

# HEALTHY HOMES and HEALTHIER PEOPLE:

How Local Authorities Can Leverage National Policy Trends to Create Healthier Homes and More Vibrant Communities

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## Introduction

Beyond the basic human need for shelter and the intrinsic human aversion to homelessness, most of us consider our homes the ultimate sanctuary – a place of safety and well-being. Health researchers have a lot to say about the connection between health and housing. On the one hand, optimal housing conditions contribute to healthier lives. Based on the evidence the reverse is also true. Suboptimal housing compromises health and quality of life.

*Not only can a home make you less healthy, but poor health can reduce the quality of life you experience within your home – or compromise your economic capacity to even afford a home.*

This begs the obvious question – how could your home make you sick? The evidence seems to point to a number of pathways – from mold to structural deficiencies and from poor ventilation to pest infestations. Potential hazards lurk behind every door, especially if community residents are unable or disinclined to be vigilant about promoting a ‘healthy home.’ Moreover, there is a bidirectional relationship between health and housing. That is, not only can a home make you less healthy, but poor health can reduce the quality of life you experience within your home – or compromise your economic capacity to even afford a home.

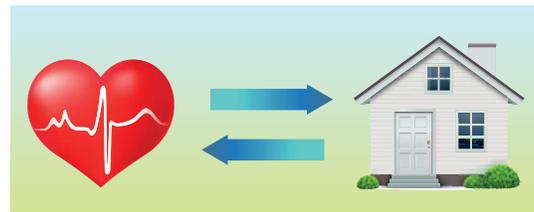
Of course, although community residents play an important frontline role in healthy housing, the rules of public policy often determine how housing is constructed, who has access to housing, what public health measures are taken to safeguard homes and neighborhoods, and how housing and health are prioritized in the public sphere.

The main objective of this paper is to examine, to the extent possible, how housing policy affects health outcomes, and to explore whether or not policy changes can sufficiently improve health outcomes relative to where people live. Geographically, we will focus our attention on Maryland, but we will lean on national trends to further inform our understanding. In the end, we hope that our analysis will inform public policy by identifying important health and housing patterns and by enabling policymakers to more concretely connect the dots between health and housing.

### *Social Determinants of Health*

According to the World Health Organization, housing is clearly one of the most central of all social determinants of health<sup>1</sup>. The social determinants of health are those elements of our daily lives that are not necessarily medical or clinical in nature, but directly or indirectly impact our health and well-being, such as economic prospects (education, job training, employment, and entrepreneurial opportunity), housing, ready access to affordable medical care, access to nutritious food, safe recreational spaces, transportation, public safety, and environmental hazards. For example, Appendices A and B show the relative need for primary care services,

by zipcode, and the distribution of primary care physicians in Prince George’s County. In other words - where you live is an important determinant of your health status.



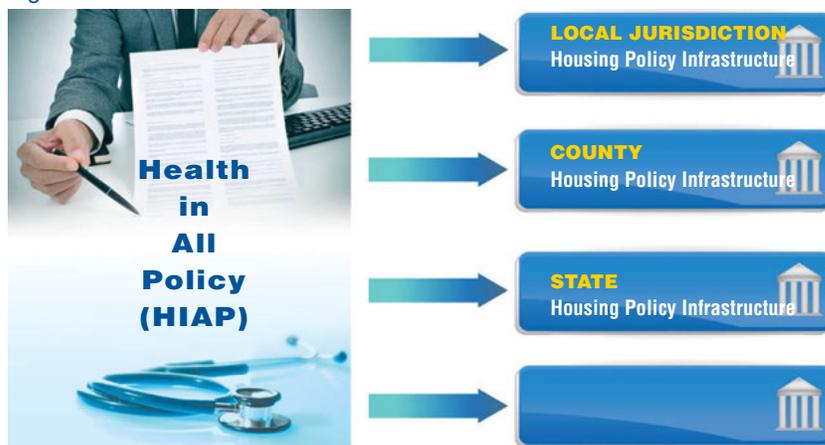
Public policy, if it is to be truly effective, must address the bidirectional relationship between health and housing. Ultimately, this requires a *health in all policies* (HIAP) approach that addresses the links between the social determinants of health, community residents’ health behavior, and healthcare accessibility.

The strength of the association between social determinants and health outcomes has led to the growing acceptance of the notion that communities should pursue “health in all policies”<sup>2</sup>. This self-evident concept holds that policymakers should consider the potential health implications of every public policy, whether or not the connections between that policy and health are obvious at the time. Health in all policies requires collaborative approaches across sectors, and across policy areas. Figure 1 illustrates the relationship between a health in all policies (HIAP) approach and the housing policy infrastructure at multiple jurisdictional levels.

This brings us to the issue of *affordability*. Personal finance experts usually counsel that the average person should spend no more than one third of net income on housing. Many Americans who struggle with ‘housing insecurity’ spend half or more of net income on housing, placing them precariously close to homelessness every pay period. We will explore this in more depth later in the paper.

Beyond location and affordability there are various public health, public safety, engineering and architectural reasons for why a home could be unhealthy. The home does not necessarily have to be located in a ‘bad’ neighborhood for problems to arise that compromise the health of residents.

Figure 1



*The home does not necessarily have to be located in a ‘bad’ neighborhood for problems to arise that compromise the health of residents.*

### *How Your Home Could Make You Sick*

The *location* of your home is also no small matter. Where you live usually determines the distance you commute to work, to the grocery store, to the park or the gym, or to the hospital or doctor’s office. It often decides how you get there as well, whether via three infrequent, overcrowded buses or via more pleasurable and efficient means. Location also determines your exposure level to blight or violence, and it contributes to social mobility and the opportunity to build wealth. Consider the fact that home values in many neighborhoods predominantly populated by people of color collapsed within the last decade or so, resulting in negative equity for the homeowners.

The Robert Wood Johnson Foundation<sup>3</sup> (RWJF) has listed the following possibilities, by category:

- ▶ **Infectious diseases** – due to rodents and insects as vectors; microorganisms that thrive on dampness and variations in temperature; the spread of communicable disease via overcrowding;
- ▶ **Unsafe drinking water** –from old or damaged pipes, contamination of water supply from environmental accidents or inadequate sewage systems;
- ▶ **Indoor air pollution** – leading to asthma, a leading cause of disability, missed school and work days, and hospitalizations, especially among children;

*Some would argue public policy more or less created the American 'inner city'.*

- ▶ **Unintentional injuries** – falls (unsafe stairs/sidewalks); fires (smoke inhalation, burns, carbon monoxide (CO) poisoning); drowning, trauma (machinery and appliance accidents, electrocution);
- ▶ **Blood poisoning** – from lead, asbestos, carbon monoxide, radon, and many other **allergens** and **toxins** that are potentially **carcinogenic**; Both the federal departments of Housing and Urban Development (HUD) and the Centers for Disease Control and Prevention (CDC) administer Lead Poisoning Prevention and Health Homes programs that benefit all 50 states, including Maryland.
- ▶ Second hand **smoke** from living with smokers;
- ▶ **Mental health impacts** – depression from job loss that leads to evictions or foreclosure<sup>4</sup>; stress from living in crime-filled neighborhoods or from aforementioned problems;
- ▶ **Location** – housing could be located in a food desert or a food swamp (not enough fresh nutritious food, or too much unhealthy food, respectively, both risk factors for obesity);
- ▶ **Poor insulation** – residents suffer more adverse impacts from extreme weather conditions;
- ▶ **Homelessness** – a recent report<sup>5</sup> indicates that every year one in 30 American children goes to sleep without a home they can call their own, up from one in 50 in 2006. Homeless children tend to be hungry and sick more often.
- ▶ Some of the effects of substandard housing may be evident throughout entire **neighborhoods** – lack of safe spaces for physical activity, crime, lack of open spaces, proximity to nutritious food – contributing to cardio vascular disease (CVD), low birth weight (LBW), sexually transmitted diseases (STDs), environmental hazards such as air pollution from power plants or vehicle exhaust emissions, as well as noise pollution and stress-related conditions.

We are, however, most interested in the connection between housing policy and health outcomes.

## How Does Public Policy Contribute To This Problem?

### *History as Guide*

Some would argue public policy more or less created the American 'inner city'. The following quote from Sections 935 and 937<sup>6</sup> of the 1938 Underwriting Manual of the Federal Housing Administration (FHA) provides some useful context: "If a neighborhood is to retain stability, it is necessary ... \*(that) properties ... continue to be occupied by the same social and racial classes. A change in social and racial occupancy generally contributes to instability and decline in values." \*Emphasis added.

FHA's lending practices reflected this mindset (to greater or lesser degrees) during the decades between its founding in the 1930s and the fair housing laws that were passed in the 1960s pursuant to the activism of the Civil Rights Movement.

FHA was established under the National Housing Act of 1934, following a housing and mortgage-lending crisis occasioned by the Great Depression. The fixed-rate, low-interest, 30-year mortgage quickly became the industry standard after the FHA made it popular, but not all borrowers could benefit from the economic value it created.

The original underwriting manual (circa 1934) intended as the guidebook for implementing the law was explicit about keeping racial and ethnic groups separate, even within neighborhoods. A few quotes follow, from Sections 310 and 311<sup>7</sup>, describing how neighborhoods and individual properties can maintain or increase their market value over time:

- ▶ "The more important among the adverse influential factors are the ingress of undesirable racial or nationality groups..."

- ▶ “All mortgages on properties in neighborhoods definitely protected in any way against the occurrence of unfavorable influences obtain a higher rating.”

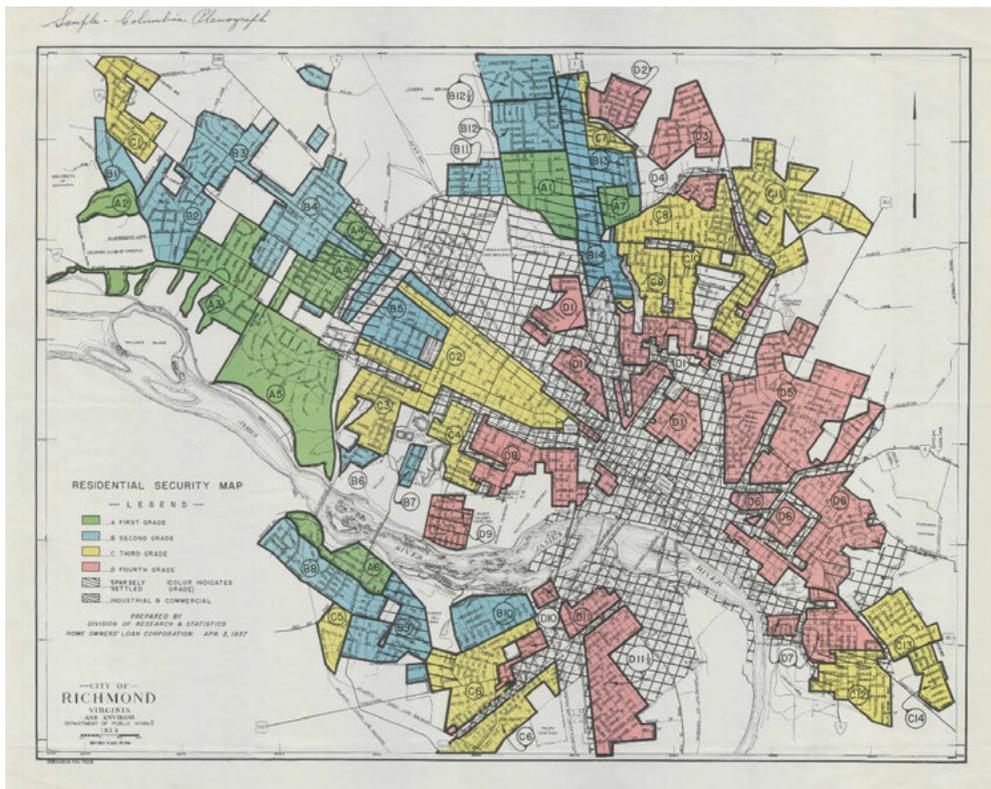
Subsequent iterations of the manual provided more guidance on how to define these “undesirable”, “unfavorable” or “adverse” influences or factors. More importantly, they provided more direction on how these influences could be mitigated. In 1936 for example, the manual stipulated – “Deed restrictions are apt to prove more effective than a zoning ordinance in providing protection from adverse influences ... Recorded deed restrictions should strengthen and supplement zoning ordinances...”

Further, the manual insisted that deed restrictions include “prohibition of the occupancy of properties except by the race for which they are intended”, and “appropriate provisions for enforcement”. The language surrounding the underwriting

of FHA backed mortgages would change over time, but America’s major cities had by then been organized in such a way as to guarantee segregated enclaves far into the distant future.

Through the explicit and widespread use of ‘redlining’<sup>8</sup>, mortgages were denied to some potential homebuyers based on race and ethnicity rather than creditworthiness or ability to pay. Lenders would literally depend on color-coded maps (known in the early years as ‘residential security maps’) where the sections of the map colored red depicted neighborhoods where blacks were to be denied mortgages.

The Place Matters<sup>9</sup> project has documented some of the ill effects of these policies. In their analysis of how this played out in Baltimore, Maryland, they note: “...residential security maps (known as redlining maps) ... were color-coded to signify the level of investment risk assumed to exist in particular neighborhoods.



Richmond, Virginia, circa 1923. Courtesy of the National Archives.



In addition “...newly suburban developments that were home to almost exclusively white residents were considered the safest areas in which to invest. Those areas with predominantly black populations were considered the highest-risk areas, and those areas with even just a few black residents were considered to be at significantly increased risk.”

*Concentrated poverty in a given neighborhood tends to become a vicious cycle that depresses economic activity.*

According to the American Civil Liberties Union (ACLU) of Maryland, Baltimore<sup>10</sup> enacted the first “racial zoning” ordinance in the United States in 1910, enforced by racially restrictive covenants.

These early public policies are no mere historic tidbits. Indeed, the flagrantly exclusionary housing policies of yesterday continue to bear serious implications for housing and health today.

Such policies have had long-term impact, including the phenomenon where Black residents in disadvantaged neighborhoods have found it hard to accumulate wealth in the form of home equity. Further, as loans in ‘red-lined’ areas became harder to obtain, it became easier for poverty<sup>11</sup> to become concentrated in these places, with long-lasting and devastating effect.

The links between poverty and poor health are well-documented. The World Health Organization (WHO) estimates that over one billion people worldwide live on less than \$1 a day, forcing them to live in environments that make them sick. The situation in this country may not be as dire, but poverty impacts access to healthy food as well as access to affordable housing. Depressed neighborhoods tend to have greater exposure to poor air quality, increased exposure to liquor stores, and blight that results from foreclosures and evictions. The latter affects mental health, as evidenced by a recent study<sup>12</sup> that demonstrated increased suicides nationwide as foreclosures and evictions soared during the housing crash of the last decade.

Concentrated poverty in a given neighborhood tends to become a vicious cycle that depresses economic activity. The amount of economic activity in a neighborhood also affects the quality of economic activity a neighborhood attracts. If businesses determine that their potential customers would not be able to afford their product or service they will likely be reluctant to serve such a neighborhood. Doctors’ offices and grocery stores, for example, are both helpful indicators in understanding the connection between economic activity and health.

In Prince George’s County there are 1,837 residents for every primary care physician (PCP)<sup>13</sup>, compared to a Maryland benchmark of 1,153 residents to every PCP. Comparing the number of PCPs in neighboring Montgomery County with those in Prince George’s casts the latter in a similarly unfavorable light. Indications are that many residents go outside the County for medical care. This is due, in part, to the fact that many county residents work outside the county, meaning they spend a lot of their time elsewhere. It also means that it would be more convenient for many of those residents to seek health care closer to work than to home.

The reasons for the provider shortage appear to be mostly about economics<sup>14</sup>. County residents tend to be uninsured at higher rates than in surrounding jurisdictions, a situation hopefully remedied by increasing enrollment in the options provided by the Affordable Care Act. There is also a disproportionate share of Medicaid patients among those residents discharged from Prince George’s Hospital Center, the busiest ‘safety net’ hospital in the County. Both uninsured and Medicaid populations tend to be low income, which puts them at increased risk for poor health, given the increased exposure to risk factors that include inadequate housing. In addition, Medicaid reimbursements are typically much lower than private insurance.

Taken together, these realities lead providers to locate their businesses in other jurisdictions where they think they would not have to be so worried about reimbursement and economic survival. The result is medically underserved areas within the County, which directly impacts access to care for vulnerable populations.

The impact<sup>15</sup> of these disparities<sup>16</sup>, such as reduced access to primary care and nutritious foods, is felt on the local level, so it is worth defining how bad the problem is in any given locality.

## How Many Prince Georgians Have Been Sickened or Injured By Their Homes?

This is a question worth answering, but the county does not collect enough data in the appropriate domains to answer this question definitively. For example – how do foreclosures and evictions impact the demand for mental health services in the County? The disease states described in the following section also contain examples of where the county could supplement whatever data Maryland is collecting, in order to understand those problems at a more granular level.

We can say, however, that during the past decade Prince George’s County<sup>17</sup> was the “epicenter” of the housing crash in the Washington D.C. Metro Area, with as yet undetermined effects (in terms of scope and type of illness) on the health of County residents.

The worst of the crisis is now behind us, but some of the economic aftermath lingers to the present day. In Prince George’s County it meant that

County officials were faced with a greater demand for emergency and temporary housing. The County has allocated an increasing amount of social service funding for emergency shelters since the crash, while hoping for a regional economic recovery that could lift the housing market.

Some homeowners found themselves in situations where they could no longer afford their housing and began defaulting on their mortgages, leading to evictions and foreclosures, and a cascading effect where vacant buildings begin to proliferate block by block in certain neighborhoods. We have alluded to some of the potential health effects in such a scenario, but hard numbers about specific health impact should be collected and analyzed.

State level data do provide a useful window into the challenge. We have attempted to understand to what degree.

## How Housing Impacts Health in Maryland: What the Data Show

The data show that four in ten Maryland children live in a household with a significant housing cost burden. Unfortunately the steep price tag does not necessarily make a dwelling any healthier. Given that 60% of the state’s homes were built before 1980, there are a lot of housing-related health hazards, making Maryland a “high housing hazard state”, according to the National Center for Healthy Housing<sup>18</sup> (NCHH). The health impact for the state is significant, including missed school days for kids and missed work days for parents, in addition to increased ER visits and hospitalizations. This necessarily inflates direct and indirect medical costs that could otherwise be avoided. NCHH cites the following examples:

*Some homeowners found themselves in situations where they could no longer afford their housing and began defaulting on their mortgages, leading to evictions and foreclosures, and a cascading effect where vacant buildings begin to proliferate block by block in certain neighborhoods.*



### FUNDING FOR HEALTHY HOUSING IN MARYLAND:

- ▶ Maryland has received a total of \$52,435,221 in funding for 36 grants from HUD’s Office of Healthy Homes and Lead Hazard Control since the inception of the grants program in 1999.
- ▶ In fiscal year 2011, the state of Maryland received \$594,000 in funding for healthy homes programmatic activities from the Centers for Disease Control and Prevention (CDC).<sup>19</sup>

### CHILDHOOD LEAD POISONING:

- ▶ In 2012, 2,892 of the children tested in Maryland had an elevated blood lead level, which is five or more micrograms of lead per deciliter of blood (µg/dL); 343 of them had blood lead levels of 10 µg/dL or more.<sup>20</sup>

### ASTHMA:

- ▶ In 2008, an estimated 127,411 children in Maryland had asthma and child current asthma prevalence was 9.5 percent, higher than the national average of nine percent. In addition, an estimated 404,516 adults in Maryland had asthma.<sup>21</sup>
- ▶ Child current asthma prevalence was higher among non-Hispanic blacks than non-Hispanic whites in Maryland.<sup>22</sup>
- ▶ In Maryland, the asthma-related hospitalization rate for children was 211.3 for every 100,000 persons.<sup>23</sup>
- ▶ In 2006, asthma in Maryland resulted in 9,700 hospitalizations, 44,300 visits to hospital emergency departments, thousands of hours of lost school and workdays, and 55 deaths.<sup>24</sup>

### RADON:

- ▶ Eight counties in Maryland have an average indoor screening level greater than 4 pCi/L, meaning they are in a “red zone” or have high radon levels. Seven counties and Baltimore City have an average indoor

screening level between 2 and 4 pCi/L, qualifying them at moderate levels of radon.<sup>25</sup>

### CARBON MONOXIDE DEATHS:

- ▶ There were 84 deaths in Maryland due to carbon monoxide exposure in 2000-2007.<sup>26</sup>

### INJURY-RELATED DEATHS:

- ▶ For every 100,000 persons in Maryland, there were nearly 20 unintentional deaths at home caused by dangers other than automobile-related issues.<sup>27</sup>

*Exposure to lead has been linked to neurological damage in children, especially from birth to age six, resulting in impaired cognitive function and learning disabilities.*

### Lead Exposure

Exposure to lead has been linked to neurological damage in children, especially from birth to age six, resulting in impaired cognitive function and learning disabilities. Maryland has tried to mitigate this for years. Since the enactment of the state’s lead paint risk reduction law in 1996, the number of childhood lead poisonings has decreased significantly in the areas of the state at highest risk, i.e. Baltimore City and Dorchester, Wicomico, Worcester and Somerset Counties in the Eastern Shore.

According to the state’s 2011 Lead Summer Study Report<sup>28</sup> - led by the Maryland Department of the Environment (MDE) - the number of children tested for lead poisoning statewide has doubled over the past 2 decades, but children found with blood lead levels above the 10 micrograms/deciliter level has plummeted by more than 20 percentage points. In 2010, 21,595 Prince George’s County children were tested, and of those there were only 42 (0.2%) new (not carried over from 2009 or previous years) cases of blood lead poisoning. Appendices E and F illustrate these gains in graphical form.

Even though the incidence of lead poisoning has been dramatically reduced over the last 2 decades, the MDE study panel recommended the following policy changes to maintain the current momentum:

- ▶ The Maryland Department of Health and Mental Hygiene (DHMH) and MDE should review lead testing and outreach in areas where elevated blood levels cluster on a recurring basis;
- ▶ MDE should seek to implement the federal rule that requires training and certification of all contractors rehabilitating pre-1978 homes, so as to prevent the spread of lead dust which results from the breakdown of lead paint, and may be even more hazardous to human health;
- ▶ Maryland should seek legislation that would give local health departments the explicit authority to order lead abatement in their respective jurisdictions; expand the universe of rental properties regulated by state lead law to include those properties built between 1950 and 1978, given the high likelihood that such units do in fact contain lead paint;
- ▶ MDE should update the registry that lists rental properties and their risk reduction certificates, by making them searchable, for example; the state should either increase the rental registration fee and/or institute a tax on every gallon of paint sold in the state, in order to adequately fund the state's lead program.

### *Asthma*

Asthma prevalence in Maryland varies by zip code. In addition, asthma emergency room visits and hospitalizations also vary based on where you live. The overall burden on the state is extensive, and there are disparities based on race, ethnicity, and who pays for asthma care. Asthma contributes to about 20% missed school days in Maryland, while only about 10% of adults attributed work-related absences to asthma. Prince George's County asthma mortality was at the higher end of the range (data 2005-2009), relative to Montgomery County. [Asthma mortality data](#)<sup>29</sup> were not available for about half the counties in the state.

The state's [Asthma Control Plan](#)<sup>30</sup> lists the reduction of disparities as one of its main goals, by age, race, ethnicity, and geography. Another goal of this plan is to reduce environmental exposure, thus reducing the amount and intensity of allergens and stimuli that trigger or exacerbate asthma attacks. These triggers could be present at home, at work, or at school, so the plan recommends various interventions to deal with these threats in either setting. It is also worth noting that triggers exist in both indoor and outdoor settings, hence the need for tailored approaches.

"Asthma in Maryland 2011", a study compiled by the Maryland Asthma Control Program (MACP), indicates the following as the leading environmental triggers in the home, for the period from 2007-2009: carpeting/rugs in the bedroom; indoor pets, gas used for cooking; pets allowed in bedroom; wood burning stoves or fireplaces; smoking inside the home. They reported that the triggers were very similar for adults and children. The MACP recommends using exhaust fans in the kitchen and bathrooms when they are in use, mattress and pillow covers in the bedrooms, washing sheets and pillow cases in hot water, and using de-humidifiers and air purifiers as often as necessary.

### *Radon*

Scientists estimate that radon gas is the second leading cause of lung cancer in the United States, after smoking, claiming between 7,000 and 14,000 lives every year. Radon occurs naturally in all soils, and if it seeps into buildings it can accumulate to dangerous levels. It is all the more insidious since it is radioactive but you cannot see, smell, or taste it. The U.S. Environmental Protection Agency (EPA) recommends that all homes be tested for radon<sup>31</sup>. There are established protocols for testing, mitigation, and reduction of radon levels. This is the nation's leading cause of lung cancer for non-smokers, making it a significant

*Asthma contributes to about 20% of missed school days in Maryland, while only about 10% of adults attributed work-related absences to asthma.*

public health issue that gets less attention than it deserves. The State of Maryland has no radon program, but Montgomery County<sup>32</sup> has mandated that homes built after 1995 be constructed to “resist” radon entry and mitigate radon levels into the future. No data are available regarding the exact number of Marylanders who succumb to radon exposure every year, nor is there a state-wide (or county by county) database of how many radon tests are done every year on Maryland homes. Such data should be collected.

*Like radon, carbon monoxide (CO) is odorless, colorless, and tasteless, and can begin to accumulate in a building before inhabitants or residents know it is there.*

### *Carbon Monoxide Poisoning*

Like radon, carbon monoxide (CO) is odorless, colorless, and tasteless, and can begin to accumulate in a building before inhabitants or residents know it is there. Sources of CO would include idling a car inside a garage, appliances that burn fuel inefficiently, a fireplace with the flue kept closed, running a generator or gasoline-powered tool indoors. Carbon monoxide detectors can be installed inside a home, and can alert residents via an alarm when CO reaches unsafe levels. It is a good idea to install them near sleeping areas. As such, Prince George’s County<sup>33</sup> now requires (as of July 1 2014) that residents in one and two family dwellings install CO detectors near sleeping quarters in each home.

The University of Maryland Medical Center<sup>34</sup> notes that December and January are peak months for CO poisoning, since people are more likely at those times to be using stoves, fireplaces or appliances that may be improperly adjusted or operated indoors without proper ventilation.

DHMH<sup>35</sup> has estimated that between 1999 and 2004 there were 46 deaths in Maryland due to accidental CO exposure, for a rate of 1.43 deaths per million persons per year, compared to a national average of 1.53 deaths per million persons per year.

### *Injuries in the Home*

According to the CDC<sup>36</sup> injury and violence was the leading cause of death in the United States in 2011, among 1 to 44 year olds. Below is a map depicting death rates from unintentional injuries in Maryland from 2004-2010.

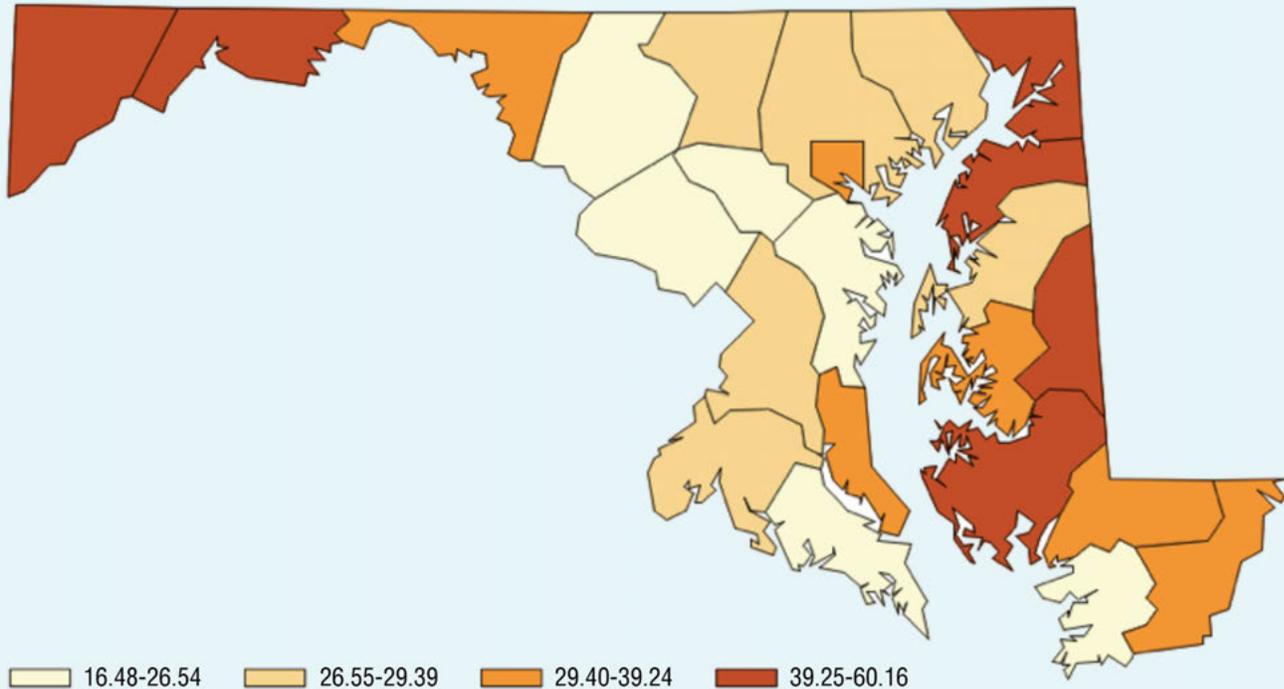
Unfortunately a lot of these injuries happen at home, and many are unintentional. Some of these are the result of poisonings, such as from radon or carbon monoxide.

The Johns Hopkins Center for Injury Research and Policy<sup>37</sup> reports that falls are the “the leading cause of injury deaths, hospitalizations, and ED visits among older adults in Maryland”, and noted that as of 2007 the number of deaths had doubled since 2000. They propose not only medical interventions to help seniors prevent falls, but also “home hazard modification”. Such hazards probably include rickety stairways, rugs, or any other obstacle that could trip an elderly person, and bad lighting. They also highlight *Safe Steps for Seniors*, a multistate fall prevention program in which five Maryland jurisdictions (Baltimore City, Allegany, Caroline, Kent and Washington Counties)<sup>38</sup> participate. The participation of the other counties was precluded by resource constraints. This is unfortunately a national crisis. The Center reports that every 15 seconds a senior is treated in an emergency room for injuries sustained in a fall, and every 27 minutes an older adult dies as a result of a fall.

Elderly Americans (as well as young children) are also susceptible to the hazard of home fires (Johns Hopkins Center, 2012). From 2006-2010, 299 Marylanders died in home fires, with seniors over age 65 being at highest risk. Smoke alarms have been shown to reduce that risk by half, but if alarms are installed they should have working batteries and should be placed in locations where they can be most effective. Newer buildings come with sprinkler systems, and some property

## 2004-2010, Maryland Death Rates per 100,000 Population

All injury and Adverse Effects, Unintentional, All Races, All Ethnicities, Both Sexes, All Ages  
Annualized Crude Rate for Maryland: 26.40



Reports for All Ages include those of unknown age.

\*Rates based on 20 or fewer deaths may be unstable. These rates are suppressed for counties (see legend above); such rates in the title have an asterisk.

Produced by: the Statistics, Programming & Economics Branch, National Center for Injury Prevention & Control, CDC  
Data Sources: NCHS National Vital Statistics System for numbers of deaths; US Census Bureau for population estimates.

Source: CDC

owners are willing to retrofit older buildings to accommodate them. Effective in 2011 however, Maryland has mandated that all one and two family homes be equipped with a home fire sprinkler system. This is a sound public policy move. There were no fire deaths reported in 2009 in any sprinkle-equipped home in Prince George's County, according to a report prepared for the County by a coalition that included the County's Fire Department<sup>39</sup>. Property loss is also minimized, according to the same report.

On a related note – in a national study involving a random sample of about 256,000 Medicare patients, researchers found that seniors who live in neighborhoods marked by poverty, low education levels and living conditions were more likely to be re-admitted to hospital within 30 days of being treated for complications due to heart disease or pneumonia. The study was published in a recent issue of the *Annals of Internal Medicine*<sup>40</sup>.

*Newer buildings come with sprinkler systems, and some property owners are willing to retrofit older buildings to accommodate them.*



## HOUSING POLICY

← Proximity to Walkable Trails and Bike Paths

→ Proximity to Healthcare Services

*Living in a healthy home, first and foremost, requires that residents and communities are able to afford rents and mortgages as well as maintenance costs.*

### How Can Public Policy Contribute To The Solution?

Since federal housing policy and local housing practices historically played such a prominent role in creating these problems, a coherent policy approach will be necessary to undo their effects in order to create a society where housing contributes to the health and wellness of all, rather than make its inhabitants sick. A ‘healthy home’ requires proper maintenance and regular inspections, but neighborhoods matter, as does affordability and easy access to the basic necessities of healthy living.

### Affordability

Living in a healthy home, first and foremost, requires that residents and communities are able to afford rents and mortgages as well as maintenance costs. A review published in 2011 by the Center for Housing Policy<sup>41</sup> summarized promising hypotheses that could potentially explain the connections between affordable housing and health, namely:

- ▶ Affordable housing may improve health outcomes by freeing up finances for more nutritious food and health expenditures;
- ▶ Affordable housing is likely to lead to residential stability, which can reduce stress and related adverse outcomes;
- ▶ Stable affordable housing has a positive effect on mental health, and the opposite is also true – unstable unaffordable housing had a negative effect on mental health;

- ▶ Affordable housing, when well-constructed and managed, can limit occupants' exposure to allergens, neurotoxins and other dangers;
- ▶ Use of green building strategies reduces environmental pollutants and improves indoor air quality.

Many stakeholders, including local, state, and federal governments, are busy implementing policy solutions to meet the challenge of substandard and unaffordable housing – a challenge disproportionately faced by African Americans and low-income communities. These solutions<sup>42</sup> fall into the following categories:

- ▶ **Zoning** – where and how to build new housing, and what new neighborhoods should look like relative to livability, sustainability, and health;
- ▶ **Rehabilitation of current housing** – getting rid of lead-based paint and other environmental hazards, improving ventilation and energy efficiency which helps limit pollution, removing structural hazards and bringing older buildings into compliance with the requirements of Americans With Disabilities Act (ADA);
- ▶ **Education and awareness** – helping stakeholders (renters, owners, community based organizations, landlords, lenders, investors) understand the health hazards of substandard housing;
- ▶ **Enforcement** – making sure public health agencies and building inspectors have all the tools and resources necessary to ensure that dwellings, whether public or private, multi-family or single family, meet the relevant codes;
- ▶ **Housing support** – federal, state and local incentives to help homeowners afford their rents and mortgages, utilities, and other housing-related costs, using taxpayer-funded subsidies and other incentives;
- ▶ **Fair housing laws** – enacting and enforcing such laws so that low and modest income residents are not priced out of affordable housing, and implementing those laws so that clusters

of substandard housing are not willfully or inadvertently created, with the undesirable result of compounding other problems that may also lead to adverse health outcomes.

## Zoning

Academic literature is replete with studies of how zoning can improve quality of life by improving housing conditions. Consider the following examples:

- Certain types of community design promote public health. Others, like urban sprawl, do not. Zoning should favor those that do<sup>43</sup>.
- Crime Prevention Through Environmental Design (CPTED)<sup>44</sup> was used in a section of Sarasota, Florida, to encourage area re-development in order to reduce crime. In the period studied (1990-98) researchers found a decreased incidence of calls to police and fewer crimes against persons and property in that section, relative to other parts of Sarasota. One study suggests community design (especially zoning) may be useful for decreasing crime and improving community health.
- Zoning has substantial implications for public health, and it is up to policy makers and planners to ensure that the impacts are mostly positive. The authors of this study<sup>45</sup> highlighted the impact of industrial areas on the neighborhoods around them, and how adverse impacts from noxious fumes, for example, are like to be concentrated in low income areas.
- Environmental equity studies reviewed for one article<sup>46</sup> found a disproportionate environmental burden based on race and/or income.
- Most public health professionals have very little exposure to urban planners, zoning boards, city councils, and others who decide what the built environment should look like. Similarly, few planners understand the health implications of their work in zoning, transportation and land use. One paper

*Many stakeholders, including local, state, and federal governments, are busy implementing policy solutions to meet the challenge of substandard and unaffordable housing – a challenge disproportionately faced by African Americans and low-income communities.*



*The HIA explained the connection between zoning and health which includes: the potential to increase residents' physical activity levels as well as access to healthy foods (farmers markets, community gardens); more walking and less crime due to increased pedestrian safety in the design of business and industrial districts; and limited exposure to off-premise alcohol sales outlets, which are associated with increased crime.*

- proposes an interdisciplinary graduate level curriculum to bridge the gap<sup>47</sup>.
- f. Metro areas with suburbs that restrict the density of residential construction<sup>48</sup> are more segregated on the basis of income than those with more permissive density zoning regimes. This arrangement perpetuates and exacerbates racial and class inequality in the United States.
- g. Mixed use developments tend to encourage more walking and less driving, in addition to lowering public service costs and increasing revenues for local governments.<sup>49</sup>

Prince George's County is in the process of re-writing their zoning ordinance and subdivision regulations<sup>50</sup>, a project last undertaken about a half century ago. The county's Planning Department is urging all stakeholders to weigh in, so that the eventual product can reflect the best ideas and the economic and health improvement aspirations of various communities.

Other jurisdictions have completed such a process in the recent past. Montgomery County's new zoning code and map<sup>51</sup> became effective October 30, 2014. There is a lot Prince George's can learn from the process in neighboring Montgomery County, not the least of which is how well the new ordinance is working for the county.

Baltimore's new zoning code<sup>52</sup> was approved by their Planning Commission in September 2013. Final approval is pending. A Health Impact Assessment<sup>53</sup> (HIA) was conducted by Johns Hopkins University, in order to forecast the impact of this proposal on the health of Baltimoreans. The HIA explained the connection between zoning and health, and summarized findings from their analysis, which included: the potential to increase residents' physical activity levels as well as access to healthy foods (farmers markets, community gardens); more walking and less crime due to increased pedestrian safety in the design of business and industrial districts;

and limited exposure to off-premise alcohol sales outlets, which are associated with increased crime.

Accordingly, they recommended that the city develop an easy-to-use code that would strengthen the connections between zoning and health, such as using the zoning process to increase access to healthy food and create more walkable environments.

Some policy makers are unaware of the connection between zoning and health, however. We have found that to be the case in our work, anecdotally, but it is also borne out in the literature. Botchwey and colleagues found that zoning officials and urban planners do not have enough exposure to public health policymakers, and vice versa, leading to a poor understanding in some circles about the best way to optimize the built environment for improved health outcomes. The authors proposed an interdisciplinary graduate level curriculum to close that gap. (Botchwey et al, 2009). Such a course is worth exploring. It would be reasonable to conclude that contributing to zoning re-writes presents a compelling opportunity. Land use patterns change over time given population and building demands. Political and economic realities also impact the built environment, as do the understanding of the impact housing and transportation have on health outcomes. These changes should be reflected in current policy-making, and should most definitely be considered as communities plan for the future.

We would encourage all stakeholders to participate if they are concerned about the quality of life in their neighborhood, and more immediately, in their homes. Zoning ordinances should be written within the framework of 'health in all policies'. The reason is straightforward - where people live is perhaps the most pivotal social determinant of health, given its impact on: economic prospects (job and entrepreneurial opportunities); nutrition (access to nutritious foods); physical activity (parks, gyms); public safety

(the absence or prevalence of crime and blight); education; transportation access; and proximity to environmental hazards.

### *Rehabilitation of Current Housing*

We have alluded to the work Maryland requires of landlords and homeowners regarding lead abatement, and how much progress has been made thus far. Other ‘rehab’ solutions include improving ventilation and energy efficiency which helps limit pollution and thus reduce the likelihood of asthma attacks, for example, as well as removing structural hazards and bringing older buildings into compliance with the requirements of Americans With Disabilities Act (ADA). This helps to reduce the incidence of falls, which, as we have already indicated, is a particular problem for seniors, especially older African Americans.

These solutions naturally overlap with building code enforcement. Some jurisdictions are stricter about that than others. Some of these solutions also overlap with energy efficiency and the mitigation of climate change. The American Recovery and Reinvestment Act of 2009 - commonly known as ARRA or ‘The Stimulus’ - committed hundreds of millions of dollars into retrofitting existing buildings, which, among other benefits, helps homeowners and landlords to better insulate homes and improve airflow. To our knowledge there has been no study that seeks to link these improvements directly to improved health, but if the number of ED visits due to asthma attacks has declined in neighborhoods that used ARRA funds to retrofit their buildings in 2009 and 2010, then that would provide the basis for further study.

Some Maryland jurisdictions, like Baltimore, make building code violations a matter of public record, in a user-friendly, searchable database. Others, like Rockville for example, allow citizens to report code violations online, by category. Data about how many of these violations are reported

monthly or annually are less readily accessible. Such an improvement would likely be helpful.

### *Education and Awareness*

Public education and awareness are vital components of public health. When the U.S. Surgeon General first reported to the nation that smoking was a clear and present danger, an education and awareness effort had to be implemented to reach mass and specific audiences. This continues a half century later, despite all the gains in the intervening years. The same is true for HIV/AIDS. In spite of the decline in death rates there are still new infections to control. Besides, there are now younger generations who do not realize how devastating the disease was before the science and the outreach began to make a difference in survival rates. The outreach needs to be tailored to reach them too.

Getting rid of mold and mitigating the conditions that encourage pest infestation in a home require a similar approach. Residents need to understand the challenge, and the tools available to overcome them. Landlords and homeowners also need to have a basic understanding of the policies - whether local, state, or federal - adopted to solve a problem such as lead or carbon monoxide poisoning. More importantly, they need to understand their obligation to comply with these policies, especially if there are incentives and penalties associated with said compliance. Public education and awareness helps to make that a reality.

There is also a vital need for individual and community understanding of the public health benefits of solving these problems. Similarly, society needs to understand the hazard of allowing these challenges to go unaddressed year after year.

Which brings us to advocacy – community-based organizations (CBOs) can help public health officials by spreading the word among their constituents about the hazards that contribute to

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*One viable set of solutions is the assortment of federal, state and local incentives to enable homeowners to afford their rents and mortgages, utilities, and other housing-related costs, using taxpayer-funded subsidies and other incentives.*

healthy homes. The advocacy can also work in the reverse direction – insisting that policymakers at all levels understand the lived experience of those forced to live in suboptimal conditions. Elected officials can be very effective advocates, given their influence over how taxpayer resources are allocated. This point is amply underscored in public health literature. We note the proud tradition, going back to the 1800s, of public health involvement in the improvement of housing conditions (Krieger and Higgins, 2002).

### *Enforcement*

Public health agencies and building inspectors need to have all the tools and resources necessary to ensure that dwellings, whether public or private, multi-family or single family, meet the relevant codes. This begins with the aforementioned education and awareness. Said awareness must also be supported by adequate funding.

As far back as the 1940s the discussion of enforcement of health codes in housing was a subject of debate in public health. Thus began a 1947 editorial in the American Journal of Public Health: “the building code is a well-established instrument of municipal administration.” It concluded with this summary recommendation: “...the Building Code for new construction may well be left as it is in the hands of the building department and its engineering specialists; but we believe that a Housing Code for occupied dwellings should be drawn up by the health department and enforced by the routine inspection service of that department, with such aid as necessary – both in drafting and enforcement - from allied departments...”

An ‘all hands on deck’ approach is becoming more useful the more we understand the interplay between improving health and addressing the social determinants of health, of which housing is

central. Most local authorities make the housing code requirements accessible to the public on relevant websites, with related information about compliance and enforcement. Prince George’s County<sup>54</sup>, for example, plainly states the “minimum requirements for dwelling units” on the Permitting, Inspections, and Enforcement pages of the County’s website. These include the requirements to keep sidewalks free of snow and ice, repair cracks in glass windows and doors, and keeping structures free of rodent infestation. An annual audit of the number of inspections completed, compared against the increase or decrease in violations, would provide some useful insight. As well, an analysis of code enforcement relative to health outcomes would be very helpful to local authorities in Maryland, especially for high risk, low income areas that have traditionally been the victims of blight and concentrated poverty. To our knowledge no such analysis exists at the moment.

### *Housing Support*

Housing affordability remains a serious problem for many in the Washington, D.C. – Baltimore corridor; a challenge not unique to this region. In “Bursting the Bubble: The Challenges of Working and Living in the National Capital Region<sup>55</sup>” the Metropolitan Washington Council of Governments and their co-authors argue that more than 4 in 10 homeowners in Prince George’s County spend 30 percent or more of their household incomes on housing. The numbers are similar for renters (especially those with lower incomes), meaning that there are a lot of County residents for whom putting a roof over their family’s head is a significant burden. One viable set of solutions is the assortment of federal, state and local incentives to enable homeowners to afford their rents and mortgages, utilities, and other housing-related costs, using taxpayer-funded subsidies and other incentives. A resident of zip code 20743 in Maryland’s

Prince George's County could participate in any of the following:

- ▶ Maryland Mortgage Program (down payment and closing cost assistance and homebuyer education);
- ▶ Maryland Triple Play Initiative<sup>56</sup> (down payment assistance, 0.25% discount on the interest rate, federal tax credit for the life of the loan via Maryland HomeCredit);
- ▶ Housing Choice Voucher Program (Section 8);
- ▶ Rental Allowance Program<sup>57</sup> (short-term assistance for homeless or other Prince Georgians facing a crisis);
- ▶ Family Self Sufficiency (a program intended to help Prince Georgians who benefit from housing assistance become self-sufficient within 5 years).

Residents can also benefit from U.S. Department of Housing and Urban Development (HUD) funded utility support administered via the Prince George's Housing Authority. These benefits, either individually or in the aggregate, enable the disadvantaged to afford decent housing, which reduces the stress of being otherwise impoverished, thus giving them a better chance of living healthier lives.

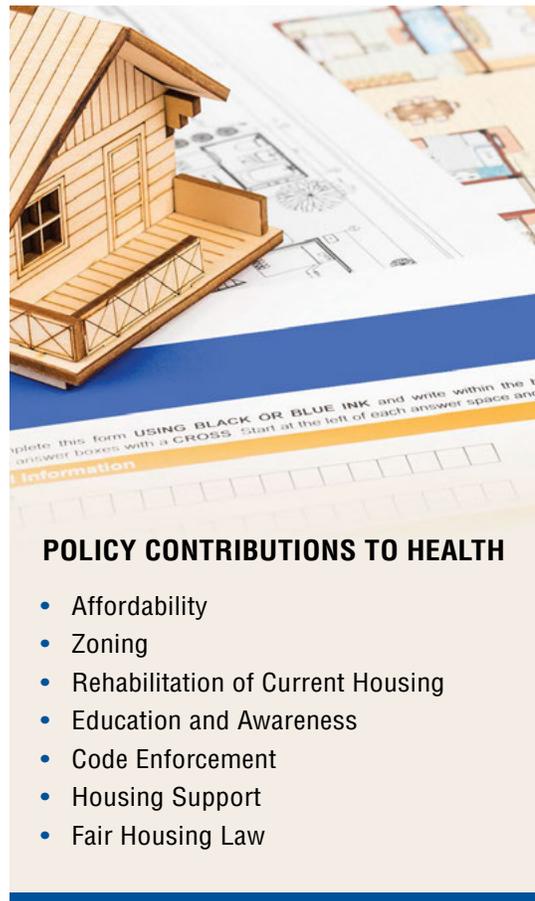
### *Fair Housing Laws*

One of the most enduring (and precious) legacies of the Civil Rights era is the portfolio of laws and regulations that began to dismantle the decades and even generations' worth of housing discrimination policies in the United States. The flagship in this fleet, the Fair Housing Act<sup>58</sup> (Title VIII of the Civil Rights Act of 1968), "... prohibits discrimination in the sale, rental and financing of dwellings, and in other housing-related transactions..." nationwide, based on race, sex, religion, or disability, among other criteria, for the first time in the nation's history. Many more laws and Executive Orders would

follow in ensuing decades, a list of which can be found on the HUD website<sup>59</sup>. They include: Rehabilitation Act of 1973, Housing and Community Development Act of 1974, and the Americans With Disabilities Act of 1990.

Maryland's fair housing laws<sup>60</sup> are "substantially equivalent" to federal law.

These laws have demonstrated the value of well-reasoned and ably implemented public policy. As a consequence of these laws, more Americans have access to the tools that enable access to healthy homes, reducing homelessness and reducing the number of Americans exposed to potentially harmful living conditions.



*As a consequence of Maryland's fair housing laws, more Americans have access to the tools that enable access to healthy homes, reducing homelessness and reducing the number of Americans exposed to potentially harmful living conditions.*



## What Can We Learn From Maryland Counties?

Both Prince George’s and Montgomery counties have laws and policies that address the needs of moderate income families. The same is true, to a greater or lesser extent, of the rest of the counties in Maryland. The link between the housing situation in any given county, and the health outcomes, is easier to discern in some jurisdictions than others, given the gaps in county-level data. This analytical challenge is best addressed by collecting more county-level data, such as data that capture Marylanders’ views of the impact their homes and neighborhoods have on their health, and the health status of renters versus owners, for example. The examples below represent a snapshot of various approaches toward healthy and affordable housing in the state’s most populous jurisdictions.

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### ANNE ARUNDEL COUNTY

Anne Arundel (AA) County Housing Commission provides assistance to nearly 3000 families. Services include housing choice vouchers (formerly Section 8); helping families achieve self-sufficiency (transportation, child care, substance abuse prevention); and programs for citizens with special needs such as HIV/AIDS patients, homeless persons, and the elderly or disabled.

The Housing Commission’s goals are to increase the availability of decent, safe, affordable housing for low to moderate income AA citizens; improve community quality of life and economic vitality; and promote self-sufficiency and asset development of families and individuals.

Eligibility criteria are defined by income<sup>61</sup> - extremely low income limits equal 30% of median County income; lower income limits equal 50% of median County income, and higher income limits equal 80% of median County income.

### BALTIMORE CITY

The Housing Authority of Baltimore City (HABC) runs on a \$300M budget, has 1,000+ employees on the payroll, serves 20,000 residents, manages 10,000 housing units, 28 family developments, 17 mixed population buildings, and provides housing subsidies for 12,000 additional families (Housing Choice Voucher program).

Baltimore City Department of Housing and Community Development (HCD) consolidates local community development efforts with housing and building code enforcement and attracts investors, developers, home buyers.

HABC and HCD are now collectively known as Baltimore Housing, responsible for coordinating planning and development, and eliminating redundancy.

Baltimore Housing is committed to fair housing by promoting non-discrimination, fostering inclusive communities, implements its programs in a manner consistent with fair housing laws, at the federal, state, and city levels.

The city is now aggressively implementing Vacants 2 Value<sup>62</sup> – a program intended to reduce blight by rehabilitating depressed properties, with the ultimate objective of returning thousands of families (read taxpayers) back to ‘Charm City’.

### CHARLES COUNTY

Charles County instituted a density-based zoning code written in 1992, which included planned development zoning districts and affordable housing approaches such as moderately priced housing units (MPDU).

#### *Vision 2020*

The County is now implementing Vision 2020<sup>63</sup>, a program designed to significantly reduce the number of Charles County residents, living

in poverty, by the year 2020. Focus areas will include health, housing, education, employment and transportation – a nod to the importance of the social determinants of health. The housing component seeks to “aid in the creation of sustainable, safe, and stable housing with adequate water and plumbing.”

## HOWARD COUNTY

In the Moderate Income Housing Unit (MIHU) program<sup>64</sup>, developers in certain zoning districts are required to sell or rent 10-15% of their dwelling units to moderate income families, where moderate income<sup>65</sup> is defined as “less than 80% of the Howard County median income for units for sale, and less than 60% of the Howard County median income for rental units”. Montgomery County uses a similar model. Rental/sale prices for the units are set by Howard County Housing.

The County has a Housing and Community Development Board, which serves as an advisory board to the Department of Housing and Community Development. The Howard County Housing Commission is a “separate legal entity which serves as the Public Housing Authority for the purpose of developing and managing housing resources for low to moderate income residents of the County.” The Commission manages 10 properties.

## MONTGOMERY COUNTY

Housing policy in Montgomery County is overseen by Department of Housing and Community Affairs (DHCA).

In 1974, the County passed a moderately priced housing (MPH) law, which stipulates that moderately priced dwelling units (MPDUs)<sup>66</sup> should occupy 12.5-15% of dwellings in new subdivisions of at least 20 units. MPDUs can be bought or leased, but different rules apply based on whether you rent or buy.

40% of MPDUs are turned over to Housing Opportunities Commission (HOC) and other non-profits to benefit low to moderate income families. The HOC offers rental assistance on limited basis.

DHCA does not offer financing to buy MPDU, and MPDU rents/purchase prices are set by Executive regulation.

One particular variety of MPDU is known as Productivity Housing Units (PHU), which can occupy no more than 25% of the land zoned for commercial use. Prospective buyers would get exceptions for building on such a lot. At least 35% of the units on such a plot is allotted to households that earn no more than the County’s median incomes. PHUs can be single family or multi-family dwellings, and should occupy 6 units/acre minimum, with a 21.5 units/acre maximum.

Montgomery’s MPH law appears to preclude the clustering of low income housing in particular sections of the county, which seems to have a protective effect on both the housing market and – indirectly – on the health of the residents, given that low to moderate income residents have access to services in their neighborhoods that would contribute to improved health outcomes.

## PRINCE GEORGE’S COUNTY

The Housing Authority of Prince George’s County (HAPGC)<sup>67</sup> was established in 1969 to provide low to middle income county residents with safe, decent and affordable housing. HAPGC implements and administers federal rental assistance and public housing (via housing choice vouchers).

Its Rental Assistance Division (RAD) managed a \$72 million allocation in U.S. Department of Housing and Urban Development (HUD) funds, and administered 5,535 vouchers in FY 2012.



The Housing Assistance Division (HAD) manages about 400 housing units, including 5 public housing residential sites (376 units). The 376 public housing units are funded by HUD operating subsidies, to the tune of approximately \$1.2 million for FY 2012.

- ▶ Housing affordability matters – this is a trend that requires close attention. Not only does housing affordability determine how many can afford to live in a given neighborhood, but it affects the tax base governments depend on to deliver services such as public health. Stagnant wages and high unemployment in depressed areas also contribute to this challenge, and public policy has an important role to play. The County’s tax revenues are largely driven by property taxes<sup>68</sup>, which in Prince George’s County are assessed at a rate of \$0.796 to \$0.956 per \$100 of property value. These revenues ultimately end up in the County’s General Fund, from whence the County allocates less than 1% to fund the operations of the County Health Department. For FY 2015<sup>69</sup>, projected allocation in the County worked out to about \$21 per resident per year. According to the Trust for America’s Health, per capita state spending for FY 2012-2013 for public health in Maryland was \$24.43, which was below the national median (\$27.49)<sup>70</sup>.
- ▶ Housing plays a key role in the proximity to doctors and hospitals, which has a direct bearing on whether vulnerable populations will seek timely medical care, which in turn directly impacts health disparities.
- ▶ The enforcement of housing codes helps improve health outcomes. The evidence is compelling that this makes a difference, clinically and economically. Lead abatement is a good example of how this can work to everyone’s advantage. But in cases where data are unavailable, or ambiguous - such as preventing falls among the elderly - the challenge of housing code enforcement tells a different story. Prince George’s County, for example, has 20 code enforcers<sup>71</sup> for the residential market, in a County with hundreds of thousands of homes. Appropriation for this line of work usually bows to political realities, which in turn

*The common thread seems to be that those counties most aggressive in preventing housing disparities (such as Montgomery and Howard Counties) appear to have the most favorable health outcomes.*

Rent revenues from public housing were estimated at \$1.5 million for FY 2012.

The County also runs various programs for elderly and disabled at various facilities, including nutritional services, handicap accessible transportation, and other health/wellness activities.

Other Maryland counties approach public housing in similar ways, with rural and less populous counties allocating commensurately smaller budgets to this sector.

### *Lessons Learned*

Maryland’s counties vary in the amount of resources dedicated toward making sure every resident lives in a safe and healthy home. The results are necessarily different, as are the challenges each county faces. The common thread seems to be that those counties most aggressive in preventing housing disparities (such as Montgomery and Howard Counties) appear to have the most favorable health outcomes.

### *National Housing Trends Reflected In Local Realities*

Our analysis began with a rather simple question – how does housing policy affect health outcomes? We uncovered important national trends, which appear to be dominant themes regarding housing policy and health. Importantly, we realized that national data help us see patterns that are evident in our local area, and our wider region. The trends are as follows:

are driven by the level of community engagement and voter participation.

- ▶ **Zoning matters.** Zoning impacts where and how we build, transportation access and usage, how much pollution a given neighborhood is exposed to, and perhaps most crucially, determines community access to nutritious food and affordable primary care. Zoning rewrites, especially if they are accompanied by Health Impact Assessments (HIA), are potential game-changers, hence the growing national trend to re-visit age old zoning ordinances.

Communities that seek to prevent the ill effects of inadequate housing usually fare better than those that do not, and it usually starts with pro-active public policy and community engagement. We made reference to the examples in the literature, such as communities with more permissive density zoning regimes, or the communities that sought to fight crime through zoning – these are examples of communities that achieved more desirable health outcomes.

## Conclusions

Given the aforementioned trends and other issues considered in this paper, we conclude as follows:

- 1. Data Collection.** There are important lines of inquiry that are hobbled by lack of data, especially at the local level. Resource constraints are often cited in these cases, but if local or state health authorities are enforcing existing prevention or mitigation policy (to prevent carbon monoxide poisoning, for instance) they should have access to data that describe their intervention's impact on health outcomes.
- 2. Zoning rewrites.** We now know a lot more about the importance of the social determinants of health, about the value of design in public policy, and about the interaction between housing and health than we did 10 or 20 years ago. Newer zoning codes and ordinances should reflect this knowledge.
- 3. Health Impact Assessments (HIA).** The more policymakers focus on 'health in all policies' the more likely it is that population health will consistently improve. HIAs help stakeholders understand the health impact of any policy before it is implemented, which in turn influences every aspect of implementation, from resource allocation to evaluation.
- 4. Housing affordability.** Everything from loan modifications to utility subsidies to tax credits for energy efficiency should be on the table. States and local authorities could augment federal programs to the greatest degree possible.
- 5. The relationship between housing and other social determinants of health.** These interactions should be better understood, so that policymakers can design more effective interventions. The interplay between housing and more efficient transportation options is a good example of why more understanding would be helpful. See Attachments G and H. Our earlier note about how mixed use developments tend to encourage more walking and less driving underscores this point.
- 6. Enforcing housing codes.** Architectural and engineering innovations such as green building standards are making it easier to develop and maintain healthy homes, thus making it easier to enforce these standards after buildings are occupied. Policymakers should optimize and build on all of this expertise. Baltimore and Prince George's County have older housing stock, with many homes built before 1950. In Baltimore that equates to about a quarter of the available homes (about 270,956 units out of 1.13 million in 2012)<sup>72</sup>. This means increased demand for regular code enforcement in those jurisdictions. In many cases the occupants of these homes struggle to make ends meet, which means regular maintenance falls by the wayside, with sadly predictable consequences for health outcomes.
- 7. Community engagement.** Community engagement matters, and could well be the difference between a 'sick' and a 'healthy' home. As previously noted, the allocation of shared resources is often a function of political reality, hence the need for mutual understanding between policymakers and constituents regarding each other's priorities.

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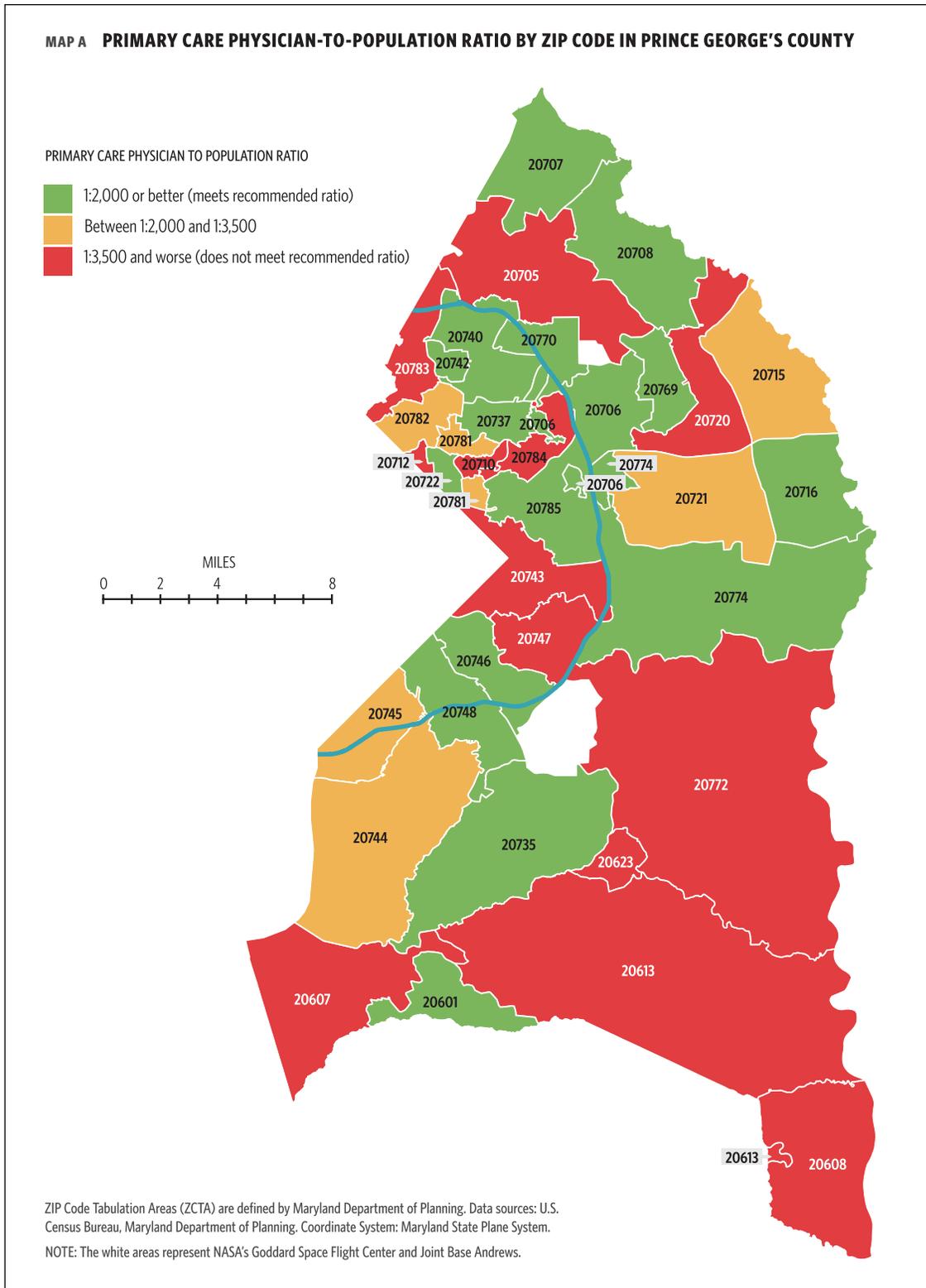
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## Appendices

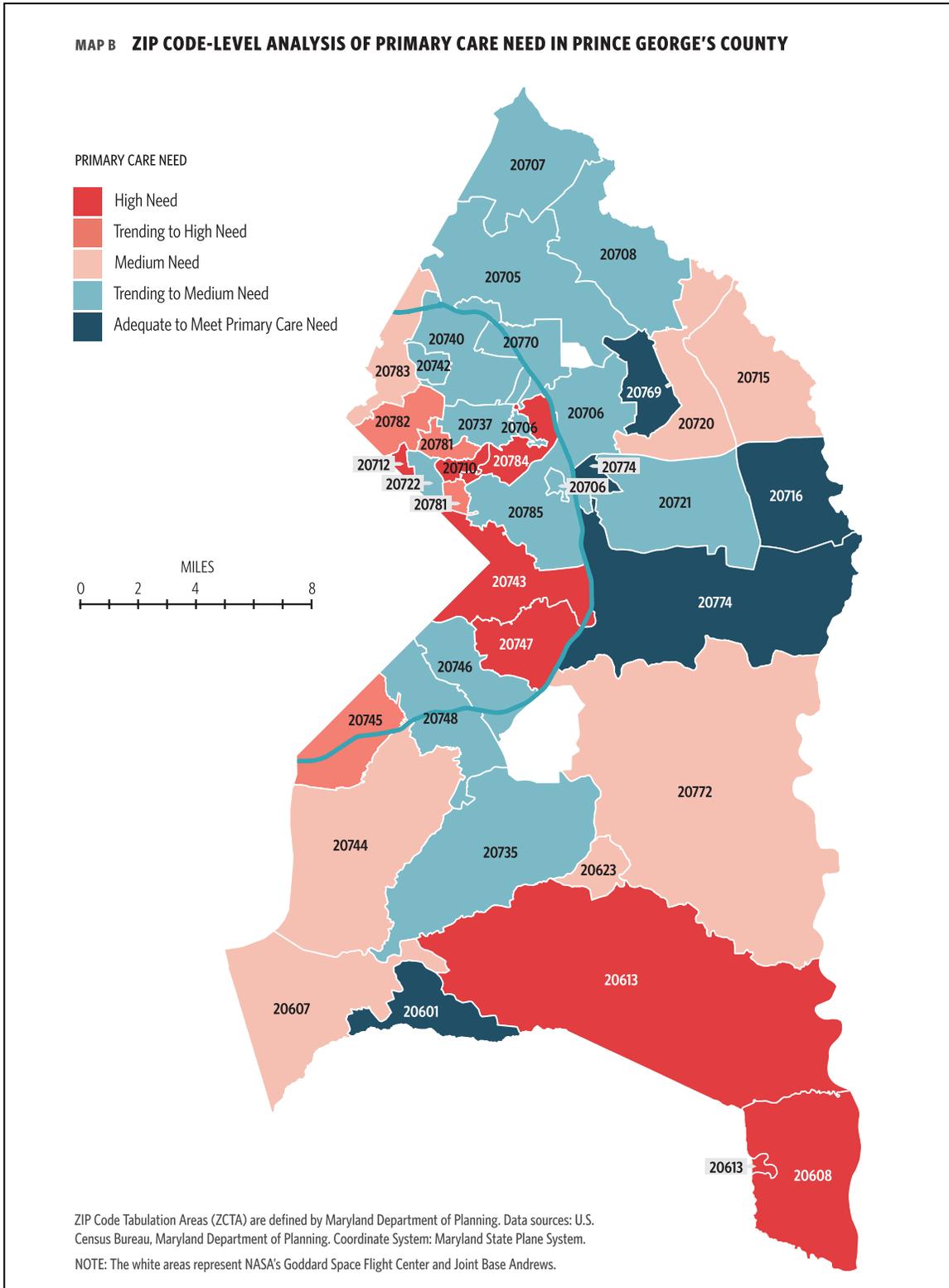
- A. Zip Code Analysis of Physician to Population Ratio Prince George's County**
- B. Zip Code Analysis of Primary Care Need in Prince George's County**
- C. Prince George's County Food System Study 2014**
- D. Blood Lead Testing, Maryland Children, Birth to 72 Months, 2006-2013**
- E. Childhood Blood Lead Surveillance, Maryland, 1993-2013**
- F. Comparison of Health Indicators – Montgomery vs Prince George's County**
- G. Travel times from senior center (6060 Sargent Rd) to local Prince George's County hospitals**
- H. Travel times from senior center (6602 Greig St) to local Prince George's County hospitals**

**APPENDIX A – Zip Code Analysis of Physician to Population Ratio in Prince George’s County**



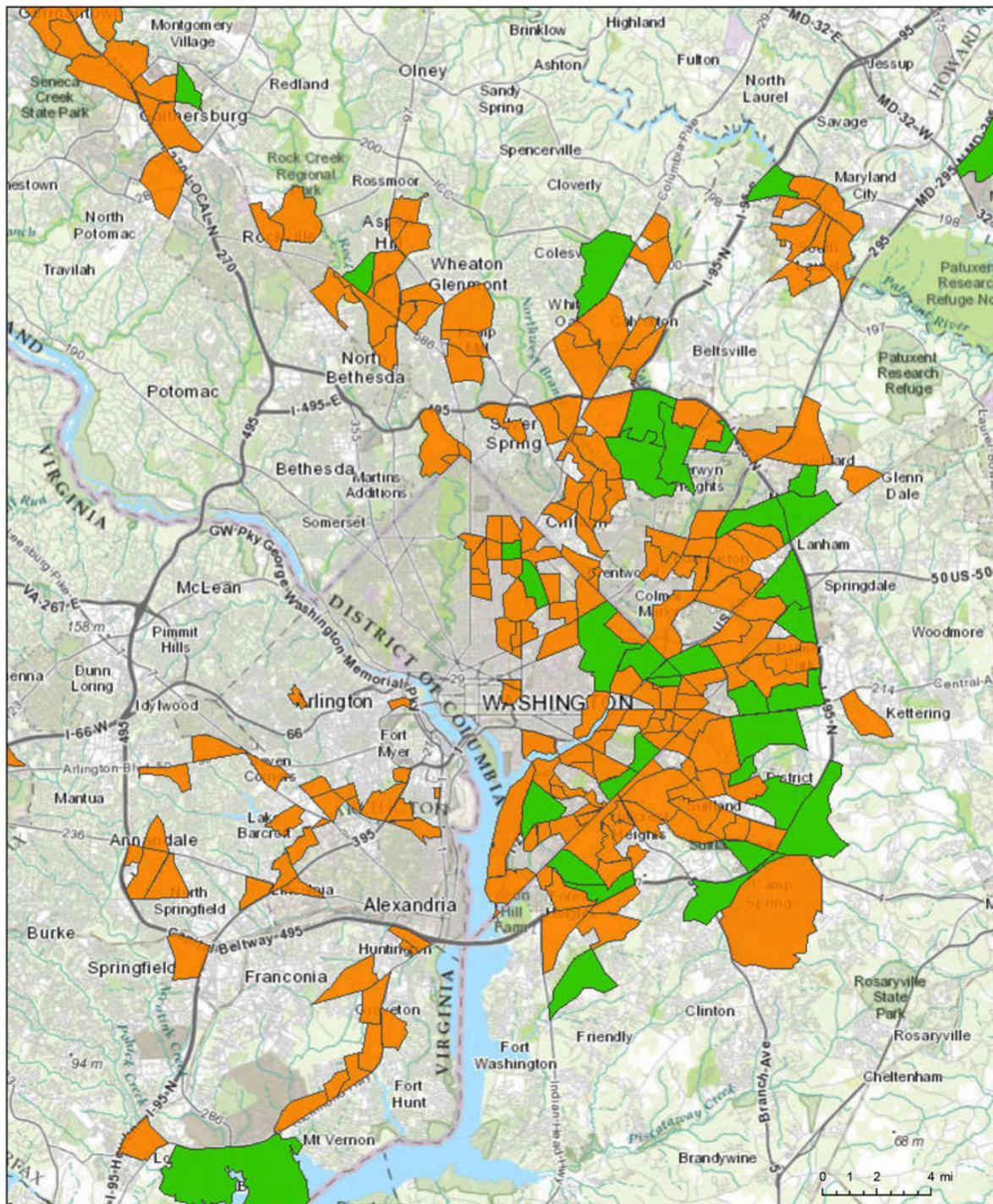
Map A is from the Public Health Impact Study report. Maps are copyright University of Maryland School of Public Health, Transforming Health in Prince George’s County: A Public Health Impact Study (2012).

**APPENDIX B – Zip Code Analysis of Primary Care Need in Prince George's County**



Map B is from the Public Health Impact Study report. Maps are copyright University of Maryland School of Public Health, Transforming Health in Prince George's County: A Public Health Impact Study (2012).

**APPENDIX C – Prince George’s County Food System Study 2014**



- LILA at 1 and 10 = low income community, low access to healthy foods between 1 and 10 miles;
- LILA at 1/2 and 10 = low income community, low access to healthy foods between 1/2 and 10 miles

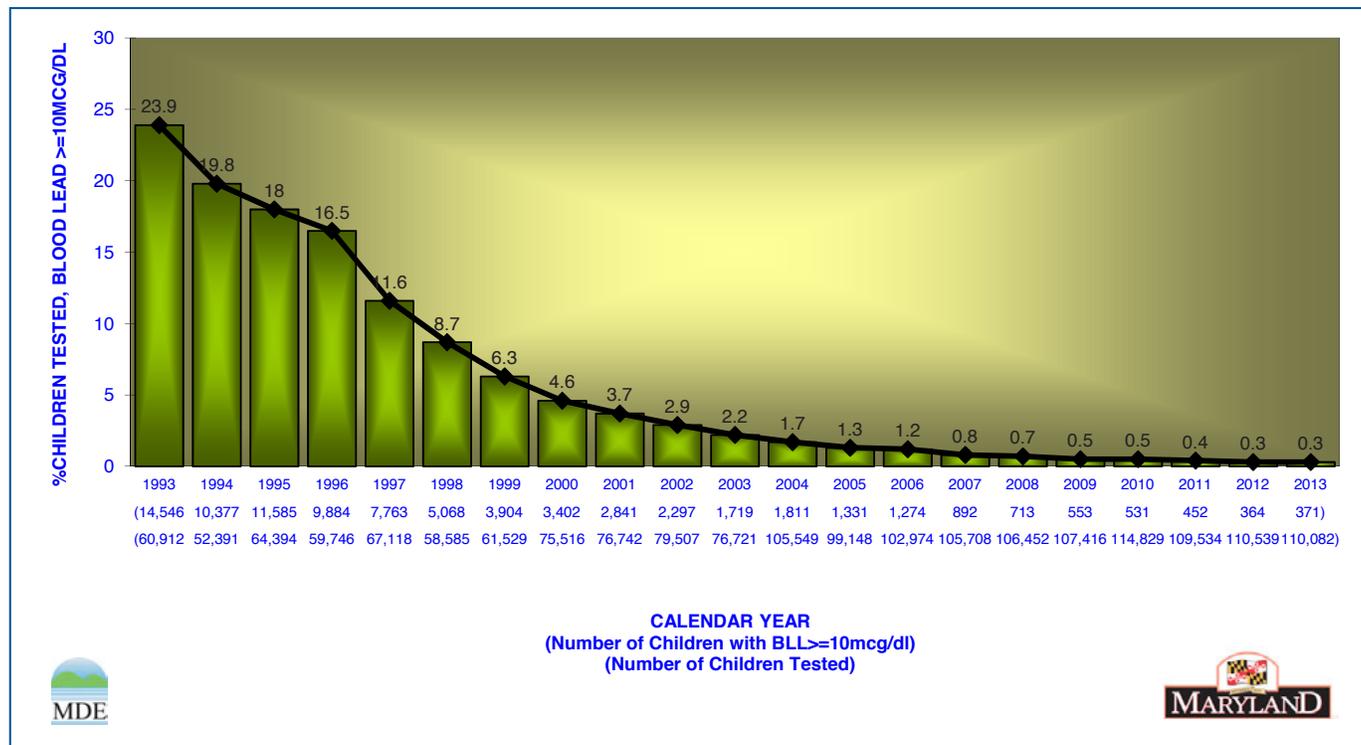
Source: USDA Food Access Research Atlas

**APPENDIX D – Blood Lead Testing, Maryland Children Birth to 72 Months, 2006 to 2013**

Calendar Year		Population	Blood Lead Tests		Prevalence		Incidence	
			Number	Percent	Number	Percent	Number	Percent
2006								
	Baltimore City	54,547	18,363	33.7	843	4.6	573	3.1
	Counties	408,784	84,611	20.7	431	0.5	363	0.4
	County Unknown		199		21		20	
	<b>Statewide</b>	<b>463,331</b>	<b>103,173</b>	<b>22.3</b>	<b>1,295</b>	<b>1.2</b>	<b>956</b>	<b>0.9</b>
2007								
	Baltimore City	55,142	17,670	32.0	624	3.5	435	2.5
	Counties	413,248	87,760	21.2	267	0.3	218	0.2
	County Unknown		278		1		1	
	<b>Statewide</b>	<b>468,390</b>	<b>105,708</b>	<b>22.6</b>	<b>892</b>	<b>0.8</b>	<b>654</b>	<b>0.6</b>
2008								
	Baltimore City	55,959	18,622	33.3	468	2.5	302	1.6
	Counties	418,941	87,830	21.0	245	0.3	187	0.2
	County Unknown		69		0		0	
	<b>Statewide</b>	<b>474,900</b>	<b>106,521</b>	<b>22.4</b>	<b>713</b>	<b>0.7</b>	<b>489</b>	<b>0.5</b>
2009								
	Baltimore City	56,431	19,043	33.7	347	1.8	214	1.1
	Counties	422,488	88,368	20.9	206	0.2	165	0.1
	County Unknown		5					
	<b>Statewide</b>	<b>478,919</b>	<b>107,416</b>	<b>22.4</b>	<b>553</b>	<b>0.5</b>	<b>379</b>	<b>0.4</b>
2010								
	Baltimore City	57,937	19,702	34.0	314	1.6	229	1.2
	Counties	433,661	94,650	21.8	217	0.2	170	0.2
	County Unknown		477		0		0	0.0
	<b>Statewide</b>	<b>491,598</b>	<b>114,829</b>	<b>23.4</b>	<b>531</b>	<b>0.5</b>	<b>399</b>	<b>0.3</b>
2011								
	Baltimore City	55,681	19,049	34.2	258	1.4	182	1.0
	Counties	445,021	90,481	20.3	194	0.2	160	0.2
	County Unknown		4		0		0	
	<b>Statewide</b>	<b>500,702</b>	<b>109,534</b>	<b>21.9</b>	<b>452</b>	<b>0.4</b>	<b>342</b>	<b>0.4</b>
2012								
	Baltimore City	56,701	18,717	33.0	219	1.2	148	0.8
	Counties	453,184	91,747	20.2	143	0.2	104	0.1
	County Unknown		75		2		3	
	<b>Statewide</b>	<b>509,885</b>	<b>110,539</b>	<b>21.7</b>	<b>364</b>	<b>0.3</b>	<b>255</b>	<b>0.2</b>
2013								
	Baltimore City	57,693	18,535	32.1	218	1.2	170	0.9
	Counties	461,172	91,539	19.8	152	0.2	134	0.1
	County Unknown		8		0		1	
	<b>Statewide</b>	<b>518,865</b>	<b>110,082</b>	<b>21.2</b>	<b>370</b>	<b>0.3</b>	<b>305</b>	<b>0.3</b>

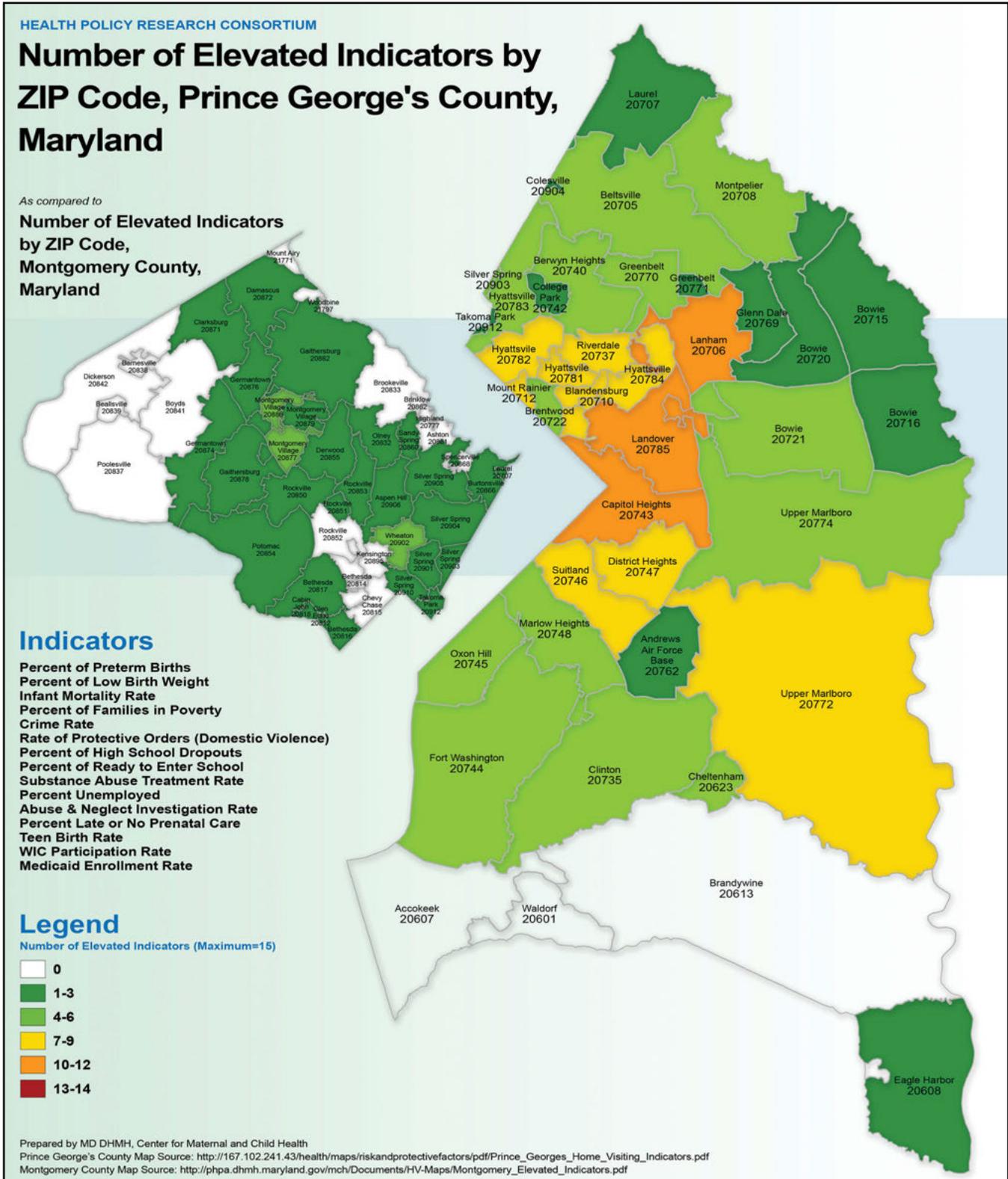
Source: Maryland Department of the Environment

**APPENDIX E – Childhood Blood Lead Surveillance, Maryland, 1993-2013**



Source: Maryland Department of the Environment

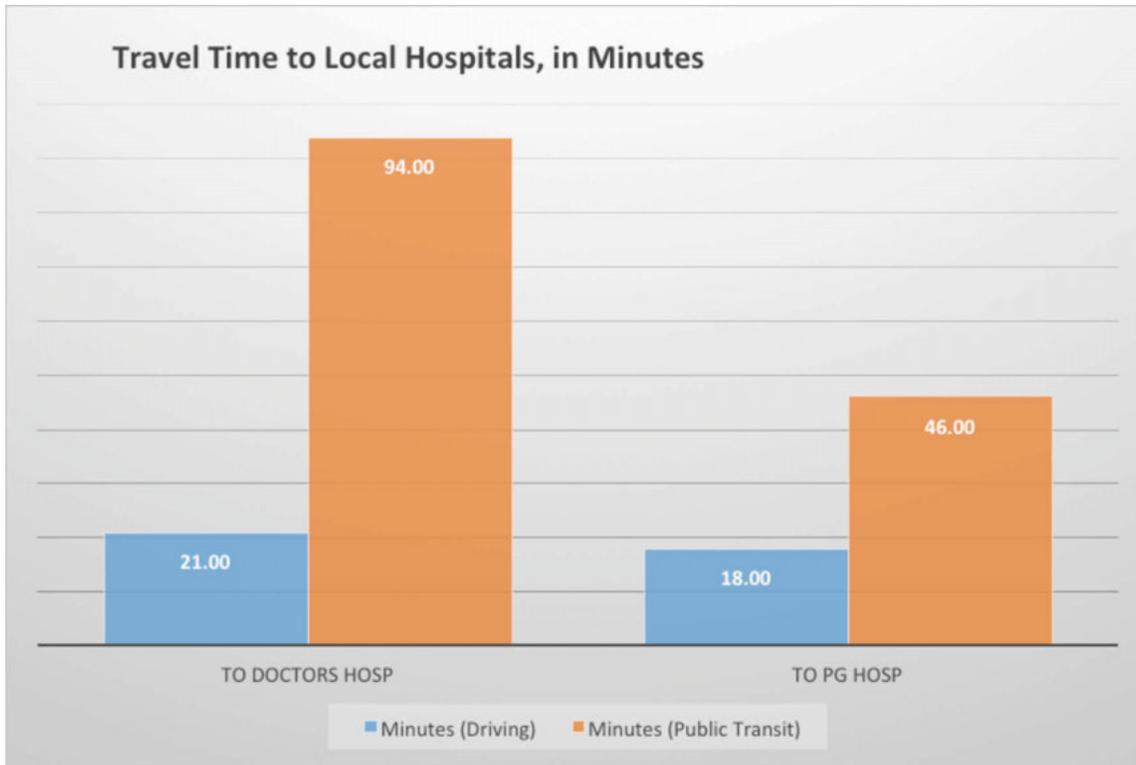
**APPENDIX F – Comparison of Health Indicators – Montgomery vs Prince George’s County**



Source: Maryland Department of Health and Mental Hygiene

## APPENDIX G

(Commute from Senior Center to local hospitals; all locations in Prince Georges County, Maryland)



### Trip 1

Travelling from 6060 Sargent Rd, Hyattsville, to Doctors Community Hospital, Lanham/Seabrook = **7.9 miles**.  
*Public Transit = 94 mins (2 buses or 2 buses, 1 train)*

MAPS: <https://goo.gl/maps/rnRXI> (transit); <https://goo.gl/maps/BdNwF> (car)

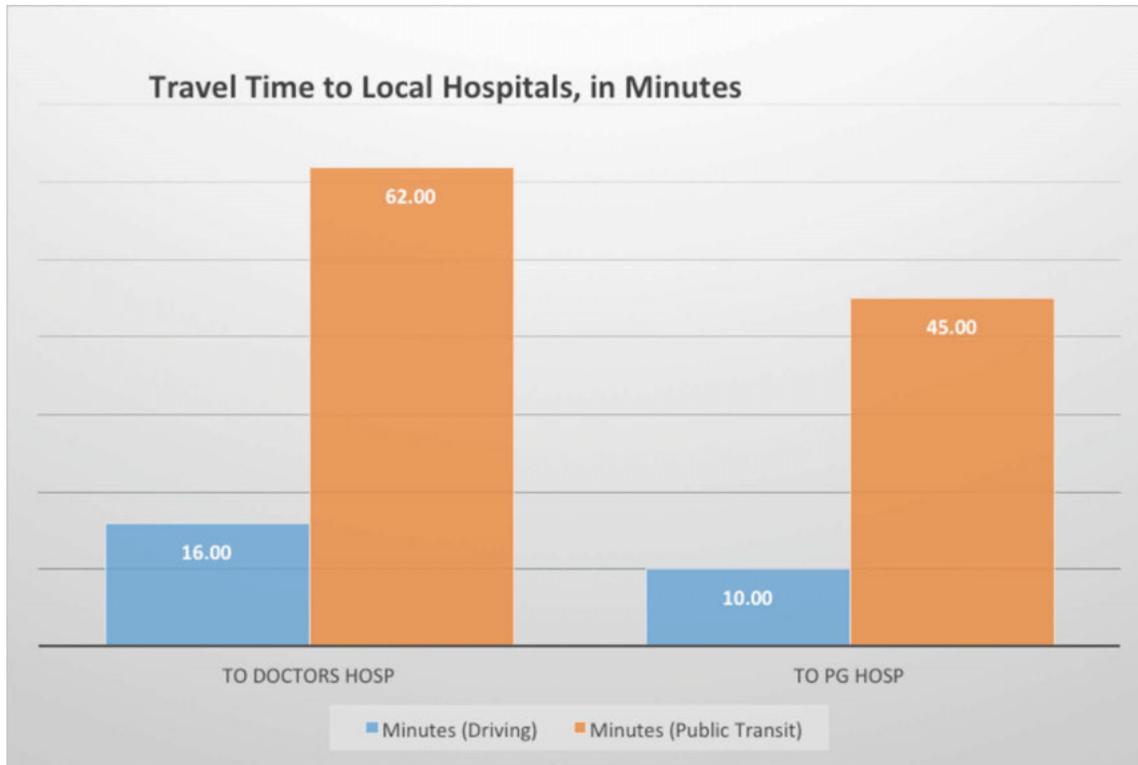
### Trip 2

Travelling from 6060 Sargent Rd to Prince George's Hospital, Cheverly = **5.7 miles**.  
*Public Transit = 46 mins (1 bus)*

MAPS: <https://goo.gl/maps/0DwHi> (car); <https://goo.gl/maps/vojqc> (transit)

## APPENDIX H

(Commute from Senior Center to local hospitals; all locations in Prince Georges County, Maryland)



### Trip 1

Travelling from 6602 Greig St, Seat Pleasant, to Doctors Hospital, Lanham/Seabrook = **9 miles**.  
*Public Transit = 62 mins (1 train, 2 buses or 2 buses)*

MAPS: <https://goo.gl/maps/UYyzB> (transit); <https://goo.gl/maps/C8Xxd> (car)

### Trip 2

Travelling from 6602 Greig St to Prince George's Hospital, Cheverly = **4.3 miles**.  
*Public Transit = 45 mins (1 bus)*

MAPS: <https://goo.gl/maps/un7ht> (transit); <https://goo.gl/maps/MQRXr> (car)





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