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FINAL REPORT

UniverCity Year

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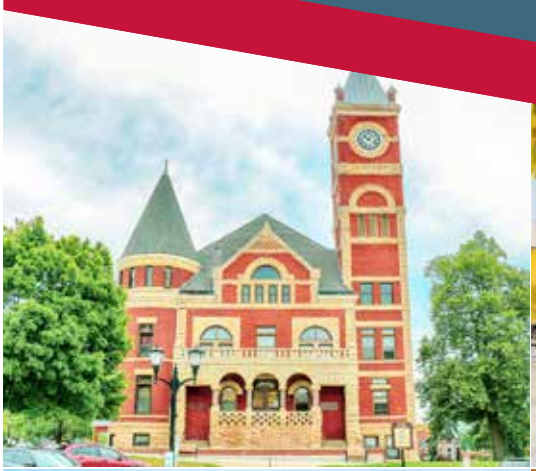
Addressing food deserts in Green County

POPULATION HEALTH SCIENCES 780: PUBLIC HEALTH: PRINCIPLES AND PRACTICE



UniverCity Alliance
UNIVERSITY OF WISCONSIN–MADISON

ABBREVIATIONS:

ACS – American Cancer Society

AHW – Advancing a Healthier Wisconsin Endowment

CHA – Community Health Assessment

CHIP – Community Health Improvement Plan

GCHCC – Green County Healthy Community Coalition

HWPP – Healthier Wisconsin Partnership Program

LA – Low Access

LI – Low Income

LILA – Low Access and Low Income

NIFA – National Institute of Food and Agriculture

SNAP – Supplemental Nutrition Assistance Program

USDA – United States Department of Agriculture

WIC – Supplemental Nutrition Assistance Program for Women, Infants, and Children

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SUMMARY STATEMENT

Food and nutrition insecurity impact people across the world, including populations in both urban and rural areas of the United States. Food insecurity and its dimensions – access, availability, utilization and stability – often impact low-income, minority, or geographically isolated populations. Yet the issue remains invisible due to the distance many people have from this insecurity. Working with the Food and Nutrition sub-committee of the Green County Healthy Communities Coalition (GCHCC), we have developed the following proposal to address food and nutrition insecurity in Green County, Wisconsin, and outline the strategies, actions, and evaluations necessary to successfully implement a mobile market to reduce the issue of insecurity in the region.

PUBLIC HEALTH ISSUE

Thus far, there has been little consensus among researchers regarding the definition of a food desert (Hendrickson, Smith, & Eikenberry, 2006). In this analysis, we will broadly define a food desert as "an area...with limited access to affordable and nutritious food, particularly in such an area composed of predominantly lower income neighborhoods and communities" (Ver Ploeg, 2010). Although the United States is often perceived as a wealthy nation, there are numerous areas that still experience decreased access to a variety of healthy and affordable foods. Several factors contribute to the development of food deserts. For example, large chain supermarkets generally provide longer business hours, more parking, and an increased variety of foods. This attracts consumers that may have otherwise shopped at local stores, putting smaller retailers at risk of closure (Alwitt & Donley, 1997). Furthermore, the United States has witnessed the migration of affluent households to suburban areas from inner cities and rural areas. Such economic stratification has driven supermarket businesses out of poorer neighborhoods and to wealthier communities (Walker, Keane, & Burke, 2010). In rural areas, greater distances from food retailers and distribution centers can deter supermarkets from establishing stores due to increased cost inputs. Additionally, community members may lack access to transportation – both personal vehicles and public transit – to stores (Sharkey, 2009).

Because people make food choices based on the food outlets available in their immediate neighborhoods, there is an increased reliance on small grocery or convenience stores within food deserts. These stores typically lack healthy food options, such as fruits and vegetables, or carry healthy options at higher prices (Ver Ploeg, 2010). This forces people to rely primarily on energy dense foods, with increased sugar, fat and sodium content, ultimately resulting in various statues of malnutrition (Walker et al., 2010). Paradoxically, malnutrition is not only linked to recurring hunger and undernutrition, but also to overnutrition and obesity (Tanumiharjdo et al., 2007). Obesity is a risk factor for myriad chronic diseases that plague the developed world, including heart disease, diabetes, chronic kidney disease, and high blood pressure, among others (Must, et al., 1999; Kovesdy, Furth, Zoccali, & World Kidney Day Steering Committee, 2017). Therefore, food deserts can greatly impact the overall health status of populations.

As noted above, food insecurity is higher among residents of urban and rural areas, compared to residents of suburban areas (Ver Ploeg, 2010). According to County Health Rankings, 60.2% of Green County, WI residents self-identify as rural. Recent studies on food access in Green County

indicate that 11% of residents are food insecure, and 10% have limited access to healthy food (University of Wisconsin Population Health Institute, 2018). Additionally, 78% of adults do not meet the recommended daily consumption of fruits and vegetables, and only 37% percent of children reported eating a serving of fruits or vegetables in the past week. Further, health indicators, such as obesity, show more obstacles to improvement. The worsening obesity in Green County adults climbed to 33% in 2014 while the U.S. and Wisconsin stand at 28% and 31%, respectively (University of Wisconsin Population Health Institute, 2018). Overall, these trends suggest that Green County is home to one or more food deserts, leading to the aforementioned health issues that are common nationwide.

The 2016 Green County Health Improvement Plan identifies health priorities to improve county health issues via a community needs assessments. The first identified goal is to improve nutrition education and food security. Two of three goals related to the priority are to 1) increase access to available food resources, and 2) increase availability and consumption of "healthier food" in food resource centers. While short term indicators are noted for the goal, and many have been reached with the help of the GCHCC and Food and Nutrition Security sub-committee, the long-term indicators of reducing body mass index in county third-graders by 2% and sustaining of food and nutrition security needs further work to realize these outcomes.

A first step towards achieving Green County's health goals is to identify existing food deserts within Green County. However, pinpointing the location of food deserts can be a challenging exercise. Data pertaining to food security and access are often difficult to obtain, requiring lengthy and costly research techniques, including travel to field sites, food index surveys, and in-person interviews (Mcentee & Agyeman, 2010). With the aid of geographic information systems (GIS) technologies, researchers have been increasingly able to create maps of food deserts worldwide. Maps can provide a visual representation of the number of shops per geographic unit, changes in socioeconomic variables per geographic unit, and population density, as well as outlining road networks and distance to outlets (Mcentee & Agyeman, 2010; Donkin, Dowler, Stevenson, & Turner, 1999). Once food deserts are identified in Green County via mapping, public health interventions can be targeted to these areas specifically.

HEALTH EQUITY FOCUS

It is important to note that different populations living within the same geographic area may face different challenges in obtaining healthy and affordable food. Recognizing the root causes of food insecurity and nutrition takes into account structural, environmental, organizational, and other issues such as poverty, race and/or ethnicity, occupation, and built environment that may be significant barriers to achieving food security.

To begin, food access is often unjustly stratified based on race. Previous studies have documented that black communities have fewer supermarkets than white neighborhoods, even after controlling for potential confounders, such as socioeconomic status (Morland, Wing, Diez Roux, & Poole, 2002). Not only do black communities have fewer supermarkets per capita, they are also typically farther in distance from the nearest supermarkets compared to their white counterparts. For example, one GIS analysis of Detroit, Michigan, found that the most impoverished black neighborhoods were located on average 1.1 miles further from the nearest

retailer compared to the poorest white neighborhoods (Zenk et al., 2005). Black communities therefore face systemic, institutional barriers to accessing healthy foods.

Latino immigrant populations also face unique barriers to accessing food. Cultural beliefs and values may make it difficult to adapt to a new food environment. One study of Latino immigrants living in New York City, for example, conducted focus group interviews to identify beliefs and preferences in female immigrants' dietary practices and their relationship to the retail food environment. Strikingly, this population did not define healthy food based on nutritional content. Rather, these women valued freshness (time since harvest or slaughter), and purity (absence of preservatives and processing). The presence of a farmers market within home neighborhoods was therefore linked to increased fruit and vegetable consumption. Conversely, proximity to supermarkets did not lead to an increased fruit and vegetable consumption (Park et al., 2011). This suggests that even in the presence of adequate supermarkets or grocers, Latino immigrants may still struggle to find culturally appropriate foods, essentially living in a food desert environment. Yet the process of acculturation can have profoundly negative effects on Latino diet. In general, recent immigrants consume less high-fat, high-sugar foods compared to immigrants who have been established in the United States for long periods of time (Ayala, Baquero, & Klinger 2008). Finally, language barriers can prevent food access. One study of Latino immigrants in Toronto, Canada, found that language was one of the most commonly identified problems leading to food insecurity. Several individuals cited difficulty in reading and interpreting labels, making it impossible to understand the health consequences of their purchases. Others noted that it was particularly problematic to shop in small grocery stores. In smaller stores, it was necessary to ask for particular foods; whereas in larger stores, they could search for the product in question themselves (Vahabi & Damba, 2013). Taken together, these findings demonstrate that immigrant status can profoundly limit access to healthy and nutritious food.

Next, socioeconomic status plays a significant role in the creation of food deserts. Impoverished areas are often home to the highest food prices and poorest food quality. Further, less variety and smaller quantities of food are noted in stores located in destitute areas compared to affluent areas (Hendrickson et al, 2006; Kaufman, MacDonald, Lutz, & Smallwood, 1997). It has been suggested that higher rates of crime in poor neighborhoods leads to increased theft from grocery stores, forcing shopkeepers to increase food prices, and perpetuating a cycle in which stealing becomes the only option by which some individuals can access food (Hendrickson et al., 2006). Transportation is another issue commonly noted by low-income families as a barrier to healthy food access. Lack of transportation forces consumers to select foods from nearby stores, leading to a sacrifice in quality if no healthy options are available at local institutions (Walker et al., 2010).

Addressing health equity through the social-ecological model is key for reducing disparities and the impacts of food and nutrition insecurity in Green County, WI. Green County faces many of the same racial disparities to food access as other parts of the United States. For example, while 94.5% of Green County residents identify as non-hispanic white and only 3% of residents identify as Hispanic, 29% of children living in poverty in the county identify as Hispanic (University of Wisconsin Population Health Institute, 2018). Based on this finding, and the fact that food deserts disproportionately affect socioeconomically disadvantaged populations, we

suspect that Green County's Latino population may be at increased risk of experiencing food insecurity.

Some food justice advocates have criticized the term "food desert" in discussions of food access and security. Food desert implies a condition which requires symptomatic, often short-term charitable management. Stronger language might include the term, "food apartheid," which implies that there are structural causes behind the condition. Once structural inequalities are acknowledged, the root causes of these inequities can be addressed, leading to long-term change (Sbicca, 2012). Although we have chosen to use the term food desert in our analysis, we hope that our proposed intervention will address some of the structural challenges faced by vulnerable populations in Green County.

COMMUNITY AND PARTNERSHIPS

Within Green County, there are many individuals and groups who can both feel the impacts of food deserts, and help to address them in various roles and levels of involvement. A lack of access to healthy foods affects a large proportion of surveyed Green County residents. We need the input of community members to correctly identify barriers to food access, as well as input from community food producers, local businesses, schools, and the continued efforts of the GCHCC to create sustainable solutions to increase access.

Many Green County residents are assets in creating solutions to food deserts. Much of the county community is involved in food production such as farming. Turnout and involvement in farmers markets have grown over the past few years, and food pantry donations have increased from stores and farmers as well. Community members have shown interest and willingness to participate in various programs related to nutrition and food security, like the farmers market, and these positives will carry them through future initiatives. Increased involvement and sustainability of involvement of these community food producers, specifically, will be critical to the success of any food and nutrition program. Involving more food producers in programs and projects will provide a steady stream of nutritious foods that would then be available for consumption across the county through programs such as food pantries, backpack programs, or mobile markets. This is crucial to keeping the supply chain local as well, to ensure sustainability in any programs designed, and to reduce needs for resources like long-distance transport and long-term refrigeration and storage, and further adds to the local economy, aiding employment and household income as food and nutrition issues are addressed.

Another stakeholder in this issue are the schools across Green County. While talking with our community contact, Ed Maksym, he identified a struggle to engage schools. Few were able to provide data on nutrition programs, school gardens and physical education programs. While programs like school gardens already exist in some schools, the lack of complete data is a limitation in program design and implementation. As data show low percentages of children getting adequate nutrition, involving schools is a critical part of improving children's' overall access to healthy food. Solid partnerships with all county schools will help with collection of data on nutrition and child health, and existing and potential food programming needs across the county.

Two final, large stakeholders in this are the GCHCC and Green County Health Department. In putting together Community Health Assessments, significant effort has already gone into combatting the effects of food deserts in Green County communities by these two entities. It is essential to engage the input of local health departments and already invested coalition members to coordinate intervention efforts and receive feedback. The Coalition has put in years of work to see multiple goals and projects developed in their implementation plan come to fruition and see health change in their county. The time and effort they have, and continue, to put in are vital to the success of these projects. The knowledge of health and food issues, resources available through their networks and positions of power, are also needed for continued support and success.

EVIDENCE-BASED STRATEGY

Identifying food deserts

Prior to considering an evidence-based strategy to address food insecurity in Green County, we aimed to identify the areas of the county with the highest needs in terms of limited food access. We began by mapping food resources in Green County, which included grocery stores, supercenters, dollar stores, convenience stores and gas stations, food pantries, farmers markets, and community supported agriculture (CSA) suppliers. Food resources located within 5 miles of Green County were also included as we recognize that for some residents the closest food resource may be a short drive outside the county. Identification of food resources was facilitated by Ed Maksym, the Wisconsin Food Security Project Mapping service (Applied Population Lab, University of Wisconsin - Madison, 2018), FairShare CSA Coalition online map (FairShare CSA Coalition, 2018), and Google Maps search. We then geographically identified food deserts in Green County using the United States Department of Agriculture's (USDA) Food Access Research Atlas. The Food Access Research Atlas defines food deserts as census tracts that are both low access (LA) and low income (LI) (Rhone, Ploeg, Dicken, Williams, & Breneman, 2017). LA status is measured by distance to the nearest supermarket, supercenter, or large grocery store. For our map, we designated LA as the number of households that are more than 1 mile from the nearest store in urban areas and more than 10 miles in rural areas. LI status is defined by poverty rate (20 percent or greater) or median income (80 percent or below the state's median family income).

Our final Green County Food Resource Map (See Appendix A) identifies 10 grocery stores, 1 supercenter, 6 dollar stores, 20 convenience stores and gas stations, 7 food pantries, 2 farmers markets, and 7 CSA pickup sites in Green County. The map also identifies 3 grocery stores, 0 supercenters, 1 dollar store, 11 convenience stores and gas stations, 4 food pantries, 2 farmers markets, and 7 CSA pickup sites within the bordering 5 miles of Green County. A total of four census tracts in Green County are identified as LI. Three of the four LI tracts are also designated as LA at 1 and 10 miles. The USDA describes LI and LA census tracts as LILA, which we will equate to food deserts for the purposes of this report. Two of the three identified food deserts overlap with the city boundaries of Monroe. Although these urban census tracts contain many food resources, due to their high percentage of low-income persons and large number of persons with no vehicle access, they are designated as food deserts. The third food desert is located in the rural southeastern portion of Green County. For this census tract, the long distance to food

resources in addition to the high percentage of low-income persons contribute its designation as a food desert. Geographic identification of these three food deserts will allow for our proposed intervention to be targeted to the highest priority areas in Green County.

Proposed intervention

Addressing food insecurity in Green County could be accomplished a variety of ways, many of which have been implemented already through the Coalition, such as accepting SNAP and WIC benefits at local farmers markets and expanding the reach of those markets. Our project team considered multiple options for addressing food insecurity, based on evidence and ideas presented by our community partner and the GCHCC. Some of the interventions and programs we considered included: public transportation mechanisms for citizens without private transportation, expanding the selection of food at local food pantries to include more fresh produce, little free pantries or new food pantries, and larger school garden programs that would allow families to better access produce.

These programs were considered, but ultimately not chosen, due to lacking or limited evidence in the literature of program success, or poor fit for the identified needs and resources in Green County. Based on anecdotal evidence that transportation was a barrier to food access in Green County, the Monroe Farmers Market implemented a taxi program to transport low-income residents to food pantries, grocery stores and farmers markets. The program showed early success, but ultimately was not the solution to food insecurity in the county. Furthermore, our community partner mentioned that while transportation for residents to the market failed, bringing the food to community members with a mobile market would remove the transportation barrier. For these reasons, our project team focused on the evidence-based idea of a **mobile market**. This intervention is a low-cost alternative, and an extension of the already successful Monroe Farmers Market that fits the needs and resources available in Green County. A mobile market can be easily implemented for improving the current food insecurity and nutrition issues some community members face.

Broadly defined, mobile vending and markets can encompass selling food out of any portable vehicle, such as trucks, carts, roadside kiosks or stands (University of Wisconsin Population Health Institute, 2018). Unlike farmers markets, mobile markets are typically single-vendor fruit and vegetable stands that have the ability to travel to areas with limited food access (Hsiao, Sibeko, & Troy, 2018). Mobile market stands generally position themselves in high-traffic, high-visibility hubs in communities, such as schools, hospitals, libraries, or senior living facilities. Most mobile markets sell only fresh produce, however some also sell food staples including eggs, dairy products, or meat (Robinson, Weissman, Adair, Potteiger, & Villanueva, 2016). Farmers may sell their own products, or food may be sold by non-producer volunteers or other vendors. Several different payment structures have been used in mobile market models including fixed below-cost prices and sliding-scale prices based on ability to pay. Many mobile markets accept SNAP benefits and enable customers to "double up" on SNAP dollars (Leone et al., 2018).

Summary of scientific literature review and supporting evidence-base

We searched PubMed and Google Scholar to identify studies published in English using the following keywords: food desert, food access, food availability, food affordability, health, food insecurity, food map, mobile market, rural, mobile farm stand, among others. We reviewed abstracts to identify articles addressing the causative factors of food insecurity, as well as proposed solutions to addressing food deserts in American communities. To ensure capture of relevant studies, we cross-referenced articles from the bibliography of the selected article.

Mobile markets have been shown to increase **access** to nutritious foods in low income areas, food deserts, and near schools. For example, in a mobile GIS survey conducted in Massachusetts, difficulty of accessibility was alleviated by the use of roadside markets when produce was in season. Travel distances are significantly reduced by roadside markets for rural residents as compared to urban residents. (Ogneva-Himmelberger and Meng, 2014) In another example, women in rural Texas who felt groceries were too far away turned to alternative markets for food, finding their fresh fruits and vegetables at these flea markets, or "pulgas" (Sharkey, Dean, & Johnson, 2012). Access can also be defined by perception, and simply believing the issue is alleviated and foods are more accessible can be an encouraging factor for communities who have long perceived that they are without. When mobile markets arrive in communities, there is an increase in perceived access to healthy foods specifically (Leone et al., 2018). Resident perception of access to healthy foods and subsequent purchases of fruits and vegetables increased with the placement of farm stands (Evans et al., 2012)

Mobile markets also appear to be more **affordable**, with curbside produce trucks having lower prices (Brinkley, Chrisinger, & Hillier, 2013), and roadside farm stands in the Carolinas having lower prices that appealed to rural residents. (Valpiani, Wilde, Rogers, & Stewart, 2015). Accepting **public assistance benefits** such as SNAP at mobile markets also helped to influence purchasing by residents. More residents purchased their healthy foods at mobile stands than at a grocery store when using these benefits, and additionally purchased more fruits and vegetables while at these mobile stands. (Breck, Kiszko, Martinez, Abrams, & Elbel, 2017; Breck, Kiszko, Abrams, & Elbel, 2015). Roadside farm stands as well have been shown to have lower prices than conventional stores for specific fruit and vegetable items (Valpiani et al., 2013). Mobile markets largely **serve low-income and food insecure populations**. (Sharkey et al., 2012). A cluster randomized control trial in North Carolina showed that mobile markets may help **increase fruit and vegetable intake** in lower-income communities (Leone et al., 2018) participating in the Veggie Van program. (Abusabha, Namjoshi, & Klein, 2011) They also showed that mobile vegetable markets increased fruit and vegetable consumption by low-income seniors.

Mobile markets have been shown to **reduce sociocultural disparities** to food access, in relation to cultural and language barriers among community members. In immigrant populations, the unique barriers they face such as language barriers (e.g. cannot ask for what is wanted specifically, low levels of participation in food assistance programs) and a lack of culturally appropriate foods can be remedied with mobile markets (Grauel & Chambers, 2014). Markets in rural areas near the Texas-Mexico border provided foods that patrons found culturally-appropriate (Sharkey et al., 2012). Mobile food vendors have a history of serving immigrant and Hispanic/Latino populations in urban areas as well (Tester, Yen, & Laraia, 2010; Dean et al.,

2011a, Dean et al., 2012b, Sharkey et al., 2012), although we focused largely on rural evidence for this proposal.

Table 1

Examples of mobile markets from communities worldwide

Mobile Grow Food Market, Toronto	**Mobile Food Market -Nova Scotia Health Authority (Public Health, Central zone), Partners for Care, Halifax Regional Municipality, and the Ecology Action Centre.**	**Roadside Farm Stand Serving Carroll County and Baltimore Maryland**
 https://www.fastcompany.com/3039061/why-mobile-markets-arent-going-to-solve-the-problem-of-food-deserts	 https://haligonia.ca/the-mobile-food-market-is-rolling-in-to-a-community-near-you-142958/	 http://www.deeprunfarmsmaryland.com/roadside-farm-stand-carroll-county-baltimore-maryland/

Implementation

Implementation of a mobile market in Green County will require some community capacity, depending on the size and specifics of the program. The main input Green County will have to provide will be people and time. This will include the GCHCC for market research and development of evaluation plans, as well as a market coordinator needed to determine the logistics, manage volunteer and food operations, and see through the implementation and evaluation of the mobile market. Person-resources would lastly include vendors or volunteers to staff mobile markets at various locations, and could range from multiple volunteers who staff the market for a handful of hours each month to a paid staff person who handles the transportation and selling at all mobile market times and locations. In addition to human resources, the program will need a vehicle or mode of transit, continued financial resources to cover fuel costs, and fresh produce from local farmers to sell. Finally, the program would need to extend the SNAP training that has been provided for farmers market vendors to these mobile vendors and volunteers and ensure continuation of the SNAP reimbursement system to encourage purchases by all community members across the county.

The short, medium, and long-term goals of the project are outlined in the logic model (Appendix C). The short-term goals are largely for the coalition and project members to gain more knowledge and awareness of the landscape of food insecurity in Green County and the complexities that arise in the creation of food deserts, including target areas of worst nutrition-related health disparities or which communities would most benefit from the program. Short-term goals for community members of Green County would be shifting or strengthening of attitudes and knowledge on food insecurity and beliefs that all people should be food secure. Medium-term goals of the project are to see the project come to life – seeing local, healthy food

making its way from local producers, to the market, and ultimately to the plates of community members who start purchasing the now-available nutritious foods provided by the market. The long-term goals and outcomes of the program would ultimately be sustainable food security seen in the county, with improved health outcomes in community members. Success in Green County, as reflected in the goals, would be food security for all residents, but especially those who previously struggled the most with food insecurity and resulting nutritional deficiencies and health problems. This picture would include, 1) community members able to access and afford healthy food for their families, 2) local producers able to sell the food they produce, and, 3) no interruptions or inefficiencies in the local food supply chain. Mobile market success would ideally result in future decreases in body mass index and obesity in children in the county, in alignment with the county's Implementation Plan.

EVALUATION

Beginning with the creation of a mobile market project team, the first steps of evaluation would be formative, and would require collection of existing secondary data, surveys to county residents, and qualitative interviews in the community about food insecurity, barriers, attitudes, and relevant policies. This formative evaluation would enable the project team to learn from the community and existing resources: where the mobile market is needed most, who would be best served by the mobile market, what specific types of locations (schools, libraries, employers, neighborhoods) would be most conducive to hosting the mobile market, what products and potential vendors may be needed for addressing insecurity, and what information and marketing might be needed alongside the program, such as Spanish-language monthly recipe pamphlets or school newsletter announcements of hours and featured produce ahead of a mobile market visit.

The team would evaluate the process through facilitation and fidelity logs, attendance records, food inventory and purchase records, and possibly more qualitative interviews with market attendees. These sources would help the team note fidelity and challenges to implementation of the market, and capture feelings of success or suggestions for improvement from community members served. This process evaluation would likely continue and evolve through the first few years of implementation, although would lessen as the project team moves onto impact evaluation. The goals of impact evaluation would be to document changes in community knowledge and attitudes, intake of healthy foods, resources for improving intake, and feelings of security among originally food insecure community members. Using community surveys and focus groups with community members would be an ideal way to document these successes and the lessons learned during both the process and impact evaluation phases in the middle years of project implementation.

Outcome evaluation of the success of the program would ideally happen with the partnership and help of many stakeholders, including health departments, schools, and all the producers, staff, project team members, and community members touching the mobile market in any way over the first years of project formation and implementation. While success can be measured by census tract food measures, economic measures, and even BMI of elementary students across the county, the additional input by survey from community members will also be vital to documenting any improvements to food security, in which specific populations or areas, and potentially resulting health **impacts** on community members and children. Lessening the burden

of food insecurity and improving the health of future generations in Green County would be the most important potential impacts of the program on the community.

Community feedback at this stage in evaluation, added to the data collected from community members through the stages of program development and implementation, will aid in creating final program information, whether reports, media outlets such as news stories or social media posts. These methods of **dissemination** will serve two purposes, in that they will get information to the community, the very people the program hopes to serve, and may ensure **sustainability** of the program. As word spreads throughout the community and knowledge and access of the market increases, this may sustain or further positively shift attitudes, knowledge, and even the health of the community over time. This dissemination of information to the community should be done as well in academic settings, adding to the body of evidence of what works. This may be an opportunity for further sustainability of the program, as data from the program and a success in market implementation and community outcomes may help with renewal or application to new or expanded funding for the market for future years.

A full evaluation plan can be found in Appendix D, written to the scope of a full-time, county-wide mobile market run by a project team. Adaptations to this plan can be pared down for smaller project teams or a smaller-scale mobile market implemented part time, such as a once-weekly, non-vehicular road-side stand operated in one targeted food insecure area.

FUNDING

Support for the mobile market project will require significant resources at the start, should the coalition and project members decide to pursue a mobile market for Green County of the size and scope outlined here. Additional funding through grants may be necessary and could include pilot to large-scale awards from development to renewal stages. Sources for mobile market and larger Green County food insecurity and nutrition funding range from national to local options, supported by government to private sources invested in issues ranging from health and nutrition to business growth to food security. Sources include:

- U.S. Department of Health and Human Services Healthy Food Financing Initiative-Financing Assistance awards
- USDA NIFA Food Insecurity Nutrition Incentive grants
- USDA NIFA Community Food Projects Competitive Grant Program
- USDA Farmers Market or Local Food Promotion Program grants
- American Heart Association & the Robert Wood Johnson Foundation Voices for Healthy Kids grants
- ACS Evidence-Based Nutrition Pilot-Program grants
- RWJF Pioneering Ideas Brief Proposal grants
- AHW HWPP RFP's
- Wholesome Wave Nutrition Incentive Innovation grants

We encourage project team members to consider that the food insecurity and associated health issues found in Green County may fit within the scope and breadth of many potential funding awards. Research funding awards may also be an option, should project members be open to

partnerships with academic or evaluation research groups who may help in securing funding, program implementation, and measurement and data collection.

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Appendix A: Green County Food Access Map

Green County Food Resource Legend	
	Grocery store
	Supercenter
	Dollar store
	Convenience store or gas station
	Food pantry
	Farmers market
	Community supported agriculture (CSA)

Green County Census Tract Legend	
	Low Income and Low Access (LILA) at 1 mile (urban) and 10 miles (rural)
	Low Income only
	Neither Low Income nor Low Access

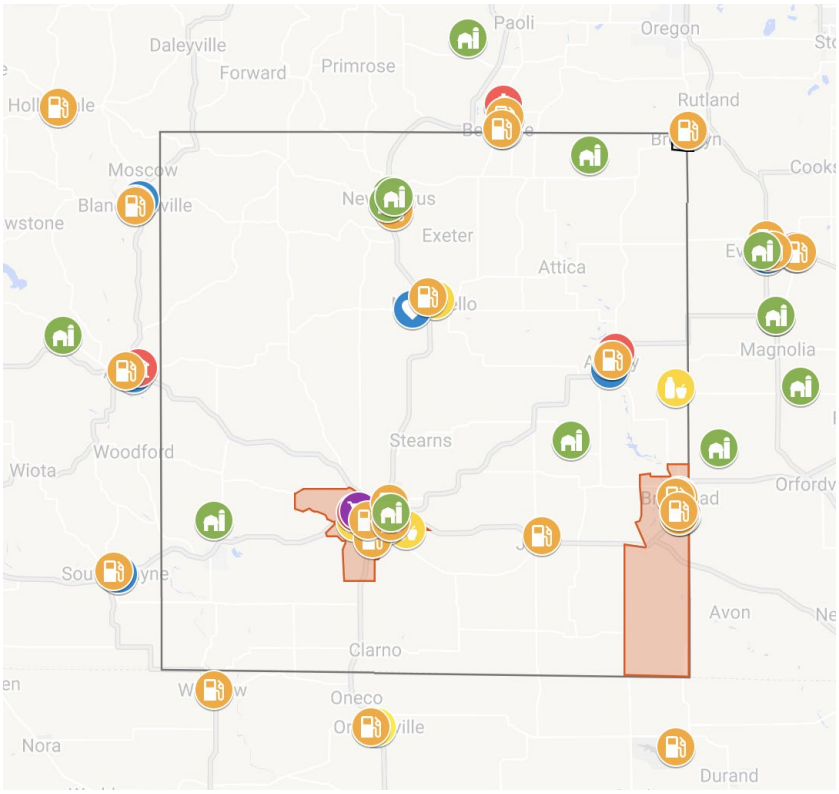

Figure 1. Green County food resources and LILA census tracts.

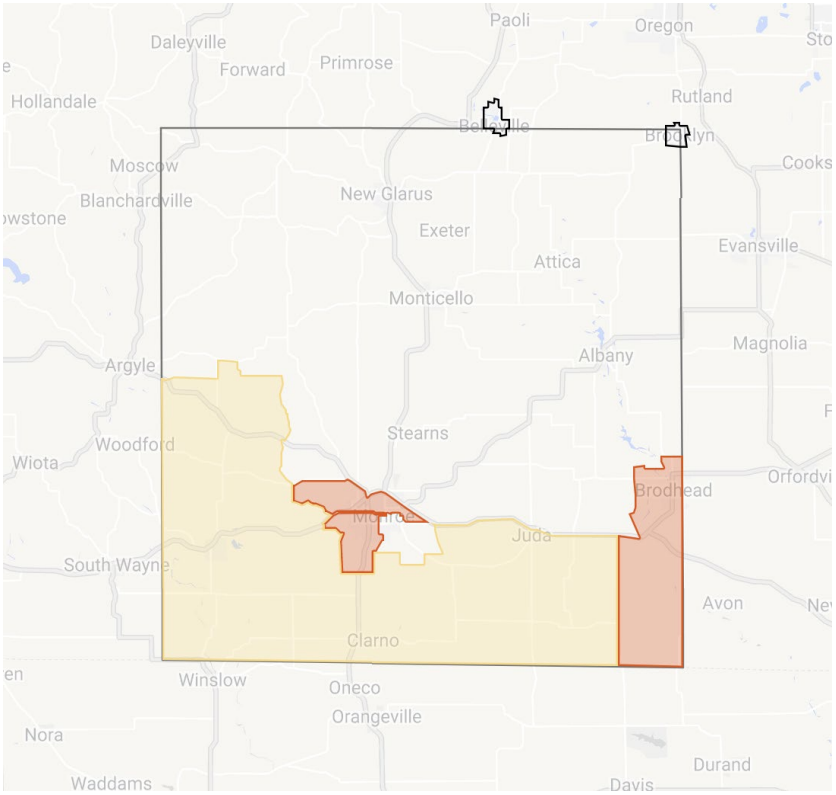

Figure 2. Green County LI and LILA census tracts.

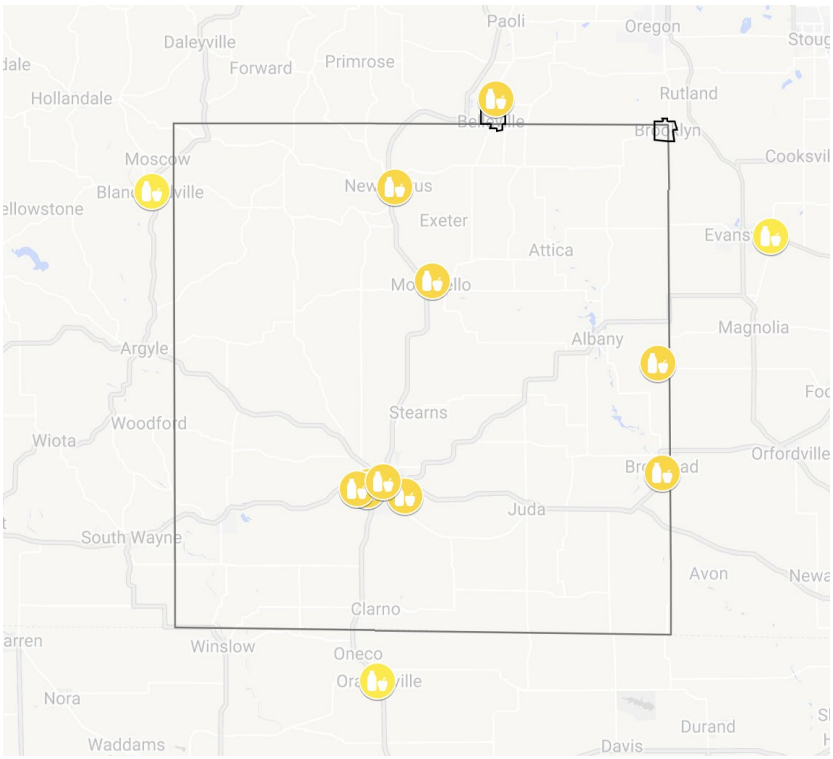

Figure 3. Green County grocery stores.

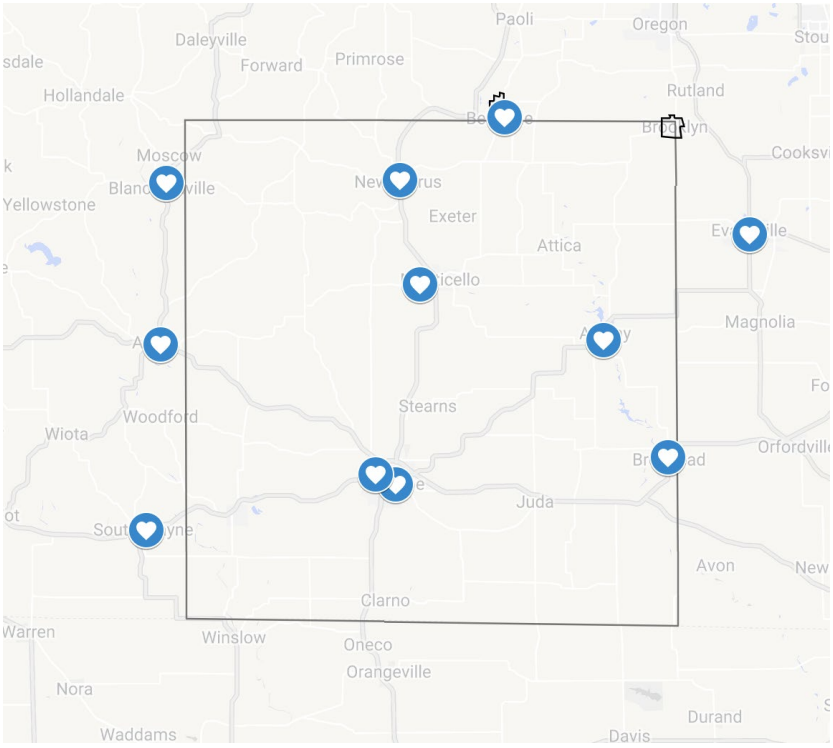

Figure 4. Green County food pantries.

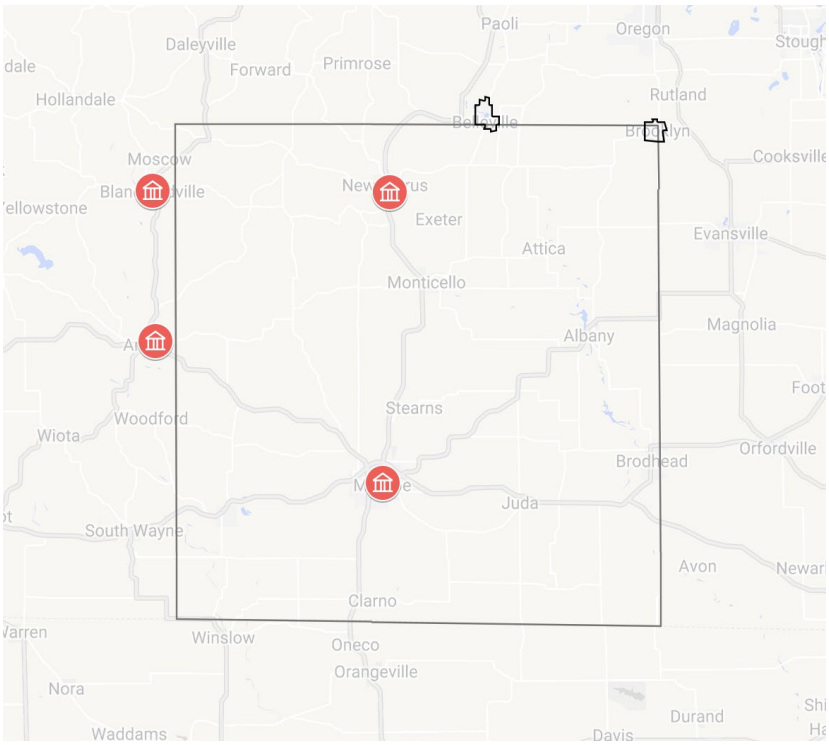

Figure 5. Green County farmers markets.

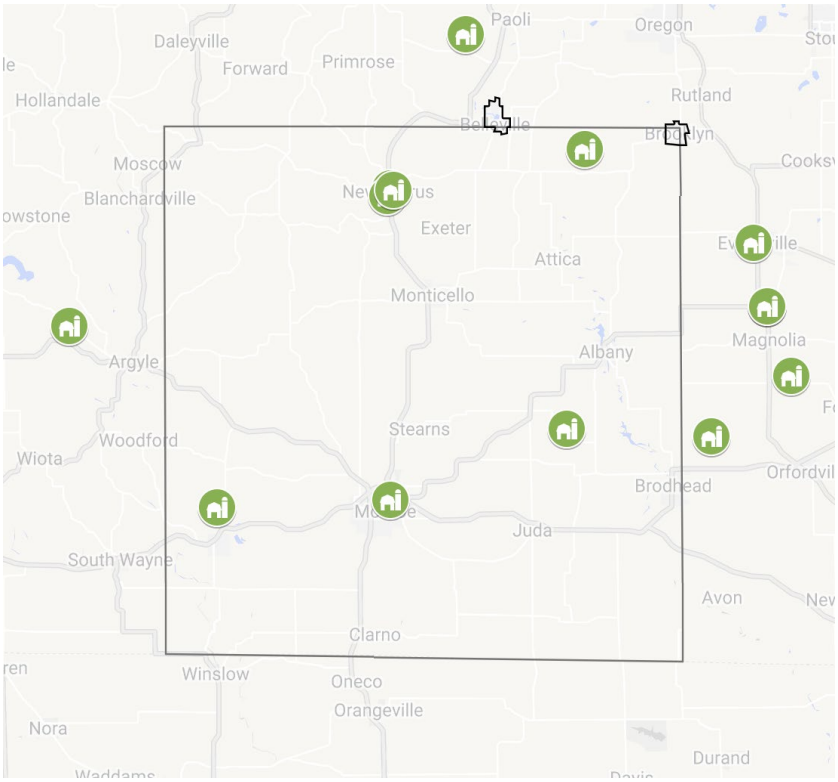

Figure 6. Green County CSAs.

Appendix B: Action Plan

INTERVENTION → MOBILE MARKETS

	Individual	Interpersonal	Organizational	Community	Health Policy
Objectives Addressed	**Knowledge** Increase knowledge of healthy and available foods in the community. **Attitudes** Increase willingness to eat and motivation to try healthy foods **Perception** Change perception that healthy food is unaffordable **Behavior** Increase consumption of healthy foods (fresh produce specifically)	**Social Networks** Household/ friendships → Increase family participation in cooking new recipes/ shopping together Work/ School → Peers and colleagues share information RE access to food w/in community Producers/ consumers → Foster relationships between food producers and consumers	**Programs** Integrate mobile markets into community structure **Built Environments** Addition of healthy foods to low - access neighborhoods, workplaces and school environments **Organizations** Encourage farm, local business/food retailers, and food pantry participation in mobile markets	**Built Environments?** Change food landscape by increasing access to healthy foods in food desert communities **Social Networks** Promote healthy food access in minority populations (e.g. Latinx community, elderly people, SES disadvantaged community) Promote cultural acceptance/ community integration of minority populations Create safe space where undocumented immigrants can access food w/o fear of repercussions	**Policies** Large food retailers change their store policies to donate unwanted food (produce specifically) to mobile markets Increase opportunities for use of SNAP → greater purchasing power
Approaches	Provide weekly pamphlets on foods available/ healthy recipes Provide information in both English and Spanish	Volunteer farmers rotate working at mobile markets Provide weekly pamphlets on foods available/ healthy recipes → ensure that these are kid friendly to encourage multi - generational participation Collect data on community perceptions of areas and networks of food instability	Host community forums Directly recruit and reach out to farms, businesses, workplaces, and schools for leaders to attend forums Create map to identify food deserts	Placement and scheduling of mobile market in targeted food desert areas identified by food desert maps Integrate a Spanish-speaking vendor/coordinator at the market Culturally relevant/translated market information, food and nutrition pamphlets	Meet with store management to advocate for change in store policies Mobile market must accept SNAP, and double token SNAP system

Appendix C: Logic Model

Inputs	Outputs		Outcomes -- Impact		
	Activities	*Participation*	*Short*	*Medium*	*Long*
• Literature review • Online data • Mapping software • Green County Healthy Community Organization • Mobile market coordinator • Vehicle • Fuel • Vendors or volunteers to staff mobile market • Fresh produce from local farmers • SNAP training for mobile market volunteers or vendors • SNAP reimbursement system	• Collect spatial data on food insecurity, food resources, nutrition status, and demographics in Green County • Map spatial data • Develop mobile market food program • Evaluate mobile market program	• Green County residents • Local food producers • Green County Healthy Community Organization • Green County schools	• Green County Healthy Community Organization has increased knowledge of food deserts and their impact on the health of communities • Belief that all individuals should have access to healthy foods • Awareness of food insecurity issues • Motivation to purchase and prepare healthy foods • Knowledge of how to prepare healthy meals with fresh produce	• Mobile food market implemented • Excess fresh produce pipelined towards mobile market program • Individuals purchase food from mobile markets • SNAP dollars accepted at mobile market	• Fewer Green County residents are food insecure • Less fresh produce is wasted • Reduced BMI of children in Green County • Greater number of adults and children in Green County meet recommended dietary consumption of fruits and vegetables

Assumptions

- Individuals will want to purchase healthy foods if available
- Increasing availability of healthy food results in better health outcomes

External Factors

- Socioeconomic and racial/ethnic distribution of Green County
- Environment
- Culture

Appendix D: Evaluation Plan

Evaluation Plan: Table for Mobile Markets

Type	Question	Qualitative vs. Quantitative	Method of Collection	Partners	Method for Reporting
Formative Evaluation	1. Are there Green County residents living in food deserts? 2. What are barriers to food and nutrition security? 3. What are attitudes among Green County residents, both adult and child, to nutritional foods? 4. What policies currently influence the physical and socio ecological landscape of food insecurity?	<u>Quantitative</u> 1. A review of geospatial data on existing food resources across Green County. 2. A review of data by county and state officials regarding nutrition, food insecurity, poverty, employment, and obesity to evaluate health status and environmental and sociocultural barriers and policies. <u>Qualitative</u> 1. A survey of children and adults on knowledge, attitudes, and barriers to health, nutrition, and healthy food access.	1. Primary data collect, secondary data review by local health officials 2. Surveys for community members, sent via email to be completed online and paper copies to be completed by mail.	• Green County Health Department • Monroe Health Clinic • Green County Healthy Communities Coalition • Professionals and owners of food stores • Food pantry staff and volunteers • Children and adult community members across Green County	Data would be collected and used within the partnership and coalition for development of the program. Pertinent information would be shared outwardly with the community, to put the program in context and share the findings and plans with County residents. Much of this data may be used as baseline comparisons for future outcomes.
Process Evaluation	1. Is the mobile market being implemented as designed? 2. What has been challenging and easy in the process?	1. Keep logs on fidelity of implementation compared to original design of the program, through mobile market volunteers (facilitation logs), and through	1. Program staff collect facilitation and fidelity logs to track the process and success of implementi ng the	• Mobile Market coordinator/st aff member • Mobile market volunteers and vendors • Community members • Health officials and coalition	This data would be used for program adjustment and developments as implementation happens. Data would be reported and circulated

	3. How many community members have been served so far? 3. How does the community feel about the mobile market so far? What are their suggestions for improvement? Are there culturally appropriate materials food options available?	coalition and partner assessments (fidelity logs). 2. Track food purchases/inventory at the mobile market. <u>Qualitative</u> 1. Open-ended survey questions to ask community members how they feel the mobile market has been implemented thus far? Do residents feel the mobile market is providing more culturally sensitive foods than they did before the program?	mobile market. 2. Program staff collect inventory information weekly from the mobile market and assess attendance and purchases by transactions. 3. Survey community members with an online and paper survey, collected on tablets by mobile market attendees, and emailed or mailed to county residents.	members working on program implementation.	among coalition members and project partners yearly and to community members yearly in order to offer feedback to everyone.
Impact Evaluation	1. What are the knowledge and attitudes among community members toward nutrition and healthy food after the implementation of the mobile market?	<u>Quantitative</u> 1. Survey of community residents on their knowledge and attitudes towards nutrition and healthy foods after participation in the mobile market program? 2. Survey question on self-reported food security and fruit	1. Focus group data collection and secondary data review by local health officials and coalition members. 2. Surveys sent to community members via email to	• Community members • School professionals and nurses • Local Health Officials • Local Health Department	Pre and post-program data would be collected to assess if and to what extent the mobile market program met objectives. Findings would be summarized in annual reports to disseminate to the community online and

	2. Did the program(s) succeed in getting more adults and children to eat more fruits/vegetables? 3. Did the programs succeed in giving people the resources needed to prepare (cook) a wider variety of foods? 4. Do residents feel more food secure?	and vegetable consumption by community residents. 3. Number of new recipes tried by individual families <u>Qualitative</u> 1. Focus groups with community members of all ages to get more extensive information on their feelings towards nutrition and food security, barriers to food access, and overall feelings on the mobile market program.	be completed online and paper through mail.		through local media. Pamphlets and brochures on the benefits of the mobile market program could also be distributed by the market as the program continues.
Outcome Evaluation	1. Is body mass index in Green County youth decreasing? 2. Was the program more successful in certain aspects, for certain schools, or certain demographics more than others (e.g. race, SES)? 3. Based on USDA criteria, is Green County more food secure?	<u>Quantitative:</u> 1. Collection of body mass index numbers of third graders in the county. 2. Economic indicators to determine influence on partner farms, family income, etc. 3. USDA census tract food access indicators. 4. Survey residents on impact of mobile market in their community and families.	*Assessment Strategy:* 1. Primary data collection and secondary data review of geospatial food resource information. 2. Surveys for community members, sent via email to be completed online and paper copies to be	• Coalition and project partners • Mobile Market Volunteers • Farmers/ producers • Community members • Local Health Officials • School officials • Possibly 1 or 2 outside Experts (UW Extension?) who could give a more objective outcome analysis.	Overall outcomes of the program would be disseminated at multiple levels - community, organizations, and health officials and governmental organizations that drive agricultural and food policy. Our final report would contain an executive summary for dissemination to administrators

4. What aspects of the program did participants (mobile market volunteers, community members, producers) feel gave them the most benefit?	completed by mail. 3. Primary data collection by school officials and nurses and secondary review by public health officials and coalition members. *4.* Outside experts review outcomes based on predetermined indicators (same as above) e.g. County Health Rankings, USDA, UW-Extension	and officials, as well as detailed health outcomes and data visualizations for dissemination to health officials, and infographics at appropriate literacy levels for dissemination to community members and youth.

About UniverCity Year

UniverCity Year is a three-phase partnership between UW-Madison and one community in Wisconsin. The concept is simple. The community partner identifies projects that would benefit from UW-Madison expertise. Faculty from across the university incorporate these projects into their courses, and UniverCity Year staff provide administrative support to ensure the collaboration's success. The results are powerful. Partners receive big ideas and feasible recommendations that spark momentum towards a more sustainable, livable, and resilient future. Join us as we create better places together.

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