

Sustainable Food Access through Sensing, Data Analytics, and Community Engagement

NSF Project_ID: 1952169

Sherif Abdelwahed, Virginia Commonwealth University
(PG, FY2020)

Principal Research Investigators (Name, Institution)

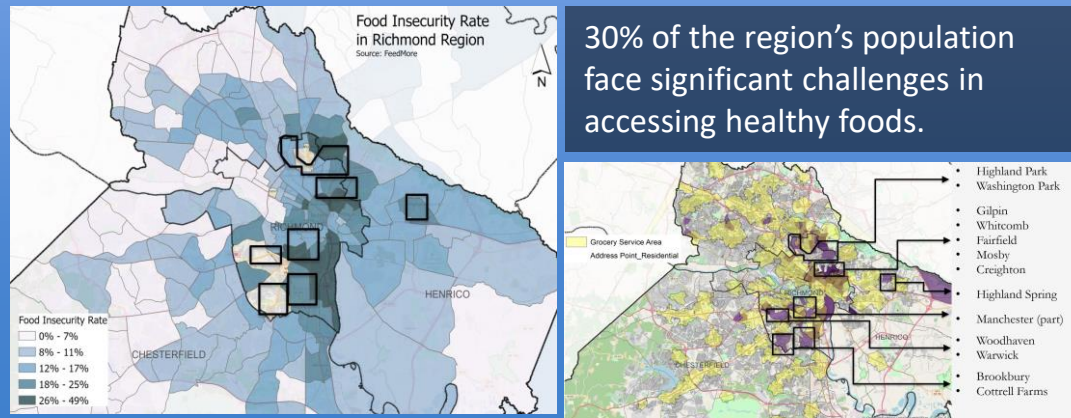
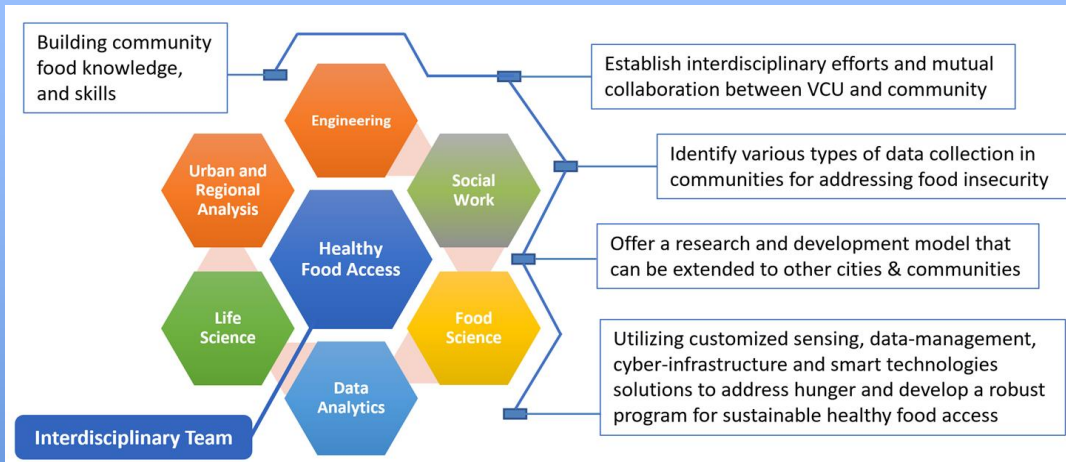
- **Sherif Abdelwahed**; Virginia Commonwealth University
- **Nasibeh Zohrabi**; Virginia Commonwealth University
- **Fabrizio Fasulo**; Virginia Commonwealth University
- **Sarin Adhikari**; Virginia Commonwealth University
- **Brian C. Verrelli**; Virginia Commonwealth University

Community Partners (Name, Institution)

- **Mayor Levar M. Stoney**, Mayor of City of Richmond
- **Danny TK Avula**, MD, MPH, Director of the Richmond City and Henrico County Health Districts
- **Mark A. Olinger**, Director of the Planning and Development Review, City of Richmond
- **Douglas H. Pick**, President and Chief Executive Officer, Feed More (non-profit food bank), Richmond, VA

Project Overview

Visual Schematic



Project Vision

- Implement an information system to support monitoring and planning for food insecurity and vulnerability at Richmond, VA, through a careful assessment that focuses on key institutional, political, technical and financial dimensions.
- Utilizing customized sensing, data management, and smart technologies solutions to develop a robust program for sustainable healthy food access, through building an efficient, effective and reliable food supply chains and distribution networks.

Project Overview

Use-Inspired Research

- Food insecurity, both the physical lack of food as well as the overabundance of low cost, nutritionally poor food, is a manifestation of socio-economic, geographic, and racial inequalities.
- This project aims to address the food access problem in **Greater Richmond Area**, by engaging a wide range of food access-related stakeholders to develop a comprehensive and detailed process to understand and solve food accessibility and security problems.
- These include, Mayor of Richmond, Head of Department of Planning and Development (City of Richmond), Head of Office of Community Wealth Building (City of Richmond), Head of Department of community Development (City of Richmond), Feed More - Central Virginia's Core Hunger-Relief Organization.

PG Activities

- Build a Network of Researchers and Experts: we coordinated with other researchers at academia, city agencies, urban planners, urban farmers, public health officials in developing sustainable food access program in Richmond through sensing, data analytics, and community engagement.
- Plan Meetings and Workshops: a set of workshops will be organized to foster the exchange of ideas towards formulating common goals for collaborative research.
- Address Diversity and Inclusiveness: through on going participation in the Inquiry, Inclusion, and Innovation Program (iCubed) at VCU.
- Horizon Scanning: to generate qualitative and quantitative data in understanding the who, what, and how of building our collaboration network.

Project Update

Promoting Food Access In Our Communities

- Developed a fundamental understanding of challenges facing communities due to food desert problem, as well as future trends based on economic and demographics indicators
- Developed a better understanding of the factors contributing to food access problem through data collection and analysis.
- Identified a set of measurable and scientifically credible success indicators to quantify progress. These incorporates aspects of food security and safety; nutrition and health education; sustainable food production and distribution system; equity and fairness.
- Developed a set of promising feasible short-term and long-term solutions to address the food accessibility problem in Richmond. These solutions will be discussed in details with community leaders and civic partners in Workshop #2.



The Food System

- Pre-production
- Farming/harvesting
- Supply chains
- Consumption
- Waste management

Equity and Access Issues

- Food deserts
- Food affordability
- Social disparities
- Racial disparities

Food Policy

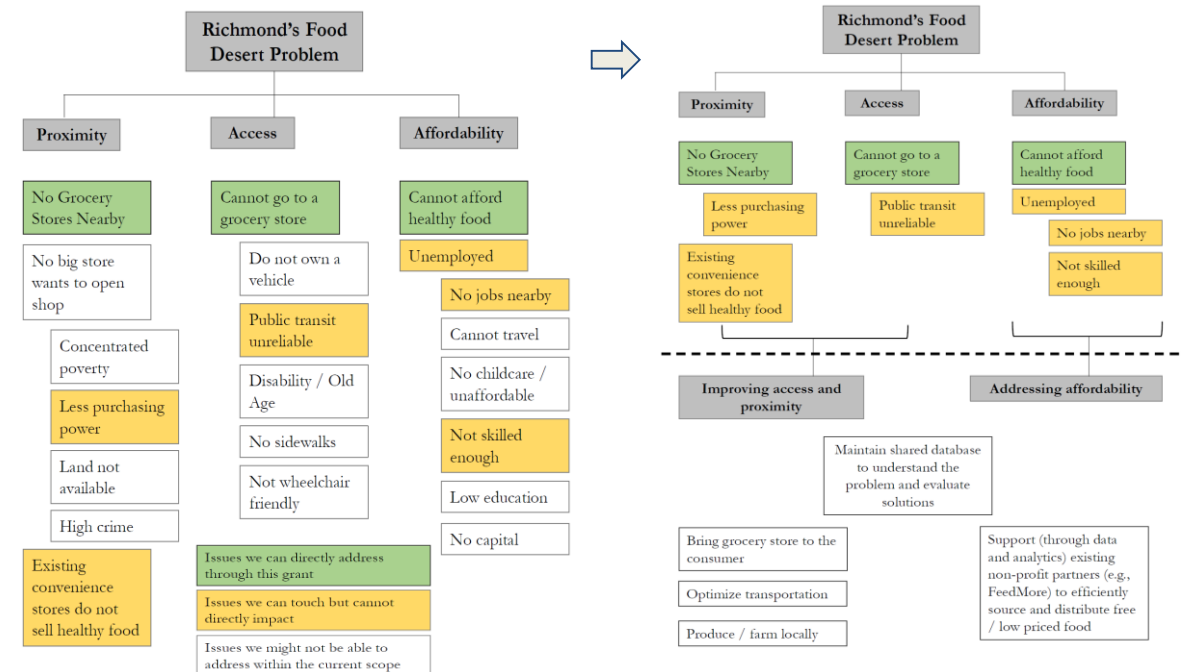
- Closing research gaps
- Decision-making
- New methods to address problems
- Community engagement

Sustainability

- Environmental impacts
- Resource management
- Jobs and growth
- Food accessibility

COVID-19 Impacts

- Emerging disparities
- Food shortages
- Connection to health impacts
- Outreach initiatives



Project Evolution

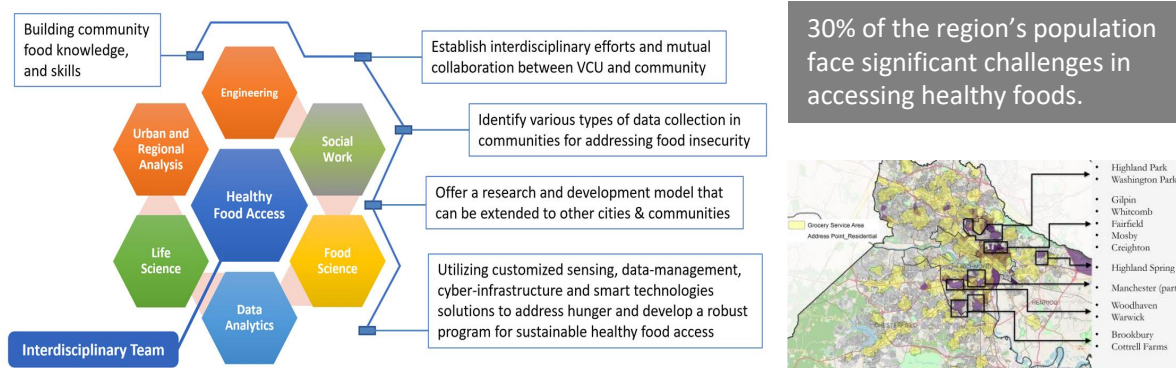
- *We learned that there are various psychological and sociological factors that contribute to the food access problem. For instance, some communities prefer to deal with the food problem internally without seeking government or food bank supports. Also, dignity and self-esteem can be a factor explaining why people do not seek help from food banks and similar organizations when needed. To address these factor we plan to extend the team with more researchers and experts in sociology and human psychology.*
- *We learned that education and raising awareness is essential to healthy food access. Habits of eating is really hard to break. People need to be educated and trained to understand the benefits of seek and buy healthy food. To address that we added a new member to the investigation team who is specialized in food science.*
- *We learned that there are a there are many groups in the community working on food-related problems, but mostly isolated from each other. It will be beneficial to have a forum in which these groups can share resources, discuss ongoing efforts and future plans, and collaborate on some of the current initiatives.*
- *We learned that community engagement requires substantial continuous efforts, including walking around and talking to people door to door. We learned that we need to start by building trust about the vision and goals of the project as well as the research team. We have to include transparency (as much as possible) in decision making, sharing resources and providing continuous feedbacks and updates to the community. We also learned that the best way to engage the community is to talk to the people who work closely with the community; for instance, store managers and staff.*

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Project Vision

- Implement an information system to support monitoring and planning for food insecurity and vulnerability at Richmond, VA, through a careful assessment that focuses on key institutional, political, technical and financial dimensions.
- Utilizing customized sensing, data management, cyber-infrastructure and smart technologies solutions to develop a robust program for sustainable healthy food access, through building a more efficient and effective food supply and distribution network.

Use-Inspired Research

- Food insecurity, both the physical lack of food as well as the overabundance of low cost, nutritionally poor food, is a manifestation of socio-economic, geographic, and racial inequalities.
- This project aims to address the food access problem in Greater Richmond area, by engaging a wide range of food access-related stakeholders to develop a comprehensive and detailed process to understand and solve food accessibility and security problems.
- These include, Mayor of Richmond, Head of Department of Planning and Development (City of Richmond), Head of Office of Community Wealth Building (City of Richmond), Head of Department of community Development (City of Richmond), Feed More - Central Virginia's Core Hunger-Relief Organization.

PG Activities

- Build a Network of Researchers and Experts: In addressing the research questions, the team will coordinate with other researchers at academia, city agencies, urban planners, urban farmers, public health officials in developing sustainable food access in Richmond through sensing, data analytics, and community engagement.
- Plan Meetings and Workshops: A set of workshops will be organized to foster the exchange of ideas towards formulating common goals for collaborative research.
- Address Diversity and Inclusiveness: through on going participation in the Inquiry, Inclusion, and Innovation Program (iCubed) at VCU.
- Horizon Scanning: to generate qualitative and quantitative data in understanding the who, what, and how of building our collaboration network.