

ZONING FOR  
A HEALTHY

# BALTIMORE

A HEALTH IMPACT ASSESSMENT OF THE TRANSFORM  
BALTIMORE COMPREHENSIVE ZONING CODE REWRITE

Center for Child and Community Health Research | Johns Hopkins University | Baltimore City 2009-2010

FUNDED BY: THE ROBERT  
WOOD JOHNSON FOUNDATION



The Center for Child and  
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# ACKNOWLEDGEMENTS

## WE WOULD LIKE TO THANK THE FOLLOWING PEOPLE FOR THEIR ASSISTANCE WITH THIS PROJECT:

The various city officials and stakeholders who made themselves available for interviews; **Laurie Feinberg** and **Seema Iyer** with the Department of Planning for their help understanding the recode process and interpreting the code; **Alisa Ames** and **Ryan Petteway** with the Office of Epidemiology and Planning at the Baltimore City Health Department and **Hal Sommers** from the Vital Statistics Administration at the Maryland Department of Health and Mental Hygiene for their assistance with data; **Prabhu Ponshe** for his assistance with communications; and finally, **Danielle German** and others from the Public Health Working Group for laying the foundation that led to this project.

## THIS WORK WAS FUNDED BY A RAPID RESPONSE GRANT FROM THE ROBERT WOOD JOHNSON FOUNDATION ACTIVE LIVING RESEARCH (GRANT NO. 66853).

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## SUGGESTED CITATION:

Thornton RLJ, Fichtenberg CM, Greiner A, Feingold B, Ellen JM, Jennings JM, Shea MA, Schilling J, Taylor RB, Bishai D, Black M. Zoning for a Healthy Baltimore: A Health Impact Assessment of the TransForm Baltimore Comprehensive Zoning Code Rewrite. Baltimore, MD: Johns Hopkins University Center for Child and Community Health Research. August 2010.

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## PURPOSE

Developing creative and innovative policy approaches to address health issues in Baltimore City is essential. Almost all health statistics about Baltimore City point to the same fact: health outcomes in Baltimore are worse than they should be. For example, Baltimoreans suffer from worse health outcomes in terms of obesity, heart disease, and homicide than other Marylanders. In addition, there are vast disparities in health status between different groups within the City. For instance, there is a 20-year difference in life expectancy between Baltimore neighborhoods.

While many policy avenues other than zoning have important implications for population health, this Health Impact Assessment (HIA) arose from a unique opportunity to evaluate the potential health effects of Baltimore City's comprehensive zoning code rewrite (known as TransForm Baltimore). To date, most HIAs have examined specific development projects, and this HIA is one of the first to examine a major revision of a municipal zoning code in the U.S. Furthermore, it represents a unique opportunity to shape an evolving conversation about land use in Baltimore.

## WHAT IS A HEALTH IMPACT ASSESSMENT?

Health Impact Assessment (HIA) is a process whereby the health impacts of a proposed policy or program are systematically evaluated in order to inform decision-making. The **goal** of this HIA is to influence the final version of Baltimore's new zoning code by contributing information that will be used to revise the TransForm Baltimore rewrite draft that was released for public comment in April 2010 (referred to as the draft new code) and inform the mapping phase of the process. In order to achieve this overarching goal, the TransForm Baltimore HIA had two primary objectives:

1. To inform stakeholders and decision-makers about the new zoning code's potential to create healthy communities and decrease health disparities, with an emphasis on preventing obesity and crime, through review of the literature and quantitative assessment of potential impacts
2. To provide recommendations about how to increase the health-promoting potential of the new code and mitigate any unanticipated negative health consequences based on literature review, quantitative assessment of impacts, and expert opinion

## RELATIONSHIP BETWEEN ZONING AND HEALTH

Zoning is an urban planning tool that significantly influences the character of the neighborhoods in which people live, work, and play. Although zoning laws do not cause development to occur and do not dictate every aspect of development, they do regulate what type of development is allowed in each part of the city. In particular, the zoning code and zoning map address:

- **Use** through regulation of the purposes for which private property is used (e.g. commercial or residential) and through creation of districts where particular collections of uses are allowed
- **Form** through regulation of aesthetic and design elements of how private property can look (e.g. building height or appearance of street-level windows)
- **Location** through creation of maps specifying where uses and districts are allowed throughout a City

Because use, form and location can affect health behaviors and outcomes, there is growing interest among public health officials and researchers in exploring how zoning can be used to facilitate the development of healthy communities.

### WHAT WE DID

Following best practices for conducting an HIA, <sup>1,2</sup> the findings and resulting recommendations of the TransForm Baltimore HIA that are presented in this report involved the first three phases of the HIA process known as screening (i.e. determining whether there is a need for an HIA), scoping (i.e. identifying the main health impacts to be evaluated), and assessment (i.e. evaluating the magnitude and distribution of the health impacts of the policy being examined). This was accomplished through:

- Interviews with stakeholders and decision-makers including planners, developers, and elected officials (i.e. scoping interviews)
- Assessment of baseline health and socioeconomic conditions in Baltimore City
- Literature review of the scientific evidence examining the health effects of built environment features governed by zoning
- Analysis of the differences between the current zoning code and the draft new code with particular emphasis on how the draft new code might impact aspects of the built environment that are related to health
- Quantitative assessment of the maximum potential impact of the draft new code on the City's built environment
- Development of recommendations based on a synthesis of the results and on expert opinion

### ZONING AND HEALTH RELATIONSHIPS OF INTEREST

Based on the health issues that Baltimore faces, the results of the scoping interviews conducted for the TransForm Baltimore HIA, and evidence from scientific studies about the relationship between the built environment and health; the TransForm Baltimore HIA impact assessment focused on the following groups of health outcomes and health-related behaviors:

1. Violent Crime
2. Obesity and Obesity-Related Illnesses
3. Physical Activity and Pedestrian Safety
4. Diet and Nutrition

### LITERATURE REVIEW FINDINGS

Our literature review found significant empiric evidence that:

- Off-premise alcohol sales outlets are associated with increased crime.
- Pedestrian-oriented environments are associated with lower crime, increased walking, and decreased obesity.
- Mixed land use (i.e. residential and commercial) is associated with increased walking and decreased obesity, but more so for higher income than lower income populations.
- Increased availability of healthy food options, such as supermarkets and farmers markets are associated with increased healthy eating and decreased obesity.

## CODE ANALYSIS AND IMPACT ASSESSMENT FINDINGS

If implemented, the draft new code could:

- Substantially increase the percentage of residents who live in neighborhoods that allow mixed use. This has the potential to increase residents' physical activity levels as well as access to healthy food.
- Dramatically increase the percentage of neighborhoods that allow urban gardens and farmers markets. This has the potential to increase residents' access to healthy food if these uses were developed.
- Prioritize the creation of pedestrian oriented areas by including pedestrian oriented design standards in business and industrial districts. If development were to occur in districts where these requirements are in place, these features have the potential to deter crime and encourage walking.
- Expand neighborhood residents' access to mixed use areas. Though generally thought to encourage physical activity, this change also has the potential to increase City residents' exposure to off-premise alcohol sales outlets. Such outlets are associated with increased crime.

## RECOMMENDATIONS

The following is a summary of the HIA recommendations, which fall into one of three categories: supported elements of the draft new code, recommended revisions to elements of the draft new code, and recommended changes to the TransForm Baltimore rewrite process and administration of the new code. All HIA recommendations are substantiated by one or both types of sources (see Table 6-1 for more detail). "Supported by evidence" designates recommendations based on information from the scientific literature review and/or impact assessment. "Supported by expert opinion" designates recommendations based on information from scoping interviews, observation of the TransForm Baltimore rewrite process, feedback from experts in the fields of land use and health, examples from model code documents, and/or examples from other cities.

### Supported elements of the transform baltimore rewrite (april 2010 draft)

These are elements of the draft new code that the TransForm Baltimore HIA team recommend remain in the final version of the new code because they are likely to contribute positively to creating healthy communities.

#### 1. Improving access to healthy food by:

- Increasing allowances for community gardens, urban agriculture, and farmers markets (from evidence and expert opinion)
- Creating a row house mixed use overlay and a designation for neighborhood commercial establishments (from evidence and expert opinion)

#### 2. Creating walkable environments by:

- Expanding mixed use areas (from evidence and expert opinion)
- Creating pedestrian corridors and transit oriented development zones (from evidence and expert opinion)
- Emphasizing pedestrian oriented design standards including first floor transparency (from evidence and expert opinion) and reduced parking requirements (from expert opinion)

#### 3. Strengthening the link between health and zoning by: Modernizing the purpose statement to reference public health (from expert opinion)

#### 4. Developing a code that is easy to use by: Updating definitions, creating use tables, and adding diagrams of the development process (from expert opinion)

### Recommended Revisions to Elements of The TransForm Baltimore rewrite (April 2010 draft)

This section highlights aspects of the draft new code that the HIA Team recommends be revised in order to enhance the potential of the TransForm Baltimore rewrite to promote health and welfare and mitigate the potential for unintended negative health consequences.

- 1. Creating healthy neighborhoods by:** Preventing concentration of off-premise alcohol sales outlets in districts that currently allow retail alcohol sales by right, particularly in transit oriented development and industrial mixed use zones; and employing comprehensive planning strategies to address problematic existing off-premise alcohol sales outlets via a “deemed approved” process (from evidence and expert opinion).

The following changes are likely necessary to facilitate the above recommendations:

- Create a separate use definition for liquor stores/off-premise alcohol sales outlets that aligns with liquor license board classes and track the location of proposed and existing off-premise alcohol sales outlets (from evidence and expert opinion)
  - Include clear public health criteria in Section 4-404 Approval Standards (from expert opinion)
- 2. Creating walkable environments by:** Including crime prevention through environmental design (CPTED) principles in landscape ordinance and design standards; and applying pedestrian oriented development goals to office residential (OR), office industrial park (OIP), Bioscience, and special purpose districts (from evidence and expert opinion)

The following change is likely necessary to facilitate the above recommendations:

- Develop a standard definition for “pedestrian oriented” to be included in the final version of the new code and apply this definition in office residential (OR), office industrial park (OIP), Bioscience, and special purpose districts (from evidence and expert opinion)
- 3. Improving access to healthy food by:** Developing incentives for Healthy Food Stores through the zoning code and through other mechanisms (from evidence and expert opinion)

The following changes are likely necessary to facilitate the above recommendation and to improve other supported elements of the draft new code that relate to food access:

- Develop a “Healthy Food Store” use and definition (from evidence and expert opinion) as well as a “Fast Food Outlet” use and definition (from expert opinion)
- Clarify distinctions between types of community gardens (i.e. temporary vs. permanent) (from evidence and expert opinion) and add language regarding ADA/Universal design standards for both types (from expert opinion)
- Modify the use definition for urban agriculture to better distinguish from community gardens and amend these regulations to disallow practices that have the potential for negative impacts on public health such as the spraying of agricultural chemicals (from expert opinion)
- Uniformly require soil testing for both urban agriculture and community gardens (from expert opinion)
- Consider additional standards for Farmers Markets that would expand access to healthy foods, such as mandating requirements for WIC acceptance (from expert opinion)



**Recommended Changes to TransForm Baltimore Re-write Process and Plan for Code Administration**

This section summarizes recommendations that address aspects of the TransForm Baltimore rewrite process and the planned administration of the new code (once ratified).

**1. Providing clear mechanisms for incorporating stakeholders' feedback in all phases of the TransForm Baltimore rewrite process by:**

- Creating a set of criteria for assessing, evaluating and incorporating changes to the TransForm Baltimore draft new code and the draft map (from expert opinion)
- Publicizing planned meetings between Baltimore City Planning Department staff and community groups to discuss plans for how the TransForm Baltimore draft new code is mapped onto City neighborhoods (from expert opinion)
- Creating a Translational Document or User's Guide comparing the old and new code (once ratified) in plain language (from expert opinion)
- Revising the Procedures Title to clearly answer basic questions about using the code (from expert opinion)

**2. Insuring a consistent and systematic strategy for administering the new Code by:** Establishing policy principles and guidelines to enhance public engagement in the processes that will govern new development in the new code (from expert opinion)



- 2.1 Goal of the TransForm Baltimore Health Impact Assessment**
- 2.2 Context and Rationale for TransForm Baltimore**
- 2.3 What is Health Impact Assessment?**
- 2.4 Objectives of the TransForm Baltimore Health Impact Assessment**

There is a national conversation in the U.S. about the myriad of ways that the environments in which we live may affect health. In fact, the White House Task Force on Childhood Obesity Report to the President (released May 2010) included particular attention to the ways that man-made elements of the environment such as streets and buildings – often referred to as the **built environment** – can have significant implications for physical activity and thus for obesity risk and general health. In particular, the report discusses the potential health benefits of pedestrian oriented design and the link between low density automobile oriented development (or sprawl) and decreased opportunities for physical activity<sup>3</sup>.

At the state and local level in Maryland, there is increasing emphasis on the importance of building sustainable communities, which aligns with the federal government's recent attention to this issue. In fact, improving population health is referenced as one of many justifications for Maryland's recently adopted Sustainable Communities Act of 2010<sup>4</sup> and for Baltimore City's first annual Sustainability Report released in April 2010<sup>5</sup>.

Elements of both the City's Comprehensive Master Plan and its Sustainability Plan emphasize the need to improve transportation linkages around the City<sup>5,6</sup>. Insofar as access to transportation through transit oriented development relates to physical activity and obesity, this represents one potential way that Baltimore's comprehensive zoning code rewrite may have implications for population health.

Furthermore, over the past decade, interest in the use of urban planning and community design to create sustainable, healthy communities has increased as the evidence linking the built environment to health has grown<sup>7,8</sup>. In contrast to the natural environment (e.g. rivers, mountains) or the social environment (e.g. relationships with neighbors), the built environment is composed of the man-made elements of a city or place. These include the size, location and arrangement of features such as streets, homes, stores, offices, and industry. Many of these built environment features are influenced by zoning.

Baltimore's comprehensive zoning recode has the potential to serve as a model piece of legislation for other municipalities. As such, it is critical that the new zoning code is maximally beneficial to city residents and contributes to the development of economically vibrant, healthy communities. Realizing the relevance of the zoning recode process to population health and the need for data to inform how the recode could best address local health needs, a team of public health researchers and other experts conducted a Health Impact Assessment of the draft new code, with funding from the Robert Wood Johnson Foundation. While a variety of other policy avenues apart from zoning have important implications for population health, this HIA represents a unique opportunity to evaluate the potential health effects of a comprehensive municipal zoning code rewrite in a way that has not occurred previously in the U.S.

## 2.1 GOAL OF THE TRANSFORM BALTIMORE HEALTH IMPACT ASSESSMENT (HIA)

The goal of this HIA is to influence the final version of Baltimore's new zoning code by contributing information that will be used to revise the TransForm Baltimore rewrite draft that was released for public comment in April 2010 (referred to as the draft new code) and inform the mapping phase of the process.

## 2.2 CONTEXT AND RATIONALE FOR TRANSFORM BALTIMORE

In Baltimore, zoning is regulated through a City Council ordinance that is administered by the Department of Planning. In 2007, Baltimore City began a three year process to revise and modernize its zoning code, which was last updated in 1971. This process became known as the TransForm Baltimore zoning code rewrite. Modernization of the city's zoning code is mandated by the City's comprehensive plan. Completed in 2006, the Comprehensive Master Plan was written in order to guide the City's future development. It emphasizes the importance of updating the City's zoning code.

Among the major goals of the rewrite are simplification and standardization of the code, and creation of new tools to support and guide City investments to preserve the unique character of Baltimore City<sup>3</sup>.

The TransForm Baltimore rewrite also seeks to update the City zoning code and zoning maps to more accurately reflect the existing built environment of Baltimore. In addition, the TransForm Baltimore rewrite has emphasized updating the City's zoning districts in order to address changing land needs (such as reinvigorating land currently zoned as industrial); create more flexible base zoning (to limit the need for planned unit developments); prepare for future land use changes (such as transit oriented development around the planned Redline train and MARC stations); and incorporate current planning practices in order to improve sustainability and promote walkable environments in Baltimore City.

The Baltimore City Health Department (BCHD) has been working in collaboration with the Public Health Working Group (a group of public health professionals and advocates) since 2008 to promote the incorporation of public health goals into the zoning code rewrite. This collaboration helped to identify the potential role for a health impact assessment in influencing this major zoning policy revision.

### 2.3 WHAT IS HEALTH IMPACT ASSESSMENT?

Health Impact Assessment (HIA) is a process whereby the health impacts of a proposed policy, program or project are systematically examined to improve the ability of decision makers to insure that proposed policies, programs, and projects promote public health <sup>1,2</sup>. While this practice is relatively common in other countries including Australia and the UK, it is relatively new in its use in the United States <sup>10</sup>. Furthermore, most U.S. built environment-focused HIAs have examined specific development projects. To our knowledge, this is among the first HIAs involving a major revision of a municipal zoning code.

- Health Impact Assessment (HIA) evaluates the potential health impacts of a proposed policy, program or project.
- Although HIAs are common practice in other countries, this is a new and growing area of work in the U.S.
- Other HIAs have looked at built environment policies, but most involve specific development projects.
- This is among the first HIAs evaluating a major revision of a municipal zoning code in the U.S.
- This HIA followed best practices established by the World Health Organization and the American HIA Practice Standards Working Group <sup>1,2</sup>.

The data presented in this report is derived from the first three phases of the HIA process: SCREENING, SCOPING, and ASSESSMENT.

SCREENING involves determining whether there is a need for an HIA.

SCOPING involves identifying the main health impacts to be evaluated. These main health impacts are identified based on the potential of the policy, program, or project under examination to affect particular aspects of population health.

ASSESSMENT involves evaluating the magnitude and distribution of the main health impacts of the proposed policy, program or project. This phase specifically evaluates how the policy, program, or project may impact population health for the specific outcomes identified in the scoping phase.



**2.4 OBJECTIVES OF THE TRANSFORM BALTIMORE HEALTH IMPACT ASSESSMENT**

The **goal** of this HIA is to influence the final version of Baltimore's new zoning code by contributing information that will be used to revise the TransForm Baltimore rewrite draft that was released for public comment in April 2010 (referred to as the draft new code) and inform the mapping phase of the process. In order to achieve this overarching goal, the TransForm Baltimore HIA had two primary **objectives**:

1. Inform stakeholders and decision-makers about the new zoning code's potential to create healthy communities and decrease health disparities, with an emphasis on preventing obesity and crime, through review of the literature and quantitative assessment of potential impacts
2. Provide recommendations about how to increase the health-promoting potential of the new code and mitigate any unanticipated negative health consequences based on literature review, quantitative assessment of impacts, and expert opinion



- 3.1 The Need for Action to Improve Health in Baltimore**
- 3.2 Basic Definition of Zoning and its Uses**
- 3.3 Relationship of Zoning and Health**
- 3.4 Selected Outcomes for the TransForm Baltimore HIA: Violent Crime, Obesity and Obesity-Related Illnesses, Physical Activity and Pedestrian Injuries, Diet and Nutrition**

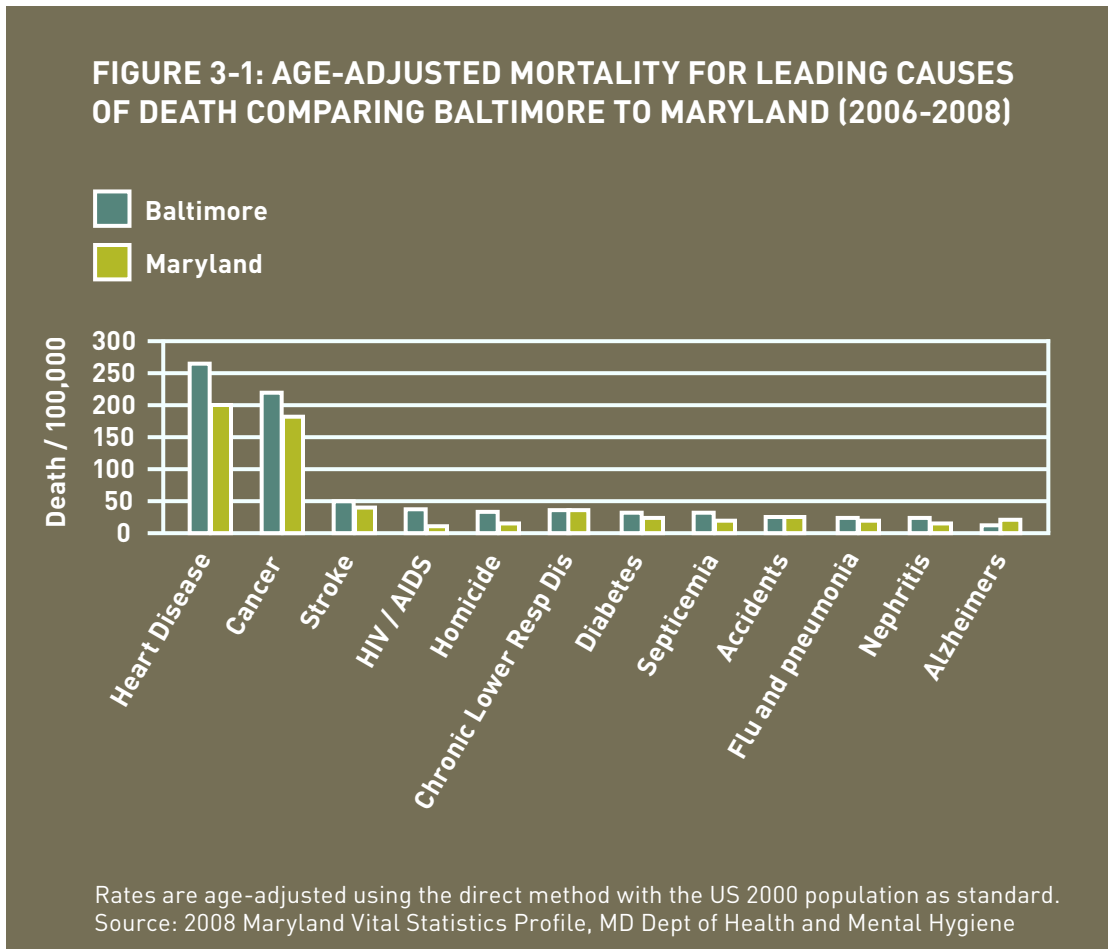
**3.1 THE NEED FOR ACTION TO IMPROVE HEALTH IN BALTIMORE**

Health outcomes in Baltimore City are striking. Baltimoreans suffer from worse health outcomes across the board than other Marylanders, and there are vast disparities in health status between different subpopulations within the city.

**Baltimore as compared to Maryland**

Baltimore City suffers from worse health outcomes in nearly all categories compared to the rest of Maryland. One manifestation of this is that life expectancy, or how long an infant born today would be expected to live given current health trends, was 72.4 years in Baltimore in 2006-2008, compared to 78.4 years in Maryland in 2008 <sup>11</sup>. On average, Baltimoreans are 34% more likely to die in a given year than Marylanders <sup>11</sup>. This difference means that there are 1,700 excess deaths (i.e. deaths that would not occur if Baltimore experienced the same mortality rate as Maryland) every year in Baltimore compared to Maryland.

Shorter life spans in Baltimore are driven by higher mortality for most major causes of death. As is shown in Figure 3-1, rates of death in Baltimore exceed Maryland rates for almost all leading causes of death. Of particular importance for fueling poor health outcomes in Baltimore are heart disease, cancer, HIV/AIDS, and homicide, which respectively account for 23%, 15%, 12% and 10% of the excess deaths in Baltimore compared to Maryland (Table 3-1).



**TABLE 3-1: MORTALITY RATES PER 100,000 FOR LEADING CAUSES OF DEATH AND EXCESS DEATHS, BALTIMORE COMPARED TO MARYLAND (2006-2008)**

CAUSE OF DEATH	BALTIMORE	MARYLAND	BALT/MD RATIO	EXCESS DEATHS*	% OF EXCESS DEATHS
All causes	1047.9	780.8	1.34	1712	100%
Heart disease	263.5	201.3	1.31	399	23%
Cancer	221.7	182.6	1.21	251	15%
Stroke	49.6	41.3	1.20	53	3%
HIV / AIDS	38.5	7.5	5.13	199	12%
Homicide	36.3	10.0	3.63	169	10%
Chronic Lower Respiratory Disease	34.4	34.9	0.99		
Diabetes	33.3	22.4	1.49	70	4%
Septicemia	32.7	17.3	1.89	99	6%
Accidents	27.0	25.8	1.05	8	0%
Flu and pneumon	21.4	18.7	1.14	17	1%
Nephritis, nephrotic syndrome and nephrosis	21.3	13.5	1.58	50	3%
Alzheimer's disease	11.0	17.1	0.64		

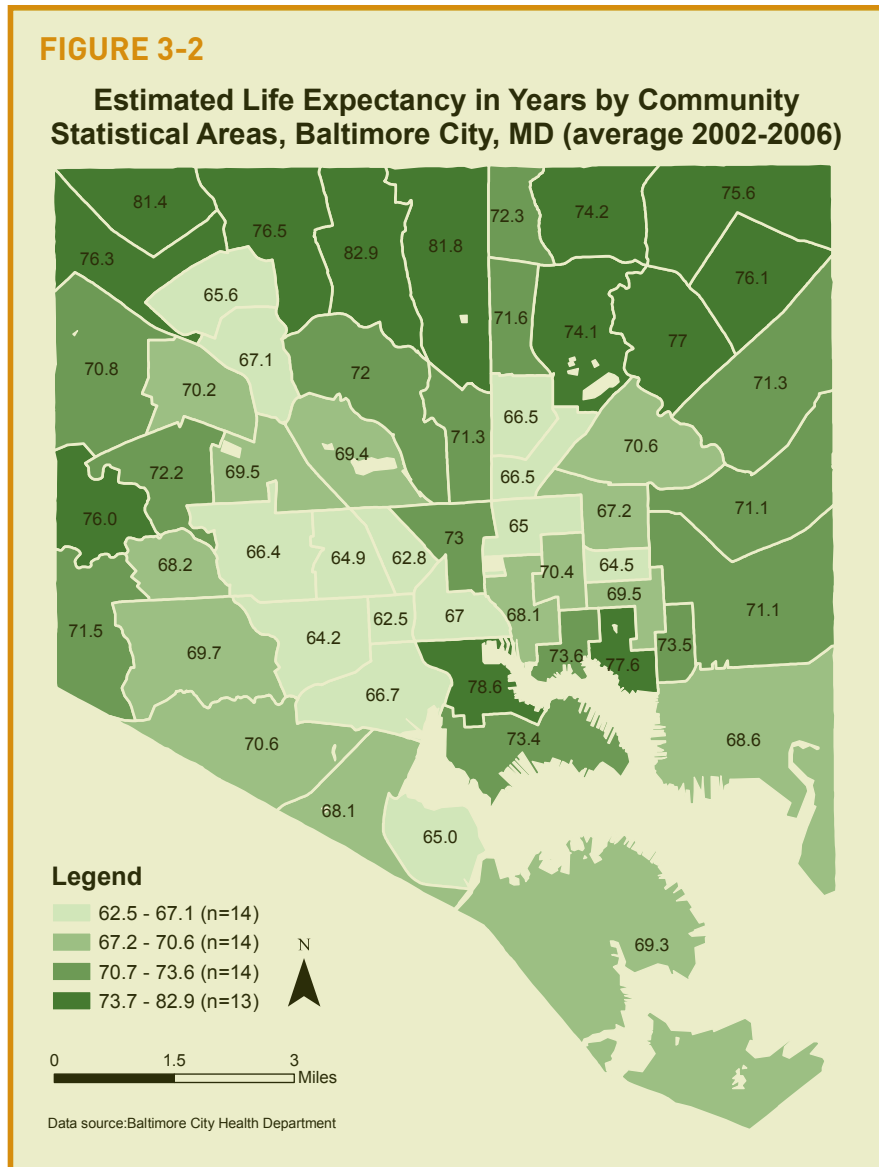
\* Excess deaths are the number of deaths that occurred because the Baltimore mortality rate is higher than Maryland's. Chronic Lower Respiratory Disease and Alzheimer's Disease do not contribute to excess deaths since the rate is the same or lower in Baltimore than in Maryland. Data Source: 2008 Maryland Vital Statistics Profile, MD Dept of Health and Mental Hygiene.

### Striking disparities within the city

While Baltimoreans have worse health outcomes on average than other Marylanders, some groups within the city fare worse than others. A 2008 Baltimore City Health Department report found that life expectancy varied by as much as 20 years between the neighborhoods of the city with the lowest and highest life expectancy (63 vs. 83 years)<sup>12</sup> (Figure 3-2). These geographic differences in longevity and health are strongly related to socioeconomic factors. This same report found a strong relationship between average neighborhood income and life expectancy such that for every additional \$10,000 in average income, a neighborhood gained 3.4 years of life expectancy<sup>12</sup>. Another recent report from the Baltimore City Health Department found that the largest health disparities in Baltimore exist between individuals of different income levels, with 26 of 43 health indicators displaying significant disparities by income<sup>13</sup>. This report also found substantial disparities between whites and African Americans, with African Americans faring worse on 21 of 29 indicators (due to small numbers, disparities for other racial/ethnic groups were not reported). These disparities result in African-American Baltimoreans dying an average of six years earlier than white Baltimoreans (70.2 life expectancy vs. 76.2 for 2006-2008)<sup>11</sup>.

It is important to note that racial health disparities in Baltimore are complex and are not fully explained by differences in income between African Americans and whites. In fact, communities where a majority of residents are African American have worse health outcomes than communities where a majority of residents are white. The reasons for these poor health outcomes and vast health disparities in Baltimore are complex. Among the likely reasons for disparities is the fact that many neighborhoods lack the infrastructure needed to foster healthy behaviors and environments. Zoning laws are important for increasing allowances for healthy environments because they set the standards for what types of development can occur in a given area.





### 3.2 BASIC DEFINITION OF ZONING AND ITS USES

Zoning is an urban planning tool that significantly influences the shape of the neighborhoods in which people live, work, and play. Zoning laws regulate private land and have historically been focused on restricting land uses and governing the placement, size, and design of buildings<sup>14</sup>. Beyond these substantive regulations of land and buildings, zoning codes also include procedural steps for applying these rules to specific areas of a community through the zoning map, conditional use permits, and overlay zones. These laws also outline the procedures for owners seeking relief from current zoning through variances and amendments. Zoning codes were initially developed in an effort to protect the general health, safety and welfare of citizens<sup>15</sup>.

## ZONING FOR A HEALTHY BALTIMORE

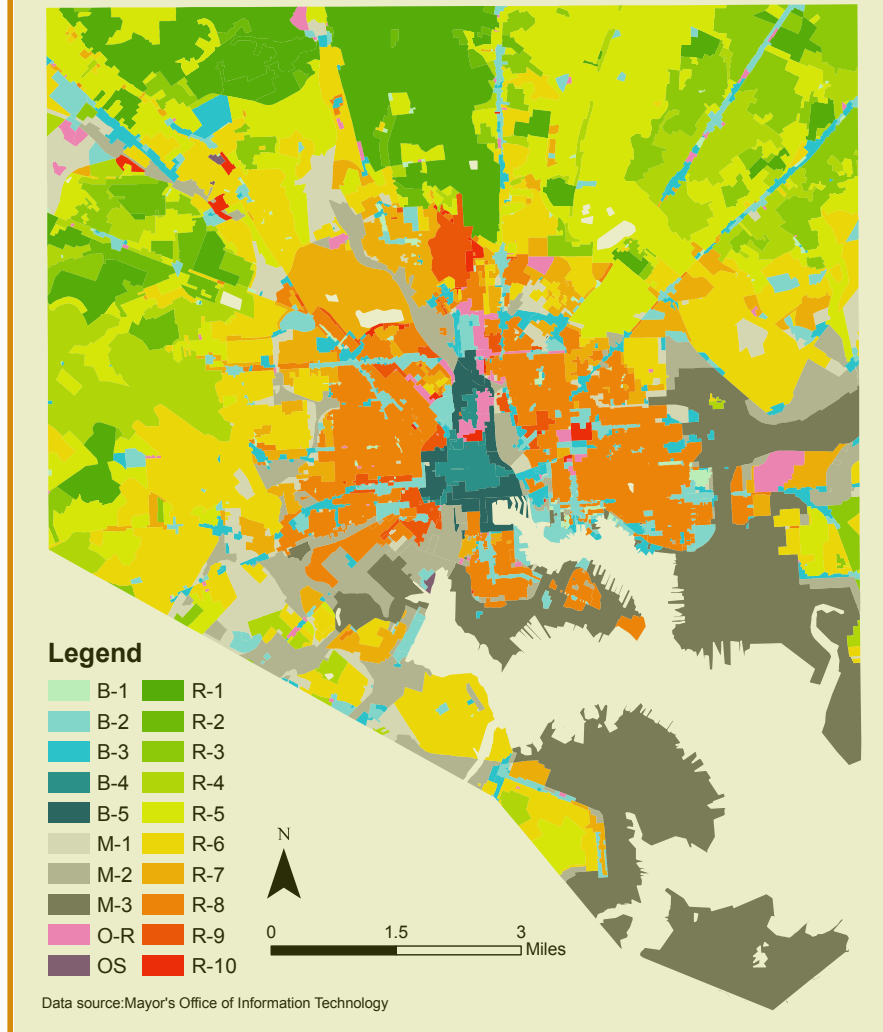
Today, zoning codes are the primary tools guiding land use in most U.S. cities and influence property values, neighborhood livability, and economic development. Current trends in zoning include increasing traditional neighborhood development, designing form-based codes, and including sustainability measures<sup>16</sup>. The TransForm Baltimore rewrite has embraced some of these trends through its emphasis on Transit Oriented Development, (TOD), community gardens, and mixed use. Table 3-2 provides a list of abbreviations used in Baltimore’s current zoning code and in the draft new code. Figure 3-3 shows the mapping of the current zoning code and the distribution of specific zoning districts across the City.

It is important to note that zoning does not mandate development of private land or determine where development occurs. Zoning’s impact on health depends on where and how development of private land occurs.

TABLE 3-2: EXPLANATION OF ZONING DISTRICT ABBREVIATIONS		
ABBREVIATIONS	DETAIL	CATEGORY
R1	Detached single family, low density	Detached Residential
R2	Detached and semi-detached single family	Detached Residential
R3	Detached single family, moderate density	Detached Residential
R4	Detached and semi-detached single family, moderate density	Detached Residential
R5	Detached, semi-detached single unit rowhomes	Rowhouse and Multifamily Residential Districts
R6	Low density rowhouse neighborhoods	Rowhouse and Multifamily Residential Districts
R7	Detached and semi-detached single family, single- and multi-unit rowhouse, and multi family residential	Rowhouse and Multifamily Residential Districts
R8	Predominantly rowhouse, higher density	Rowhouse and Multifamily Residential Districts
R9	Higher density, low rise housing	Rowhouse and Multifamily Residential Districts
R10	Higher density, high rise and multi unit rowhouse	Rowhouse and Multifamily Residential Districts
B1	Neighborhood Business - more pedestrian oriented	Commercial District
B2	Community Commercial - more pedestrian oriented	Commercial District
B3	General Commercial - more auto oriented	Commercial District
B4	Heavy Commercial	Commercial District
B5	Downtown	Commercial District
BI	Business Industrial - light industrial uses with no outside impact	Industrial
OIP	Office Industrial Park - large office structures, research and development	Industrial
BSC	Bioscience Campus- integrated manufacturing, office, residential, research and development, and retail	Industrial
I-MU	Industrial Mixed Use - light industrial surrounded by non-industrial uses, such as live/work, residential	Industrial
I-1	Light Industrial	Industrial
OR	Office Residential	Special Purpose District
TOD1	Transit Oriented Development - high density, mixed use development around transit stops	Special Purpose District
TOD2	Transit Oriented Development with lower density compatible with more “suburban” setting	Special Purpose District

FIGURE 3-3

## Zoning Districts Baltimore City, MD (2010)



### 3.3 RELATIONSHIP OF ZONING AND HEALTH

There are a variety of ways in which zoning may positively and negatively affect health. It is likely that zoning's impact on health occurs through its potential to shape the built environment. Changes in the built environment can have both direct and indirect impacts on health. One way zoning may directly impact health is through its effects on the local food environment by allowing for uses such as supermarkets, farmers markets, or community gardens in residential areas. Having access to these types of uses in neighborhoods may provide greater access to fresh produce and nutrient dense food, increasing the likelihood that residents will have improved nutrition and thus reduce their risk for obesity, diabetes, or other obesity-related illnesses<sup>17-19</sup>. Because zoning can also regulate private building appearances, landscaping design, signage and lighting, it contributes to the aesthetic appeal of neighborhoods and thereby the likelihood that people will walk in those neighborhoods<sup>20</sup>. Zoning can also restrict or facilitate mixed use (i.e. the allowance of multiple land uses in the same area), which has been shown to promote functional physical activity in the form of walking to needed services<sup>21-23</sup>.

Zoning may affect the social environment and, thus, exhibit indirect impacts on health. For example, mixed-use and urban design features that facilitate natural resident surveillance have been shown to reduce criminal activity including violent crimes<sup>24,25</sup>. Streets with high-volume traffic and a high concentration of non-residential land use are associated with higher crime<sup>26,27</sup>. Specific types of non-residential land uses are known to serve as crime generators and crime attractors. Off-premise alcohol outlets such as liquor stores, on the other hand are documented crime attractors because potential offenders are drawn or attracted to patronize them<sup>27-29</sup>. The concentration of both off-premise alcohol sales outlets and bars have been associated with violent injuries<sup>30,31</sup>. Both off-premise alcohol sales outlets and bars can also have the potential to be regulated – at least in part – through zoning. Zoning usually includes off-street parking requirements for larger residential and commercial uses, which can affect traffic volume. Changing these requirements has been shown to reorient transportation choices towards non-car alternatives that provide more opportunities for functional physical activity<sup>32</sup>. Given that land use regulations can also allow or limit particular types of food outlets such as fast food and supermarkets, zoning may compliment other policies and strategies intended to facilitate equitable access to healthy food outlets and limit undue concentrations of unhealthy food outlets in certain areas<sup>18,19,33</sup>.

The impact of zoning on crime, violence and safety may be particularly important for obesity prevention. Perhaps the most obvious health impacts of crime are the resultant injuries and deaths associated with violent crimes. But crime and perceptions of safety have more far-reaching implications for promoting healthy behaviors and creating healthy communities. In particular, crime and safety are important determinants of neighborhood-based physical activity, including walking or biking to school, among children and adolescents<sup>34-37</sup>. In Baltimore, which suffers from one of the nation's highest violent crime rates, perceptions of safety may be a more important determinant of physical activity among children and adolescents than access to recreational spaces and walkable communities.

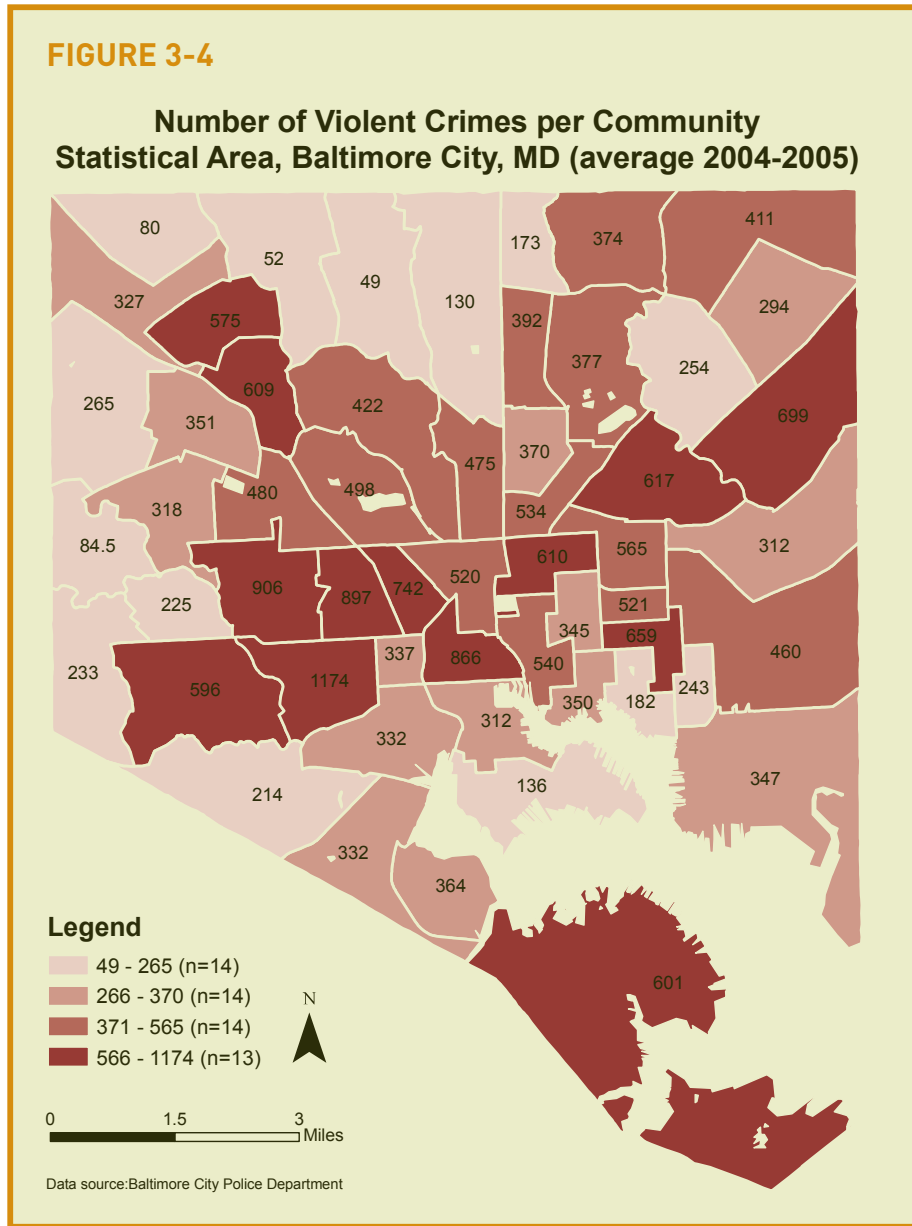
### **3.4 SELECTED OUTCOMES FOR THE TRANSFORM BALTIMORE HIA: VIOLENT CRIME, OBESITY AND OBESITY-RELATED ILLNESSES, PHYSICAL ACTIVITY AND PEDESTRIAN INJURIES, DIET AND NUTRITION**

Based on the health issues that Baltimore faces, the results of the scoping interviews conducted for the TransForm Baltimore HIA, and evidence from scientific studies about the relationship between the built environment and health, the TransForm Baltimore HIA impact assessment focused on the following groups of health outcomes and health-related behaviors:

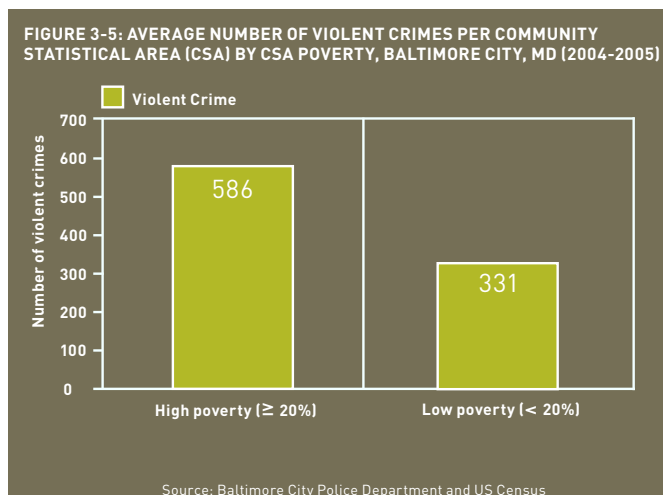
1. Violent Crime
2. Obesity and Obesity-Related Illnesses
3. Physical Activity and Pedestrian Safety
4. Diet and Nutrition

#### **Violent Crime**

Crime is widely recognized as one of the Baltimore's most pressing problems. Violent crime includes four categories of criminal offenses: murder, forcible rape, robbery, and aggravated assault (Uniform Crime Reports). In 2006 homicide was the fifth leading cause of death in Baltimore and the leading cause of death among Baltimore residents age 15-34 years. By comparison, homicide was the 15th leading cause of death in the U.S. for the same year<sup>38</sup>. Although homicide accounts for only 3% of deaths in Baltimore in a given year, it contributes 10% of excess deaths for City residents (Table 3-1). As is shown in Figure 3-4, certain neighborhoods experience higher homicide rates than others. Neighborhoods in the southwest, northwest, and eastern areas of Baltimore City have higher homicide rates. These patterns are associated with neighborhood poverty.



As depicted in Figure 3-5, the homicide rate for high poverty neighborhoods is nearly twice as high as the rate for low poverty neighborhoods in Baltimore City (586 vs. 331 crimes per year per community statistical area). This suggests a significant relationship between homicide rates and neighborhood location and socioeconomic status.



In addition to the harm experienced by victims, violent crime shapes city neighborhoods and affects residents’ lives in countless ways. For instance, it may affect the desirability of neighborhoods, property values, and whether residents are likely to walk and exercise in their neighborhoods, thereby affecting obesity and obesity-related diseases. Scientific evidence suggests that crime may be shaped by land use and design. For example, particular uses, such as off-premise alcohol sales outlets, may affect crime (see Section 3.3). A study by LaVeist and Wallace <sup>39</sup> in 2000 demonstrated that liquor stores in Baltimore City are concentrated in high poverty neighborhoods and in neighborhoods with predominantly African American residents. Therefore, residents of high poverty neighborhoods may be at higher risk for homicide in part because of the relatively higher concentration of off-premise alcohol sales outlets in their neighborhoods. There is also evidence that design of physical structures, as well as lighting and landscaping, may affect the likelihood that a crime could occur in a particular location (see Section 3.3).

Given the public health importance of homicide in Baltimore and the ability of zoning laws to regulate environment features that may influence homicide, examining the impact of the built environment on crime was a focus for the TransForm Baltimore HIA literature review and impact assessment. In particular, the assessment phase of this HIA examined the potential of the draft new code to enable changes in the distribution off-premise alcohol sales outlets and design features throughout the City.

### Obesity and Obesity-Related Illnesses

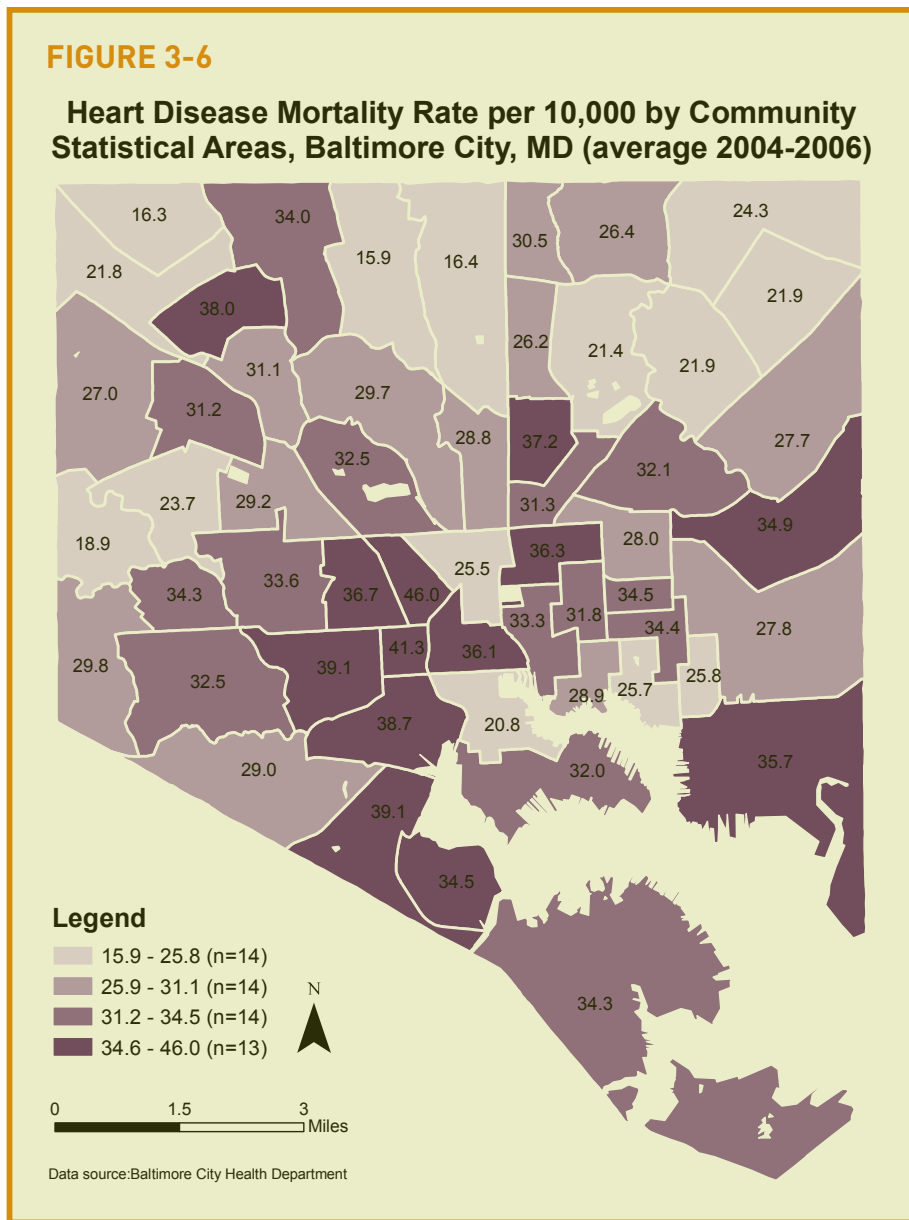
Obesity rates among children and adults in the U.S. have risen substantially in recent decades <sup>40-45</sup>. The epidemic disproportionately affects racial/ethnic minority children <sup>43</sup>, increasing their risk for adverse health conditions including type 2 diabetes and heart disease <sup>46-49</sup>. Not only has obesity prevalence among children increased exponentially the past three decades, but work by Lee and colleagues suggests that children are spending more of their childhood and adulthood overweight or obese than they have in past decades, which has negative implications for their health in adulthood <sup>50</sup>. Furthermore, work by Baker and colleagues provides strong evidence that obesity in childhood is associated with heart disease in adulthood <sup>46</sup>. Overweight and obesity in adulthood has also been associated with increased risk of premature death <sup>51,52</sup>.

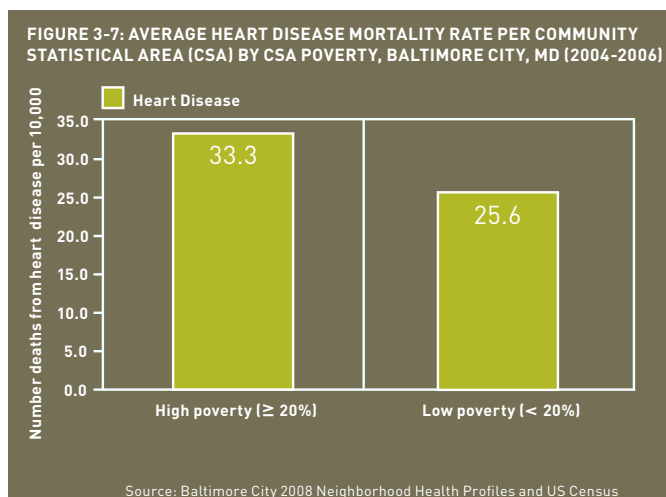
According to the Behavioral Risk Factor Surveillance System, in 2007, 35% of adults in Baltimore were obese, and another 33% were overweight <sup>38</sup>. In comparison, 26% of Maryland residents were classified as obese in 2007 <sup>38</sup>. According to Youth Risk Behavioral Risk Factor Survey, it is estimated that 18.5% of Baltimore City high school students are obese, which is 40% higher than the state of Maryland as a whole <sup>38</sup>. Heart disease is the leading killer in Baltimore City, and accounts for more than 20% of excess deaths in Baltimore compared to Maryland (see Table 3-1). As shown in Figure 3-6, certain neighborhoods experience higher rates of heart disease mortality than others. In particular the southwest,



northwest, and eastern neighborhoods of Baltimore City have higher rates. Furthermore, as shown in Figure 3-7, heart disease mortality rates are 30% higher for high poverty neighborhoods compared to low poverty neighborhoods in Baltimore (33.3 vs. 25.6 deaths per 10,000 per community statistical area per year). This suggests a significant relationship between cardiovascular disease mortality and neighborhood location and poverty levels.

There is growing research suggesting that neighborhood environments affect residents' risk for obesity and related illnesses such as heart disease and diabetes (See Section 3.3). For instance, zoning can influence the proximity between residences and other uses and therefore the likelihood that individuals may walk or bike during the course of their days. In addition, zoning can influence the availability of different types of food establishments and thereby influence diet.





### Physical Activity and Pedestrian Safety

Physical activity is an important determinant of obesity. One of the reasons why Baltimore has high rates of obesity and obesity-related diseases may be that rates of physical activity in Baltimore are low. In 2007, only a third of residents reported engaging in recommended amounts of physical activity, and a fifth reported engaging in no activity at all<sup>53</sup>. Low activity levels in Baltimore may be due to the barriers to safe pedestrian activity that many residents experience. For example, in many neighborhoods of the city, residents may be reluctant to walk to run errands or go to work or school because of safety considerations, both from neighborhood violence and from traffic. On average there were 2.5 pedestrian traffic related injury deaths per 100,000 children in 2002-2006<sup>54</sup>, which is four times higher than the national death rate in the U.S. in 2006 (0.6 deaths per 100,000 children 15 and younger)<sup>55</sup>. In addition to fatalities, rates of pedestrian injuries in Baltimore are significantly higher than the national average. From 2004 to 2006, there were an average of 111 injuries per 100,000 population per year (720 pedestrian injuries each year)<sup>56</sup>. This is more than five times higher than the national rate in 2006, which was 20 injuries per 100,000 population<sup>55</sup>. Given the potential role that zoning plays in shaping pedestrian environments in Baltimore, this HIA focused in part on identifying how TransForm Baltimore could contribute to reducing pedestrian injuries and fatalities.

### Diet and Nutrition

Another factor that may contribute to excess deaths from heart disease in Baltimore, and disparities in obesity and related illnesses (e.g. heart disease) is the barriers residents face to accessing healthy food. In 2007, 43% of residents reported eating fewer than 3 servings of fruits and vegetables per day, up from 28% ten years earlier<sup>53</sup>. Similarly, in 2007, less than a quarter of high school students ate five or more servings of fruits and/or vegetables per day (the recommended amount)<sup>53</sup>. One factor contributing to unhealthy diets in Baltimore may be that some neighborhoods in the City are ‘food deserts’, locations where there is a lack of access to healthy food<sup>18</sup>.

Zoning has the potential to affect several built environment factors that may relate to obesity, obesity-related illnesses, physical activity and pedestrian safety, and diet and nutrition by shaping proximity of residences and commercial uses, opportunities for walking and physical activity, and access to healthy foods (See Section 3.3). Therefore, given connections between poverty and obesity-related illnesses among Baltimoreans and the ability of zoning laws to regulate obesity-related neighborhood conditions such as access to healthy food and opportunities for physical activity; examining the impact of the built environment on physical activity, diet and nutrition, obesity, and obesity-related illnesses was an important focus area for the TransForm Baltimore HIA literature review and impact assessment. In particular, the assessment phase of this HIA examined the potential of the draft new code to enable changes local mixed use and access to healthy foods throughout the City.



- 4.1 In-Depth Interviews and Meeting Observations
- 4.2 Literature Review
- 4.3 Zoning Code Analysis
- 4.4 Impact Assessment

We conducted a mixed methods analysis to evaluate the potential for the zoning code rewrite to affect violent crime, obesity and obesity-related illnesses, physical activity and pedestrian injuries, and diet and nutrition.

**Our analysis was composed of four components:**

1. Review of zoning regulations in Baltimore and the anticipated content of the TransForm Baltimore draft new code prior to its release, and in-depth interviews and meeting observations
2. A literature review of the relationship of zoning to the health outcomes and behaviors of interest (violent crime, obesity and obesity-related illnesses, physical activity and pedestrian injuries, diet and nutrition)
3. Identification of proposed changes to built environment factors in the new zoning code based on information in the draft new code
4. Estimates of the percentage of the city population likely to be exposed to changes in the built environment through zoning code changes based on the draft new code and a quantitative impact assessment

The following sections describe the methods used for each of these phases.

#### 4.1 IN-DEPTH INTERVIEWS AND MEETING OBSERVATIONS

The primary aims of our interview process were: **1)** to gather information about aspects of the code that were being considered for change and that would be relevant to health prior to the release of the draft new code, **2)** to determine where these changes might occur, **3)** to better understand the process of zoning regulation in Baltimore and **4)** to understand the possible implications of zoning code changes on the built environment in Baltimore.

Interview participants were identified from among those professionals with current involvement in the code (such as the planners, consultants and lawyers charged with drafting the code), those who would likely have a future role in approving the code (City Council), those who would be charged with implementing and enforcing the code (Department of Housing and Community Development and the Office of the Zoning Administrator), and those other stakeholders who could provide perspectives on the impacts of the code (developers, citizens' planning groups, Food Policy Task Force). It is important to note that this interview process began in the fall of 2009. As the draft was not released until late spring of 2010, there was limited public discussion of the draft new code content, and many scoping interviews took place prior to release of the draft new code.

Transcripts were read by the HIA team and key themes were highlighted. A detailed analysis identified content based on the goals stated above and themes (such as "creating healthy neighborhoods") that emerged. The interview findings (summarized in Section 5.1) are the result of both the detailed analysis and consensus on themes via discussions within the TransForm Baltimore HIA team.

All public comment meetings held June 14th – June 29th, 2010, after release of the draft new code, were attended and observed for specific content. During these meetings, notes about the content of the code, discussion of health-related concerns, and points of interest to the presenters and audience were noted. These meetings helped to highlight various stakeholder concerns and initial public reaction to the draft new code.

### 4.2 LITERATURE REVIEW

A literature review was conducted to identify relationships between zoning-related built environment features and specific health outcomes and behaviors of interest for the TransForm Baltimore HIA. The literature review focused on built environment factors, health outcomes, and health behaviors identified from scientific literature, expert opinion, interviews, meeting observations, and code analysis.

The systematic literature review focused on the following relationships:

1. Built environment features relevant to zoning (i.e. mixed use, walkability, urban form, landscaping, lighting, parking, alcohol outlets) → **Crime**
2. Built environment features relevant to zoning (i.e. mixed use, walkability, food environment, urban or community gardens) → **Obesity and Obesity related illnesses**
3. Built environment features relevant to zoning (i.e. mixed use, walkability, urban form, landscaping, lighting, parking) → **Pedestrian safety and Physical activity**
4. Built environment features relevant to zoning (i.e. food environment, urban or community gardens) → **Diet and Nutrition**

Research on the relationship of off-premise alcohol sales outlets and crime was further explored in consultation with crime experts. In addition, the relationship of farmers markets to diet and nutrition was explored further.

Searches were conducted in ISI web of knowledge, PubMed and PsychInfo using the following two combinations of search terms: **A**) (food environment OR food security OR food desert OR garden) AND (obesity OR nutrition OR obesogenic); **B**) (mixed use OR walkability OR urban form OR lighting OR landscaping) AND (physical activity OR obesity OR crime OR traffic-related injuries OR pedestrian injuries). Studies were included if they provided quantitative estimates of associations, studied associations in an urban US population, were written in English, and included a relationship between a built environment feature and a health outcome of interest. To that end, papers that considered a built environment feature as part of a larger index (e.g. crime index, walkability index) but that did not provide separate estimates for the specific zoning-related exposures were excluded as they did not allow for the assessment of the association between the feature and outcome of interest.

We focused on urban US studies to limit our review to the research most relevant to Baltimore. We systematically searched references of the articles we read for additional articles that met our inclusion criteria. Relevant details from each article were abstracted by one reviewer. We conducted a quality review of the papers based on whether they utilized an appropriate study design, whether they adequately controlled for confounding by socioeconomic status, and whether they used self-reported as opposed to externally measured variables. Studies were categorized into three quality groups (good, fair, or poor) based on these criteria. It should be noted that there is a vast and growing body of literature on the relationship between the built environment and health. Much of this literature was excluded due to the lack of direct examination of the relationships we were interested in, and/or due to not meeting our inclusion criteria.



The TransForm Baltimore HIA involved a targeted literature review evaluating specific evidence linking zoning-related built environment characteristics and a specific set of health outcomes identified as contributors to excess deaths and health disparities in Baltimore City.

The literature review was restricted to only U.S. studies relevant to urban areas or urban populations. These studies also had to examine the link between specific built environment features of interest and specific health outcomes and behaviors of interest

Because the literature review was very focused. Many studies were not included because they did not meet the selection criteria for inclusion

### 4.3 ZONING CODE ANALYSIS

The zoning code analysis was intended to identify the differences between the current code and the draft new code with respect to health-related built environment zoning features, namely mixed use, food environment, alcohol environment, pedestrian environment. The two versions of the code were assessed for their treatment of each of these topics. This assessment involved a series of steps.

**Step 1:** Reviewing of the relevant chapters of each code in which our topic of interest was contained: definitions, residential, commercial, industrial, development standards, parking, special purpose districts

**Step 2:** Identification of uses and design elements that most closely matched the built environment features of interest (e.g. Is food environment represented by a variety of types of restaurants or an overall restaurant category?)

**Step 3:** Determination of allowable uses, circumstances of allowance (by right, temporary, conditional, accessory), and the specific districts for each chapter of interest. For pedestrian environment design features, we identified districts that referenced either the pedestrian environment in general or lighting, landscaping, and first floor transparency specifically.

**Step 4:** Comparison of current and draft new code districts (i.e. residential compared to commercial and industrial for intensity/variety of use, low-density compared to higher density, and variety/intensity of use in the business districts)

**Step 5:** Comparison of uses between current and draft new code (i.e. location of changes, implications of changes in uses in new districts)

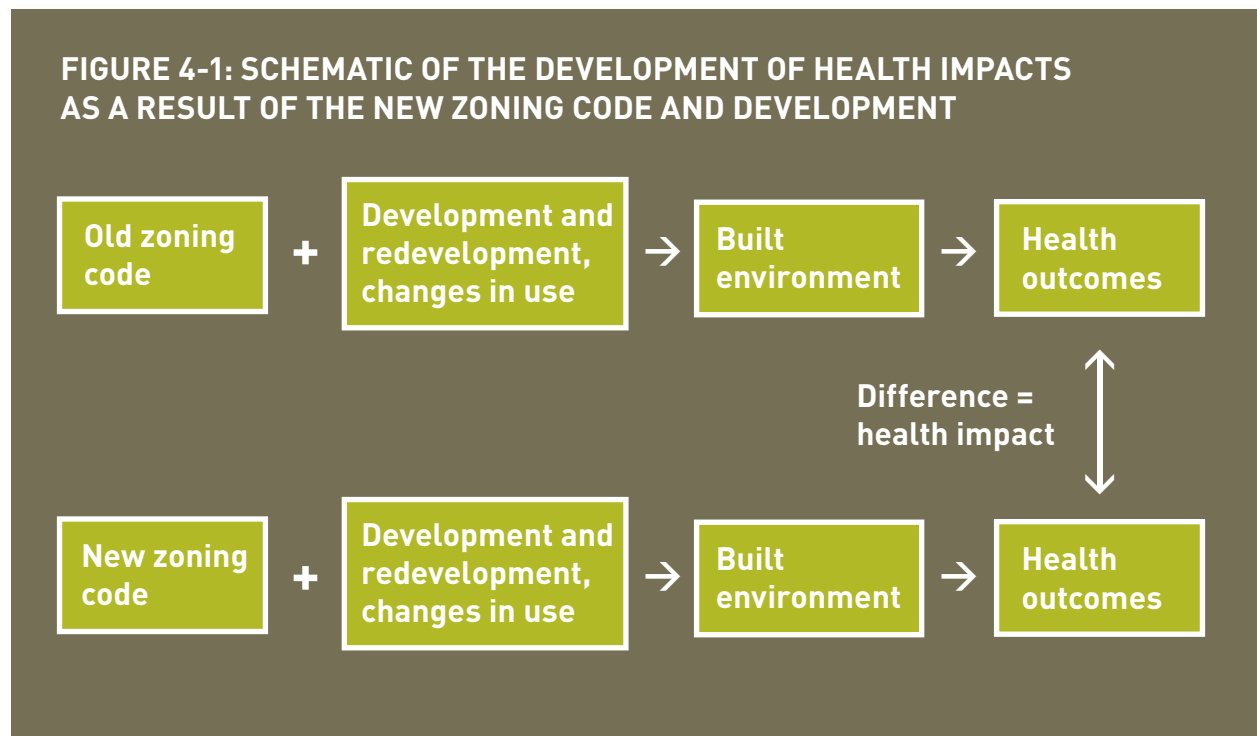
**Step 6:** Evaluation of implications of changes for health and health equity (i.e. changes in opportunities for physical activity, access to diverse food environments, and access to off-premise alcohol sales outlets)

### 4.4 IMPACT ASSESSMENT

#### Rationale

A crucial element of the TransForm Baltimore HIA was to estimate the potential impact of the policy change of interest on the health outcomes of interest. We wanted to estimate the potential impacts of changes to the zoning code on our priority health outcomes. There are many steps between changes in a zoning code and potential health impacts (See Figure 4.1). Since new zoning rules would only apply to new development or redevelopment of existing sites, the new code will only have an impact when sites are developed or redeveloped, or when owners desire to use their property for a different purpose. Then, for there to be health impacts, the changes to the code need to generate a difference in how the site is developed, compared to what would have happened under the old code. The health impacts would then accrue over time as a result of changes in the built environment. Much time could elapse between when the code is passed and when health impacts could be felt, and many factors along the way could affect the size and existence of any health impacts.

**FIGURE 4-1: SCHEMATIC OF THE DEVELOPMENT OF HEALTH IMPACTS AS A RESULT OF THE NEW ZONING CODE AND DEVELOPMENT**



Our approach to quantifying the impact of the code changes was to estimate the changes in the percent of the city population that lives in zoning districts with particular characteristics, focusing on characteristics that our literature review found to be associated with our health outcomes of interest.

In order to quantify the potential affect of proposed zoning code changes on health, we first estimated the percent of Baltimore’s population that lives in zoning districts with health-related zoning features under the current code. We then estimated the percent of Baltimore’s population that would live in areas with specific health-related zoning features under the draft new code given proposed changes in the allowable uses in districts across the city. This requires that we make certain assumptions. The difference between the percentage of residents living in zoning districts with specific health-related zoning features under the current code as compared to the draft new code represents an estimate of the population affect by potential built environment changes that would be allowed if the draft new code were implemented. This percentage difference represents the possible changes that could result if development where to occur and property owners chose to apply for the allowed use of interest.

## Assumptions

Our analysis focused on the zoning features that we identified as being related to the health outcomes and behaviors examined through our literature review: mixed use, transit oriented development (TOD), pedestrian oriented design, lighting, landscaping, off- and on-premise alcohol establishments, supermarkets and grocery stores, corner stores, community gardens, urban gardens, farmer's markets, fast food restaurants, and carry out establishments. We identified the districts that allow the specific health-related zoning features in both the current code and the draft new code by analyzing the existing and draft new code documents and identifying which district categories allow (permitted by right or conditional) land uses of interest (see Section 4.3). We did not distinguish between by right and conditional uses for ease of analysis, although we do recognize that these two processes are different. In some cases, the codes had clearly defined use categories that matched the built environment characteristics of interest, in other cases we had to find the best match.

### The best matches were:

- Mixed use in residential districts was defined as allowing commercial uses. Conversely, mixed use in commercial districts was defined as allowing residences. Total mixed use combined both of these two mixed use district categories.
- Transit oriented environment was defined as the two new TOD district categories in the draft new code. Since there was no equivalent in the current code, we did not calculate a TOD percentage for the current code.
- Districts allowing off-premise alcohol sales outlets were defined as those allowing liquor stores in the current code. In the draft new code we defined districts that allowed off-premise alcohol sales outlets as districts that allow retail-alcohol uses.
- On-premise alcohol establishments include restaurants, taverns, and cocktail lounges under the current code, and restaurants and neighborhood commercial establishments under the draft new code (since neighborhood commercial establishments can include restaurants).
- A district category was considered to be pedestrian oriented if its definition, description, or standards referred to pedestrian-friendly features and pedestrian scale, or if they referred to first-floor transparency. For pedestrian oriented design, we focused just on non-residential districts since residential districts are usually pedestrian oriented on their own.
- A district was considered to focus on lighting and landscaping if those elements were mentioned as part of the district category's description or design standards.
- Supermarkets and grocery stores are defined as a specific use category in the current code. In the draft new code districts that allow supermarkets and grocery stores were defined as districts that allow retail (both alcohol and no alcohol).
- Community gardens, urban gardens, and farmers markets had no equivalent use categories under the current code, therefore we did not calculate percentages for the old code for these categories. For the draft new code, we used these exact use categories since they were created in the draft new code.
- Districts that allow convenience or corner stores were defined as districts allowing retail food shops under the current code, and neighborhood commercial establishments under the draft new code.
- Districts that allow fast food were defined as districts allowing restaurants or drive-in restaurants under the current code, and allowing restaurants-standard or drive through facilities under the draft new code.
- Districts that allow carry out were defined as districts allowing carry out under the current code, and retail without alcohol under the draft new code.

To estimate the percent of the population living in particular districts, we used census block group (CBG) population estimates. Using a geographic information software (ArcGIS), we identified what fraction of area for given CBG was within a given zoning district. We then attributed that fraction of the CBG's population to the district, under the assumption that the CBG's population is uniformly distributed in space. We acknowledge that this produces only an estimate of the population in each district, not an exact number.

To estimate the percent of the population living in particular districts under the draft new code, we assumed that district boundaries would not change, as we did not have any information at our disposal about if and how such boundaries might shift. We were also unable to take into account the new rowhouse mixed use overlay because we had very little information about where it might be applied. We assumed that the new transit oriented development (TOD) districts would be applied around all the existing metro, light-rail and Marc stops in the city and around the future RedLine stops. We estimated the population in the new TOD districts by assuming that the new TOD districts would be applied in a ¼ of a mile buffer from the transit stop locations.

Given the significant association between worse health outcomes and living in high poverty neighborhoods in Baltimore City (see Section 3.1) and the evidence that the built environment differs in high poverty versus low poverty neighborhoods<sup>18,39</sup>, we evaluated whether the potential impacts of the draft new code on the built environment differed for high poverty versus low poverty neighborhoods.

We defined high poverty neighborhoods as census block groups (CBGs) with 20% or more of their population living below the poverty line according to the 2000 US Census. We defined low poverty neighborhoods as CBGs with less than 20% of their population living below the poverty line. This definition is consistent with the approach taken in other research studies<sup>57,58</sup>. Census block groups were split into sub-parcels along boundary lines of zoning districts. Each sub-parcel was assigned the CBG level value for poverty from the CBG within which it fell. These sub-parcels were then treated as the units of analysis. Using this definition, approximately half of City residents live in high poverty neighborhoods and half live in low poverty neighborhoods.



## **5.1 Summary of Stakeholder Interviews and Meeting Observations**

- 5.1.1 Stakeholder Interviews
- 5.1.2 Observations from Public Meetings

## **5.2 Estimated Health Impacts on Crime**

- 5.2.1 Off-Premise Alcohol Sales Outlets
- 5.2.2 Lighting and Landscaping Requirements for Crime Prevention Through Environmental Design (CPTED)

## **5.3 Estimated Health Impacts on Pedestrian Safety, Physical Activity, Obesity and Obesity-Related Illnesses**

- 5.3.1 Pedestrian Oriented Design
- 5.3.2 Mixed Use
- 5.3.3 Transit Oriented Development

## **5.4 Estimated Health Impacts on Diet and Nutrition, Obesity and Obesity-Related Illnesses**



We conducted a multi-stage impact assessment to evaluate the potential for the draft new code to affect the health of Baltimore City residents with specific emphasis on health outcomes related to violent crime, obesity and obesity-related illnesses, physical activity and pedestrian injuries, diet and nutrition. While we acknowledge that the draft new code is likely to have implications for many other health-related outcomes including air and water quality, we limited the scope of our analysis based on the rationale that these outcomes are particularly salient to the health of Baltimore City residents, some of which are current sources of excess deaths in Baltimore and health disparities across the City.

We conducted in-depth interviews with decision-makers and stakeholders, a review of the literature on the built environment and health relationships of interest, an analysis of the current zoning code and the draft new code, and a quantitative analysis of the draft new code's potential impact on the built environment. Tables 5-1 and 5-2 summarize the results of the literature review. Table 5-3 summarizes the results of the code analysis. The impact assessment (Table 5-4) pays particular attention to how the draft new code might affect residents in high poverty versus low poverty neighborhoods differently.

In addition to supporting aspects of the draft new code that are likely to have positive health implications, we recommend revisions intended to improve the health promoting potential of the code and/or mitigate potential negative health consequences. The sources supporting each recommendation are listed in detail in Table 6-1.

The findings are a summary of a multi-stage impact assessment to evaluate the potential for the draft new code to affect the health of Baltimore City residents.

## 5.1 SUMMARY OF STAKEHOLDER INTERVIEWS AND MEETING OBSERVATIONS

### 5.1.1 STAKEHOLDER INTERVIEWS

#### Topic: Anticipated land use changes and location of change

One of the major areas of interest for the HIA was understanding both what new content the code would include and where changes would occur on the ground. Based on our interviews, the major changes of interest for the HIA included the following topics:

- Expanding mixed use areas
- Fostering Transit Oriented Development (TOD)
- Allowing community gardens, urban agriculture, and farmers markets throughout the City
- Updating the landscaping manual
- Creating pedestrian friendly commercial areas

Identifying which aspects of the city were likely to change and what impacts any changes might have was challenging. Several interview participants stated that "85-90% of the City would not change" and that the areas that were likely to change were identified in the 2006 Comprehensive Master Plan, such as Park Heights, State Center, vacant industrial areas, Comprehensive Plan Designated Growth Sites, West Baltimore MARC, Downtown, and East Baltimore Development Inc. (EBDI). The details of which areas would receive new zoning change are to be determined during the mapping phase of the recode process. As of this writing, the mapping process is slated to be completed by the end of 2010.

### Topic: Links between zoning and health and health topics of interest

Some individuals we interviewed were quickly able to connect the ways a zoning code might impact human health – such as in creating more walkable neighborhoods. The following highlights the main points from these conversations;

- Links between zoning and health are often difficult to immediately establish
- People are used to talking about zoning only in terms of physical arrangement of buildings, not in terms of human or social impacts
- There is interest in how the rewrite can promote healthy communities
- Addressing health via zoning is in line with Comprehensive Plan

During these discussions, the following topics of interest emerged: healthy food access/increasing food choice, walkability, promoting transit/reducing parking, crime, obesity, and health disparities.

*“there are public health issues that you deal with in doing the zoning code. But they don’t, sort of, leap off the page and hit me in the face as the first issues that I would think of.” – Baltimore City Official*

*“If it’s a broader discussion about building neighborhoods that encourage people to walk, that encourage access to a broad array of amenities and services within the neighborhood... then zoning’s pretty important.” – Developer*

### Zoning’s ability to influence health

One of the themes that emerged from the interviews is the extent to which zoning alone could influence health. The following summarizes the key issues raised:

- View that many factors other than zoning contribute to these issues
- Changes in zoning may not lead to changes in the physical environment
- No agreement on what features make a use “healthy”
- Ability for zoning to influence health depends on the new zoning maps
- Social issues, such as resistance to increased density, may influence content of the rewrite
- Addressing public health issues not initially part of the rewrite process

### Strategies for making healthier neighborhoods

Talking about zoning and health in terms of healthy neighborhoods helped bring forth ideas for what should be emphasized during the TransForm Baltimore process. The ideas include:

- Use evidence about what creates a healthy neighborhood to inform zoning rewrite
- Need for a database that lets potential retailers know what resources are available and what is required by other City codes
- New code should help accommodate people with a variety of abilities and needs
- Need tools in zoning to address vacant lots and buildings on row house blocks
- It is challenging to address severely distressed neighborhoods via zoning
- Enforcement of the code is important

*“I really think if we had a way to engage people in this conversation about what does a healthy neighborhood look like, I think you would get more people talking about it [zoning] because so much of this is all policy and theory, and a lot of people don’t feel like it matters to them in their day to day.” – City Council Member*

### 5.1.2 OBSERVATIONS FROM PUBLIC MEETINGS

In June 2010, the Baltimore Department of Planning held five public meetings across the city to present the draft new code, review major portions, and receive initial audience feedback. Members from the HIA team attended each of these meetings to observe how the draft new code was presented, note how issues relevant to the HIA were discussed, and to understand various public viewpoints about the code, particularly those related to the HIA.

The Baltimore Sun published “Zoning for Zucchini” on the day of the first meeting (June 14, 2010) – a front page piece about the new zoning code and the role it would play in potentially promoting access to healthy food. This article provided a vehicle to increase visibility of the connections between zoning and health.

Thomas Stosur, the Planning Director, began the second meeting with the following plug, “Who saw Zoning for Zucchini in the Sun yesterday? It talks about public health benefits and how the zoning code can reinforce that. Most people don’t think of this link.” While the first two meetings prominently referenced the article, the subsequent three meetings did not mention it and generally gave less attention to health and zoning.

For each meeting, the initial presentations from Planning lasted approximately 45 minutes and covered many aspects of the draft new code. Each meeting emphasized the role of transit oriented development and the need to make Baltimore more pedestrian friendly. Eliminating surface parking downtown and creating pedestrian corridors were highlighted as two main ways of achieving these goals. The new mixed use overlay zone and neighborhood commercial establishment use were also mentioned. Finally urban agriculture, farmers markets and community gardens were briefly discussed in each meeting as being an important new aspect of the code.

Audience questions and comments covered a wide variety of topics, most outside of the scope of the HIA. Several comments, however, were relevant for the project. The discussion of mixed use, particularly the neighborhood commercial establishment, received some attention from audience members. Some expressed concern about whether commercial uses were compatible with their neighborhood and others about the impacts corner stores might have on neighboring homes. Most meetings had questions about community gardens, and many were curious about when maps would be released and how these changes would affect their communities. During the first three meetings, an audience member asked about whether the Planning Department was conducting a health impact assessment of the zoning code and whether the Planning Department was following guidelines for Health in All Policies. One resident was concerned about a liquor store in her neighborhood and what zoning might be able to do to remedy the issue.

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Other than the Zoning for Zucchini connection, perhaps the most notable public link that was made between TransForm Baltimore and health was in response to a question about the big picture of the rewrite. Laurie Feinberg, the manager of TransForm Baltimore, responded this way:

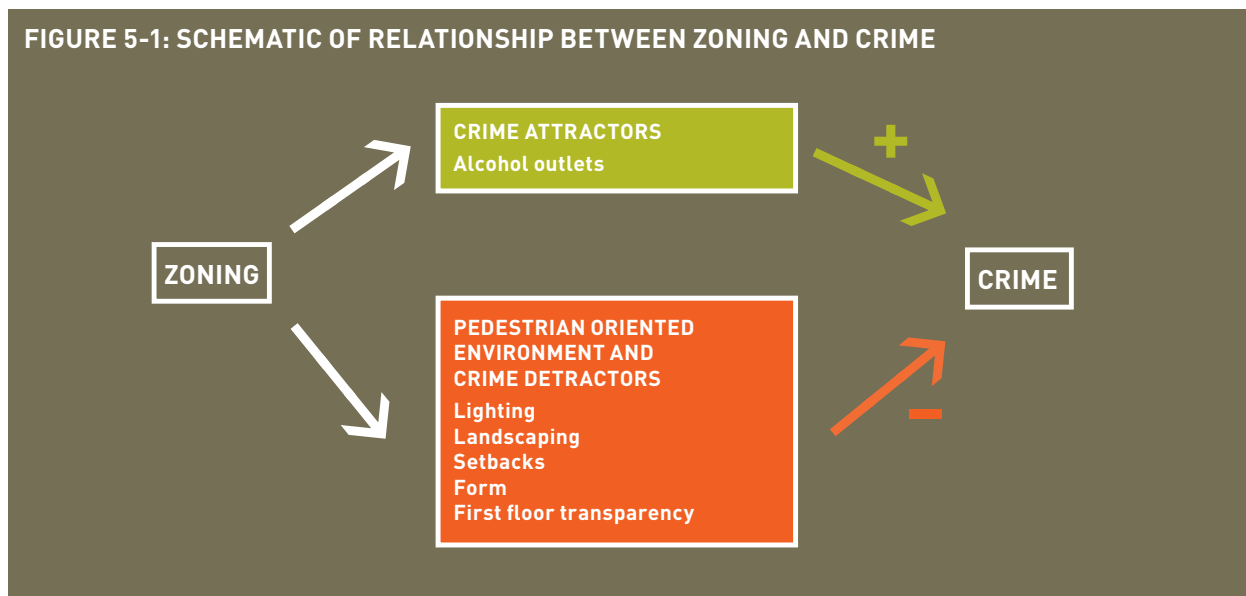
*“We’re looking at encouraging mixed use, which we think will lead to more walkable neighborhoods, which leads to better air and water quality. The big picture is health. Being closer to jobs may also reduce stress and driving time, which are good for health. In addition we want to promote job growth in line with the Comp Plan (live, earn, play, learn). Health is part of the overreaching vision for the city. Zoning code revision is an incremental change intended to move towards this broader goal. Landscaping can also lead to improved air quality.”*

In summary, community gardens, food access, walkability, urban agriculture, transit oriented development, health impact assessment, mixed use and alcohol, were all mentioned at least once. Discussions of crime, pedestrian safety, and obesity were not a salient aspect of any of the meetings.

### 5.2 ESTIMATED HEALTH IMPACTS ON CRIME

Based on our initial review of the literature, we hypothesized two primary pathways through which violent crime could be affected by zoning (Figure 5-1). The first is through mixed use increasing the density of uses that serve as crime attractors or generators by increasing contacts between potential offenders and victims and/or decreasing residents’ ability to maintain informal social control<sup>59</sup>. The second is through design features either limiting or enabling criminal activity, by enabling or limiting natural surveillance<sup>60</sup>. We evaluated these pathways through our literature review, code analysis and built environment impact assessment.

FIGURE 5-1: SCHEMATIC OF RELATIONSHIP BETWEEN ZONING AND CRIME



### 5.2.1 OFF-PREMISE ALCOHOL SALES OUTLETS

**Literature summary:** We identified three research articles linking built environment features and crime that met our inclusion criteria (See Table 5-1). All three were rated as “Good” based on our quality review. One study examined the association of mixed use in general with neighborhood crime while the other two examined the association of alcohol outlets and crime.

A study by Stucky and colleagues examined the association between mixed use and violent crime<sup>59</sup> and found that areas with higher percentages of commercial land use have higher violent crime counts than those areas with lower percentages of commercial uses. They also found that industrial uses were associated with lower crime rates. They did not examine specific types of commercial or industrial uses. Finally, they found that the association of commercial uses with violent crime was weakest for high poverty neighborhoods where homicide rates in particular were high regardless of the percent of commercial use.

The other two studies examined the association of alcohol outlets, a specific type of commercial use, with violent crime<sup>31,61</sup>. They examined the association of both on-premise and off-premise alcohol sales outlets with crime separately. A study by Gruenewald and colleagues conducted in California was the first study to look at longitudinal relationships between alcohol outlets and violence<sup>31</sup>. Analyzing changes in California zip codes over 6 years, this study found that the density of both on-premise alcohol sales outlets (such as bars) and off-premise alcohol sales outlets (such as liquor stores) were associated with increases in violence within the zipcode area, as measured by hospital discharges for assault. In this study, off-premise alcohol sales outlets and on-premise alcohol sales outlets were associated with a 1.67% increase and a 2.06% increase in violence rates respectively. They also found an increase of one violent assault resulting in a hospital stay for every 6 alcohol outlets in a neighborhood<sup>62</sup>.

Another study, conducted in Philadelphia, also demonstrated an association between off-premise alcohol sales outlets and increased risk of violent injury<sup>61</sup>. While this study did not demonstrate an increased risk of being shot in an assault based on being in an area of high on-premise alcohol sales outlet availability or high alcohol availability from all types; they did show an increased risk of being shot in an assault based on being in an area of high off-premise alcohol sales outlet availability. In particular, the risk of being shot in an assault doubled in areas of high versus low off-premise alcohol sales outlet availability; and the risk of being fatally shot was 4.19 times higher. They further demonstrated that the association of high off-premise alcohol sales outlet availability with increased risk of gun assault is particularly significant for nondrinkers in such areas. While the risk of gun assault for heavy drinkers was similar in areas of high and low off-premise alcohol sales outlets availability, the risk of gun assault for nondrinkers was 2.29 times higher in areas of high versus low off-premise alcohol outlet availability<sup>61</sup>. Taken together the studies identified through the literature review suggest that increased mixed use can be associated with increased crime, possibly by increasing the density of off-premise alcohol sales outlets. In particular, two of the studies included in the literature review provide strong evidence that higher proximity to and density of off-premise alcohol sales outlets is associated with increased risk of violent crime<sup>61,62</sup>. These results are consistent with a recent review of the literature published in 2009, as well as other earlier reviews<sup>63-65</sup>.

**Code analysis:** The following summarizes the ways in which the draft new code differs from the existing zoning code in terms of which district categories allow alcohol sales in general, and off-premise alcohol sales outlets in particular, and under what conditions (see Table 5-3 for details):

- **In the current zoning code:** In terms of general alcohol availability, alcohol is available from restaurants in B2-B5 on a by-right basis. In B1 districts, restaurants may operate on a conditional basis and some may serve alcohol. Cocktail lounges are an accessory use in R8-R10 and in OR districts. With respect to off-premise alcohol sales outlets, taverns and liquor stores are also permitted by right in districts B2-B5.

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- **In the draft new code:** The opportunity to develop new alcohol-related commercial uses is expanded in the draft new code. Restaurants are now permitted by right in B1 in addition to B2-B5. In the newly created mixed use overlay districts, restaurants serving alcohol could also be allowed in R5-R10. With respect to off-premise alcohol sales outlets, they will continue to be allowed in B2-B5 districts and now will also be allowed by right in Bioscience, I-MU, TOD1 and TOD2 and conditionally in BI, OIP and I-1.

**Impact Assessment:** The following summarizes our estimates of the potential population-level built environment impact of the draft new code with respect to alcohol sales outlets (see Table 5-4 for more details):

1. We estimate that the percentage of Baltimore residents living in neighborhoods that allow off-premise alcohol sales outlets (such as liquor stores), by right or conditionally, would triple from 9% to 27%. Under the draft new code residents of high poverty communities would be 50% more likely to live in a neighborhood that allows off-premise alcohol sales outlets than residents of low poverty communities (33% vs. 20% respectively).
2. We estimate that the percentage of residents living in neighborhoods that allow on-premise alcohol sales outlets, including bars, taverns, or restaurants (if they have the appropriate license) by right or conditionally, would increase dramatically, from 34% to 81%. Residents of high poverty communities would be somewhat more likely than residents of low poverty communities to live in neighborhoods that allow on premise alcohol sales outlets under the draft new code (94% vs. 70% respectively).

### RECOMMENDATIONS: OFF-PREMISE ALCOHOL SALES OUTLETS

**Summary and Rationale:** Our literature review found evidence that mixed use is associated with increased crime, possibly through alcohol outlets. Given the potential positive impact of increased mixed use on healthy eating, physical activity, obesity and obesity-related diseases (see Section 5.3.2), we do not think the association between mixed use and crime suggests that mixed use should be limited. Rather, we believe that the negative association between mixed use and crime may be due to specific uses, and our recommendations focus on mitigating the possible negative impacts of those specific uses. Evidence was most consistent for off-premise alcohol sales outlets being associated with increased violent crime; therefore this is the area on which we have focused our recommendations.

Our results suggest the need to be particularly thoughtful about what zoning can do to regulate the distribution of off-premise alcohol sales outlets so that all of Baltimore City's neighborhoods have the potential to be healthy communities. Furthermore, given evidence that liquor stores are concentrated in high poverty neighborhoods in Baltimore <sup>39</sup>, it is also important that the draft new code ensure that potentially crime-attracting commercial uses such as off-premise alcohol sales outlets are not further concentrated in high poverty areas. Because the proposed new TOD and I-MU districts would allow alcohol retail by right and because many such zones may be located near high poverty neighborhoods; we recommend a particular focus on these new districts. However, our recommendations apply to all areas of the city where new alcohol establishments may be developed.

Recommendations related to off-premise alcohol sales outlets are listed below (see Table 6-1 for sources used to support each recommendation). In addition to emphasizing areas where the draft new code appears to have positive health implications, we recommend revisions to the code that would have important consequences for improving the health of city residents, particularly with respect to their risk of experiencing violent crime.

**Supported changes:** We support 1) the expansion of mixed use areas and 2) the creation of TOD zones that are outlined in the draft new code. As described above, we do believe there is a need to pay attention to the types of neighborhood commercial establishments that exist over time in less affluent Baltimore City neighborhoods where certain types of mixed use and TOD zones are likely to exist.



**Recommended revisions:** Based on the results of our impact assessment, we recommend that measures be taken within the proposed zoning code to prevent concentration of off-premise alcohol sales outlets allowed by right, particularly in the new TOD and I-MU zones. There are several strategies that would achieve this using some form of spacing or dispersal zoning. Therefore the TransForm Baltimore HIA Team recommends:

- Use a dispersal model to prevent concentration of off premise alcohol sales outlets in districts that currently allow retail alcohol sales by right, particularly in TOD and I-MU. See Proposed Ordinance in Appendix 8.1 (Sample Language). This goal can be accomplished several different ways:
  - Via making such off premise outlets conditional as opposed to permitted by right
  - Via a separate conditional use process that considers such relevant issues as the pedestrian environment, nearby sensitive uses, crime, loitering, and traffic or away from uses such as schools, places of worship, parks. See Sample Language Appendix, Section 8.1 for details on this unique conditional use process.
  - Via a set of dispersal/spacing standards that apply to off-premise alcohol retail sales
  - Via another arrangement the Planning Department deems feasible
- There are many additional opportunities outside of the scope of this rewrite that could help improve issues around existing off-premise alcohol sales outlets in Baltimore. Such strategies may involve a zoning component but would require a larger effort and interagency collaboration. See language about a “deemed approved” process that has helped address existing off-premise alcohol sales outlets elsewhere. See Appendix 8.2 (Healthy Comprehensive Planning Strategies) for details.

### 5.2.2 LIGHTING AND LANDSCAPING REQUIREMENTS FOR CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

**Literature summary:** There is a body of scientific work in the criminology literature that refers to the concept of Crime Prevention through Environmental Design (CPTED). Through landscaping and other lighting and design measures, CPTED principles seek to maximize the visibility of people’s activity and clearly distinguish between public and private space<sup>24,60</sup>. Our literature search on the association of CPTED-related built environment factors influenced by zoning (e.g. lighting and landscaping) with crime (Table 5-1) yielded one study that was relevant to Baltimore City based on our inclusion criteria (see Section 4.2). This study was rated as “Good” based on the quality review.

The study by Carter and colleagues<sup>24</sup> examined the association of a comprehensive CPTED approach related to adoption of a zoning ordinance in Sarasota, FL. The ordinance required that all new developments in a certain zone be reviewed for concordance with CPTED principles and that recommendations be made to property owners and developers on implementing CPTED principles in their designs. They found a decrease in police calls for service in the area of the city where lighting and landscaping designs in accordance with CPTED principles were encouraged through the zoning code. While there were no significant differences in police reported crimes in the two areas, there did appear to be less of an increase of narcotics crimes in the areas where CPTED principles were implemented in designs compared to the rest of the city.

**Code analysis:** The following summarizes the ways in which the draft new code differs from the existing zoning code in terms of lighting and landscaping requirements (see Table 5-3 for details):

- **In the current zoning code:** The old version of the code pays minimal attention to lighting and landscaping. Lighting is discussed in terms of maximums to reduce glare and interference. Such standards appear in B1-B5, OR and M1 and in Parking. Landscaping is discussed in B3, B5, M2, and PUD.

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- **In the draft new code:** Lighting standards are discussed in the context of Title 15: Site Design Standards. Reference to this title appears in B1-B5, OR, BI, OIP, I-MU, Bioscience, TOD1 and TOD2. The lighting standards are still discussed in terms of maximums. The role of landscaping has the potential to be greatly increased. Currently, the following sections refer to meeting standards set forth in the yet-to-be-written Baltimore City Landscape Manual: R1-R10, OR, B3, B4, BI, OIP, Bioscience, I-1, TOD1, TOD2 and Parking.

**Impact Assessment:** The following summarizes our estimates of the potential population-level built environment impact of the draft new code with respect to lighting and landscaping (see Table 5-4 for more details):

1. We estimate that the percentage of people living in districts that make reference to lighting and/or landscaping guidelines would increase under the draft new code from 15% to 98%.
2. Under the draft new code, we estimate that nearly all residents of the city, regardless of neighborhood income, would live in districts that reference lighting and/or landscaping guidelines.

**Recommendations:** Crime Prevention through Environmental Design

**Summary and Rationale:** Our literature review identified only one study meeting our inclusion criteria that studies the relationship between CPTED principles and crime. While it is only one study, it did find an association between CPTED-based design standards and reduced crime<sup>24</sup>. Given the need for strategies to address Baltimore's high crime rates, to the extent that CPTED principles do not conflict with other goals for lighting and landscaping standards, we support their use as part of the zoning code design standards, in particular in high poverty areas where crime rates are high.

Recommendations related to CPTED are listed below. See Table 6-1 for sources used to support each recommendation.

**Supported changes:** Based on our impact assessment it is clear that the application of lighting and landscaping standards in the draft new code would likely affect more than 90% of city residents. We support the first floor transparency standards included in the draft new code.

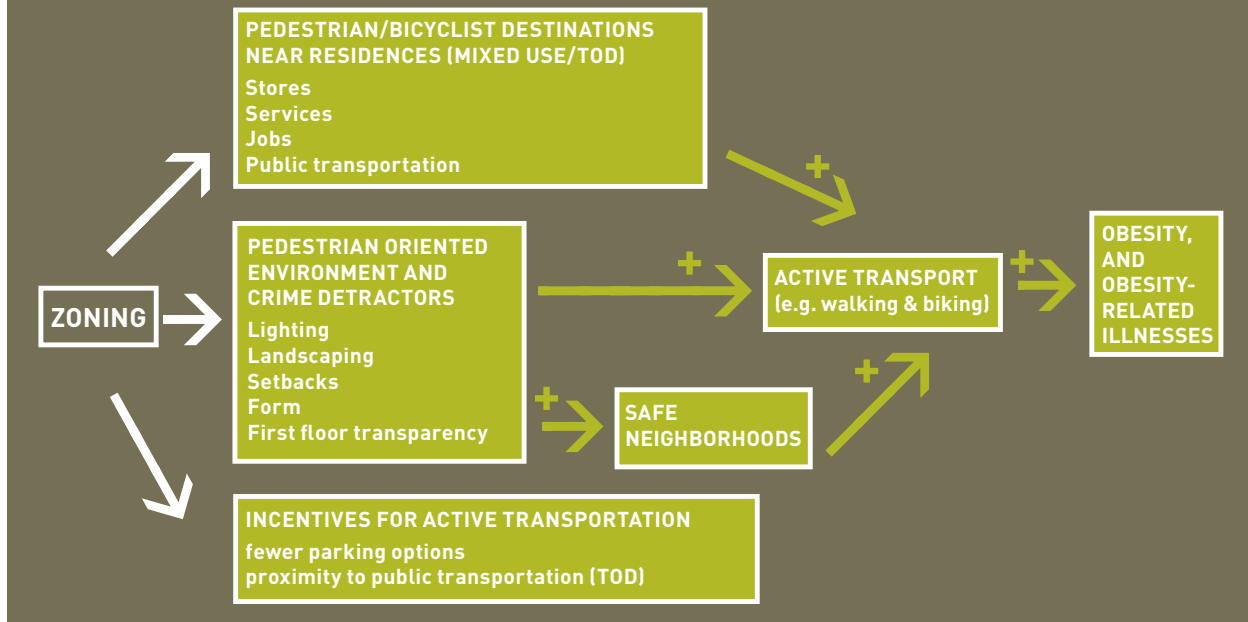
**Recommended revisions:** Based on the results of our impact assessment and literature review, we recommend that first floor transparency standards be added for B1, B2, Biosciences, OIP, and IMU districts as well. This change also has implications for pedestrian safety (see Section 5.3.1). Additionally we recommend that the new landscape ordinance include CPTED standards. We recognize that the application of landscaping standards may have other benefits apart from crime prevention, including pedestrian safety and sustainability.

### 5.3 ESTIMATED HEALTH IMPACTS ON PEDESTRIAN SAFETY, PHYSICAL ACTIVITY, OBESITY AND OBESITY-RELATED ILLNESSES

The likelihood that people will walk in their neighborhoods, and the likelihood that they might be accidentally injured when walking are potentially related to several aspects of the built environment that can be regulated through zoning. As depicted in Figure 5-2, we hypothesized that zoning may impact physical activity by shaping the following aspects of the pedestrian built environment: **1)** regulating the number and type of commercial establishments and other destinations near residential areas, **2)** regulating the presence of aesthetic and design elements (such as lighting, landscaping and first-floor transparency) that are present in a given area, and **3)** incentivizing active transport (such as walking and biking) by reducing parking requirements and/or facilitating transit oriented development.

Because physical activity plays an important role in maintaining energy balance, we were particularly interested in evaluating the scientific literature examining the association of zoning-related built environment factors with physical activity and also with obesity and obesity-related illnesses.

**FIGURE 5-2: SCHEMATIC OF RELATIONSHIP BETWEEN ZONING AND THE PEDESTRIAN ENVIRONMENT**



Similarly, pedestrian safety can be impacted by a number of built environment features including the presence of sidewalks; the number of curb cuts in sidewalks; the speed of traffic and the presence of traffic lights; and the landscaping, lighting, and aesthetic elements of the streetscape. Not all of these elements are traditionally regulated through zoning, but several of them can be. In this section we consider the evidence linking pedestrian oriented design, mixed use, and transit oriented development to pedestrian injuries, physical activity, obesity, and obesity-related illnesses.

### 5.3.1 PEDESTRIAN ORIENTED DESIGN

**Literature summary:** Based on our inclusion criteria, our literature search examining the relationship between pedestrian oriented design features likely to be regulated by zoning and pedestrian injuries yielded one methodologically strong study (“Good” quality) that was relevant to Baltimore City (see Table 5-1). This study examined the association between the number of pedestrian-scaled retail and commercial uses in a neighborhood (defined as a census block group) and the incidence of motor vehicle crashes, including crashes involving injuries and fatalities, controlling for neighborhood socio-demographics and other aspects of the built environment <sup>66</sup>. The study found that pedestrian-scaled retail was statistically significantly associated with fewer crashes overall and fewer crashes involving injuries.

**Code analysis:** The following summarizes the ways in which the draft new code differs from the existing zoning code in terms of how it addresses issues such as pedestrian scale, landscaping, lighting, first-floor transparency and other pedestrian environment design elements (see Table 5-3 for details)

- **In the current zoning code:** Creating pedestrian oriented environments is not an area of focus in the current code.
- **In the draft new code:** More overt emphasis on creating pedestrian oriented environments is part of this code. Specific sections include Open Space district, in the R5-R10 for new multifamily construction, B1, B2 and B5. For new development on designated “primary streets” (e.g. Pratt, Charles, Howard), much more attention will be given to design and to creating pedestrian oriented environments as specified in Design Standards Section 10-17. Pedestrian scale is also encouraged in TOD 1 and 2 and the Waterfront Overlay. First floor transparency standards are included for B5, TOD 1 and TOD 2.

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**Impact Assessment:** The following summarizes our estimates of the potential population-level built environment impact of the draft new code with respect to pedestrian oriented design features (see Table 5-4 for more details). We did not include residential districts in this analysis since they often have pedestrian oriented design features on their own.

1. We estimate that adoption of the draft new code would increase the percentage of city residents living in neighborhoods with zoning regulations that mention pedestrian oriented design from 1% to 24%.
2. Under the draft new code, residents of high poverty communities would be almost twice as likely to live in neighborhoods with zoning regulations that reference pedestrian oriented design compared to residents in low poverty neighborhoods (31% vs. 17%).

### RECOMMENDATIONS: PEDESTRIAN ORIENTED DESIGN

**Summary and Rationale:** Our literature review found one study that met our inclusion criteria, which examined the association between pedestrian oriented design and crashes. While that study did not specifically identify whether injuries involved pedestrians, the study did find that pedestrian oriented design was associated with fewer injury-producing crashes. This is consistent with other reviews that suggest that pedestrian-scaled environments contribute to improving pedestrian safety and increasing physical activity<sup>67-70</sup>. We therefore find that it would be desirable for the draft new code to include more widespread and consistent regulations aimed at improving the pedestrian environment. Furthermore, expanding the focus on pedestrian oriented design to include special purpose districts might further increase pedestrian safety.

Recommendations related to pedestrian oriented design are listed below. See Table 6-1 for sources used to support each recommendation.

In addition to emphasizing areas where the draft new code appears to have the potential to increase pedestrian safety, we recommend revisions that would be likely to increase the potential benefits of the draft new code for pedestrian safety.

**Supported changes:** We support the elements that exist within the draft new code to 1) create pedestrian corridors, 2) establish TOD zones, 3) establish design standards for first floor transparency, 4) reduce parking requirements and establish shared parking measures, 5) increase bicycle parking, and 6) reference landscaping requirements. We do recognize that additional streets could be considered for inclusion in pedestrian corridors and that it would be desirable to establish consistent pedestrian oriented design standards that would be required more uniformly across the city.

**Recommended revisions:** With respect to pedestrian oriented design, we believe there is room to improve the uniformity of the standards required across several zoning districts and would expect that by doing this, the potential health benefits related to pedestrian safety would increase. As such, we recommend revising the draft new code to 1) include a definition of “pedestrian oriented” and uniformly substitute this definition in instances throughout the code where specific pedestrian oriented features are identified individually, and 2) apply “pedestrian oriented” goals to OR, OIP, Bioscience, I-MU and special purpose zones given the mix of uses contained within them could easily encourage walking.

### 5.3.2 MIXED USE

**Literature summary:** Based on our inclusion criteria, our literature search examining the relationship between mixed use features likely to be regulated by zoning and physical activity and obesity yielded eight “Good” quality studies that were relevant to Baltimore City (see Table 5-1). These studies provide consistent support for an association of mixed use with: 1) increased physical activity<sup>23,71-74</sup> and 2) decreased obesity and obesity-related illnesses<sup>23,71,73,75-77</sup>. While the association of mixed use with increased physical activity and decreased obesity was consistent across studies, there is additional evidence from this literature that the link between mixed use and these health outcomes may be stronger for socioeconomically advantaged as compared to disadvantaged populations<sup>78</sup>.

Apart from the relationship of mixed use with physical activity and decreased obesity and related illnesses, mixed use may also have the potential to negatively impact health. In particular, work by Stucky and colleagues found that increased mixed use is associated with higher crime rates for all types of neighborhoods<sup>59</sup> (See Section 5.2.1). While the research identified by our systematic literature review examining the association of crime and safety to the health outcomes of interest was inconsistent (see Table 5-2 for details), we did identify several studies that showed significant associations between measures of neighborhood crime or safety and the health outcomes of interest for the HIA.

One “Fair” quality study demonstrated an association between higher perceptions of neighborhood safety and decreased obesity<sup>79</sup>. Another “Good” quality study by Scott and colleagues also demonstrated an association between higher ratings of neighborhood safety and increased physical activity<sup>80</sup>. Two “Good” quality studies showed a relationship between higher neighborhood crime and increased obesity<sup>81,82</sup> or obesity-related illnesses<sup>75</sup>. Another study showed an association between neighborhood safety and decreased obesity<sup>83</sup>. Furthermore, work by Scott and colleagues found an association between neighborhood safety and increased physical activity<sup>80</sup>.

**Code analysis:** The following summarizes the ways in which the draft new code differs from the existing zoning code in terms of which district categories allow mixed use that includes residential with commercial (see Table 5-3 for details):

- **In the current zoning code:** Mixed use was primarily accomplished through accessory uses in R8-R10, proximity to B1 and B2 districts, the OR district and PUDs which allowed for more flexible arrangements than the base zoning. Variances and nonconformities were other means of accomplishing mixed use. Various health and medical institutions were allowed as conditional in R1-R7 and by right in R8-R10, B2-B5 and M2 and M3. Mixed use is also present in B1-B5 since residential uses are permitted by right in those districts.
- **In the draft new code:** Mixed use has been greatly expanded in the draft new code. This is accomplished through the Rowhouse Mixed Use Overlay, I-MU, Bioscience, TOD 1 and 2, and BI and OIP districts. Allowable uses have been expanded in the OR and light industrial districts. Farmers markets are a temporary use, community gardens are permitted by right, and urban agriculture is a conditional use in all residential districts (including R1-R4). Neighborhood commercial establishments are now allowed as a conditional use in R5-R10. These include: art gallery, art studio, day care, office, personal services establishment, restaurant, retail goods (no alcohol sales). As part of the Rowhouse Mixed Use overlay, personal service establishments may also exist as a permitted use in R5-R10. Health and medical institutions are no longer allowed in R1-R4 (hospitals and medical institutions for care of elderly and children used to be allowed). Medical and dental clinics are allowed as part of an overlay in R5-R10. This expands use from the previous code (as it was limited there to R7- R10). Medical/dental clinics are allowed by right in B1-B3, B5, OR, BI, OIP, Bioscience, OR, and TOD1 and TOD 2, and I-MU.

**Impact Assessment:** The following summarizes our estimates of the potential population-level built environment impact of the draft new code with respect to mixed use (including TOD) (see Table 5-4 for more details):

1. We estimate that the percentage of people living in districts that allow both residential and commercial uses in the same district will nearly triple under the draft new code, increasing from 32% to 80%.
2. Under the draft new code, we estimate that the percentage of the population living in districts that allow mixed use would go from 46% to 91% in low poverty neighborhoods, and from 18% to 70% in high poverty neighborhoods.

### RECOMMENDATIONS: MIXED USE

**Summary and Rationale:** The scientific evidence is strong that mixed use is associated with increased physical activity and decreased obesity. Expansion of mixed use areas in Baltimore may therefore help facilitate active transport (e.g. walking and biking) and may have positive implications on obesity. It may also have a positive impact on availability of healthy food (see Section 5.4 for detailed analysis of the food environment). Expanded mixed use may have the unintended negative effect of increasing access to alcohol (see Section 5.2.1 for detailed analysis of off-premise alcohol sales outlets). It is notable that, other than farmers market and community gardens, provisions for any kind of mixed use in R1-R4 districts is limited. Medical/health clinics used to be allowed in R1-R4 and would not be allowed based on the draft new code. The nature of the mixed use in less affluent areas of the city remains a central concern, especially because of its implications for crime (see Section 5.2.1) and food access (see Section 5.4).

Recommendations related to mixed use are listed below. See Table 6-1 for sources used to support each recommendation.

In addition to emphasizing areas where the draft new code appears to have incorporated provisions to encourage mixed use, which research suggests can have positive health implications, we recommend revisions intended to improve the health promoting potential of the code and/or mitigate potential negative health consequences associated with mixed use.

**Supported changes:** We support the elements that exist within the draft new code to 1) expand mixed use areas and 2) establish TOD zones, where mixed use is likely to be a prominent feature. As discussed in Section 5.2.1, we recognize that mixed use is not universally health promoting and that context and types of neighborhood commercial establishments as well as their distribution and relative concentration in different neighborhoods across the city are important considerations. In particular, we would advocate for dispersal zoning to apply specifically to commercial establishments in mixed use areas that are involved in the sale of alcohol for off-premise consumption (see Section 5.2.1 above for details). Furthermore, we recommend establishing a program of incentives to bring healthy food options to currently underserved neighborhoods where such options are currently lacking (see Section 5.4).

### 5.3.3 TRANSIT ORIENTED DEVELOPMENT

**Literature summary:** Based on our inclusion criteria, our literature search examining the relationship between transit oriented development (TOD) and physical activity and obesity yielded five “Good” quality studies relevant to Baltimore City (see Table 5-1). One study found lower obesity rates among transit riders versus non-riders and additionally found that living closer to public transit rail stops was associated with lower BMI and less obesity for women<sup>84</sup>. Another study suggests that the association between TOD and BMI is stronger for more affluent populations<sup>77</sup>. Apart from its association with lower BMI, TOD has also been associated with increased physical activity. Brown and colleagues found that transit riders tend to be more physically active than nonriders<sup>85</sup>, and another study found that older adults were more physically active in areas with a higher density of transit stations<sup>73</sup>. While our literature review revealed that TOD is generally associated with positive health outcomes (i.e. decreased obesity and increased physical activity), a study by Coogan and colleagues suggests that TOD may primarily influence walking in dense areas<sup>86</sup>.

**Code analysis:** The following summarizes the ways in which the draft new code differs from the existing zoning code in terms of encouraging transit oriented development (see Table 5-3 for details).

- **In the current zoning code:** These were not formal districts in the old code. This style of development occurred through planned unit developments (PUDs) and occurred to some extent through existing base zoning (i.e. Lexington Market) and existing transit-heavy areas such as downtown.



- **In the draft new code:** Two new districts have been created to support denser, mixed use development along current and proposed transit corridors. The two new districts are TOD1 and TOD2. TOD1 districts will be applied to more “urban” areas of the city and allow greater residential density. TOD2 districts will be applied to more “suburban” areas of the city and have lower residential density requirements than TOD 1. Each will be applied in a ¼ to ½ mile radius around the transit site. Both districts allow by right a wide range of uses including residence, retail no-alcohol, retail-with alcohol, medical/dental clinics, restaurants, taverns, and personal services establishments. Conditional uses include parking lots, outdoor dining and live entertainment.

**Impact Assessment:** The following summarizes our estimates of the potential population-level built environment impact of the draft new code with respect to transit oriented development (see Table 5-4 for more details):

1. Under the draft new code we estimate that approximately 18% of Baltimore City residents would live in neighborhoods designated as TOD zones. This percentage would be approximately twice as high in high as compared to low poverty communities (23% vs. 12%).

### RECOMMENDATIONS: TRANSIT ORIENTED DEVELOPMENT

**Summary and Rationale:** We found consistent evidence that transit oriented development is associated with increased physical activity and decrease obesity. TOD zones are a key component of supporting a pedestrian-friendly environment and encouraging wider access to public transit. As with other expansions of mixed use, TODs have the potential to expand access to food, daily services and retail needs.

Allowing outdoor dining by right may help keep these locations attractive and encourage an active streetscape (see Section 5.3.1). Plans for TOD are envisioned for several growth areas that may also be experiencing various forms of distress. Expanding access to retail in these TOD zones may also expand access to unhealthy food options and increase the concentration of off-premise alcohol sales outlets (see Section 5.2.1). Applying dispersal zoning or spacing requirements in TOD zones to limit the concentration of off-premise alcohol sales outlets (see Section 5.2.1) and creating incentives for healthy food options (see Section 5.4) in TOD zones could help best advance these areas of new development as healthy, vibrant places.

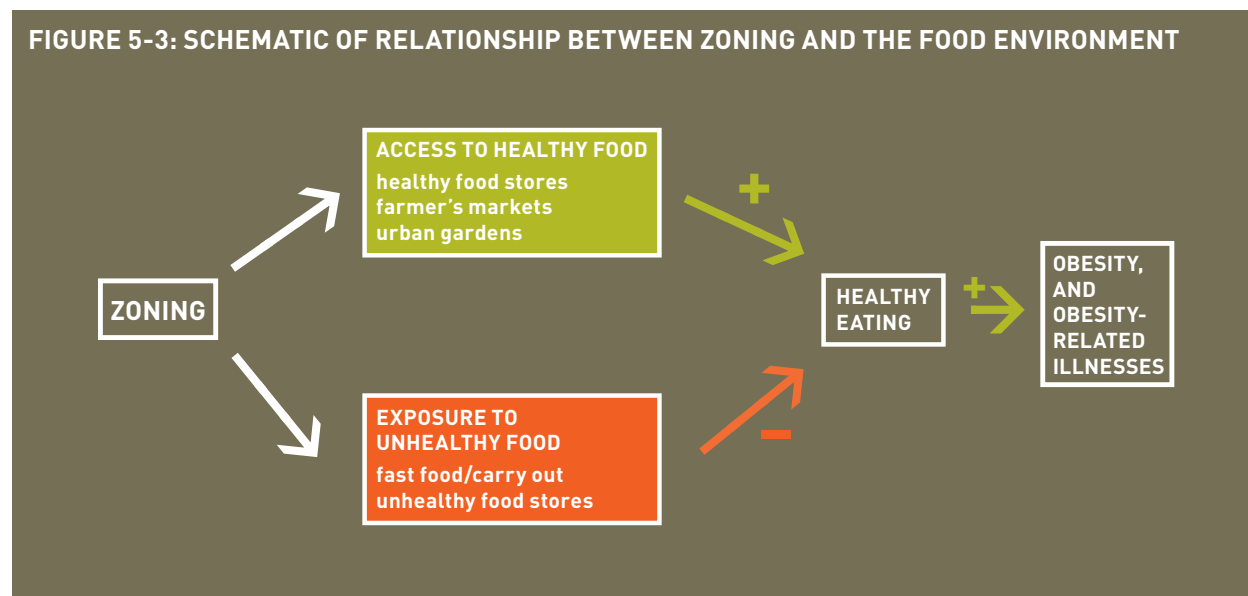
Recommendations related to transit oriented development are listed below. See Table 6-1 for sources used to support each recommendation.

**Supported changes:** We support the establishment of TOD zones, where mixed use and access to public transit are likely to be prominent features.

We recognize that mixed use is not universally health promoting. In particular, the issue of off-premise alcohol sales outlets (see Section 5.2.1) in TOD1 zones is cause for concern because these outlets are associated with increased crime and because TOD1 districts are likely to be more common in high poverty neighborhoods where crime rates are already elevated compared to low poverty neighborhoods (see Section 3.1). In particular, we would recommend for dispersal zoning to apply specifically to off-premise alcohol sales outlets in the newly created TOD zones described in the draft new code (see recommendations in Section 5.2.1 for details). Furthermore, we would recommend establishing a program of incentives to bring healthy food options to currently underserved neighborhoods where such options are currently lacking (see Section 5.4). This may be particularly relevant to TOD zones since these transportation hubs are places residents are likely to pass through as they travel around the city for work, school, and leisure activities.

### 5.4 ESTIMATED HEALTH IMPACTS ON DIET AND NUTRITION, OBESITY AND OBESITY-RELATED ILLNESSES

Figure 5-3 outlines the hypothesized relationships between zoning, the food environment, healthy eating, and obesity and obesity-related illnesses that were evaluated in the TransForm Baltimore HIA. We hypothesized that by changing allowed uses, the draft new code would have the potential to impact access to healthy food (e.g. full service supermarkets, urban agriculture) and unhealthy food (e.g. fast food and carry out). Access to healthy and unhealthy food was then hypothesized to affect the likelihood of eating a healthy diet and thus linked to obesity and obesity-related illnesses such as cardiovascular disease.



In order to determine whether the draft new code might have these impacts, we conducted a literature review aimed at understanding the relationships between the food environment and diet, obesity and obesity-related illnesses (see Table 5-1). We also performed an analysis of the draft new code in order to identify any food environment related zoning code changes (see Table 5-3) and performed an impact assessment to obtain quantitative estimates of the maximum potential change in the food environment that the draft new code might represent (see Table 5-4).

**Literature summary:** We identified seventeen research articles that met our inclusion criteria (13 with a “Good” quality score and 4 with a “Fair” quality score) (See Table 5-1). The research articles examined the following elements of the food environment:

1. Supermarkets (large chain stores) and grocery stores (smaller usually independently owned)
2. Community gardens (non-commercial gardens, usually smaller) and urban agriculture (commercial, usually larger)
3. Farmers markets
4. Convenience and corner stores (includes minimarts)
5. Full service restaurants
6. Fast food restaurants (usually defined as franchised or chain fast food restaurants) and carry out (non-chain retail food establishments with little to no sit down space).

Patterns that emerged from our literature review for the overall food environment and for specific types of food establishment are summarized below:

- **Perceived healthy food availability:** One study that found that persons living in areas perceived as being low in availability of healthy foods were 22-35% less likely to have a healthy diet than those in the best-ranked food environments <sup>87</sup>.
- **Supermarkets and grocery stores:** Our literature review yielded ten studies that examined the association between supermarkets and grocery stores and our health outcomes of interest, which met our inclusion criteria <sup>17,75,80,87-93</sup>. All of these studies were judged to be “Good” quality. Seven of these studies examined availability of supermarkets (alone or in combination with grocery stores or fruit and vegetable and natural food stores) and found associations with either decreased obesity <sup>88,89,91,92</sup> or improved diet <sup>17,87,89-92</sup>, although one found such an association only for high poverty neighborhoods <sup>88</sup>. Five of these studies examined the relationship between grocery stores (as a category separate from supermarkets) and obesity <sup>75,80,89,91,93</sup>. One of these found that the availability of grocery stores was associated with increased prevalence of obesity <sup>89</sup>, while the other four found no association <sup>93</sup>. Together these ten studies suggest that the presence of supermarkets, with or without grocery stores, is associated with better nutrition and lower obesity, while the presence of grocery stores are not. This difference may reflect differences between the availability, quality, and/or cost of healthy foods in supermarkets as compared to grocery stores <sup>94</sup>.
- **Community gardens:** We found two studies that examined the association between community gardens or urban agriculture and diet and obesity that met our inclusion criteria <sup>95,96</sup>. Both showed that people who participate in community gardens were more likely to consume fruits and vegetables than others. We found no studies that examined the link between the availability of gardens and the likelihood that residents might participate in them.
- **Farmers markets:** Since a review on farmers markets was published in 2010, we did not conduct our own review on this topic but report instead on the results from this recent review by McCormack et al <sup>97</sup>. The authors found that 5 of 12 studies that reported on participation in a farmers market program found an association between farmers market participation and greater intake of fruits and/or vegetables. The authors of the review conclude by calling for additional research with better designed studies in this area.
- **Convenience stores and corner stores:** Most of the literature used the term “convenience store” and we follow suit in this section. We did not find evidence of a consistent association of convenience stores with diet, obesity, or obesity-related illnesses. We found eight studies that examined these associations and that met our inclusion criteria <sup>75,88-93,98</sup> (see Table 5-1). Four of these found that increased density or availability of convenience stores was associated with worse diet <sup>90</sup>, increased obesity, including in children <sup>89,93</sup>, and increased metabolic syndrome cluster score in adolescents <sup>98</sup>. One study found that the presence of convenience stores without supermarkets, grocery stores, restaurants, or fast food was associated with reduced obesity in low poverty communities, but found no association for high poverty communities <sup>88</sup>. Finally three studies found no associations with diabetes, high serum cholesterol and hypertension <sup>89</sup>, or obesity <sup>75,91</sup>. One study that examined convenience stores as part of an ‘unhealthy food’ index that included fast food establishments, meat markets, bodegas, bakeries, pizzerias, and candy and nut stores also found no association <sup>92</sup>. No clear patterns emerged that might explain the differences in the results, and all but one study <sup>98</sup> was rated by the study team as “Good” quality. It is noteworthy, however, that two of the studies finding associations between convenience stores and worse health outcomes were among children for whom convenience stores may be the most easily accessible sources of snack foods <sup>93,98</sup>.

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- **Full service restaurants:** As with convenience stores, the evidence for the association of full service restaurants with diet and obesity is inconsistent. We identified seven “Good” quality studies that met our inclusion criteria and examined these relationships <sup>17,75,88,91-93,99</sup>. Among these, two found that restaurants were associated with positive health benefits <sup>17,99</sup>, one found a similar association but only within low poverty neighborhoods <sup>88</sup>, and four found no association (although one of these <sup>92</sup> considered full service restaurants as part of an index that also included medium sized grocery stores, specialty stores, and fish markets) <sup>75,91-93</sup>. Again, no patterns emerged that might explain these differences, aside from the fact that full service restaurants may be very heterogeneous with respect to availability of healthy options.
- **Fast food and carry out:** We only found papers on fast food through our literature review. As with convenience stores and full service restaurants, the evidence on fast food is mixed. We identified eight studies that met our inclusion criteria and examined the association of fast food establishments with diet, obesity, and obesity-related illness <sup>17,75,88,91,92,99-101</sup>. Among these, five found no association <sup>17,75,88,92,101</sup> while four found an association <sup>73,91,99,100</sup>. All but two received a “Good” quality score, the other two received a “Fair” score <sup>100,101</sup>. Four studies <sup>75,88,92,101</sup> found no association with obesity, including one among preschool children <sup>101</sup>, and one that considered fast food establishments as part of an ‘unhealthy food’ index that also included convenience stores, meat markets, bodegas, bakeries, pizzerias, and candy and nut stores <sup>92</sup>. One study found no association with diet <sup>17</sup>. Among the studies that found associations, three found associations with increased obesity <sup>91,99</sup>, however one of those found the association only among individuals who did not own cars <sup>99</sup>. Finally, one study found an association with stroke incidence <sup>100</sup>. No clear patterns emerged to explain these divergent findings.

**Code analysis:** The following summarizes the ways in which the draft new code differs from the existing zoning code in terms of the overall food environment and with respect to the specific types of food establishments identified in our literature review (see Table 5-3 for details).

- **Overall food environment**

**In the current zoning code:** The current code limits availability of food establishments in residential environments. Food outlets are permitted only in high density residential areas (R8-R10). PUDs, variances, and nonconformities have enabled some increases in neighborhood food outlets (e.g. through mixed use and corner stores) over time.

**In the draft new code:** Opportunities for access to food outlets are greatly expanded. Some of these are likely to expand access to healthy foods in particular. The specifics of these changes are listed below by specific food outlet categories and specific uses.

- **Supermarkets and grocery stores**

**In the current zoning code:** Grocery stores are permitted by right in B1-B5.

**In the draft new code:** Grocery stores no longer constitute a separate use category. They would fall under the use of “retail-no alcohol.” The scale and space requirements for a grocery store and what definitionally “counts” as a grocery store make comparisons difficult between the current code and the draft new code. Neighborhood commercial establishments are now allowed as conditional uses in R5-R10 and in OR. The rowhouse mixed use overlay will allow first floor retail in R5-R10. Such retail can include restaurants, retail goods (no alcohol), and personal service establishments. Retail-no alcohol is also allowed by right in B1-B5, BI, OIP, Bioscience, TOD1 and TOD2.

- **Community gardens, urban agriculture, and farmers markets**

**In the current zoning code:** These uses were not specified as use categories in the old code.

**In the draft new code:** Community gardens are permitted in R1-R10, B5, BI, TOD1, TOD 2, and I-MU. Urban agriculture is conditional in R1-R10 and OR and by right in B1-B5. Farmers markets are allowed as a temporary use throughout the city in all zones.

- **Convenience stores and corner stores**

**In the current zoning code:** Corner stores were not an official use in the old code. Food outlets were limited to R8-R10. PUDs, variances and nonconformities have enabled some mixed use and corner stores in other residential districts.

**In the draft new code:** Neighborhood commercial establishments (NCEs) are now allowed as conditional uses in R5-R10 and in OR. NCEs allow “retail-no alcohol” as a use, and corner stores would likely fall under this designation. NCE includes restrictions based on the historic and non residential character of the building which may have implications for the creation of new retail outlets. Corner stores may also be allowed via the rowhouse mixed use overlay, which will allow first floor retail in R5-R10. Such retail can include restaurants, retail (no alcohol), and personal service establishments.

- **Full service restaurants**

**In the current zoning code:** Standard, full service restaurants are allowed conditionally in B1 and by right in B2-B5.

**In the draft new code:** The number of districts that allow these uses has expanded. Standard, full-service restaurants are allowed by right in B1-B5, BI, OIP, I-MU, Bioscience, TOD1 and TOD2. They are allowed conditionally in I-1. They could also be allowed in R5-R10 via the rowhouse mixed use overlay.

- **Fast food and carry out**

**In the current zoning code:** “Fast food” is not its own, distinct category. As such it does not have a definition or use standards in the current code. Specific rules do apply for drive-throughs, though not all of these rules apply for food establishments. The drive-through use likely captures some of the large fast food chains that have drive-through service. Drive-throughs were allowed on a conditional basis in B2, B3, and B5. “Carry outs” are permitted by right in B2-B5.

**In the draft new code:** “Fast food” is not a separate category and also has no definition in the draft new code. Such establishments would likely be subsumed under the “retail-no alcohol” use. As such, fast food outlets would be allowed by right in B1-B5, BI, OIP, Bioscience, TOD1 and TOD2. Drive-throughs, however, are no longer permitted by right in B2 and are conditional in B3, B4, BI, OIP, Bioscience and I-MU. “Carry outs” no longer exist as a distinct use. Such operations would be allowed now under the rowhouse mixed use overlay in R5-R10 as part of retail goods – no alcohol. Under the “retail-no alcohol” use they would be allowed by right in B1-B5, BI, OIP, Bioscience, TOD1 and TOD2 as well.

**Impact Assessment:** The following summarizes our estimates of the potential population-level built environment impact of the draft new code with respect to food-related land uses (see Table 5-4 for more details):

- **Supermarkets and grocery stores:** We estimate that the percentage of residents living in districts that allow supermarkets and grocery stores by right or conditionally would increase from 10% to 27%. This percentage would increase in both high and low poverty neighborhoods: from 12% to 35% in high poverty neighborhoods, and from 8% to 21% in low poverty neighborhoods. Increasing access in high poverty neighborhoods is particularly important as residents in these areas are less likely to possess cars that allow them to travel larger distances to access stores and services.

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- **Community gardens and urban gardens:** We estimate that, under the draft new code, 89% of residents would live in districts that allow community gardens by right or conditionally, 77% in districts that allow urban gardens, and 98% in districts that allow farmer's markets (as temporary uses). Residents in both high and low poverty neighborhoods would be similarly affected.
- **Convenience or corner stores:** We estimate that the percentage of residents living in neighborhoods that allow corner stores uses by right or conditionally will double, from 23% to 53%. Under the draft new code, the percentage of residents living in districts that allow corner store uses would be similar in both high and low poverty communities (59% vs. 49%).
- **Restaurants, fast food, carry out:** We estimate that the percentage of residents living in neighborhoods that allow restaurants including fast food restaurants by right or conditionally would increase from 10% to 27%. Resident of high poverty communities under the draft new code would be 50% more likely to live in districts that allow restaurants and fast food. The percentage of people living in districts allowing carry out uses would similarly increase from 9% to 25%. Under the draft new code the percentage of residents living in districts that allow carry out uses would be twice as high in high poverty compared to low poverty communities (33% vs. 17%).

### RECOMMENDATIONS: FOOD ENVIRONMENT

**Summary and Rationale:** Our review of the literature found substantial and consistent evidence that access to supermarkets is associated with better nutrition and lower risk of obesity. There is also evidence, although more limited, that community gardens are associated with better diet. For convenience stores, grocery stores, and fast food restaurants there is inconsistent evidence of associations with worse nutrition and higher obesity. Full service restaurants and farmer's markets are inconsistently associated with better nutrition and lower obesity.

Our code analysis and our assessment of the potential impacts on the built environment suggest that access to all of these food options could increase if the draft new code went into effect and individuals were interested in developing these types of uses. Based on these findings, our recommendations related to the food environment focus on strengthening the potential of the new code to increase access to stores that sell healthy food. We have focused on healthy food stores overall as opposed to supermarkets in particular based on the assumption that the relationship between supermarkets and health would hold for other types of stores that also sell healthy food options. Furthermore, there may be limited room in Baltimore for the development of new large-scale supermarkets. Because the evidence about the negative impacts of fast food and convenience stores on nutrition and obesity is inconclusive, we make few recommendations in this area.

Recommendations related to the food environment are listed below. See Table 6-1 for sources used to support each recommendation.

**Supported changes:** We support **1)** the establishment of community gardens, farmers' markets, urban agriculture, and neighborhood commercial establishments as specific uses, and **2)** the establishment of a row house mixed use overlay district insofar as it may potentially facilitate increased access to healthy foods in neighborhoods where such options are currently limited.

**Recommended revisions:** Based on the results of our impact assessment, we recommend several measures to expand access to healthy food and clarify existing code language. We recommend the following:

- **Create Healthy Food Store Use and Definition** – Out of the options to address environment and nutrition, the scientific evidence most strongly links the presence of healthy foods with improved diet. Given "food desert" considerations and the current lack of variety in many "corner" and convenience stores, such a certification program could help create framework for bringing healthier items such as whole wheat bread, perishable produce, and low fat milk to new and existing retail. See Sample Language (Appendix Section 8.1)



## Section 8.1

- Develop and include zoning incentives for Healthy Food Stores
  - Such incentives could include waiving of fees, reducing parking requirements, or other creative solutions the Planning Department deems appropriate. See additional details in the Appendix (Section 8.3)
- Include a Fast Food use definition and mark as a distinct use – (See Sample Language Appendix, Section 8.1)
- While we support the inclusion of community gardens into the code, we have the following recommendations to improve their accessibility for all potential users and clarify the different types presented in the code
  - Consider adding language regarding ADA/Universal design for community gardens – (See Sample Language Appendix, Section 8.1)
  - Clarify distinction between “Community Garden (permanent)” and “Community garden (temporary).”
- Similarly, we are supportive of urban agriculture as part of the draft new code. The following recommendations will help clarify the standards and mitigate potential harm from such uses
  - Consider changing the use definition for urban agriculture to better distinguish from community gardens. (See Sample Language Appendix, Section 8.1)
  - Consider amending the zoning regulations in 14-327, as they currently allow uses that may be negative for public health, such as spraying of agricultural chemicals. (See Sample Language Appendix, Section 8.1).
  - Add soil testing language in urban agriculture use standards to match community garden language
- When considering conditional uses in Section 4-404 and when evaluating proposals during site plan review, include the following criteria:
  - Impact on access to healthy foods
  - Impact on access to safe and well-maintained recreational and open space opportunities
  - Promotion of active transportation, including walking, bicycling, and transit
  - Impact on health disparities and potential public health benefit or burden to the surrounding neighborhood/community

There are many additional opportunities outside of the scope of the draft new code that could help improve food access in Baltimore. Such strategies may involve a zoning component but would require a larger effort by the Planning Department that involves interagency collaboration. Such comprehensive planning strategies include creating a healthy food enterprise overlay zone that provides a variety of incentives (zoning and otherwise) to bring healthy food establishments to underserved areas. Similarly, additional standards for farmers markets can help expand access to healthy food (see Appendix Section 8.2 for examples).

TABLE 5-1: LITERATURE REVIEW FINDINGS FOR BUILT ENVIRONMENT FEATURES AND OUTCOMES OF INTEREST

STUDY QUALITY  
ALCOHOL SALES OUTLETS  
CPTED  
MIXED USE  
PEDESTRIAN SCALE  
TOD  
SUPERMARKETS  
GROCERY STORES  
COMMUNITY GARDENS/URBAN AGRICULTURE  
CORNER & CONVENIENCE STORES  
FULL SERVICE RESTAURANT  
FAST FOOD  
BARS & TAVERNS  
CRIME  
PEDESTRIAN INJURY & FATAL CRASHES  
PHYSICAL ACTIVITY  
HEALTHY DIET & NUTRITION  
OBESITY & BMI  
OBESITY-RELATED ILLNESS

CITATION	BUILT ENVIRONMENT INDICATORS										FOOD ENVIRONMENT INDICATORS					PRIMARY HEALTH OUTCOMES OF INTEREST				
	STUDY QUALITY	ALCOHOL SALES OUTLETS	CPTED	MIXED USE	PEDESTRIAN SCALE	TOD	SUPERMARKETS	GROCERY STORES	COMMUNITY GARDENS/URBAN AGRICULTURE	CORNER & CONVENIENCE STORES	FULL SERVICE RESTAURANT	FAST FOOD	BARS & TAVERNS	CRIME	PEDESTRIAN INJURY & FATAL CRASHES	PHYSICAL ACTIVITY	HEALTHY DIET & NUTRITION	OBESITY & BMI	OBESITY-RELATED ILLNESS	
Alaimo et al, 2008 <sup>6</sup>	Good										✓					↘				
Blair et al, 1991 <sup>95</sup>	Fair							✓								↘				
Branas et al, 2009 <sup>61</sup>	Good	✓											↘							
Brown & Werner, 2009 [Journal of the APA] <sup>84</sup>	Good					✓									↘				→	
Brown et al 2009 (Health & Place) <sup>76</sup>	Good		✓			✓													→ →	
Burdette & Whitaker, 2004 <sup>101</sup>	Fair																		↔	
Carter et al, 2003 <sup>24</sup>	Fair		✓											→						
Coogan et al, 2009 <sup>86</sup>	Good					✓										↘				
Dengel et al, 2009 <sup>98</sup>	Fair																		↘	
Dumbaugh & Rae, 2009 <sup>66</sup>	Good					✓									→					
Frank et al, 2004 <sup>71</sup>	Good		✓																→	
Frank et al, 2005 <sup>23</sup>	Good		✓																↘	
Grafova, 2008 <sup>93</sup>	Good							✓											↔↔↔	

TABLE 5-1: LITERATURE REVIEW FINDINGS FOR BUILT ENVIRONMENT FEATURES AND OUTCOMES OF INTEREST (continued)

STUDY QUALITY  
ALCOHOL SALES OUTLETS  
MIXED USE  
CPT ED  
PEDESTRIAN SCALE  
TOP  
SUPERMARKETS  
GROCERY STORES  
COMMUNITY STORES  
CORNER & CONVENIENCE STORES  
FULL SERVICE RESTAURANT  
FAST FOOD  
BARS & TAVERNS  
CRIME  
PEDESTRIAN INJURY & FATAL CRASHES  
HEALTHY DIET & NUTRITION  
OBESITY & BMI  
OBESITY-RELATED ILLNESS

CITATION	BUILT ENVIRONMENT INDICATORS										FOOD ENVIRONMENT INDICATORS						PRIMARY HEALTH OUTCOMES OF INTEREST					
	STUDY QUALITY	ALCOHOL SALES OUTLETS	MIXED USE	CPT ED	PEDESTRIAN SCALE	TOP	SUPERMARKETS	GROCERY STORES	COMMUNITY STORES	CORNER & CONVENIENCE STORES	FULL SERVICE RESTAURANT	FAST FOOD	BARS & TAVERNS	CRIME	PEDESTRIAN INJURY & FATAL CRASHES	HEALTHY DIET & NUTRITION	OBESITY & BMI	OBESITY-RELATED ILLNESS				
Gruenwald et al, 2006 <sup>62</sup>	Good	✓												↘								
Inagami et al, 2009 <sup>99</sup>	Good							✓			✓					↘/↙						
Kerr et al, 2007 <sup>72</sup>	Good			✓											←							
Laraia et al, 2004 <sup>90</sup>	Good					✓									←	←						
Li et al, 2008 <sup>73</sup>	Good			✓											←	←						
Lovasi et al, 2004 <sup>77</sup>	Good			✓		✓									→	→						
Mobley et al, 2006 <sup>75</sup>	Good			✓												→	→	→	↔			
Moore et al, 2008 <sup>87</sup>	Good						✓								←							
Morgenstern <sup>100</sup>	Fair																		←			
Morland et al, 2002 <sup>17</sup>	Good							✓							→	←	↔	↔	↔			
Morland et al, 2006 <sup>89</sup>	Good							✓											→			



TABLE 5-2: LITERATURE REVIEW FINDINGS FOR EVIDENCE LINKING CRIME AND HEALTH

CITATION	PRIMARY HEALTH OUTCOMES OF INTEREST							
	STUDY QUALITY	CRIME	NEIGHBORHOOD SAFETY	FEAR OF CRIME	PHYSICAL ACTIVITY	OBESITY & BMI	OBESITY-RELATED ILLNESS	
Burdette & Whitaker, 2004 <sup>101</sup>	Good	✓			↔			
Burdette et al, 2006 <sup>79</sup>	Poor		✓		→			
Doyle et al, 2006 <sup>81</sup>	Fair	✓			←		↔	
Grafova, 2008 <sup>93</sup>	Good	✓			↔			
Mobley et al, 2006 <sup>82</sup>	Good	✓			←		←	
Scott et al, 2009 <sup>80</sup>	Good		✓		←		↔	
Voorhees & Young, 2003 <sup>102</sup>	Fair		✓		↔			
Young & Voorhees, 2003 <sup>103</sup>	Fair		✓		↔			

TABLE 5-3: CODE ANALYSIS SUMMARY TABLE WITH SIDE-BY-SIDE COMPARISON OF CURRENT ZONING CODE AND THE TRANSFORM BALTIMORE REWRITE (DRAFT RELEASED APRIL 2010)

LEGEND

- P - Permitted by right
- C - Conditional use
- A - Accessory use
- X - Topic present in this district/title
- O - Addressed by Overlay Zone (Rowhouse Mixed Use)
- T - Temporary use

ISSUE	CURRENT CODE: USE	DISTRICTS																				
		R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	OR	B1	B2	B3	B4	B5	M1	M2	PUD	Parking	
FOOD	Carry out food shop																					
	Drug Store								A	A	A	A	A	P	P	P	P					
	Retail food shops								A	A	A	A										
	Newsstand								A	A	A	A	P	P	P	P						
	Candy Stores												P	P	P	P						
	Food stores/grocery/delicatessen												P	P	P	P						
	Bakeries															P						
	Meat market															P						
	Vending machines															P						
	Restaurant													C	P	P	P					
ALCOHOL	Restaurant, drive in														C?	C	C					
	Gas station															C	C	C				
	Restaurant													C	P	P	P					
	Tavern														P	P	P					
	Cocktail Lounge												A	A								
	Liquor Stores															P	P	P				
	Health institution: care of children or elderly																					
	Hospital															C	C	C				
	Clinics															P	P	C				
	Physicians offices															A						
DESIGN	Lighting															C	C	C				
	Landscaping															X	X	X	X	X		X
<b>RESIDENTIAL ALLOWED</b>		<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>

\*\* For explanation of district type abbreviations, see Table 3-2



TABLE 5-3: CODE ANALYSIS SUMMARY TABLE WITH SIDE-BY-SIDE COMPARISON OF CURRENT ZONING CODE AND THE TRANSFORM BALTIMORE REWRITE (DRAFT RELEASED APRIL 2010) continued

LEGEND

- P - Permitted by right
- C - Conditional use
- A - Accessory use
- X - Topic present in this district/title
- O - Addressed by Overlay Zone (Rowhouse Mixed Use)
- T - Temporary use

ISSUE	DISTRICTS																									
	DRAFT NEW CODE: USE OR STANDARD	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	OR	B1	B2	B3	B4	B5	BI	O/IP	BSC	I-MU	I-1	TOD1	TOD2	Parking	
FOOD	Community Garden	P	P	P	P	P	P	P	P	P	P	P	P					P	P			P	P	P		
	Urban Agriculture	C	C	C	C	C	C	C	C	C	C	C	C	P	P	P	P									
	Farmers Market	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T		T	T	T	T	T	T		
	Neighborhood Commercial Establishment				C	C	C	C	C	C	C	C	C									C	C			
ALCOHOL	Gas Station																									
	Restaurant, standard				O	O	O	O	O	O	O	O	O	P	P	P	P		P	P	P	P	P	P		
	Drive through facility														C	C			C	C	C	C	C			
	Retail - no alcohol				O	O	O	O	O	O	O	O	O	P	P	P	P		P	P	P		P	P		
	Restaurant, standard				O	O	O	O	O	O	O	O	O	P	P	P	P		P	P	P	P	P	P		
	Tavern													C	P	P	P		P	P	P	P	P	P		
	Retail - alcohol																									
	Neighborhood Commercial Establishment														P	P	P	P		C	C	P	P	P		
	Personal Services Establishment				O	O	O	O	O	O	O	O	O	P	P	P	P		P	P	P	P	P	P		
	Medical/Dental Clinic				O	O	O	O	O	O	O	O	O	P	P	P	P		P	P	P	P	P	P		
DESIGN	Hospital				C	C	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C				
	Rehabilitation center																									
	Lighting													X	X	X	X	X	X	X	X	X	X	X	X	
	Landscaping	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	
	First floor transparency													X	X	X		X								
	Pedestrian oriented				X	X	X	X	X	X	X	X	X	X	X	X		X								
RESIDENTIAL ALLOWED		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	C	P	P	P	P	C	P	P		

\*\* For explanation of district type abbreviations, see Table 3-2

TABLE 5-4: SUMMARY OF FINDINGS FROM QUANTITATIVE ASSESSMENT OF POTENTIAL IMPACTS OF THE TRANSFORM BALTIMORE REWRITE (DRAFT RELEASED APRIL 2010)

Zoning Feature	Summary of health impacts of this exposure	Districts that allow this use by right or conditionally*		Percent of the city (No. of people) living in districts where use allowed (total =651,154)		Percent of the city (No. of people) living in districts with 20% poverty where use allowed (total =332,439)		Percent of the city (No. of people) living in districts with 20% poverty where use allowed (total =318,515)	
		Existing code	Draft new code	Existing code	Draft new code	Existing code	Draft new code	Existing code	Draft new code
Mixed use - Residential	Promotes physical activity, reduces obesity, improves access to services	R8-R10	R5-R10	23% (147,404)	53% (344,327)	35% (116,366)	57% (189,092)	10% (31,038)	49% (155,234)
Mixed use - Commercial	Promotes physical activity, reduces obesity, improves access to services	B1-B5	B1-B5, BI, I1, BSC, TOD1, TOD2, I-MU	10% (62,787)	27% (177,463)	11% (37,940)	34% (111,956)	8% (24,847)	21% (65,506)
Mixed use - Total	Promotes physical activity, reduces obesity, improves access to services	R8-R10, B1-B5	R5-R10, B1-B5, BI, I1 BSC, TOD1, TOD2, I-MU	32% (210, 191)	80% (521,790)	46% (154,306)	91% (301,049)	18% (55,885)	70% (220,740)
Transit-oriented development	Promotes physical activity, reduces obesity, improves access to services	None	TOD1, TOD2	n/a	18% (114,029)	n/a	23% (74,955)	n/a	12% (37,074)
Pedestrian environment (non residential)	Promotes physical activity, reduces obesity, promotes safety	B1	B1-B3, B5, TOD1, TOD2	1% (5,035)	24% (158,167)	1% (3,063)	31% (103,187)	1% (1,972)	17% (54,981)
Lighting/Landscaping	promotes safety	one or both in B1-B5, OR, M1 & M2	R1-R10, OR, B1-B5, BI, OIP, I-MU, I1, BSC, TOD1, and TOD2 (one or both mentioned)	15% (99, 923)	98% (635,385)	18% (60,789)	97% (322,066)	12% (39,133)	98% (313,320)
Off-premises alcohol sales (liquor stores)	increases crime, increases nuisances	B2-B5	B2-B5, BI, OIP, I-MU, I1, BSC, TOD 1 and TOD2	9% (57,753)	27% (174,008)	10% (34,878)	33% (109,693)	7% (22,875)	20% (64,315)
On-premise alcohol sales (restaurants, taverns, cocktail lounges)	increases crime and nuisances	R8-R10, B1-B5, OR	R5-R10, OR, B1-B5, BI, OIP, BSC, I-MU, I1, TOD1, TOD2,	34% (219,767)	81% (528,038)	49% (159,600)	94% (304,512)	19% (60,166)	70% (223,525)
Convenience and corner stores (residential districts)	increases obesity, decreases safety	R8-R1	R5-R10	23% (147,404)	53% (344,327)	36% (116,366)	59% (189,093)	10% (31,038)	49% (155,234)
Grocery stores/supermarkets (food stores, retail - no alcohol, and retail - alcohol)	increases healthy food access	B1-B5	B1-B5, BI, OIP, BSC, I1, I-MU, TOD1, TOD2	10% (62,787)	27% (177,463)	12% (37,940)	35% (111,956)	8% (24,847)	21% (65,506)
Urban agriculture	increases healthy food access	None	R1-R10, OR, B1-B5	n/a	77% (502,467)	n/a	73% (236,567)	n/a	83% (265,900)
Community gardens	increases healthy food access	None	R1-R10, B5, OR, BI, I-MU, TOD1, TOD2	n/a	89% (580,921)	n/a	89% (288,698)	n/a	92% (292,223)
Farmers Markets	increases healthy food access	None	R1-R10, OR, B1-B5, BI, OIP, BSC, I-MU, I1, TOD1, TOD2 (temporary use)	n/a	98% (635,385)	n/a	100% (322,066)	n/a	98% (313,320)
Carry out (new code= retail no alcohol)	increases obesity, decreases safety	B2-B5	B1-B5, BI, OIP, BSC, TOD1, TOD2	9% (57,753)	25% (161,402)	11% (34,878)	33% (106,242)	7% (22,875)	17% (55,161)
Fast food/Restaurants (old=restaurant + drive-in, new = restaurant standard+ drive-in)	increases obesity, increases healthy food access	B1-B5	B1-B5, BI, OIP, BSC, I-MU, I1, TOD1, TOD2	10% (62,787)	27% (177,463)	12% (37,940)	35% (111,956)	8% (24,847)	21% (65,506)

\*\* For explanation of district type abbreviations, see Table 3-2



## 6.1 Discussion

### 6.2 Recommendations

- 6.2.1 Supported Elements Included in the TransForm Baltimore Rewrite (April 2010 draft)
- 6.2.2 Recommended Revisions to the TransForm Baltimore Rewrite (April 2010 draft)
- 6.2.3 Recommended Changes to the TransForm Baltimore Rewrite Process and the Plan for Code Administration

## 6.1 DISCUSSION

The TransForm Baltimore HIA set out to analyze the potential of Baltimore City's comprehensive zoning code rewrite to improve health outcomes and reduce health disparities in Baltimore. To do this, we conducted interviews with stakeholders and observations of public meetings, reviewed the scientific literature, analyzed the current and the draft new code, and evaluated the potential population-level impacts of the draft new code on the built environment. Based on the findings and input from experts summarized below, we developed a set of recommendations.

The HIA team generated the following findings from our work:

- **Off-premise alcohol sales outlets, and crime:** We found consistent evidence that increased density of off-premise alcohol sales outlets and increased proximity to off-premise alcohol sales outlets are associated with increased crime. Our code analysis and impact assessment suggest that the potential for living in a neighborhood that allows off-premises alcohol sales outlets would triple under the draft new code, and that lower income communities would be 50% more likely to allow these outlets than higher income communities.
- **Pedestrian oriented environment and pedestrian injuries, crime and physical activity:** We found evidence that pedestrian oriented environments defined as pedestrian scaled, designed to promote pedestrian safety; and that provide visual appeal and natural surveillance through first floor transparency, appropriate lighting, and landscaping, are associated with lower pedestrian injuries, lower crime and increased physical activity. Our analysis of the draft new code suggests that if it were enacted, a substantially higher proportion of new developments in Baltimore would be required to follow pedestrian oriented design guidelines.
- **Mixed use, transit oriented development, and physical activity:** We found that increased mixed use is associated with increased functional physical activity, although this association seems strongest for higher income communities. In lower income communities, there is evidence that fear of crime may limit the impact of increased mixed use on physical activity. The draft new code would greatly increase the potential for mixed use, both in residential and in commercial areas. The creation of a new transit oriented development district would also contribute to the potential for increased mixed use.
- **Food environment and diet/nutrition/obesity:** We found consistent evidence in the literature that access to supermarkets is associated with better nutrition and lower risk of obesity. There is also some evidence that community gardens are associated with better diet. For convenience stores, grocery stores, full service restaurants, fast food restaurants, and farmer's markets, the link to diet, nutrition and obesity seems less clear. When there is evidence of associations, convenience stores, grocery stores, and fast food restaurants are associated with worse nutrition and higher obesity, and full service restaurants and farmers markets with better nutrition and lower obesity. Our code analysis and impact assessment suggest that the potential access to all of these food options would increase if the draft new code were enacted. The potential access to gardens and farmers markets would increase the most, convenience/corner stores an intermediate amount and other establishments the least.

### Strengths and Limitations

There are many strengths to this HIA. It is among the first of its kind in that it evaluates a comprehensive municipal zoning code revision. In addition, while we were not able to produce quantitative assessments of the potential health impacts of the draft new code in Baltimore, we believe we have made significant contributions to the methods for quantitative assessment of the impacts associated with zoning-related changes to the built environment. Our findings will further application to the zoning recode process in Baltimore when the draft new zoning maps are produced. This work also provides a set of methods for producing similar estimates in other municipalities. Furthermore, because the assumptions used to generate these estimates are clearly articulated, the same estimation techniques can be used in the future to evaluate the extent to which Baltimore's new zoning code (once ratified) has been associated with the anticipated changes to the built environment hypothesized in our impact assessment.

It is also important to acknowledge the limitations of our HIA. For one, there are many steps linking zoning and health. As a consequence, we did not attempt to quantify health impacts. Instead we developed quantitative estimates of the potential for the draft new code to impact the built environment.

We then developed qualitative summaries of anticipated health impacts by combining these quantitative estimates with the findings of our literature. We realize that the zoning code alone does not create the built environment of Baltimore. Rather, it only provides the guidelines for future development. All of our estimates and conclusions about impacts are contingent upon when, where, and how development actually occurs in Baltimore subsequent to the adoption of a new code.

Our analysis was also limited by the current literature on the associations of the built environment with health. Most of the studies included in our literature review were cross sectional in design, making it impossible to determine whether observed associations are causal or the result of confounding. Socioeconomic status could be an important confounder in the association between the built environment and health. We addressed this issue as best we could by considering whether studies adequately controlled for socioeconomic status and related variables when determining study quality. However, it is still possible that many of the associations observed are not causal. Until additional longitudinal studies or randomized controlled trials are available, this challenge will remain. This work highlights the need for ongoing investment in well-designed studies to further delineate the relationship between the built environment and health.

A final limitation is that while the draft new code was available to us at the time of this HIA, the corresponding zoning maps were not. An important aspect of how the code will impact health in Baltimore is how the draft new code is applied, which will be reflected in the new zoning map. Our analysis assumed that current district boundaries would not change. Furthermore we were not able to take into account some changes outlined in the draft new code, such as the rowhouse mixed use overlay that would impact the health-related built environment. Despite that, we believe that our impact assessment findings are generally applicable and will therefore be useful and relevant to decision makers and residents during the mapping process. As such, we hope that this HIA informs the mapping phase of TransForm Baltimore rewrite process.

Despite these limitations, the TransForm Baltimore rewrite process is occurring at a time when the connections between planning and health are being recognized and highlighted at the highest levels of our government<sup>3</sup>. We readily acknowledge that zoning on its own cannot address high rates of violent crime and obesity in Baltimore. Yet, our findings demonstrate that zoning is one important piece of the solution. We recommend initiatives that would complement revisions to the draft new code and could do more to help facilitate healthier communities in Baltimore (see Appendix Sections 8.2 and 8.3). The TransForm Baltimore rewrite represents a once in a generation opportunity to establish zoning regulations that will contribute to creating economically vibrant and healthy communities for all Baltimore residents for years to come.

## 6.2 RECOMMENDATIONS

### Process for Developing Recommendations

The following recommendations emerged from several sources including: the review of the scientific literature, the code analysis, the impact assessment, stakeholder interviews, observation of the Transform Baltimore process, and consultation with experts in the field of urban planning and public health. Please refer to relevant portions of Section 5 of this report (Findings) for an explanation of rationale for specific recommendations.

Table 6-1 identifies the source(s) of each recommendation. In particular, it distinguishes recommendations supported by scientific evidence (i.e. substantiated by the literature review and impact assessment) from those that were derived from expert opinion but were outside the scope of the literature review and impact assessment for the Transform Baltimore HIA.

**To note these distinctions, each recommendation below is followed by one of three designations:**

- **Evidence** – the recommendation supported by scientific literature review and/or HIA Impact Assessment
- **Expert opinion** – the recommendation supported from interviews, observation of the process, or from experts in fields of land use and health, and/or examples from model documents (such as the American Planning Association’s PAS reports) or examples from other cities
- **Evidence and expert opinion** – the recommendation is supported by a combination of the sources listed above



**TABLE 6-1: SOURCES SUPPORTING TRANSFORM BALTIMORE HIA RECOMMENDATIONS**

RECOMMENDATION	ALREADY INCLUDED IN TRANSFORM BALTIMORE SUPPORTED BY LITERATURE REVIEW			SUPPORTED BY IMPACT ASSESSMENT INTERVIEWS		SUPPORTED BY OBSERVATION OF TRANSFORM PROCESS SUPPORTED BY OTHER CITIES' INITIATIVES OR MODEL ORDINANCES	
	EVIDENCE	EVIDENCE		EXPERT OPINION		EXPERT OPINION	
Expanding mixed use areas	X	X	X	X		X	
Creating pedestrian corridors	X	X	X	X	X	X	
Creating TOD zones	X	X	X	X		X	
Establishing first floor transparency and other design standards	X	X	X	X		X	
Reducing parking requirements	X	X		X	X	X	
Expanding where Community Gardens are allowed	X	X	X	X	X	X	
Adding Urban Agriculture	X	X	X	X	X	X	
Expanding where Farmers Markets are allowed	X	X	X	X	X	X	
Creating Row House mixed use overlay	X	X	X	X			
Creating Neighborhood commercial establishment *	X	X		X			
Modernizing the purpose statement	X				X	X	
Updating definitions	X				X		
Creating use tables	X				X	X	
Adding diagrams of development process	X				X		
Prevent concentration of off-premise alcohol sales outlets particularly in TOD, I-MU and other areas slated for change that currently allow retail alcohol sales by right.		X	X				X
Create a separate use definition for liquor stores/off-premise alcohol sales outlets; align with liquor board license classes*		X	X	X			X
If such dispersal /spacing standards are created, tracking the location of proposed and existing outlets through business license applications and approvals would be necessary*		X	X	X	X		
Comprehensive planning strategies include addressing problematic off-premise alcohol sales outlets via a "deemed approved" process that holds grandfathered uses to new standards		X	X				X
Include clear public health criteria in Section 4-404				X	X	X	
Apply pedestrian oriented goals to following zones: OR, OIP, Bioscience, and special purpose districts		X	X		X	X	
Define "pedestrian oriented"		X	X	X			X
Include principles of crime prevention through environmental design (CPTED) in landscape ordinance		X	X				X
Develop/include zoning incentives for Healthy Food Stores*		X	X	X	X	X	
Create Healthy Food Store Use and Definition*		X	X	X			X
Include fast food definition and mark as a distinct use				X			X
Clarify distinction between "Community Garden (permanent)" and "Community Garden (temporary)"*		X	X	X	X	X	
Consider adding language regarding ADA/Universal design for community gardens							X
Consider changing the use definition for urban agriculture to better distinguish from community gardens					X	X	
Consider amending the zoning regulations in 14-327, as they currently allow practices that may be negative for public health (e.g. spraying of agricultural chemicals)					X	X	
Add soil testing language in urban agriculture use standards to match community garden language					X	X	
Consider additional standards for Farmers Markets that would expand access to healthy foods							X
Amend the zoning code to require the Planning Director to establish a set of policy principles and guidelines for enhancing the process for engaging the public in land development							X
Clearly publicize Planning-initiated meetings with community groups about mapping options					X	X	
In plain language, a Transitional Document or User's Guide should be created to compare the old and new code					X	X	
In plain language, the Procedures Title should clearly answer for any user basic "How to" questions for using the code, such as "How do I apply for a variance?"					X		
Amend zoning code to require the Planning Director in consultation with community organization to create a set of principles by which recommendations for changes to the Code and Map will be assessed, evaluated and incorporated.					X	X	

\* These recommendations are for changes that are thought to be necessary to facilitate related evidence-based recommendations but will not, in and of themselves potential changes to built environment

### 6.2.1 SUPPORTED ELEMENTS INCLUDED IN THE TRANSFORM BALTIMORE REWRITE (APRIL 2010 DRAFT)

**Explanation of section:** The following components are items that are included in the draft new code that our analysis suggests could help remove barriers to achieving health.

#### Creating walkable environments – For detailed rationale, see Section 5.3

- Expanding mixed use areas (from evidence and expert opinion)
- Creating pedestrian corridors (from evidence and expert opinion)
- Creating TOD zones (from evidence and expert opinion)
- Establishing first floor transparency and other design standards (from evidence and expert opinion)
- Reducing parking requirements (from evidence and expert opinion)

#### Improving food access – For detailed rationale, see Section 5.4.

- Expanding where community gardens are allowed (from evidence and expert opinion)
- Adding urban agriculture (from evidence and expert opinion)
- Expanding where farmers markets are allowed (from evidence and expert opinion)
- Creating row house mixed use overlay (from evidence and expert opinion)
- Creating neighborhood commercial establishment (from evidence and expert opinion)

#### Clarifying link between health and zoning

- Modernizing the purpose statement (from expert opinion)

#### Developing a code that is easy to use

- Updating definitions (from expert opinion)
- Creating use tables (from expert opinion)
- Adding diagrams of development process (from expert opinion)

### 6.2.2 RECOMMENDED REVISIONS TO ELEMENTS OF THE TRANSFORM BALTIMORE REWRITE (APRIL 2010 DRAFT)

**Explanation of section:** The following components are items that the HIA Team recommends be revised in order to enhance the new code's potential to promote health and welfare and mitigate the potential for unintended negative health consequences. Sample language and justifications for these suggestions is provided in the Appendix (Section 8).

#### Creating healthy neighborhoods – For detailed justification, see Section 5.2.1

- Prevent concentration of off premise alcohol sales outlets in districts that currently allow retail alcohol sales by right, particularly in TOD and I-MU (from evidence and expert opinion)
- This goal can be accomplished several different ways (from evidence and expert opinion)
  - Making such off premise outlets conditional as opposed to permitted by right
  - A separate conditional use process that considers such relevant issues as the pedestrian environment, nearby sensitive uses, crime, loitering, and traffic or away from uses such as schools, places of worship, parks (See Sample Language Appendix, Section 8.1).

## ZONING FOR A HEALTHY BALTIMORE

- A set of dispersal/spacing standards that apply to off premise alcohol retail sales. See Sample Language Appendix, Section 8.1.
- Another arrangement the Planning Department deems feasible
- The following changes are likely necessary to facilitate the above recommendations (from evidence and expert opinion)
  - Create a separate use definition for liquor stores/off-premise alcohol sales outlets that aligns with liquor license board classes. See Sample Language Appendix, Section 8.1.
  - If such dispersal/spacing standards are created, tracking the location of proposed and existing outlets through business license applications and approvals.
  - Comprehensive planning strategies include addressing problematic off-premise alcohol sales outlets via a “deemed approved” process that holds grandfathered uses to new standards. See Comprehensive Planning Strategies Appendix, Section 8.2.
- When considering conditional uses in Section 4-404 and when evaluating proposals during site plan review, include the following criteria (from expert opinion)
  - Impact on access to healthy foods
  - Impact on access to safe and well-maintained recreational and open space opportunities
  - Promotion of active transportation, including walking, bicycling, and transit
  - Impact on public health disparities and potential public health benefit or burden to surrounding neighborhood/community

### Creating walkable environments – For detailed justification, see Section 5.3

- Define “pedestrian oriented”. See Sample Language Appendix (Section 8.1). (from evidence and expert opinion)
- Apply pedestrian oriented goals to following zones: OR, OIP, Bioscience, I-MU and special purpose districts, given location near residential uses and mix of uses that could easily encourage walking. (from evidence and expert opinion)
- Include principles of Crime Prevention through Environmental Design in Landscape Manual. See Sample Language Appendix (Section 8.1). (from evidence and expert opinion)

### Improving food access – For detailed justification, see Section 5.4.

- Develop and include zoning incentives for Healthy Food Stores. See Strategies for Healthy Food Store Certification and Incentives Appendix (Section 8.3). (from evidence expert opinion)
- Such incentives could be waiving of fees, reducing parking requirements, or other creative solutions Planning deems appropriate, which may include creation of Healthy Food Enterprise Overlay zoning that could incorporate a variety of incentives, zoning and otherwise to bring healthy food establishments to underserved areas.
- Create Healthy Food Store Use and Definition. See Sample Language Appendix (Section 8.1). (from evidence expert opinion)
- Include Fast Food definition and mark as a distinct use. See Sample Language Appendix (Section 8.1). (from expert opinion)
- Community Gardens
- Clarify distinction between “Community Garden (permanent)” and “Community Garden (temporary).” (from evidence and expert opinion)
- Consider adding language regarding ADA/Universal design for community gardens. See Sample Language Appendix (Section 8.1). (from expert opinion)

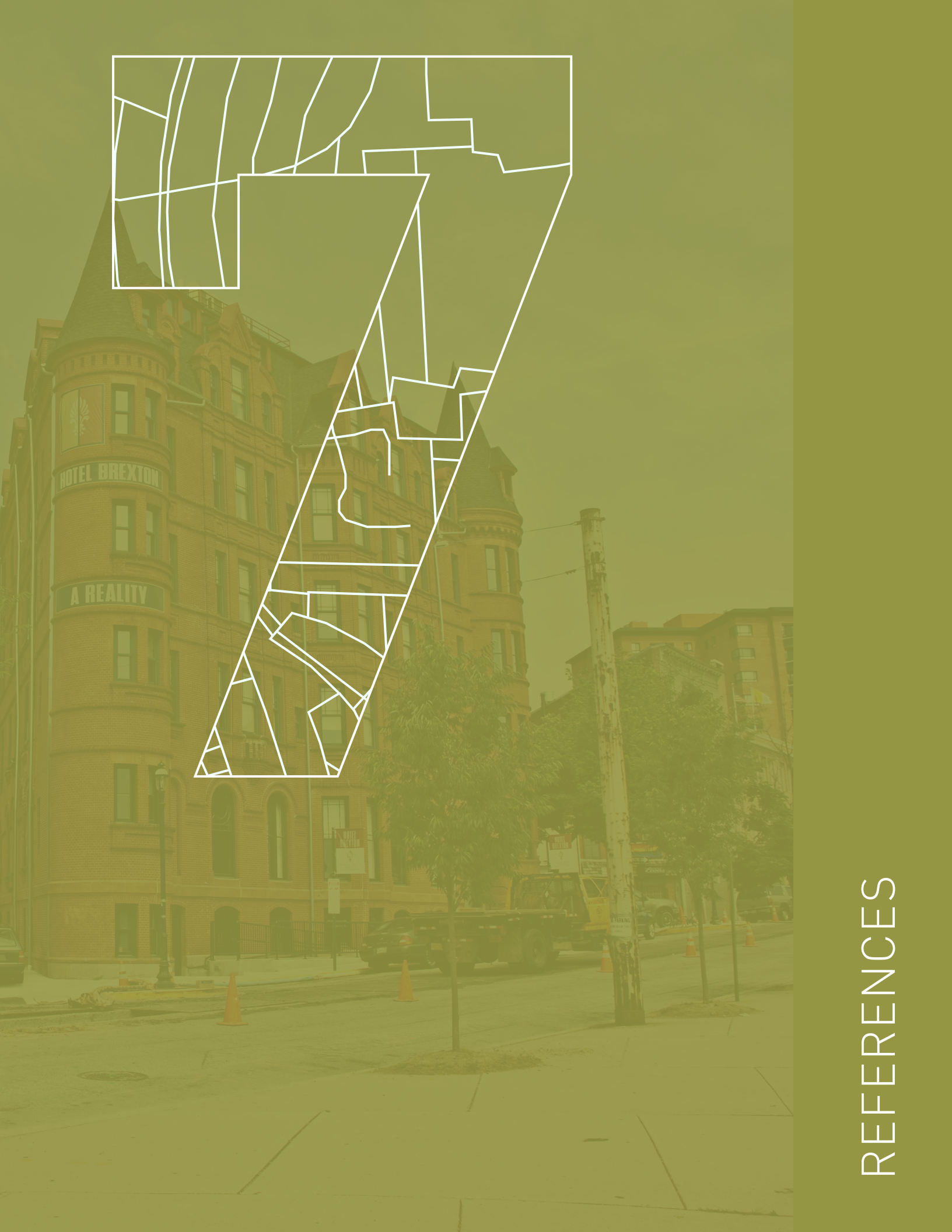
- Urban Agriculture
- Consider changing the use definition for urban agriculture to better distinguish from community gardens. See Sample Language Appendix (Section 8.1). *(from expert opinion)*
- Consider amending the zoning regulations in 14-327, as they currently allow uses that may be negative for public health, such as spraying of agricultural chemicals. See Sample Language Appendix (Section 8.1). *(from expert opinion)*
- Add soil testing language in urban agriculture use standards to match community garden language *(from expert opinion)*
- Consider additional standards for Farmers Markets that would expand access to healthy food (e.g. requirements for WIC acceptance). See Sample Language Appendix (Section 8.2). *(from expert opinion)*

### 6.2.3 RECOMMENDED CHANGES TO TRANSFORM BALTIMORE REWRITE PROCESS AND PLAN FOR CODE ADMINISTRATION

The following recommendations emerged from a combination of sources including interviews, observation of the process, and guidance from Planning documents (American Planning Association’s Fair and Healthy Land Use (PAS Report 549/550); Smart Codes: Model Land Development Regulations (PAS Report 556). Included in this section are recommendations for conducting mapping meetings, determining how decisions are made about revisions to the code, and other strategies to make the new zoning code as easy to use as possible. See Sample Language Appendix, Section 8.1 and Denver’s Comprehensive Zoning Rewrite website (<http://www.newcodedenver.org>) for some examples.

- Amend the zoning code to require the Planning Director to establish a set of policy principles and guidelines for enhancing the processes for engaging the public in land development. *(from expert opinion)*
- Clearly publicize Planning-initiated meetings with community groups about mapping options. *(from expert opinion)*
- Amend zoning code to require the Planning Director in consultation with community organization to create a set of principles by which recommendations for changes to the code and map will be assessed, evaluated and incorporated. *(from expert opinion)*
- In plain language, the Procedures Title should clearly answer for any user basic “How to” questions for using the code, such as “How do I apply for a variance?” *(from expert opinion)*
- In plain language, a Translational Document or User’s Guide should be created to compare the old and new code *(from expert opinion)*





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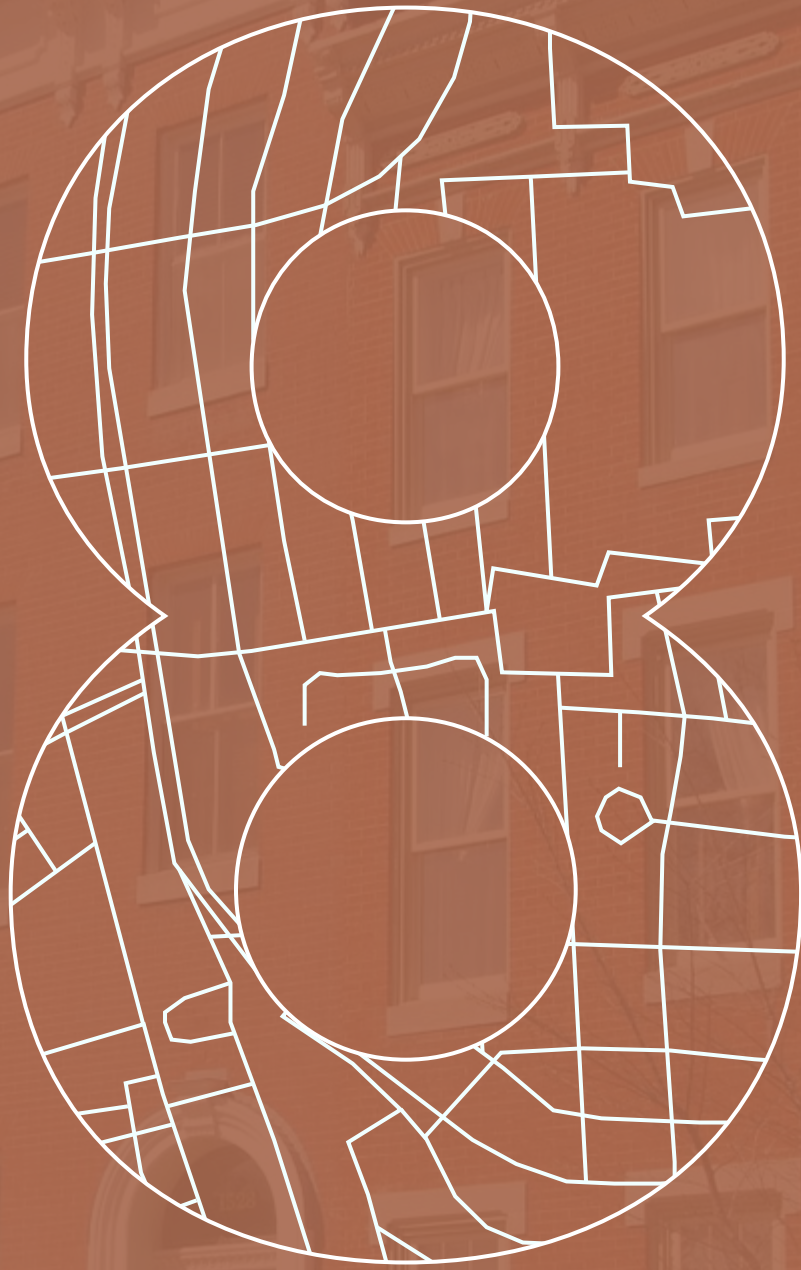
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- 8.1 Sample Code Language**
- 8.2 Strategies for Healthy Comprehensive Planning**
- 8.3 Strategies for Healthy Food Store Certification and Incentives**



## 8.1 SAMPLE CODE LANGUAGE

### Language and Definitions for Addressing Off-Premise Alcohol Sales Outlets

- Definition for Off Premise Alcohol Sales Outlets
  - Off premise alcohol sales outlets includes establishments that sell alcohol for off premise consumption with any of the following licenses from the Liquor Board: 1) Beer and Wine Class “A” off Sale package goods; 2) Beer, Wine and Liquor Class “A” off sale package goods; or 3) Beer, Wine and Liquor Class “A-2” - Off Sale package goods.
- Sample Conditional Use standards
  - The City of Oakland has a separate conditional use process for alcohol outlets, convenience markets and fast food. The full process is available from, <http://www.oaklandnet.com/government/ceda/revised/planningzoning/ZoningSection/Forms/ConvenienceMarketsFastFoodAlcohol.pdf>.

### Below are measures from this process:

1. The proposal will not contribute to undue proliferation of such uses in an area where additional ones would be undesirable, with consideration to be given to the area’s function and character, problems of crime and loitering, and traffic problems and capacity.
  2. The proposal will not adversely affect adjacent or nearby churches, temples, or synagogues; public, parochial, or private elementary, junior high, or high schools; public parks or recreation centers; or public or parochial playgrounds.
  3. The proposal will not interfere with the movement of people along an important pedestrian street.
  4. The proposed development will be of an architectural and visual quality and character which harmonizes with, or where appropriate enhances, the surrounding area.
  5. The design will avoid unduly large or obtrusive Signs, bleak parking areas devoid of landscaping, and an overall garish impression.
  6. Adequate litter receptacles will be provided where appropriate.
  7. Where the proposed use is in close proximity to residential uses, and especially to bedroom windows, it will be limited in hours of operation, or designed or operated, so as to avoid disruption of residents’ sleep between the hours of ten p.m. and seven a.m..
- Sample Options for Achieving Dispersal Zoning (From <http://www.healthpolicyguide.org/doc.asp?id=121>)
    - The City of Oakland, which combined zoning restrictions with an education and enforcement program, conditional use permit requirements and nuisance abatement ordinances. The zoning ordinance limited alcohol outlets to at least 1,000 feet apart.
    - The City of Hayward, which used its zoning ordinance to restrict outlets to at least 500 feet apart and two-per-block
    - The City of Pasadena uses an alcohol overlay district that combines additional notifying requirements and density restrictions: <http://ww2.cityofpasadena.net/zoning/P-2.html#17.28.030>

### EXAMPLE LANGUAGE

- Purpose. The purposes of the AD (Alcohol Density) overlay district are to:
  - Provide increased public notification for the establishment of new bars or taverns, billiard parlors with alcohol service, nightclubs with alcohol service, food sales, liquor stores, convenience stores, and any other use that provide for the sale of alcohol for off-site consumption; and

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- Regulate the density of new bars and taverns, billiard parlors with alcohol service, nightclubs with alcohol service, and food sales, liquor stores, convenience stores, and any other use that provide for the sale of alcohol for off-site consumption in order to prevent an over-concentration of such uses.
- Public notice. This Subsection provides noticing requirements in addition to those in Chapter 17.76 (Public Hearings). The following types of notice shall be provided for applications proposing new bars or taverns, billiard parlors with alcohol service, nightclubs with alcohol service, and uses which provide for the sale of alcohol for off-site consumption. These requirements shall also apply to existing bars or taverns and uses which provide for the sale of alcohol for off-site consumption if the use changes from beer and wine sales to full alcohol sales.
- Timing of notice. Notice shall be mailed and posted at least 28 days prior to the public hearing.
- Mailed notice. Notice shall be mailed to occupants of buildings within 300 feet of the site boundaries.
- Separation requirements. New bars or taverns, billiard parlors with alcohol service, nightclubs with alcohol service, and uses which provide for the sale of alcohol for off-site consumption shall be separated from existing bars or taverns, billiard parlors with alcohol service, nightclubs with alcohol service and uses which provide sales of alcohol for off-site consumption, as follows. These separation requirements are applied to property by the Zoning Map designating appropriate areas in either the AD-1 or AD-2 overlay districts. These requirements shall also apply to existing bars or taverns and uses which provide for the sale of alcohol for off-site consumption if the use changes from beer and wine sales to full alcohol sales.
- AD-1 separation requirements. Within areas designated AD-1 on the Zoning Map, the facilities regulated by this Section shall be separated by a minimum distance of 250 feet.
- AD-2 separation requirements. Within areas designated AD-2 on the Zoning Map, the facilities regulated by this Section shall be separated by a minimum distance of 1,000 feet.

### Language and Definitions for Walkable Environments

- See sample criteria from Wisconsin Traditional Neighborhood Development Model Ordinance, available from: <http://www.urpl.wisc.edu/people/ohm/tndord.pdf>
  - Safe and convenient
  - Mix of uses
  - Incorporates a system of relatively narrow, interconnected streets with sidewalks, bikeways, and transit that offer multiple routes for motorists, pedestrians, and bicyclists and provides for the connections of those streets to existing and future developments
  - Sidewalks in residential areas. Clear and well-lighted sidewalks, [3-5 feet] in width, depending on projected pedestrian traffic, shall connect all dwelling entrances to adjacent public sidewalk.
  - Sidewalks in mixed use areas. Clear and well-lighted walkways shall connect building entrances to the adjacent public sidewalk and to associated parking areas. Such walkways shall be [a minimum of 5 feet] in width.
  - Crosswalks. Intersections of sidewalks with streets shall be designed with clearly defined edges. Crosswalks shall be well lit and clearly marked with contrasting paving materials at the edges or with striping.
  - Curb cuts for driveways to individual residential lots shall be prohibited along arterial streets. Curb cuts shall be limited to intersections with other streets or access drives to parking areas for commercial, civic or multifamily residential uses. Clear sight triangles shall be maintained at intersections, as specified below, unless controlled by traffic signal devices
  - Street lighting shall be provided along all streets. Generally more, smaller lights, as opposed to fewer, high-intensity lights, should be used. Street lights shall be installed on both sides of the street at intervals of no greater than [75] feet. Street lighting design shall meet the minimum standards developed by the Illumination Engineering Society.

- See Principles of Walkability section from URS’s Crescent Street Connectivity Study in Grand Rapids, MI, June 2010
  - Short blocks
  - Safe Walk
  - Comfortable Walk
  - Interesting Walk
- See Pedestrian Friendly Code Elements (book forthcoming) from Public Health Law and Policy:
  - Medium to High Density
  - Mix of land uses
  - Transit routes every ½ mile, maximum
  - Sidewalks 10-12 feet wide
  - Street oriented buildings
  - Closely spaced shade trees
  - Articulated buildings
  - Pedestrian scale lighting
  - Street walls
  - Outdoor dining
  - Public art
- Special paving See Pedestrian Overlay District language in Chapter 4.8 of The American Planning Association’s Smart Codes/ PAS Report 556

### Resources for Crime Prevention Through Environmental Design (CPTED)

- **Virginia Beach’s Crime Prevention through Environmental Design:** General Guidelines for Building Safer Communities (2000), available from <http://www.humanics-es.com/cpted.pdf> recommends that municipalities address the following landscaping and lighting questions for project and policy development:
  - Questions about landscaping
- What kinds of trees, shrubs, or other plants are proposed for the site?
- Where will each of the different kinds of plants be installed?  
Will trees be planted adjacent to fences or walls?
- What are the recommendations or requirements for plant maintenance?
- Are walls, fences, plazas, fountains, berms or other landscape elements included in the plan?
- Will plants, walls, fences, plazas, berms or other landscape elements reduce or remove opportunities to see entrances and exits?
- Will they provide places to hide?
- Will they be attractive to outsiders?
- How are the dumpsters screened (if this is required)?

### Questions about lighting

- Where will light fixtures be located? Along streets? In parking lots? Near buildings? Attached to the building?
- What kind of lamp is proposed? How bright?
- How tall will the light poles be?

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- Where are the lights relative to the building? Parking? Loading areas? Entrances and exits? Pedestrian paths?
- Will trees or other landscape elements block some or all of the light falling on the buildings? On the ground?
- Are entryways well lit?
- These guidelines can be useful for site plan review, the landscape ordinance, and other zoning criteria
- These recommendations must be considered in terms of how well they align with the Sustainability Master Plan and other City goals
- The document referenced above, <http://www.humanics-es.com/cpted.pdf>, contains additional CPTED principles and design guidelines that are specific to the building use (residential, commercial, educational)

### Language and Definition for Healthy Food Store

- **Definition of healthy food store:** A healthy food store is a retail operation that meets the following criteria: accepts EBT, Food Stamps and WIC, labels healthy food options, carries more than 3 varieties of fresh fruit, carries more than 2 varieties of fresh vegetables (not including potatoes or onions), stocks skim or 1% milk, stocks bottled water, stocks at least 1 type of whole wheat bread and stocks at least 2 low-fat/low-sugar snacks (<10g sugar and <10% daily value of fat/serving)
- The Health Department would administer the Healthy Food Store certification program. Existing stores could receive certification upon meeting criteria on Health Inspector's Checklist. New stores to get Health Department license would need to commit to stocking items from the list of criteria and would be inspected within 3 months of opening for meeting these criteria by Health Department Food Inspectors.

### Language and Definition for Fast Food Outlets

- **Definition of fast food From PHLP's Model Healthy Food Zone :** "Fast Food Restaurant" means a retail food establishment where food and beverages are: **(1)** prepared in advance of customer orders or are able to be quickly prepared for consumption on or off the premises; **(2)** are ordered and served over counters or at drive-through windows; and **(3)** paid for before being consumed.
- For additional model fast food zoning language and spacing requirements, see PHLP's Model Healthy Food Zone, available at: <http://www.nplanonline.org/nplan/products/model-healthy-food-zone-ordinance>

### Language for Community Gardens

- Cambridge, Mass., requires that at least 5 percent (but not fewer than one) of the garden plots have raised beds. It is important to ensure that all residents have access to community gardens.
- PHLP's model zoning ordinance, available from [http://www.nplanonline.org/system/files/CommunityGardenPolicy\\_FINAL\\_Updated\\_100608.pdf](http://www.nplanonline.org/system/files/CommunityGardenPolicy_FINAL_Updated_100608.pdf), suggests the following:
  - The garden must comply with Americans with Disabilities Act design standards for accessible entrance routes and accessible routes among different components of the garden, and must follow universal design principles whenever possible.
  - A minimum of \_\_\_ percent of the garden must contain raised beds that are designed for access for gardeners using wheelchairs or with other mobility impairments

**Language and Definitions for Urban Agriculture**

- Sample definition
  - Urban Agriculture shall consist of land used for the cultivation of fruits vegetables, plants, flowers or herbs by an individual, organization, or business with the primary purpose of growing food for for sale (including for-profit and non-profit enterprises). Urban agriculture should provide economic development and entrepreneurial opportunities in the City’s food system, and provide a source of fresh, local food for food markets.
- Use standards
- Site users must use organic and sustainable growing practices. Use of pesticide and chemical fertilizer is prohibited.
- The site is designed and maintained so that water will not drain onto adjacent property.

**Resources for User-Friendly Codes**

- Denver’s Comprehensive Zoning Rewrite Website <http://www.newcodedenver.org/>. This site includes:
  - Frequently Asked Questions
  - Description of how revisions and decisions are made
  - Spanish Language site
  - Searchable Calendar of Events
  - Meeting Minutes and Copies of Press material

**8.2 STRATEGIES FOR HEALTHY COMPREHENSIVE PLANNING****Creating Healthy Neighborhoods and Off-Premise Alcohol Sales**

- In addition to using zoning to deal with future liquor stores, Baltimore could consider a “deemed approved” ordinance to deal with existing liquor stores: in areas where there is already an over-concentration of off-site liquor retailers, a local government can revoke “grandfathered” business licenses if that business is not operating in a way that upholds community health, safety and welfare.
- This tool may potentially be applied to existing small stores that carry only unhealthy products like liquor, tobacco, and junk food without offering healthy alternatives.
- In 1994, Oakland CA passed a “deemed-approved” ordinance, allowing the city to hold alcohol retailers with older permits (granted under old state standards) to new standards. If neighbors report nuisances ranging from litter and graffiti to drug dealing and prostitution, the city can require the store to either eliminate the nuisances or face potential revocation of its operating permit.
- Vallejo, Oxnard, San Diego, and San Francisco have passed similar ordinances.
- If such an ordinance is created, tracking the location of proposed and existing outlets through business license applications and approvals would be necessary.

**Improving food Access**

- Create “Healthy Food Enterprise [Overlay] Zones” that only apply in underserved areas of the City.
  - The package could include zoning incentives, but could also be used as the basis for additional non-zoning incentives such as marketing assistance or special recognition, infrastructure improvements including roads, sidewalks, parking, lighting, building facades, waste water capacity, and the electrical grid, as well as other financial incentives like grants/loans, business planning assistance, tax breaks, etc.

The New York City FRESH Initiative incentives include zoning and non-zoning incentives:

- **Zoning Incentives**
  - Additional Floor Area in Mixed Residential and Commercial Buildings
  - Reduction in Required Parking
  - Larger As-of-right Stores in Light Manufacturing Districts
- **NYCIDA Financial Incentives**
  - Real Estate Tax Reductions
  - Sales Tax Exemption
  - Mortgage Recording Tax Deferral
- **Farmers Markets**
  - There is currently inconsistency in zoning code for farmers’ markets – the code includes a use definition but no regulations or operating standards.
  - Add regulations such as requiring farmers’ markets to accept EBT and other federal food assistance programs, provide a required percentage of vendors that must sell farm products as opposed to crafts or other goods, etc.)
  - See PHLP’s model farmers’ market zoning ordinance, Establishing Land Use Protections for Farmers’ Markets, available at: <http://www.nplanonline.org/nplan/products/establishing-land-use-protections-farmers-markets>

### 8.3 STRATEGIES FOR HEALTHY FOOD STORE CERTIFICATION AND INCENTIVES

The following section details components that could become part of a healthy food store certification program to be managed by the Baltimore City Health Department

#### Scope of program

- The Health Department would administer the certification program. Existing stores could receive certification upon meeting criteria on Health Inspector’s Checklist. New stores to get Health Department license would need to commit to stocking items from the list of criteria and would be inspected within 3 months of opening for meeting these criteria by Health Department Food Inspectors.
- Benefits of proposed approach:
  - Managed by Health Department
  - Part of existing inspections, no additional cost to administer
  - Such stores could locate in additional areas around the city and
  - Certification may be a requirement for additional subsidies in the future that encourage carrying/purchasing healthy items.

#### Options for Establishing Healthy Food Store Definitions

- From the Healthy Corner Stores Network, Healthy Corner Stores Q & A, available at: [http://healthycornerstores.org/wp-content/uploads/resources/Corner\\_Stores\\_Q+A.pdf](http://healthycornerstores.org/wp-content/uploads/resources/Corner_Stores_Q+A.pdf)
  - Some organizations have developed specific standards that stores must meet in order to earn some type of healthy corner store designation.
  - These standards typically include requirements to stock certain types of items (such as whole grain bread, low-fat milk, or fresh produce) and/or a minimum number of healthy items (such as six types of fresh produce).
  - In Hartford, standards for “Healthy Food Retailers” are based on the percentage of shelf space dedicated to healthy foods, and increasing that percentage each year.



### Criteria for “Healthy Food Store” Designation

- Some criteria from the Congressional Hunger Center ([http://healthycornerstores.org/wp-content/uploads/resources/NOLA\\_Healthy\\_Corner\\_Stores\\_Toolkit.pdf](http://healthycornerstores.org/wp-content/uploads/resources/NOLA_Healthy_Corner_Stores_Toolkit.pdf)) include the presence of:
  - Fresh fruits and vegetables
  - Frozen fruits and vegetables
  - Low-sodium or unsweetened canned fruits and vegetables
  - Dried fruit and nuts
  - Whole wheat bread, bagels, pasta and other grains
  - Brown rice
  - Low-fat or skim milk, yogurt and other dairy products
  - 100% fruit juice
  - Low-sugar cereals
  - Lean meats and seafood
  - Light dressings and condiments
  - Water
- Another option (as opposed to, or in addition to stocking requirements) is to require that a percentage of the store’s square footage or a fixed amount of floor space be devoted to the sale of fresh produce. New York City’s FRESH program is an excellent example of this strategy (Oakland, CA also follows this model). The FRESH program requires the following provisions:
  - Provide a minimum of 6,000 square feet of retail space for a general line of food and nonfood grocery products intended for home preparation, consumption and utilization;
  - Provide at least 50 percent of a general line of food products intended for home preparation, consumption and utilization;
  - Provide at least 30 percent of retail space for perishable goods that include dairy, fresh produce, fresh meats, poultry, fish and frozen foods; and
  - Provide at least 500 square feet of retail space for fresh produce.

### Insuring Access to Healthy Food for Low Income Populations

- Additionally, require that Healthy Food Stores accept EBT and WIC (WIC certification may substitute for specific product stocking requirements, since the new WIC food package includes healthy food options such as produce, low-fat dairy and whole grains.