

**APTA District of Columbia
Community Relations
HEART Update
November 14, 2020**

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Meetings: Every other Tuesday at 6:00 -7:00 pm. The next meeting is December 1 at 6PM. Please email us at advocacy@aptadc.org to receive the Zoom link.

History: HEART, the Health Equity & Anti-Racism Team, was formed in June 2020. After George Floyd was killed, the importance for having a group like HEART became even more clear to its co-leaders. Valerie Rucker, PT, DPT and Jennifer Ibe Aiken, PT, DPT formed HEART to support the movement for black lives and black communities by addressing and bringing awareness to health inequities and social determinants of health. The **purpose and mission** of the group is as follows:

- We will utilize our roles as health care providers to influence community members as well as APTA DC members
- We will work towards addressing health equity issues as a larger body through APTA DC
- We will partner with community organizations to further our goals of health equity
- And we work towards these goals with an anti-racism lens

1. There will be a **Journal Discussion December 15, 2020 from 6-7PM.** We will be discussing the attached article (*Cardiovascular Disease in the Nation's Capital: How Policy and the Built Environment Contribute to Disparities in CVD Risk Factors in Washington, D.C.*). All are welcome to attend, so please mark your calendars.

2. We are looking for volunteers to assist with a **DC Student Immersion Program - Pipeline to the PT Profession.** Please consider watching this [APTA DEI video](#) for insight into pipeline programs.

We look forward to seeing you soon! Please contact us at advocacy@aptadc.org or visit the www.aptadc.org for more information.



HEART (Health Equity and Anti-Racism Team) presents

Journal Discussion

Please join our open discussion of a journal article which highlights the prevalence of cardiovascular disease within each Ward in DC as it relates to the history of segregation in our city. All are welcome to join!

December 15

6-7p

Email advocacy@aptadc.org for article and Zoom info.





Cardiovascular Disease in the Nation's Capital: How Policy and the Built Environment Contribute to Disparities in CVD Risk Factors in Washington, D.C.

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Abstract

On average, Washington D.C. residents experience low levels of cardiovascular disease (CVD) behavioral risk factors compared to the rest of the country. Despite presenting as a city of low risk, CVD mortality is higher than the national average. Driving this inconsistency are vast racial disparities as Black D.C. residents die from CVD at a much higher rate than their White counterparts. A closer examination of the data also reveals significant disparities between White and Black populations with regard to behavioral risk factors. Segregation and the built environments of sections of the city with large Black populations may be contributing to risk factor disparities. We examine factors in those built environments that contribute to disparities and assess the intentionality and effectiveness of policies focused on food access, physical activity, and tobacco use implemented between 2003 and 2014. We found that D.C. enacted few policies intentionally designed to reduce barriers in the physical environment that contributed to disparate outcomes, and the few that were implemented showed mixed results in their levels of effectiveness. Our findings demonstrated that both racial and geographical disparities have persisted for more than a decade and half. It is possible that the formation of intentional policies may help reduce barriers in the physical environment and disparate CVD outcomes.

Keywords Cardiovascular disease · Risk factors · Built environment · Policy · Health disparities

Introduction

Cardiovascular disease (CVD) is the leading cause of death in the USA, and according to the Centers for Disease Control and Prevention (CDC), more than a quarter of all deaths attributed to CVD and stroke could be prevented or delayed with better control of key risk factors [1]. These risk factors, hypertension, high cholesterol, diabetes, smoking, excessive drinking, obesity, an unhealthy diet, and physical inactivity, can be modified through behavior or medical treatment [2]. While the aforementioned risk factors are preventable, other risk factors for heart disease such as age, heredity, and gender cannot be avoided [2]. Extant literature highlights that there are racial and ethnic patterns to CVD mortality and the prevalence of CVD risk factors [3, 4]. Nationally, Black individuals die from CVD at a higher rate than any other race/

ethnic groups. In 2014, the age-adjusted national heart disease death rate per 100,000 Black individuals was 210.8 [5]. The second highest rate was among Whites with a rate of 169.9 per 100,000 [5]. In the nation's capital, Washington, D.C. (D.C.), this racial disparity is particularly stark. When ranked among other states, D.C. had the sixth highest rate of age-adjusted heart disease deaths per 100,000 residents, at a rate of 207.8 in 2014 [5]. When disaggregated by race, however, the city's White residents have the lowest rate (108.5 per 100,000 residents), compared to Blacks who had the third highest rate (270.6 per 100,000 residents) [5].

To understand and address the racial/ethnic disparities in CVD death, current research has focused on CVD risk factors and the role the built environment plays in exacerbating or improving the disparities in CVD outcomes [6]. In this article, we explored the built environment of Washington, D.C. and the role it may play, in the underlying reasons behind the stark racial and geographical disparities for six modifiable cardiovascular disease (CVD) risk factors. We examined the intentionality of policies implemented between 2003 and 2014 related to the built environment, and the impact they may have on reducing barriers in the built environment that contributed to CVD risk factor disparities. Specifically, we examine policies related to food access, physical activity, and

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tobacco use. CVD risk warrants significant attention as racial disparities for age-adjusted CVD-related deaths are greater in Washington, D.C. than those in any other states in the country [5]. Further, citywide data for modifiable CVD risk factors suggests that the risk for developing CVD is greatest in some of D.C.'s most segregated and low-income areas.

Washington D.C.: a City Divided

On the surface, D.C. is a thriving metropolis, with a strong economy, and a comparatively healthy population of more than 680,000 residents. The city has flourishing upper and middle classes with household incomes well above the national average [7]. Real estate prices are at an all-time high, with gentrification on the rise [8]. City averages over the past several years indicate that D.C. residents have better health behaviors and outcomes than the rest of the nation. On average, D.C. residents are more likely to exercise, eat healthy foods, have lower rates of hypertension, and tend to engage in fewer risky activities, such as smoking [5]. However, hidden within city averages is a city divided, with significant impacts on the public's health and well-being.

D.C.'s population increased by more than 13% between 2010 and 2016, with the White population growing more rapidly than any other racial/ethnic groups. The data further shows that the once predominantly Black areas of the city are becoming less so and the Black population overall is rapidly decreasing [9]. Historically, D.C. has been divided by racial, class, political, and physical barriers. Geographically, the city is segmented into four quadrants and eight wards with differing racial and ethnic compositions. Wards 2 and 3 in the Upper Northwestern quadrant are mostly White and wealthier. Currently, more than 75% of residents in these wards are White, and average significantly higher household incomes compared to other wards in the city [9]. To the East of wards 2 and 3, the city becomes more integrated and more economically diverse. White populations in wards 1, 4, 5, and 6 have been increasing since 2000, and for the most part, Black populations have been decreasing due to gentrification. Across the Anacostia River, wards 7 and 8, which occupy the Southeastern and part of the Northeastern quadrants of the city, are more than 90% Black [9]. These two wards have historically been largely Black, and the average family income in wards 7 and 8 is at between \$18,000 and 26,000 less than that of any other wards in the city [9].

Methods

First, we examined city- and ward-specific data on CVD deaths and risk factors, then conducted an environmental scan of D.C.'s built environment, identifying barriers that underscore the disparities in CVD risk focused on food access, physical activity, and tobacco use. We evaluated the city's efforts to address the barriers through intentional health policies implemented from 2003 to 2014, by examining existing policies and their

effectiveness in reducing barriers and disparities. Our analysis focused on policies that targeted adult populations and were designed to have an impact either citywide or on large subgroups such as racial groups or regional populations. Policies targeting only city employees were not included. We aimed to answer two research questions:

1. Was the policy intentionally designed to reduce a risk factor disparity for CVD?
2. Was the policy effective in addressing an existing barrier?

To determine if a problem had been identified, we evaluated both D.C. government and academic literature that focused on disparate health outcomes in D.C. To aid our understanding of intentionality, we examined language in the policy to determine if it was designed to reduce barriers that contributed to a racial/ethnic health disparity. We assessed effectiveness by examining outcome data, both individual level and macro-level before and after implementation of each policy under study, where data were available.

Results

CVD Risk Factor Prevalence

Significant disparities exist in CVD death rates between White and Black D.C. residents, which mirrors disparities observed across six of the eight CVD risk factors. Data from the 2014 Behavioral Risk Factor Surveillance System (BRFSS) highlighted substantial differences in the prevalence of hypertension, high cholesterol, diabetes, obesity, physical inactivity, and tobacco use. A measure for diet was not included in the city's BRFSS report. Black D.C. residents had a prevalence that was more than double that of White residents for almost all the risk factors (Table 1).

Table 1 CVD risk factor prevalence among Whites and Blacks in Washington, D.C.

Risk factor	White	Black
Diagnosed hypertension (%)	20.6	40
Diagnosed high cholesterol (%)	30.9	38.4
Diabetes (%)	2.8	14.8
Obesity (%)	10.3	33.9
Diet	–	–
Not physically activity in past month (%)	7.1	32.5
Current smoker (%)	7.3	26
Heavy drinking (%)	13.0	6.5

Sources: Behavioral Risk Factor Surveillance System (BRFSS) D.C. Annual Report 2014; Behavioral Risk Factor Surveillance System (BRFSS) D.C. Annual Report 2013

Our examination of the prevalence of risk factor data for each ward highlighted geographic disparities that could be linked to segregation, and disadvantages in the built environments of predominantly Black neighborhoods. The highest prevalence for six of the seven risk factors was consistently observed in wards 7 and 8 (Table 2). Blacks comprised greater than 93% of the population for both wards 7 and 8, and 44% of the city’s Black residents live in wards 7 and 8 [10].

Food Access

In our examination of policies related to food access in D.C., we found only one policy that was intentionally designed to increase food access during this period: The FEED DC Act of 2010. Food deserts are often used as a measure of a community’s access to affordable fresh fruits and vegetables [11]. The prevalence of food deserts not only limits access to fresh fruits and vegetables, but also forces residents to shop at convenience stores or fast food outlets, which offer food options that are high in calories and low in nutritional value [12]. According to the D.C. Policy Center, a non-partisan think tank focused on local D.C. issues, nearly 11% of the city is considered a food desert. Fifty-one percent of those food deserts exist in ward 8, and 31% are in ward 7.

The FEED DC Act of 2010 created two separate programs. One program incentivized grocery store development in underserved areas through tax credits, financing, and licensing fee exemptions, and the other created the Healthy Corner Stores Program to bring fresh produce to corner stores [13]. We found that this policy was implemented in a timely manner following the identification of food deserts as a problem and that the policy was intentionally designed to reduce a health disparity as its goal was to increase access to food in areas where access was limited. To assess the effectiveness of these two programs, we examined the changes in the number of grocery stores by ward and the number of corner stores participating in the Healthy Corner Stores Program since implementation.

Effectiveness of Grocery Store Incentives and the Healthy Corner Stores Program

Since adoption of the legislation, D.C. has seen an increase in the number of grocery stores in most areas of the city, but a reduction in the number in wards 7 and 8. According to an analysis by D.C Hunger Solutions, a local organization that addresses issues related to food insecurity, in 2010, ward 7 had four full-service grocery stores, but in 2016, that number dropped to two for the region’s 70,064 residents. Ward 8 had three full-service grocery stores in 2010, but in 2016, the ward had only one to service 78,686 residents. Data were not available on the exact location of grocery stores that received tax breaks under the Supermarket Tax Exemption program, but

Table 2 CVD risk factor prevalence by ward

Race	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8
Total population	81,637	75,780	82,795	82,375	80,307	82,092	70,064	78,686
White	54.7% (44,675)	74.7% (56,625)	82.2% (68,019)	26.1% (21,464)	18.3% (14,659)	54.1% (44,447)	2.5% (1717)	4.3% (3349)
Black or African American	31.4% (25,643)	9.0% (6790)	6.0% (4931)	58.6% (48,288)	72.8% (58,464)	36.7% (30,141)	94.4% (66,142)	93.7% (73,739)
Risk factor								
Hypertension	28.6%	23.8%	24%	32.3%	37.2%	29.6%	42.9%	37.7%
High cholesterol	29.7%	33.2%	37.4%	35.9%	35.5%	40.5%	40.6%	42.3%
Diabetes	5.8%	3.6%	4.2%	8.6%	10.8%	9.1%	13.4%	19.7%
Obesity	16.4%	9.3%	11.9%	22.6%	25.9%	23.2%	34.0%	37.0%
Diet	–	–	–	–	–	–	–	–
Not physically active in past month	16.4%	11.6%	8.8%	16.3%	25.8%	13%	32.3%	41.6%
Current smoker	10.6%	–	7.4%	11.1%	17.6%	16.1%	30.7%	33.1%
Heavy drinking	11.9%	16.6%	10.1%	5.9%	–	9.8%	–	–

Sources: Washington, D.C. Office of Planning, Census and Demographic Data, Behavioral Risk Factor Surveillance System (BRFSS) D.C. Annual Report 2014, Behavioral Risk Factor Surveillance System (BRFSS) D.C. Annual Report 2013

between 2000 and 2016, 22 grocery stores received tax exemptions under the program, and only two were in wards 7 and 8 (Table 3). To carry out the *Healthy Corner Stores Program*, the city partnered with a local food bank to distribute fresh food to 66 stores throughout the city, with 14 stores in ward 7 and 19 stores in ward 8 in 2015 [14]. The program also claims that it has increased profit for all stores involved [14]. This program was successful in decreasing access barriers to fresh food.

Physical Fitness

Access to parks and greenspace has been shown to increase the likelihood of physical activity [15]. D.C. has a considerable amount of green space, as well as parks and recreational facilities. Unlike the distribution of healthy food sources, access to these recreational facilities is distributed equally throughout the city. According to The Trust for Public Land, 22% of the city is considered park land, and 97% of the city’s low-income population lives within a half-mile walk to a park. Additionally, the City’s Department of Parks and Recreation claims that no place in the city is more than two miles from a recreation center.

Despite access to facilities that can be used for physical activity, pockets of inactivity are patterned around disadvantaged neighborhoods in wards 7 and 8. A third of ward 7 residents and 42% of ward 8 residents reported not being physically active over the period of a month in 2014 [16], rates that are significantly higher than any other wards in the city. Several factors that are prevalent in Wards 7 and 8 likely play a role in residents’ inactivity including poverty [17], low educational attainment, and perception of neighborhood safety [18, 19]. Ward 7 and 8 residents experience all three of these barriers at higher rates than the rest of the city, as poverty rates are higher than those of other wards, people are less likely to have a college degree, and residents tend to experience both

perceived and real crime at higher levels than the rest of the city [9, 20].

Although the D.C. Department of Health has recognized both the racial and geographical disparities in rates of inactivity [21], we found no evidence of policies that were intentionally designed to reduce this disparity. However, we found two citywide policies that were intended to increase physical activity rates for all residents of the city. We first analyzed the policies to determine if the programs they created had distributed resources evenly and then reviewed physical inactivity data to determine if there had been any changes in disparities between 2003 and 2014. To measure the effectiveness of the two policies, we assessed the following outcome measures: the number of Bikeshare docks in wards 7 and 8, and the percentage of schools with recreational shared use agreements by ward, and the perception of safety.

Bikeshare

In 2008, D.C. became the first city in the nation to operate a bicycle sharing program, and in 2012, the city established dedicated funding for the program, which is operated by Capital Bikeshare. The program provides a low-cost transportation option for short trips by allowing users to rent a bicycle from a self-service docking station and then return the bicycles to another docking station near a destination. This provides not only additional transportation options, but also an opportunity for physical activity. The program is only useable if a docking station is near riders’ start and ending destinations. As such, docking stations would need to be spread evenly throughout the city for the program to be effective in helping all residents be more physically active. This however is not the case as only 24 of the programs 440 docks were located in wards 7 and 8 as recently as 2017. While Capital Bikeshare recently announced plans to add eight additional docking stations to wards 7 and 8, this will still bring the total to only 32.

Table 3 Grocery stores and healthy corner store participation, by ward

Ward	# of full-service grocery stores, 2010	# of full-service grocery stores, 2016	# of full-service grocery stores in pipeline, 2016	# of participating corner stores as of 2015	Median income 2009	Median income 2014
1	6	8	1	3	\$60,998	\$80,794
2	8	7	0	0	\$76,592	\$99,422
3	11	9	0	0	\$97,960	\$109,909
4	2	5	1	9	\$60,642	\$71,545
5	3	7	1	19	\$45,627	\$55,063
6	4	10	3	2	\$73,190	\$90,903
7	4	2	0	14	\$34,965	\$39,828
8	3	1	0	19	\$31,188	\$31,642
Overall	43 (avg. 5.4 per ward)	49 (avg. 6.1 per ward)	6 (avg. 0.75 per ward)	66	\$56,519	\$69,235

Sources: D.C. Hunger Solutions, Washington D.C.; Department of Health, Washington, D.C.; Office of Planning, Census and Demographic Data

Shared Use Agreements

Shared use agreements open public facilities for community recreational activities and have been shown to increase physical activity among adults and children [22]. D.C. allows for such agreements, but the number of schools with shared use agreements is not distributed equally throughout the city. According to an analysis by Active Kids, Healthy Community, a local D.C. organization that works to increase physical activity levels for youth in the city, in 2015, nearly 50% of schools in ward 8 currently maintain shared use recreational agreements, and only 25% of schools in ward 7 maintain such agreements. When compared to other wards in the city, ward 8 has the fourth highest percentage of schools with shared use agreements, and ward 7 is tied for the lowest percentage of schools with these types of agreements. By opening more schools to shared use recreational agreements, residents would have additional access to fields and playgrounds and may also be less likely to have to walk through dangerous areas of the city to reach places to exercise. There were fluctuations in physical activity rates between 2003 and 2014 and no consistent increase or decrease in physical activity disparities between Black and White residents of D.C. Additionally, residents of wards 7 and 8 consistently had the highest rates of inactivity during this period.

Tobacco Use

There are significant disparities in tobacco use in D.C. between White and Black residents. Among White D.C. residents, 7.3% are classified as current smokers, far below the national average of 17.2% for Whites [23]. Black residents however smoke at a rate of 26%, much higher than the national average of 16.7% for Blacks [23]. Although city reports show that the city has identified this disparity, we found no policies intentionally designed to address it and identified 11 policies or programs intended to reduce smoking citywide. Although we found no policies intended to address this disparity, we found one program designed to reduce smoking among Black residents and among residents in wards with higher rates of smoking that we included as part of our discussion (Table 4).

Public Smoking Ban

In 2006 following implementation of legislation that banned smoking in most public places, there was a consistent decrease in smoking among White residents, but no decrease among Black residents. The law first prohibited smoking in workplaces in April 2006 and in bars and restaurants in January 2007. Between 2006 and 2007, smoking rates for Whites dropped nearly 3%, and although rates increased in subsequent years, they remained consistently lower than rates

before implementation of the law. During this same period, however, smoking rates for Black residents increased immediately following implementation and then decreased in subsequent years to remain in a range consistent with smoking rates prior to implementation of the law. The decrease in smoking among Whites during this period, and the consistent rates among Blacks, resulted in an increase in disparate rates prior to implementation of the law.

Anti-smoking Campaign and Tobacco Tax

In 2011, an increase in the cigarette tax was implemented, and D.C.'s only intentional program, an advertising campaign that focused on Black and minority residents, as well as residents living in wards with higher rates of smoking was put into effect. After implementation of the tax and the campaign, smoking rates for Blacks began to steadily decrease to a 4-year low of 26% in 2014. Black/White differences also began to steadily decline during this period. The city reported that calls to the DC Quitline increased during and after the campaign, and 30 to 46% of callers reported hearing of the Quitline through a media source during the period of the campaign [24].

Although not intentionally designed to reduce disparities, the tax may have also had an impact on the reduction in disparities. Black smokers, especially young Black smokers, have been shown to be more price sensitive than White smokers, and it is possible this policy had an impact on smoking among Black residents [25, 26]. It should be noted however that a 2003 increase in tobacco taxes was followed by an increase in smoking among black residents. It is possible that the 2003 increase was not great enough to have an impact, or it is also possible one of the policies implemented around the same time contributed to this decrease in smoking.

It is also possible that the 2011 advertising campaign played a role in helping Black residents quit. Nationally, Black smokers have been shown to have more difficulty quitting smoking [27], but some programs, such as quitlines, have been shown to be more effective at assisting Blacks than others. One study found that quitlines in D.C., Texas, and Louisiana have been utilized by Black smokers at greater rates and have resulted in successful cessation at the same rate for both Black and White smokers [27]. The D.C. program however appears to have had no noticeable impact on smoking rates among Blacks following its implementation, but according to city officials, the advertising campaign appears to have raised awareness of the quitlines existence, as well as the number of people calling the quitline for help. It should also be noted that although there were sharp increases in smoking rates among Blacks and disparities that began in 2011, it is not possible to conduct an analysis comparing 2011 rates to rates in previous years. BRFSS is a phone survey, that in 2011, changed methodology to include cell phones, and a new

Table 4 Washington, D.C. current smoker rates by race and year of anti-smoking policies

Year	Summary of policy changes	White	Black
2003	Increased cigarette tax to 0.05 cents per cigarette and 3.25 cents per pack	13.7%	21.1%
2004	N/A	15.1%	24.6%
2005	D.C. quit line implemented	–	–
2006	Ban on smoking in public places, places of employment, schools, child care facilities, and government buildings	11.6%	22.5%
2007	N/A	8.5%	24.1%
2008	N/A	9.8%	22.4%
2009	N/A	10%	22.1%
2010	Prohibited purchase or possession of tobacco by individuals under 18 years of age. Prohibited selling through vending machines (with some exceptions)	9.1%	21.5%
	Prohibited selling cigarettes in packages containing less than 20 cigarettes, or the sale of loose cigarettes		
	Allowed property owners to post signs restricting smoking within specified distance of property up to 25 ft		
2011	Increased cigarette tax to current rate of 12.5 cents per cigarette implemented in 2011	9.6%	30.8%
2012	D.C. government ran a local multi-media, education campaign that focused on Black and other minority smokers, as well as residents in wards 5 through 8	10.7%	29.1%
	Prohibited smoking within 25 ft of playgrounds, recreational facilities, and bus stops		
2013	Allowed a portion of cigarette tax revenue to be dedicated to a Smoking Cessation Fund for smoking cessation efforts under certain conditions	9.9%	28.4%
2014	Allocated \$495,000 for tobacco prevention and cessation in FY2014	7.3%	26%

Sources: Washington, D.C. Department of Health Behavioral Risk Surveillance System, 2009 to 2014

weighting method. Data from years prior to the change in methodology cannot be directly compared to data following the change.

Discussion

We found that D.C. enacted few policies intentionally designed to reduce barriers in the physical environment that contributed to disparate outcomes for the identified CVD risk factors. Additionally, the few policies that were designed to reduce a barrier were often inadequate to assist populations living in geographical regions that consistently experienced the greatest prevalence for nearly all risk factors. Our findings demonstrated that both racial and geographical disparities have persisted for more than a decade and half.

It is difficult to say why policies that were enacted by the city had little to no impact on reducing disparities for CVD risk factors, but perhaps, some answers can be found by considering fundamental cause theory which posits that persistent social factors associated with poor health are the underlying causes of preventable disease [28]. Studies show that both low socioeconomic status (SES) and segregation meet the criteria

as fundamental causes of disease, which is consistent with our findings demonstrating that residents living in lower SES, and segregated sections of the city have poor health outcomes when compared to counterparts living wealthier, whiter areas of the city [28, 29]. According to the theory, access to fundamental resources, such as money, power, prestige, and beneficial social connections, can be used to avoid risk or minimize the consequence of disease after occurrence [28]. Resource disparity could possibly explain why health disparities increased or remained persistent after the implementation of citywide policies.

Viewing the cause of disease through this lens could have a significant impact on public policy designed to reduce disease and health disparities. The developers of this theory, Link and Phelan, suggest that policymakers could address fundamental causes by adopting approaches that reduce resource inequity, reduce the relevance of resources, or contextualize risk factors to avoid the enactment of policies that do not address factors that influence behavior [28]. It is possible that the formation of intentional policies that adopt this approach, particularly with regard to reducing resource inequity, may have an impact on reducing disparities for CVD risk factors in the built environment. While these policies would ideally reduce poverty or

segregation directly, we believe policymakers can also take intervening steps to reduce resource inequity. Reducing resource inequity may take the form of minimizing financial barriers that make healthy lifestyles difficult for vulnerable populations or designing policies that reduce challenges that are unique to populations whose health outcomes may be driven by a fundamental cause.

Food Access: the Importance of Education, Affordability, and Quality

The effectiveness of the FEED DC Act of 2010 was mixed as the number of grocery stores did increase in some underserved areas following implementation, but also decreased in wards 7 and 8. Since 2014, Washington, D.C. has continued efforts to address food access through legislation intended to increase available land for urban farming and the creation of a Food Policy Council to advise the city government on food access issues. Recent research has shown that simply making fresh food available is not enough to bring about significant changes in consumer buying and food consumption habits in low SES areas [30, 31]. Some of this may be attributable to affordability, as healthy diets are often more expensive than those that are less healthy [32]. Other studies have shown that both food quality and perceptions of the shopping environment are important to low SES communities and that food environments that do not offer high-quality options will impact consumer decisions about buying fruits and vegetables [33, 34]. Finally, health literacy has also been shown to be an important predictor of food choices [35], and efforts to educate consumers about the impact of food choices on their health should also accompany any efforts to bring fresh fruits and vegetables to low SES communities.

The exact reason this policy has not had an impact in wards 7 and 8 is unclear, but gentrification is likely a factor. Between 2010 and 2016, the number of grocery stores in wards 4, 5, and 6 was more than doubled. Between 2009 and 2014, these wards also experienced increases in median income that were between 18 and 21%, and their White populations increased as well [9, 36]. During this same period, incomes in wards 7 and 8 remained significantly lower than the city's median income, and there were no significant changes in demographics. In other words, while wards 4, 5, and 6 were becoming wealthier and whiter, wards 7 and 8 remained poor with a very large Black population. "Urban obstacles," such as lack of profitability in low-income neighborhoods, crime, and cultural bias, are all documented factors that have discouraged development in Black and low-income neighborhoods [37]. Given that such "obstacles" exist in wards 7 and 8, this may impact grocery store development.

The policy may still prove to be helpful in attracting grocery stores to wards 7 and 8 with some changes that address the resource inequity that could be driving development in the

city. The current version of the law allows grocery stores to build in historically underutilized business zones (as defined by the Federal Small Business Act) and several specified census tracts to qualify for the program, allowing grocers to benefit from tax breaks and other incentives in areas where attractive markets already exist or are in development. By changing the legislation to restrict eligibility to census tracts that are defined as food deserts, the city may be able to provide more aid to populations that are most in need. Both New York and New Orleans have similar programs to the one created by the DC FEED Act. An analysis of the outcomes and differences in these policies may be beneficial in determining if they can have a positive impact on D.C. communities in need.

Physical Activity: the Need to Create Intentional Solutions

A lack of access to recreational facilities does not appear to be a problem in Washington, D.C., yet significant disparities in physical activity remain. To increase exercise opportunities for residents of wards 7 and 8, it will need to create intentional solutions that address the unique challenges of these residents, and policies adopted should consider violence, poverty, and education as public health issues that can be an obstacle to exercise policy approaches such as the CURE Violence program, which adopts an evidence-based public health approach to stopping violence could serve as a model for the city. The program has been implemented in parts of New York, Baltimore, and Chicago and led to significant reductions in violence. Additionally, while some studies have linked violence and perceptions of safety to low use of parks [38], other studies have found that violence is less of a predictor of park use, than the level of coordinated and supervised activities at the park, in both low-income and high-income communities [39, 40]. Given the vast disparities in physical fitness activities, city policymakers could possibly reduce these disparities by designing programs with an equity view so that greater resources are given to areas in need.

Tobacco Use

The tobacco industry has long engaged in marketing strategies that target Black communities [41]. In D.C., predominately Black neighborhoods had significantly higher numbers of tobacco advertisements outside of retail establishments [42]. Tobacco advertising has been shown to be particularly effective at initiating youth smoking [43] and influencing smoking habits among minority populations [44]. To counter the effectiveness of these ads, states have used point of sale counter advertising. In 2009, the New York City Board of Health required tobacco retailers to display health warnings that contained graphic images, as well as information about smoking cessation. The campaign led to an increase in

awareness of tobacco warnings and participants who considered quitting [45]. Legal challenges forced an end to the campaign as the practice of requiring retailers to display such warnings was found to have been pre-empted by federal tobacco advertising laws. Despite the ruling, other municipalities have been able to develop similar programs that have not yet been challenged in court. Jefferson County, Alabama implemented a campaign for convenience store owners to voluntarily post health warnings in their stores. Washington, D.C. currently does not have a government-sponsored counter advertisement campaign, and in light of evidence that such a campaign may be effective, this may be a potential policy solution.

Mentholated Cigarettes

Nationwide, Blacks smoke menthol cigarettes at significantly higher rates than White smokers (86 vs 29% respectively) [46]. To address this public health concern, some municipalities have banned cigarettes that contain menthol. In 2016, Santa Clara County in California became the first municipality in the country to adopt such a ban, and in 2017, San Francisco approved a citywide ban on all flavored tobacco products, including menthol cigarettes. Although these policies are relatively new, there is evidence to suggest such a ban may reduce smoking among Blacks. One survey seeking to discover behavioral intentions for a hypothetical menthol ban found that 38.9% of all menthol users, and 44.5% of Black menthol users, claimed they would quit smoking if menthol cigarettes were banned [47]. A menthol ban could reduce cigarette smoking among Blacks in Washington, D.C., especially considering menthol cigarettes have been shown to be harder to quit.

Smoking Cessation

Black smokers have also been shown to have more difficulty quitting smoking [48], but some programs are more effective at assisting Black smokers than others. D.C. has adopted at least one of these policies through citywide quitline. Nationally, quitlines have been utilized by Black smokers at greater rates and have resulted in successful cessation at the same rate for both Black and White residents [27]. The D.C. program however appears to have had no noticeable impact on Black smokers following its implementation, but as mentioned previously, it may have played a role in reducing smoking rates among Blacks following implementation of the law.

Limitations

This study is not without limitations. One limitation of our analysis is that our examination of the built environment focused solely on data by ward. This was because data that

demonstrated clear patterns of segregation, linked to increased risk factors for cardiovascular disease, were readily available. Similar data was not available for different populations within wards. Just as city averages mask disparities for health outcomes across the city, it is possible that similar disparities within wards are masked by data that show a ward doing well as a whole. In addition to attempting to address the built environments in wards 7 and 8, it may be beneficial for the city to conduct analysis of risk factors by census tract or zip code to uncover additional areas of the city where disparities may be less obvious. Additionally, we were unable to control for other factors that could have influenced outcomes at the same time policies were implemented. Without the ability to isolate each policy in a vacuum, it is impossible to say with certainty that any single policy had an impact on smoking rates or disparities. Most importantly, our findings on effectiveness should be interpreted with care. Our examination of effectiveness assessed the impact of systems-level variables on individual level data. Without more individual-level data beyond ward-specific data, it is difficult to evaluate the true impact of the policies we examine on CVD risk factors. Finally, this study used data from 2003 to 2014 and the findings may not be generalizable to more recent years.

Conclusion

While it is important for cities to adopt policies that assist their entire population achieve better health outcomes, policymakers should always consider the impact a policy may have on increasing or decreasing health disparities, particularly in cities like Washington, D.C. where disparities are significant. Additionally, although we suggest some intervening strategies to reduce resource inequity, the city may need to consider policies that address underlying factors such as poverty and segregation to see significant reductions in disparities. Policies that do not do so may have some positive effects, but are often treating symptoms of a problem rather than its cause. Health disparities are a social justice issue where policymakers can make a positive impact by viewing all policies through a health equity lens.

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Compliance with Ethical Standards

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