

# Neighborhood assessment of the environment for physical activity: Engaging adolescents within an under-resourced community

Melissa Bopp, Ph.D.<sup>a</sup>, Mallika Bose, Ph.D.<sup>b</sup>, Lucas D. Elliott,  
MPH<sup>a</sup>, Natisha Washington<sup>c</sup>, Paula Needer, MSLA<sup>b</sup>

<sup>a</sup>Department of Kinesiology, Pennsylvania State University, University Park, PA

<sup>a</sup>Department of Landscape Architecture, Pennsylvania State University, University Park, PA

<sup>c</sup>Operation Better Block

## ORCID

Bopp: 0000-0002-5170-9410

Bose: 0000-0002-4521-4964

Elliott: 0000-0001-6305-3407

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**ABSTRACT:**

**Background:** Physical activity participation has many benefits; however, rates of participation remain low, particularly among underserved populations which may face low physical activity participation due to having poorer quality of built environment factors which is a known influence on activity levels.

**Objectives:** To train adolescents to conduct environmental neighborhood assessments and neighborhood resident surveys of with the end goal of encouraging advocacy for neighborhood improvements.

**Methods:** This mixed methods, prospective design study was focused in a low-income, under-resourced, predominately African American neighborhood in Pittsburgh. Adolescents (n=14, 13-17 years) in a community partner's youth program were trained to conduct neighborhood environmental assessments and distributed neighborhood resident surveys. Results of these assessments were shared with community partners to create strategies for improvement. These adolescents participated in a focus group following the environmental assessments to reflect on their findings and the process. The neighborhood resident survey (n=123) assessed demographics, perceptions of the neighborhood, PA participation and health outcomes.

**Results:** Neighborhood assessments noted and resident surveys noted many barriers to activity (i.e. poor sidewalks, unsafe areas). Results were informative for our community partner to advocate for neighborhood improvements. Focus group results indicated that the adolescents understood how their neighborhood environment could influence physical activity and how the findings could be utilized to make improvements in their neighborhood.

**Conclusions:** Adolescents can be successfully trained/educated to follow a research protocol for assessing the built environment for physical activity using a variety of measurement tools, while additionally gaining insight towards neighborhood environment advocacy.

**KEYWORDS:** Exercise, Education, Environment Design, Income, Child Development, Health disparities, Adolescents, Physical Activity

## Introduction

Physical activity (PA) has many well-known benefits for physical and mental health as well as the prevention of chronic disease.<sup>1</sup> Despite the known benefits, less than half of American adults participate in adequate PA to garner these benefits, and approximately a quarter of adolescents engage in PA daily.<sup>2</sup> Participation varies across the population, with individuals from lower income levels and those from racial or ethnic minority groups reporting lower activity levels,<sup>2</sup> which is related to a higher rate of inactivity-related chronic disease such as obesity, diabetes, and cardiovascular disease.<sup>1</sup> Globally physical inactivity accounts for more than \$50 billion annually and more than 13.4 million disability-adjusted life-years, which indicates the scope of the problem.<sup>3</sup>

Participation in PA is influenced by the physical environment; particularly safety from traffic/crime, supportive infrastructure (e.g. sidewalks, greenspace, parks), and neighborhood aesthetics as significant influences on physical activity for individuals of all ages.<sup>1,4-6</sup> Active transportation (walking or bicycling for transportation), which has notable health and sustainability benefits,<sup>5-9</sup> is also impacted these neighborhood factors as well; such as traffic calming, availability of well-maintained pedestrian and cyclist supports, or available destinations . Environmental factors that impact the feasibility of walking and bicycling for transportation also can impact leisure-time PA as well. Low-income and predominately ethnic minority neighborhoods often have fewer resources for supporting PA and when present, the resources tend to be of lower quality when compared with higher income neighborhoods or predominately White neighborhoods.<sup>10-12</sup> Occupational and household activity are typically not impacted by the

environment but represent a greater portion of overall PA typically for low-income and racial/ethnic minority individuals.<sup>13,14</sup>

Employing a citizen science approach (which encourages the public to voluntarily participate in the scientific process to address real-world problems,) for health issues allows for empowerment in communities, increases awareness of challenges and opportunities and builds capacity to effect positive change<sup>12</sup> and has been used in studies focused on the physical activity environment with both adults and youth.<sup>15-18</sup> For residents, understanding the key environmental influences on PA in a neighborhood can often lead to increased activity and improved advocacy for better resources among residents.<sup>17,19,20</sup> Therefore, the purpose of this project was to engage adolescents to conduct neighborhood assessments and resident surveys, examine the feasibility of the training and the adolescents' perspectives on the training, and engage in advocacy to promote neighborhood improvement

## **Methods**

### **Setting and Partnership**

The city of Pittsburgh, Pennsylvania had an estimated population of 301,048 in July 2019, of which 15.1% were under the age of 18 years, 33.1% identify as a racial/ethnic minority and 21.4% live in poverty.<sup>21</sup> The city has 90 defined neighborhoods which vary significantly in geography, terrain, culture and environment. The neighborhoods have distinct histories based on the ethnic groups settling in the areas and immigration patterns starting in the 1800s. Declining industrial production in the 1970's led to economic trouble and a significant decline in population throughout the city, with greater impact on ethnic minority communities in the city.<sup>22</sup>

The neighborhood of Homewood- (1.03 square miles- see Figure 1) had a population of 6,438 at the 2010 Census, experiencing a 29.5% decline from the 2000 Census.<sup>23</sup> The majority of the neighborhood is zoned as residential (70.1%). Residents from this neighborhood are predominately African American (94.5%) and low income (41.5% living in poverty). In 2010 there was a high proportion of vacant lots relative to the city of Pittsburgh (26.2% vs. 12.8%) and buildings in poor/derelict condition (14.2% vs. 3.5%) and a high crime rate (7.6 major crime/100 persons vs 4.0).<sup>23</sup> Homewood has several trusted, long-standing organizations that serve the needs of its residents, including Operation Better Block (OBB). OBB was founded in 1970 to serve the Homewood neighborhood with a mission of strategizing, mobilizing and organizing neighborhood blocks in Homewood. One of their main goals is the development of strong youth leaders, which is operationalized through the Junior Green Corps Program. This program, established in 2010, targets youth aged 14-18 and are led by adult leaders with a background in community organizing and sustainability. Participants take part in structured activities that impact their physical environment, emphasize leadership skills, improve their academic achievements and explore career opportunities related to economic, environmental and social sustainability. The mission of the program aligned with the current project with the focus on sustainable transportation (active travel) access. The program includes up to 20 youth with a program that runs year-round and youth are provided a small daily stipend for participating in the activities, which included the project activities described below. The partnership for the current project was initially established in 2018 with OBB through service-learning activities and outreach as a part of a university course taught by one of the co-authors and evolved to the current project based on overlapping interest and abilities for the research team and community organization. During Fall 2018 students from a class (taught by a co-author) worked with OBB

on a project that was selected by them related to housing and built environment data with GIS based maps. Through this exercise we developed a working relationship with OBB. In Spring 2019, the academic team continued to meet with OBB to discuss mutually beneficial opportunities for community engaged projects, leading to the development of the current project. The timeline of the project is found in Table 1.

The current project aimed to engage youth around the environment for physical activity. Using a Citizen Science based approach,<sup>24</sup> the goals for the project were focused on training youth from Operation Better Block to conduct environmental assessments in Summer 2019 and neighborhood resident surveys in Summer 2020 with the end goal of promoting advocacy for community improvements. This project was approved by the Institutional Review Board at Pennsylvania State University.

**Design:** This prospective, mixed methods project spanned two summers, the first phase of the project took place in summer of 2019 where the adolescents completed the neighborhood assessments and the second phase in summer of 2020 included surveys of neighborhood residents. All assessments were conducted by the adolescents in the Junior Green Corps Program run by OBB and facilitated by the same group of leaders in both years. The project was introduced to the youth as a part of their summer projects focused on sustainability and environment. Both the assessments and surveys from phases 1 and 2 were completed as a part of their summer program activities. OBB representatives provided input at all stages and were instrumental in determining the logistics of data collection and provided contextual information about the neighborhood to advance the project.

Participants: The adolescents (n=14) from the OBB Junior Green Corps were aged 15.37±1.30 years, predominately female (64%), all African American with an average household size of 4.65±2.50 individuals. Parents/guardians were provided with a description of the project with the opportunity for the child to opt out of participating in the focus groups and a child assent form for participation in the focus group was completed. They served as data collectors for both phase 1 and 2 and were research participants in phase 1 only (focus group).

### *Phase 1: Neighborhood Environmental Assessments*

#### **Environmental Assessment Tools**

**The Community Park Audit Tool (CPAT):** The CPAT (2010) was created to combine multiple characteristics of community parks to test for park information, access and surrounding neighborhood, park activity areas, and park quality and safety.<sup>25</sup> The CPAT asks questions with checkboxes, allowing for multiple responses.

**Active Neighborhood Checklist:** Version 2 (2011) of the Active Neighborhood Checklist combines several neighborhood features in its questions to create a general summary of street segments; including: land use, public transit, stop signs, street characteristics, quality of the environment to the pedestrian, and places to walk/bicycle.<sup>26</sup> This brief, 2-page synopsis of the street segments provided a general overview of each street segment, resulting in percentages and frequencies of features.

**Neighborhood segment selection:** The most significant street segments (e.g. high traffic, presence of significant destinations) from Homewood were selected (by an OBB representative with a background in neighborhood planning projects) based on the location of schools and



important places to the community, which make those streets frequently used. The number of days and the groups of adolescents available to perform the assessments were also considered. Individual maps were prepared for each day of fieldwork with highlighted landmarks to help navigate through the neighborhood. In every street segment, the sides to be assessed were located and marked on the map as well as on the checklist tool. The segments that were assessed by groups are identified in Figure 1.

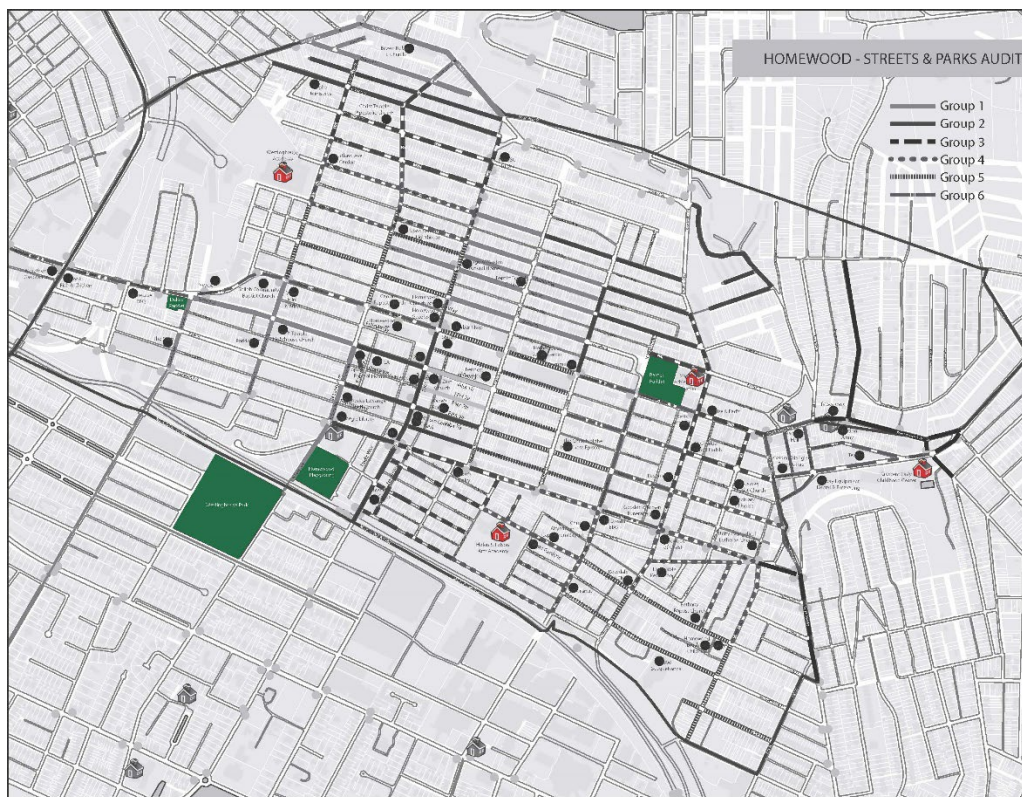


Figure 1: Segments assessed by groups in Homewood.

**Training & Assessment Activity:** The Junior Green Corp youth group who were adolescents from Homewood and surrounding neighborhoods were trained to use the assessment tools. A 3-hour training session, delivered by academic members of the project team, included a presentation about the tools, activities to familiarize themselves with the tools and then a hands-

on session. The presentation was reviewed by a female and male adolescent for clarity, terminology and level of detail prior to use. A reference sheet was provided to the adolescents to assist with completing the assessments. After completing the hands-on session, the adolescents were debriefed, and any issues or problems were discussed. The tools were adjusted slightly after this to assist with clarity and improve the reliability of the tool. The major barrier to implementation was the somewhat long and tedious presentation, which was alleviated with multiple breaks and the inclusion of the hands-on session.

After the training session was completed, the street segments assessments were completed as a part of their youth program activities. There were three days scheduled for street assessments over two weeks, with provisions for inclement weather if needed. Adolescents were divided into small groups of 2-3 with a trained adult leader. Each group was assigned a small section of street segments to assess with the tool. Adolescents completed on average 10 assessment forms/street segments assessments per group and were encouraged to discuss the items on the tool and once they came to consensus, they recorded the information on the tool. The assessments in the neighborhood took 60-90 minutes to complete. A total of 190 street segments were conducted (6 groups \* ~ 10 assessments/group \* 3 days) out of 395 segments from the neighborhood, representing 48% of the Homewood neighborhood. A similar procedure was followed for the parks assessment, with small groups conducting an evaluation of the four parks in the Homewood neighborhood. One of the parks is not located within the neighborhood boundaries but is located at the border and greatly serves the community and was included in the assessments. Adolescents were encouraged to take pictures of interesting things they saw during their assessments and share their photos with the project team via Google Photos™ (Google Inc., Mountain View, CA). Drinks and refreshments were provided to the students.

**Evaluation of Training & Assessment Activity:** Post-activity, the adolescents participated in a focus group asking about their experience with the training, the assessment activity, their findings and how their findings could be used for advocacy efforts for neighborhood improvements. The group was presented with three pictures; one featuring a park and two featuring a streetscape and asked to reflect on features in the photos. The group was led by a trained moderator following a structured guide (Table 2), recorded and transcribed verbatim. Using standard qualitative methods,<sup>27</sup> the transcripts were analyzed using a codebook developed by the project team. Two members of the project team independently coded the transcripts and then came to consensus. Major themes were identified using ATLAS.ti 8.1 (ATLAS.ti Scientific Software Development, Berlin, Germany).

### *Phase 2: Neighborhood Resident Survey*

There is significant evidence to indicate that there is often discordance between an individual's perceived environment for PA compared with an objective assessment,<sup>28-32</sup> which is often mediated by sociodemographic factors such as age and income level. Therein, to complement the objective assessment performed in Phase 1 the adolescents performed a survey of neighborhood residents to document perceptions of the PA environment.

**Resident survey:** The survey was designed to be at a 6<sup>th</sup> grade reading level and easy to administer. The survey contained questions about physical activity participation from the Global Physical Activity Questionnaire,<sup>33</sup> items from the Neighborhood Environment Walkability Scale,<sup>34</sup> demographics, and general health. The survey was conducted using the Qualtrics (Provo, UT) survey software application on a tablet to allow for offline data collection.

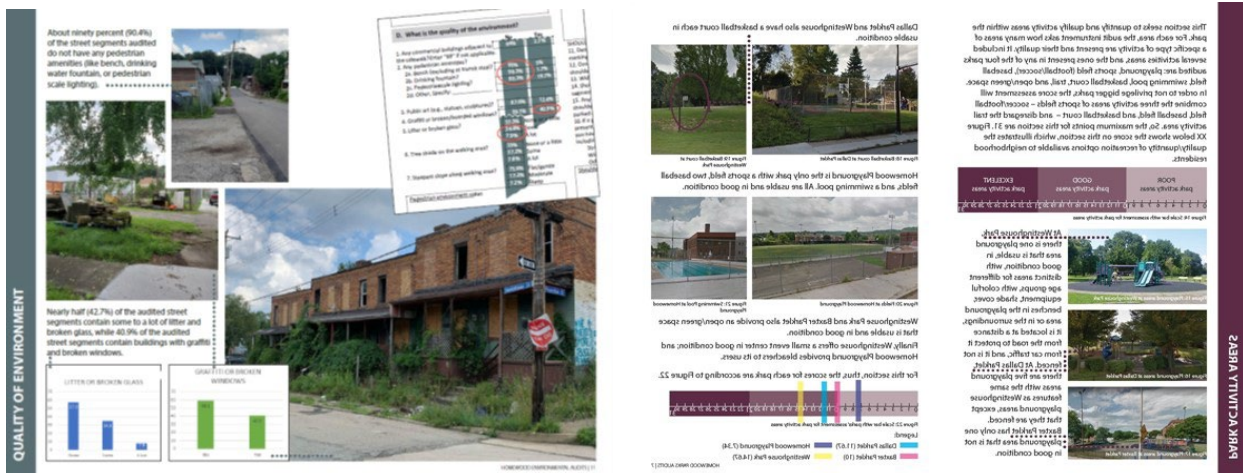
**Neighborhood resident recruitment:** Homewood is divided into 11 neighborhood clusters which overlapped with the areas where data was collected in Phase 1 using non-randomized, convenience sampling. On weekend days during summer 2020 adolescents went door-to-door in these different clusters to recruit neighborhood residents to complete the survey. Adolescents recruited in small groups with an adult supervisor following appropriate Covid protocols. The survey took approximately 10 minutes to complete. Upon completion of the survey residents were provided with a \$5 gift card.

**Training and Assessment:** Due to pandemic restrictions for in person gatherings and in-state travel, adolescents were trained via video conference (Zoom, Zoom Video Communications, San Jose, CA). The hour-long training delivered by the academic research team to the adolescents included a brief description on conducting research ethically and responsibly (topics included: what are research ethics and why they are important, historic overview of research ethics, basic guidelines for ethical research, and informed consent), the purpose and details of the survey and how it was related to the previous summer's work, the procedures to be followed (e.g. recruitment, consent and survey administration), and the logistics of using the tablet and survey software (e.g. opening the survey, navigating, saving response). The presentation was piloted with two adolescents for content and suitability for the age group. Local pandemic restrictions prevented us from further debriefings with the adolescents post-data collection, though we had intended to conduct additional focus groups.

## Results

### Results of the Assessments

The results of the assessments (Table 3) from phase 1 were summarized in two lay-oriented booklets, one for the neighborhood street assessments and one for the parks. The neighborhood booklet was 16 pages and featured a summary of the main results from the assessments in all different sections (e.g. land use, public transport and street characteristics, quality of environment, and sidewalk condition). It also included two GIS maps (ArcGIS 10.8.1, Esri, Redlands, CA) illustrating the presence of crosswalk and sidewalk condition. The parks booklet was 12 pages and highlighted the main characteristics of the 4 audited parks for the sections assessed by the tool (access and surrounding neighborhood, park activity areas, and park quality and safety). OBB provided input on drafts of the booklets by giving feedback, helping to adapt content for a community audience and correcting any contextual errors. Though the development process did not engage the youth group, the final products were shared with the adolescents and helped to prepare them for Phase 2. Representative pages from the neighborhood and parks booklets are found in Figures 2A and 2B. The booklets were shared with community partners and posted on the project website.



Figures 2a and 2b: Representative pages from the neighborhood and parks booklets.

## **Results of the survey**

The adolescents recruited Homewood residents (n=123) to complete the survey, the majority of whom were women, African American and had some college or higher education. Most residents were not meeting current physical activity recommendations and did not report good health. Residents agreed that there were issues in the neighborhood that could make it difficult to be active including a high level of crime and speeding traffic. Results are noted in Table 4.

## **Results of the focus groups**

The adolescents (n=14) reflected on how their neighborhood can influence their PA and how the assessment activity made them more aware of the environment. Examples of some of the main themes and illustrative quotes are found in Table 5. The adolescents offered several examples of how their neighborhood environment could influence PA for different populations, including young children, older adults and people with disabilities, with one person stating: “It would probably be easier if the sidewalks weren't as bumpy for the people in wheelchairs.”. The assessment activity made it very evident that there were several features of the environment that were in poor condition and the students noted how it would be beneficial to have other features in their neighborhood. One noted: “The park near the [location], that was bad, saw a lot of trash everywhere. And it looked like there was a lot of equipment just sitting out and nobody was using it.”

The adolescents noted several benefits of doing the assessments and how they could use the information to make improvements in their neighborhood. One participant indicated that there was the potential to reach out to local legislators: “Let's say this [to the mayor], hey look,

we're trying to improve the quality in our neighborhood, if you look at other surrounding neighborhoods, they have exhibits A, B, C, D, E that they can do here, we don't have A, B, C, D, E. We have A, and A is run down.”

### **Other outcomes**

OBB shared the neighborhood assessment booklets (on street and park assessments) with planners and policy makers from the city of Pittsburgh in early 2020, with extensive discussion on the findings relative to safety for pedestrians. During Summer and Fall 2020, when street improvements were being made (with the use of CARES funds) by the city, many of the street segments that were identified as needing improvements in the booklets were upgraded by the city. Discussion with OBB representatives revealed that the feedback they received from local government indicated that the booklets were used by the city in selecting street segments for improvements.

### **Conclusions**

This project showed that training youth to engage in assessment in a variety of methods is a viable way to engage the community that resulted in meaningful outcomes such as increased awareness of the environment in the neighborhood, lasting resources to advocate for improvements with policymakers and environmental change. After initial adjustments to the process, the training for both the assessments and the survey was easy enough to understand to allow for effective data collection in this underserved neighborhood. Given the ease of engaging the youth for this project, the next step is to determine how we could use similar strategies with adults and/or older adults to gain additional perspective into how community members perceive their neighborhood from different life stages (e.g. parents) or abilities (e.g. with mobility

impairments). Additionally, as technology rapidly evolves, further investigation on innovative methods of data collection to address the neighborhood environment for health and health behaviors is warranted. These findings also resulted in positive advocacy outcomes with neighborhood improvements as an outcome. Our findings contribute to the growing body of evidence to support these methods for engaging underserved youth. Previous studies that have engaged youth in citizen science type projects have seen moderate success<sup>35</sup> and can be an effective engagement strategy for strategies focused on the built environment for PA<sup>36</sup> and parks.<sup>16</sup> The current study adds a layer to the literature with the addition of neighborhood resident surveys to examine the perception of the built environment to create more meaningful and impactful findings that can serve as a springboard for advocacy efforts.

Although the primary goal for the current study was to examine the feasibility of the process of gathering neighborhood information and the resulting community-level advocacy activities, the findings from the assessments and surveys were moderately insightful as well. The assessment indicated that there was a fair amount of disorder in the neighborhoods that could be impactful on PA participation. This was confirmed with resident surveys, with low rates of meeting PA recommendations, possibly connected to the noted poor health and high rates of obesity. Environmental justice initiatives attempt to address these disparities of a poor environment in low-income communities by focusing on expanded park access, improved city design and better streetscapes.<sup>37-40</sup> The advocacy-related outcomes for the current project suggest that there is significant potential for these types of strategies to address inequities in the neighborhood and further studies should examine how organized efforts could help advocate for improvements. Although this study was centered on one neighborhood in Pittsburgh, the



methodology would easily transfer to other community settings in locations throughout the United States with effective community partnerships.

### **Limitations**

Despite the insightful findings there were a number of limitations within the current study. Though there were thorough trainings, there were still some concerns with the integrity of the data collected by the adolescents tied to poor motivation in some youth. Some of the notable challenges for the assessments included hot/rainy weather, student comprehension of the assessment tools, motivation for participation in the activities, and attention to detail with data collection. The assessment plan allowed for extra days for poor weather which was essential. For hot weather we planned to conduct the activities earlier in the day to avoid excessive heat. Even after the training the youth struggled to comprehend some of the concepts in the assessment tools. We attempted to address this by adapting the tool after the first pilot session and then by providing clarification and additional reference sheets to use when they were out doing their assessments. Student motivation to properly complete the assessments sporadically waned, especially at the end of the day, though we attempted to address this by providing positive reinforcement and discussing how the results could be used. Therein the data should be considered in a formative way to address the advocacy related work for the project rather than for making decisions about the neighborhood environments and resident perceptions. Future studies could use double-checking methods or objective assessments by trained technicians as comparisons.

### **Strengths**

The Citizen Science approach of engaging the community for a variety of data collection and sharing activities is this project's greatest strength. The process outlined in this study for engaging youth and examining the environment of an underserved neighborhood was sufficiently effective and resulted in positive outcomes. Our findings and insights from the process highlight the potential for dissemination of these strategies in other communities interested in targeting neighborhood improvements for the physical activity environment. We were able to confirm the feasibility of our methods and have noted a number of implications below for other communities looking to engage youth in similar activities.

### **Implications for Practice**

Although interpretation of the data collected is limited based on the effort and quality of data collection, the findings were insightful and informative enough to create real change in the community and there are a number of insightful implications for practitioners. We determined after this activity that the group needed to perceive a greater personal impact of their findings for them to be more engaged and motivated to participate in advocating for neighborhood improvements and our instructional materials should emphasize the connection between the environment and healthy living. It was noteworthy that the adolescents, the majority of whom had participated in Phase 1 were much more receptive and motivated for the activities in Phase 2 than Phase 1, which could have been a function of a greater understanding of the premise of the project or possibly in seeing how the findings could impact residents. The training techniques we employed and protocol implementation needed to be adjusted to meet the needs, preferences and motivation level of the youth if this project were to be disseminated or adapted to other neighborhoods. Given that motivation from the adolescents remained a challenge it would be

worthwhile to consider getting additional feedback from our community partner on effective strategies since they have a long-standing relationship with the students involved in this program. Additionally, engaging youth for these activities created an increased understanding and awareness of the role of the environment in influencing physical activity and health and they observed the impact of their findings on community improvements. This could be useful in building long-term community capacity for advocacy as the adolescents mature and can take on an active role for promoting change in their neighborhoods.

Overall, the objectives of this project were achieved, most notably in determining the feasibility of training adolescents and secondly in engaging in advocacy activities surrounding improvements of the neighborhood environment for physical activity. The lessons outlined provide insight for dissemination and expanded opportunities in other communities and populations.

### Acknowledgements

We would like to express our profound thanks to Operation Better Block who has served the Homewood community for more than 50 years with grassroots efforts to improve the neighborhood and improve the quality of life for its residents. Additionally, we would like to thank the youth who participated in this project with the Junior Green Corps, without whom our efforts would not have been possible.

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Table 1. Timeline of Activities – Phase 1 and Phase 2 (2018-2020)

<b>Time Period</b>	<b>Activities</b>
Fall 2018	Class project with Operation Better Block. Development of working relationship between academic team and Operation Better Block.
Spring 2019	Regular meetings with Operation Better Block staff. Finalization of project reports based on Fall 2018 class. Planning for project including IRB.
Summer 2019	Phase 1 Training and data collection
Fall 2019	Continued meetings with Operation Better Block Data Analysis Development of booklets Joint presentation with community partner at the Greater Pittsburgh Non-Profit Summit to local stakeholders
Spring 2020	Continued meetings with Operation Better Block Developing survey to find out about perception of the built environment to support physical activity Initial plan was to begin the survey during Spring Break in April Covid 19 Pandemic- Continued discussions via Zoom with Operation Better Block
Summer 2020	Continued Zoom meetings with Operation Better Block Finalization of Phase II study protocol Phase 2 Training and data collection (via zoom by Penn State Project team)
Fall 2020	Continued Zoom meetings with Operation Better Block Data analysis

Table 2. Focus Group Questions for Adolescents post neighborhood assessment

Focus Group Questions
<ul style="list-style-type: none"><li>• How much of physical activity is needed by youth to get health benefits?</li><li>• Before you participated in this audit activity, did you ever think about how the built environment either helps or prevents you from being physically active?</li><li>• Now that you have completed three days of street audits and one day of park audits –how do you think the built environment influences the ability of people to live active (and healthy) lives?</li><li>• Thinking about different groups of people that live in your neighborhoods (e.g. children, older adults), how would the built environment influence their activity?</li><li>• How was the quality of the parks?</li><li>• Describe how these audits made you more aware of the environment in your neighborhood?</li><li>• (Reflecting on pictures from the audits) What are some things in this picture that are good for promoting exercise and active living? What are some things that could make it challenging to be active? Would this space be OK for exercise for children or older adults in your neighborhood?</li><li>• How could you use some of this information that you have gathered through the street audits to improve your neighborhoods?</li><li>• What are your thoughts on the audit tools -streets and parks? What were some things that could make it easier for teens or adults to use them?</li><li>• How can we involve youth in thinking about our built environment, so that it supports active living for them?</li></ul>



Table 3 Neighborhood and Park Assessment Results

	% with feature	Park Ranking (n=4)
<b>Neighborhood Assessments</b>		
Land Use		
Residential	47	
Commercial	14	
Underdeveloped/abandoned	30	
Greenspace	11	
Public Transport & Street Characteristics		
No speed limit posted	80	
No crosswalks for crossing	65.7	
No traffic calming	91.3	
Quality of the Environment		
No pedestrian amenities	90.4	
Presence of litter and broken glass	42.7	
Buildings with graffiti and broken windows	40.9	
Sidewalk Condition		
Sidewalk present	76.6	
Wide sidewalk available	70	
Poor quality sidewalk	63.2	
Missing curb cuts/ramps	16	
Park Assessments		3/4 Good
Access and Surrounding Neighborhood		4/4 Good
Transit access	75	
Useable sidewalks on bordering roads	100	
On street parking	100	
Sidewalk leading to the park	100	
Safety concerns (graffiti, litter, etc.)	50	
Signage with park rules	75	
Park Activity Area		2/4 Good
Playground area in good condition	50	
Basketball court in usable condition	50	
Greenspace in good condition	100	
Park Quality and Safety		2/4 Good
Usable restrooms	50	
Usable water fountain	75	
Benches in good condition	100	
Trash cans available	100	
Medium shade coverage	50	
Poor lighting	100	

Table 4 Neighborhood Survey Results

	n (%)	Mean (SD)
<b>Demographics</b>		
% Female	80 (68.4)	
% African American	102 (87.2)	
Body Mass Index (kg/m <sup>2</sup> )		28.44 (6.90)
Household size		2.93 (1.62)
% some college education or higher	65 (57.5)	
% reporting marginal or low food security	52 (42.3)	
% meeting physical activity recommendations	25 (27.5)	
% reporting good or excellent health	36 (32.7)	
<b>Neighborhood Characteristics</b>		
% perceived traffic made it difficult/unpleasant to walk	43 (67.6)	
% perceived that most drivers exceed the speed limit	77 (67.6)	
% perceived that there were accessible crosswalks	60 (53.1)	
% perceived there to be a high crime rate in their neighborhood	85 (74.5)	
% perceived a high level of crime that makes it unsafe to walk during the day	55 (48.3)	
% perceived a high level of crime that makes it unsafe to walk at night	85 (73.9)	

Table 5. Focus group results

Theme	Illustrative Quote
How different neighborhood populations could be impacted by the environment	<p>“We don't really have sidewalks. So it's also pretty hard for people older than 60 to usually get up to the [destination] because it's pretty steep, too.”</p> <p>“Most of the swings [in the park] are rusty and so is the other equipment. So that kinda looked dangerous to me and it might be dangerous to children also.”</p>
Features of the existing built the environment	<p>“People are pretty ungrateful where I live, and they mostly break the working items that we have there, such as swings.”</p> <p>“A lot of construction happens where I live so, a lot of that prevents most of the people to really do much more of activities like biking or walking or running or something like that.”</p> <p>“I wish they would tear down old houses on my street. There's a lot of old houses that is abandoned and they're just there.”</p> <p>“Vandalism. And the broken glass in the play area [of the park]. There wasn't a lot of trash to the one that I went to, but it wasn't an ideal playground.”</p>
Availability of features (or lack thereof) in the environment	<p>“We should have bike lanes. We don't have bike lanes. We've just got two lanes for cars going both ways.”</p> <p>“And I always sometime wonder how come we don't have one of those [open grass field]. Why do we have to travel all the way to have a park to go play catch?”</p> <p>“Actually yeah I think we need cameras around here, all these cameras to, yeah, you see all these people doing drugs, people getting shot, people speeding.”</p>
How to use/share the information from the assessments for changing the environment	<p>“I would ask [neighborhood residents] if they can help like start picking up trash and stuff, making the street look a little bit cleaner.”</p> <p>“We could probably do a poster like we do all the time. Or put together a Powerpoint [with the results]. I was gonna share [the findings] on Facebook.”</p>
Reflections on the assessment procedures	<p>“But for the most part, the information that we did gather, I think was beneficial because even though it was repetitive, you will see that when you're walking through the community, a lot of this stuff is the same no matter which part.”</p> <p>“Most residents [of the neighborhood], when they seen us out there</p>

	doing it, they were like, I'm glad you guys are out here doing it. And I just said to them, it was just a neighborhood audit, what the streets and what the sidewalks look like, is how I explained it to them. But they were like, I'm glad to see the youth out there doing this"
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