Birmingham, USA
Smarter Cities Challenge report

IBM

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1. Executive summary

Introduction

The City of Birmingham, Alabama, was one of 16 cities selected to receive a Smarter Cities Challenge® grant from IBM in 2014 as part of the company's citizenship efforts to build a Smarter Planet®. During three weeks in July 2014, a team of five IBM experts worked to deliver recommendations on a key challenge identified by Mayor William A. Bell, Sr. and his senior leadership team: food insecurity. Much of the City of Birmingham suffers from limited access to supermarkets, grocery stores and affordable healthy food options. In other words, they live in "food deserts." The lack of high-quality food choices leads to major health problems for people in every age group and particularly for youth and the elderly in Birmingham's most impoverished neighborhoods.

The challenge

Today in the U.S. the primary cause of food insecurity is economic. While the negative effects of economic disparity manifest themselves in many ways, the one fact our government and citizens agree on is that there is no excuse for anyone to experience food insecurity in this prosperous nation. The IBM Smarter Cities Challenge team looked into many of the factors that contribute to food insecurity in Birmingham and developed a four-point framework to address this issue. The four points are access, cost, education and communication. This document addresses potential solutions for the short term, medium term and long term to help eradicate food insecurity and food deserts in Birmingham.

During a three-week period in July 2014, a team of IBM executives and experts worked with the City of Birmingham to develop these recommendations, which are focused on improving economic development and reducing food insecurity in the city. The IBM team conducted more than 70 interviews with a wide variety of stakeholders, including representatives from City government, the federal government, community organizations, nonprofit organizations, financial institutions, local businesses, the academic community and the faith-based community, as well as entrepreneurs, health professionals and concerned citizens.

Findings and recommendations

The City of Birmingham has an illustrious history. Founded as an industrial city in the age of coal and steel, Birmingham is a proud city, one that has experienced both glory and tragedy, tumultuous social challenges and inequities, and poverty and unemployment. Food insecurity is a problem of immense magnitude in Birmingham. It is a challenge that will require the entire community's involvement to solve. To eradicate food insecurity, the City must build a strong foundation that sets the stage for deliberate, focused, action-oriented solutions that fuse a number of critical factors:

- Community-wide response to the call for action
- Zeroing in on the root causes and effects of food insecurity
- Commitment to achieving the benefits of eradication
- Consolidated efforts across stakeholders to improve effectiveness
- Proven program management and subject matter expertise

The IBM team recommends seven interrelated initiatives that together seek to overcome the complex underlying causes of food insecurity. Several short-term initiatives should result in immediate mitigation of insufficient access to healthy food. Implementation of a mobile food market program, development of a portal on the City website to inform citizens of available healthy food and development of foundational metrics that inform stakeholders of resources and results should all help illuminate the opportunities and benefits of taking action. Incorporating a Community Food Insecurity Task Force will unite, integrate and coordinate current and future activities geared toward the eradication of food insecurity.

To build on the momentum of initial results, the IBM team proposes several broader solutions. Some should be initiated immediately so that the benefits, which may take longer to emerge, will occur as quickly as possible. The establishment of a data-driven decision-making capability — through a partnership between the City and University of Alabama at Birmingham (UAB) stakeholders and informed by a coalition of citizens and community leadership — is imperative. A data mart and analytics framework will provide City leaders with dashboards to help evaluate the effectiveness of food access initiatives and identify problems, such as abandoned housing, before they become critical. These tools will ultimately provide a means to use hard data to inform decisions about economic development, public safety, health and more.

The development of a comprehensive nutrition education effort for youth and families can build on existing community efforts and infrastructure as well as incorporate additional venues for sharing information, such as mobile food markets and web-based platforms. Structured expansion of healthy food education programs across the school system (similar to current pilots) will educate the crucial K-12 population of the city. The benefits of education should start accruing immediately as communities become more aware of the value of healthy food distributed through mobile food markets and start taking advantage of new information platforms.

In the longer term, education should help empower families to insist on better-quality food and better access to it, creating demand for mobile food markets and improved public transit. Our recommendation for improving transit routes should enable underserved communities to benefit from more convenient and efficient access to healthy food venues. Extension of the City's web-based outreach and communication platform would add mobile, text and voice channels for citizens to share concerns and questions and to receive updates about new healthy food choices and programs. Enhancing data-driven decision making across the city will combine with electronic outreach to expand community awareness of food insecurity and involvement with efforts to eradicate it. The Community Food Insecurity Task Force will help create entrepreneurial opportunities to extend healthy food options and build awareness.

The IBM team recommends the establishment of a consolidated Birmingham Economic Action Authority that is chartered to improve economic vitality in the City of Birmingham. Its goal will be to attract private capital and business enterprises that can have a direct impact on food insecurity and help create a healthier city, as well as centralize and galvanize the community. The Birmingham Economic Action Authority should improve awareness of the vision, goals and roadmap for the city's economic development as well as the vision outlined in the City's 2014 comprehensive plan. Sustainable economic development should address food insecurity and the related issues of job creation and housing. The Birmingham Economic Action Authority will be empowered with a bold, decisive action plan that has clear expectations for results and embraces a data-driven decision-making methodology.

Whether the City succeeds in eradicating food insecurity depends on three underlying factors: managing change through committed leadership, remaining focused on a single vision and engaging the community in significant ways with respect to both decision making and implementation. The recommendations in this report, together with effective foundational leadership and change management competencies, represent an actionable roadmap the City of Birmingham can follow to successfully eradicate food insecurity.

Conclusion

The recommendations in this report include short-, medium- and long-term suggestions to resolve the many factors that contribute to food insecurity. Although the IBM team aligned and consolidated these recommendations, the citizens of Birmingham provided the imagination, creativity and commitment to begin solving the problem of food insecurity and economic disparity.

The Smarter Cities Challenge team would like to thank Mayor William A. Bell, Sr., his administration, the Birmingham City Council, the University of Alabama at Birmingham and all of the public and private stakeholders with whom we spoke for providing the insight and perspective necessary to create this report.

Highlights

- **Birmingham faces serious economic challenges caused by the loss of key sustaining industries during the last several decades.**
- **The loss of key industries has affected neighborhoods across the city, causing the closure of full-service grocery stores and markets and reducing access to healthy, nutritious food.**
- **Less access to healthy food is affecting citizen health, as demonstrated by an increased incidence of diabetes, obesity, asthma and heart disease.**
- **The top three food deserts in the city also have the lowest life expectancy; in some cases up to 20 years less than areas of the city not affected by food insecurity.**
- **Negative health outcomes strain both families and health services.**
- **Although multiple stakeholder groups recognize the problem of food insecurity, there is a lack of communication and coordination among these groups and no systematic approach to measuring progress.**
- **Eradicating food insecurity requires a coordinated solution set capable of delivering results in the short term (immediate access to food), medium term (education and data-driven decision-making framework) and long term (sustained economic development).**

2. Introduction

A. The Smarter Cities Challenge

By 2050, cities will be home to more than two-thirds of the world's population. They already wield more economic power and have access to more advanced technological capabilities than ever before. Simultaneously, cities are struggling with a wide range of challenges and threats to sustainability in their core support and governance systems, including transport, water, energy, communications, healthcare and social services.

Meanwhile, trillions of digital devices, connected through the Internet, are producing a vast ocean of data. All of this information — from the flow of markets to the pulse of societies — can be turned into knowledge because we now have the computational power and advanced analytics to make sense of it. With this knowledge, cities could reduce costs, cut waste and improve efficiency, productivity and quality of life for their citizens. In the face of the mammoth challenges of economic crisis and increased demand for services, ample opportunities still exist for the development of innovative solutions.

In November 2008, IBM initiated a discussion on how the planet is becoming "smarter." By this it meant that intelligence is becoming infused into the systems and processes that make the world work — into things no one would recognize as computers: cars, appliances, roadways, power grids, clothes and even natural systems, such as agriculture and waterways. By creating more instrumented, interconnected and intelligent systems, citizens and policymakers can harvest new trends and insights from data, providing the basis for more informed decisions.

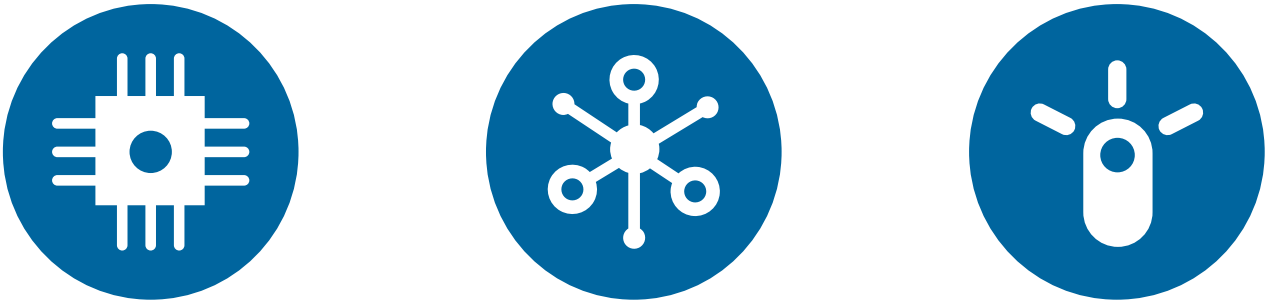
A Smarter City uses technology to transform its core systems and optimize finite resources. Because cities grapple on a daily basis with the interaction of water, transportation, energy, public safety and many other systems, IBM is committed to a vision of Smarter Cities® as a vital component of building a Smarter Planet. At the highest levels of maturity, a Smarter City is a knowledge-based system that provides real-time insights to stakeholders and enables decision makers to manage the city's subsystems proactively. Effective information management is at the heart of this capability, and integration and analytics are the key enablers.

Intelligence is being infused into the way the world works.

The IBM Smarter Cities Challenge contributes the skills and expertise of top IBM talent to address the critical challenges cities around the world now face. We do this by putting teams on the ground for three weeks to work closely with City leaders and deliver recommendations on how to make the City smarter and more effective. Over the past four years, more than 100 cities have received these grants. The Smarter Cities Challenge is the largest philanthropic initiative IBM has launched, with contributions valued at more than $50 million to date.

The City of Birmingham, Alabama, was selected through a competitive process as one of 16 cities to be awarded a Smarter Cities Challenge grant in 2014.

During a three-week period in July 2014, a team of five IBM experts worked in Birmingham to deliver recommendations around key issues for Mayor William A. Bell, Sr.



Instrumented
We can measure, sense and see the condition of practically everything.

Interconnected
People, systems and objects can communicate and interact with one another in entirely new ways.

Intelligent
We can analyze and derive insight from large and diverse sources of information to predict and respond better to change.

Figure 1: Instrumented, interconnected, intelligent

B. The challenge

The City of Birmingham has experienced a significant population decline over the course of several decades and needs to reestablish stable and growing neighborhoods with access to high-quality goods and services. Birmingham blossomed from its inception in 1880 to reach a population of 340,000 in 1960. Since that time, however, the City has lost 128,000 residents (or 38 percent of its population). As many industries shuttered factories and other facilities in Birmingham, the workforce became trapped in a spiral of divestment and loss that compromised many neighborhoods. One of the most troubling issues the City faces is food insecurity. Much of the City of Birmingham suffers from limited access to supermarkets, grocery stores and affordable healthy food options. In these "food deserts," a lack of high-quality food leads to major health problems for people in every age group and particularly for youth and the elderly in Birmingham's most impoverished neighborhoods.

3. Context, findings and roadmap

A. Context and findings

During a three-week period in July 2014, a team of IBM executives and experts worked with the City of Birmingham to develop a series of recommendations focused on improving economic development and reducing food insecurity in the city. The IBM team conducted more than 70 interviews with a wide variety of stakeholders, including representatives from City, county and federal government, community organizations, nonprofit organizations, financial institutions, local businesses, the academic community and the faith-based community, as well as entrepreneurs, health professionals and concerned citizens.

The issues the team uncovered are systemic and are deeply rooted in both the loss of heavy industry and manufacturing and the City's inability to sufficiently replace the economic foundation of many neighborhoods and communities in Birmingham. Increasing numbers of abandoned homes and businesses have been a major impediment to economic revitalization. As the economy continues to struggle, long-term health effects manifest in the form of increased childhood obesity, diabetes and heart disease in addition to shortened life expectancy. Food insecurity has become a critical issue in Birmingham, especially as the City faces lower tax revenues from property and businesses as well as growing demand for essential public safety and health services.

Birmingham is not a stranger to difficult and seemingly intractable problems. The city played a major role in the struggle for civil rights in the 1960s. Against daunting odds, the citizens of this community fought hard and eventually reversed many decades of discrimination. The collective will, intelligence, creativity and faith of the people of Birmingham became a beacon of hope for millions of oppressed citizens across the country.

Today, Birmingham is undergoing a rebirth. New resources have been dedicated to transform the downtown area into a 24-hour mixed-use district. The market for downtown lofts and condominiums has grown, while restaurant, retail and cultural venues are beginning to expand. Though manufacturing maintains a presence in Birmingham, other industries, such as banking, telecommunications, transportation, electrical power transmission, medical care, college education and insurance, have had a positive effect on the city through welcome economic diversification. But pockets of poverty remain, and these impending improvements do not benefit everyone in the city. For this reason, our recommendations address those neighborhoods and communities that most need to join in the city's prosperity and security.

B. Roadmap

The following recommendations stem from a vision for transforming potential outcomes from the theoretical to the practical and from planning to execution. Our plan demonstrates a bias for action and the ability to identify, prioritize and attack the lingering problem of food insecurity through focus, coordination and communication. Key recommendations include the following:

- Establish a community-wide task force to lead the food insecurity eradication program, incorporating a unified vision for all stakeholders working on food insecurity issues and enabling a coordination mechanism to execute initiatives. Create a realistic roadmap with input from the community to build trust, transparency and confidence as the city unites to solve these difficult issues. Reduce silos and barriers to action.

- Implement a web-based and/or mobile communication platform designed to inform citizens about food, health and community issues to mitigate the effects of food insecurity. This platform should be incorporated within the City's public website and have the capability to push information to mobile devices.

- Implement a comprehensive education platform for youth, families and the elderly to stimulate demand for healthy and nutritious food.

- Pursue the possible conversion of retired City transit buses into "mobile markets" to improve short-term access to healthy food choices.

- Direct the Birmingham-Jefferson County Transit Authority (BJCTA) to review current bus routes in conjunction with recognized areas of food insecurity to determine route changes that could improve access to established full-service grocery stores.

- Establish a consolidated economic authority to identify issues, align resources and measure results of targeted economic development to attract new sources of capital and business activity that can have a direct and lasting impact on food insecurity.

- Create the infrastructure required to use data and analytics and establish a methodology for data-driven decision making.

- Mount a stakeholder engagement campaign that strengthens community relationships to create and sustain an inclusive, vision-driven and consistent effort by the Community Food Insecurity Task Force. Implementation should be driven by urgency, focused by the vision and balanced by input from community stakeholders.

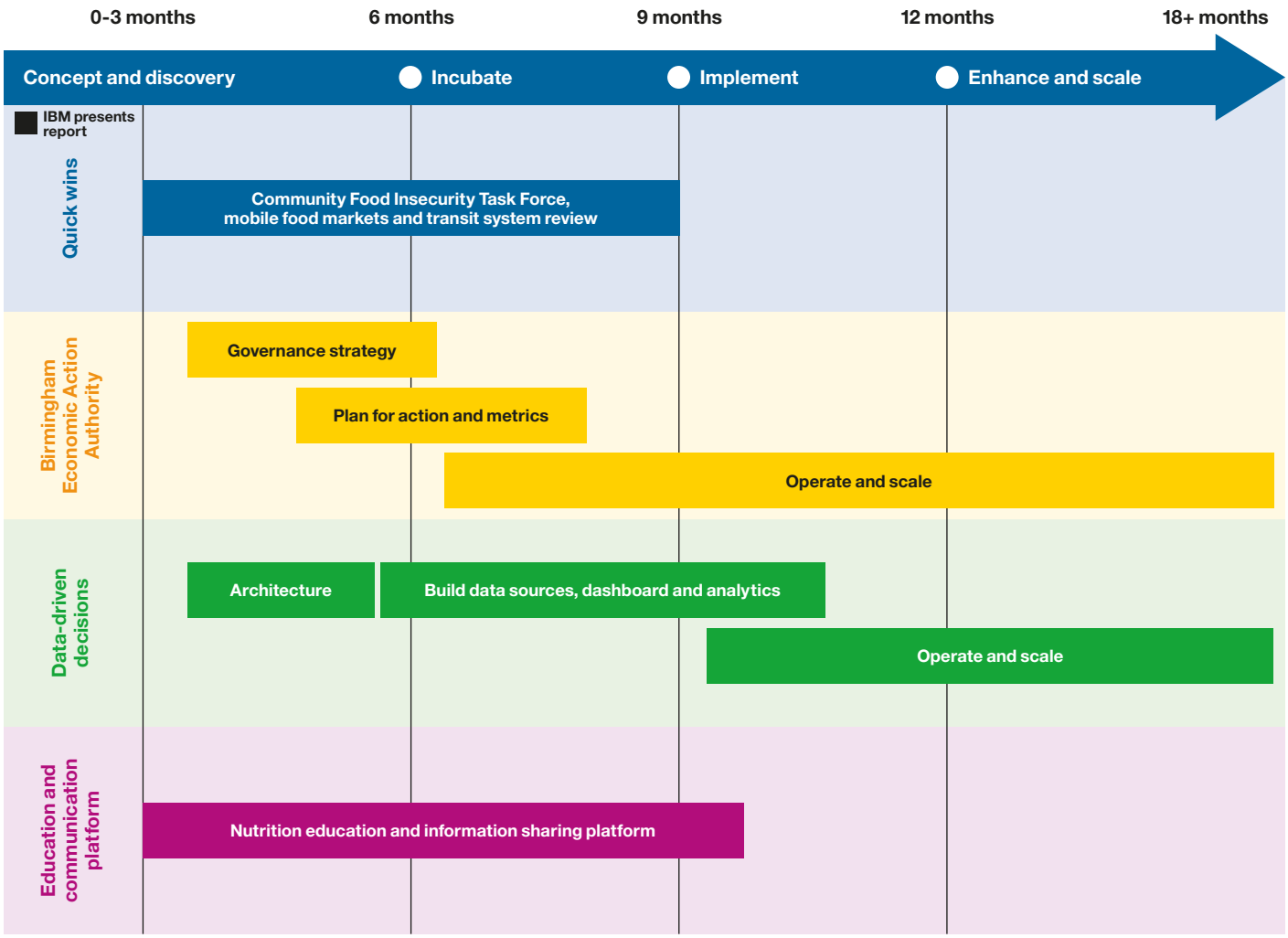


Figure 2: Roadmap of recommendations for the City of Birmingham

Prerequisites for success

1. Change management

Food insecurity is a complex issue with no single cause and many potential solutions. Success in eradicating food insecurity will depend on changes in mindset and operation. To create meaningful change and sustain it requires the careful selection of initiatives to balance opportunity, stakeholder support and capacity to manage change. This report outlines a high-level roadmap. An effective implementation program that incorporates principles of change management, communication and outreach programs that inform, motivate and align City stakeholders will be critical to success.[1]

The recommendations in this report are extremely urgent. However, controlled timing is important and requires a roadmap to schedule the rollout of initiatives in a way that yields purposeful change. Considerations include the readiness of stakeholders to embrace each change, the organizational capacity to undertake the recommendations and an assessment of required skills and technologies. Systematic change management must occur concurrently.

While listening to stakeholders is an important ingredient for success, change is hard and complaints may be frequent. As the City realigns resources and adjusts priorities, strong leadership will be needed to guide stakeholders toward the potential cost savings and efficiencies as well as alternative service delivery mechanisms. For this reason, the recommendations outline effective leadership structures that can help launch successful change initiatives and yield lasting results.

2. Stakeholder engagement

Stakeholder engagement is an integral part of creating a transformational leadership agenda. Success means moving from traditional methods (holding meetings and developing communications) to more collaborative ones (involving technology, analytics and fundamental transformational design). As this roadmap is implemented, stakeholder engagement is the single most important component of success. Approaches for maintaining stakeholder engagement may vary according to the phase of the roadmap, but all of these techniques are designed to ensure that stakeholder input, the sharing of results and vision alignment communications all remain clear and consistent.

During each phase, stakeholders inside and outside the city need attention. Both constituencies may have strong views about transformational initiatives that affect their interests, and they should have a stake in major decisions.

Effective leadership will anticipate instances when there will be natural support or opposition and focus on win-win opportunities. In the age of social networks, the need for community interaction and anticipation of stakeholder reaction becomes more intense each day. Extensive communication and engaged stakeholders are essential for accomplishing a number of important goals:

Develop and align

- Define and validate the vision for community food insecurity eradication
- Advance the community-wide eradication roadmap
- Implement leadership and governance necessary to build community commitment and foster urgency
- Streamline existing processes and mechanisms, leveraging stakeholder input to guide convergence and build capacity for food insecurity eradication (focus, skills, analytics, communication mechanisms)

Transform

- Develop and leverage technical capacity to build transparency using data-driven decisions, web-based communication platforms and transit solutions
- Implement roadmap and strategic initiatives informed by the vision and stakeholder engagement
- Assess, revalidate and/or redirect energy and momentum

3. Value statement

Undertaking the recommendations in this report begins with mission alignment. To drive these recommendations forward with full and continued community engagement and stakeholder support, the City must focus its efforts through the lens of a value statement. A well-defined value statement helps determine the optimal path among various service-improvement and cost-reduction alternatives. While a single value may not be the only criterion for choosing a new delivery model, for example, having a way to measure value enables decision making to be more open and consistent. We offer for consideration the following value statement:

Eradicating food insecurity one neighborhood at a time

A secondary but significant benefit of fundamentally engaging stakeholders is that they can encourage innovation and share stories about changes that worked as well as changes that quickly fizzled after the initial launch. An implementation process that moves forward with community support must emphasize collaboration to an unprecedented extent. The starting point for building trust and cooperation will be a shared commitment to the mission. Achieving the mission requires bringing stakeholders along at each step. Recommendations in this report highlight some specific engagement opportunities and activities to ensure ongoing involvement of the City's stakeholders.

4. Program management

Establishing program management to identify, quantify, scope, define and manage initiatives enables the development of a solid project plan with clearly defined deliverables and dependencies. This is fundamental to success. Maintaining focus throughout the project lifecycle (planning, delivering, monitoring, closing), with rigor and attention to detail, helps ensure project and program needs are met. This kind of focus is important for demonstrating competence, building confidence among stakeholders and influencing future opportunities.

Risk management and scope changes are only two of the numerous issues that can crop up during delivery. Any event or issue that compromises project delivery will create a cascade effect on the overall plan and will need to be analyzed so that the necessary steps can be taken. Program monitoring often takes the form of deliverable lists, plan reviews, status reports, budget and cost reports and project reviews. After all deliverables are completed and all contractual obligations are satisfied, the project can be closed out. This activity is very important because all the open actions, deliverables, documentation and so on are completed and final stakeholder signoff is obtained. Another extremely important element is knowledge management, which includes identifying reusable assets that can help move subsequent project phases forward more efficiently.

Sustaining transformation initiatives requires more than an understanding of costs or effectiveness. There is a need to establish legitimacy as well. The establishment of a task force with a visionary and committed leader is crucial. To be successful, the task force should be designed to include the following:

- Dedicated leadership
- Drive for the vision
- Committed and involved stakeholders representing a broad range of interests
- Flexible roadmap
- Proven program management approach and expertise

Roadmap of recommendations

	Short term (0 to 6 months)	Medium term (6 to 12 months)	Long term (12 to 18+ months)
Community Food Insecurity Task Force	• Recruit task force leader to develop the vision with key stakeholders • Create a comprehensive dashboard that includes all active projects that affect food insecurity • Develop a communication plan that incorporates the information needs of all stakeholders • Set up the charter to establish a foundation for the task force and foster cooperation among all stakeholders • Hold periodic meetings to develop an action plan, establish metrics and create accountability for progress	• Create project roadmap to achieve the vision through a prioritized list of key projects and initiatives • Seek private and public funding to execute high-impact projects	• Work with community organizations to broaden the scope of the task force to include other systemic issues related to food insecurity • Equip the task force with data-driven tools to evaluate the effectiveness of initiatives and take corrective action proactively
Information-sharing platform	• Determine stakeholder needs and/or requirements • Determine a phased approach for deployment • Develop system architecture and design • Develop communication strategy and marketing plan in concert with stakeholders • Identify media budget	• Develop applications and content • Perform testing • Launch applications/content and execute marketing plan to inform citizens • Coordinate with metrics team to build data-rich content • Execute campaigns aligned with technology builds and integration of new data sources and metrics	• Evaluate product launch and adjust projects based on customer feedback • Leverage social media to engage residents and use analytics to target outcomes more precisely
Community nutrition education	• Determine required investment • Gain approval for funding • Gain buy-in from school districts, urban farms and faith-based leaders	• Create curriculum for schools and faith-based organizations • Develop communication plan and execute marketing plan to inform citizens • Launch education in faith-based communities	• Roll out formal stand-alone classes within schools

	Short term (0 to 6 months)	Medium term (6 to 12 months)	Long term (12 to 18+ months)
Mobile food markets	• Determine critical access locations in the city • Determine organizational structure (public vs. private) • Determine funding mechanism (private, public, foundations, grants)	• Determine route stops using feedback from residents of key food deserts • Acquire and retrofit vehicles • Identify suppliers • Create a communication plan to launch the service and keep the public informed of stop changes or additions • Establish key performance indicators (KPIs) to track results	• Evaluate outcomes and determine how best to reach other areas • Analyze sales data and the supply chain from suppliers to distribution • Leverage data to strengthen the business case for physical stores in food deserts
Optimized transit	• Ensure that the City provides food insecurity maps to the BJCTA • The BJCTA determines route changes that can improve transit system access in areas affected by food insecurity	• Phase in changes to routes • Communicate route changes to the public, particularly those in affected areas	• Continue to engage community to optimize routes and improve access
Birmingham Economic Action Authority	• Establish Executive Council, appoint Executive Director and construct Board of Directors • Create the vision, roadmap and milestones for success — KPIs	• Develop the blueprint for execution • Prioritize key initiatives for quick wins to foster team cohesion and cooperation • Develop timeline, resource allocation and funding mechanism • Implement metrics and KPIs	• Secure private capital to oversee further efforts to eradicate food insecurity • Create a replicable blueprint to tackle similar economic development challenges • Leverage the authority to execute the City Comprehensive Plan
Data-driven decisions	• Develop requirements through engagement with stakeholders • Design the system	• Acquire data sources • Develop core data mart	• Develop reports and dashboards • Develop analytics

4. Recommendations

Recommendation 1: Community Food Insecurity Task Force

Findings

During our assessment interviews, we discovered that Birmingham is blessed with many organizations committed to tackling the challenge of food insecurity. These organizations include nonprofits, faith-based entities, food banks, neighborhood associations and private corporations. However, what these organizations lack is a common vision for collaborating to eradicate food insecurity. The organizations agree that food insecurity is an urgent issue, especially in areas with limited access to pubic transit. A common vision will be critical to making a sustainable impact and overcoming the alarming lack of access to fresh food that much of the city's population faces.

Recommendations

The Smarter Cities Challenge team recommends that Birmingham establish a Community Food Insecurity Task Force to oversee food insecurity projects. This task force will include key stakeholders and will communicate, coordinate and track various initiatives. It will help coordinate best practices among participating community organizations and leverage resources to achieve the greatest possible impact in affected communities. With visibility into the entire portfolio of projects, the task force will help improve efficiency, streamline the grant application process, reduce duplication of effort and generate a more focused impact in the community. In addition, the task force will strengthen the community's perception that the City is committed to one vision and one roadmap for eradicating food insecurity. Cities, such as Baltimore and San Francisco, have benefitted from implementing similar food insecurity task forces.[2]

We recommend that the City task force leader have significant authority and influence to enable effective collaboration among participating groups and that the leader report to Mayor Bell. In addition, the task force should include stakeholders from all relevant organizations.

Figure 3: The Community Food Insecurity Task Force can help centralize the oversight and coordination of efforts among all stakeholders

Recommendation 1: Community Food Insecurity Task Force

The City should establish a Community Food Insecurity Task Force in charge of overseeing all programs related to eradicating food insecurity as well as defining a unified vision for all stakeholders and enabling coordination among community groups to execute initiatives more efficiently.

Scope and expected outcomes

Scope

The Community Food Insecurity Task Force should oversee and help coordinate all community development projects related to food insecurity, promoting communication and collaboration among various stakeholders and tracking implementation of initiatives. The task force will help share best practices and leverage financial and human resources to maximize results in affected communities.

Expected outcomes

- Increased sharing of best practices among stakeholders
- Better leverage of human and physical capital among various stakeholder groups
- Improved efficiency and cost effectiveness
- Stronger perception that the City is committed to one vision and one roadmap for eradicating food insecurity

Cost of inaction

The cost of inaction would be the status quo — separate community organizations acting in isolation, resulting in lost opportunities to collaborate and generate better outcomes. Without a unified vision and coordinated roadmap that includes multiple agencies, it will be difficult for the City to address the systemic nature of food insecurity.

Proposed owner and stakeholders	Suggested resources needed
Owner: City of Birmingham Department of Community Development **Stakeholders:** • UAB School of Public Health • UAB Sustainable Smart Cities Research Center (SSCRC) • UAB Minority Health & Health Disparities Research Center (MHRC) • United Way of Central Alabama • Center for Community Progress • REV Birmingham • Birmingham Board of Education • Jefferson County Department of Health	Special project manager with strong ties to key business and community leaders as well as executive presence to communicate with Mayor Bell **Cost estimate:** Low The project manager will coordinate and manage the different initiatives as well as track metrics and share lessons learned with the various organizations. The project manager could come from the City of Birmingham Department of Community Development or be an external hire.

Recommendation 1: Community Food Insecurity Task Force (continued)

Dependencies	Key milestones, activities and timeframe
• Information-sharing platform (Recommendation 2) • Strong commitment from the mayor's office to unite the many community agencies working to eradicate food insecurity	**Short term:** • Recruit task force leader to develop the vision with key stakeholders • Create a comprehensive dashboard that includes all active projects that affect food insecurity • Develop a communication plan that incorporates the information needs of all stakeholders • Set up the charter to establish a foundation for the task force and foster cooperation among all stakeholders • Hold periodic meetings to develop an action plan, establish metrics and create accountability for progress **Medium term:** • Create project roadmap to achieve the vision through a prioritized list of key projects and initiatives • Seek private and public funding to execute high-impact projects **Long term:** • Work with community organizations to broaden the scope of the task force to include other systemic issues related to food insecurity • Equip the task force with data-driven tools to evaluate the effectiveness of initiatives and take corrective action proactively

Priority

High: The City needs to establish a comprehensive view of all groups working to eradicate food insecurity, generate synergy among all agencies to optimize outcomes and allocate financial and technical assistance to the right groups.

Recommendation 2: Information-sharing platform

Findings

With the advent of the Internet and smartphones, communication among governments, businesses and individuals has been transformed. Smartphones, now nearly ubiquitous, can serve as a primary communication channel. To this end, many cities in the US and around the world have developed communication strategies that use smartphones to inform citizens and allow citizens to share feedback with the government. Forums about pending legislation, pothole and traffic notifications from citizens and emergency alerts are only a few examples of how technology is enriching the citizen experience.

In the past, the City of Birmingham published a mailer that was distributed to all citizens. Because it is not always easy to track residents, the City discontinued this practice. Other small and medium-sized cities are moving away from this same practice to reach environmental targets and improve sustainability. In its place, many cities are using the Internet to deliver the same information at a lower cost and with less environmental impact.

Because not everyone has Internet access or a smartphone, any new platform should be multimodal, meaning it supports web, text, mobile and voice channels. Today, the City of Birmingham has a 311 information line and a web presence. These two channels are a great foundation on which the City can build a next-generation information-sharing platform for residents.

Recommendations

The IBM team recommends that the City of Birmingham develop a multimodal platform that extends its current communication infrastructure to include web, text, mobile and voice channels. All channels need to provide consistent information despite their individual constraints. With respect to food insecurity, these channels should provide residents with information about the hours and contact details for local farmers markets, food banks and mobile markets (if they are developed). Nutrition information also could be made available to citizens through this platform. For the launch of this platform, the City should first concentrate on information directly related to food insecurity.

Costs

The cost of developing and deploying such a platform depends on the following factors:

- Acquiring software and hardware
- System design
- Development
- Deployment, operations and lifecycle management

In general, the cost would be low and not all channels would need to be available at once. The City can phase in channels as funding becomes available. Because smartphones are so pervasive, a mobile app would be a good place to start. This app can facilitate two-way communication between the government and citizens, allowing service providers to add weather and traffic alerts over time. In the short term, the app can be used to notify citizens about how to access healthy food. Because the initial effort is focused on food deserts and food insecurity, it is possible the City could apply for grants to defray initial start-up costs. In addition, the City should encourage the community to develop its own apps, which could help reduce development time and costs, encourage community involvement and potentially result in apps that are more attuned to community needs.

Operations

Responsibility for developing this platform would remain with the IT department of the City, although the department can outsource the effort if this practice has been used in the past. In any case, the IT department would need to develop an operations strategy that would include two topics:

1. Content management to ensure that all channels distribute consistent content and that out-of-date content is retired
2. Security and privacy controls

Operations management will need to be adjusted if the City adds content providers or decides to enable two-way communication through the channels. Appropriate security and privacy controls need to be reviewed regularly and adjusted for effectiveness and coverage. Other cities have expanded mobile apps to help citizens report potholes, graffiti and other situations. If the City chooses to add this capability, formal process management will be required to route notifications to the appropriate department. All other current IT controls should apply.

Recommendation 2: Information-sharing platform

The City should implement a web-based and mobile platform to notify citizens about food, health and other community information related to food insecurity. Initially, the platform will be a section within the City's public website and will have the capability to push information to mobile devices.

Scope and expected outcomes

Scope

The City should invest in a multimodal platform that makes it easy to notify citizens of important information about health, nutrition, access to healthy foods and other details related to eradicating food insecurity and improving citizens' health.

Expected outcomes

- Improved awareness of the City's vision, goals and roadmap for eradicating food insecurity
- Greater utilization of services and organizations that improve the health of citizens
- Efficient two-way communication with those in underserved neighborhoods
- Increased education about the importance of a healthy lifestyle and nutritious diet
- Disseminating success stories about improvements in food access and health outcomes
- Families gain helpful information about where to go for support
- Stakeholders are energized to build and share positive attitudes about Birmingham, its neighborhoods and nutrition, encouraging investors, grant providers, new residents and new businesses to help the City

Cost of inaction

The cost of inaction would be the continued under-utilization of services and organizations focused on reducing food insecurity, as well as continued citizen frustration caused by a lack of information. Disenfranchised neighborhoods would remain disenfranchised.

Proposed owner and stakeholders	Suggested resources needed
Owner: City of Birmingham **Stakeholders:** • City of Birmingham • Neighborhood associations • Businesses • Churches • Citizens	• City IT department • Content providers **Cost estimate:** Low This platform is simple to design, implement and maintain.

Recommendation 2: Information-sharing platform (continued)

Dependencies	Key milestones, activities and timeframe
Integration with communication plans for the task force, mobile markets and optimized recommendations	**Short term:** • Determine stakeholder needs and/or requirements • Determine a phased approach for deployment • Develop system architecture and design • Develop communication strategy and marketing plan in concert with stakeholders • Identify media budget **Medium term:** • Develop applications and content • Perform testing • Launch applications/content and execute marketing plan to inform citizens • Coordinate with metrics team to build data-rich content • Execute campaigns aligned with technology builds and integration of new data sources and metrics **Long term:** • Evaluate product launch and adjust projects based on customer feedback • Leverage social media to engage residents and use analytics to target outcomes more precisely

Priority
High: Feedback from the community indicated a high degree of frustration with the lack of available information about organizations, resources and events related to eradicating food insecurity.

Recommendation 3: Community nutrition education

The City of Birmingham would benefit from a coordinated effort to educate the community about the benefits of nutrition and eating healthy foods. This could be accomplished by supplementing the nutrition education offered in schools and by partnering with faith-based organizations.

Individuals who receive nutrition education at an early age understand the importance of healthy food and enjoy the many benefits of consuming them. These benefits include age-appropriate physical and mental development, increased life expectancy and a higher level of well-being compared to those who do not eat healthy foods.[3] A focused effort on nutrition education in Birmingham also would enhance the city's economic development opportunities because investors consider community health a key metric when evaluating investment opportunities.

The City of Birmingham has many resources available to enhance nutrition education through schools and faith-based organizations. These resources include, among others, a school system focused on academic achievement; a respected university with medical, nutrition and education departments; a partnership with a professionally run urban farm; and a large, vibrant, faith-based community. By combining these resources with a focused community education effort, Birmingham can quickly improve and sustain the health of its citizens and ensure it remains a desirable place to live, work and invest.[4]

Findings

Food insecurity in Birmingham is the result of many issues that have left several communities with little access to fresh nutritious food and limited resources to buy them.[5] Having met with more than 70 stakeholders, including the leadership of Birmingham City Schools, it is clear to the IBM team that nutrition education is a very important way to curb food insecurity. Faith-based organizations are vital community hubs and can be ideal places for delivering nutrition education.

Challenges to creating consistent and formal nutrition education include the following:

1. Nutrition as a stand-alone subject is not required by the school system.
2. Economically stressed families have many other concerns besides nutrition.
3. New parents may not have time to teach children about nutrition.
4. Children who receive no information about nutrition may never become interested in nutrition.
5. Faith-based organizations and other nonprofit agencies have mission-specific messages to deliver and nutrition may not be a top priority.
6. Community and neighborhood gardens have limited budgets.
7. Urban farms do not have the capacity to scale offerings to serve the entire city.

Recommendations

The IBM team recommends implementing a comprehensive community nutrition education effort for youth and families to increase understanding, consumption and demand for healthy food. Specifically, we propose the following:

1. Incorporate nutrition education into the curriculum of Birmingham City Schools

The City and the University of Alabama at Birmingham (UAB) are mutually dedicated to the overall health of Birmingham. This is evidenced by a recently signed partnership with UAB's Sustainable Smart Cities Research Center (SSCRC). This partnership provides an opportunity to create a preschool nutrition curriculum and determine best practices for integrating nutrition into the core curriculum of City schools. The ultimate long-term goal is to create a required nutrition curriculum that starts in preschool and continues through high school. The City should work with the state Department of Education and other outside vendors to determine curriculum content, best practices for implementation and delivery timeline.

2. Support farm-to-school and school garden programs

A growing number of cities and school districts are leveraging farm-to-school programs as educational platforms for teaching students about the importance of fresh, healthy foods. Many of these operations offer support for school gardens, which are another way to connect youth with fresh, healthy foods. The City should support and leverage urban teaching farms that include the following:

- Early exposure to fresh foods to pique curiosity
- Hands-on farming activities to better understand the food cycle
- Traditional education to learn the value and benefits of nutritious foods
- Participation in the distribution cycle to understand the business model of food

The City of Birmingham is fortunate to be home to Jones Valley Teaching Farm, one of the preeminent urban teaching farms in the US. In 2012, Jones Valley Teaching Farm launched the Good School Food program at Glen Iris Elementary School with more than 800 students. After working with the Director of Education at Jones Valley Teaching Farm, the IBM team determined that two offerings of the Good School Food program could be rolled out to other City schools. We recommend that the City take advantage of Title I funding to implement these programs over the next 12 to 24 months.

3. Leverage faith-based organizations to provide nutritional education to families

Faith-based organizations provide a valuable venue for promoting the City's nutrition education efforts. These organizations provide physical locations, communities that include youth, families and the elderly, plus trusted leadership and a culture of community outreach.

We recommend that the City work with the UAB, urban teaching farms, parents, community leaders and a variety of nutritionally focused stakeholders to develop a nutritional education kit that leaders of faith-based organizations could use to "roll out" a consistent education program to members. The kit would ensure consistency and make it easy for leaders to participate. Each kit would include the following elements:

- Basic nutrition collateral
- Ready-made presentations
- Suggestions for how to build, maintain and profit from community gardens
- Calendar of healthy events in the city
- Monthly BMI assessment and improvement metrics

Birmingham has a large community of health-conscious volunteers that could be called upon to teach nutrition to members of faith-based organizations. The pool of volunteers for this effort could include the UAB Department of Nutrition Sciences as well as local restaurant owners. The owner of Hot and Hot Fish Club, for example, is currently a nutrition coach for two local families.

Recommendation 3: Community nutrition education

The City should implement a comprehensive nutrition education initiative for youth and families in order to increase consumption of and demand for healthy food.

Scope and expected outcomes

Scope

Birmingham's nutrition education initiative will help teach children and families the basics of nutrition and the benefits of eating healthy foods. It will create a constant drumbeat of nutrition information that starts in preschool and continues through high school. The curriculum will be delivered in a variety of ways through schools, urban farms and faith-based organizations.

Expected outcomes

- Increased awareness of nutrition and the benefits of healthy food
- Increased consumption of nutritious foods
- Increased demand for nutritious foods
- Improved wellness and achievement of children
- Improved image of Birmingham as a place to live, work and invest

Cost of inaction

The costs of inaction would include unnecessary medical costs for families and healthcare providers, shorter life spans in communities that do not understand nutrition, low achievement of youth in all aspects of life (school, activities, jobs, social) and a negative impression of Birmingham as a place to live, work and invest.

Proposed owner and stakeholders	Suggested resources needed
Owners: • City of Birmingham • City of Birmingham School District • Faith-based organizations' leaders **Stakeholders:** • City of Birmingham • School districts • Faith-based organizations • Jones Valley Teaching Farm • UAB, SSCRC and Service Learning • Residents in affected areas	• Commercially available nutrition courses • Jones Valley Teaching Farm • Neighborhood associations • Community associations • UAB **Cost estimate:** Medium to high This will require research, community outreach, communication, coursework and possibly personnel.

Recommendation 3: Community nutrition education (continued)

Dependencies	Key milestones, activities and timeframe
• Agreement of school board and school district • Cooperation of Jones Valley Teaching Farm and Association of Related Churches (ARC)	**Short term:** • Determine required investment • Gain approval for funding • Gain buy-in from school districts, urban farms and faith-based leaders **Medium term:** • Create curriculum for schools and faith-based organizations • Develop communication plan and execute marketing plan to inform citizens • Launch education in faith-based communities **Long term:** • Roll out formal stand-alone classes within schools

Priority

High: Feedback from community and business leaders indicated education is critical to the long-term success and sustainability of eradicating food insecurity in Birmingham.

Recommendation 4: Mobile food markets

Findings

One key element to addressing food insecurity is helping residents in areas that do not have full-service grocery stores gain access to healthy food. Typically, these neighborhoods have abundant access to fast food and convenience stores but not to the lean meats and fresh fruit and produce found in grocery stores. This situation is not unique to Birmingham. Many cities, both small and large, have faced similar challenges as smaller grocery chains consolidate or go out of business, leaving gaps in communities that often go unfilled. In 2012, Food Lion, a major chain of full-service grocery stores, announced the closing of 126 stores, many of them in the southern US. This single action burdened many cities with areas of food insecurity, including Birmingham. Because the closures occurred due to poor local economies, there was no incentive for other chains to open new stores in these areas. Retail is a low-margin business, and supporting brick-and-mortar operations in underperforming areas further compounds the challenge.

One way to improve access is mobile food markets, an initiative that is gaining popularity across the country. The concept involves retrofitting buses or trailers with bins and mobile refrigeration units and stocking them with a variety of meats, dairy and fresh produce (see Figure 4). These mobile markets travel to affected areas according to a regular schedule. The concept has shown promise in Chattanooga, Tennessee, an area affected by the closure of 12 Food Lion stores. In six months, through a cooperative effort by the Chattanooga Area Food Bank, the YMCA and other organizations, the city was able to deploy a number of mobile food markets to 11 locations every week. This helped alleviate the need for residents to shop monthly and avoid perishable foods. Today they can supplement their bulk shopping with healthy perishables from the mobile food markets. (For more details, see chattanoogamobilemarket.org.)

Figure 4: The interior of a public transit bus converted into a mobile food market

Recommendations

The IBM team recommends Birmingham explore establishing mobile food markets to serve areas of critical food insecurity. This effort could be coordinated through the Community Food Insecurity Task Force. Additional opportunities for entrepreneurship and employment will be made available for residents of the most adversely affected communities. A new generation of business owners could be developed to spawn employment opportunities for related activities, such as the retrofitting, configuration and maintenance of buses; operations management; supply chain management; accounting; and sales.

Cost

The cost of the operation would consist of, at a minimum, the following:

1. Acquisition of vehicles to act as mobile food markets
2. Converting vehicles into mobile food markets
3. Personnel, gas and other operating expenses
4. Contracts with wholesalers to provide food inventory

Other costs may come into play depending on how the concept is deployed. It should be noted that in other cities, buses that were coming offline from the local transit system were converted into mobile food markets. The head of the BJCTA indicated that she had some buses coming offline that might be used in this regard.

Funding

Partial funding for the mobile food markets could come from revenues generated by the markets themselves. The City should conduct an analysis of available grant money from federal government sources, such as the Centers for Disease Control (CDC) and US Department of Agriculture (USDA), as well as private sources, such as the Robert Wood Johnson Foundation, the W.K. Kellogg Foundation and Wholesome Wave. Potential local funding sources include the United Way and the Birmingham Food Bank. It should be noted that mobile food markets could be funded by private entrepreneurs who are unable to raise enough capital to build brick-and-mortar stores but could fund mobile food markets, which have a much lower cost of entry.[6]

Operations

General operations and organization need to be determined. This work would include an analysis to determine the areas of highest priority. These areas should be prioritized by "Lack of Access" (LA) and "Lack of Mobility" (LM). The following GIS data could be used to help identify potential stops:

- Farmers markets or produce stands
- Grocery stores
- Low food access and/or food insecurity census blocks
- Community gardens
- Food desert/insecurity USDA map

Areas that rank high in LA and LM should be overlaid with this GIS data to determine optimal stops for mobile food markets. Once the areas have been defined, a schedule should be developed that indicates when the markets will be available at each stop.

Other operational considerations greatly depend on how the mobile food markets are organized. Generally, mobile food markets are created by a consortium of charitable organizations or private enterprise. Either way, there may be legal ramifications for how the operation needs to be established. The City may want to be involved in order to collect enough data to ensure the mobile food markets are adequately addressing access. The City also can help guide the effort to determine the areas of greatest need.

Recommendation 4: Mobile food markets

The City should convert retired transit buses into mobile food markets, giving residents in affected areas regular access to fresh meat, dairy, fruit and produce.

Scope and expected outcomes

Scope

The City could address the most critical areas of food insecurity by retrofitting buses coming offline to hold racks for fresh fruit and produce and other healthy foods. The City could work with the BJCTA to identify the buses and provide the funds to convert them into mobile food markets. Stocking and scheduling the mobile food markets can be handled through a partnership of nonprofits.

Expected outcomes

- Regular access to fresh, healthy foods in affected areas
- Employment opportunities for local residents

Cost of inaction

Without this activity, the current food insecurity landscape will remain the same and residents will struggle to find healthy food choices in their neighborhoods.

Proposed owner and stakeholders	Suggested resources needed
Owner: Community Food Insecurity Task Force The National Mobile Market (www.nationalmobilemarket.org) can provide guidance on how to organize and structure the effort.[7] **Stakeholders:** • City government • Citizens in affected areas • BJCTA • Community organizations • Charitable organizations • Independent entrepreneurs • Food banks	• Buses or other vehicles that can be converted • Funding for bus conversions **Cost estimate:** Low to medium The cost of removing the seats from the old buses and installing racks should be relatively low. Funding ongoing operations should be low to medium.

Recommendation 4: Mobile food markets (continued)

Dependencies	Key milestones, activities and timeframe
• City and/or regional aid organizations identifying a consistent source of funding, potentially from entrepreneurs • Creation of the Community Food Insecurity Task Force	**Short term:** • Determine critical access locations in the city • Determine organizational structure (public vs. private) • Determine funding mechanism (private, public, foundations, grants) **Medium term:** • Determine route stops using feedback from residents of key food deserts • Acquire and retrofit vehicles • Identify suppliers • Create a communication plan to launch the service and keep the public informed of stop changes or additions • Establish KPIs to track results **Long term:** • Evaluate outcomes and determine how best to reach other areas • Analyze sales data and the supply chain from suppliers to distribution • Leverage data to strengthen the business case for physical stores in food deserts

Priority

High: This is a viable alternative with immediate potential impact, particularly if the City can get private enterprise to partner with the City to secure funding.

Recommendation 5: Optimized transit

The City should request that the Birmingham-Jefferson County Transit Authority (BJCTA) review bus routes in conjunction with recognized areas of food insecurity to determine how route changes could improve access to full-service grocery stores and other sources of fresh food.

Findings

The lack of optimized routes and excessive time between buses has a major impact on ridership of mass transit. Reliability of service is also an issue. While mean-time-between-failure for buses is improving (from 1,500 hours to 5,000), there could be some regression as nearly 45 buses in the fleet approach end of life. The BJCTA has been successful with its fleet-modernization efforts. Fifty new buses have been secured through grant funding, but the total fleet is approximately half the size needed to serve the population and geographical area of Birmingham.

Both the BJCTA and the City recognize that bus routes need to change from a hub and spoke topology to a grid topology. Today the BJCTA has approximately half the buses required to change current route configurations to a more efficient, available and scalable model that would help improve both coverage and ridership. This transformation may occur gradually by incorporating shuttle routes to connect larger lines operating on main corridors. Major route planning and design efforts, however, do not take food accessibility into account.

Another challenge is the lack of a strong liaison at the City department level for the BJCTA director to work with in developing a comprehensive transit plan. New and innovative plans are being evaluated within the BJCTA, and their formulation and rate of adoption could be improved by engaged stakeholders within City government. A prime opportunity exists to optimize bus routes in a way that improves access to current and future healthy food sources.

Recommendations

The IBM team recommends that more resources be made available to the BJCTA. Specifically, time and funding need to be increased to make demonstrable improvements and to elevate the stature of the transit authority among citizens. Today the BJCTA has a poor reputation, and citizens of Birmingham have low expectations from the transit system. Public transit offers a way for people in poor communities to gain access to fresh, healthy food, but the transit system must be available and dependable. Many people in these communities do not have any reliable way to transport themselves to grocery stores and pharmacies. This lack of mobility is especially difficult for the elderly.

We recommend that a point person from the City administration be dedicated to working with the BJCTA to devise new recommendations and funding models designed to make the BJCTA more effective and improve the lives of citizens. A top priority should be identifying new sources of capital for expanding the fleet and implementing a more efficient grid system. This is especially important considering that 30 buses will reach end of life within five years. Pooling talent and resources between the City and the BJCTA also could have a positive impact on grant requests at the federal and state level.

Recommendation 5: Optimized transit

The City should request that the BJCTA compare current bus routes to recognized areas of food insecurity to see whether route changes could help citizens in these areas gain better access to current and future sources of healthy food.

Scope and expected outcomes

Scope

The BJCTA, working with the City, would overlay areas of critical food insecurity on the current transit map. The BJCTA would then review this overlay to determine whether any optimizations could be made to routes, route times and/or stops to improve access to full-service grocery stores for residents in these areas.

Expected outcomes

- More efficient mass transit
- Improved access to healthy food for residents in areas of food insecurity
- Improved access to employment opportunities among these same residents
- Increased ridership and adoption rates for public transit

Cost of inaction

Residents of areas of food insecurity where transportation is limited would continue to be the most adversely affected.

Proposed owner and stakeholders	Suggested resources needed
Owners: City of Birmingham and the BJCTA **Stakeholders:** • Residents in areas of food insecurity • BJCTA • City of Birmingham	• Director of BJCTA • City transit liaison **Cost estimate:** Low Analyzing current routes alongside areas of food insecurity should be a low-cost endeavor. If significant route changes are identified and implemented, total costs could rise.
Dependencies	**Key milestones, activities and timeframe**
None	**Short term:** • Ensure that the City provides food insecurity maps to the BJCTA • The BJCTA determines route changes that can improve transit system access in areas affected by food insecurity **Medium term:** • Phase in changes to routes • Communicate route changes to the public, particularly those in affected areas **Long term:** • Continue to engage community to optimize routes and improve access

Priority

Medium: Optimizing bus routes to improve access to sources of healthy food could deliver significant benefits at a relatively low cost.

Recommendation 6: Birmingham Economic Action Authority

The IBM team recommends the establishment of a Birmingham Economic Action Authority that is chartered to improve economic vitality within the city to attract private capital and business investment that will help reduce food insecurity and result in a healthier population.

Findings

The City of Birmingham and the UAB have signed a memorandum of understanding (MOU) that commits both entities to work together to promote sustainable economic development and a healthier city. The memorandum was established with the acknowledgement that healthy cities attract more business, which in turn helps revitalize the community and make it even healthier.

The UAB will be able to leverage two key organizations: the Sustainable Smart Cities Research Center (SSCRC) and the Minority Health & Health Disparities Research Center (MHRC). Together with the City, these organizations can align, coordinate and direct disparate stakeholders to achieve a common goal of economic development and the improved health of all citizens of Birmingham. According to the MOU, City leadership recognizes that many health indicators in Birmingham have reached crisis levels. It is essential that the City, UAB and other stakeholders mobilize to address the alarming rates of obesity, type 2 diabetes and hypertension, as well as the extreme disparity in life expectancy (up to 20 years) between Birmingham residents who live in areas affected by food insecurity and those who do not.

Multiple public and private agencies have addressed this issue in Birmingham in recent years. Well-intentioned work is being done every day by the City government, business consortiums and civic organizations to address and improve the economic factors that will attract private enterprise to the city and help reverse the downward spiral. The lack of jobs and economic vitality leads to economic insecurity, which in turn drives food insecurity. Direct results of this are deteriorating long-term health outcomes that compound the demand on already strained social and health services and suggest a negative outlook for the future in many affected communities.

Several studies and reports have been commissioned to understand the extent of the issues that prohibit economic development in Birmingham. The recommendations are remarkably similar in these studies, and there is a general consensus about the importance of reducing food insecurity. The description of the current situation and potential solutions is clearly detailed in the Birmingham Strategic Plan. The recommendations in the Strategic Plan, especially chapters seven, eight and nine, provide a solid framework for creating the Birmingham Economic Action Authority. Unlike prior efforts, the statutory authority provides the ability to execute with urgency.

Food insecurity does not exist in isolation. It contributes to and is the result of neighborhoods in decline and is related to a variety of factors that drive the cycle of deterioration. In the same way, food insecurity can't be addressed in isolation. It must be addressed with a comprehensive, systematic framework that transforms plans into sustainable actions. A holistic approach must be established that transcends political, cultural and geographic boundaries.

Recommendations

The IBM team recommends the establishment of a governing body with statutory authority to identify the problem and consequences, create a framework for execution, establish KPIs and measure results.

Solving the pervasive issue of economic disparity in Birmingham requires collective effort, focus, resources and an overarching and unambiguous governance model. It starts with identifying the right leadership — people who have authority and the respect of the community. Governance structures are required to sustain a program that drives all stakeholders toward a desired set of outcomes for which they will be held accountable. Successful initiatives, even in highly collaborative environments, require strong champions and focused leaders who are not distracted by other priorities and who can place the initiative's success above other needs.

The City of Birmingham needs to identify the leaders who can unite the community and drive bold actions to deliver meaningful, sustained outcomes with respect to economic development and food insecurity. These leaders should be responsible for the development of an executable plan with specific milestones, and they should be held accountable for measurable results.

The initial term of the Birmingham Economic Action Authority would be 24 months. The term can be renewed or extended for any duration determined by the Executive Council. The Birmingham Economic Action Authority will comprise the following units:

Executive Council

The Executive Council is responsible for oversight and governance of the joint authority. The Executive Council will be made up of seven members, including a chair who may be appointed by Mayor Bell and representatives from the City Council and the UAB.

The Executive Council will be responsible for oversight of policy and will act as a liaison to the Birmingham City Council and Mayor Bell for any policy and legislative statutes, amendments, modifications and proposals that need be interpreted or enacted to support the program of action for the agreed-upon scope of authority. The Executive Council can solicit counsel from the City attorney and other interested administrative and compliance agencies during the development of policy guidelines.

Executive Director

The Executive Council grants the Executive Director the responsibility to run the authority based on the prescribed policy and legislative boundaries. The role of the Executive Director is to design, develop and implement strategic plans for the authority in consideration of available resources and milestones. The Executive Director is also responsible for day-to-day operation of the organization, including managing committees, communications and staff as well as developing business plans in collaboration with the Executive Council. In addition, the Executive Director, as Head of the Board of Directors, is responsible for assessing performance metrics, developing accountability for implementation and creating targeted community ownership.

This critical role will be a driving force to unify constituent organizations under one umbrella, focus on the goal of reducing food insecurity and leverage limited financial and staff resources with synchronized coordination among independent agencies.

Board of Directors

The Board of Directors is a body of appointed members who jointly oversee the activities of the authority. The Board's activities are determined by the powers, duties and responsibilities delegated to it or conferred on it by statute through the Executive Council. The scope of responsibility will be detailed in the bylaws developed by the Executive Council and Executive Director. The bylaws will specify the number of members of the Board of Directors, how they are to be chosen and when they are to meet.

Advisory Board

The Advisory Board is specifically selected by the Executive Director and Board of Directors to provide additional expertise, context, information and perspective to the authority. This is an informal board that typically includes concerned citizens, civic and business leaders and members of the community with special skills and perspectives.

Recommendation 6: Birmingham Economic Action Authority

The IBM team recommends the establishment of a Birmingham Economic Action Authority that is chartered to improve economic vitality in the city in order to attract private capital and business investment that will help reduce food insecurity and result in a healthier population.

Scope and expected outcomes

Scope

The Smarter Cities Challenge team recommends the establishment of a governing body with authority granted by statute.

Expected outcomes

- Improved awareness of the vision, goals and roadmap for the City's economic development efforts
- Increased attention and focused effort to attract private capital to underserved neighborhoods
- Sustainable, long-term economic development that will help address many symptoms of food insecurity

Cost of inaction

The cost of inaction is extremely high and is devastating to many of the communities and residents of the city. Without a new, bold direction, the City will continue to struggle with the problems that have unfolded in recent years. Human, organizational, economic and academic assets will remain isolated. The unacceptable disparity that exists between affluent and poor communities will continue unabated. The children of Birmingham will share in the current legacy of diabetes, heart disease and premature death.

Proposed owner and stakeholders

Owner: City of Birmingham

Stakeholders:

- UAB
- City of Birmingham
- Neighborhood associations
- Business organizations

Suggested resources needed

- Birmingham Business Alliance (BBA)
- Neighborhood associations
- Community associations
- United Way

Cost estimate: Medium

Costs include salary for a full-time Executive Director and staff. Office space should be set up independent of the City and UAB, ideally located in one of the neighborhoods that is experiencing a high degree of food insecurity.

Dependencies

- Strong partnership and collaboration between City government and the Executive Council
- Sustainable funding model to support Board-recommended initiatives
- Connecting the eradication of food insecurity to the City Comprehensive Plan

Key milestones, activities and timeframe

Short term:

- Establish Executive Council, appoint Executive Director and construct Board of Directors
- Create the vision, roadmap and milestones for success — KPIs

Medium term:

- Develop the blueprint for execution
- Prioritize key initiatives for quick wins to foster team cohesion and cooperation
- Develop timeline, resource allocation and funding mechanism
- Implement metrics and KPIs

Long term:

- Secure private capital to oversee further efforts to eradicate food insecurity
- Create a replicable blueprint to tackle similar economic development challenges
- Leverage the authority to execute the City Comprehensive Plan

Priority

Medium: Establishing the authority can help address the root causes of economic disparity, which are directly related to food insecurity and its long-term health effects on the community.

Recommendation 7: Data-driven decisions

In order for the City of Birmingham to move from planning to action, it needs a way to make decisions that are driven by data. Data-driven decision making is essential in order to prioritize, execute, monitor and align plans and programs to eradicate food insecurity. Results matter. By moving to a data-driven decision-making framework, the City can more easily justify its actions to various stakeholders. Many cities are moving to an "open data" concept that improves the transparency of government, and Birmingham is uniquely positioned to take advantage of this concept. The reason is its strong relationship with the UAB and UAB's creation of the SSCRC and the MHRC as well as the Collat School of Business. The collective knowledge in these programs can help produce a model of data-driven decision making that can make Birmingham and the UAB a leading practice.

Findings

While data-driven decision making is imperative for maintaining efficient, effective and transparent operations and planning, our recommendations focus on the application of data-driven decisions to the eradication of food insecurity. In our efforts to understand food insecurity in Birmingham, we uncovered several key findings. Food insecurity is really a symptom of systemic issues that can be addressed only through a coordinated effort among many stakeholders and organizations. Many of these organizations, such as HUD, REV Birmingham, the UAB and the City, each have unique sources of data. These data sources tend to be "siloed," without any available mechanism for sharing information. Additionally, the UAB and SSCRC have data and research that could potentially streamline and accelerate these efforts if aggregate analysis could be performed and visualized across the organizations and among stakeholders. Likely challenges with the current environment include the following:

- Multiple disparate data sources
- Data that is aged or simply unavailable
- Lack of uniformity across data sets
- Difficulty in accessing data across organizational boundaries
- Few, if any, metrics or KPIs because data aggregation is not available
- Little capacity for City officials and other stakeholders to visualize data holistically for real-time analysis
- Limited capacity for citizens to access data and become more informed

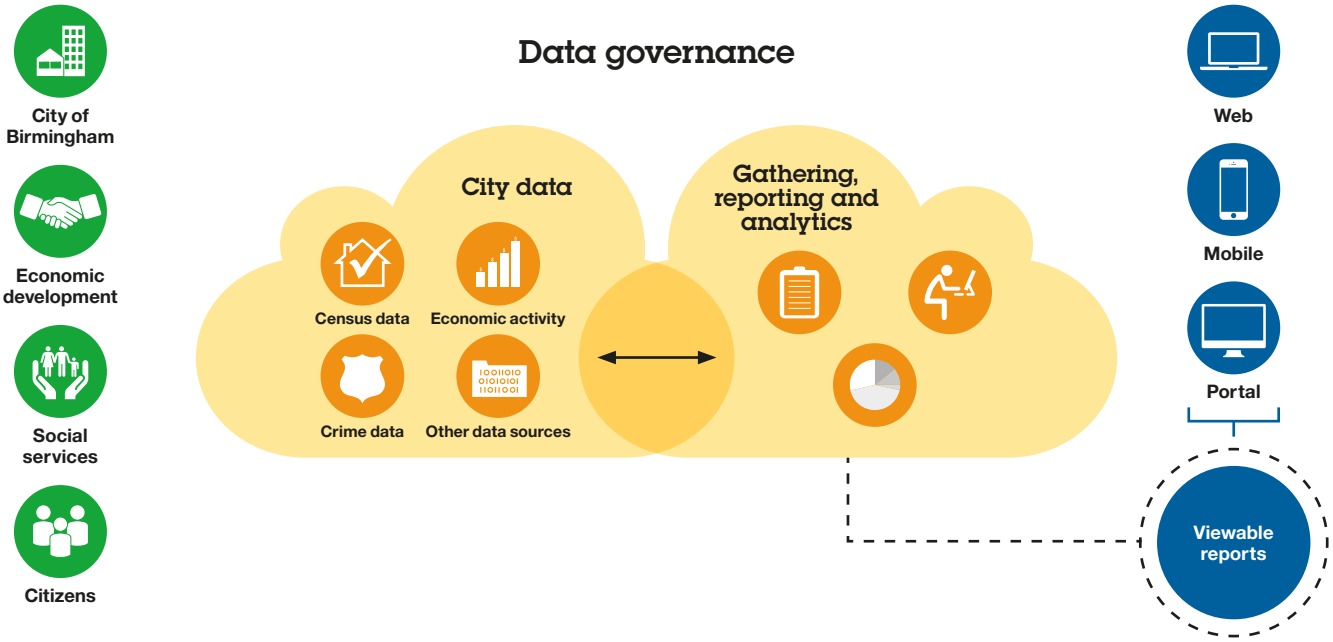


Figure 5: The architecture of a data-driven decision-making environment

These challenges limit the effectiveness of programs and hamper the City's efforts to improve economic development and provide targeted solutions to address food insecurity. If the City were to implement plans to address a specific food insecurity issue, for example, it would do so without the ability to understand the situation on the ground or track progress. Further, the current environment institutionalizes information silos and severely limits collaboration.

Recommendations

Stakeholders need a way to aggregate, analyze and visualize data to be able to act with purpose and confidence. To that end we propose the following:

Common data framework

The City and its stakeholders need a common data framework for planning and execution. We believe that the higher education stakeholders (including UAB and Stamford University) are uniquely positioned to lead this effort. This framework would consist of several components:

Central aggregator

The aggregator enables the integration of content from independent systems and repositories to a network of content stores and web services that share a common infrastructure. A centralized aggregation of disparate data sources is needed. This could take the form of a data warehouse or data mart. The required data structures would be defined with respect to all of the disparate data sources that would be included in the data mart. The aggregator should allow the easy addition of new sources, whether structured or unstructured, as they are discovered.

Visualization and reporting capabilities

The common data framework should have the ability to provide visual dashboards and reports, with data sourced as defined by the Community Food Insecurity Task Force, that allow stakeholders to see the status and impact of actions at a glance and adjust accordingly.

Advanced analytics

The focus of theUAB's SSCRC, in collaboration with the School of Public Health and Collat School of Business, is a principal capability for interdisciplinary integration that provides a framework for advanced analytics. This capability could aid in making decisions and provide predictive and prescriptive indicators that could help the City and its stakeholders identify trends and redirect efforts to ensure alignment with planning done by the Community Food Insecurity Task Force.

Multimodal access

Dashboards and reports should be readily accessible by stakeholders through a single portal. Transparency into the data and/or dashboards by all stakeholders is vital for developing informed and engaged stakeholders. To that end, web and mobile clients are desirable.

Security

A comprehensive security plan should be developed to address concerns about data privacy and access to information that may be sensitive or personal in nature.

Comprehensive metrics and KPIs

In order for progress to be understood, measurements need to be made to track progress and identify potential risks. A suite of KPIs should be developed and published consistently. Strategic KPIs, such as safety, transportation, health, blight remediation and food insecurity, are just a few indicators that could be part of a comprehensive dashboard that allows City leaders, the business community and the citizenry to see an overall picture of Birmingham's condition. The metrics and KPIs should be managed under the auspices of the Community Food Insecurity Task Force.

Data governance

Data governance ensures that data is accessible, usable, able to be integrated and most of all, valuable to the City and its stakeholders. Data governance requires collaboration among all City stakeholders. Data collection, integration and management are IT functions and should be guided by the Community Food Insecurity Task Force. The benefits of data governance that promotes data-driven decision making include cost efficiencies, consistency across metrics, greater representation across communities, improved health outcomes, improvement in quality of life and greater interest in the city by external stakeholders.

Recommendation 7: Data-driven decisions

The City should engage with the UAB to develop a comprehensive data mart and analytics platform that can help City and community leaders make data-driven decisions, develop KPIs to track the performance of programs for food insecurity and address other issues the City faces.

Scope and expected outcomes

Scope

We recommend developing a data mart and analytics framework for City leaders and the community. Today, the data that would provide insight about food insecurity is trapped in pockets and silos. By leveraging the technical and intellectual expertise of the UAB and others, the City is in a unique position to use data to drive decisions.

Expected outcomes

- Development of a data mart and analytics framework
- Closer monitoring of current initiatives
- Identification of potential problems, such as abandoned housing, with predictive analytics
- Proactive mitigation of potential issues
- Improved decision making with analytics

Cost of inaction

The cost of inaction will be the continuation of decision-making processes that do not benefit from the power and insight of relevant, accurate and complete data. Without an objective data framework, it will be significantly more difficult for the City to achieve stakeholder alignment, real-time visibility and reduced errors or to make more-informed decisions.

Proposed owner and stakeholders

Owners: City of Birmingham IT and UAB (through the SSCRC)

Stakeholders:

- City leaders
- City council and department heads
- Data owners
- Other stakeholders with intellectual capital related to IT and metrics

Suggested resources needed

- City IT department
- SSCRC

Cost estimate: Medium to high

This recommendation requires the creation of the data mart and the development of reports, dashboards and analytics.

Dependencies

This recommendation is not dependent on other recommendations. The City would need to determine how data will be handled and whether data from current owners will be made available.

Key milestones, activities and timeframe

Short term:

- Develop requirements through engagement with stakeholders
- Design the system

Medium term:

- Acquire data sources
- Develop core data mart

Long term:

- Develop reports and dashboards
- Develop analytics

Priority

High: Data is needed to enable decision making that uses resources most efficiently and helps educate stakeholders on the City's progress toward eradicating food insecurity.

5. Conclusion

Mayor Bell has stated that "80 percent of our city's population doesn't have access to healthy affordable foods; 100 percent deserve it." The Mayor's goal is nothing less than eradicating food insecurity in Birmingham. This report and its recommendations are designed to help achieve this goal.

Birmingham has all the elements of a Smarter City, including leading universities, passionate neighborhoods, engaged citizens, numerous volunteer and professional organizations, philanthropic foundations and a dedicated mayor and City council. Because all of the necessary organizations are committed to eliminating food insecurity, the City needs only to improve the coordination of these resources to realize the mayor's goal.

The recommendations in this report include short-, medium- and long-term ways to resolve the many factors that contribute to food insecurity. Although we may have aligned and consolidated these recommendations, it was the imagination, creativity and commitment of the citizens of Birmingham that inspired them.

The IBM Smarter Cities Challenge team would like to thank Mayor Bell and his administration, the Birmingham City Council, the University of Alabama at Birmingham and all of the stakeholders, both public and private, who provided the insight and perspective for this report.

Our goal in this report is to harmonize the many voices in this community we spoke to over the course of three weeks. These voices included everyone from leaders in positions of power and authority to volunteers in community centers working to make a small difference for their families and neighbors. They included educators teaching basic nutrition to third graders and deans of prestigious university schools on the leading edge of societal research. They included young local entrepreneurs, regional grocers and giant retailers. They included those who work hard every day in nonprofit and faith-based organizations committed to lending a hand and financial leaders committed to improving lending practices and spurring economic activity.

During our three weeks in Birmingham it became clear that many people and organizations are working to address food insecurity. Our objective is to help these stakeholders deliver more impactful results in a shorter period of time by embracing leading practices in communications, organization and change management. These recommendations provide a blueprint that will lead to tangible results and demonstrated improvements in the health, well-being and economic security of all residents of this remarkable city.


BELLSOUTH
UAB
CAMP HALL

6. Appendix

A. Acknowledgments

Name	Title	Organization
Honorable William A. Bell, Sr.	Mayor	City of Birmingham
John Colon	Director, Department of Community Development	City of Birmingham
Amber Courtney	Mayor's Office, Department of Community Development	City of Birmingham
Lisa Cooper	Economic Development	City of Birmingham
Irenio Johnson, Jr.	Administrative Assistant to Mayor Bell	City of Birmingham
Kwani Carson	Administrative Assistant to Mayor Bell	City of Birmingham
Doug Hale	Principal Planner	City of Birmingham
Tom Magee	Chief Planner, Department of Planning, Engineering and Permits	City of Birmingham
Andrew Mayo	Economic Development Specialist	City of Birmingham
James Roberts III	Senior Planner	City of Birmingham
Phil Amthor	Department of Community Development	City of Birmingham
Brandon Bias	Department of Community Development	City of Birmingham
Andre Bittas	Economic Development	City of Birmingham
Matthew Churnock	Urban Designer	City of Birmingham
Shirley Gordon	Department of Community Development	City of Birmingham
Charlene Smith	Department of Community Development	City of Birmingham
Corlette Burns	President and CEO	Shift Marketing Consultants
Chuck Faush	Mayor's Office	City of Birmingham
April Odom	Director, Office of Public Information	City of Birmingham
Jarvis Patton	COO, Mayor's Office	City of Birmingham
Srikanth Karra	CIO, Mayor's Office	City of Birmingham
Lashunda Scales	City Council, District 1	City of Birmingham
Kim Rafferty	City Council, District 2	City of Birmingham
Valerie Abbott	City Council, District 3	City of Birmingham
William Parker	City Council, District 4	City of Birmingham
Johnathan Austin	City Council, District 5 and President	City of Birmingham
Sheila Tyson	City Council, District 6	City of Birmingham
Jay Roberson	City Council, District 7, President Pro Tempore	City of Birmingham
Steven Hoyt	City Council, District 8	City of Birmingham
Marcus Lundy	City Council, District 9	City of Birmingham

Name	Title	Organization
Renee Kemp-Rotan	Grants and Special Programs	City of Birmingham
Michael German	Director, Alabama Field Office	US Department of Housing and Urban Development
Randall Woodfin	President	Birmingham Board of Education
Dr. Craig Witherspoon	Superintendent	Birmingham City Schools
Anthony Marino	Owner	Marino's Markets
Anthony Marino, Jr. (AJ)	Fourth Generation Proprietor	Marino's Markets
Basim Ajlouny	Vice President	Piggly Wiggly
George Trible	Area President, Mid-South Central Alabama	Wells Fargo
Richard Busby	Community Development	Wells Fargo
Chris Hastings	Chef and Owner	Hot & Hot Fish Club
Nan Baldwin	Vice President, Regional Development	Birmingham Business Alliance
Ann Dawson-August	Executive Director	BJCTA
Jeffrey Bayer	President and CEO	Bayer Properties, Inc.
Ken Johnson	President	Echo Highlands
Paul Carruthers	Senior Vice President, Community Affairs, Regional Manager	Regions Bank
Bart Slawson	Owner	Slawson, Esq. P.C.
Dr. Ray Watts	President	University of Alabama, Birmingham
Dr. Linda Lucas	Provost	University of Alabama, Birmingham
Dr. Will Ferniany	CEO, UAB Health System	University of Alabama, Birmingham
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Maria C. Norena	Associate Director	University of Alabama, Birmingham Sustainable Smart Cities Research Center

Name	Title	Organization
Jen Barnett	Owner	Bottle & Bone Restaurant
Maurice Bothwell	Finley Farmer's Market	Alabama Farmers Market/Jefferson County Truck Growers Association
Kadie Peters	Vice President, Health and Community Impact	United Way of Central Alabama
Rev. Jerry C. Cunningham	Minister	New Pilgrim Baptist Church
Grant Brigham	Executive Director	Jones Valley Teaching Farm
Sara Williamson	Education Director	Jones Valley Teaching Farm
Katie Davis	Farm Director	Jones Valley Teaching Farm
Melodi Echols	Executive Director	Norwood Resource Center
Bryn Manzella	Director, Quality Improvement	Jefferson County Department of Health
John Obert	Co-owner	J3 Organics
David Flemmings	Executive Director	REV Birmingham
Taylor Clark	Manager, Urban Food Project	REV Birmingham
Paulette Van Matre	Executive Director	Magic City Harvest
Hollis Wormsby	Sr. Management Analyst, Office of Records	Housing and Urban Development
Mary Michael Kelly	Executive Director	Community Food Bank of Central Alabama
Sally Allocca	Executive Director/Minister	P.E.E.R., Inc.
Tracy Hipps	Executive Director	Christian Mission Service
Ellen Spencer	Citizen	Citizens Advisory Board
Alonzo Darrow	Citizen	Citizens Advisory Board
Clarence Ford	Citizen	Citizens Advisory Board
Ms. Washington	Norwood Community	City of Birmingham
Ms. Bruce	Norwood Community	City of Birmingham
Dr. Tom	Norwood Community	City of Birmingham
Dr. Ken	Norwood Community	City of Birmingham
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Idrissa Thioune is currently a Senior Program Manager at the IBM Watson® Research Lab in Yorktown, NY. He has been participating in the IBM General Manager Leadership Development Program since 2013. Previously, Thioune was a Senior Strategy Consultant with IBM Global Business Services advising clients in financial services in New York City. Thioune received a bachelor's degree in electrical and computer engineering from Wayne State University, a master's degree in systems engineering from Purdue University and an MBA in corporate finance and strategy from Duke University. Prior to joining IBM, Thioune worked for six years as a Senior Software Engineer at a Fortune 500 global manufacturing company based in Indiana. Thioune lives with his family in the New York City area. He is a native of Senegal in West Africa.

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Linda Goudreau is a Senior Managing Consultant in the IBM Talent and Change organization within IBM Global Business Services. Goudreau has more than 30 years of experience, including 10 years with IBM, successfully providing innovative strategy and transformation solutions for commercial and public sector clients. She has a master's degree in work environment engineering from the University of Massachusetts and a master's degree in advanced business from Johns Hopkins University. Goudreau lives in northern Virginia with her husband and two stepchildren. She is actively engaged with animal rescue and community education.

Henry D. Rohrer,
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Henry Rohrer is a senior leader at IBM responsible for IBM Smarter Cities solutions. These solutions include specific applications designed to help governments improve social services and community health. He is a graduate of Villanova University and resides in Philadelphia, PA, where he and his wife have raised their three children. He and his family are active in their church and in his free time, Rohrer enjoys community service and home remodeling.

Joe Noonan,
North America Architect Leader, Client Technical Manager

Joe Noonan is a Software Architect Leader for North America for the IBM Software Group. Noonan has worked for IBM in a variety of roles for the last 11 years. He has more than 30 years of experience in software development and management. Noonan has 10 years of experience working with clients in the public sector, specifically state and local governments. He has two grown sons and resides in Chattanooga, TN, with his wife of 26 years.

Joseph S. Voss,
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Joseph Voss is a Partner in IBM Global Business Services and a leader in the Strategy and Analytics practice for the communications sector. He has extensive experience working with media and communications clients and developing strategies for the digital supply chain, audience insight and analytics, cloud-based computing platforms and the integration of digital, social and mobile capabilities with traditional channels. He is active in several community and nonprofit organizations.

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