

## ABSTRACT

Title of Thesis:

HEALING PLACES

Nusheen Majidi, Master of Architecture, 2021

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Planning, and Preservation

The earth and its inhabitants are experiencing a rapid decline in physical, mental, social, and environmental health. The built environment directly affects each of these factors, and therefore has the ability to improve them. Baltimore City, Maryland is a clear example of the dialectic relationship between a built environment and its community. Plagued by vacant and dilapidated buildings, raging crime rates, inequality and divisiveness, and poor physical and social health, Baltimore City is in dire need of regeneration. This thesis proposes an urban intervention in Oldtown, Baltimore City, Maryland that employs active design, sustainable design, and specialized programming to alleviate the specific health, social, and environmental problems of this community. This thesis ultimately asserts that healing social and environmental issues can start with healing the built environment.

# HEALING PLACES

by

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# Table of Contents

Table of Contents	ii
Chapter 1: Issues to be Addressed by Thesis	1
Decline of Health and Wellness	1
Physical Health	2
Mental Health	4
Social Health (Social Capital)	7
Decline of Planetary Health	8
Climate Change	9
Air and Water Pollution	10
Race and Opportunity	13
Chapter 2: The Intersection of Urban Design and Health, Wellness, Environment, and Opportunity	16
Urban Design & Health and Wellness	16
Physical Health	16
Mental Health	18
Social Health (Social Capital)	20
Urban Design & Planetary Health	22
Climate Change	22
Air and Water Pollution	23
Urban Design & Race and Opportunity	26
Chapter 3: Thesis Proposal: Urban Intervention in Baltimore City	29
Health and Wellness Issues in Baltimore City	29
Overview	29
Proposal	31
Environmental Problems in Baltimore City	32
Overview	32
Proposal	33
Race and Opportunity in Baltimore City	33
Overview	33
Proposal	35
Chapter 4: Site Selection & Analysis	37

Site Comparisons	37
Quantitative Analysis	37
Qualitative Analysis	38
Graphic Analysis	39
Selected Site Analysis	41
Graphic/Spatial Analysis	41
Chapter 5: Precedent Application & Design Exploration	44
Medieval	44
Baroque	45
Solar	46
Chapter 6: Design Proposal	48
City	49
Neighborhood	51
Place	52
Community	53
Chapter 7: Conclusion	54
Bibliography	55

# Chapter 1: Issues to be Addressed by Thesis

## *Decline of Health and Wellness*

Health and wellness (or wellbeing) are two terms that are often conflated in an effort to encompass a broad variety of meanings. To understand the nuances of these terms, it is important to analyze the two models through which science and health professionals define health: the medical model and the wellness model.

In the medical model, only observable or measurable diseases and illnesses are used as parameters from which health is determined. These diseases and illnesses fall into one of the “five Ds” categories – death, disease, discomfort, disability, and dissatisfaction – and are primarily cured through tangible, medical intervention. Ultimately, the medical model defines health on the basis of biology and relies on biological interpretations and interventions to address problems. The wellness model, on the other hand, considers sources/factors beyond (and including) biology to measure health, diagnose, and treat problems. These indicators may not be tangible or objectively measurable, the diagnoses could be ambiguous, and the treatments may have nothing to do with medicine or physical intervention. Overall, the wellness model defines health through multiple, interrelated dimensions, and seeks to understand and eliminate the source of the issue rather than the observable symptoms.<sup>1</sup>

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<sup>1</sup> Gordon Edlin, and Eric Golanty. *Health & Wellness*. 12th ed. Burlington, MA: Jones & Bartlett Learning, 2015.

This thesis employs both models of health to discuss the decline of physical, mental, and social health over time – three distinct but not mutually exclusive categorizations of health and wellness. The terms “health and wellness,” are used as a reference to both models to show that both are important to this thesis exploration and proposal.

### Physical Health

Physical health is another term that can be defined in multiple different ways. Some professionals consider diet, exercise, injury, and regular medical exams as the basis of physical health. Others consider physical fitness and body composition as the core tenet of physical health. And still, other experts believe organ function and the absence of diseases are the main determinants of physical health. Although there are many different perspectives on what comprises physical health, each definition has in common a main focus on the body. Psychiatrist M. Scott Peck’s broad definition, that physical health “involves caring effectively for our physical body,” provides an appropriately broad understanding of the concept for this thesis.<sup>2</sup>

Physical health was once imbedded in everyday life. Work, transportation, and recreation all required physical activity that is integral and indisputably linked to physical health. Since the industrial revolution, however, daily physical activity has drastically decreased as work, transportation, and recreation can all be achieved with almost no movement whatsoever. Typical jobs today involve sitting at a computer as opposed to the labor-heavy farming or factory work that was typical of the past.

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<sup>2</sup> John Hjelm. *The Dimensions of Health: Conceptual Models*. United States: Jones & Bartlett Learning, 2010.

Transportation today requires minimal physical activity, such as driving, taking the metro, or taking an airplane, as opposed to walking, biking, or simply taking the stairs. Recreation today comes in sedentary forms such as movies, video games, and social media, whereas before, recreation more typically involved movement, such as sports, gardening, or taking a walk with friends. Even household chores like washing clothes or mowing the lawn have become far less active today with the use of washing machines and riding lawn mowers.<sup>3</sup>

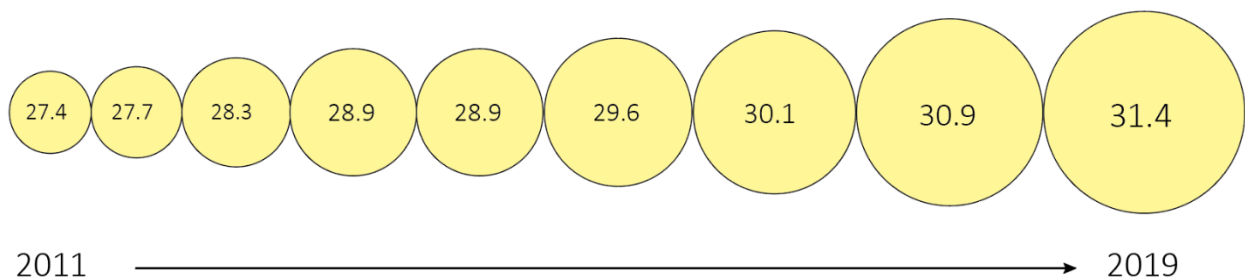


Figure 1.1.1 – Percentage of Obese Adults (18+) (Yearly): Author



Figure 1.1.2 – Percentage of Obese High Schoolers (Every Two Years): Author

<sup>3</sup> Howard Frumkin, Lawrence Frank, and Richard J. Jackson. *Urban Sprawl and Public Health : Designing, Planning, and Building for Healthy Communities*. Washington, DC: Island Press, 2004. <http://search.ebscohost.com.proxy-um.researchport.umd.edu/login.aspx?direct=true&db=nlebk&AN=152007&site=ehost-live.>”

“The result is a nation of sedentary people.”<sup>4</sup> Some of the effects of sedentary lifestyles, such as obesity and Type 2 Diabetes, have reached epidemic proportions and has required professional, public health, and government intervention. Every year from 2011 to 2019, the national percentage of adults who have obesity has increased, except from 2014 to 2015 when it remained the same.<sup>5</sup> Likewise, the national percentage of adolescent obesity has also increased (measured every two years) since 2011.<sup>6</sup> Less than a quarter of all adults are consistently meeting aerobic and muscle strengthening guidelines, measured every two years since 2011.<sup>7</sup> These statistics correlate to increased risk of numerous dangerous health problems, such as high blood pressure, heart complications, and Type 2 Diabetes.<sup>8</sup>

Chapter 2 will explore the ways in which urban design can impact physical activity to address these staggering statistics. The design exploration and final proposal in this thesis will employ the methods discussed to address the decline of physical health and set an example by which future developments can impact this aspect of health and wellbeing.

### Mental Health

Like physical health, mental health can be defined in a number of different ways. At one time, mental health was understood simply as the absence of mental illness. The current World Health Organization’s (WHO) definition of mental health

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<sup>4</sup> Frumkin, Frank, and Jackson, 91.

<sup>5</sup> “Nutrition, Physical Activity, and Obesity: Data, Trends and Maps.” Centers for Disease Control and Prevention, February 10, 2021. <https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html>.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Frumkin, Frank, and Jackson, 91.

is far more specific: “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.”<sup>9</sup> Like the many definitions of physical health and their common denominator, the body, these mental health definitions also have a common denominator: the mind. The Centers for Disease Control and The Centers for Disease Control and Prevention (CDC) states that “mental health includes emotional, psychological, and social well-being.”<sup>10</sup> This thesis utilizes the CDC definition for mental health but explores social well-being as a separate category of health, though it is undoubtedly related to both mental and physical health as well.

Mental health trends have been studied in a variety of ways, depending on the particular mental illness or population in question. One indicator of mental health is the incidence of depression and/or anxiety. Substantial evidence exists to support the claim that there has been an increase in both depressive and anxiety symptoms among adolescents in the US.<sup>11</sup> Negative mental health trends have also been noted in the adult population. As seen in Figure 1.2.1 below, psychological well-being has decreased over the years across all socioeconomic classes. Disturbingly, there is a great divide between socioeconomic classes in some measures of mental health. Figure 1.1.3 also shows that there is a relationship between negative mental health

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<sup>9</sup> Silvana Galderisi, Andreas Heinz, Marianne Kastrup, Julian Beezhold, and Norman Sartorius. “Toward a New Definition of Mental Health.” *World Psychiatry* 14, no. 2 (June 4, 2015): 231–33. <https://doi.org/10.1002/wps.20231>.

<sup>10</sup> “Mental Health - Home Page - CDC.” Centers for Disease Control and Prevention, December 31, 2020. <https://www.cdc.gov/mentalhealth/index.htm>.

<sup>11</sup> Ramin Mojtabai and Mark Olfson. “National Trends in Mental Health Care for US Adolescents.” *JAMA Psychiatry* 77, no. 7 (2020): 703–14. <https://doi.org/10.1001/jamapsychiatry.2020.0279>.

indicators and socioeconomic class: the lower one's socioeconomic status (SES), the worse their mental health. As those at the bottom of the SES chain experience worsening mental health over time in the categories of affect and life satisfaction, those at the top of the chain are experiencing improvements in the same categories.<sup>12</sup> This gap in mental health across classes is indicative of inequities in opportunity that will be further discussed in Section 3 of this chapter.

Chapter 2 will explore the ways in which urban design can affect mental health to address and improve these statistics. The design exploration and final proposal in this thesis will employ the methods discussed to address the decline of mental health and set an example by which future developments can impact this aspect of health and wellbeing.

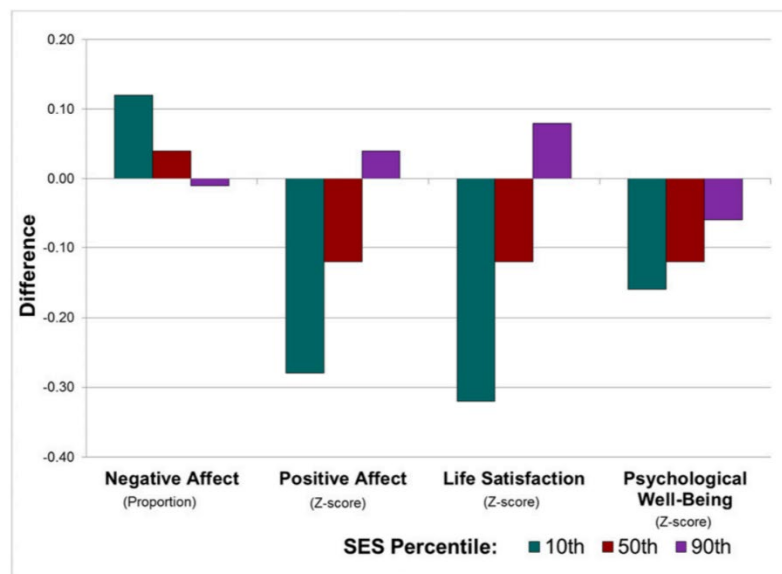


Figure 1.1.3 – Difference in predicted values from 2011 to 2014 in non-Latino Whites<sup>13</sup>

<sup>12</sup> Noreen Goldman, Dana A. Gleit, and Maxine Weinstein. “Declining Mental Health among Disadvantaged Americans.” *Proceedings of the National Academy of Sciences of the United States of America* 115, no. 28 (June 18, 2018): 7290–95.  
<https://doi.org/https://doi.org/10.1073/pnas.1722023115>.

<sup>13</sup> Ibid., 7293.

## Social Health (Social Capital)

Social networks and behaviors are complex and dynamic, which makes evaluating their function and effect on people quite challenging. One way to understand or define social health and wellbeing is through the lens of social capital. Social capital refers to a sense of communion, conviviality, trust, and belonging brought about by community features or institutions, beliefs, and networks.<sup>14</sup> These elements help bring members of the community together and inspire them to get involved in different ways. Based on this understanding of social capital, it follows that measurements and assessments of social capital are often made at the community scale, but some measurements can also be made on a smaller level (individual) or larger level (state or nation).

Huge declines have been noted in a wide range of indicators on all levels of social capital since the 1950s. On the individual level, there has been a decrease in social visits and perception of honesty, morality, and trustworthiness. On the local level, club participation, church attendance and participation in campaign activities have declined. Even on the national level, decreases in social capital are evidenced by the declining participation in presidential elections.<sup>15</sup> Overall, there is an increasing disconnect between the individual and his/her community, and much like physical activity, post-industrial life is a major culprit behind this downward trend. Prior to the industrial revolution, spontaneous and informal human interaction was reliably common because of the integrated nature and structure of life. Now, with the ability

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<sup>14</sup> Frumkin, Frank, and Jackson, 161-162.

<sup>15</sup> Ibid, 165.

to work remotely, travel alone, and find entertainment from the comfort of the couch, social interaction, and therefore the ability to have meaningful connections, has significantly decreased. Opportunities to build trust and become invested in the neighbors, neighborhood, and local institutions have diminished, causing a decline in social capital.

There are many factors that affect social capital. Section 3 in this chapter will discuss some of the demographic and socioeconomic indicators of social capital. Chapter 2 will investigate the ways in which urban design can affect social capital to understand what interventions could reverse this downward trend and reconnect communities. The design exploration and final proposal in this thesis will employ the methods discovered to address the decline of social capital and set an example by which future developments can impact this aspect of health and wellbeing.

### *Decline of Planetary Health*

Planetary health refers to the state of earth's natural systems as they have been impacted by humankind and their influence on human health and wellness.<sup>16</sup>

Planetary health is not dissimilar from the field of environmental health, which also studies the dialectic relationship between the environment and human life. However, planetary health is distinct in that there is an explicit focus on the importance of natural systems, whereas environmental health may include environmental factors beyond the natural, such as chemical, social, and other human-made factors.<sup>17</sup>

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<sup>16</sup> Nate Seltenrich. "Down to Earth: The Emerging Field of Planetary Health." *Environmental Health Perspectives* 126, no. 7 (July 12, 2018): 072001-1–072001-7. <https://doi.org/10.1289/ehp2374>.

<sup>17</sup> Frank R. Spellman, and Melissa L. Stoudt. *The Handbook of Environmental Health*. Lanham, MD: Scarecrow Press, 2013: 2. <http://search.ebscohost.com.proxy-um.researchport.umd.edu/login.aspx?direct=true&db=nlebk&AN=537767&site=ehost-live>.

This thesis focuses on two gauges of planetary health – climate change and air and water pollution – to demonstrate how the built environment influences the natural environment. It is important to remember that there is a direct relationship between these systems and human health and wellness; as global warming escalates, pollution increases, and resource availability diminishes, health and wellness decreases.<sup>18</sup>

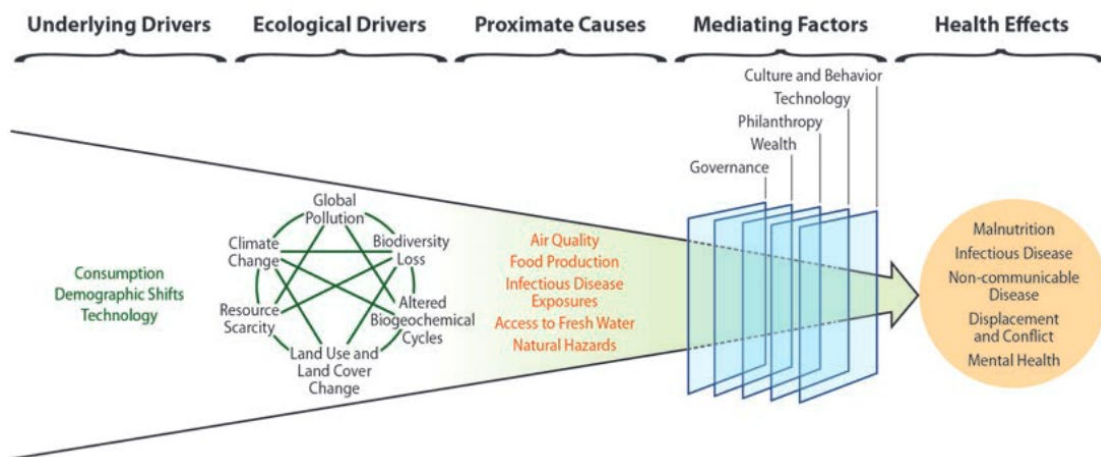


Figure 1.2.1 – Anthropogenic Change Impacts Human Health<sup>19</sup>

## Climate Change

Global warming – the gradual increase in average global temperature over time – is a major indicator of planetary health. “Since the beginning of the twentieth century, global average temperature has warmed by approximately 1°C.”<sup>20</sup> This is almost entirely due to human activity, mainly through the release of greenhouse gases.

<sup>18</sup> Samuel Myers, and Howard Frumkin. *Planetary Health : Protecting Nature to Protect Ourselves*. Washington, DC: Island Press, 2020. <http://search.ebscohost.com.proxy-um.researchport.umd.edu/login.aspx?direct=true&db=nlebk&AN=2589201&site=ehost-live>.

<sup>19</sup> Myers and Frumkin, 7.

<sup>20</sup> Ibid., 72.

There are an increasing number of natural disasters and extreme events that can be credited largely to this trend in climate change. One such disaster is coastal flooding. Over time, sea levels have risen more than five meters because of melting polar ice, threatening more and more coastal cities, their ecosystems, and their inhabitants. Plants and animals have also been forced to adapt (migrate) to cooler locations or die. Evidence of this can be seen in the rapid fading of coral reefs. The increase in wildfires, particularly in the west, and increase in more deadly hurricanes can also be attributed to global warming.<sup>21</sup>

Chapter 2 will explore the ways in which urban design has negatively affected climate change to suggest how this relationship could be reversed. The design exploration and final proposal in this thesis will employ the methods discussed and set an example by which future developments can be designed to address the decline of planetary health.

#### Air and Water Pollution

Pollution is “harmful, unwanted material released to the environment as the consequence of human activity,” and is a significant cause of disease and premature death globally.<sup>22</sup> Some of the main sources of all types of pollution include, but are not limited to, combustion of fossil fuels, overuse of dangerous natural substances, production of dangerous unnatural substances, and unsafe disposal of contaminants. The impact of pollution can be seen in all the earth’s natural systems, but this thesis will focus specifically on air and water pollution.

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<sup>21</sup> Ibid., 73.

<sup>22</sup> Ibid., 97.

The main source of air pollution in high- and middle-income countries is the combustion of fossil fuels to power factories, power plants, and motor vehicles. In low- and middle-income countries, the main source of air pollution is from burning of biomass for household reasons such as cooking or providing heat. Though household air pollution can be just as contaminated as outdoor (ambient) air pollution, and is therefore equally dangerous and important, it is declining globally. Outdoor air pollution, however, is increasing due to many factors, including rising demands for energy, increases in mining and deforestation, the spread of toxic chemicals and insecticides/herbicides, and the increasing reliance on vehicular transportation.<sup>23</sup> Air pollution has become so significant and so widespread that “more than 90% of the world’s population lives in areas that exceed the World Health Organization guidelines for healthy air,” and “in the absence of aggressive intervention, the death toll from ambient air pollution is projected to double by 2050.”<sup>24</sup>

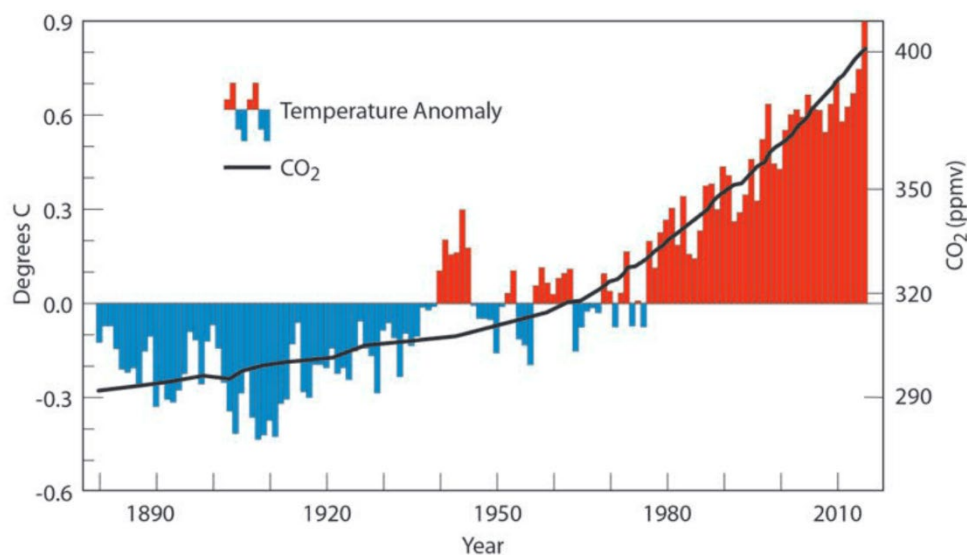


Figure 1.2.2 - Global Mean Temperature and CO<sub>2</sub> Concentrations at Mauna Loa<sup>25</sup>

<sup>23</sup> Ibid., 98.

<sup>24</sup> Ibid., 98.

<sup>25</sup> Ibid., 72.

Pollution is present in the majority of water systems: surface water, ground water, rivers, lakes, oceans, rainfall, etc. This pollution comes from many different sources, including human and animal waste, industrial chemicals, pharmaceutical wastes, heavy metals, and pesticides. Increasing plastic production is also a major contributor to water pollution and has affected ecosystems from deep ocean trenches to the Arctic. Plastic is not only found in the water, but in the wildlife itself; it is estimated that plastic can be found in 90% of seabirds.<sup>26</sup> Chemical and microbial contamination of water, and their associated waterborne illnesses, are also very dangerous for human and ecosystem health. This kind of contamination largely comes from stormwater runoff, which has increased over the years.<sup>27</sup>

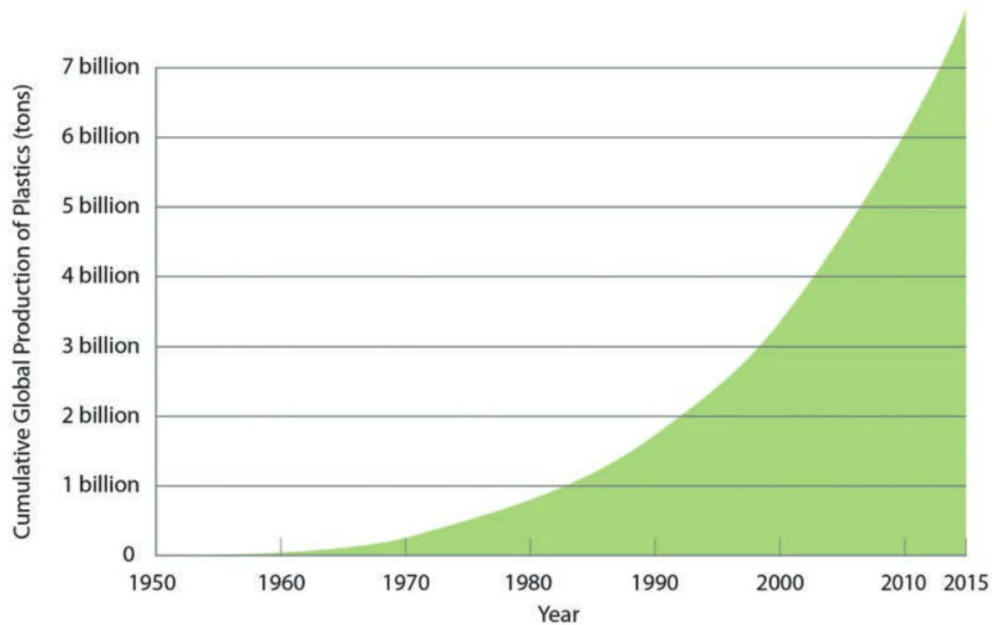


Figure 1.2.3 – Cumulative Plastic Production since WWII<sup>28</sup>

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<sup>26</sup> Ibid., 99.

<sup>27</sup> Frumkin, Frank, and Jackson, 124-125.

<sup>28</sup> Myers and Frumkin, 100.

Chapter 2 will explore the ways in which the built environment affects air and water pollution. The design exploration and final proposal in this thesis will employ the methods discussed to address the decline of planetary health and set an example by which future developments can coexist harmoniously with natural systems to protect the earth and, therefore, protect human health and wellness.

### *Race and Opportunity*

Racial discrimination has been woven into the built environment since the Great Depression. In 1933, the Home Owners Loan Corporation (HOLC) created a standard for appraisal methods in which city blocks were rated based on various criteria, including explicit racial criteria. The presence of a single Black family could cause a neighborhood to receive the lowest loan rating. On “Residential Security Maps,” neighborhoods that housed minority residents were colored red (redlined), which greatly devalued them and made it harder for them to get loans from private lending institutions, as they were classified as “definitely declining” or “hazardous” neighborhoods.<sup>29</sup>

With the creation of the Federal Housing Administration (FHA) in 1934, discrimination continued in the built environment. The FHA’s appraisal method allowed personal bias regarding the ethnic make-up of a neighborhood play a role in determining its value. Single-family houses and new construction received more FHA loans than urban, multifamily dwellings.<sup>30</sup>

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<sup>29</sup> Frumkin, Frank, and Jackson, 197.

<sup>30</sup> Frumkin, Frank, and Jackson, 197.

These policies and procedures led to White flight, where White people left the city for the suburbs and Black people remained behind. Employment opportunities and wealth followed the Whites out of the inner cities, causing huge disparities in access, opportunity, and social and health markers between neighborhoods. “The catastrophic consequences of these conditions for people living in the inner city have been well documented. In New York City’s central Harlem, where 96 percent of the population is Black, men and women die at 3 times the rate of the U.S. White population, and the odds of reaching age sixty-five are lower than in Bangladesh.”<sup>31</sup>

Though racial discrimination in housing policies has since diminished, inner-city neighborhoods are still plagued with poverty and the many associated consequences that follow. One of these associated consequences is decreased mental health. Those with lower socioeconomic status (SES) have experienced substantial increases in negative affect and substantial decreases in well-being over time, while those with high SES have experienced little change in negative affect and modest improvements in well-being.<sup>32</sup> Social capital is also affected by income inequality. There is a direct relationship between income inequality and social mistrust, and both contribute to poor health outcomes.<sup>33</sup>

Policy, far more than the design of the built environment, is responsible for correcting these issues. Still, designers and developers can play an important role in making space for everyone to thrive in neighborhoods and they must be careful not to contribute to existing disparities. Chapter 2 will explore specific ways in which the

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<sup>31</sup> Frumkin, Frank, and Jackson, 197-198.

<sup>32</sup> Goldman, Gleit, and Weinstein. 7290-95.

<sup>33</sup> Frumkin, Frank, and Jackson, 182.

built environment can be designed to alleviate existing racial disparities and issues with access and opportunity. The design exploration and final proposal in this thesis will employ the methods discussed in an effort to reduce the impact of decades of damaging policy and discrimination.

## Chapter 2: The Intersection of Urban Design and Health, Wellness, Environment, and Opportunity

### Urban Design & Health and Wellness

#### Physical Health

The built environment plays a significant role in the decrease of the population's physical health over time. To understand how the built environment and physical activity (and thus, physical health) are related, it is important to understand a key distinction within the broad realm of physical activity: recreational physical activity vs. utilitarian physical activity.

Recreational physical activity is carried out with the primary intention of getting exercise and experiencing the variety of benefits that exercise provides.<sup>34</sup> Examples of recreational physical activity include going for a jog, weightlifting, or playing a sport. Utilitarian physical activity, on the other hand, is physical activity that is a byproduct of a separate, unrelated primary goal.<sup>35</sup> Examples of this kind of activity are walking to the store or moving furniture or boxes at home or work. These categories are not always mutually exclusive, but they do provide an important distinction. The built environment influences both categories of physical activity in different ways. The inclusion of facilities, both built and natural, that allow opportunities for recreational physical activities can encourage people to actively exercise more often. On the other hand, diversity of land uses within close proximity

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<sup>34</sup> Ibid., 92.

<sup>35</sup> Ibid., 92.

and the inclusion of pedestrian-friendly infrastructure can encourage increased utilitarian physical activity. Utilitarian physical activity is an effective way to ensure that people are getting some physical activity without having to set aside specific time for it. However, over the years, land use and transportation planning have changed drastically in a way that significantly decreases the amount of utilitarian physical activity people have on a daily basis. Urban planners, designers, developers, and architects can help reverse this downward trend by considering various factors in their designs.

There are many different factors of built environment that influence physical activity. In particular, high density, high land use mix, high connectivity, good walking infrastructure, pleasing aesthetics, and safety are all features that correlate to high levels of pedestrian activity, whereas the absence of these elements correlate to low levels of pedestrian activity. These levels of activity are also related to the prevalence of obesity, where the more walkable neighborhoods had significantly lower rates of obesity than the less walkable neighborhoods. More specifically, the level of sprawl and health risk factors such as hypertension and obesity are directly correlated: as sprawl increases, so do these health risk factors.<sup>36</sup>

What constitutes good walking infrastructure, pleasing aesthetics, and safety? Good walking infrastructure includes adequate sidewalks, trails, and/or parks. Many elements, both natural and manmade, can contribute to enjoyable scenery or pleasing aesthetics in a neighborhood. Natural beauty can include trees, rivers, distant views, flower beds, etc. while manmade beauty could include interesting architecture, well-

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<sup>36</sup> Ibid., 100.

designed streets, bridges, and parks. Safety factors can include the presence of streetlights and crosswalks, the condition of surrounding buildings, the general crime rate in the area, and the absence of busy streets. Physical activity is directly related with safety, where the safer an area is, the higher the probability of being physically active is, and vice versa.<sup>37</sup>

In summary, the built environment has contributed heavily to the decline of physical activity, and thus physical health, but future developments and redevelopments will play an important role in reversing this trend. Communities can be designed to promote physical activity, and thus increase physical health, simply by prioritizing the pedestrian experience once again.

#### Mental Health

The built environment can significantly influence mental health in many ways. To understand how the built environment and mental health are related, it is important to understand the connections between mental health and physical activity, social capital, and greenspace.

Exercise and mental health have a significant relationship. Physical activity has been shown to reduce symptoms of depression and anxiety in youth, adults, and older adults.<sup>38</sup> As discussed in the previous subsection, the built environment can significantly influence the amount of physical activity individuals get, which then affects the state of their mental health. Without adequate infrastructure in place to be

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<sup>37</sup> Ibid., 100.

<sup>38</sup> Scott A. Paluska and Thomas L. Schwenk. "Physical Activity and Mental Health." *Sports Medicine* 29, no. 3 (September 24, 2012): 167–80. <https://doi.org/10.2165/00007256-200029030-00003>.

physically active, either recreationally or passively for utility, both physical health and mental health will be negatively affected.

There is also substantial evidence that social capital is associated with a variety of mental health indicators. The presence of social capital correlates to increased self-reported optimism and life satisfaction.<sup>39</sup> Additionally, those who feel that they have diverse ties and trust in their community experience better mental health and stronger feelings of self-efficacy than those who feel they do not have this level of social capital in their neighborhood.<sup>40</sup> Suicide rates are also lower in areas with high social capital, which is highly indicative of the severe consequences that poor social capital can have on people and their communities.<sup>41</sup> The way the built environment can impact social capital is discussed further in the next subsection, but in general, developers and designers must understand their role in affecting change in this category of health and wellness and provide adequate space and programming for diverse social interaction and connection.

There is also a positive relationship between greenspace and mental health. Greenspace refers broadly to manmade or natural, maintained or unmaintained environmental areas. Living in areas with more greenspace is correlated with less mental distress, anxiety, depression, and stress, and is also correlated with greater wellbeing.<sup>42</sup> These mental health benefits could, in part, also be related to the

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<sup>39</sup> Kwame McKenzie and Trudy Harpham. *Social Capital and Mental Health*. London: Jessica Kingsley Publishers, 2006: 11-160. <http://search.ebscohost.com.proxy-um.researchport.umd.edu/login.aspx?direct=true&db=nlebk&AN=167107&site=ehost-live>.

<sup>40</sup> McKenzie and Harpham, 119.

<sup>41</sup> Ibid., 12.

<sup>42</sup> Jo Barton and Mike Rogerson. "The Importance of Greenspace for Mental Health." *BJPsych. International* 14, no. 4 (2017): 79-81. doi:10.1192/S2056474000002051.

connection between greenspace and physical activity. It is noted that “people who use the natural environment for physical activity at least once per week have about half the risk of poor mental health compared with those who do not do so; and each extra weekly use of the natural environment for physical activity reduces the risk of poor mental health by a further 6%.”<sup>43</sup> Greenspaces are also utilized in therapeutic interventions for various vulnerable groups, and have been noted to improve levels of stress, agitation, anger, apathy, and depression.<sup>44</sup>

In summary, the built environment can be designed to positively affect mental health. Developers and designers can heal or prevent mental health issues by prioritizing the pedestrian with pertinent infrastructure and connectivity, providing spaces that allow for passive and active social interaction and physical activity, and ensuring that each community has an abundance of greenspace.

#### Social Health (Social Capital)

The design of the built environment has significant implications for social capital. Social capital is dependent on social interaction, and there are certain factors in urban design that can promote more opportunities for casual, natural social interaction. Unsurprisingly, these factors are largely the same as those that are pedestrian friendly and encourage higher physical activity, such as high density, high land use mix, and high connectivity. The absence of these elements is typical of urban sprawl, which is characterized by a major separation of land uses and the subsequent reliance on private vehicular transportation, low density, and little public space.<sup>45</sup>

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<sup>43</sup> Barton and Rogerson, 80.

<sup>44</sup> Ibid., 80.

<sup>45</sup> Frumkin, Frank, and Jackson, 2.

The heavy reliance on vehicular transportation that results from separated land uses is a major contributor to declining social capital. With more time spent on the road, there is less time and energy available for getting involved with the community. Conversely, in mixed-use, pedestrian-friendly developments, connecting with members of the community is organic and frequent, which is instrumental in building trust and a sense of belonging. The inclusion of public spaces also helps encourage informal community interaction and a feeling of togetherness. Architects and developers play a major role in correcting this issue. Efforts must be made to increase the programming and public spaces within communities, as well as provide pedestrian-friendly connections between communities. Ultimately, prioritizing the pedestrian experience will, again, lead to success in this specific aspect of health and wellness.

The increase in low density development has also contributed to the decline of social capital. The very nature of sprawled development demonstrates the shift of value from the community to the individual, as made evident by the amount of land used per person. Allowing so much space between residents promotes discontinuity, disinvestment, and even segregation. With scattered developments and the convenience of a car, residents can distance themselves from one another easily, which has led to socioeconomic and racial divides between neighborhoods.<sup>46</sup> To address these problems, designers and developers must strive toward high-density, pedestrian-friendly developments that offer a variety of housing typologies and public features that appeal to a diverse group of people.

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<sup>46</sup> Ibid., 173.

In summary, the built environment has contributed heavily to the decline of social capital, but future developments and redevelopments will play an important role in reversing this trend. With high-density, mixed-use, mixed-income, and pedestrian-friendly developments with ample public space and community amenities, residents can once again feel a sense of communion, conviviality, trust, and belonging in their communities.

### Urban Design & Planetary Health

#### Climate Change

The built environment plays a significant role in climate change because of its contribution to greenhouse gas emissions. In fact, one third of all global greenhouse gas emissions come from the built environment.<sup>47</sup> Mitigation, by means of reducing greenhouse gas emissions and reducing deforestation, is the most important approach to take in tackling the global warming problem.<sup>48</sup>

Analyzing the emissions of a building throughout its lifetime shows that over 80% of a building's greenhouse gas emissions happen during the operational phase of the building's life for processes such as heating, cooling, ventilation, lighting, and appliance operations. Materials manufacturing, transportation, construction, maintenance, renovation, and demolition account for the other 10-20% of emissions during a building's lifetime.<sup>49</sup> These statistics show where the most attention should be directed to have the greatest impact in reducing greenhouse gas emissions that

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<sup>47</sup> *United Nations Environment Programme UNEP*. International Organizations, 2009.

Web Archive. <https://www.unclearn.org/wp-content/uploads/library/unep207.pdf>.

<sup>48</sup> Myers and Frumkin, 74.

<sup>49</sup> UNEP, 6.

come from the built environment: the operational phase. Significant effort and money should be spent ensuring buildings are made with the highest efficiency products and materials for new construction, and, given that the majority of buildings existing in 2050 have already been constructed, significant efforts should also be made toward renovations.<sup>50</sup>

Another way to reduce greenhouse gas emissions is through planting trees. Trees play a significant role in reducing the amount of carbon dioxide (CO<sub>2</sub>) in the atmosphere, and urban forests are particularly effective in this role.<sup>51</sup> Designers and developers can contribute to the reduction of CO<sub>2</sub> through the design of dedicated greenspace or the preservation of existing greenspace.

In summary, the built environment can be designed to help mitigate and alleviate global warming. Through sustainable design, including the preservation and planting of more trees, developers and designers can significantly reduce the built environment's contribution to climate change.

#### Air and Water Pollution

The built environment significantly affects air and water pollution in many ways. Air pollution is impacted particularly through land-use mix and its effect on driving, while water pollution is influenced primarily through the increase of impervious surfaces and their effect on amount and quality of runoff.

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<sup>50</sup> Ibid., 6.

<sup>51</sup> David J. Nowak and Daniel E. Crane. "Carbon Storage and Sequestration by Urban Trees in the USA." *Environmental Pollution* 116, no. 3 (March 2002): 381–89. [https://doi.org/10.1016/s0269-7491\(01\)00214-7](https://doi.org/10.1016/s0269-7491(01)00214-7).

As discussed in previous sections, the separation of land uses over time has greatly increased reliance on vehicular transportation. With increased car ownership and increased time spent driving from place to place, more carbon monoxide, carbon dioxide, and sulfur oxides are released into the air. These gases can cause significant respiratory health issues such as respiratory disease, asthma, impaired lung development in children, and even death.<sup>52</sup> Designers and developers can help reduce the reliance on vehicular transportation by ensuring a diversity of land uses in new and existing communities and plenty of pedestrian-friendly infrastructure that encourages the public to choose safer and more environmentally conscious methods of transportation.

Impervious surfaces are directly related to the quality and quantity of water in an area. Development generally coincides with a significant reduction in the number of trees and the amount of grass and dirt in an area. These permeable surfaces are replaced with impervious surfaces such as rooftops, roads, driveways, and parking lots. This substitution reduces the amount of rainwater that can be soaked into the ground (groundwater) and instead increases runoff. “According to both empirical data and hydrologic modeling, development densities greater than about 10 to 20 percent lead to dramatic increases in runoff.”<sup>53</sup> One study showed that a suburb lost 15% of rainfall as runoff while a grassland experienced just a 4% loss.<sup>54</sup> This runoff can be extremely harmful to health and wellness of both humans and ecosystems, as it carries animal waste, bacteria, and fertilizers to storm sewers, streams, and rivers.

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<sup>52</sup> Frumkin, Frank, and Jackson, 83.

<sup>53</sup> Ibid., 128.

<sup>54</sup> Ibid., 128.

Architects and developers can help mitigate the amount of runoff in a few ways. First, since roads and parking lots can account for 60% of impervious surfaces in sprawling areas, prioritizing the pedestrian, and thus minimizing the need for vehicular travel, would contribute significantly to reducing water pollution.<sup>55</sup> Water pollution can further be reduced if designers strategically incorporate ample greenspace in developed areas to intercept and filter microbes and chemical pollutants before they enter water sources and underground aquifers.

In summary, the built environment has undeniably contributed to the increase of air and water pollution, but certain actions can be taken to reduce its impact. Devaluing motor vehicles and instead prioritizing pedestrian infrastructure and greenspaces in community designs will make a measurable difference in both air and water pollution levels.

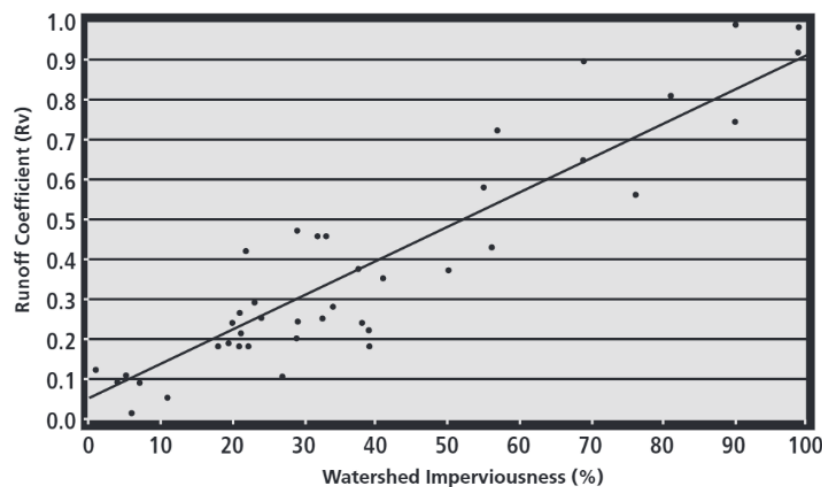


Figure 2.2.1 – Impervious Surfaces and Runoff<sup>56</sup>

<sup>55</sup> Ibid., 128.

<sup>56</sup> Ibid., 129.

### Urban Design & Race and Opportunity

As mentioned in Chapter 1, policies regarding the built environment are far more influential on minority health, wellness, and opportunities than the built environment itself is. Still, there are many design decisions that can have implications for minority groups, and an ethnographic study of each specific site is important to determine which decisions are best. However, there are four design strategies/priorities that are broadly applicable and considered general good practice, but are especially important and effective in areas of high ethnic diversity. These four strategies can provide architects and developers with a great place to start the design process.

The first urban design strategy to improve inequalities and increase conviviality is to incorporate ample public spaces that allow for uncomplicated, straightforward participation.<sup>57</sup> Places such as markets, playgrounds, and sports facilities allow people of different backgrounds to participate in clear roles (shopping and recreation) alongside one another without requiring extensive conversation. Developers and designers can consider which programs allow for this kind of participation and include several of them in their designs.

The next strategy is to allow for a diversity of activities in public spaces.<sup>58</sup> Different people have different forms of socializing and relaxing, and designing for one specific kind and not another can promote segregation and inequalities. However,

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<sup>57</sup> Clare Rishbeth, Farnaz Ganji, and Goran Vodicka. "Ethnographic Understandings of Ethnically Diverse Neighbourhoods to Inform Urban Design Practice." *Local Environment* 23, no. 1 (October 10, 2017): 36–53. <https://doi.org/10.1080/13549839.2017.1385000>.

<sup>58</sup> Rishbeth, Ganji, and Vodicka, 48.

ensuring that multiple activities can be performed near one another can promote inclusivity and help increase awareness and positive perceptions of different cultures.

The third strategy is to design micro-retreats around busy areas to grant opportunities for deeper social connections to take place.<sup>59</sup> Busy areas, like those used regularly for commuting or shopping, are highly conducive to quick, positive encounters, but may not provide the opportunity to extend those encounters into more meaningful experiences and connections. Designers and developers should analyze their sites to understand where the busiest areas are and incorporate quiet spaces nearby to promote more social connection.

The final urban design strategy is to address inequalities in the access and quality of open space.<sup>60</sup> Typically, higher quality public spaces are located in more affluent neighborhoods. Those living in urban areas may not have adequate public space for leisure and may therefore resort to transforming street corners or garages into makeshift gathering spaces, which may be perceived by others as problematic. The inequality in access and resulting negative perceptions both contribute to inequalities and divisiveness among populations. Designers and developers must make sure that they are affording the same opportunities to each community in order to avoid this problem.

In summary, the design of the built environment can help reduce racial and income inequalities. Through thoughtful and inclusive design of public spaces and

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<sup>59</sup> Ibid., 48.

<sup>60</sup> Ibid., 49.

their surroundings, designers and developers can help increase opportunities, conviviality, and health and wellness among minority populations.

## Chapter 3: Thesis Proposal: Urban Intervention in Baltimore City

As discussed, the built environment can be designed and developed to foster specific health and wellness outcomes, planetary health outcomes, and to alleviate racial inequities. Though declines in these indicators are national, if not global, still there are specific places that have a higher prevalence of these problems than others. Baltimore City is one such place that could benefit significantly from urban redevelopment.

The goal of this thesis is to positively affect the health and wellness indicators, planetary health issues, and racial inequities that are specific to Baltimore City through the redesign and redevelopment of the built environment to assert that “healing” the built environment can “heal” societal and planetary issues. In this chapter, those specific problems are stated to determine design priorities and set parameters for success.

### *Health and Wellness Issues in Baltimore City*

#### Overview

Baltimore has significant physical, mental, and social health issues. There is substantial overlap between these three categories of health and wellness, and many of Baltimore City’s issues are reflective of this condition. It is therefore important to note that these problems are created and perpetuated from multiple sources, so it is important to consider a variety of approaches. It is also important to note that solutions can have impacts on all three categories of health and wellness.

The Baltimore City Health Department summarizes key issues and trends in a yearly White Paper. In 2018, some of Baltimore City’s most pressing health concerns were HIV, obesity, asthma-induced emergencies, and drug/alcohol use and related deaths.<sup>61</sup> The HIV diagnosis rate in Baltimore City in 2018 was 53.7 – more than double the state’s rate of 22.1 – and while African Americans make up 63% of the city’s population, they account for more than 82% of those living with HIV, revealing a major racial inequity. Also in 2018, one third of high school students were considered obese or overweight, and the prevalence of asthma-induced emergencies were three times the state rate. Finally, in that same year, the city had one of the highest rates of heroin use and overdose in the country, and approximately 11 percent of residents over the age of 12 are estimated to abuse drugs or alcohol.

The City came up with four public health priorities to address these and other major concerns in the city.<sup>62</sup> The first priority, behavioral health, specifically focuses on the opioid epidemic and addressing trauma and access to mental health services, since there is a disproportionate amount of both drug addiction/overdose and mental illness within the city. The second priority, violence prevention, is quite clear: violence has always been a major threat to Baltimore City and its inhabitants. The third priority, chronic disease prevention, is meant to address the city’s most prominent chronic diseases: heart disease, stroke, cancer, hypertension, diabetes, and asthma. The final priority, life course and core services, focuses on lifetime health

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<sup>61</sup> “State of Health in Baltimore: White Paper 2017.” Baltimore City Health Department, April 10, 2017. <https://health.baltimorecity.gov/state-health-baltimore-winter-2016/state-health-baltimore-white-paper-2017>.

<sup>62</sup> State of Health in Baltimore.

and wellness, from infancy to older age, and the implementation of important public health services.

#### Proposal

This thesis will employ various programmatic and spatial interventions to address Baltimore City's health and wellness issues, specifically those outlined by the Baltimore City Health Department.

To address opioid addiction and overdose and the consequential high prevalence of HIV, various programmatic elements should be included, such as substance abuse support groups and potentially clean needle clinics.

To improve mental health and access to mental health care services, both spatial and programmatic interventions should be utilized. Spatially, the design should be highly walkable, include a significant amount of greenspace, and allow for passive and active social interaction and physical activity. Programmatically, the site should include a community center, recreational facility, and mental health clinic that accommodates various educational and support programs.

To prevent violence, spatial interventions that increase connectivity, walkability, public spaces, and lighting should be utilized. These same interventions can be used to address and reduce chronic disease prevalence, as they increase the opportunity to be physically active. However, other interventions are also needed to address asthma and the availability of nutritious foods. This design should include a significant amount of greenspace to help reduce greenhouse gas emissions, particularly SO<sub>2</sub>, as well as include healthy food stores to encourage healthy diet choices.

Finally, this thesis should incorporate life-stage specific program interventions to fulfill the last health priority set forth by the Baltimore City Health Department. Important elements to include are maternal/infant care, childcare facilities, and senior centers.

### *Environmental Problems in Baltimore City*

#### Overview

Baltimore City has substantial air pollution. One of the main pollutants in Baltimore City is sulfur dioxide (SO<sub>2</sub>), which comes primarily from the Crane and Wagner coal-fired power plants to the south and east of the city.<sup>63</sup> In fact, Baltimore's SO<sub>2</sub> concentrations are higher than the Environmental Protection Agency (EPA) deems safe, and the city consistently has one of the highest SO<sub>2</sub> emission rates on the eastern seaboard. SO<sub>2</sub> is linked to various respiratory problems, lung disease, and heart complications. This particular greenhouse gas makes it hard for people with asthma to breathe, which is related to the high prevalence of asthma-related emergencies in the city discussed in the previous section. Smog is also prevalent in the city and is linked to other prevalent health issues, such as pre-term birth, heart attacks, and premature mortality.<sup>64</sup>

Water pollution is also a problem in Baltimore city. Sewage, polluted stormwater runoff, toxic pollution, and trash and litter are all major sources of water

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<sup>63</sup> "Maryland's Air: Still at Risk - Sierra Club" (Sierra Club), accessed April 22, 2021, [https://content.sierraclub.org/creative-archive/sites/content.sierraclub.org/creative-archive/files/pdfs/1079-MD-AirPollution-Fact\\_02\\_low.pdf](https://content.sierraclub.org/creative-archive/sites/content.sierraclub.org/creative-archive/files/pdfs/1079-MD-AirPollution-Fact_02_low.pdf).

<sup>64</sup> Maryland's Air: Still at Risk.

pollution in the Baltimore Harbor and Chesapeake Bay.<sup>65</sup> Impervious surfaces play a significant role in this problem, as they prevent water from percolating into the ground where they can be treated by plants and trees and instead cause pollutants like trash and bacteria to be washed straight into nearby streams. Water pollution harms the environment, negatively impacts various ecosystems, and threatens the health of city residents.

#### Proposal

There are multiple design strategies that can address air and water pollution in Baltimore City. Large amounts of trees and greenspace should be incorporated to help with both air and water pollution by absorbing greenhouse gases, like SO<sub>2</sub>, and filtering groundwater. Also, impervious surfaces in the development should be minimized to reduce harmful stormwater runoff. Finally, employing sustainable construction methods will ensure energy efficiency in construction and lifetime operation of buildings. Certifications can be acquired for land and buildings to ensure sustainable practices.

#### *Race and Opportunity in Baltimore City*

#### Overview

As discussed in Chapter 1, racism has been woven into the built environment through explicit discriminatory federal policies for almost a century. Baltimore City,

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<sup>65</sup> “Threats to Water Quality” (Blue Water Baltimore, May 3, 2019), <https://bluewaterbaltimore.org/learn/threats-to-water-quality/>.

however, began implementing racist policies even before the federal government. In 1911, Baltimore's city council "passed the first housing segregation ordinance in the country directed at black people."<sup>66</sup> Shortly after, the mayor declared that renting or selling properties to black people in predominantly white areas in the city was a punishable code violation. The next mayor also contributed to division and racism by forming a Committee on Segregation, which continued and expanded racism in the housing market. The effects of these old policies are still felt in Baltimore City today. Segregation and racial inequities in access and opportunity are abundantly clear.

Baltimore City's racial divide is reflected geographically. Morgan State University associate professor Lawrence Brown aptly refers to "the white L" and "the black butterfly" to describe this segregation, where black communities are spread out in to the east and west of the city and white communities populate the center north-south axis.<sup>67</sup>

Racial inequities are also made evident through capital flow analyses, which are indicative of a neighborhood's access to amenities, services, and resources. In Baltimore City, neighborhoods that are comprised of more than 85% African Americans receive approximately a quarter of the investment funding than neighborhoods comprised of less than 50% African Americans. Property values also show the differences between "the black butterfly" and "the white L." It is clear that properties are valued much lower in predominantly black neighborhoods and much higher in white neighborhoods. Furthermore, in neighborhoods where the population

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<sup>66</sup> Brett Theodos et al., "'The Black Butterfly,'" Racial Segregation and Investment Patterns in Baltimore, January 29, 2019, <https://apps.urban.org/features/baltimore-investment-flows/>.

<sup>67</sup> Theodos et al., 2019.

consists of more than 85% African Americans, the average volume of loans is less than half the amount granted to neighborhoods with less than 50% African American residents. These trends persist in commercial real estate lending and small business lending, as well.<sup>68</sup>

Other differences in access, treatment, and opportunity between “the black butterfly” and “the white L” are also observed. Transportation, policing, education, food access, and other policies and practices are significantly worse in black neighborhoods.<sup>69</sup> Previous sections also highlighted racial inequities in physical and mental health, like the prevalence of HIV, poverty, and poor mental health in the black population. Race is clearly a significant determinant of health and wellness and opportunity in Baltimore City, and these inequities must be addressed.

#### Proposal

This proposal must address the racial inequities latent in Baltimore City. To minimize the geographic separation between black and white residents, the selected site must provide spatial connections between neighborhoods and allow mixed income housing, retail, and work opportunities so that no one is excluded from living or participating fully in the community. Capital flow issues that create economic segregation stem from policy, but services should be included to ensure residents have access to ample financial literacy and support.

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<sup>68</sup> Ibid., 2019.

<sup>69</sup> Lawrence Brown, “Two Baltimores: The White L vs. the Black Butterfly,” [baltimoresun.com](https://www.baltimoresun.com/citypaper/bcpnews-two-baltimores-the-white-l-vs-the-black-butterfly-20160628-htmstory.html) (Baltimore Sun, June 28, 2019), <https://www.baltimoresun.com/citypaper/bcpnews-two-baltimores-the-white-l-vs-the-black-butterfly-20160628-htmstory.html>.

Providing equal access to opportunities is also of vital importance in this thesis. In addition to a variety of housing opportunities, this urban intervention must incorporate adequate and varied options for transportation, high-quality education opportunities, and healthy food access.

Finally, as discussed in Chapter 2, Section 3, there are certain design decisions that designers and developers could utilize to increase conviviality within a community. This thesis will focus on one of the four methods described to address racial inequities in Baltimore City: the inclusion of high quality public spaces in which a diversity of activities can take place.

These strategies can help create a more inclusive and integrated environment where race does not determine opportunity.

## Chapter 4: Site Selection & Analysis

Baltimore City, Maryland proves to be a clear example of poor health and wellness, suffering ecosystems, and racial inequities. A site within Baltimore City must be selected through which this thesis can explore and impact the dialectic relationship between the built environment and the vitality of its community. In this chapter, multiple sites are compared across various criteria in order to choose an ideal location for this project.

### Site Comparisons

#### Quantitative Analysis

Economic factors, safety factors, physical health indicators, environmental factors, and access are all important determinants in assessing health and wellness. Statistics that fall into these categories can be utilized to determine need. Using available data from the Baltimore City Health Department's 2017 Neighborhood Health Profiles, five community statistical areas (CSAs) were compared to help choose a site in Baltimore City. These quantitative measures reflect the social context of the neighborhoods and help determine which site may benefit the most from an urban intervention.

Neighborhood (CSA)	Health, Wellness, & Opportunity Indicators							
	Economics		Safety		Maternal / Prenatal			Access
	Family Poverty Rate	Hardship Index	Non-Fatal Shooting Rate (per 10,000)	Homicide Rate (per 10,000)	Low Birthweight	Infant Mortality Rate (per 1000)	Obese Mothers at time of Birth	Land Covered by Food Desert
Harbor East / Little Italy	50.8%	58	5.9	1.8	12.7%	16.7	28.6%	34.5%
Oldtown / Middle East	60.0%	80	13	6.8	14.6%	12.6	41.5%	56.6%
Medfield / Hampden / Woodberry / Remington	10.1%	34	0.2	0.6	7.5%	6.9	15.4%	0.1%
Clifton-Berea	30.2%	61	20.3	7.9	14.8%	14.8	41.8%	47.9%
Sandtown-Winchester / Harlem Park	50.3%	80	18.5	8.9	16.1%	10.1	36.8%	59.4%
Baltimore City	28.8%	51	6.9	3.9	11.5%	10.4	30.5%	12.5%

Table 4.1.1 – Health, Wellness, & Opportunity Indicators: Author

Neighborhood (CSA)	Environmental Indicators			
	Percent of Land Covered by Green Space	Percent of Land Covered by Pavement	Vacant Lot Density (per 10,000)	Vacant Building Density (per 10,000)
Harbor East / Little Italy	9.2%	32.7%	968.8	107.6
Oldtown / Middle East	10.5%	32.7%	1,732.6	692.1
Medfield / Hampden / Woodberry / Remington	38.2%	25.8%	559.6	50.6
Clifton-Berea	11.8%	28.6%	1,605	2,649.3
Sandtown-Winchester / Harlem Park	18.4%	28.3%	1,589.3	2,560.4
Baltimore City	33.1%	25.5%	677.3	562.4

Table 4.1.2 – Environmental Indicators: Author

Neighborhood (CSA)	Totals	
	Top 2	Top 3
Harbor East / Little Italy	4	4
Oldtown / Middle East	7	12
Medfield / Hampden / Woodberry / Remington	0	0
Clifton-Berea	7	11
Sandtown-Winchester / Harlem Park	6	10

Table 4.1.3 – Comparisons of Totals: Author

### Qualitative Analysis

Determining community need via quantitative measures is a helpful first step in narrowing down site options, but a qualitative analysis that includes physical context must also be done to determine which site has the greatest ability to meet the goals of this thesis. The strengths, weaknesses, opportunities, and threats of Clifton-

Berea and Oldtown/Middle East – the two CSAs determined to have the greatest need – are assessed to grant further insight into the most ideal site for this thesis.

#### Clifton-Berea

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>• Clear grid</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity to cemetery</li> <li>• Proximity to industrial area</li> <li>• Proximity to recycling plant</li> <li>• High crime rate</li> </ul>	<ul style="list-style-type: none"> <li>• Current plan for redevelopment</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution from recycling plant</li> </ul>

#### Oldtown/Middle East

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>• Proximity to Johns Hopkins Hospital</li> <li>• Lower crime rate</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity to prison/correctional facility</li> <li>• Difficult street grid</li> <li>• Some industrial zoning</li> </ul>	<ul style="list-style-type: none"> <li>• Cultural history</li> <li>• Potential for adaptive reuse</li> <li>• Current plan for redevelopment</li> <li>• Affect larger neighborhood connections</li> </ul>	<ul style="list-style-type: none"> <li>• Jones Falls highway</li> </ul>

#### Graphic Analysis

Graphic analysis is also important in determining the potential of a site for an urban intervention. Understanding how the spatial characteristics of a site can aid or hinder specific design goals is critical. Graphic analysis for Clifton-Berea and Oldtown/Middle East focused on the potential for an intervention to create broader neighborhood connections and take advantage of empty or dilapidated lots.

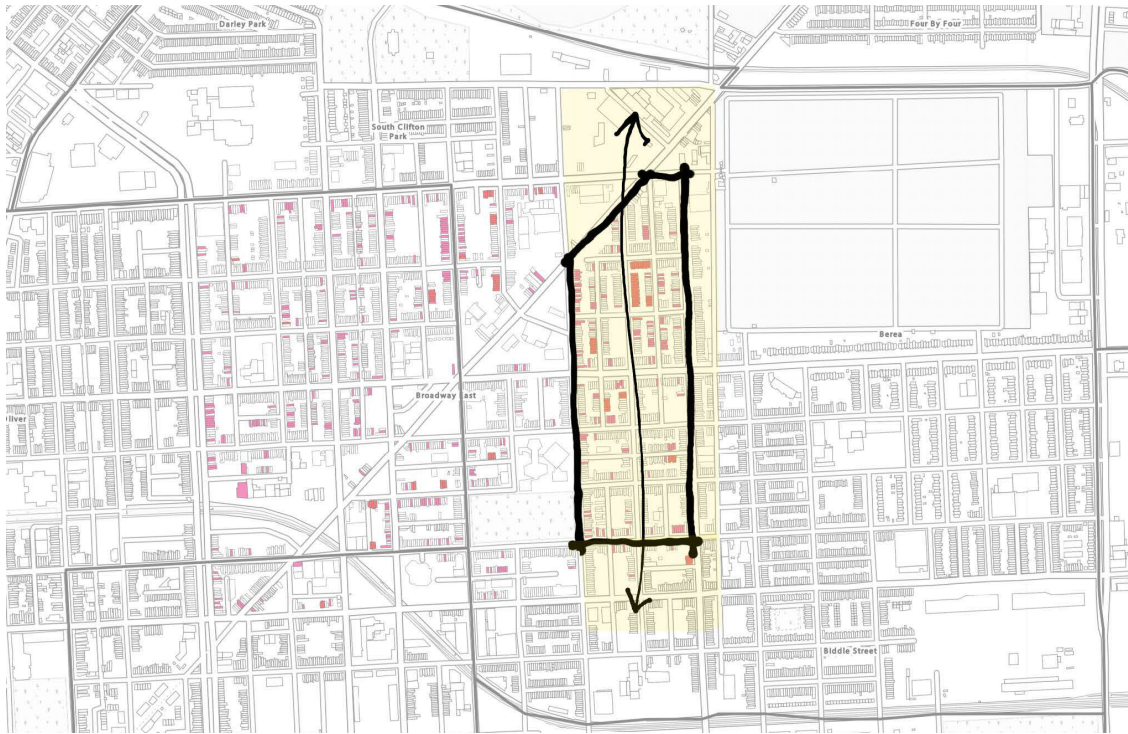


Figure 4.1.1 – Potential for Connections (Clifton-Berea): Author

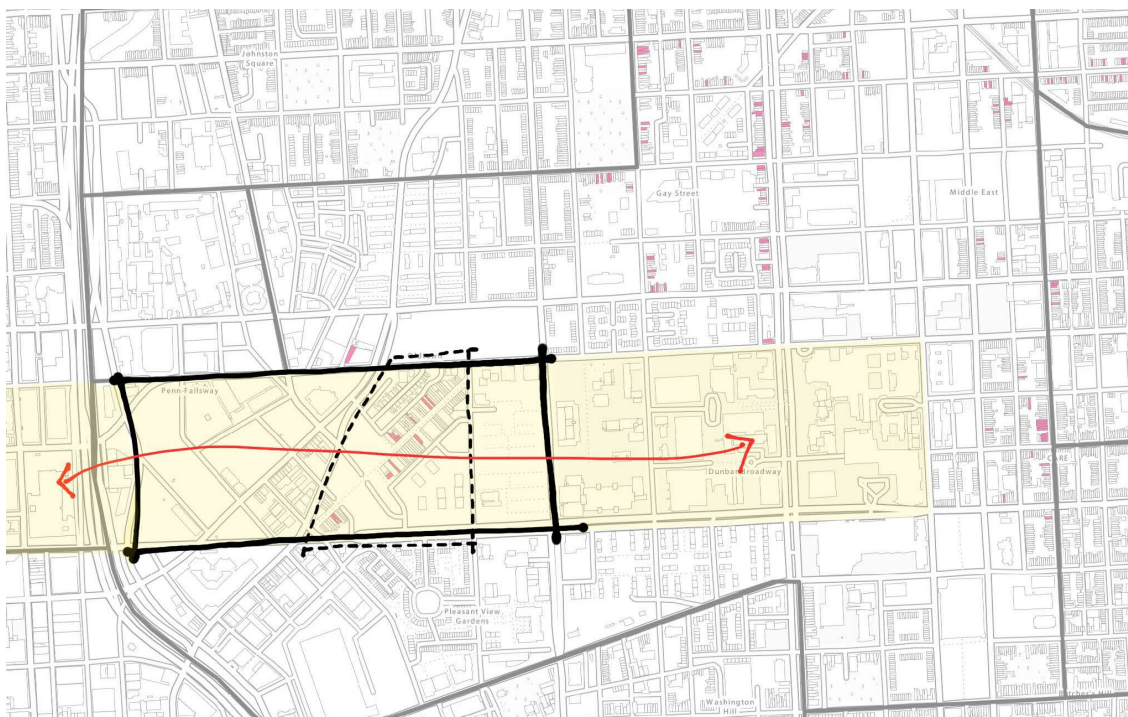


Figure 4.1.2 – Potential for Connections (Oldtown/Middle East): Author

### Selected Site Analysis

#### Graphic/Spatial Analysis

Based on the previous quantitative, qualitative, and graphic analyses, the Oldtown/Middle East neighborhood in Baltimore City proves to be an excellent candidate for urban intervention. Before speculating on possible interventions and design strategies, it is important to maximize the understanding of the site through visualizations and spatial analyses. This section will focus on Oldtown/Middle East's street and block structure, transit, tree coverage, and civic/institutional building distribution.

Figures 4.2.1 through 4.2.4 show the differences between the site and surrounding context in 1914 and now. It is clear from these diagrams that the scale of development has increased significantly in this area over the past century. The block structure in 1914 was negated as buildings grew larger and development spread out in a haphazard manner.

Figures 4.2.5 depicts the BaltimoreLink bus system. In June 2017, Baltimore overhauled and rebranded their transit system, shifting to a radial system with increased service. The highest ridership rate is on the CityLink Red bus, which runs through the Oldtown/Middle East site and is therefore a great strength and opportunity for development.

Bicycle transit, however, is quite poor. Bicycle lanes are scattered and discontinuous throughout Baltimore City and within the site. Increased opportunity for bicycle and pedestrian access will be important in developing this site.

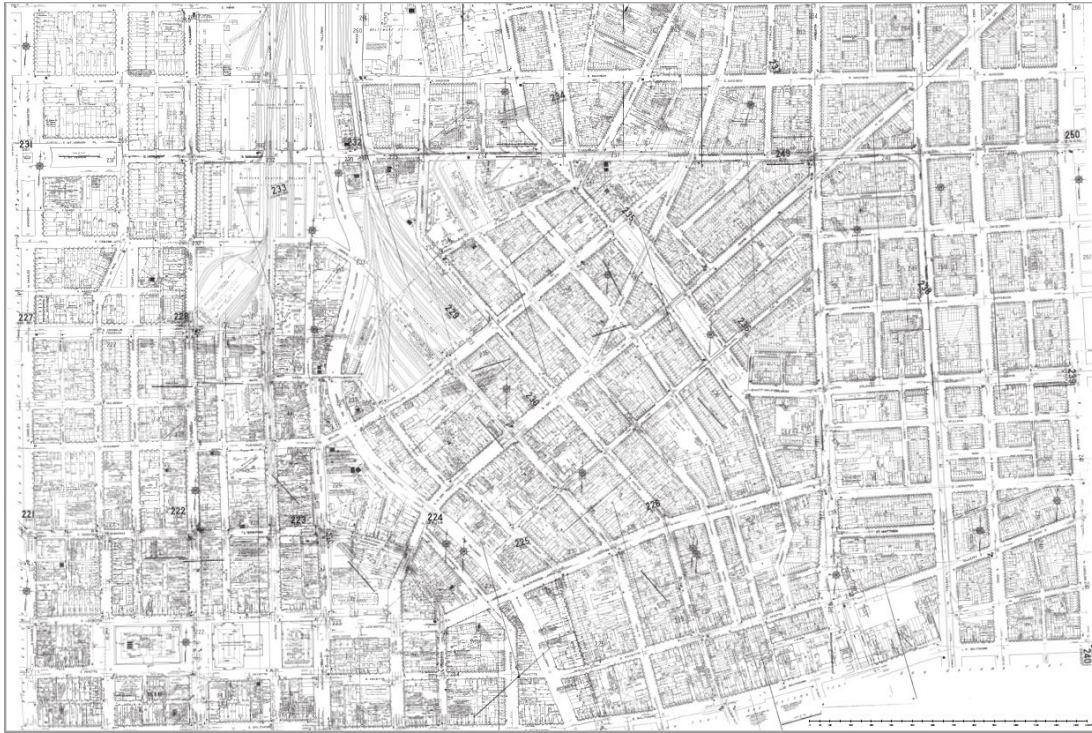


Figure 4.2.1 – Reconstructed 1914 Map – Sanborn Insurance Maps: Author

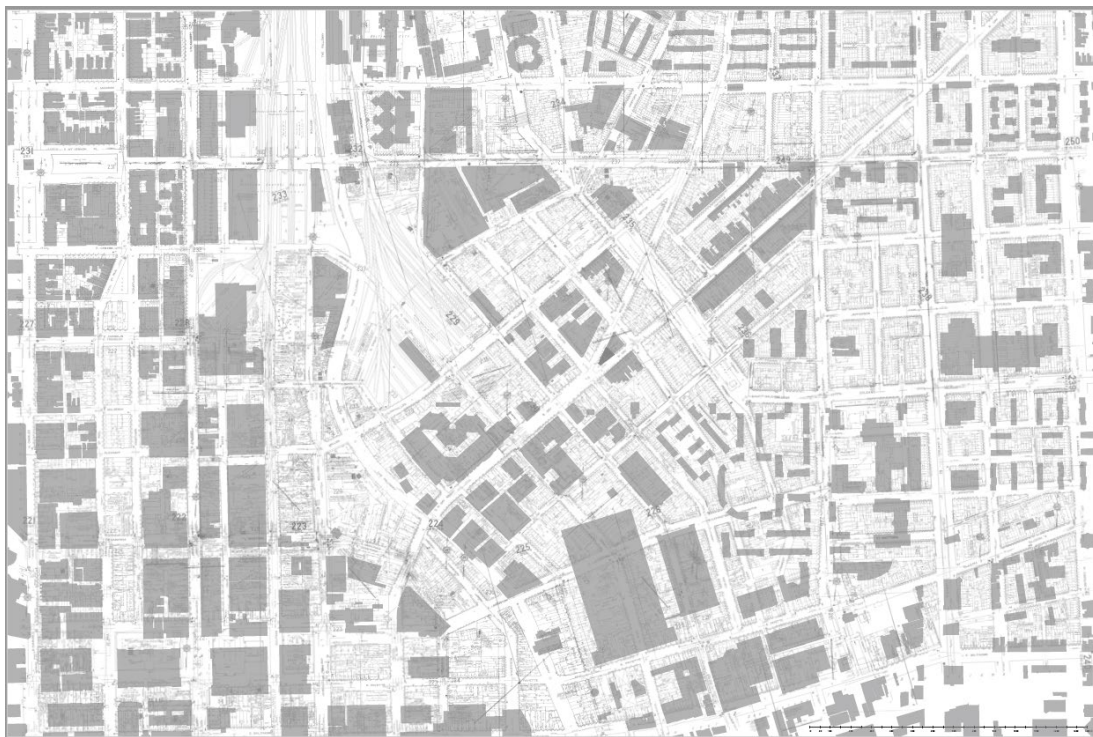
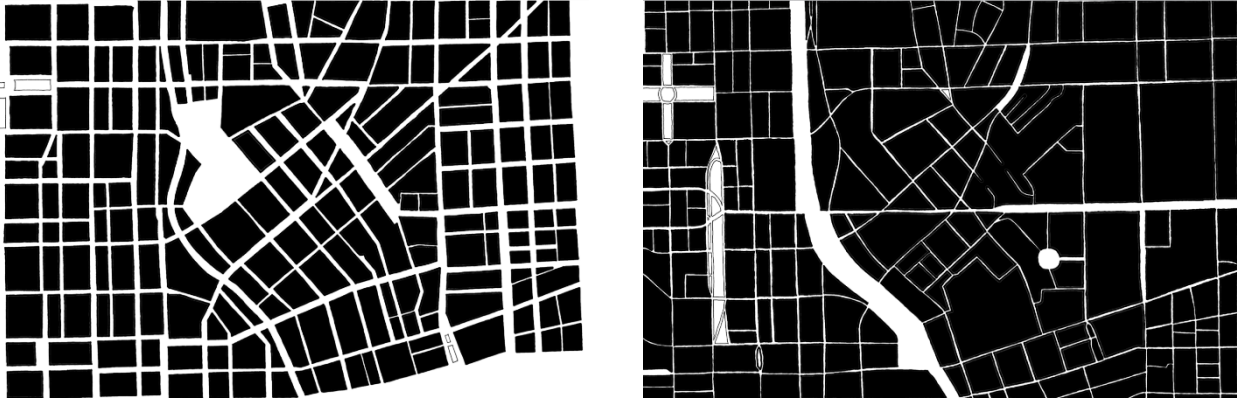


Figure 4.2.2 – Reconstructed 1914 Map with Overlay of Current Conditions: Author



Figures 4.2.3 and 4.2.4 – Streets and Blocks – 1914 vs. 2021: Author

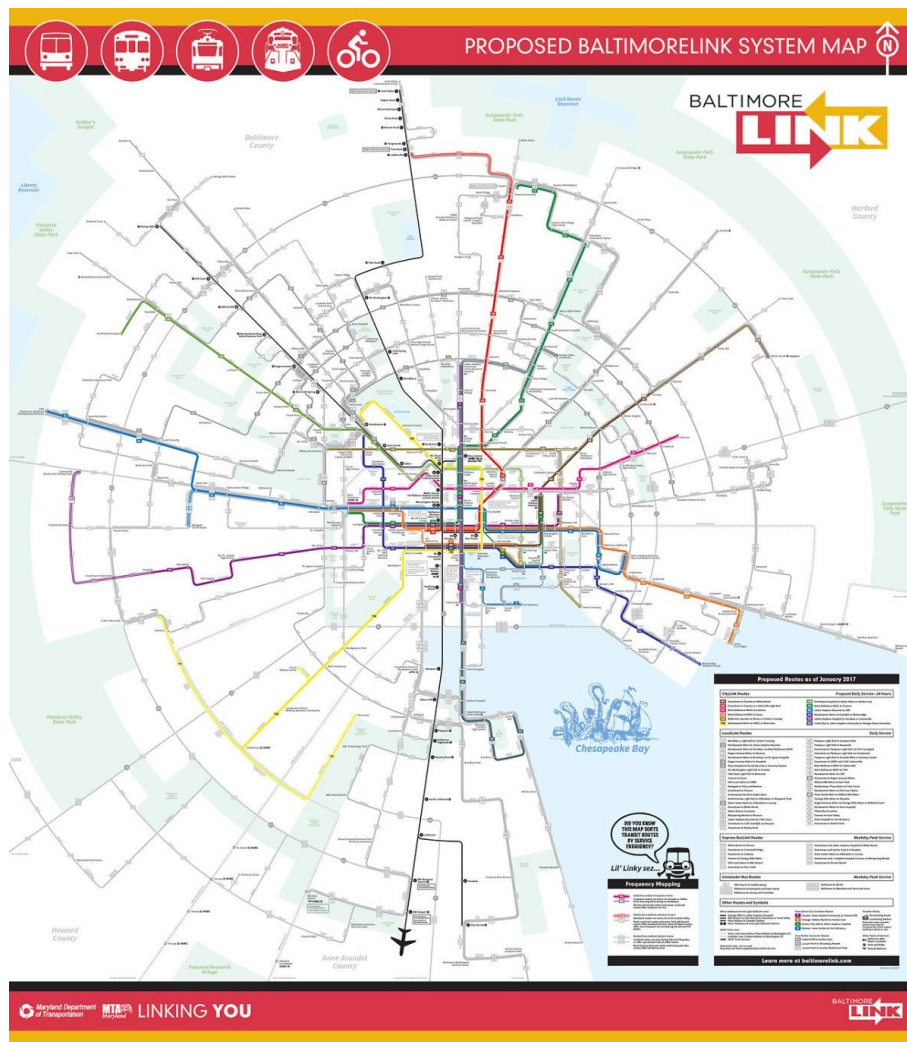


Figure 4.2.5 – BaltimoreLINK System Map<sup>70</sup>

<sup>70</sup> “Submission – Proposed Official Map: Baltimorelink System Map, 2017,” Transit Maps, January 12, 2019, <https://transitmap.net/baltimore-link-radial/>.

## Chapter 5: Precedent Application & Design Exploration

Different historical approaches toward urban design were studied and applied in order to explore the potential of the site. These approaches included Greek, Roman, Renaissance, Medieval, Baroque, Solar, and combinations of them all. Medieval, Baroque, and Solar styles were pursued in the most depth.

### Medieval

The medieval approach focuses on the incorporation of a “high street,” one that is hierarchically prioritized by a greater street width and the inclusion of important programmatic elements throughout the street.

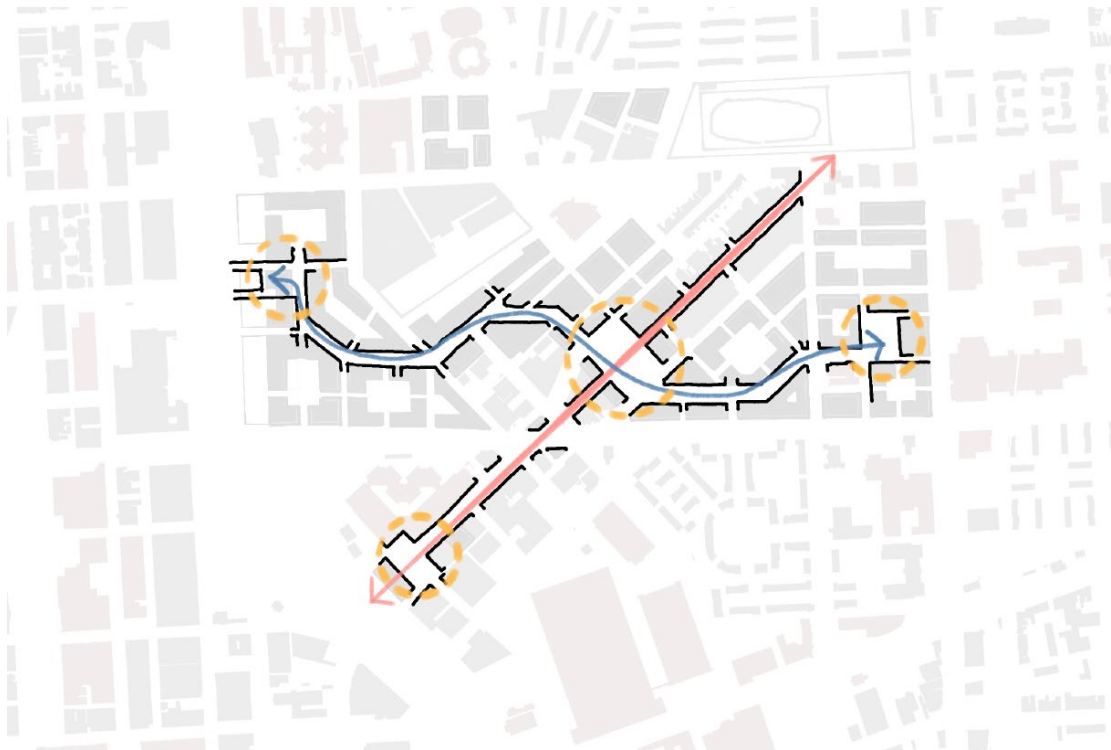


Figure 5.1.1 – Medieval Approach: Author

This iteration benefits from a strong east-west connection, ample opportunity for “high-value” locations along the high street, and a large central park area that allows the high street to intersect with Gay Street / Oldtown Mall in a meaningful way. This iteration presents challenges as well, specifically its heavy contrast to the surrounding context, and how that is resolved to allow for successful resolution of streets and blocks.

### Baroque

The Baroque approach focuses on radial pathways to and from a hierarchically and programmatically significant location.



Figure 5.1.2 – Baroque Approach: Author

This iteration benefits from a strong east-west connection and creates an important and well-defined central space. One significant challenge that is presented in this iteration is the many complex intersections created by the winding east-west connection, and how those can be resolved to create interesting gateways and viewpoints as one travels through the site.

### Solar

The Solar approach focuses on optimum solar orientation of buildings, which is to have the larger facades facing the south.

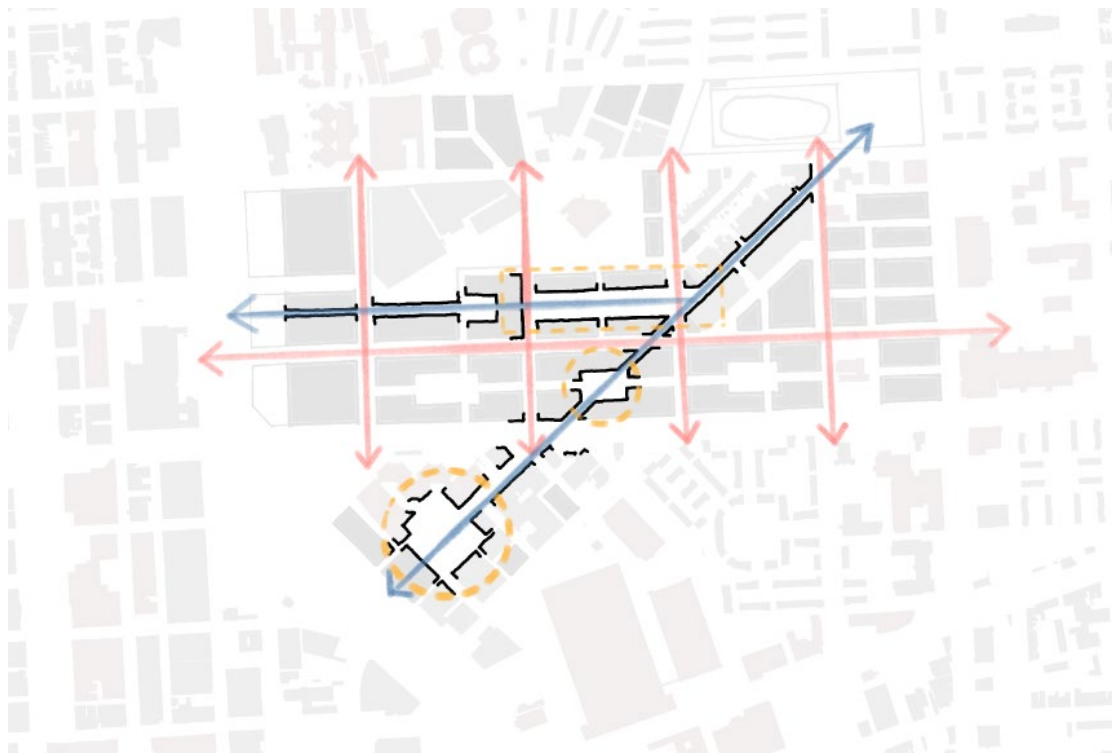


Figure 5.1.3 – Solar Approach: Author

This style of urban design ensures maximum energy efficiency for the entire development. This iteration also allows an area that currently deviates from the Baltimore City grid system to re-integrate into that grid. Finally, this site utilizes Gay

Street / Oldtown Mall as an important perimeter element in the main central space, thereby further activating the retail strip and highlighting its historical significance. This iteration has challenges as well, including how to reconcile the large BGE lot with the new grid, how to continue Gay Street past the central space, and how to integrate the Stirling Street rowhomes into the new grid.

## Chapter 6: Design Proposal

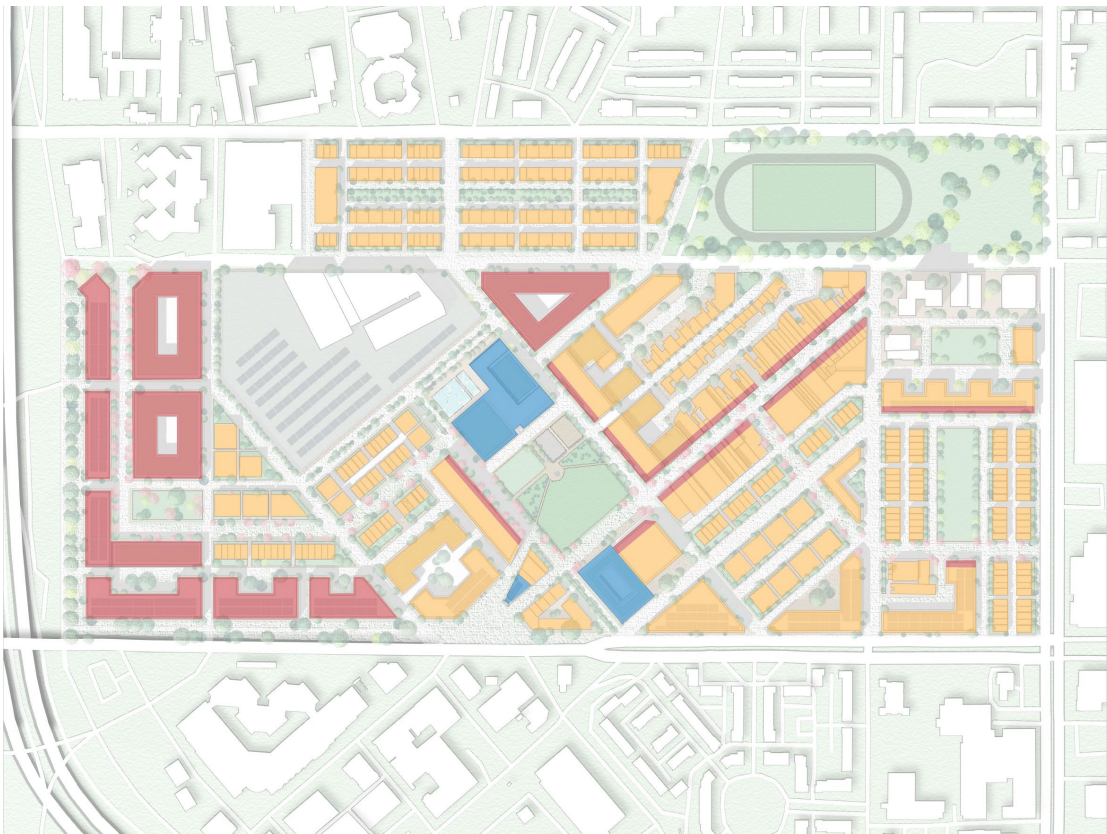
This Oldtown Master Plan proposal pursues the medieval approach to urban design because of its greater emphasis on a community greenspace and its ability to continue Oldtown's organizational identity as a deviation from the standard grid. This decision not to conform to the surrounding grid highlights the site's historical streets: Oldtown Mall and Stirling Street. The Master Plan proposal addresses the thesis issues by targeting health and wellness on four scales: city, neighborhood, place, and community.



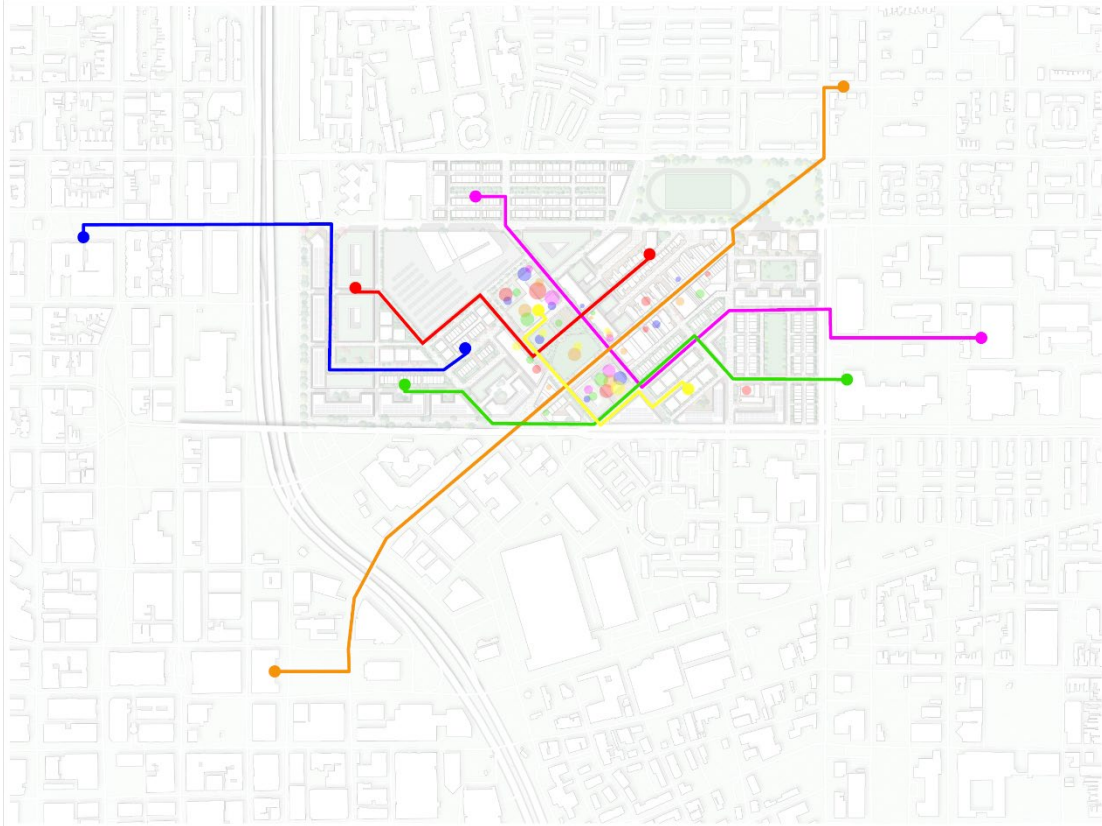
Master Plan Proposal: Author

## City

At the city scale, this proposal offers connections to and through the site, utilizes mixed-use development, and alleviates the food desert condition of Oldtown with the inclusion of a large grocery store. High-density development is utilized in order to bring vibrancy and activity to this previously vacant area. This plan includes business, residential, civic, and retail programming. The design also utilizes sustainable design via green infrastructure, including geothermal wells, rain gardens, solar panels, and green roofs.



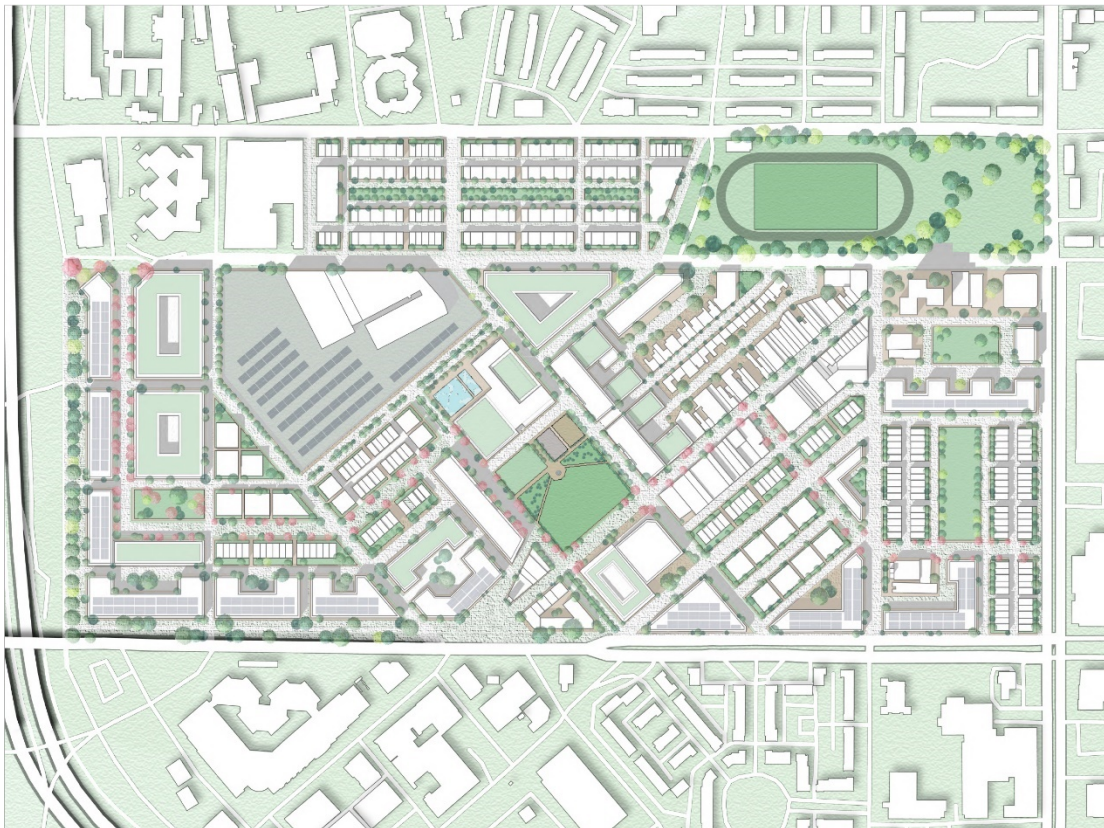
Mixed-Use Development: Author



Potential Commutes to/through the Site and Places of Interest: Author

## Neighborhood

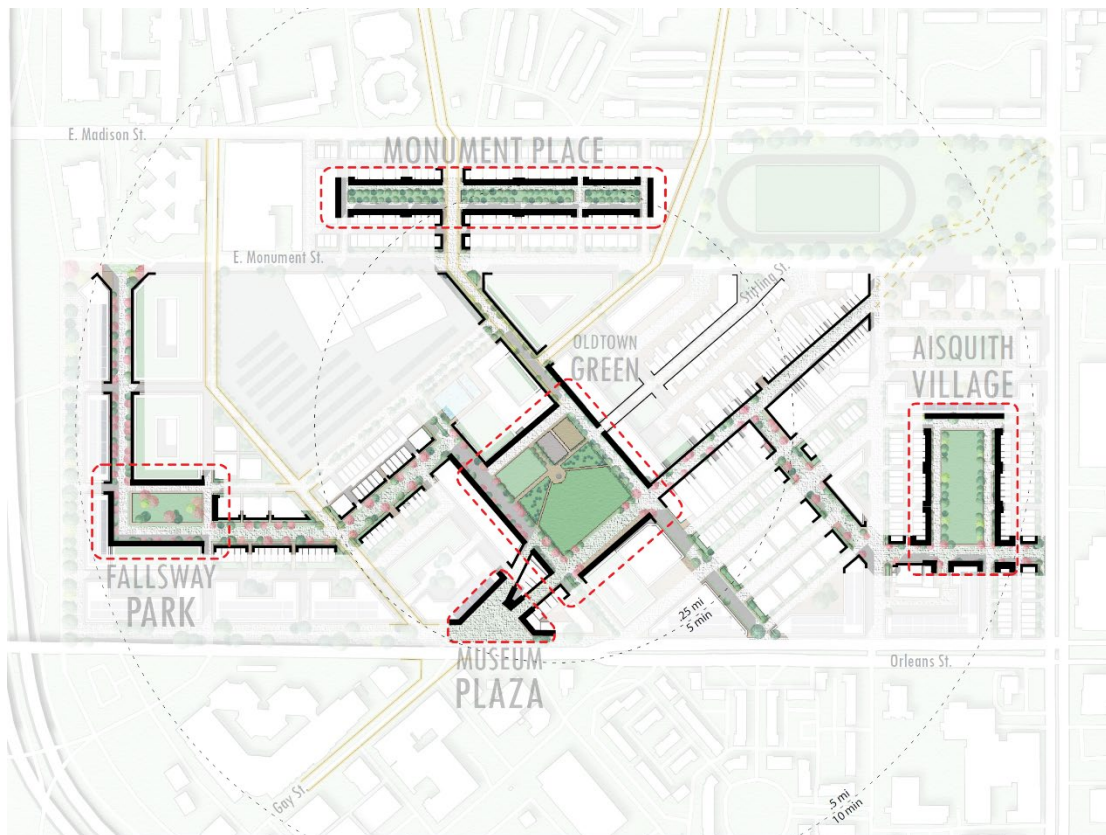
At the neighborhood scale, this proposal offers pedestrian-oriented design, multiple major parks, and a high quantity and variety of households (1,831 households split among multifamily, garden-style, and rowhome typologies) that brings diversity to the site. The entire development fits within a ten-minute walking diameter, so that no one is ever far from an amenity.



Master Plan – Zoomed-In: Author

## Place

This development creates a significant sense of place. First, the development brings Oldtown Mall back to life and highlights the Stirling Street rowhomes: two historical places that were lost and underutilized in a largely vacant site. Additionally, the high street winds through multiple different programs and nodes that each have their own separate identities as places. Furthermore, indoor and outdoor programs, offer the opportunity to relax, play, and socialize in a multitude of ways, ensuring inclusivity. Finally, as a sustainable community with significant green infrastructure, such as geothermal fields, stormwater management mechanisms, and solar energy, this development boasts an overarching “clean, green” sense of place.



Sequence & Placemaking Diagram: Author

## Community

This proposal impacts the community largely through programmatic elements. With the inclusion of a variety of housing typologies and price points, people of all different life stages are welcome. Through programs that target health and wellness, such as fitness centers, medical clinics, psychiatric care facilities, and more, the community can experience an increase in physical, mental, and social health. The development also features educational programming, such as financial literacy programs, career services, and community kitchen, that targets the inequities many of Baltimore City's residents have faced throughout history.



Center Space Axonometric – Author

## Chapter 7: Conclusion

Through significant urban design exploration and analysis, this thesis proposal envisions a new master plan for Oldtown, Baltimore City that alleviates the various health, environmental, and social problems explored in this document. Urban form, organization, and programming are all important to impacting change in these ways. Through mixed-use, mixed-income, high-density development with a wide variety of housing opportunities and recreational activities, this thesis activates the site with richness and diversity.

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