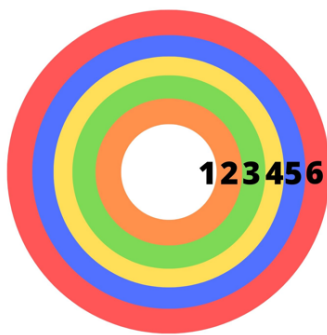


Figure 1: Concentric Zone Model (Park and Burgess, 1925)

theorized on how the city of Chicago specifically developed. In 1925, they proposed that the city can be divided into six zones (Figure 1). **Zone I** is the central business district, with concentrated wealth and technology. This area is the most accessible due to a convergence of transportation. **Zone II** surrounds the first zone; this is an area where industry is located. Places in this zone are slightly less accessible by public transport than those in zone I. **Zone III** is dominated by manufacturing

and industry. It is home to poorer inner-city communities and houses a highly segregated

population of new immigrants. **Zone IV** is a working-class residential zone, dictated by second generation immigrants who could afford to move. This zone is in close proximity to areas of employment as well as to a well-developed transportation infrastructure. **Zone V** has an even higher quality of living but also increased transport costs. **Zone VI** is the suburban area dominated by the wealthy who can afford the high cost of transport. As time passes and industry expands, the central zones begin to expand and converge outward (Park *et al.*, 1984).

This zoning theory was one of the first to acknowledge the trade-off between cost of living and cost of transportation; as people live further from the city center, they pay more for transportation in both time and money. The benefits of living further from the city include cheaper rent for nicer homes, reduced crime and superior social amenities (like schooling, neighborhood programs and community). The cost of land is greater near the center of the city because of its high accessibility and demand by businesses. People are willing to pay more for transportation if they have a cheaper, safer and nicer home. This tradeoff was also discussed in the agricultural theory by von Thünen in 1826. He argued the costs of commodity transportation impacts the location of its production (von Thünen, 1826). Despite its introduction almost two centuries earlier, this model still rings true, as some segments of the population are willing to spend more on rent to reduce travel time, thereby increasing convenience. The lasting validity of this theory speaks volumes about the nature of the city and how we study it. Features endemic to the built environment, like skyscrapers, buses, sidewalks, etc., impact how people use the space as much as how people can change patterns of urban settlement based on their interaction with these unique features.

The von Thünen theory was later revised and applied to rent by Alonso (Bid Rent Theory), who saw land, distribution of population and employment within the CBD as indicators of land

cost (Shieh, 2003). This phenomenon is shown in Figure 2. The yellow zone has the cheapest rent but the highest cost of transportation, and red has the highest rent but the lowest cost of travel.

The Park and Burgess concentric zone model is considered classic to theories of urbanization but is heavily criticized. I will discuss the Chicago-exclusive critiques, as there is no shortage of ideas that discuss the theory's inapplicability to cities outside the US and to those within the US that have natural landmarks,

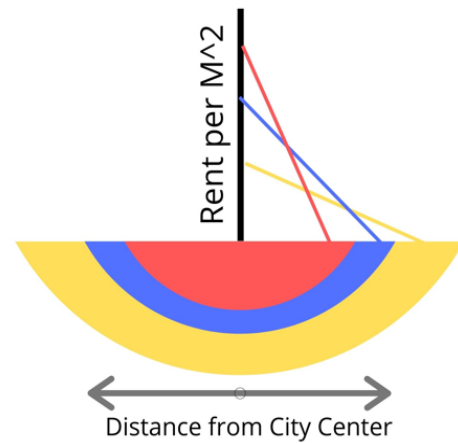


Figure 2: Bid Rent Theory (Alonso 1826)

preventing this form of concentric development. Many argue that the relationships in the concentric zone model are an oversimplification, and no ideal pattern exists (Athens, 2009). Further, people later argued that the model is dated, and could only explain the phenomenon until the 1950's. People began to move to urban areas after the 1950's for economic opportunity. Wealth increased quite rapidly in this period, and residences were being built in the middle of the city at an increased rate. Park and Burgess's theories simply could no longer be applied to the post-1950's housing movement. Regardless of these critiques, it is still important to recognize the legacy left by Park and Burgess, as they were among the first to study and acknowledge that the city is affected by the changing attitudes and economic factors of its residents, and that the way the city is designed changes the people who live there. Therefore, the city and its unique features are cultural objects that at once shape man and are shaped by man.

The concentric zone model gave rise to Homer Hoyt's Sector model. This model was also based on transportation models throughout cities. It accounted for expansion and growth of different parts of the city more effectively than the Park and Burgess model (Hoyt, 1964). The model (Figure 3) argued there were sections of space in which factories and industry predominate (yellow), a strip for high income residences (red), and an about equal share of land for low income (blue) and middle class (green) families. All of these are centered around the CBD (orange).



Figure 3: Sector Model (Hoyt, 1939)

This model is similarly criticized for being an oversimplification as no ideal model of settlement exists, and if it did, it would not look like the Hoyt model (Ullman, 1968). Further critiques of the original Hoyt model argue that it does not account for building height, which substantially alters the city's composition (Hoyt, 1964).

A final model of city distribution is the 1945 Harris and Ullman multiple nuclei model. This model argues that even if a city originated with one CBD, over time and as suburbanization occurs, multiple nuclei develop. Unlike the Park and Burgess model and the Hoyt model, it accounts for even distribution of residential areas throughout the nuclei. It also was a response to more private ownership of cars that increased the ability for transportation efficiently (Harris and Ullman, 1945; Harris, 1997). This model has again been criticized for not acknowledging tall buildings. It also does not substantially define spaces between neighboring sections in its map, so it is relatively nonspecific (Agnew, 1997).

These theories are important to better understand why people choose to live in high-rises, and how the city both shapes and is shaped by people who live there. Though some of the theories are now no longer pertinent, as the world has changed since they were first published, they are important to the field as they constitute its foundation. The Park and Burgess model was formative for the field of urban studies, and the implication that the CBD extends outward is an important observation when looking at the expansion of high-rises in Chicago and the timeline of these expansions. Within the past decade, the boundaries in which the high-rise could be located has grown incrementally, as the city center has expanded outward. Additionally, there is some merit in the implications of the von Thünen model, as one of the major reasons people choose to live in high-rises in the CBD is because they have greater access to their place of work and to cultural centers in the city. People are thus willing to pay more in order to have the luxury of travelling less. The question is whether such convenience is equally desirable and accessible to all segments of the population.

(ii) Segregation

Chicago as a city is known for being immensely segregated. Currently occupying the spot of 13th most segregated city in the US, for a long time Chicago held the title of “most segregated in America” (Goldsborough, 2019). This is in part due to Chicago’s forced housing ordinance, in which the city disallowed members of other races to live in areas dominated by a preexisting group (Edwards, 2017). In 1968, the Fair Housing Act was passed, ensuring that people could live where they so choose. However, this did not drive the integration of neighborhoods, as some of the segregation was self-selecting. There is comfort in being surrounded by the people of your own race (Edwards, 2017). Additionally, even though it was legal for families to move into these neighborhoods, there were internal threats due to prejudice. Many families of the minority community were unable to move into white-dominated neighborhoods for fear of backlash

(Edwards, 2017). Finally, banks often chose not to give loans to families of color to live in predominantly white neighborhoods, making integration impossible. Whenever masses of black people moved into an area, white families moved out. This phenomenon was known as “white flight”. According to Shertzer and Walsh (2019):

[The] exodus of white people from a particular neighborhood following the arrival of black residents led to a 34 percent increase in segregation during the 1910s; in the 1920s, it resulted in a striking 50 percent increase.

This resulted in further segregation for cities, especially Chicago (Shertzer and Walsh, 2019).

This situation became more complicated with the introduction of high-rise living. As more and more buildings in Chicago’s loop were erected, more people could live in apartments near where they worked, as they would save time and transportation costs. However, the question arises as to whether high-rise living was equally accessible to all, or whether these buildings helped to cause Chicago to be the blueprint for modern segregation. Thus, skyscrapers were both a negative and a positive for Chicago, as they gave the city a reputation for the beauty and innovation but were not equally accessible to all.

This leads us to ask the following questions. First, is the high-rise perpetuating segregation within Chicago? Second, what does the partition of the city look like due to the introduction of the high-rise? Finally, how can the high-rise possibly be used to address and resolve the problems of segregation?

(iii) Case Studies

One of the more important aspects of studying the high-rise is to analyze the human-level interactions within the building. To do this, I looked at a broad scope of recent studies that built upon past literature and took into account the changes to the built environment that have occurred in the last 20 years. There were few sources that lined up directly with my criterion; however, the ones that did gave a strong and comprehensive summary of high-rise dwelling and provided me with robust information to make policy recommendations.

Initially, I wanted to limit my scope of exploration to Chicago. However, I quickly realized that scant literature is available on the health impacts of the high-rise in this city. Not only does this speak to the importance of my quantitative study in investigating who actually chooses to live in high-rise buildings but it also shows that more research must be performed to assess the mental health and wellbeing of high-rise dwellers in Chicago. There were several studies done exclusively on public-housing programs and early development interventions, but, to my knowledge, only one study on the social and psychological aspect of the high-rise living conducted within Chicago (Du *et al.*, 2017, “Life Satisfaction of Downtown High-Rise vs. Suburban Low-Rise Living: A Chicago Case Study”). This study looked to survey responses of residents of three high-rise structures in Chicago, the Commonwealth Towers in Lakeview and the Legacy and Aqua Tower in the Loop, and compared them to the suburban Oak Park Neighborhood. The researchers conducted their study over the course of three months, and obtained 177 survey responses, 94 from high-rise residents and 83 from suburban residents.

The researchers wanted to adjust for demographic data, as they believed no research had previously done so. They found that overall, living in downtown high-rises was associated with higher life satisfaction than living in suburban low rises when controlling for demographic

differences. This finding surprised me, as it was contrary to all the literature I have read. However, I believe these findings are due to the survey respondents and design. First, both the high-rises and the Oak Park neighborhood that the study focused on are well known for housing affluent populations, and, of the respondents, an overwhelming majority were in the top two quartiles for income (68.3% for high-rises and 79.5% for Oak Park). This sample is limited as most of the residents of the city of Chicago do not fall within these income brackets. Additionally, many respondents were Caucasian (90.4% for High-Rises and 84.3% for Oak Park), showing that the choices for the study were limited to predominantly Caucasian areas (Du *et al.*, 2017).

Had the study been more inclusive of other neighborhoods or other buildings dominated by people of lower socioeconomic status, the authors might have found different results. I believe that their findings were accurate; the people that lived in the three high-rises overall had a slightly higher satisfaction with their neighborhood, because of the safety and accessibility of the locations studied, and because of the life trajectory of the inhabitants. However, I do not believe this speaks to a majority of people in the city of Chicago due to the study's limited sample. This study does an excellent job at pointing out the disparity in who is being housed in these high-rises. Additionally, after additional research into these buildings, I concluded that they have excellent amenities, access to the city via public transit, walkability and public spaces for resident mixers. These are all features important to community building that I will argue are essential for fostering social capital among residents in the high-rises.

The next study I considered, conducted by Verhaeghe *et al.* (2016) in Belgium (“Is Living in a High-Rise Building Bad for Your Self-Rated Health?”), looked specifically to Census data on self-rated health to investigate the disparity between those living in high-rises versus the traditional neighborhood. The authors found that those that live in high-rises have a significantly lower level

of satisfaction. However, when adjusted for income, this gap virtually disappeared. This is important, as it shows the high-rise is not necessarily the problem, it has more to do with the type of high-rise and whether one has the choice to live in the high-rise or the traditional neighborhood. Finally, they report a low curvilinear correlation between the floor one lives on and the level of contentment. They concluded that people are less content until they reach the seventh floor, then the relationship stabilizes. In other words, living on the eighth floor and above has a higher level of contentment. The main finding is that - “worse self-rated health in high-rise buildings can be explained by the strong demographic and socioeconomic residential segregation between building types”. They additionally found that these nicer buildings have more amenities and privileges for those that can afford them.

These findings are significant, especially when put in context with the findings of Du *et al.* (2017), because they show that the design features of the high-rise that benefit the wealthy, such as a better view of the city, more natural light, and more open space, provide a better opinion of the social connection of the high-rise. Those who live on the lower floors are segregated from the upper floors residents and do not enjoy the benefits of upper floor living, such as access to light. Therefore, the high-rise can both increase the standard of life for the resident or make it worse.

Based on my reading of Gifford’s paper, “The Consequences of Living in High-Rise Buildings” (2007), I understand that architectural science is both a technology and a social science. This analysis comes directly from the Chicago School of Architecture; we therefore must understand social and psychological impacts of high-rise living to better address the problems of today before they get worse. Gifford discusses that even if we moderate for common differences, such as race, income, and gender, high-rise dwellers are less content overall with their living situation. “High-rises are less satisfactory than other housing forms for most people, that they are

not optimal for children, that social relations are more impersonal and helping behavior is less than in other housing forms, that crime and fear of crime are greater, and that they may independently account for some suicides.” However, again these conclusions must be considered in the context of whether high-rise living is a choice or imposed as a result of external factors.

Per the findings of Arslan and Sev (2014), conducted in Turkey (“Significant Issues in and around High-Rise Environments”), we find an argument that the high-rise building mode of living is an inevitability due to the growth of the city and the built environment. This means that there needs to be better ways of housing more people and maximizing the contentment with their living situation. The high-rise can prove to be an appropriate solution to the problem of urban spread and can provide lower energy consumption for a greater number of people, making it a sustainable option. The paper argues there needs to be more research and focus on the costs and benefits of the high-rise environmentally, psychologically and socially to find optimal housing situations. They argue that mixed-income housing provides a feasible solution, as does implementing better design features that maximize the residents’ sociality and connection to the outside world. Additionally, they dispel the myth that school age children face developmental delays due to the high-rise living. Rather, they argue this is due to the poor education in the city and a lack of stimulating social spaces and green spaces for them to interact with.

Of course, when discussing revitalization of mass-housing projects, significant consideration must be given as to who will eventually benefit from these programs. I looked at the study of Karacor *et al.* (2014), conducted in Turkey (“PlaceMaking Approachment to Accomplish Social Sustainability”), to assess the long-term consequences of restoration of an abandoned and depressed neighborhood. This study describes the refurbishment of abandoned row houses in Istanbul through a public-private partnership. While not a high-rise, this neighborhood is still

considered a mass-housing project since it is comprised of blocks of row houses. Restoration was a success, as evident by revitalization of street life, introduction of trees and green spaces, ease of vehicular circulation and pedestrian movement, access to public transportation, decreased noise and crowding levels, improved aesthetic and design features, and decreased crime rate. However, because of these improvements, residents for whom the row houses were originally built for were priced out and high-income groups moved into the area. Thus, revitalizing of the local economy did not have the desired effect in this case.

Overall, these case studies demonstrate the need to implement social programming/spaces for public use to better satisfy the community, and to make sure these improvements serve the community they were originally planned for. Moreover, these mass-developments are necessary due to urbanization, and developers are moving toward building these dwellings, so understanding the social features of a traditional neighborhood that make the space better would in general improve the standard of life in all mass-housing projects. This is likely to be applicable to high-rises all over the globe. The US has shown a similar growth in high-rise developments in cities due to the urban agglomeration.

There is relatively scant literature available on the health impacts of the high-rise in the city of Chicago. Overall, this “gap” in the literature may of itself be evidence as to why Chicago high-rise buildings tend to be so limited in their assumed users, tenants, and investors. The importance of the quality of high-rise dwelling to the well-being of its residents is an area of research that developers, architects, policy analysts, and designers looking at Chicago have not prioritized in the past. The high-rise in general should be analyzed for its social effect. Ultimately, this may even result in it being a vector for social change and integration.

III. Background – History of the Skyscraper

In the year 1884, Chicago permanently changed the world-wide cityscape by erecting the world's first skyscraper, the Home Insurance Building. Though only ten-stories high and with an elevation of 138 feet (barely considered a skyscraper by modern standards), this landmark structure towered over all other buildings in the city due to its innovative design (Glancey, 2015).

The identifying characteristics of the Chicago School of Design are best summed up by Louis Sullivan, “form forever follows function.” This modernist contention implies that the appearance of a building should, ideally, serve to better benefit the client (Plie, 2016). This is to say, if a building is to have both offices and retail space, the shops would be located on the ground floor, at eye-level, with large display windows to attract customers, while the offices would occupy the higher floors of the building, allowing for space and privacy for the workers. Offices would also come equipped with wide windows and narrow piers to give workers an appropriate amount of natural light. For the skyscraper itself, the function was to occupy as much space vertically without expanding horizontally, so architects and engineers began experimenting to find ways to keep skyscrapers growing upward.

The Chicago School of Architecture, and skyscrapers as a whole, fell out of favor in 1893 with the Columbian World Fair. During this period, the favored architectural design took inspiration from the aesthetic style of the prominent designer of the fair, namely, Daniel Burnham. While Burnham had previously designed skyscrapers, he did not believe they were of merit for the city. He realized that the soil in the financial districts was clay-like, making it hard to build upon upwards because it compacts under pressure. He moved to building larger buildings with fewer stories so there was less possibility of sinking with compaction of the soil. Burnham took a note of inspiration from the multi-cultural backgrounds of Chicago natives (Kamin, 1993). During this

era, 41% of the Chicagoland area was occupied with immigrants who colonized areas around the city; the population was starting to feel disjointed and divided. American cities were industrial, and embodied the modernist Chicago-school architecture, buildings of great height covered in pounds of soot. Burnham wanted to counter this isolating and uniquely American aesthetic, and his plans reflected this in a new American aesthetic.

Additionally, external economic pressures worked against the development of skyscrapers in Chicago. In 1893, a country-wide economic downturn that started in New York had spread throughout the United States (Living History of Illinois, 2017). The crisis started because “people attempted to return silver notes for gold,” causing banks to reach their statutory limit. This caused US notes to no longer be redeemable for gold (Living History of Illinois, 2017). This crisis started the week after the immeasurably successful Columbian World Fair had begun. The fair brought in millions of dollars from concessions and admissions alone, but the money was essentially worthless because of the depression. This took a massive toll moving forward on architectural, industrial and manufacturing companies, and railroads were completely decommissioned.

After the end of the panic, many offices were left vacant because business had to close shop due to the recession. This made development projects obsolete, as there was already so much office space to fill. Understandably, landlords emphasized the importance of getting tenants in already-completed projects (Living History of Illinois, 2017). The city began to regulate more heavily the building of office spaces so as not to bankrupt landlords and to ensure payment of taxes. Buildings were also restricted to a height of 150 feet (Bluestone, 1991). This being said, however, Chicago was home to twelve buildings that were classified as skyscrapers halting high-rise production in Chicago, and contributing to dissatisfactory feelings toward high-rises by locals.

High-rises began growing in favor in Chicago again in the 1940's due to the aesthetic influence of the Second School of Chicago Architecture, founded by the famous architect Mies Van De Rohe at the Illinois Institute of Technology (IIT) Architecture School. He championed minimalism and the use of glass and steel (Marshall, 2015). This style, which was influenced by the famous European architect Le Corbusier, enjoyed a thoroughly modern design with no reference to the past and rang in a new era of importance of the residential high-rise and skyscraper office-spaces. It adopted a futurist perspective. There was little ornamentation, and everything was functional. Van De Rohe took inspiration from this minimalist style and from the Great Depression and World War II. He wanted to modernize the city of Chicago, which he believed was living in the past.

This style dominates the city of Chicago and is especially evident in residential buildings. The materials are durable to withstand the frigid winter weather and harsh winds of Chicago. This is especially evident in the 860-880 Lake Shore Drive Apartments, that Van De Rohe designed, which were commended for their clarity and not their frivol. He loved the shape of rectangles, harsh lines and rigidity (Marshall, 2015), and wanted structures to be friendly, inviting and well lighted rather than decorative and frivolous. His design has inspired some of the most famous Chicago buildings, including the John Hancock Center, the Willis Tower, and the Trump Tower. These buildings are all considered to be luxurious because of their clean design and well-defined modernist aesthetics. They attract customers willing to pay a lot for apartments and condos (Marshall, 2015).

IV. Historical Data

There are many factors that lead people to choose to live in the center of cities, including ease of access to transportation (von Thünen, 1826). According to the bid rent theory, people will pay more to live in the city center because they save money and time with regards to transportation (Shieh, 2003). Urban dwelling as a whole is increasing globally, though this may not be true for all cities in the US (Arslan and Sev, 2014; IPUMS, 2019), and high-rises are a way to provide housing to this ever-increasing urban population. City dwelling is becoming increasingly viable for professionals because wages have increased and economic opportunity is predominantly available within the city (Du *et al.*, 2017). People choose to pay more in order to build networks close to where they live with likeminded individuals (Du *et al.*, 2017).

Opinions of high-rise dwelling have dramatically changed over time; what was once considered lowbrow in the United States is now seen as favorable and is increasingly being sought by those of high socio-economic status (Mooney, 2014). In the past, the poor were relegated to public housing projects in the city of Chicago that were often high-rises because authorities could house the largest density of people without taking up too much land (Mooney, 2014). This was typically where the projects were relegated to, the inner city. These projects were profoundly flawed in execution due to the segregation of the poor and often times minority residents being placed together in densely crowded areas (Rothstein, 2017).

In Chicago, this can best be exemplified by the Cabrini-Green public housing projects. Cabrini-Green was a development in the Near-Northside community in the 1960s (Austen, 2018). It was built over a section previously known as “Little Hell,” because this area was Chicago’s first slum in the 1860’s and home to the first organized crime rings (Austen, 2018). There were gang-related conflicts between the Irish and Italian mobsters of the area that resulted in multiple

casualties. Before the project was constructed, hundreds of people around the area were profoundly affected by gang-related activities (Petty, 2013). In the 1940's, politicians and planners worked together to try to redefine the area where people were so adversely affected by crime and low standard of living (Petty, 2013). They wanted to establish housing that low income residents could still afford to pay on time, while selecting residents who had no prior history of drug use, gang membership or arrest.

Construction of the Cabrini-Green apartments began in the 1940's and lasted through to the 1960's (Austen, 2018). Initially, only 25% of the population was black, but over time it quickly became a majority black area and a breeding ground for gang violence (Petty, 2013). By the mid-1970's, many tenants could not pay their rent and were resorting to gang violence to make ends meet. Increased police presence only made the situation more complicated; while it did suppress crime marginally, it also added constant surveillance which made residents uneasy. Additionally, poverty was criminalized, sending the poor who did not necessarily engage in illegal activity to jail (Petty, 2013). This surveillance waned and the territory conflicts raged on.

By the 1980's and 1990's, the Cabrini-Green projects were falling apart. Elevators were held captive by gangs who demanded payment for their use (Austen, 2018). Additionally, young women were assaulted in these elevators. Elevators were central features, necessary for the residents of the high-rises, and to have them completely unusable minimized functionality. This was just one of the many features of the high-rises that were necessary but rendered useless due to the complicated social relationships of the projects (Townesley *et al.*, 2013). By this same time, the buildings were dilapidated and destroyed; most of the units were abandoned and those remaining occupants were unable to leave due to their lack of steady income or drug addiction. The projects

were all torn down by 2011, but the legacy of crime and slum conditions lasted in the Chicago canon.

This situation of the Cabrini-Green projects is not an isolated event but applies to many high-rise public housing projects. Townsley *et al.* conducted a mixed-method analysis of crime around high-rises and found that buildings with both transitory and long-term residents had significantly high crime rates (Townsley *et al.*, 2013). No strong correlation between constant guardianship and reduction in crime existed. However, design features of the apartments had the highest impact on reduction of crime rates (Townsley *et al.*, 2013). These features included access to shared public spaces, well-lit facades and natural light. These findings were indeed true for the Cabrini-Green apartments (mostly devoid of these features). However, it must be noted that many of the residents had no choice; they needed affordable housing and these projects offered precisely that.

Not only have opinions of high-rises changed over time, but they also vary regionally. According to Arslan and Sev of the Mimar Sinan Fine Arts University, living in high-rises in Europe is considered unfavorable and reserved for those with little disposable income (Arslan and Sev, 2014). In Asia, most people live in high-rises because they are more economically viable. Most of the time, single-family homes are not an option in densely populated Asian cities, like Tokyo, Hong Kong and Shenzhen. In these cities, a majority of high-rises are publicly owned, and are the best option for housing with access to the urban core (Barr, 2017). The same attitude is true in the United States; however, there is more of a schism in attitudes toward housing because of the availability of alternatives further from the urban core. Moreover, a Japanese study found that the development of infants raised above the fifth floor of a high-rise was delayed, compared to those raised below the fifth floor, and these children had significantly less play time. A curvilinear

relationship has been described between floor level and self-rated health in a study of high-rise dwellers (Verhaeghe *et al.*, 2016). The authors describe adverse effects of high-rise living as lack of exercise, decreased capability to make contact with the environment, and diminished participation in social life. They report that people living on the fourth floor or lower had higher levels of activity as a result of climbing the stairs, but people living on the fifth floor and beyond would take the elevator. Again, social interaction and contact with the environment was optimal for the lower two stories and much harder on the fifth floor and beyond. However, there are multiple advantages to living on higher floors, including less noise from traffic, less traffic-related air pollution, and the quality of the view (Verhaeghe *et al.*, 2016).

V. Discussion – Historical Perspective

Despite the negative perceptions of the Cabrini-Green projects, there was still an attachment for them by the residents; many sought to keep them standing despite their bad reputation (Reed, 2015). Several residents fought long and hard for the government to maintain and renovate the buildings and eradicate the crime centered around the area. However, these efforts were met with little success. Rather than make these changes, the buildings were torn down because of the negative perception surrounding them, and because developers wanted a fresh start to wipe the profound blunders of concentrating poverty in high-crime areas (Reed, 2015). The Cabrini-Green projects were not, in fact, a failure in thought; they promised a new and innovative way to house dozens of people economically in well-designed and carefully thought out neighborhoods. This idea was based on the earlier public housing projects initiated in 1934, the Techwoods Homes in Atlanta, Georgia (Library of Congress, 2020). The Cabrini-Green projects were notably different because they were meant to be mixed-income units that housed the middle class together with people below the federal poverty line. While this strategy initially proved successful, as the neighborhood developed an unfavorable reputation and as middle-class families gained wealth, it soon came to house only those who qualified for section eight housing (Austen, 2018). The high-rise had unbridled potential as an answer to the complicated and convoluted problem of housing. Its failure was due to the problems that were inherent to the consequences of segregating people of low socioeconomic status, thereby concentrating poverty (Townesley *et al.*, 2013).

These conclusions, though still in the memory of Chicagoans, have not deterred people from settling in high-rises. However, importantly, the opinion on high-rises has changed. No longer are high-rises only dedicated to public housing, they have become luxurious abodes for the wealthy. The high-rise has become a space of unbridled potential and includes countless amenities

that only the wealthy can afford. Public housing is often fraught with problems inherent in housing the socioeconomically disadvantaged, and when there is such a dense and disadvantaged population, trouble can and will invariably arise (Dunworth and Saiger, 1994). The high-rise was not to blame; it was the lack of forethought on the consequences of concentrating poverty that created the problem (Dunworth and Saiger, 1994). Currently, there is a mandate in many buildings that requires them to offer a certain number of units and floors to low-income residents, subsidized by the government (Chicago Housing Authority, 2019). There is a boom in Chicago's high-rises due to high demand, with 33 projects to be completed in the next five years (Kozlarz, 2019). This provides hope, as decentralizing poverty and housing low income residents in diverse areas eliminates many of the issues inherent to public housing while still providing accommodation for the growing urban population.

The Cabrini-Green apartments are a testament to the power of the built environment in affecting human behavior. Because of their placement in a historically fraught area, there were social challenges with gang violence and high rates of civilian casualties. These were not the only reasons why violence erupted; there were features of the building and its management that led to negative experiences for residents. These features included poor natural lighting, little social space, and poor management (Austen, 2018).

Opinion shifts on high-rise dwelling has occurred rapidly, despite the prior mixed feelings towards vertical urbanization by laymen. On the one hand, people began to see high-rises as a status symbol in the 1970's (Barr, 2018). With higher income inequality, living in tall buildings is increasingly being used to demonstrate wealth status. Conversely, public housing projects, built with no attention to socioeconomic factors and located predominantly in deprived areas, have proven to be disastrous (Verhaeghe *et al.*, 2016).

Outcomes of housing projects where residents are below the poverty line are overall negative. An overview of the literature reported a correlation between low income and negative effects of high-rise living on well-being and mental health. (Gifford, 2007). In addition, negative outcomes only increase for residents living on lower floors of high-rises buildings. Residents also complain about the impersonal interactions and lack of community with their neighbors (Gifford, 2007).

It may therefore appear that high-rise living may be psychologically detrimental overall. However, an important caveat in these studies is that the bulk of research in both the US and other countries has been carried out in declining cities and in public housing projects. This housing was constructed for the poorest of the poor, with adverse living conditions and often with racial segregation. Moreover, there is a difference in satisfaction of living in high-rises depending on whether this is a temporary situation and of one's choosing, such as in the case of college students or young adults, or whether it is imposed due to economic reasons (Barr, 2018).

VI. Methods

To answer my research question, I use GIS to understand the phenomenon of demographic distribution within high-rises in the city of Chicago. Because high-rises can only occupy areas of the city zoned to allow buildings above 160 feet (City of Chicago, 2019), I use zoned tracts that currently allow such residential dwellings as my research subject and analyze the demographic distribution within these buildings. While no data on the specific variables I investigate exist at the building level, it is assumed that the tracts are zoned to only contain high-rises, as opposed to low-rise flats and houses, and therefore can give as complete a picture of the demographic distribution of the high-rise as one can find from publicly accessible data.

In order to create the maps, I first locate the shapefile of Chicago's 866 census tracts and merge it with the American Community Survey (ACS) five-year data from the 2019 data set using the ArcGIS Online software. Using the shapefile from the ArcGIS online database, I use the variables for age, ethnicity, educational attainment, income and marriage status to better understand the populations that live in high-rises in the city of Chicago. With all these criteria considered equally important, I then calculate a diversity index based on the ACS's 2019 data set that accounts for a range of 0-1 in the overall diversity of the tract.

Because participation in the ACS is compulsory, these data can most accurately represent a sample of the population that reflects the population patterns of the city as a whole. Below, I include a table (Table 1) listing the categories examined and what can be learned from each of them to further inform the project regarding dwelling patterns in high-rise buildings.

Table 1: Variables and Definitions	
Age	Age shows what stage of life residents are in. The cohorts are defined 0-18, 18-24, 25-44, 45-64 and 65+.
Diversity Index	The diversity index measures the likelihood that two randomly chosen people belong to different race or ethnic groups. This is calculated through ArcGIS, given the demographic breakdown of each tract in the city of Chicago.
Ethnicity	Indicates what race residents most closely identify with. The cohorts represented in the ACS are Caucasian, Black, Hispanic, Asian, American Indian, Mixed-Race and Other. In this project, I represent Black and Caucasian populations.
Educational Attainment	Education level correlates highly with income (Wolla and Sullivan, 2017). This parameter looks at level of education from GED to associate, bachelors, masters, and doctorate degrees.
Income	This parameter divides cohorts by annual income. The categories fall between \$0-10,000, \$10,001-25,000, \$25,001-50,000, \$51,000-75,000, and \$75,000+.
Marital Status	Indicates if cohorts are married, single or divorced.

I then use the CTBUH’s definitions of high-rises to compile a list of the buildings in Chicago that fit into each of three different categories. The CTBUH classifies buildings as “tall”, “supertall”, and “megatall”, depending upon their height (Council on Tall Buildings and Urban Habitat, 2020). I look at buildings that fit the tall and supertall criteria to create my dataset. The CTBUH considers buildings of at least 10 stories or over 165 feet to be tall structures, and those over 984 feet to be supertall (CTBUH, 2020). There are 328 residential buildings considered to be tall and supertall in Chicago. The megatall category was excluded as no residential high-rise fits the criteria.

I then compile the datasets from the CTBUH’s Skyscraper Center which categorizes the high-rises in different cities. I narrow my selection to the City of Chicago, then apply the filters to find buildings that fit my criteria for residential high-rises. First, I select all building types. Under status, I then select completed, constructed, architecturally topped out and structurally topped out.

Next, I select all materials used in construction. Finally, I set a function to select for residential or mixed use. I also set a parameter for buildings over 165 feet and locate this data set.

CTBUH provides information on the building rank, name, height, number of floors, completion date and material used in construction. In the table below (Table 2), I include the definition of each category. CTBUH does not include the address of the buildings, so I manually input this information using the google search engine. These data set are presented in the Appendix.

Table 2: Data Points	
Building Rank	These data rank the tallest to shortest high-rises. It gives an idea of where the largest buildings are located around the city.
Building name	This is basic categorization data. It helps to cross reference on the interactive map.
Address	Gives the geographic location, ties the rank and the name to a point on the map.
Height	Categorizing data, goes hand in hand with the rank.
Floors	Number of floors can be a strong indicator for purchase price, as taller buildings tend to have higher rent. Also indicates time period built - as technology advanced, buildings have grown taller. Additionally, there is a larger stratification in rent price for people living at the top of taller buildings than on the lower floors.
Completion Date	This category helps to show what era the building is from; it speaks to background information and advances in technology.
Material	This category speaks to the quality and expense of the building, as some construction materials are more durable and therefore more expensive. It also speaks of an era of innovation, including features such as introduction of open spaces and wide windows to give residents appropriate access to natural light.

I then overlay the population variables from the ACS 2019 data set onto the datasets from the CTBUH’s Skyscraper Center in order to generate maps of high-rise distribution versus the parameters listed in Table 1.

(i) Study Limitations

The limitations of my study are the multi-layered and incomplete historical records of Chicago buildings, requiring a lot of reading into such records, because Chicago has a long and complicated history of tearing down historical buildings and building atop. Looking specifically into dwelling patterns can remove some of this uncertainty as housing is more well documented in ACS records. Additionally, by looking at areas that were zoned to be high-rise structures only, I have been able to obtain some data even if not as in depth as I had originally projected.

Additionally, because I am using ACS data, there is only material on a sample of the population. While this is collected randomly, with no apparent bias, it has the potential of not fully representing the population of Chicago outside of the sample.

The results could also potentially be skewed because I look at buildings at the tract-level as opposed to building-level. The greater the degree of granularity in research, the more likely results will display a true phenomenon. Due to the limited time allotted to the project, I decided it would be more appropriate to zoom out slightly in order to investigate these phenomena, as it could take years to acquire the building-level information for so many high-rises.

(ii) Researcher Positionality

As a young white woman from the suburbs of Houston, Texas, I have had very little personal experience with urban living prior to moving to Chicago. In the suburb where I grew up, high-rises are few and far between, and even in downtown Houston, there is no great abundance of high-rise structures, especially when compared to Chicago. Therefore, I appear to have little personal stake in this question of urban dwelling patterns within high-rise structures. However, during my time at the University of Chicago, I fell in love with the ample skyscrapers that

constitute Chicago's skyline and the principles that govern urban dwelling patterns. In this research, I aim to show as little pro-megastructure bias as possible while still demonstrating that these buildings have become increasingly culturally significant to the city and the distribution of people that live in them. I also show the negatives as well as positives of high-rise living, despite their inevitability within the urban setting.

VII. Results

(i) Data Analysis

Based on my analysis through ArcGIS, I observed a concentration of high-rise buildings on the north-side of Chicago, centered around Lake Michigan (Figs. 4 and 5). These structures were mostly constructed in the last ten years (Appendix) and show a trend of northern development (Figs. 4 and 5).

I compiled my data from the Center for Tall Buildings and the Urban Habitat.. I found that most buildings considered to be skyscrapers are found within the loop. When looking at proposed developments and developments in progress, the northern development will not let up any time soon (Kozlarz, 2020). The cleanup of the Chicago River and the beauty of Lake Michigan provide an amazing backdrop for development to take place, hence this acceleration in construction. Southside communities with access to the river and the lake do not have the same number of high-rise developments projected to be erected soon (Lydersen, 2019).

I observed a growing movement toward luxury high-rises in the south loop, such as NEMA, the Paragon Chicago and 1000M. Land and house price values were obtained from Zillow, a billion-dollar real estate database founded in 2005 (Pittman and Sheehan, 2017). When these and similar luxury projects were announced from 2010 to 2017, there was a boom in the cost of land in this area. Now, due to gentrification, as well as these luxury mega developments, the median house value for a house in the south loop has increased from \$190k in 2012 to \$297k in 2019. One square foot of land costs \$369 (Zillow, accessed 2019). The loop is the center of commerce - this is where many financial institutions are centered, and many high-rise buildings are located. This

area has historically been the CBD. The loop has gone through cyclical boom and bust periods, with the median cost of a home ranging from \$350k to \$420k. The average cost of a square foot of land in the loop is \$359 (Zillow, 2019). This phenomenon, where the south loop is being priced

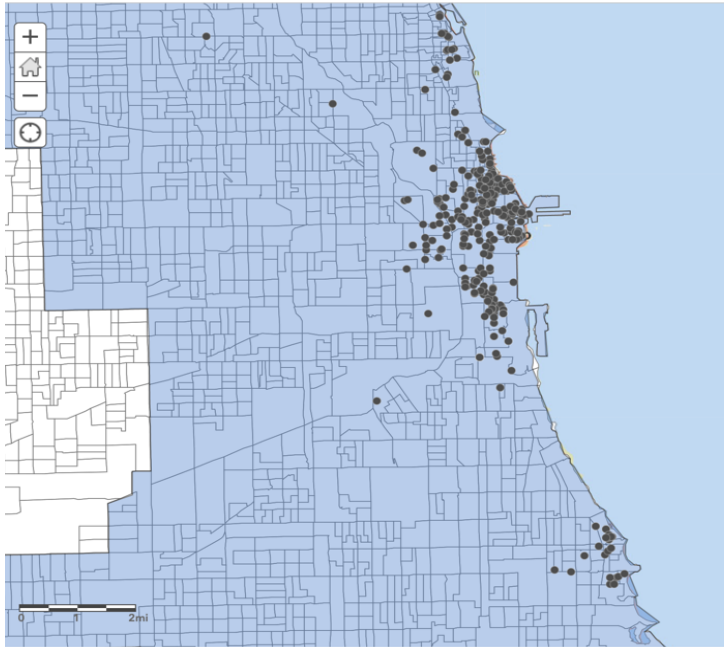


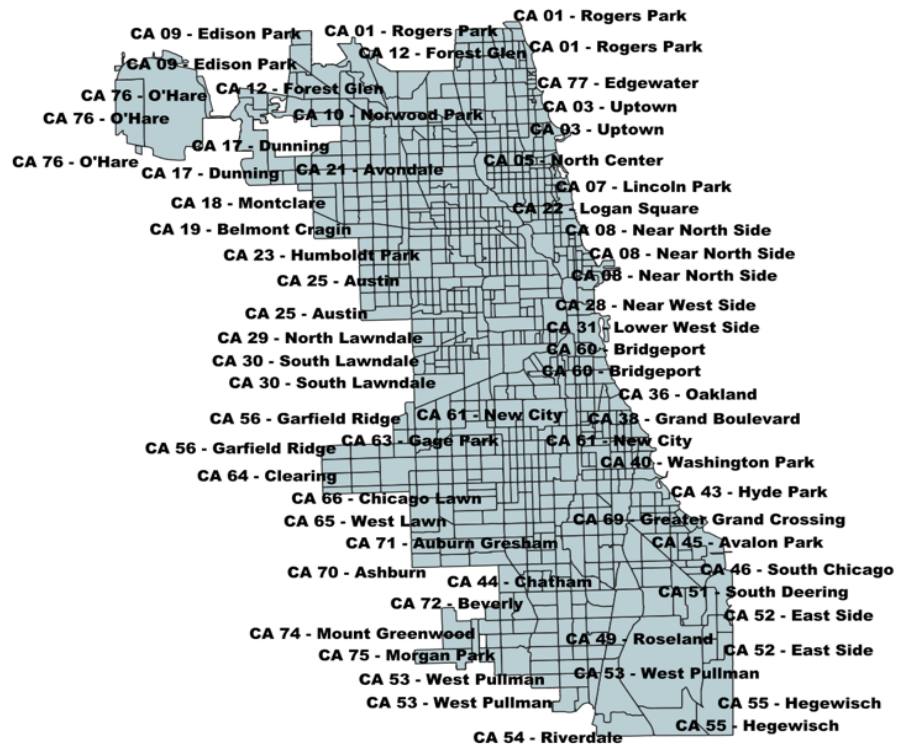
Figure 4: High-rise distribution overlaid on a map of the Chicago Boundaries by census tract

higher than the main loop on a per acre basis, is something worthy of further exploration in future studies, as at face value it seems counterintuitive based on the literature on dwelling patterns.

Figure 5: A QGIS census tract breakdown by neighborhood. Most high-rises can be seen in neighborhoods on the lake like Near Northside, Logan Square, and Near West Side.

My data show that, overall, high-rise dwellers are relatively homogenous. Residents are mostly white, with a college education, and young (median age in the mid-

twenties). In areas where high-rises predominate, the diversity index is low compared to that of the Midwest and to other metropolitan areas in the US. I have also seen that there is a large disparity in income of those living in high rises



throughout the city of Chicago. Some high rises cater to the wealthy and are built in desirable areas with numerous amenities. Others provide opportunities for mixed income living. There are only a

few modern projects that cater to low income tenants in high-rise facilities. In fact, many of the wealthiest Chicagoans do tend to live in high-rise structures (Bauer, 2019). These follow historical patterns of segregation followed throughout Chicago, excluding the lower and lower-middle classes from the new and innovative high-rise.

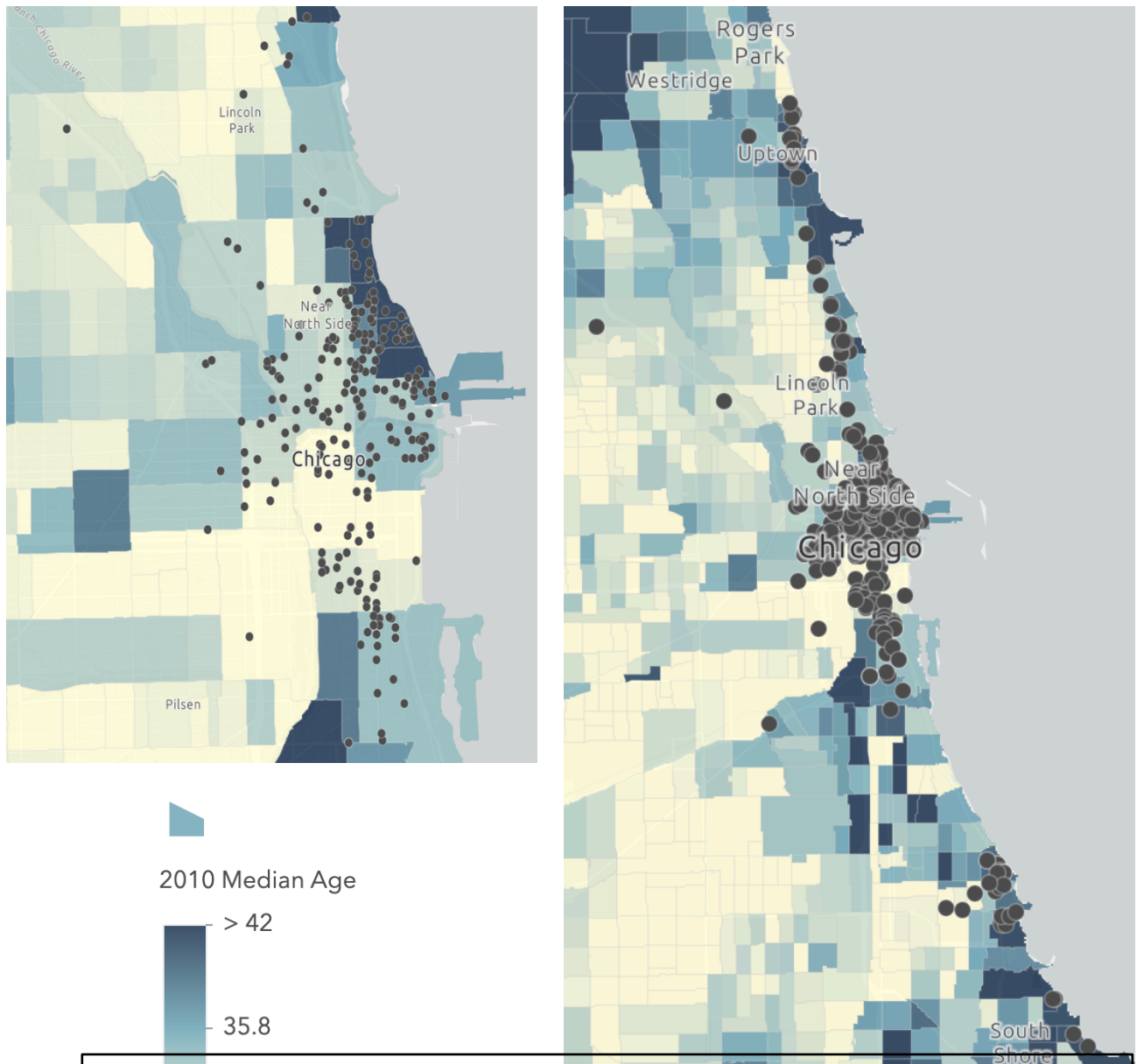


Image 6: Pictured, the **age index** for the city of Chicago. The average age is significantly higher for the Near Northside areas (around 42) than for other areas where high-rises are. These are sites where many high-rent condos are available. The overall average age in the loop falls at around 35.8, while the average age in the West Loop and River North is under 29.3 years.

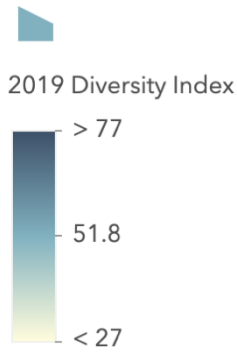
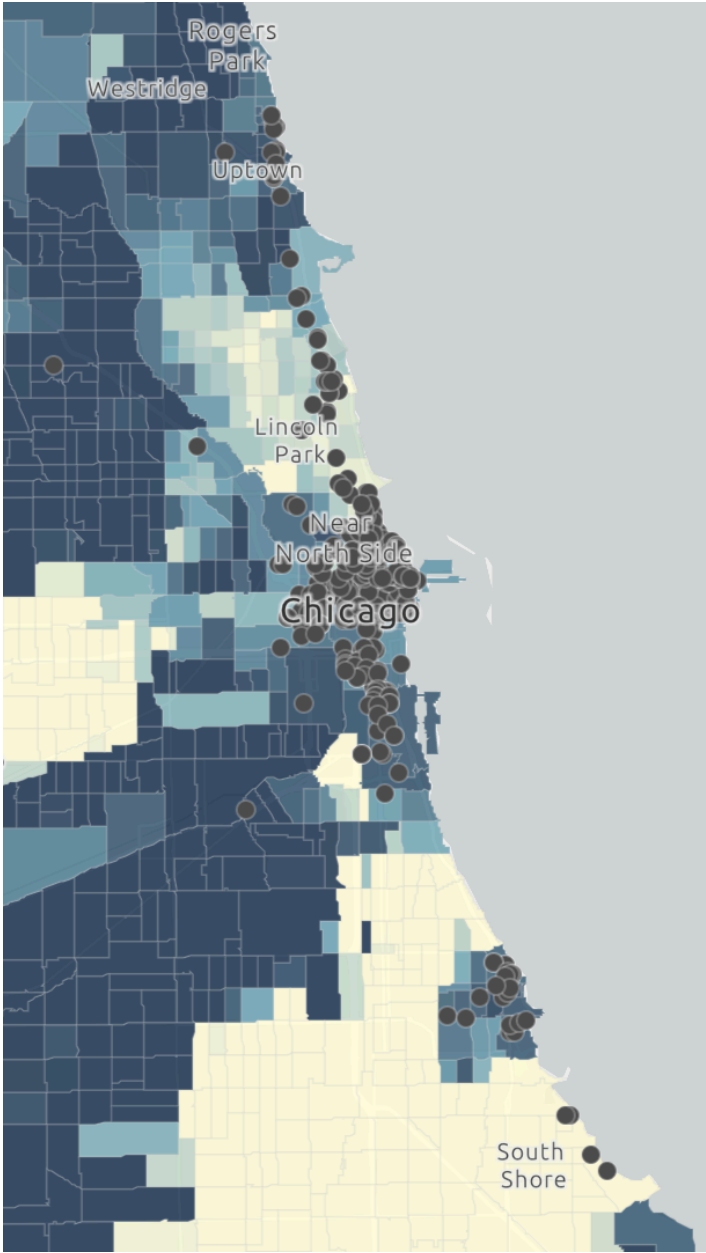
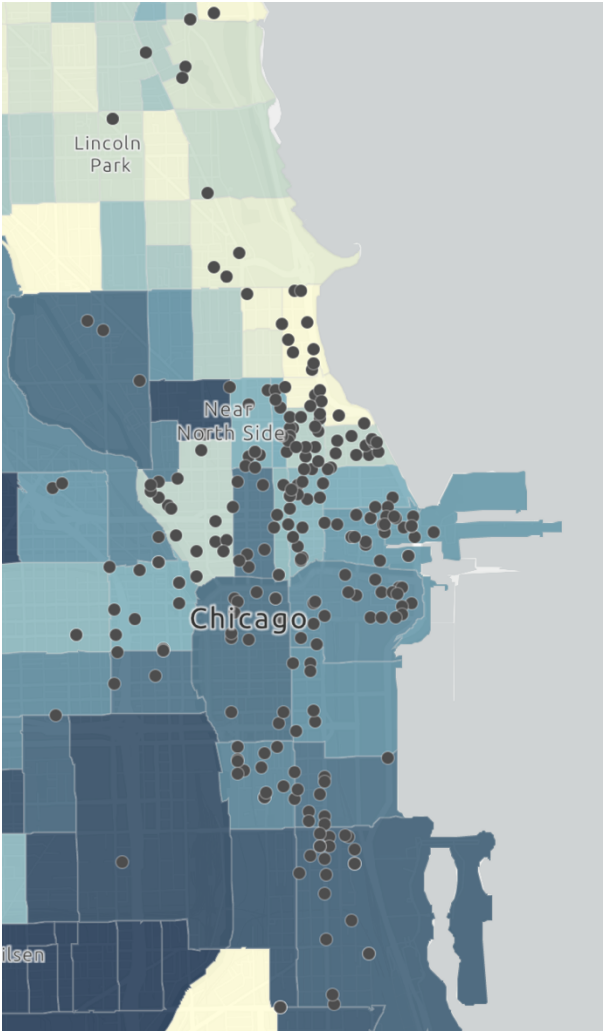


Image 7: Pictured, the diversity index throughout the city of Chicago. The average diversity index for the Midwest is 60.7, for metropolitan areas, it is 67.8% and in the tested areas where high-rises fall in Chicago, the index average is 51.8 (US Census, 2019). Here, it can be seen that in the city of Chicago, areas where high-rises are located generally are significantly below the average diversity index despite efforts to correct segregation.

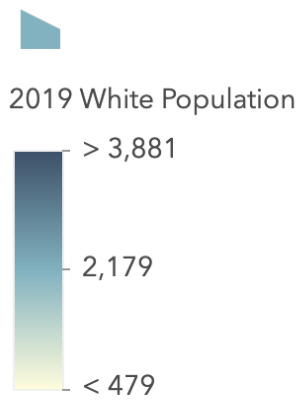
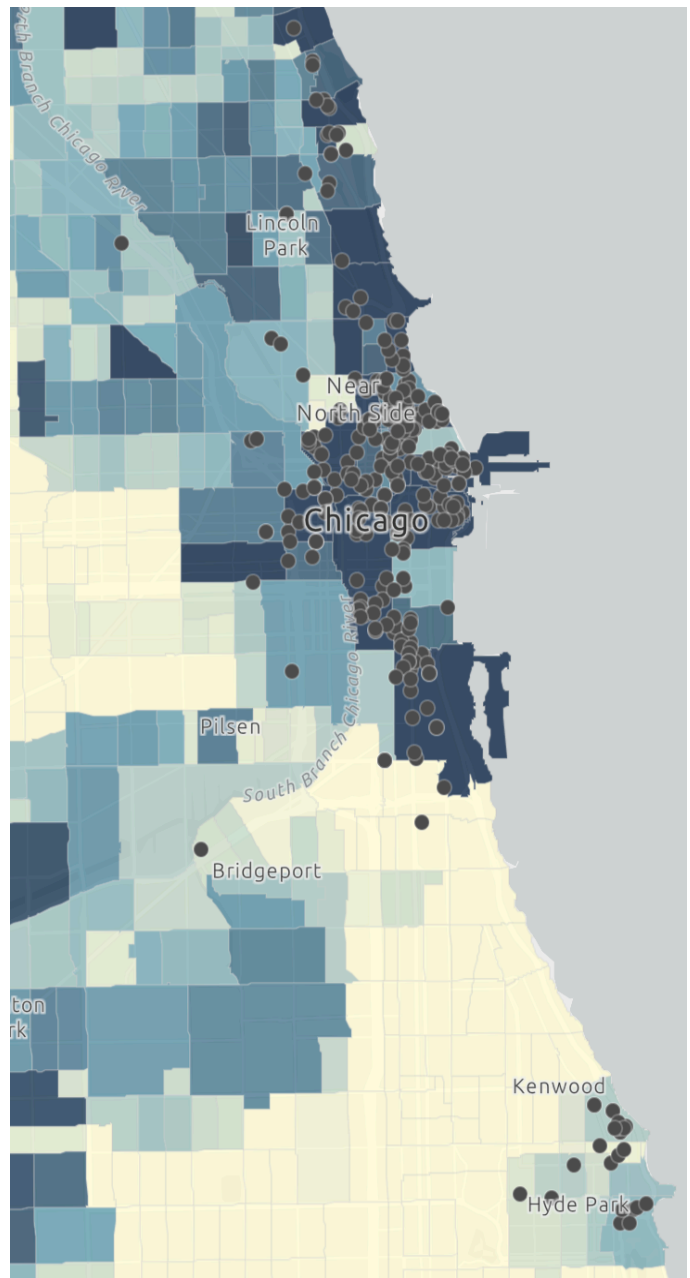
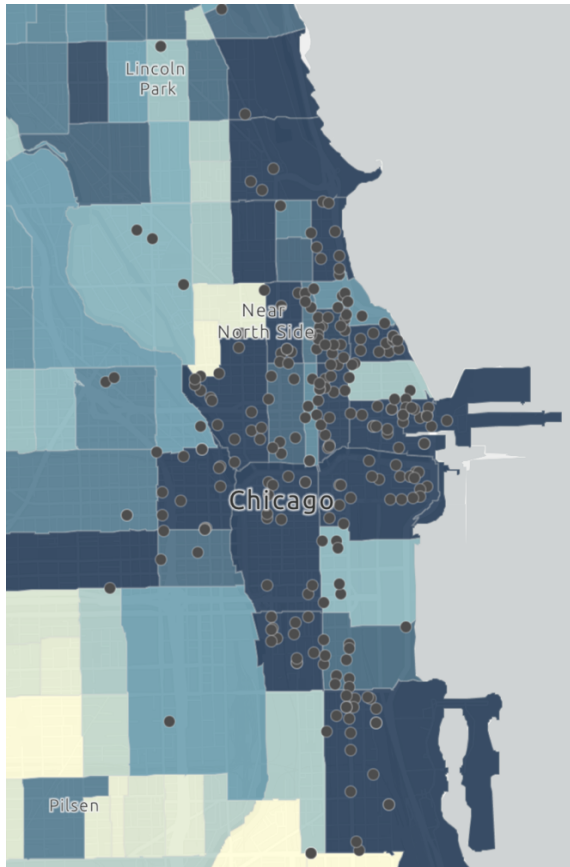


Image 8: Pictured, the concentrations of white residents in the city of Chicago per 2019 data. It can be seen that there is a higher concentration of white people in areas where high-rises are built in the city of Chicago.

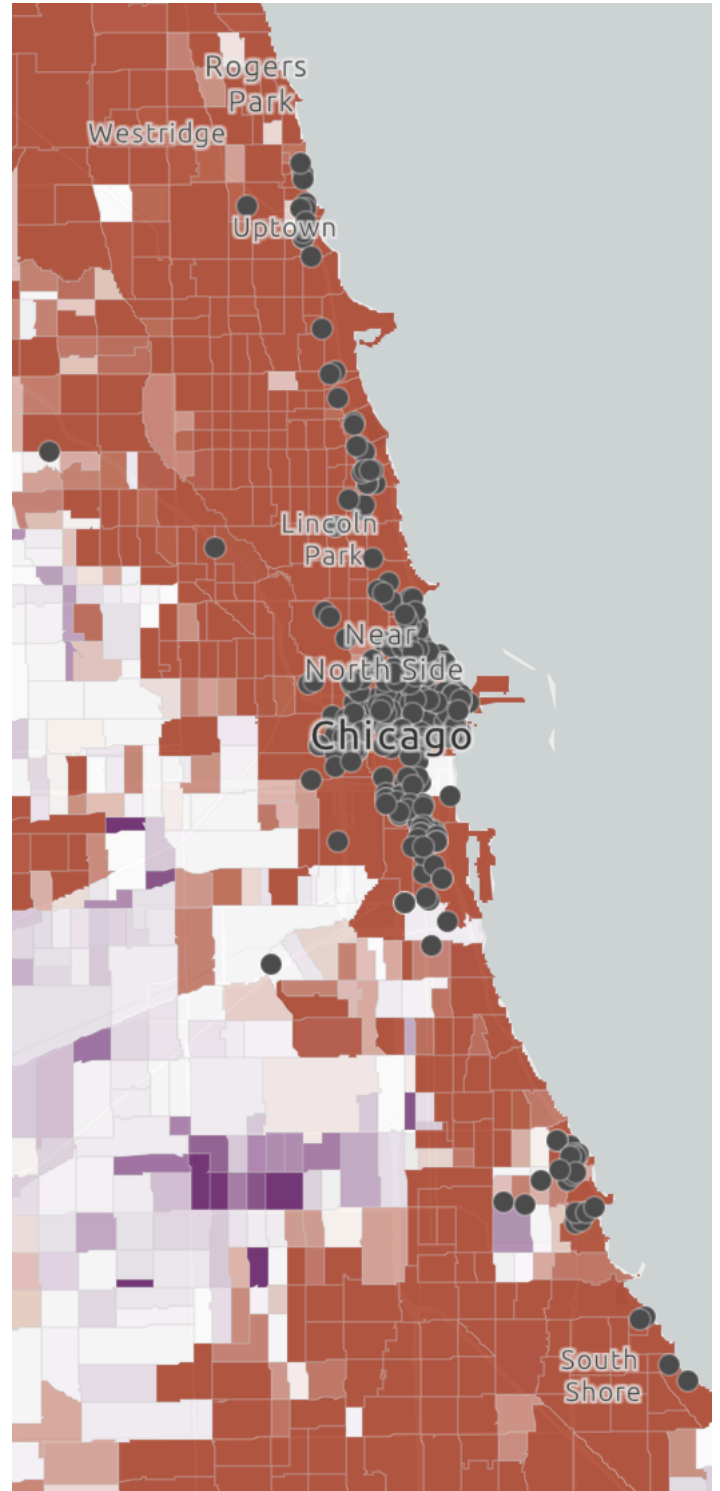
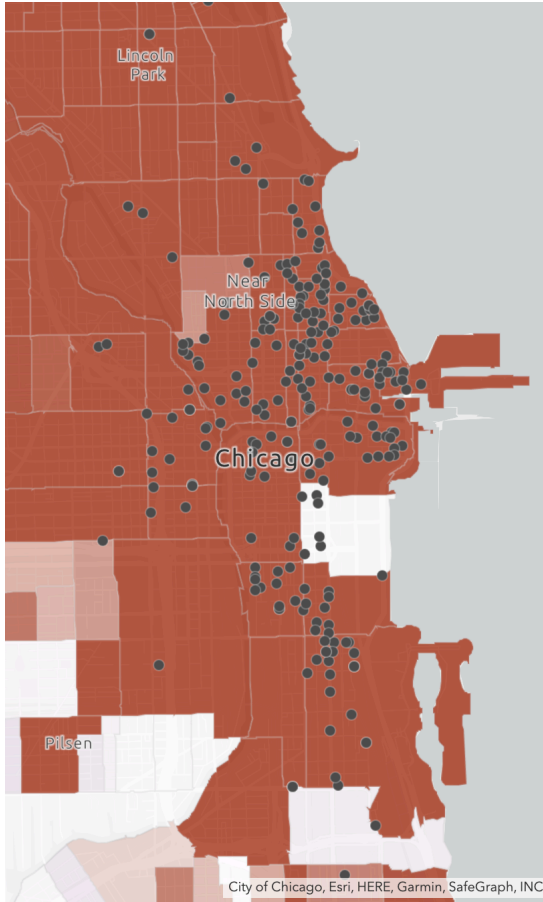
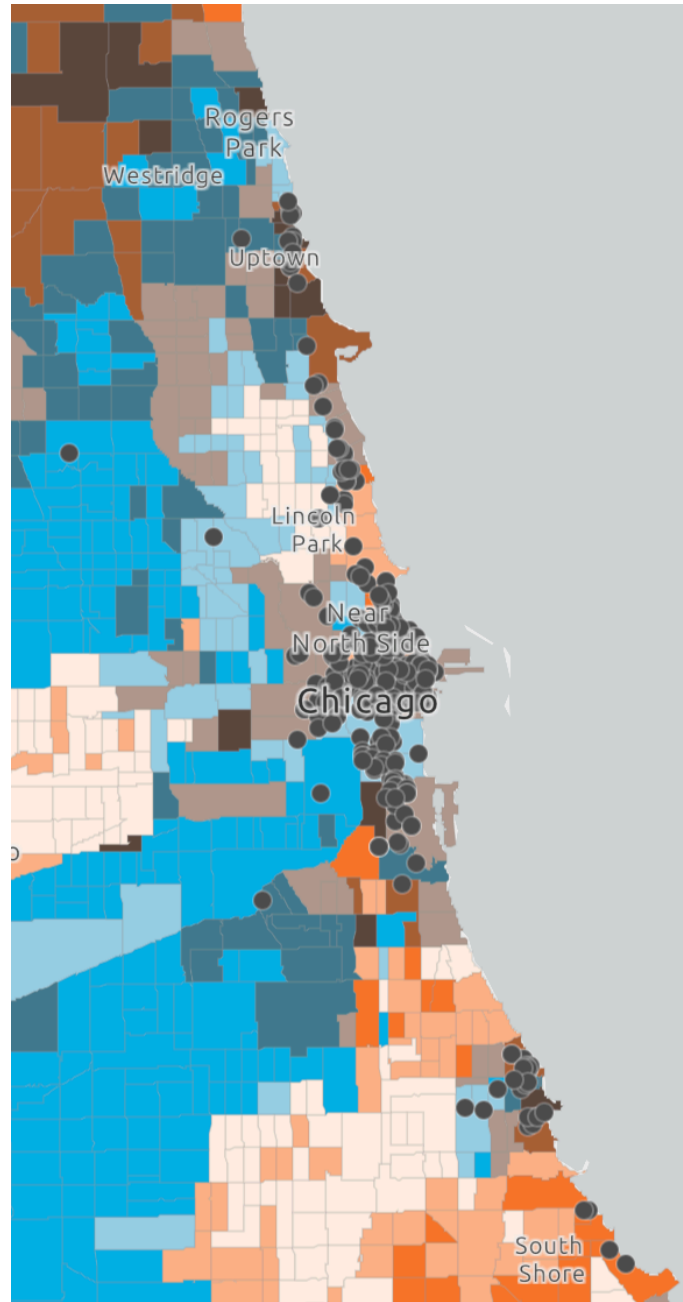
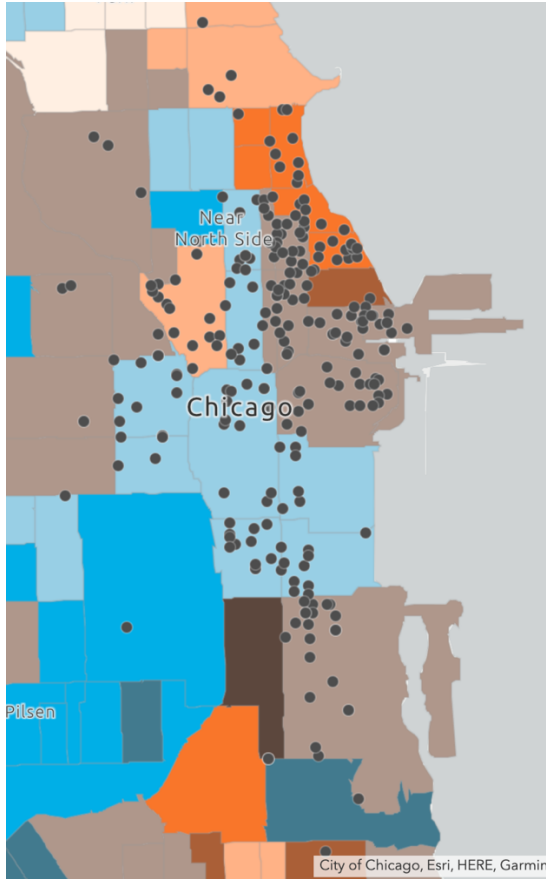


Image 9: Chicago's 2019 diversity index ratio to bachelor's degrees. Diversity is relatively low where skyscrapers are the most concentrated and there is a high number of residents with bachelor's degrees.



Relationship

↖ 2019 Diversity Index

↗ 2010 Median Age

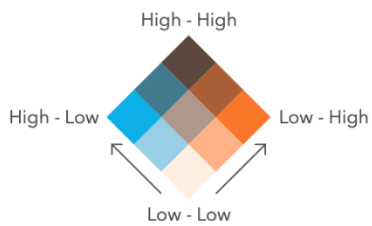


Image 10: Chicago's 2019 diversity index as related to the median age. As pictured, there is some diversity in distribution, but the vast majority of tracts show low diversity and medium-low median age (mid-twenties).

VIII. Discussion

Data presented in the Results section indicate that developments are largely centered around the northern region of Lake Michigan. There has been a boom in the construction of high-rises that has occurred over the course of a single generation (Kamin, 2019). This phenomenon of the growth and expansion of the loop, colloquially called the Super-Loop, has notably included development of the CTA and of housing in areas that were historically not included in the downtown Metropolitan area (Silets and Kamin, 2017). The Super-Loop is bound by North St, Ashland Ave, the Stephenson and the Lake, and notably, an abundance of developments can be seen in this area by my data analyses. These buildings are in an area formerly called “skid-row,” known to be highly associated with crime and poverty. The shift in the demographic makeup is startling and can be seen in the area’s cultural shift as well. This area used to be home to diners and dive-bars, as well as storefronts that people would save up for and manage within the community. Now, rapidly, these family-owned and operated shops are getting priced out of the neighborhoods, as developers reimagine their projects within the area. This area that historically housed the poorest populations in over-crowded public tenements and skyscrapers now has apartments and condos well out of the price range for the previous tenants (Silets and Kamin, 2017).

Most apartment complexes in Chicago are required to provide some form of voucher program to house low income residents; however, these spots are largely unfilled. The Chicago Voucher Authority’s Housing Choice Voucher (HCV) is a program established by U.S. Secretary of Housing and Urban Development Julian Castro in 2015 for low income residents who have a “super-voucher”. These vouchers are given once residents pass an extensive background check through the government. Those who receive the voucher are then asked to apply through private

businesses in areas with little concentrated poverty. In many cases, this can prove difficult, as landlords and management companies can reject requests for housing due to their preconceptions regarding poverty (Dukmasova, 2017; Moore, 2019). An intervention in the program is needed to increase the success rate of the program and make housing more equitable (The Chicago Regional Housing Choice Initiative).

This post-recession high-rise boom could be attributed to a number of reasons. First, there was demand by consumers who could afford to pay the high rents. Per my findings, the majority of the people living in these areas zoned to be high-rises are young, Caucasian, highly educated individuals who desire a residency close to the central business district. Around a decade ago, this finding would be surprising, as the suburbs were generally thought of as luxury due to the prospect of owning one's property and the ample free space (Jackson, 2019). However, now this is no longer the case. High-rise apartments provide numerous amenities, such as public pools, vast rooftops that overlook the city, accessible gyms, dog walks, affordable parking spots, and the list goes on. Developers have started to bring the luxury of the single-family home to the convenient location of the high-rise, and successfully market to millennials.

If we look at studies at the dwelling patterns of millennials, we see that they are not buying homes. Compared to Generation X and Baby Boomers, millennial home ownership for the ages of 25-34 is 8% lower than that for older generations (Choi *et al.*, 2018)³. The authors attribute this to a number of reasons, including increasing student debt, delayed marriage, and increased awareness of racial diversity in house ownership (Choi *et al.*, 2018, Hankin, 2019). I found this last point,

³In the United States, 37% of millennials (ages 25-34) own houses, compared to baby boomers and gen X-ers, 45% of whom owned homes when they were in the same age range as millennials.

regarding diversity and home ownership, to be highly relevant, given my findings. Choi *et al.* state that:

Between 1990 and 2015, the share of white households dropped 16 percentage points from 76 to 60 percent. During that period, Hispanics' share increased 9 percentage points, Asian Americans' share increased 3 percentage points, and blacks' share increased 2 percentage points (Choi et al., 2018).

Delayed marriage may also account for decreased home ownership, as people tend to relocate to the suburbs once they marry, in order to raise their family in an area that has lower crime rates and better schooling and provides more space (Perino, 2019).

Additionally, the boom in high-rise construction can be attributed to the developers' desire to house the largest number of people for the least cost to them. This approach epitomizes the overall plan of the developer; they want to make the most money for the least cost up front. This strategy helps them fund future projects and maximize profitability.

Diversity index statistics reveal high-rises in Chicago are starkly below other US metropolitan averages. This comes as no surprise, but does prove my initial conjecture, that these high-rises are being built for a homogenous population. Despite an incredibly progressive super-voucher program in Chicago, this resource is doing little to house low income residents in high-rises. The buildings are by and large unequitable, non-diverse, and poorly connected. Of course, it must be kept in mind that the hesitancy of minorities to live in high-rises could be due to a reminder of the prior failure of social housing projects and their proclivity in causing slum-like conditions for tenants.

Despite these observations, high-rises have the potential to house more people of varied backgrounds. High-rises are the most effective way to house the most people in the least space (Arslan and Sev, 2014, Wray, 2018). This is important because cities throughout the world are expanding, even if Chicago and several other American cities are shrinking (Kang, 2019). It is estimated that 66% of the total population of the world will be living in urban areas by 2050 (Arslan and Sev, 2014). This makes high-rises a necessity for future urban growth. It is now almost impossible to image a city developing without a strong high-rise presence. These buildings are the only way to house this growing urban population efficiently, and necessity is one of the reasons they have become popular.

High-rises are also more sustainable than the spread-out traditional neighborhood (Ali and Al-Kodmany, 2012; Oldfield, 2019). The high-rise was the developer's answer to the horizontal spread that happened in the 1960's with the expansion of the traditional neighborhood. Well-constructed high-rises reduce energy consumption overall, as they consolidate power into one super structure in place of multiple buildings. Because high-rises are situated in the urban core, they also reduce the cost and energy expense of transportation (Ali and Al-Kodmany, 2012).

Finally, high-rises occupy an important cultural space. The high-rise is a form of art that can define a city. Each building is a creation of its time and reflects the current social situation. They can capture the city's spirit and increase tourism within the city (Ali and Al-Kodmany, 2012). Therefore, the skyscraper is a modern invention that tells a story.

IX. Policy Recommendations

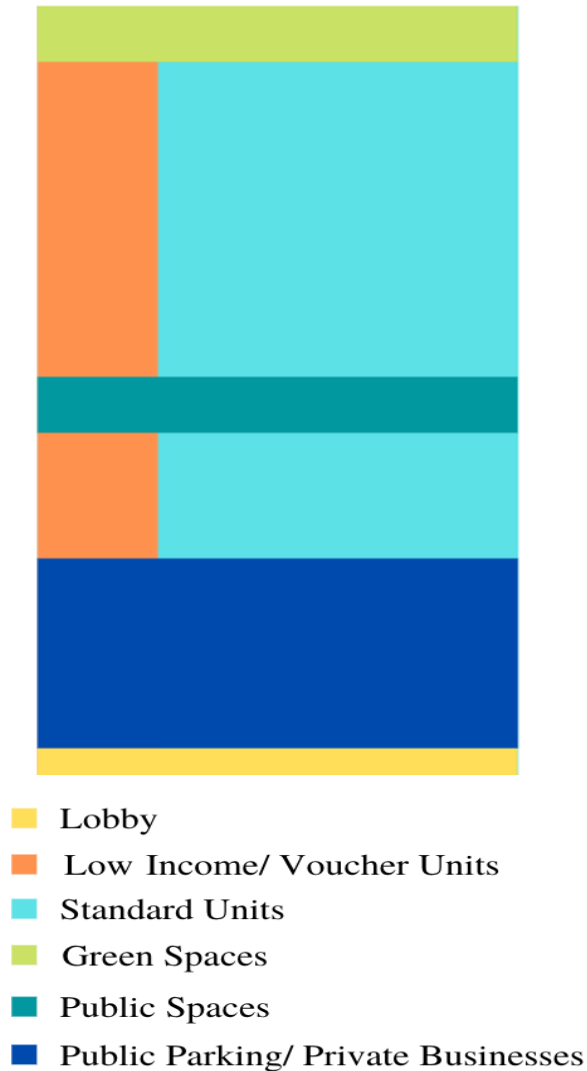


Figure 11: The potential solution to inequity and isolation in the high-rise. This model vertically integrates public housing units so low-income residents are not segregated nearer the bottom. It also disallows housing units below the seventh floor and provides social spaces in the middle and a penthouse floor in the building.

In this section, I will argue there needs to be integral changes in the high-rise to give the best quality of life to all residents. Additionally, mixed-income housing can best address the needs of the most residents while catering toward diversity.

First, current demographic trends within Chicago lean towards high-rises catering for a majority of white, young, unmarried, well-educated, middle to upper-middle class group of people. This is a problem because it reinforces the legacy of segregation that Chicago has been known for. Additionally, income disparity and racially segregated housing amount to residents being overall less content with their living experience (Arslan and Sev, 2014). There needs to be a more diverse base for housing in order to provide the best possible accommodation for all.

To this end, I propose Mixed-Income Solutions to homogenous high-rises. There is promise in a public-private housing model where people of all incomes can rent the more desirable

upper floors and therefore lower income residents can potentially live near those who enjoy higher

incomes (Arslan and Sev, 2014). Currently, the super voucher system is not doing enough to let low-income residents live in high-rises. This is important, because by having members of a broader community able to live together, urban segregation is decreased, and people become more aware of those from different backgrounds and cultures. These buildings are private, so the landlords and development companies can reject applicants. Having some buildings partially owned by the government and upkept by public sector employees could provide the most people with the greatest likelihood of co-habitation. In Figure 11, the potential future for equitable high-rise housing is pictured. Based on my research, this mixed-use, mixed-income building format could possibly provide the solution to the homogenous high-rise because of its design features and structural changes.

The possible drawbacks of this style of housing could be driven by the negative stigma toward public housing, ingrained in the city of Chicago as well as in other cities. I believe that advertisement campaigns could counter this negative perception and inform potential residents of the litany of benefits of co-living. These include greater awareness of other cultures, better services offered in the apartment due to the public-private split cost, and improved local conditions that alleviate the ills of poverty. The only criterion holding back people from accepting mixed-income housing is a bias; this can be worked through with some effort from all sides.

Additionally, there must be methods of building social capital within high-rise communities. High-rise living can be incredibly isolating and lonely for its residents. In general, people living in high-rises have inferior self-assessed mental health compared to their horizontal-neighborhood counterparts. This is because some of the typical design features in the high-rise simply do not provide residents with quality living. They lack good lighting, access to greenspace and public spaces, and there is a cognitive disconnect between the city and the individual. These

drawbacks can be circumvented by adding courtyards, public spaces like gyms and dog runs, windows for natural light and views outward. Finally, social events like mixers and parties help residents with community-building and provide stronger feelings of connection.

X. Conclusion

High-rise living is the future of Chicago and of other American cities, and it is not letting up any time soon. Growth of the urban scape is inevitable, so the residential high-rise will maintain importance and prevalence due to its ability to house many people in a relatively small space. Overall, these high-rises are not doing the social job that they should in catering to all demographics. There need to be changes to maximize beneficial outcomes and not only allow but attract people of different backgrounds and incomes. The high-rise further entrenches residents in these typical unequal power dynamics, rather than being the answer to segregation.

This exploration of the high-rise as more than a structure, but as an object worthy of exploration sociologically has been rewarding and challenging. To me, the skyscraper is a synecdoche - it stands for the city in and of itself. Right now, its message is powerful but not optimal due to the high degree of segregation. Implementing meaningful strategic changes means that these structures can offer hope for a future that is more socially aware, equitable and inclusive. It is thus the job of the urban planner to take into account the role of the high-rise as a social entity and work to develop it as a better and fairer abode for all.

This research sets the stage for future necessary research analyzing the diversity, equity, and interconnectedness of high-rises. It would be important to conduct a survey of low-income residents in the city of Chicago and their experience with the super voucher application process. This could consist of studying a group of people rejected from the voucher program, a group accepted and never housed and a group who were accepted and found their housing assignment. Data from this research would better highlight the problems with the program while also showing that, while the demand for high-rise living exists across all demographic groups, it is not being

met. This study will also help to redefine the program and discover the points in which the private and public sectors are potentially misaligned in their goal.

Additionally, ethnographic surveys of people in high-rises throughout Chicago regarding self-rated contentment relative to the diversity index would provide insight into the best way to build the high-rise for the future. Asking people about their satisfaction with the building's structural features, as well as with the city and its social features, could showcase the potential benefits of building for people of diverse backgrounds.

Conducting this research revealed to me significantly more than I had initially envisioned. When initially exploring the topic, I discovered that there was insufficient research addressing the robust relationship between high-rises and a continuation of the segregated development that Chicago had so long been known for. Through each step, I was able to narrow down and refine the most appropriate methodology, until I settled on a compelling question. We can see the significant degree of housing discrimination with respect to high-rise dwelling. I am thankful for this experience, and, despite the highs and lows, I believe I could not have picked a better research topic. I can definitively say that now is the time for developers and landlords to change the current model; there is a need to build units for people of diverse backgrounds to counteract the ills of segregation that plague Chicago. Developers should prioritize these principals to better address the problems of the high-rise. Currently, developers are missing the design features that could improve the high-rise because they are only looking to maximize profit. This is a shame as the high-rise has the capacity to be better – it can be equitable, diverse, and interconnected. Given the city of Chicago's commitment to better serving diversity, especially through the voucher program, the private market must also follow suit.

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XII. Appendix

NO	Building Name	Address	City	Height_ft	Floors	Completion	Material	Use
1	Trump International Hotel & Tower	401 North Wabash Avenue	Chicago	1,389	98	2009	concrete	residential / hotel
2	875 North Michigan Avenue	875 N Michigan Ave	Chicago	1,128	100	1969	steel	residential / office
3	NEMA Chicago	1210 S Indiana Ave	Chicago	896	81	2019	concrete	residential
4	900 North Michigan Avenue	900 N Michigan Ave	Chicago	869	66	1989	concrete/steel	residential / residential / office / hotel
5	Water Tower Place	835 North Michigan Avenue	Chicago	859	74	1976	concrete	residential / hotel / retail
6	Aqua at Lakeshore East	225 North Columbus Drive	Chicago	859	86	2009	concrete	residential / hotel
7	Park Tower	5415 North Sheridan Road	Chicago	844	68	2000	concrete	residential / hotel
8	One Bennett Park	451 East Grand Avenue	Chicago	837	67	2018	concrete	residential
9	The Legacy at Millennium Park	60 E Monroe St	Chicago	818	73	2010	concrete	residential
10	Olympia Centre	161 E Chicago Ave	Chicago	731	63	1986	concrete	residential / office
11	One Museum Park	1211 S Prairie Ave	Chicago	726	62	2009	concrete	residential
12	Waldorf Astoria Chicago	11 E Walton St	Chicago	686	60	2009	concrete	residential / hotel
13	One Magnificent Mile	980 N Michigan Ave	Chicago	673	57	1983	concrete	residential / office
14	340 on the Park	340 E. Randolph	Chicago	672	64	2007	concrete	residential
15	55 East Erie	55 East Erie St	Chicago	647	56	2004	concrete	residential
16	Lake Point Tower	505 N Lake Shore Dr	Chicago	645	70	1968	concrete	residential
17	River East Center	544 N. McClurg, Chicago	Chicago	644	58	2001	concrete	residential
18	Grand Plaza Apartments	540 N State St	Chicago	641	57	2003	concrete	residential
19	The Heritage at Millennium Park	130 N Garland Ct	Chicago	631	57	2005	concrete	residential
20	Essex on the Park	808 S	Chicago	620	57	2019	concrete	residential

		Michigan Ave						
21	OneEleven	111 W Upper Wacker Dr	Chicago	613	58	2014	concrete	residential
22	Millennium Centre	33 W. Ontario	Chicago	610	58	2003	concrete	residential
23	Chicago Place	700 North Michigan Ave	Chicago	608	49	1991	concrete	residential / office
24	The Grant	1201 S Prairie Ave	Chicago	595	54	2010	concrete	residential
25	1000 Lake Shore Plaza	1000 N Lake Shore Dr	Chicago	590	55	1964	concrete	residential
26	The Clare	55 E Pearson St	Chicago	589	53	2009	concrete	residential
27	Marina City I	300 N State	Chicago	588	61	1964	concrete	residential
27	Marina City II	300 N State	Chicago	588	61	1964	concrete	residential
29	Optima Signature	220 E Illinois St	Chicago	587	57	2017	concrete	residential
30	55 East Monroe	55 East Monroe	Chicago	583	49	2013	concrete	residential / office
31	North Pier Apartments	505 E Illinois St	Chicago	581	61	1990	concrete	residential
32	The Fordham	25 E Superior St	Chicago	574	52	2003	concrete	residential
33	Onterie Center	441e E Erie St	Chicago	570	58	1986	concrete	residential / office
34	Loews Chicago Hotel	455 N Park Dr	Chicago	569	54	2015	concrete	residential / hotel
35	Huron Plaza	30 East Huro n Street	Chicago	560	56	1983	concrete	residential
36	The Parkshore	195 N Harbor Dr	Chicago	556	56	1991	concrete	residential
37	North Harbor Tower	175 N Harbor Dr	Chicago	556	55	1988	concrete	residential
38	Harbor Point	155 N Harbour Dr	Chicago	554	54	1975	concrete	residential
39	Streeter Place	345 E Ohio St	Chicago	554	55	2009	concrete	residential
40	Newberry Plaza	1030 N State St	Chicago	553	53	1974	concrete	residential
41	Park Millennium	222 N Columbus	Chicago	544	57	2002	concrete	residential

		Dr						
42	AMLI River North	71 W Hubbard St	Chicago	543	49	2013	concrete	residential
43	The Pinnacle	21 E Huron St	Chicago	535	48	2004	concrete	residential
44	Park Place Tower	655 W Irving Park Rd	Chicago	531	56	1971	concrete	residential
45	Elysees Condominiums	111 E Chestnut St	Chicago	529	56	1973	concrete	residential / retail
46	465 North Park	465 North Park	Chicago	525	48	2018	concrete	residential
47	River Plaza	405 N Wabash Ave	Chicago	524	56	1977	concrete	residential
48	The Paragon Chicago	1326 S Michigan Ave	Chicago	523	48	2019	concrete	residential
49	The Columbian	1160 Michigan Ave	Chicago	517	47	2008	concrete	residential
50	401 East Ontario Street	401 East Ontario Street	Chicago	515	51	1990	concrete	residential
51	The Streeter	345 E Ohio St	Chicago	514	50	2007	concrete	residential
52	600 North Lake Shore Drive - South Tower	600 North Lake Shore Drive - South Tower	Chicago	513	47	2009	concrete	residential
53	Park Tower Condominiums	5415 N Sheridan Rd	Chicago	513	54	1973	concrete	residential
54	215 West	215 West Washington	Chicago	509	50	2010	concrete	residential
55	400 East Ohio Street	400 East Ohio Street	Chicago	503	50	1982	concrete	residential
56	One Superior Place	1 West Superior Street	Chicago	502	52	1999	concrete	residential
57	The Tides at Lakeshore East	360 East South Water Street	Chicago	500	51	2008	concrete	residential
58	Parkview West	505 N	Chicago	498	49	2008	concrete	residential

		McClurg Ct						
59	500 North Lake Shore Drive	500 North Lake Shore Drive	Chicago	497	47	2013	concrete	residential
60	Ontario Place	10 E Ontario St	Chicago	495	49	1983	concrete	residential
61	727 West Madison	727 West Madison	Chicago	495	44	2018	concrete	residential
62	The Ritz-Carlton Residences	118 E Erie St	Chicago	495	40	2012	concrete	residential
63	50 East Chestnut Street	50 East Chestnut Street	Chicago	495	40	2008	concrete	residential
64	No. 9 Walton	9 E Walton St	Chicago	491	38	2018	concrete	residential
65	235 West Van Buren	235 West Van Buren	Chicago	490	46	2010	concrete	residential
66	The Bristol	2152 N Damen Ave	Chicago	488	42	2000	concrete	residential
67	Wolf Point West	343 W Wolf Point Plaza	Chicago	485	48	2016	concrete	residential
68	The Regatta	420 E Waterside Dr	Chicago	480	45	2007	concrete	residential
69	73 East Lake	73 East Lake	Chicago	477	42	2014	concrete	residential
70	Lincoln Park 2550	2550 N Lakeview Ave	Chicago	477	39	2012	concrete	residential
71	Moment	545 N McClurg Ct	Chicago	477	45	2016	concrete	residential
72	Plaza 440	440 N Wabash Ave	Chicago	474	49	1991	concrete	residential / hotel
73	Roosevelt University Academic, Student Life Residence Center	430 S Michigan Ave	Chicago	469	32	2012	steel/ concrete	residential / education / office
74	Columbus Plaza	233 E Wacker Dr	Chicago	468	47	1980	concrete	residential
75	Coast at Lakeshore East	345 E Wacker Dr	Chicago	467	47	2013	concrete	residential

76	The Sterling	345 N LaSalle St	Chicago	466	49	2001	concrete	residential / retail
77	200 North Dearborn Apartments	200 North Dearborn	Chicago	463	47	1989	concrete	residential
78	Presidential Towers I	555 W Madison St	Chicago	461	49	1985	concrete	residential
78	Presidential Towers II	556 W Madison St	Chicago	461	49	1985	concrete	residential
78	Presidential Towers III	557 W Madison St	Chicago	461	49	1985	concrete	residential
78	Presidential Towers IV	558 W Madison St	Chicago	461	49	1985	concrete	residential
82	The New York	3660 N Lake Shore Dr	Chicago	461	49	1986	concrete	residential
83	The Residences at Grand Plaza	545 N Dearborn St	Chicago	458	39	2003	concrete	residential
84	600 North Fairbanks	600 N Fairbanks Ct	Chicago	458	41	2008	concrete	residential
85	Kingsbury Plaza	520 N Kingsbury St	Chicago	456	47	2007	concrete	residential
86	400 North LaSalle	400 North LaSalle	Chicago	454	45	2005	concrete	residential
87	600 North Lake Shore Drive - North Tower	600 North Lake Shore Drive - North Tower	Chicago	453	41	2008	concrete	residential
88	Riverbend Condominiums	333 N Canal St	Chicago	451	38	2002	concrete	residential
89	The Shoreham	400 East South Water Street	Chicago	450	47	2005	concrete	residential
90	Eugenie Terrace on the Park	1730 N Clark St	Chicago	450	44	1987	concrete	residential
91	Hubbard Place	360 W Hubbard St	Chicago	449	44	2013	concrete	residential
92	200 Squared	210 N Wells St	Chicago	449	42	2010	concrete	residential
93	MILA	201 N	Chicago	444	40	2016	concrete	residential

		Garland Ct						
94	Optima Chicago Center	200 E Illinois St	Chicago	443	42	2014	concrete	residential
95	1001 South State Street	1001 South State Street	Chicago	440	40	2016	concrete	residential
96	Marquee	25 W Randolph St	Chicago	436	38	2016	concrete/steel	residential / retail
97	Silver Tower	303 W Ohio St	Chicago	433	39	2010	concrete	residential
98	1130 South Michigan	1130 South Michigan	Chicago	431	43	1967	concrete	residential
99	The Gallery On Wells	637 N Wells St	Chicago	430	39	2017	concrete	residential
100	McClurg Court Center B	333-600 E Ontario St	Chicago	430	46	1971	concrete	residential
102	1555 North Astor	1555 North Astor	Chicago	428	48	1975	concrete	residential
103	Eugenie Square	W Eugenie St	Chicago	426	42	1972	concrete	residential
104	Sky55	1255 S Michigan Ave	Chicago	425	40	2006	concrete	residential
105	2020 North Lincoln Park West	2020 N Lincoln Park W	Chicago	421	39	1971	concrete	residential
106	Skybridge	737 W Washington Blvd,	Chicago	421	39	2003	concrete	residential
107	The Sinclair	1201 N LaSalle St	Chicago	420	35	2017	concrete	residential
108	Alta at K Station - East Tower	555 W Kinzie St	Chicago	417	41	2010	concrete	residential
109	2 East Erie	2 E Erie St	Chicago	415	39	2002	concrete	residential
110	10 East Delaware	10 East Delaware	Chicago	415	35	2010	concrete	residential
111	MoMo	727 W. Maxwell St	Chicago	411	32	2008	concrete/steel	residential
112	State and Chestnut	845 N State St	Chicago	410	35	2015	concrete	residential
113	1100 North Lake Shore Drive	1100 North Lake Shore Drive	Chicago	410	40	1979	concrete	residential

114	Museum Tower	1335 S Prairie Ave	Chicago	409	38	2006	concrete	residential
115	Malibu East	6033 N Sheridan Rd	Chicago	408	45	1970	concrete	residential
116	Lake Shore Plaza	445 E Ohio St	Chicago	405	38	1986		residential
117	1300 North Lake Shore Drive	1300 North Lake Shore Drive	Chicago	404	40	1965	concrete	residential
118	The Montgomery	500 W Superior St	Chicago	404	28	1972	concrete	residential
119	420 East Ohio	420 East Ohio	Chicago	400	41	1990	concrete	residential
120	Buckingham Plaza	59 E Van Buren St	Chicago	400	44	1982	concrete	residential
121	Millennium Park Plaza	151 N Michigan Ave	Chicago	400	40	1982	concrete	residential / office
122	777 North Michigan	777 North Michigan	Chicago	400	38	1964	concrete	residential
123	River View II	445 E North Water St	Chicago	399	32	2004	concrete	residential
124	James House	1560 N Sandburg Terrace	Chicago	398	43	1971	concrete	residential
125	Cityfront Place	400 N McClurg Ct	Chicago	396	40	1991	concrete	residential
126	The Pearson	250 E Pearson St	Chicago	395	35	2003	concrete	residential
127	Walton Colonnade	100 E Walton St	Chicago	395	44	1972	concrete	residential
128	The Plaza on Dewitt	260 E Chestnut St	Chicago	395	43	1966	concrete	residential
129	1110 North Lake Shore Drive	1110 North Lake Shore Drive	Chicago	394	40	1970	concrete	residential
130	East Point	6101E N Sheridan Rd	Chicago	391	43	1967	concrete	residential
131	The Chandler	450 E Waterside	Chicago	389	36	2008	concrete	residential

		Dr						
132	The Lex	2138 S Indiana Ave	Chicago	388	35	2010	concrete	residential
133	The Carlyle	1040 N Lake Shore Dr	Chicago	388	40	1967	concrete	residential
134	Wells Street Tower	701 S Wells St	Chicago	388	35	2002		residential
135	The Fairbanks at Cityfront Plaza	280 E Illinois St	Chicago	387	31	2008	composit e	residential
136	Hotel Palomar	505 N State St	Chicago	380	36	2010	concrete	hotel / residential
137	The Aurelien	833 N Clark St	Chicago	380	33	2017	concrete	residential
138	Alta at K Station - West Tower	555 W Kinzie St	Chicago	378	37	2010	concrete	residential
139	Outer Drive East	400 E Randolph St	Chicago	378	36	1963	concrete	residential
140	1700 East 56th Street	1700 East 56th Street	Chicago	376	38	1968	concrete	residential
141	1400 Museum Park	1400 Museum Park	Chicago	375	34	2008	concrete	residential
142	Astoria Tower	8 E 9th St	Chicago	374	30	2009	concrete	residential
143	2800 North Lake Shore Drive	2800 North Lake Shore Drive	Chicago	372	43	1968	concrete	residential
144	Brookdale Plaza	2960 N Lake Shore Dr	Chicago	372	38	1990	concrete	residential
145	Arkadia Tower	765 W Adams St	Chicago	369	33	2015	concrete	residential
146	1720 South Michigan	1720 South Michigan	Chicago	368	32	2008	concrete	residential
147	The Admiral at the Lake	929 W Foster Ave	Chicago	368	32	2012	concrete	residential
148	Hawthorne House	3450 N Lake Shore Dr	Chicago	367	42	1966	concrete	residential
149	1111 South Wabash	1111 South Wabash	Chicago	367	34	2004	concrete	residential
150	One East Delaware	1 E Delaware Pl	Chicago	366	36	1989	concrete	residential

151	K2 at K Station	365 N Halsted St	Chicago	366	33	2013	concrete	residential
152	Left Bank at K Station	300 N Canal St	Chicago	366	36	2006	concrete	residential
153	Kinzie Park Tower	501 N Clinton St	Chicago	365	34	2001	concrete	residential
154	Echelon at K Station	353 N Desplains St	Chicago	363	36	2008	concrete	residential
155	The Chicagoan	750 N Rush St	Chicago	362	37	1990	concrete	residential / retail
156	Edgewater Plaza North	Edgewater Plaza North	Chicago	361	38	1968	concrete	residential
157	2 East Oak Street	2 E Oak St	Chicago	360	39	1967	concrete	residential
158	Chestnut Tower	121 W Chestnut St	Chicago	360	36	2000	concrete	residential
159	Walton on the Park	2 W Delaware Pl	Chicago	360	31	2010	concrete	residential
160	Regents Park South	5035 S East End Ave	Chicago	357	37	1972	concrete	residential
161	1600 Museum Park	1600 Museum Park	Chicago	357	32	2009	concrete	residential
162	Exhibit on Superior	165 W Superior St	Chicago	357	34	2017	concrete	residential
163	Alta Roosevelt	801 S Financial Pl	Chicago	354	33	2018	concrete	residential
164	Malibu Condominiums	6007 N Sheridan Rd	Chicago	350	39	1969	concrete	residential
165	LINEA	3713 W Belmont Ave	Chicago	348	33	2017	concrete	residential
166	Eight O Five	805 N LaSalle Dr	Chicago	348	33	2015	concrete	residential
167	Park Alexandria	125 S Jefferson St	Chicago	347	32	2003	concrete	residential
168	Drake Tower	179 E Lake Shore Dr	Chicago	347	30	1929		residential
169	Edgewater Plaza South	5445 N Sheridan Rd	Chicago	346	38	1971	concrete	residential
170	Tower One Old	1140 N	Chicago	344	31	2018	concrete	residential

	Town Park	Wells St						
171	Regents Park North	5035 S East End Ave	Chicago	342	36	1974	concrete	residential
172	3150 North Lake Shore Drive	3150 North Lake Shore Drive	Chicago	339	38	1963	concrete	residential
173	1550 North Lake Shore Drive Apartments	1550 North Lake Shore Drive	Chicago	338	34	1960	concrete	residential
174	200 East Delaware	200 E Delaware Pl	Chicago	336	36	1972	concrete	residential
175	Century Tower	182 W Lake St	Chicago	336	28	1930	concrete	residential
176	Elm Street Plaza	1130 N Dearborn St	Chicago	335	33	1974	concrete	residential
177	990 North Lake Shore Drive	990 North Lake Shore Drive	Chicago	335	33	1973	concrete	residential
178	1212 North Lake Shore Drive	1212 North Lake Shore Drive	Chicago	333	36	1969	concrete	residential
179	2500 North Lakeview	2500 North Lakeview	Chicago	333	35	1974	concrete	residential
180	Concord City Centre	208 W Washington St	Chicago	332	23	1927	steel	residential
181	Gold Coast Galleria	111 W Maple St	Chicago	331	32	1991	concrete	residential
182	Museum Park Place 2	1841 S Calumet Ave	Chicago	329	30	2009	concrete	residential
183	South Shore Beach Apartments	7447 S South Shore Dr	Chicago	329	34	1965	concrete	residential
184	840 North Lake Shore Drive	840 North Lake Shore Drive	Chicago	329	27	2004	concrete	residential
185	Michigan Terrace Condominiums	535 N Michigan Av	Chicago	328	33	1963	concrete	residential

186	1240 North Lake Shore Drive	1240 North Lake Shore Drive	Chicago	328	32	1971	concrete	residential
187	530 North Lake Shore Drive	530 North Lake Shore Drive	Chicago	328	29	2003	concrete	residential
188	The Breakers at Edgewater Beach	The Breakers at Edgewater Beach	Chicago	325	33	1987	concrete	residential
189	The Lancaster	201 N Westshore Dr	Chicago	324	30	2005	concrete	residential
190	Vetro	611 S Wells St	Chicago	324	31	2008	concrete	residential
191	Americana Towers	1636 N Wells St	Chicago	322	34	1970	concrete	residential
192	1212 South Michigan	1212 South Michigan	Chicago	322	30	1982	concrete	residential
193	River View I	445 E North Water St	Chicago	321	27	2000	concrete	residential
194	1133 North Dearborn	1133 North Dearborn	Chicago	321	33	1988	concrete	residential
195	The Cooper	720 S Wells St	Chicago	321	29	2018	concrete	residential
196	100 Bellevue Place	100 Bellevue Place	Chicago	316	31	1971	concrete	residential
197	The Parker	730 W Couch Pl	Chicago	315	29	2016	concrete	residential
198	100 West Chestnut	100 West Chestnut	Chicago	315	30	1983	concrete	residential
199	1000 South Clark	1000 South Clark	Chicago	315	29	2016	concrete	residential
200	Michigan Avenue Tower I	1250 S Michigan Ave	Chicago	314	29	2005	concrete	residential
201	Alta at K Station - East Tower	555 W Kinzie St	Chicago	417	41	2010	concrete	residential
202	2 East Erie	2 East Erie St	Chicago	415	39	2002	concrete	residential
201	100 West	100 West	Chicago	315	30	1983	concrete	residential

	Chestnut	Chestnut						
202	1000 South Clark	1000 South Clark	Chicago	315	29	2016	concrete	residential
204	McCormick Building	2301 S King Dr	Chicago	314	20	1912	steel	residential / office
205	Burnham Pointe	730 S Clark St	Chicago	314	28	2008	concrete	residential
206	777 South State	777 South State	Chicago	312	27	1984	concrete	residential
207	550 St. Clair	550 St. Clair	Chicago	312	26	2008	concrete	residential
208	Michigan Avenue Tower II	1250 S Michigan Ave	Chicago	311	28	2009	concrete	residential
209	Hilton Homewood Suites and Wabash Suites Hotel	40 E Grand Ave	Chicago	310	29	2019	concrete	residential / hotel
210	EnV	161 W Kinzie St	Chicago	308	28	2010	concrete	residential
211	Landmark West Loop	1035 W Van Buren St	Chicago	308	30	2017	concrete	residential
212	Socony-Vacuum Building	360 E Randolph St	Chicago	306	27	1930	steel	residential / office
213	SoNo West Tower	SoNo West Tower	Chicago	306	27	2009	concrete	residential
214	Eleven40	1140 S Wabash Ave	Chicago	303	26	2018	concrete	residential
215	Michigan Avenue Lofts	910 S Michigan Ave	Chicago	302	20	1911	steel	residential
216	1111 North Dearborn	1111 North Dearborn	Chicago	301	32	1981	concrete	residential
217	Kingsbury on the Park	653 N Kingsbury St	Chicago	301	25	2004	concrete	residential / residential
218	4 East Elm Street	4 East Elm Street	Chicago	300	24	2016	concrete	residential
219	NEXT	347 W Chestnut St	Chicago	299	29	2016	concrete	residential
220	Astor Tower	1300 N Astor St	Chicago	299	25	1962	concrete	residential
221	Wave Lakeview	420 W Belmont Ave	Chicago	297	30	1967	concrete	residential

222	1600 East 53rd Street	1600 East 53rd Street	Chicago	297	27	2019	concrete	residential
223	Noble Square Co-op	165 N Milwaukee Ave	Chicago	295	28	1969	concrete	residential
224	North American Building	121 S Broad St	Chicago	295	19	1912	steel	residential
225	3Eleven	311 W Illinois St	Chicago	293	25	2018	concrete	residential
226	8 East Huron	8 East Huron	Chicago	293	26	2017	concrete	residential
227	Marquee Michigan Avenue	1464 S Michigan Ave	Chicago	292	26	2008	concrete	residential
228	Erie on the Park	510 W Erie St	Chicago	292	24	2002	steel	residential
229	1418 North Lake Shore Drive	1418 North Lake Shore Drive	Chicago	292	29	1983	concrete	residential
230	Astor House	1340 N Astor St	Chicago	289	30	1969	concrete	residential
231	One Triple Three	1333 S Wabash Ave	Chicago	289	28	2017	concrete	residential
232	Museum Pointe	233 E 13th St	Chicago	289	26	2005	concrete	residential
233	5000 East End Building	1629 E 50th St	Chicago	288	28	1928		residential
234	Solstice on the Park	1616 E 56th St	Chicago	286	26	2018	concrete	residential
235	Eight Eleven Uptown	811 W Agatite Ave	Chicago	285	27	2018	concrete	residential
236	525 Hawthorne	525 W Hawthorne Pl	Chicago	285	31	1970	concrete	residential
237	Transportation Building	600 S Dearborn St	Chicago	285	22	1911	steel	residential
238	Horizon House	5733 N Sheridan Rd	Chicago	284	30	1965	concrete	residential
239	6 North Michigan	6 North Michigan Ave	Chicago	282	22	1899	steel	residential
240	Museum Park Tower I	1335 S Prairie Ave	Chicago	280	20	2002	concrete	residential

241	Lake Park Plaza	3930 N Pine Grove Ave	Chicago	278	30	1969	concrete	residential
242	Cornell Village	5201 S Cornell Ave	Chicago	276	27	1968	concrete	residential
243	River Place on the Park	700 N Larrabee St	Chicago	276	21	2006	concrete	residential
244	3150 North Sheridan	3150 North Sheridan	Chicago	276	29	1976	concrete	residential
245	The Newport North Tower	4800 S Chicago Beach Dr	Chicago	274	27	1963	concrete	residential
245	The Newport South Tower	4800 S Chicago Beach Dr	Chicago	274	27	1963	concrete	residential
247	Granville Tower	6166 N Sheridan Rd	Chicago	273	29	1965	concrete	residential
248	Quadrangle House	6700 S South Shore Dr	Chicago	272	28	1968	concrete	residential
249	Jones	220 W Illinois St	Chicago	272	26	2014	concrete	residential
250	The Bernardin	747 N Wabash Ave	Chicago	272	27	2005	concrete	residential
251	Admiral's Point	645 N Kingsbury St	Chicago	271	27	2002	concrete	residential
252	Prairie Pointe	1600 S Prairie Ave	Chicago	271	24	2006	concrete	residential
253	Hollywood Towers North	5701 N Sheridan Rd	Chicago	270	29	1962	concrete	residential
253	Hollywood Towers South	5700 N Sheridan Rd	Chicago	270	29	1962	concrete	residential
255	860 North Lake Shore Drive	860 North Lake Shore Drive	Chicago	270	26	1951	steel	residential
255	880 North Lake Shore Drive	880 North Lake Shore Drive	Chicago	270	26	1951	steel	residential
257	The Powhatan	4950 S Chicago Beach Dr	Chicago	270	22	1929	concrete	residential

258	730 North Milwaukee	730 North Milwaukee	Chicago	266	23	2019	concrete	residential
259	Aspire	25 E Washington St	Chicago	265	24	2020	concrete	residential
260	1401 South State	1401 South State	Chicago	264	22	2008	concrete	residential
261	Pearson on the Park	222 E Pearson St	Chicago	262	27	1965	concrete	residential
262	The Hudson	750 N Hudson Ave	Chicago	262	25	2017	concrete	residential
263	Hubbard 221	221 W Hubbard St	Chicago	262	23	2018	concrete	residential
264	Hermitage on Huron	70 W Huron St	Chicago	261	26	1985	concrete	residential
265	SixForty North Wells	SixForty North Wells	Chicago	260	23	2017	concrete	residential
266	Esplanade Apartments I	880 N Lake Shore Dr	Chicago	260	28	1956		residential
266	Esplanade Apartments II	870 N Lake Shore Dr	Chicago	260	28	1956		residential
268	Harper Square Cooperative - North Tower	4800 S Lake Park Ave	Chicago	260	25	1969	concrete	residential
268	Harper Square Cooperative - South Tower	4800 S Lake Park Ave	Chicago	260	25	1969	concrete	residential
270	Museum Park Place 1	1841 S Calumet Ave	Chicago	259	23	2007	concrete	residential
271	899 South Plymouth Court	899 South Plymouth Court	Chicago	259	27	1980	concrete	residential
272	1410 North State Parkway	1410 North State Parkway	Chicago	256	26	1981	concrete	residential
273	AMLI 900	900 S Clark St	Chicago	256	23	2008	concrete	residential
274	2101 South Michigan	2101 South Michigan	Chicago	255	26	1971	concrete	residential
275	Barclay Condominiums	4940 S East End Ave	Chicago	255	20	1929	concrete	residential

276	Cambridge Manor	2631 S Indiana Ave	Chicago	254	28	1972	concrete	residential
277	Commonwealth Promenade I	330 West Diversey Parkway	Chicago	253	27	1956	steel/ concrete	residential
277	Commonwealth Promenade II	330 West Diversey Parkway	Chicago	253	27	1956	steel/ concrete	residential
279	Narragansett Apartments	1640 E 50th St	Chicago	251	22	1929	concrete	residential
280	21 East Chestnut Street	21 East Chestnut Street	Chicago	246	23	1963	concrete	residential
281	SoNo East Tower	840 W Blackhawk St	Chicago	243	22	2012	concrete	residential
282	Oglesby Towers	6700 S Oglesby Ave	Chicago	242	25	1963	concrete	residential
283	5000 South Cornell Avenue	5000 South Cornell Avenue	Chicago	240	21	1930		residential
284	Museum Park Tower II	1335 S Prairie Ave	Chicago	236	20	2009	concrete	residential
285	Residences at New City	1457 N Halsted St	Chicago	235	19	2015	concrete	residential
286	40 East Oak	40 East Oak	Chicago	231	21	1929		residential
287	Jackson Towers	5555 S Everett Ave	Chicago	230	19	1925		residential
288	Mentor Building	6 E Monroe St	Chicago	230	17	1906		residential
289	2930 North Sheridan Road	2930 North Sheridan Road	Chicago	226	22	1964		residential
290	Manhattan Building	431 S Dearborn St	Chicago	224	16	1891	steel	residential
291	Renelle on the River	403 N Wabash Ave	Chicago	221	18	2019	concrete	residential
292	Dwight Building	642 S Clark St	Chicago	219	16	2008	concrete	residential
293	Hyde Park Tower Apartments	5140 S Hyde Park Blvd	Chicago	218	22	1990	concrete	residential

294	Two River Place	720 N Larrabee St	Chicago	218	17	2004	concrete	residential
295	Promontory Apartments	5530 S Shore Dr	Chicago	218	21	1949	concrete	residential
296	Old Colony Building	37 W Van Buren St	Chicago	215	17	1894	steel	residential
297	University Center	525 S State St	Chicago	215	19	2004	concrete	residential
298	Lincoln Common Tower 1	2345 N Lincoln Ave	Chicago	214	20	2019	concrete	residential
298	Lincoln Common Tower 2	2345 N Lincoln Ave	Chicago	214	20	2019	concrete	residential
300	2950 North Sheridan Road	2950 North Sheridan Road	Chicago	214	19	2017	concrete	residential
301	Niche 905	905 N Orleans St	Chicago	213	18	2017	concrete	residential
302	Edgewater Beach Apartments	5555 N Sheridan Rd	Chicago	212	20	1928		residential
303	Michigan Beach Apartments	7251 S South Shore Dr	Chicago	203	21	1969	concrete	residential
304	Xavier	625 W Division St	Chicago	201	18	2015	concrete	residential
305	Hilliard Homes 1	54 W Cermak Rd	Chicago	200	22	1966	concrete	residential
305	Hilliard Homes 2	54 W Cermak Rd	Chicago	200	22	1966	concrete	residential
307	Vue20 Condominium	200 N Dearborn St	Chicago	200	19	2003	concrete	residential
308	Ronald McDonald House	5444 S Drexel Ave	Chicago	198	15	2012	concrete	residential
309	Union West Tower 1	936 W Washington Blvd	Chicago	193	15	2020	concrete	residential
310	R+D 659	659 W Randolph St	Chicago	191	17	2009	concrete	residential / retail
311	Spoke South Building	728 N Morgan St	Chicago	188	15	2017	concrete	residential
312	450 West Belmont Avenue	450 West Belmont	Chicago	187	18	2020	concrete	residential

		Avenue						
313	Bush Temple Tower	108 W Chicago Ave	Chicago	186	16	2019	concrete	residential
314	Union West Tower 2	936 W Washington Blvd	Chicago	186	15	2020	concrete	residential
315	River City	800 S Wells St	Chicago	184	18	1986	concrete	residential
316	The Kent	2625 N Clark St	Chicago	179	20	1984	concrete	residential
317	1411 South Michigan Avenue	1411 South Michigan Avenue	Chicago	173	15	2018	concrete	residential / office
318	City Hyde Park	5105 S Harper Ave	Chicago	172	14	2016	concrete	residential / retail
319	The University of Chicago Campus North Residential Commons	5500 S University Ave	Chicago	164	15	2016	concrete	residential / retail
320	Vue53	1330 E 53rd St	Chicago	151	14	2016	concrete	residential
321	Hilliard Senior Homes I	54 W Cermak Rd	Chicago	146	16	1966	concrete	residential
321	Hilliard Senior Homes II	54 W Cermak Rd	Chicago	146	16	1966	concrete	residential
323	320 West Oakdale Avenue	320 West Oakdale Avenue	Chicago	-	21	1954	concrete	residential
324	820 South	820 S Michigan Ave	Chicago	-	12	2019	concrete	residential