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Developing a Framework for Measuring Community Wellbeing in Central Massachusetts

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WPI

Worcester Community
Project Center

Developing a Framework for Measuring Community Wellbeing in Central Massachusetts

December 17, 2015

An Interactive Quality Project Report submitted to the faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfillment of the requirements for the Degree of Bachelor of Science

Project Sponsor

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Central Massachusetts Regional
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This report represents work of WPI undergraduate students submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review. For more information about the projects program at WPI, see

<http://www.wpi.edu/Academics/Projects>

Abstract

The goal of this project was to provide the Central Massachusetts Regional Planning Commission (CMRPC) with a recommended framework for measuring community wellbeing. Community wellbeing measurements, known as *indicators*, enhance visibility of quality of life trends within the community, highlighting opportunities for improvement. We conducted interviews with indicators project organizers from around the country and analyzed reports published by existing indicators projects. At the conclusion of our project, we recommended a framework which emphasizes planning for sustainability and fulfilling the needs of specific community leaders to maximize the use of results. If successfully implemented, the CMRPC will provide a useful, sustainable indicators project for Central Massachusetts.

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We would like to thank the following for their willingness to dedicate their time, efforts and resources, without which this project and report would not have been possible.

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- All of those interviewed over the course of this project (see Appendix C – List of Interviewees)
- Bill Aldrich & Jeannette Harmsen, Theater Cafe

Executive Summary

The Central Massachusetts region has no shortage of motivated people and organizations that are eager to make lasting, positive changes to the community. Yet they currently lack a comprehensive resource to both identify and prioritize where the changes are most needed, and to track the progress of their efforts. The grants and charitable giving that tackle these changes are not limitless and therefore must be appropriated in a way that maximizes community impact.

Currently, there is an abundance of data, not all of which is being aggregated, synthesized, or otherwise used to inform members of the community. A consistent, reliable source to measure and track the wellbeing of various facets of the Central Massachusetts community has the potential to benefit grant writers and community leaders.

Background

Hundreds of projects exist around the United States that are dedicated to tracking the health and wellbeing of a community (CIC, 2015). Most of these projects are known as “community indicators projects”, as each project typically identifies, acquires, and maintains sets of data indicative of the wellbeing of some part of the community (e.g. economy, education, health) (Van Assche, 2010).

The streamlined process for users to assess community status creates the opportunity for nearly anyone to utilize data in order to understand a community and contribute towards its wellbeing. Such groups include interested residents, elected officials, foundations, business leaders, grant writers and public agency managers (Dluhy, 2006).

Methods

The goal of this project was to work collaboratively with the Central Massachusetts Regional Planning Commission (CMRPC) to provide them with a recommended framework for the development of a full-scale indicators project in Central Massachusetts.

In order to complete our goal, we achieved the following four objectives:

Objective 1: Identify successful, currently operating indicators projects

We worked with our sponsors at the CMRPC to identify a definition for success of an indicators project. We define a successful indicators project as: (1) one that has been in full operation for more than two years; (2) one that has conducted periodic evaluations of the program's success; and (3) one that has stable, sustainable funding.

Objective 2: Research and analyze methods used in indicators projects identified in Objective 1, focusing particularly on funding procurement, to be used as a guideline in development of a framework for the Central Massachusetts indicators program

We used a case study approach, with a multiple-case design, to learn from successful indicators projects. The case study approach included analysis of other indicators projects, meta-analysis of project reports, as well as interviews with a subset of those involved with these established projects.

We identified seven general aspects of an indicators project to aid in the analysis of existing projects.

1. Project funding
2. Project goal and origins
3. Stakeholder determination
4. Stakeholder input
5. Indicator selection
6. Data acquisition and indicator analysis
7. Publication and distribution of findings and results

Objective 3: Assist in the efforts to publicize DataCommon

We prepared a short informational video which demonstrated the core functions of DataCommon, and shared clips from interviews with existing DataCommon users explaining their use cases for the resource. We worked with the CMRPC to ensure the informational video was made publicly available, and was shown during meetings of potential stakeholders. This maximized the utility of the video by targeting the message directly to the desired audiences.

Objective 4: Develop framework and process recommendations for a full-scale Central MA indicators project using findings from Objectives 1-3

To provide the Central Massachusetts Regional Planning Commission with recommendations for a full-scale indicators project, we synthesized the large amounts of information gathered from indicators projects interviews, content analysis, and meta-analysis, using several matrices.

Findings

After analyzing our research, we arrived at the following findings.

- Finding 1: It is important to define the target population who will benefit to ensure the greatest impact of the project
- Finding 2: Having reliable sources of funding is key in the development, implementation, and sustainability of an indicators project
- Finding 3: The number of selected indicators and their geographic scopes directly affects project impact and sustainability
- Finding 4: Employing repeatable and sustainable data sourcing methods can help to alleviate the resource burden of keeping the indicators data up to date
- Finding 5: Collaboration provides mutual benefits to indicators projects and local organizations

- Finding 6: The findings and results of an indicators project must be published and distributed effectively to facilitate community impact
- Finding 7: Different sectors (e.g. Education, Health) often require different approaches to community involvement and indicator selection

Recommendations

We first recommend that the CMRPC carefully assess its current funding and resources, as well as its projections for funding resources in the foreseeable future. Funding is crucial because of how community involvement, indicator selection, and findings/results distributions and publishing are all tightly constrained by funding and resources within the CMRPC. By first assessing these, the project can be developed within the scope of feasibility and sustainability.

When initially selecting indicators, pursue those that are backed with data that is both easily obtained and maintained. Constrain the scope of the indicators project to just a handful of sectors initially if necessary due to limited funding and resources. Once support builds, other sectors and more burdensome indicators can be supported to expand the utility and impact of the project. Consult with local experts and community stakeholders in related fields for guidance and direction in the initial indicator selection process. When discussions with local experts suggest that obtaining input from a larger, grassroots community group may be advantageous, proceed with a known direction that is determined with the local experts in order to most effectively guide conversation with community members.

As the current structure of DataCommon only allows for city/town-level data to be utilized, continue to populate the data repository with data from the US Census/American Community Survey (ACS). Consider narrowing the geographic scale of Worcester data to neighborhood-level when funding and resources allow. Because no lower-level data can currently be entered into

DataCommon for the city of Worcester, the usability and actionability of Worcester data is severely limited.

Once DataCommon is stable and well-populated with public, easily available city/town-level data (and hopefully neighborhood-level in Worcester), begin spending time and resources acquiring more specialized data sets where the need is identified by desired indicators, e.g. local town government officials or utilities companies. Carefully document all processes used to gather and use this data for the sake of repeatability and sustainability.

We recommend investigating and pursuing inclusion into the National Neighborhood Indicators Partnership to utilize the experiences of other indicators projects to more easily grow the Central Mass Indicators Project.

When publishing reports, tailor information to the community leaders identified as the target audience. Focus the discussion of project reports to areas where these organizations can focus their efforts, enabling the highest use for the indicators information.

Based on the response we saw to the DataCommon Informational Video we provided to the CMRPC, we recommend that the CMRPC continue efforts to publicize DataCommon to potential stakeholders with visual media. Given the interactive nature of DataCommon, we noted that a visual explanation is effective in explaining the tools available through the repository after several screenings with stakeholders.

It is important that the CMRPC be able to format presented reports and data in a manner which is receptive to the stakeholders. Formatting requires the CMRPC to have the ability to modify all publication materials including the website which houses DataCommon and eventually the indicators project reports and summaries. The current website is restricted to the formatting of the MetroBoston DataCommon. We recommend that the CMRPC investigate possible resources for the

creation of a new website, one specific to the Central Massachusetts region. A new website would allow the CMRPC to modify formatting to suit the needs that stakeholders express.

Authorship

Section	Primary Author(s)
Abstract	Zac Temple
Acknowledgements	All
Executive Summary	All
1. Introduction	Jack Perry
2. Background	
2.1 The Concept of Community Wellbeing	Zac Temple
2.2 Why Should We Measure Community Wellbeing	Jack Perry
2.3 How is Community Wellbeing Measured	All
2.4 The Central Massachusetts Regional Planning Commission	Zac Temple
3. Methodology	
3.1 Objective 1: Identify successful, currently operating indicators projects	Zac Temple
3.2 Objective 2: Research and analyze methods used in indicators projects...	Jack Perry
3.3 Objective 3: Assist in the efforts to publicize DataCommon	Zac Temple
3.4 Objective 4: Develop framework and process recommendations for a full-scale Central MA indicators project using findings from Objectives 1-3	Jack Perry
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Finding 2: Having reliable sources of funding is key in the development, implementation, and sustainability of an indicators project	
Finding 3: The number of selected indicators and their geographic scopes directly affects project impact and sustainability	
Finding 4: Employing repeatable and sustainable data sourcing methods can help to alleviate the resource burden of keeping the indicators data up to date	
Finding 5: Collaboration provides mutual benefits to indicators projects and local organizations	
Finding 6: The findings and results of an indicators project must be published and distributed effectively to facilitate community impact	
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Chapter 1. Introduction

Progress begins with a goal. The goal can be grand (eliminate extreme poverty in the world); the goal can be subtle (increase school attendance rates). Small and large, the changes made around the world are driven by the goals and visions set by empowered communities. Both qualitative and quantitative data is used in the goal-setting process.

Since 1990, the United Nations Development Programme (UNDP) has tracked the life expectancy, education, and income per capita of every member state in the United Nations (for which adequate data exists) in an effort to use both economic and human wellbeing to indicate which countries have the greatest need (Malik, 2014). These data points serve as indicators of human development and are essentially combined to form a one-

number-summary *index* for each

country. The main utility in the

Human Development Index is the

ability to compare indices of

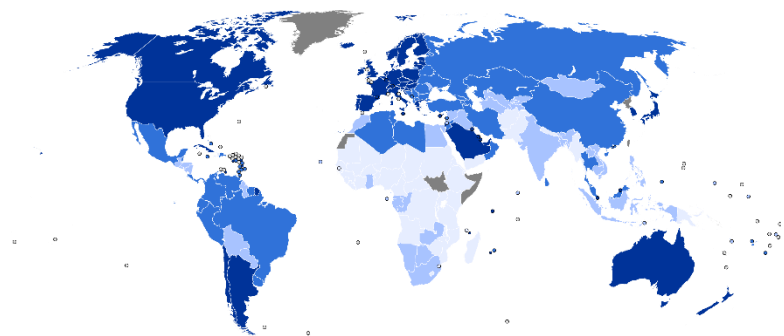
countries against each other, as well as

track trends and progress in indices over time. Bill Gates, in a special contribution to the Human

Development Report, describes the need for data-driven approaches to benefit humanity:

"...the development community is starting to consider the next set of global goals and how to build on the current progress. The Secretary-General of the United Nations convened a High Level Panel on the subject, and one of the priorities it highlighted is a 'data revolution'. According to the panel, to accelerate the pace of improvements, development organizations and developing-country governments need access to more and better data." (Malik, p. 47, 2014)

The global development community uses data-driven assessments of human development and quality of life to identify areas in need and to subsequently set goals especially for these areas. The Fragile State Index (formerly the Failed States Index), measured annually by the Fund for Peace,



*Human Development Index by country, 2013 (darker indicates higher HDI)
Wikimedia Commons*

measures the stability and vulnerability of sovereign states recognized by the United Nations (Carlsen & Bruggemann 2014). Similar to the Human Development Index, the Fragile State Index uses indicators of risk and vulnerability to assign levels of ‘alert’ to the 193 member states of the UN. Twelve indicators, across social, economic, and political-military domains, are measured for each member state. Uniform measurement allows countries to track their own progress and also empowers the global community to address the most critically unstable countries.

The potential utility of a similar, but much more detailed project, has been identified for the United States. The United States Government Accountability Office (GAO) published a report in 2004 titled *Improving our Nation: Improving How to Understand and Assess the USA’s Position and Progress*. In the report, the GAO discovered that the “United States does not have a national system that assembles key information on economic, environmental, and social and cultural issues” (Hayes, 2006).

Currently, there is an abundance of data in regions around the country like Central Massachusetts (though some of it may not be easily accessible or immediately recognizable as usable data) (Scerri & James, 2010). However, not all of the data is being aggregated, synthesized, or made available to relevant members of the community.

The Central Massachusetts region has no shortage of motivated people and organizations that are eager to make lasting, positive changes to the community. Yet they currently lack a comprehensive resource to both identify and prioritize where the changes are most needed, and to track the progress of their efforts. A consistent, reliable source to measure and track the wellbeing of various facets of the Central Massachusetts community has the potential to benefit grant writers and community leaders. The grants and charitable giving that tackle these changes are limited and therefore must be appropriated in a way that maximizes community impact.

Hundreds of projects exist around the United States that are dedicated to tracking the health and wellbeing of a community (CIC, 2015). Most of these projects are known as “community indicators projects”, as each project typically identifies, acquires, and maintains sets of data indicative of the wellbeing of some part of the community (e.g. economy, education, health) (Van Assche, 2010). While the Metro Boston Region has been served by the Boston Indicators Project since 2000, the Central Massachusetts region lacks such a comprehensive resource (Roberts, et al., 2005).

The Central Massachusetts Regional Planning Commission (CMRPC) has successfully developed and implemented, but not yet fully populated, a data repository called CentralMass DataCommon. In its final form, DataCommon will contain relevant and far-reaching data on the Central Massachusetts community that can be manipulated, cross-compared, and analyzed for trends over time, all in one accessible website. However, DataCommon lacks the bottom-up, community-grassroots input into what should be tracked and measured in order to catalyze campaigns for change or follow trends (Magee, et al., 2012).

The goal of this project was to work collaboratively with the Central Massachusetts Regional Planning Commission (CMRPC) to provide them with a recommended framework for the development of a full-scale community indicators project in Central Massachusetts. We identified successful indicators projects from around the country and, in conjunction with content analysis of existing literature and reports, interviewed people directly involved with several of these indicators projects. We learned about their purpose, development, implementation, and sustainability of nine projects and sought recommendations for a fledgling indicators project for the Central Massachusetts region. We then synthesized all of this information to develop framework and process recommendations for a full-scale Central MA indicators project.

This report contains four chapters, including this introduction. In the second chapter, we discuss the background information necessary to contextualize and execute this project. In the third chapter, we describe the methods and procedures that we used to complete the goals of our project. Finally, in chapter four, we describe the findings from our analysis of existing indicators projects and the recommendations to the Central Massachusetts Regional Planning Commission that follow.

Chapter 2. Background

Central Massachusetts is a diverse and thriving region (WRRB, 2010) in the heart of the Commonwealth of Massachusetts. As communities grow and further diversify, as they have been doing for the last three decades (Magee, 2012), the Central Massachusetts Regional Planning Commission (CMRPC) seeks to establish a program aimed at measuring community wellbeing of Central Massachusetts. Data sets that are indicative of community wellbeing will be identified and tracked by the CMRPC to facilitate informed decision making and the measurement of progress of shared community goals and vision.

In this chapter, we begin by introducing and explaining the concept of "community wellbeing," how it is measured, and how indicators measure community wellbeing. In section 2.2, we detail the importance of tracking and measuring the various aspects of community wellbeing. In section 2.3, we describe how community wellbeing is measured fundamentally and how it is already being measured in the global community. Finally, in section 2.4, we explain our role and the role of the Central Massachusetts Planning Commission in the project.

2.1 The Concept of Community Wellbeing

2.1.1 Defining Community Wellbeing

The wellbeing of a community is judged by many things, including: median household income, crime rate, percentage of home ownership vs. renters, and access to open space. In a 2009 report, Professor Geoffrey Woolcock explains that community wellbeing encompasses safety, health, recreation and economic stability of a place (Woolcock, 2009). Liam Magee explained, in a 2012 report *Measuring Social Sustainability: A Community-Centered Approach*, that community wellbeing or quality of life, is a combination of judgments made by community members, judgments based upon comparisons between current conditions against experiences from the past, perceptions of the experiences of others, as well as universal expectations for a community (Magee, et al., 2012).

Community wellbeing, used interchangeably with community health in this report, varies greatly amongst individual communities. Woolcock explains that there is yet to be a universal framework in place which acts to define community livability, or community wellbeing. This is a recognition of the fact that different geographic areas have different barometers for what it means to live in a healthy community. Community wellbeing is therefore a subjective characteristic of a community, however one that is understood as simply being the community status as it relates to the goals of that community as a whole. Many communities collect and analyze data to indicate the wellbeing of their community.

2.1.2 Measuring Community Wellbeing

Given the subjective nature of community wellbeing, the broad spectrum of communities, and the variance in definitions of a healthy community amongst them, measuring community wellbeing cannot be a standardized process. The overarching idea of measuring community wellbeing refers to the process for measuring the status of the community as it pertains to the goals for the community. While there is no universal method for measuring community wellbeing, many communities are able to make use of indicators to accomplish the task of utilizing objective characteristics, data, to explain the underlying subjective qualities of the community which combine to become community wellbeing.

2.1.3 The Role of Indicators in Community Wellbeing

In a 2002 report by Mathis Wackernagel and Kim Rodgers, whose studies of indicators led to the creation of a Community Indicators Network, indicators were defined as “A measurement that reflects the status of some social, economic, or environmental system over time” (Cobb and Rixford, pp. 23). In other words, indicators are selected sets of data which can be analyzed to convey the trends within a community. The data sets are grouped specifically by an overseeing body to measure progress toward goals. Wackernagel and Rodgers go on to explain that “generally an

indicator focuses on a small, manageable, tangible and telling piece of a system to give people a sense of the bigger picture.” In this individualized way, indicators are useful in making data relevant to specific aspect of a community, serving to paint part of the picture that is the community at large (EDN, Sustainability Starts in Your Community, 2002).

The distinction between indicators and raw data is crucial to understanding the opportunities made available through the use of indicators. Although indicators are nothing more than data sets, selected to characterize the progress towards a community goal, indicators are not just any data sets. Because indicators are so broad in nature, individual indicators need to be tailored to their specific audience (Scrivens, 2010). The importance of indicators in a society comes from their “reinventing” of data to tailor to key concerns felt by residents (Diener, 1997). What is so enabling about indicators is that, once selected, users of indicators no longer need to pour through vast amounts of information, picking and choosing what they believe to be the most important aspects to understand trends within a community. By simply reviewing the indicators, the select data sets, users can efficiently cover the information which is predetermined to be the most pertinent and telling, enabling users to understand overarching community status, and progress towards set goals.

The streamlined process for users to assess community status creates the opportunity for nearly anyone to utilize data in order to understand a community and contribute towards its wellbeing. Such groups include interested residents, elected officials, foundations, business leaders, grant writers and public agency managers (Dluhy, 2006). For many stakeholder groups, indicators may simply offer a streamlined process for assessing data, a quicker way to accomplish a task that is required as part of their jobs. However, for interested residents, indicators are more enabling. The process for analyzing large amounts of data in order to assess community wellbeing is outside the ability for the interested community member. The process is far too involved. With indicators,

interested community members are presented with only the pertinent information. The labor saving process for gaining insight into the community empowers its members to understand their communities, and to identify areas for improvement. The use for indicators is neatly summed up in Milan Dluhy's article *Connecting Knowledge and Policy*: "We use these indicators for public enlightenment as well as to monitor the progress of a community or society" (Dluhy, 2006, pp. 4). Indicators are the pathway to making clear what community members cannot otherwise see about how their populations are progressing towards community goals.

2.2 Why Should We Measure Community Wellbeing?

The global community has a distinct use for indicators as it identifies and addresses areas of the world with the greatest need. Bill Gates, renowned global philanthropist and co-founder of Microsoft Corporation, succinctly cites the importance of measurement in the name of progress: "What gets measured gets done" (Malik, p. 74, 2014). With over \$134 billion dollars being spent globally each year on official development assistance of developing countries, accurate and timely measurements of development progress ensure that the impact of each dollar of aid is maximized (OECD, 2015).

Data Deprivation – Another Deprivation to End is a report published in 2015 by the Poverty Global Practice & Development Data Groups of the World Bank Group. In the report, Serajuddin et al. discuss the importance of data for tracking the progress of goals—specifically, the goal to end extreme poverty by the year 2030. However, the ability to measure progress made on the elimination of poverty is hampered by the "data deprivation" of less developed countries, 57 of which track less than two conventional poverty estimate statistics (Serajuddin et al., p. ii, 2015). The lack of tracking is the result of a lack of resources necessary to collect and organize data, or instability due to violence or natural disaster (Malik, 2015; Serajuddin et al., 2015).

Investments into indicator development can help to fill the gap in progress measurement even in areas that lack resources or stability. Organizations like the United Nations Development Programme or World Bank Group can develop and use unconventional indicators that are both possible to track consistently, and accurately reflect the economic, social, or environmental status of a struggling country.

In the United States, the Government Accountability Office (GAO) identified potential for a countrywide indicators program in a 2004 report that investigated the background, utility, applications, and operation of indicators projects around the world (Hayes, 2006). The GAO discovered a lack of a "national system that assembles key information on economic, environmental, and social and cultural issues" (Hayes, 2006)

At an even smaller geographic scale, hundreds of communities around the country are currently served by indicators projects (CIC, 2015). We studied many projects and each community had its own specific needs for measuring and tracking community wellbeing. In the following paragraphs, we describe the needs expressed by several smaller communities (under 1,000,000 people, similar to Central Massachusetts) and how the implementation of community-customized indicators programs fulfilled the needs.

Jacksonville Community Council Inc. (JCCI) began the first quality-of-life-oriented indicators program in the world in 1985 (Swain and Hollar, 2003). At the time, only traditional economic and other quantitative indicators served to measure the wellbeing of the Jacksonville, Florida community. A clear need for more comprehensive indicators arose when more and more business leaders required "quantifiable information about Northeast Florida's quality of life that, at the time, was not available" (Swain and Hollar, 2003). Prospective business leaders needed this information to make an informed decision before investing in the Jacksonville community.

Baltimore, Maryland first identified a specific need for data-driven decision making and progress tracking in 1999 when then-mayor Martin O'Malley urged the development and implementation of a government-run program called CitiStat (Schachtel, 2001). The program aimed to enhance city service management by tracking “overtime, leave, disability days, and light-duty days” and compared them over two-week periods; The program later expanded to geocoded data tracking “everything from burglaries to potholes, vacant houses, lead paint poisoning, and rat concentrations” (Schachtel, p. 255, 2001). In approximately one year, the city of Baltimore saved over \$5,000,000 and realized numerous benefits and reductions in road repair, active lead paint violations, and more. After noticing the success of the data-driven CitiStat initiative, a mix of public, private, and non-profit community members formed the Baltimore Neighborhood Indicators Alliance to investigate how a similar approach could bring similar benefits to the entire Baltimore community (Schachtel, 2001).

In their 2013 article in the *National Civic Review*, Sheila Martin and Elizabeth Morehead identified a major problem in the Portland, Oregon metropolitan area (and other similar areas across the country): lack of a formal regional system of governance. In many cases, there is no formal organized effort or focus on important goals or problems. A group of private, public, and nonprofit community leaders were invited by the Institute of Portland Metropolitan Studies at Portland State University in 2010 to address Portland's regional dilemma. The Institute's efforts led to the creation of the indicators project called Greater Portland Pulse (Martin & Morehead, 2013).

2.3 How is Community Wellbeing Measured?

2.3.1 Fundamental Approaches to Measuring Community Wellbeing

In a case study published in 2008 in the *Australasian Journal of Regional Studies*, R. L. Miles et al. discuss methods used for assessing community health. The One Number Approach and the Suite of Indicators Approach are still commonly used to measure community wellbeing in indicators projects today.

The One Number Approach takes a numerical approach to defining community wellbeing. Component indicators of community wellbeing, such as health, wealth, education, and environmental indicators are weighted and combined into a single measurable indicator of community wellbeing, hence “One Number.” Similarly, the Suite of Indicators Approach, utilizes composite indicators of community wellbeing, selected to best represent a given community, and each are analyzed individually. In contrast to the One Number Approach, the Suite of Indicators Approach does not make any effort to combine these indicators into a single measure. The component indicators are instead left together to be analyzed separately. Advantages to this approach stem from its simplicity, with less manipulation of data between the collection and presentation steps, the composite indicators more accurately represent their respective categories of community health than a single indicator could ever represent the broad topic of community wellbeing at large. In addition, indicator information can be processed more rapidly (Miles et al., 2008).

Both the One Number Approach and the Suite of Indicators Approach can be used effectively when tailored to the target audiences for indicator information. The One Number Approach offers the simplest possible result, by delivering just a single assessment of community wellbeing. The simplicity makes the one number approach for indicator presentation an attractive option when trying to enlighten community members. The Suite of Indicators Approach breaks community health wellbeing down into components. Unlike any other form of data, indicators serve to directly represent the state of community wellbeing. While indicators still rely on data, the data becomes more usable when formatted into an indicator, and therefore, more impactful to a community.

2.3.2 Measuring the Global Community

Two notable examples of the One Number Approach on a global scale are the United Nations Development Programme's (UNDP) Human Development Index, and the Fund for Peace's Fragile State Index.

In 2000, the Millennium Development Goals (MDGs) were established to allow motivated and charitable organizations around the world, of any scale, to unite their efforts and work toward shared goals (Malik, 2014). Some examples of MDGs are the elimination of extreme poverty and hunger, reduction in child mortality, and promotion of gender equality. These goals are universal; all countries are expected to meet them within the timelines established by the UNDP.

One of the tools used by organizations around the world to track the progress of the Millennium Development Goals is the Human Development Index (HDI), which is published annually by the United Nations Development Programme. The HDI provides a one-number summary measure of the state of human development in each of the sovereign states recognized by the United Nations. Countries can be directly compared both with each other and against past levels of development because every country's human development is indexed equally. Three indicators of human development are assessed and combined into a useful and descriptive summary statistic: life expectancy, years of schooling, and per capita income (Malik, 2014). The ability to compare countries in a geographic and historical frame allows UNDP to discover trends in human development and direct more or less resources to countries depending on observed need.

Similarly, the Fund for Peace calculates a composite statistic for nearly every country (for which data is available) that describes the "vitality and stability," called the Fragile States Index (FSI). Twelve indicators of instability across social, economic, and political and military topics are normalized and combined into a summary statistic that, like the Human Development Index, can be compared

geographically and historically. Changes in the FSI of countries are often explained by war, civil unrest, natural disasters, and other world events. The Index is also used to identify countries in need of aid, and to track the progress of countries as they deal with the factors causing instability (FFP, 2015; Carlsen & Bruggemann, 2014).

Measurement of the facets of communities of all types and sizes in countries around the world can vary greatly because the communities are each unique. Alternate measurement techniques are also sometimes required due to the resources or special circumstances of a country, such as civil war, poverty, or simply the lack of gathered statistics (Malik, 2014; Serajuddin, et al., 2015). In such cases, other measurements are used as proxies. One recent example of this is in the case of poor or war-torn African countries and the new proxy measurement tool proposed by Orbital Insight to assess their human and economic development: satellites (OI, 2015). Orbital Insight leverages satellite imagery and complex software to measure experimental indicators of human development such as building heights, infrastructure density, and number of cars. By discovering innovative ways of measuring communities, Orbital Insight is helping to end the "Data Deprivation" that threatens to slow the progress of community improvement around the world (Serajuddin, et al., 2015).

2.4 The Central Massachusetts Regional Planning Commission

The Central Massachusetts Regional Planning Commission has spent half a century helping the communities in its region have a positive impact (CMRPC, 2015). We helped gather data to increase their resources and further their ability to serve as a repository for information on the region and to advise area stakeholders. To understand how our work fits into their goals, we look at their history, structure, and primary functions of the CMRPC.

The CMRPC was formed in 1963, to collaborate with local agencies on planning and development in Central Massachusetts. It advises on regional planning in the City of Worcester and the

surrounding 39 communities, which includes the southern two-thirds of Worcester County.

Commission delegates, who are comprised of 1-4 people (based on population) from 40 Central Massachusetts communities, meet quarterly, with an annual meeting in June of each year. The body of delegates bears responsibility for policy and budget items (CMRPC, 2015).

The stated goal of the CMRPC is to "improve the quality of life for those who work and live in the Central Massachusetts region." The CMRPC works with officials and agencies from a local to federal level to offer local perspectives to issues, and works alongside them. They assist with municipal and regional planning, Community Development services, Transit Planning, Geographic Information Services, and other programs. (CMRPC, 2015)

In late August, 2015, the CMRPC was asked to weigh in on a proposed rail line in East Brookfield, MA. Several members of the small community were objecting due to the close proximity of the proposed rail line to their homes (Ellery, 2015). The function of the CMRPC is to help decide what projects are worth the time and money, what will have the greatest impact, and what will be disruptive to the communities in its jurisdiction.

Among numerous other land use planning functions, the CMRPC is at the helm of the new Central Massachusetts DataCommon, a data repository. CMRPC developed DataCommon, in conjunction with numerous area stakeholders, to be a data hub of high-quality information about Central Massachusetts (CMRPC, 2015). Our work contributes to the important addition of information to DataCommon, which is intended to be used by the community to make more informed decisions. In enabling informed decision making, indicators can present information which directly relates to the issues faced by members of the Central Massachusetts region.

In an effort to catalyze development of the Central Massachusetts Indicators Project, the CMRPC reached out to Worcester Polytechnic Institute's Worcester Community Project Center.

Consequently, in conjunction with the CMRPC, we developed recommendations for a systemic process for finding and working with relevant stakeholders to regularly reevaluate necessary indicators for community health and education. We worked with the CMRPC, and together developed a baseline for education and health in the Greater Worcester Community, to better understand these sectors of community wellbeing and how they have changed over time. Additionally, we worked to acquire maintenance funding for the project and develop a work program. All indicator information gathered as part of the indicators project was to be published to the DataCommon website in a manner which we helped to develop in order to make this resource accessible to all potential stakeholders. Our process for recommending a framework for the CMRPC took into account the limited resources available for the Central Massachusetts Indicators Program. DataCommon, was in stage two of development, the website was publicly available, with limited functionality and minimal use by community members. Roughly two full time staff positions were available for work on the indicators project. Minimal funding had been identified to cover initial expenses associated with the planning of the indicators project. The scope for the project aimed to serve 62 cities and towns in Central and Northern Massachusetts.

In next chapter, we explain the methods we used to accomplish our goal and objectives.

Chapter 3. Methodology

The goal of this project is to work collaboratively with the Central Massachusetts Regional Planning Commission (CMRPC) to provide them with a recommended framework for the development of a full-scale indicators project in Central Massachusetts.

As CMRPC seeks to stand with the Boston Indicators Project as a leader in New England for indicators programs, we must first pay due diligence to existing programs, before laying the groundwork for a sustainable, ongoing community indicators project. In this chapter, we describe the four objectives we completed in order to achieve our overall goal. Our objectives are:

- (1) Identify successful, currently operating indicators projects;
- (2) Research and analyze methods used in indicators projects identified in Objective 1, focusing particularly on funding procurement
- (3) Assist in the efforts to publicize DataCommon
- (4) Develop framework and process recommendations for a full-scale Central MA indicators project using findings from objectives 1-3.

Objective 1: Identify successful, currently operating indicators projects

In order to provide recommendations to the Central Massachusetts Regional Planning Commission we needed to first understand all of the different methods currently existing indicators projects use to deliver indicators to stakeholders. To become well versed in the frameworks of indicators projects, we needed to identify and subsequently investigate a variety of existing, successfully running indicators projects.

Our first task was to define a successful indicators project. For the purposes of this project, we define a successful indicators project as: (1) one that has been in full operation for more than two

years; (2) one that has conducted periodic evaluations of the program's success; and (3) one that has stable, sustainable funding. Our sponsor, the CMRPC, stressed the importance of funding and sustainability for indicators projects. If a project provided little to no utility to any of its intended stakeholders, it was likely that the project would struggle to find funding in order to sustain itself and therefore would not last long enough to provide updates as new data became available.

Using this definition, we began our search for successful indicators projects by reading reports recommended to us by our sponsor, the CMRPC, as well as the most accessible reports we could find during initial searches of journal articles and other published literature on indicators projects. We aimed to read reports which included details about the methods used during the indicators project, therefore, projects which simply detailed results in their reports were not included in our initial research.

We noticed that in several indicators project reports, other projects were specifically cited as model frameworks or inspiration. This formed a "network" of projects that served two main purposes for us in our goal of researching the methods of successful indicators projects: first, we were able to continue our research by looking into each of the programs which were cited in project reports; second, we were able to triangulate the information we had gathered. Triangulation refers to the process by which information becomes strengthened when cited by several other sources. Nearly every report cited several other projects which in turn cited each other as being successful indicators projects. This gave us confidence that we chose the most successful indicators projects and the ones that other evolving indicators projects modeled themselves after.

Additionally, we recognized that many reports mentioned their partnership in the National Neighborhood Indicators Partnership (NNIP), a selective organization aimed at fostering the development and use of neighborhood indicators projects citation. The NNIP evaluates indicators

projects in the United States and includes those that fit their criteria in the partnership. Despite not having access to criteria when we selected projects to include in the partnership, we saw that several of the indicators projects which were identified as being particularly strong by our sponsors at the CMRPC were part of the NNIP. We concluded that projects which were selected by the partnership would satisfy our definition of a successful indicators project. The NNIP then served as an excellent repository of indicators projects to further investigate. We screened all of the projects listed by the NNIP and analyzed only the reports which discussed methods of indicator selection.

Objective 2: Research and analyze methods used in indicators projects identified in Objective 1, focusing particularly on funding procurement, to be used as a guideline in development of a framework for the Central Massachusetts indicators program

Hundreds of community indicators projects exist around the world with scopes ranging from sub-neighborhood to multinational (CIC, 2015). In developing a project for the Central Massachusetts Regional Planning Commission, we stood to benefit from the hard work already done by the groups responsible for these existing projects. We used a case study approach, with a multiple-case design, to learn from successful indicators projects. This approach included content analysis of other indicators projects, meta-analysis of project reports, as well as surveys and interviews with a subset of those involved with these established projects. The case study approach was useful in qualitative assessment because case studies help answer the ‘how’ and ‘why’ questions (Yin, 1994): “how did these other communities establish and utilize indicators projects,” and “why were their approaches successful (in improving the health of their respective communities)?”

3.2.1 Content and meta-analysis of other indicators projects

We analyzed the content of the websites and publicly available reports on these indicator projects to identify each project's unique evolutionary timeline and chosen community indicators. Websites and reports are maintained by most indicator projects, as public accessibility to indicators information is

often a cornerstone of the projects (CIC, 2015). The Boston Indicators Project, for example, has a biennial report (Martin & Vance, 2015), and the GPP publishes a biannual report (GPP, 2015). This analysis guided us as we formed our own timeline of events.

All of the community indicator projects that we analyzed had a process for summarizing and distributing their work through published reports, generally through a website maintained by the project. Although meta-analysis is classically used in a heavily quantitative context, it is still a key tool for the social scientist that wishes to gain a macro-level insight of the functioning of different indicator projects (Glass, MacGaw, & Smith, 1984). To meta-analyze the reports and project websites, we searched for common threads, such as origin (grassroots, public, private), structure (committees, executives, delegates), etc. and compared them. We noted trends and contrasts between projects to use as guides and references as we continued to develop the indicators project. We compiled a list of indicators via project reports and websites and organized them by sector (e.g. economy, education). We then identified indicators that were used in multiple projects and noted in how many projects were used. The results of this aspect of the meta-analysis were given to our sponsors at the CMRPC to be used in the indicators program focus group to facilitate the discussion of potential indicators for Central Massachusetts, described below in Objective 3.

3.2.2 Interviewing of parties involved with other indicators projects

We reached out to the groups and organizations responsible for the indicators projects above for interviews as well as general feedback and information. The published reports from groups like Greater Portland Pulse or the Jacksonville Community Council Inc. do not describe the technical problems or the organizational difficulties that were encountered in the process of developing their community indicators projects. With contact information supplied by the projects themselves and from our sponsors at the CMRPC, we asked for information they felt would be helpful to a newly

developing indicators project that would otherwise not be readily available in existing project reports or other literature.

When reaching out to any given indicators project, we aimed to interview someone who would likely have an intimate familiarity with their project due to their position within the program (e.g. Executive Director, Research Manager, Program Director).

The goal of these interviews was to use the generally time-limited format of a semi-structured interview to acquire the most useful and extensive information about a particular indicators project.

To accomplish the goal, we identified seven general aspects of an indicators project:

1. Project funding
2. Project goal and origins
3. Stakeholder determination
4. Stakeholder input
5. Indicator selection
6. Data acquisition and indicator analysis
7. Publication and distribution of findings and results

We identified these aspects after extensive background research into existing indicators projects.

These seven aspects, while not explicitly stated by any interviewees or in any analyzed content, comprehensively represent fundamental core structures of an indicators project of any scale.

See Appendix A – Interviews with other indicators projects for a general sample of interview questions used in these interviews.

Objective 3: Assist in the efforts to publicize DataCommon

The CMRPC requested that we assist in efforts to broadcast DataCommon to community stakeholders. The Central Massachusetts Regional Planning Commission believed that DataCommon was underused and that building relationships with stakeholders could lead to potential partners to work with during the indicators project. Through informal meetings with existing stakeholders and interested parties, organized by the CMRPC, we identified the key information that convinced stakeholders to experiment with DataCommon and begin to understand the role that it can play in streamlining the process of data sourcing and analysis.

One of the academic requirements for Interactive Qualifying Projects completed at the Worcester Community Project Center is the creation of a short informational video. Our sponsors at the CMRPC suggested utilizing the video to advertise DataCommon to potential stakeholders. Having an informational video created an opportunity for the CMRPC to experiment with a completely new medium for publicizing resources.

We prepared a short informational video which demonstrated the core functions of DataCommon, and shared clips from interviews with existing DataCommon users explaining their use cases for the resource. We worked with the CMRPC to ensure the informational video was made publicly available, and was shown during meetings of potential stakeholders. This maximized the utility of the video by targeting the message directly to the desired audiences.

Objective 4: Develop framework and process recommendations for a full-scale Central MA indicators project using findings from Objectives 1-3

To provide the Central Massachusetts Regional Planning Commission with recommendations for a full-scale indicators project, we synthesized the large amounts of information gathered from indicators projects interviews, content analysis, and meta-analysis.

Because every interview with existing indicators projects adhered to the same structure (see Appendix A – Interviews with other indicators projects) identified in Objective 2 – Section 3.2.2, we compiled and sorted the comments and recommendations of each interviewee in a matrix roughly organized by the seven general aspects described in Section 3.2.2 (see Appendix B – Indicator Project Comparison Matrix for the full comparative matrix). We condensed and simplified the content in the matrix to enhance its readability and usability. We also provided the comments and recommendations that did not explicitly belong in any of the seven identified project aspects in the Findings section below. The compiled matrix of interview findings contributed to our final recommendations and will also serve as a resource for the CMRPC in all general aspects of an indicators project.

We also synthesized and distilled all of the findings from the interviews and analysis into a matrix, organized by project that includes eleven elements of indicators projects. We identified these eleven elements as the most distinct and immediately useful pieces of information from the indicators projects that we studied. The eleven categories also allow for quick and easy comparisons between indicators projects.

With short-form information and comparisons available in the interview and analysis matrices, and long-form project information available in the findings below, we developed a full set of recommendations for a full-scale indicators project for the Central Massachusetts community. Development involved synthesizing the findings and reconciling them with the needs, interests, and unique characteristics of the Central Massachusetts region described in Section 2.6 of the Background. Wherever possible, we also noted the effectiveness and feasibility of certain aspects of other indicators projects outside the scope of our research (described in interviews and in some project reports) that we used in our recommendations for Central Massachusetts.

Our recommendations are organized in the form of the seven general core elements of an indicators project (identified above in Objective 2). The recommendations serve to guide the CMRPC in all aspects of a community indicators program as it develops and implements its own in the Central Massachusetts region.

Chapter 4. Findings & Discussion

Due to the community-centric nature of indicators, every project that we analyzed from around the country uniquely contributed to the findings presented in this chapter. We organize the findings by the seven general aspects of an indicators project identified in Section 3.2.2, because these seven aspects form a narrative that closely mirrors the chronology of methods of many indicators projects.

Many of our findings are the result of fruitful interviews with indicators projects organizers in other communities in the United States, as well as three interviews with stakeholders and organizations already involved with CentralMass DataCommon and the developmental indicators program. For reference Appendix C – List of Interviewees contains a table of the people we interviewed.

Finding 1: The first step in the development of an indicators project is to define the target population who will benefit to ensure the greatest impact of the project

As each indicators project is customized to its own community, it is critical that a developing project consider who in the community it aims to benefit. Most of the indicators projects we studied began by identifying a target audience, the few that did not instead offer their projects as open resources to be used by anyone and everyone. One of the major downsides to not defining an audience is that it can lead to an effort that is not utilized to its full potential compared to a project that is intentionally structured to benefit a target population.

Seema Iyer, the Associate Director at the Baltimore Neighborhood Indicators Alliance (BNIA), identified the target beneficiaries of the BNIA as organizations working to help make data driven decisions to improve the quality of life in distressed communities. By working with these organizations BNIA is able to fill the need that organizations have for data analysis. Iyer explained that organizations do not have time to analyze data, yet still have a need for it as a tool to drive progress in community improvement efforts. By addressing needs of stakeholders directly, BNIA is

able to ensure that the work being completed is utilized (S. Iyer, personal communication, Nov. 23, 2015).

In an interview with Robert Ross, a professor in the department of sociology at Clark University, Ross identified a drastically different group of stakeholders for a small scale indicators project he constructed at the university. Ross aimed to provide information to students of sociology as well as Clark researchers, to “tell the story” behind communities in the Worcester area. Due to the audience Professor Ross aimed to benefit, there was no need to implement large scale advertising of the indicators website. Rather, word of mouth amongst Clark students and staff sufficed. Additionally, the website Ross used to publish indicators information, was easily housed within the Clark webpage, allowing the majority of his efforts to be efficiently focused on gathering and formatting indicators data (R. Ross, personal communication, Nov. 5, 2015).

In successful implementations of indicators projects, we observed varying target populations and beneficiaries, including: empowered community leaders in low-income neighborhoods; non-profits and similar organizations seeking grants or general guidance; and even simply the ‘typical’ community member who seeks to be more informed and knowledgeable of the qualities and trends of their community. In projects which clearly identified a target audience to benefit, project organizers were able to efficiently focus efforts to provide the most benefit to stakeholders. The focused efforts yielded the most use of the indicators information.

Finding 2: Having reliable sources of funding is key in the development, implementation, and sustainability of an indicators project

While this finding may seem needlessly obvious and intuitive at first, all nine of the projects that we researched take reliable, sustainable funding into account. The most common warning of potential funding shortfalls expressed to us during our interviews, was a point that Susan Kelly, an indicators

project consultant at CGI (Center for Government Research), stressed. She stated that the tendency for project organizers is to underestimate the resources required to maintain large amounts of data which eventually leads to difficulty sustaining an indicators project (S. Kelly, personal communication, Nov. 19, 2015).

Funding ties into every aspect of any indicators project. Funding is an enabler; it can enable the hiring of staff, the purchase of physical resources, and the ability for organizers to sustain more time intensive planning efforts.

Erika Rosenberg, principal at CGR (Center for Government Research), has experience as a consultant developing indicators projects. She stated that several of the projects she studied had to scale back the number of indicators that they tracked, or broaden the geographic scope used to evaluate indicators. Acquiring and updating such large amounts of data and information on a regular basis is often a far more burdensome task to complete than project organizers anticipate (E. Rosenberg, personal communication, Nov. 20, 2015). Susan Kelly, Director of Community Planning at Jacksonville Community Council Inc. (JCCI) echoed the warning shared by Rosenberg and added that there is a need to account for the funding needed as an indicators project grows to better suit community needs. She stated that there is a need for indicators projects to expand as new stakeholder goals were brought to their attention. Expansion efforts inherently utilize additional resources. There is a direct relationship between resource needs and funding needs. Kelly identified the need for indicators projects to continue securing reliable funding streams even after establishing a primary set of indicators to enable the opportunity for expansion. By anticipating the need for funding early on in the process, indicators projects can avoid delays to expansion which would otherwise occur while additional funding is acquired (S. Kelly, personal communication, Nov. 19, 2015).

Even in the earliest stages of an indicators project, adequate funding is necessary to acquire, format, and maintain initial indicators. Jessica Martin, Boston Indicators Project Director, stressed the importance of having enough indicators in the initial stages of an indicators project: too few, and the project may lack the broad appeal or comprehensive utility to attract further support from the community. Manpower is clearly a rate-limiting step in the initial stages of an indicators project (J. Martin, personal communication, Nov. 30, 2015). We observed in several of our interviews with those directly involved with indicators projects, that the process for gathering and formatting data can range from “extremely slow” or “impossible” (R. Ross, personal communication, Nov. 5, 2015), to somewhat streamlined and manageable given sufficient staffing and time to develop standardized processes for data collection (S. Kelly, personal communication, Nov. 19, 2015).

We did not observe any kind of “minimum number” of employees necessary for community impact. Rather, we found that any amount of project staffing (which is generally a function of the amount of funding available) could result in a successful and meaningful community indicators program. The indicators projects that we studied all had drastically different levels of funding and full-time staffing, ranging from at least three full-time employees at the Boston Indicators Project down to “about one-tenth of a full-time employee” at the Eastern Tennessee Index (T. Kuhn, personal communication, Nov. 13, 2015).

Having reliable sources of funding can aid in project development and sustainability in other ways. Some projects leverage their funding resources to alleviate some of the work on their employee(s). Alleviating work generally involves outsourcing components of their projects, most commonly data acquisition, analysis, and maintenance. The Knoxville-Knox Metropolitan Planning Commission even hired a nonprofit consultant to handle a significant part of the development of Eastern Tennessee Index. This allowed for a greatly expedited program development process, bypassing the

time- and resource-intensive deliberation and convening phase (T. Kuhn, personal communication, Nov. 13, 2015).

Finding 3: The number of selected indicators and their geographic resolution directly affects project impact and sustainability

Project organizers need to balance providing sufficient information to the community and maintaining a reasonable workload for the team. Consequently, project organizers must identify a manageable geographic resolution of data sets, and number of indicators.

In this project we often refer to geographic resolution. Geographic resolution is most easily understood through example. The two maps below (see Figure 1) illustrate two different geographic resolutions; both are commonly used to analyze census data. The image on the left illustrates a set of data on a county level while the image on the right depicts a set of data visualized on a subcounty (effectively town) level. Both data sets survey the entire state of Massachusetts. The key difference is the resolution of the data sets. The left map presents data on a lower resolution (larger geographic area of each collection area) while the map on the right offers a higher resolution (smaller geographic area of each collection area).

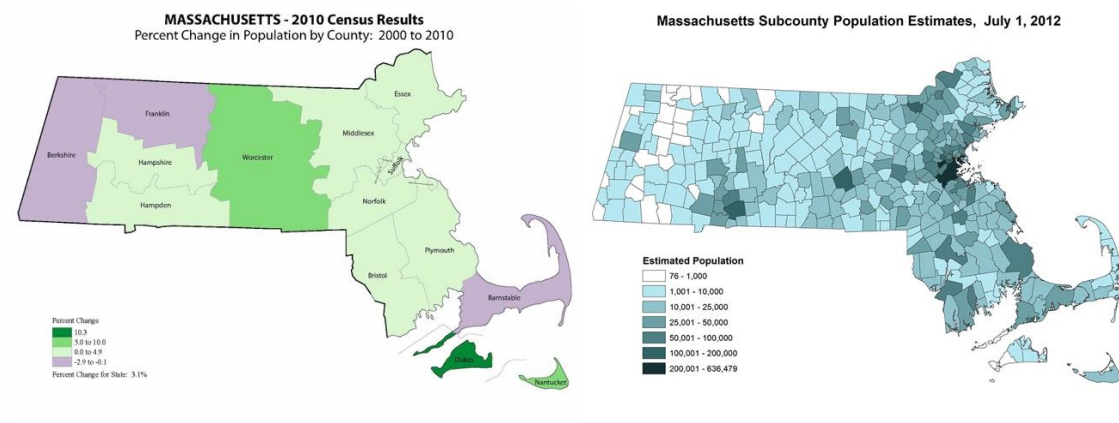


Figure 1 – Examples of Geographic Resolution

In an interview with Erika Rosenberg, a consultant at the Center for Governmental Research (CGR), she noted that, in her experiences working to develop community indicators projects across the country, it becomes difficult to provide a comprehensive and influential resource with fewer than 50-75 indicators; however, working with more than 100 indicators can become burdensome without adequate staffing. Additionally, the number of indicators included in the project must be large enough to be comprehensive of all aspects of the community. Too few indicators leaves users with data that is not broadly applicable or credible, while too many indicators makes the process for finding specific information sets difficult (E. Rosenberg, personal communication, Nov. 20, 2015).

No two of the nine projects that we analyzed have identical numbers of indicators. The uniqueness is a result of the ‘tailored fit’ of each indicators project to its community. Much of what dictates the resolution of the indicators data is the resolution of the most easily accessible data sets to the indicators project team. The process for entering data into a management system can also become a limiting factor in determining the level of precision of the data. A data management system that does not accommodate data sets of differing geographic resolution, would require a project team to select a single geographic resolution for all data.

All indicators project organizers we interviewed explained that utilizing data with a higher geographic resolution (smaller data collection areas) enabled additional opportunities for the utility of indicators. Many warned that the additional efforts of utilizing data with higher resolution may not yield significant increases in the effectiveness of indicators towards meeting the goals of the project. This is to say that although the indicators information would in fact provide more potential insight, the additional information may not enable significant advances for the targeted user of the

indicators project. In this case the user does not need a data set with high resolution, therefore it would be inefficient for an indicators project to expend resources to provide one (J. Martin, personal communication, Nov. 30, 2015).

When determining the most useful level of precision for indicators data we found that different indicators have differing amounts to gain from being analyzed on a higher resolution. For instance indicators which aim to uncover trends which occur on a large scale, such as access to arts and culture, do not need data collected on a census block level to be most useful, and instead the indicator can be analyzed effectively with data taken on a town or even regional level.

Finding 4: Employing repeatable and sustainable data sourcing methods can help to alleviate the resource burden of keeping indicators data up to date

Data maintenance and procurement is cited by nearly every project as the most labor-intensive and resource-consuming task performed. This often must be reconciled with a tight budget and small available labor force. By saving resources in the day-to-day operation of an indicators process, more resources can be allocated to expanding and promoting services. This means that indicators projects have a lot to gain from employing efficient data-sourcing methods for updating indicators data or procuring sets of data for new indicators for the first time.

All of the indicators projects that we analyzed actively used one or more of the following techniques to improve the efficiency of their data procurement and maintenance:

- Only use publicly available data
- Form relationships and establish data sharing processes with data-holding organizations;
- Record and catalog methods used previously to reference the next time data is obtained for the first time or updated;

- Automate as much of the data sourcing and manipulation as possible

By far, the most popular and widely-used source of data for indicators projects that we have observed is the United States Census Bureau. Every indicators project in the scope of our analysis uses some combination of data from the Census Bureau's decennial national census, or their annual American Community Survey (ACS). Census Bureau data offers several advantages: it is publicly available for download and use and manipulation at any time; it is a rigorous and widely respected source of data; and it covers a wide array of data sets. However, the US Census does not provide comprehensive data for all conceivable indicators. Due to this lack of comprehensive data from the census, indicators projects often must acquire data from local government agencies, public nonprofits, health agencies, and more to get the data they need to accurately track facets of community wellbeing. Using public sources allows indicators programs to more efficiently gather data, especially when compared to the potential inefficiencies of seeking data from private groups such as local businesses (which can incur costs and require more negotiation).

Indicators are typically updated annually, at the very least. While many indicators projects routinely change some indicators and data sources year-by-year, the majority of annual data updates require nearly identical interactions with the same data-holders. Projects benefit from familiarity and strong relationships with data-holders by expediting the annual data acquisition process. Jessica Martin, Director of the Boston Indicators Project, stated that due to the strong relationships that the Boston Indicators Project staff formed with data holders within the community, it is rare that periodically collected data is gathered and not sent to the indicators project team (J. Martin, personal communication, Nov. 30, 2015). Susan Kelly, Director of Community Planning at JCCI, echoed Martin, stating that the majority of the data that JCCI works with doesn't even require a phone call to the data holders. The process occurs so periodically that data holders have grown accustomed to

sharing data with the projects when it becomes available (S. Kelly, personal communication, Nov. 19, 2015).

Similarly, those responsible within the indicators projects often process much of the same data in the same way each year. By encouraging consistent methods of collecting and implementing the data (including keeping the same person responsible for the same tasks each year), indicators projects save even more time. Peter Eaton, Director of the Center for Economic Information in Kansas City, Missouri stressed that relationship building with data holders is an efficient method for data collection (S. Eaton, personal communication, Nov. 9, 2015).

The Baltimore Neighborhood Indicators Alliance (BNIA) takes efficiency and automation a step further. A computer scientist working for the BNIA alleviated inoperability between dozens of data sources. Many data sets used by the project had different field names or other small but disabling inconsistencies (S. Iyer, personal communication, Nov. 23, 2015).

Finding 5: Collaboration provides mutual benefits to indicators projects and local organizations

Indicators projects all run on similar bases. There is no need for new indicators projects to reinvent the wheel when there is already so much precedent set by existing indicators projects (J. Martin, personal communication, Nov. 30, 2015).

As we learned in our interviews with those directly involved with existing indicators programs, there was little to no precedent to guide Jacksonville Community Council Inc. as they pioneered the quality of life indicators project in 1985. The Boston Indicators Project was in a comparable situation as it conceived its own neighborhood-level indicators project in the late 1990s. Using existing projects as models for developing projects began at the turn of the millennium as more and more community indicators programs were implemented.

For example, the Baltimore Neighborhood Indicators Alliance partly modeled their project after the Boston Indicators Project, among five others from Atlanta, Georgia; Cleveland, Ohio; Denver, Colorado; Oakland, California; and Providence, Rhode Island (Schachtel, 2001). Both of these situations contrast sharply with the situation today where hundreds of such projects inspire each other and collaborate openly. This collaboration is yet another method used by projects we have analyzed to increase community impact in spite of tight funding and limited resources.

In our interviews and project meta-analysis, we observed two approaches to collaboration: passive, in which some organizations looked to existing indicators projects for inspiration; and active, in which indicators projects actively share knowledge, resources, and more. For example, our meta-analysis showed that several projects, including those in Baltimore and Portland, looked to the indicators project pioneered by Jacksonville Community Council as they sought to develop their own (S. Iyer, personal communication, Nov. 23, 2015; S. Iyer, personal communication, Nov. 23, 2015). By learning from the successes and difficulties experienced by an established, successful program, fledgling projects could avoid potential waste of resources on "unknowns" and instead use money and resources more effectively.

Jessica Martin, Director of the Boston Indicators Project, described in an interview the three years of careful deliberation with topic and policy experts, as well as city, state, and community leaders as they formed the basis for the indicators project. She suggests that this would be a waste of time and resources for a new indicators project these days. The main result of these three years of deliberation is the very core structure of the Boston Indicators Project today and can be plainly observed, analyzed, or even replicated without taking up too much precious time repeating such initial processes (J. Martin, personal communication, Nov. 30, 2015).

Today, the National Neighborhood Indicators Partnership (NNIP) is a shining example of the power of active collaboration amongst indicators projects across the country. The NNIP is a collaborative partnership of indicators projects. The partnership offers included projects the opportunity to meet twice yearly, to discuss all aspects of indicators projects, and to share their experiences with one another. We interviewed four indicators projects that are NNIP partners Boston Indicators Project, Baltimore Vital Signs, University of Missouri – Kansas City Center for Economic Information, and Greater Portland Pulse, and learned from them that utilizing the pooled knowledge and resources of successful indicators projects makes the NNIP an invaluable resource (J. Martin, personal communication, Nov. 30, 2015; S. Iyer, personal communication, Nov. 23, 2015; S. Eaton, personal communication, Nov. 9, 2015; S. Martin, personal communication, Nov. 17, 2015).

For example, Sheila Martin of the Greater Portland Pulse project noted in an interview that since there are many different Geographic Information System (GIS) packages and software systems used through the dozens of projects in the partnership, there is less risk involved when another project wants to try out one of these tools. Partnered projects can use one another as a resource, they ask question, seek recommendations, and learn from each other's experiences (S. Martin, personal communication, Nov. 17, 2015).

We have also observed strong collaboration between indicators projects and higher education. Both Robert Ross and Thomas White run small scale indicators programs out of universities. Robert Ross, a professor at Clark University, runs the Worcester Community Indicators project. In an interview with Ross, he explained that he is able to utilize resources available to the university, such as data and contacts, as well as students who created the website for the project. Ross elaborated to say that student labor is an excellent option when there is a need for repetitive tasks like formatting

data to be performed. Additionally, student labor is a strong candidate for the technically demanding aspects of indicators projects, such as website creation and maintenance, or creation of tool to streamline data manipulation (R. Ross, personal communication, Nov. 5, 2015).

Thomas White, a professor at Assumption College, publishes the Worcester Economic Index, and is also able to make use of the existing Assumption College website to publish his reports on (T. White, personal communication, Nov. 6, 2015). Higher education has proved to be a wealth of various topic experts, idea generation, and even manpower. Robert Ross lauded the efforts and impact of student interns from colleges and universities and spoke generally of the fruits of collaboration with local higher education communities (R. Ross, personal communication, Nov. 5, 2015).

Finding 6: The findings and results of an indicators project must be published and distributed effectively to facilitate community impact

We discovered a multitude of ways in which indicators projects tailor publication formats to prospective audiences to enable access to the information, as well as ways in which projects publicize and market themselves. We determined that publication format and marketing are detrimental to the frequency of use of an indicators project.

The Boston Indicators Project produces the most in-depth report that we encountered during our research of existing indicators projects. Every two years, the Boston Indicators Project publishes reports which Jessica Martin, Director of the Boston Indicators Project, suggested are designed to "create headlines" to highlight issues and put them at the forefront of discussions in homes and workplaces in the region. These reports offer careful analysis of a full spectrum of community indicators. The reports span over sixty pages in length. However, Jessica Martin identified the target audience for the reports as 'motivated community leaders'. This narrows the focus of the project and allows for more effort to be put into tailoring information for use by community leaders. In order to

provide information to the casual interest audience, the Boston Indicators project additionally publishes "Snapshots and Briefs," which are quick, descriptive, surface-level insights into communities (J. Martin, personal communication, Nov. 30, 2015).

On the other end of the spectrum, we interviewed Susan Kelly, the Director of Community Planning at Jacksonville Community Council Inc. (JCCI). She explained that JCCI produces reports aimed at benefiting the community at large: the "everyday community member." This target audience leads JCCI staff to take a different approach to publishing results compared to the Boston Indicators Project. JCCI produces brief "community report cards" on an annual basis. These report cards cover the major aspects of community wellbeing that JCCI has identified in order to effectively inform community members without presenting them with more information than necessary (S. Kelly, personal communication, Nov. 19, 2015).

Tim McGourthy, Executive Director of the Worcester Regional Research Bureau (WRRB), steers his organization in yet another direction to use data to inform the community. The organization has, starting this year in 2015, begun to publish an annually-updated collection of key data points about the city of Worcester, coined the Worcester Almanac. This static list of important figures, data, and statistics about the city is seen as a useful and appealing middle ground between indicators reports and interactive data repositories like CentralMass DataCommon. It offers the raw data and statistics like DataCommon, but is formatted, published, and lightly contextualized to resemble an indicators report. The almanac format is more approachable and actionable to a portion of the community that would otherwise not find the opportunity for utility in either alternative (T. McGourthy, personal communication, Dec. 1, 2015).

The other aspects of publishing and distributing findings and results are marketing and advertising. Jacksonville Community Council Inc. successfully utilized an external PR/communications firm to

stir interest in the community and encourage use of and contribution toward the Jacksonville indicators project. The widespread impact of the marketing campaign was clearly reflected by the 14,000 local survey responses and hundreds of attendees across four community forums aimed at hearing the needs of the community prior to indicator selection. While JCCI's pointed use of marketing was namely for the stakeholder input and indicator development stage of their 2012 large-scale visiting initiative, it illustrates the potential influence and community impact of effective project marketing (S. Kelly, personal communication, Nov. 19, 2015).

When we shared the DataCommon informational video that we created with both existing users of DataCommon, as well as with potential users, both parties expressed the utility in a visual explanation over a verbal or written explanation. Tim McGourthy expressed the advantages of presenting DataCommon, a highly interactive tool, in a video format. He explained that unlike text or verbal descriptions, a video presentation of DataCommon encouraged potential users to imagine using the resource in their work, the connection they can feel with DataCommon in a relatively short period of watching the video is much stronger (T. McGourthy, personal communication, Dec. 1, 2015).

Finding 7: Different sectors (e.g. Education, Health) often require different approaches to community involvement and indicator selection

The most efficient and effective process for determining indicators is determined by the amount of community input required in order to select indicators which represent the most important trends for the target users of the project.

We identified three main approaches for including community members in the indicator identification process. The first is often referred to as the "Champion Method" in which a single community expert determines all necessary indicators for a specific sector. Robert Ross utilized the Champion Method for his indicators project aimed at measuring community health in Worcester,

Massachusetts. Given his limited resources, Ross decided to use himself as a champion which enabled him to select indicators quickly (R. Ross, personal communication, Nov. 5, 2015). The second method, “broad community input” involves more community members in the process. This method enables community opinions to be heard in meetings or focus groups. The indicators project team can then use the presented opinions to decide on indicators to move forward with. Jacksonville Community Council Inc. (JCCI) utilized survey results from thousands of community members in their indicator selection process. Susan Kelly, Directory of Community Planning at JCCI explained that this process takes significant time and resources, but ensures that selected indicators are reflective of the information the community members desire (S. Kelly, personal communication, Nov. 19, 2015). The third approach that we encountered was simply a hybrid. The hybrid model, which uses experts and some amount of community engagement aims to limit the tendency for large groups of community members to stray in several directions when determining potential indicators. The approach suggests first consulting with an expert to develop a baseline familiarity and understanding of a sector. Then, this foundational knowledge and sector-specific indicator framework allows for clear focus and direction when convening with community members. The Boston Indicators project utilized a hybrid model. Jessica Martin, Director of The Boston Indicators Project explained that the hybrid model added structure to the process of involving community members in indicator selection (J. Martin, personal communication, Nov. 30, 2015).

None of the three methods is universally superior to the others. Indicators project teams typically decide upon methods to use on a sector by sector basis. While selecting which method to utilize organizers attempt to weigh the benefit of hearing from many community members and therefore gaining a broader understanding of a sector, with the reality that setting up and carrying out such

meetings takes significant time as well as resources to execute well. The most efficient use of community involvement is the smallest amount which still allows for the indicators project to produce "credible indicators," a point stressed by Chris O'Keeffe, Vice President for Program at the Greater Worcester Community Foundation. He felt that, for indicators to be credible, they must appeal to the majority of members of the population being analyzed. If community members are consulted during the indicator selection process they will feel represented, and are more likely to trust and utilize the indicators project publications (C. O'Keeffe, personal communication, Dec. 1, 2015).

The general abundance and availability of data also varies sector-by-sector and therefore often requires specialized approaches to community involvement and indicator selection.

Recommendations

The following recommendations serve as a general framework for a full-scale indicators project aimed at measuring community wellbeing and promoting positive change in the Central Massachusetts region. These recommendations factor in the wealth of background knowledge and findings in this report along with the qualities and context of the area. We reconcile our recommendations with the (currently) limited funding and resources of the Central Massachusetts Regional Planning Commission.

We first recommend that the CMRPC **carefully assess its current funding and resources, as well as its projections for funding resources in the foreseeable future.** Funding is crucial because of how community involvement, indicator selection, and findings/results distributions and publishing are all tightly constrained by funding and resources within the CMRPC. With the given staffing available for the indicators project (approximately 2 full time staff), and the goals for the project (to be a comprehensive resource for the entire Central Massachusetts region) funding will be crucial to setting up streamlined processes for data collection and formatting.

When searching for sources of funding, there are several particularly promising options:

- **Health Sector.** The health sector is incredibly strong and prevalent in Central Massachusetts and is an invaluable potential stakeholder in the preliminary stages of an indicators project
- **Nonprofits, public agencies, and other grantmakers** whose goals and visions align with the community-impact oriented values of DataCommon and the indicators project
- **Local government agencies,** in exchange for services provided by the CMRPC via DataCommon/indicators project, if resources allow

When initially selecting indicators, **pursue those that are backed with data that is both easily obtained and maintained.** Constrain the scope of the indicators project to just a handful of sectors initially if necessary due to limited funding and resources. As stated in Finding 3 selecting too few indicators can lead to limited use of an indicators project. Enough indicators must be used to support the trends of the community. Given the funding and staffing limitations that the Central Massachusetts Indicators Project is beginning with, it is not reasonable to expect the first round of selected indicators to adequately represent all sectors of each of the cities and town which make up the Central Massachusetts region. **By targeting the Health and Education sectors, areas of the community with whom the CMRPC has preexisting ties, the CMRPC could present a small number of indicators, while still properly representing the sectors.** Once support builds, other sectors and more burdensome indicators requiring non-public data sets or high resolution data to be analyzed can be supported to expand the utility and impact of the project. The CMRPC should **consult with local experts and community stakeholders in related fields** for initial guidance and direction in the preliminary stages of the indicator selection process. When discussions with local experts, suggest that obtaining input from a larger, grassroots community group may be advantageous, proceed with a known direction that is determined with the local experts in order to most effectively guide conversation with community members. In practice this could mean speaking with a community expert about the five to ten issues they believe need to be tracked, then conducting meetings with community members to narrow down the five to ten top issues to just one or two. This method is much more streamlined than conducting a meeting in which community members collectively brainstorm which issues they believe are most prevalent. As seen in the Boston Indicators Project, a hybrid model involving discussion with experts and community members alike, enables indicators to be selected quickly, but also ensures the indicators represent the opinion of the community at large (J. Martin, personal communication, Nov. 30, 2015).

As the current structure of DataCommon only allows for city/town-level data to be utilized, continue to populate the data repository with this data from the US Census/American Community Survey (ACS). **Consider narrowing the geographic scale of Worcester data to neighborhood-level when funding and resources allow.** Because no lower-level data can currently be entered into DataCommon for the city of Worcester, the usability and actionability of Worcester data is severely limited (C. O'Keeffe, personal communication, Dec. 1, 2015). Given the diversity of towns that make up the Central Massachusetts region, higher level data is certainly not without purpose. More homogeneous towns do not need lower level information to find utility in the indicators project. Worcester, however, is far from homogeneous, lower level data can pinpoint areas of need within the neighborhoods of the city, allowing community organizations to target efforts for improvement more effectively.

Once DataCommon is stable and well-populated with public, easily available city/town-level data (and hopefully neighborhood-level in Worcester), **begin spending time and resources acquiring more specialized data sets where the need is identified by desired indicators**, e.g. local town government officials or utilities companies. **Carefully document all processes used to gather and use this data for the sake of repeatability and sustainability.**

Investigate and pursue inclusion into the NNIP to utilize the experiences of other indicators projects to more easily grow the Central Massachusetts Indicators Project.

Publish reports tailored to the community leaders identified as the target audience. Focus the discussion to areas which these organizations can focus their efforts as well as on issues that they present.

The CentralMass DataCommon and indicators projects have the potential to become the source of community empowerment and local change that is already seen in communities around the world.

Additional Recommendations

Based on the response we saw to the DataCommon Informational Video we provided to the CMRPC, **we recommend that the CMRPC continue efforts to publicize DataCommon to potential stakeholders with visual media.** Given the interactive nature of DataCommon, it makes sense, and was observed, that a visual explanation is more effective in explaining the tools available through the repository.

As described in Finding 6, it is important that the CMRPC be able to format presented reports and data in a manner which is receptive to the stakeholders. This requires the CMRPC to have the ability to modify all publication materials including the website which houses DataCommon and eventually the indicators project reports and summaries. The current website is restricted to the formatting of the MetroBoston Datacommon. **We recommend that the CMRPC investigate possible resources for the creation of a new website, one specific to the Central Massachusetts region.** A new website would allow the CMRPC to modify formatting to suit the needs that stakeholders express.

We also recommend that the CMRPC **investigate the use of summary statistics and composite indicators as supplementary measures of community wellbeing.** While this is a common practice on the global scale, we have not observed the use of community wellbeing indices in any of the seven full-scale community indicators project that we studied. The CMRPC has expressed a desire to pursue unique and innovative tools to measure community wellbeing, and we recognize this as an opportunity to do so. The utility of summary statistics and composite indicators is explained on the global scale in Section 2.3.2. On a smaller scale, Thomas White's Worcester Economic Index shows the value of using multiple indicators to calculate a One Number Summary

component measurement of community wellbeing. We recommend further research into the feasibility of summary measures in regional communities and in topics outside of economics.

Conclusion

The Central Massachusetts region lacks a common, centralized tool to facilitate informed discussions and decisions, drive and measure progress toward shared goals, and provide a credible, accurate snapshot of the wellbeing of the many facets of the Central Massachusetts community. The findings and recommendations in this report can help the Central Massachusetts Regional Planning Commission develop, implement, and sustain the critical indicators program tailored to both the special circumstances of the Planning Commission and the unique needs, characteristics, and common goals of the region.

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Appendix

Preamble

We are a group of students from Worcester Polytechnic Institute in Massachusetts. We are conducting interviews and focus groups of community members to learn more about the status of the education sector of the community in order to develop community indicators. We strongly believe this kind of research will enable stakeholders to better understand the education system and where efforts can be made in order to see positive changes. Your participation in this survey is completely voluntary and you may withdraw at any time. Please remember that your answers will remain anonymous. No names or identifying information will appear on the questionnaires or in any of the project reports or publications. This is a collaborative project between the Central Massachusetts Regional Planning Commission (CMRPC) and WPI, and your participation is greatly appreciated. If interested, a copy of our results can be provided at the conclusion of the study.

Appendix A – Interviews with other indicators projects

1. What's the background of your project?
 - What was your motivation?
2. Who does your project aim to benefit?
 - How were these parties determined?
 - Would you recommend this determination method for our project?
 - If yes, why?
 - If no, what would you recommend?
3. What methods of stakeholder involvement did you utilize, if any?
 - How do you recommend using community stakeholder input to select indicators?
4. How is data collected in the communities you aim to benefit?
 - Where does the data come from?
 - Does your project utilize a centralized source for all data (i.e. CentralMass DataCommon)?
5. What was the process followed to choose indicators?
 - Do you think this would be an effective process in a project of our scale?
 - If so, why?
 - If not, why?

- How else would you recommend choosing indicators?
6. What sources of funding does your project rely on?
 - What is your corporate structure?
 - How many full-time and part-time employees do you have?
 - Are there any potential funding sources that you believe we should investigate?
 7. Is there anyone else you would recommend we try to get in touch with?

Appendix B – Indicator Project Comparison Matrix

	Project Purpose/Goal	Project Inspirations	Scale of Project
Robert Ross (Clark University) Worcester Community Indicators	To provide student in his sociology students with the story of a community which can't be told by data. He used to have his students walk through communities to understand them	Providence Plan. The director of the Prov. Plan is Pat McGuigan, an acquaintance of Ross.	Worcester, Massachusetts About 40 Square Miles
Thomas White (Assumption College) Worcester Economic Index	To provide a way to keep track of the local economy relative to national or state measures. Serve as another piece of information for businesses and organizations. Never intended for the project to end up becoming anything large scale. Aimed to project economic change.	Based indicator selection on indicators used for national economic projects. Based methods on those used by Allen Clayton Matthews at Northeastern University.	Worcester, Massachusetts About 40 Square Miles
Peter Eaton Kansas City Center for Economic Information	The goal was to benefit low-income neighborhoods in urban core of Kansas City as well as larger cities in the Metropolitan area.	Early GIS attempts Department of Housing and Urban Development Grant in 1990's	
Jessica Martin Boston Indicators Project	NOT Deficit-oriented Aimed at determining where the community should be in the future Sustainability	Oakland, Atlanta, Rhode Island data hub, Cleveland - founding members of NNIP	Boston and surrounding cities
Seema Iyer Baltimore Vital Signs	Help make data driven decisions for distressed communities	Cohort with Cleveland and Oakland	Baltimore, 81 Square Miles. Data by each of 55 community statistical areas (CSAs)
Tim Kuhn Eastern Tennessee Index	Plan East Tennessee (a regional planning effort) defined the need for indicators as a way to track progression of community goals. Broad resource to anyone with needs for data.	Jacksonville Boston	"The Region" About 3500 Square Miles
Sheila Martin Portland Oregon, Greater Portland Pulse	Provide an intuitive, easy-to-use data repository with up-to-date data & information Serve as an authoritative source through its collaborative community-driven process and an impartial managing organization	General Oregon "ethos" of measurement, progress tracking, etc., Oregon Shines (community goal/vision)	Portland-Vancouver-Hillsboro Metropolitan Statistical Area (Portland MSA), which is comprised of seven counties
Susan Kelly Jacksonville	Illustrate and track quality of life in Jacksonville relative to the goals and visions set by the community		Jacksonville (Duval County) for indicators All Florida counties for Community Snapshot when possible, otherwise aim for Jacksonville MSA (5 counties)
Erika Rosenberg CGR	Often stems from knowing about other indicators projects, and needing a way to compare to other locations		

	Community Involvement	Presence of Data Repository (e.g. DataCommon)	Geographic Scope and Criteria of Data/Indicators
Robert Ross (Clark University) Worcester Community Indicators	None	Data Compare feature but not on the scale of a DataCommon	
Thomas White (Assumption College) Worcester Economic Index	None	No	
Peter Eaton Kansas City Center for Economic Information	Community Partners are involved, the needs they voice are used as a starting block for indicator selection. Neighborhood Associates CDC's Regional Groups Council of Government	CityScope and MetroScope are the equivalents	
Jessica Martin Boston Indicators Project	Most involvement is with grassroots leaders, who can convey the information that they receive from the community members.	Yes, DataCommon	Look for lowest level neighborhood data
Seema Iyer Baltimore Vital Signs	Steering Committee of about 25 members, representatives from foundations, higher education systems, city agencies, library system etc. Meet twice per year	Yes, Vital Signs website	Prefer yearly updated data Prefer data at neighborhood level
Tim Kuhn Eastern Tennessee Index	The original goals were defined by community members during the Plan East Tennessee event. Used experts from the community to determine indicators	No	Data by county (9 total counties)
Sheila Martin Portland Oregon, Greater Portland Pulse		Internal/integrated data repository	County-level/metropolitan-level, except for education (which is school-district-level)
Susan Kelly Jacksonville	see Indicator Selection	JCCI Community Snapshot	County-level. Aim for data for all FL counties. Prioritize Duval (Jacksonville) and other four counties in Jacksonville Metro Statistical Area.
Erika Rosenberg CGR	NEED Community Involvement, one organization can not plan and execute indicators project Start with experts in the field to gain inspirations, then engage community effectively	County Data is main level Smallest section sizes always preferred	Same data in several projects, Census Bureau, National Economic Data Sets, BEA, Education Data from states, health data from states

	Population Covered	How County/City Gathers Data	Indicator Selection Process (Champion, Committee, Hybrid...)	# Indicators
Robert Ross (Clark University) Worcester Community Indicators	About 180,000	Sourced data from Census and ACS. Suggested that non-public record data is "a pain"	Ross served as his own Champion during data collection.	40-50 indicators
Thomas White (Assumption College) Worcester Economic Index	About 180,000	Sourced data through Assumption College in order to pay for data which was unavailable to public.	Initially White served as a Champion in the data selection and indicator selection, eventually ran remaining data sets through a mathematic simulation in order to select which data sets would most appropriately represent the indicator he had selected.	4 local leading economic indicators in Worcester
Peter Eaton Kansas City Center for Economic Information		Local governments provide data. Purchasing data isn't a sustainable framework ACS Data > Census Data Housing Condition Survey Get data from health partners	Focus Group style meeting with community partners	
Jessica Martin Boston Indicators Project	1 Million +	All publicly available data Source Data from agencies (key partnerships) Found primary source data to be too difficult to get without significant return	Vetting with experts within Boston Foundation before sector based convening's with community members (organized by sector)	150 detailed indicators across 10 primary sectors
Seema Iyer Baltimore Vital Signs	About 620,000	Source data from agencies administrative data records Publicly available data	Steering Committee Reach out to businesses and stakeholders on a yearly basis to involve more community members.	150+ indicators
Tim Kuhn Eastern Tennessee Index	About 865,000	Tried primary source data but found it to have minimal returns given the effort required	75 Indicators to begin the project Tried to select indicators which "filled gaps" and were the most generally applicable Expert champions used in indicator selection Recommended committees to get insight into the communities, but not too much deliberation	87 indicators
Sheila Martin Portland Oregon, Greater Portland Pulse	About 550,000		Advisory committee nominates people to be in work groups (one work group per indicator category) and ensure "gaps are filled". Use "goal question" to steer discussion and indicator selection. Each work group proposes 5-8 indicators. Equity Committee ensures equal representation and addresses disparities	49 indicators over 11 "topics"
Susan Kelly Jacksonville	About 1,000,000 people	Census/ACS, health/crime data from local/state departments, some data from direct requests (e.g. electrical/power data from utilities). Florida "sunshine laws" help data acquisition.	2012: large-scale visiting initiative for whole city. 140,000 survey responses, 4 community forums (via hired PR/comm. firm). First forum for visioning, second for tracking progress, accountability, more fine details. Annual Quality of Life review of 15 subject experts	50 indicators across 10 "target areas" (5 per)
Erika Rosenberg CGR		Set up key partnerships with data agencies	Recommends middle ground between Champion Method and Grassroots Focus Groups	Recommends 75-150 indicators

	Number of Staff	Funding Sources
Robert Ross (Clark University) Worcester Community Indicators	Ross, part-time. Sources work from students to update data and website.	Began with project set up by the United Fund that Ross did not remain a participant in. Eventually tried to gain funding from Worcester Community Foundation but failed. Suggested that Health Sector had both need for indicators and data which we could utilize.
Thomas White (Assumption College) Worcester Economic Index	White, part-time.	Assumption College paid for data.
Peter Eaton Kansas City Center for Economic Information	4 Full Time Staff	Use paid indicators to subsidize other efforts (general indicators as well as CityScope and MetroScope)
Jessica Martin Boston Indicators Project	3 Full Time Staff Have a lot of help around report publications	The Boston Foundation
Seema Iyer Baltimore Vital Signs	3.5 Full Time Staff 2 Contractual Employees 2-3 Student Summer Interns	Began with 90% funding from Annie A Casey Foundation Now 1/3 from foundation, 1/3 data partners for higher education institutes, 1/3 Grants
Tim Kuhn Eastern Tennessee Index	0.1 Full time employees	Recommended getting strong partnerships with community stakeholders Help from stakeholders with sourcing data United Way Community Action Coalition Engage with Economic Development people
Sheila Martin Portland Oregon, Greater Portland Pulse		Lots of support from the Institute of Portland Metropolitan Studies, which it's housed in Oregon Population Research Center Local gov't sponsorships Washington State University Health Foundation for Health Equity (?)
Susan Kelly Jacksonville	0.5 full-time employees	All JCCI core programs are by sponsorship. United Way (also has input in review committee) CSX, utilities, other companies with interest in community wellbeing
Erika Rosenburg CGR		

Appendix C – List of Interviewees

Interviewee	Organization	Position(s)
Peter Eaton	University of Missouri-Kansas City	Associate Professor, Economics, UMKC Director, Center for Economic Information
Seema Iyer	Baltimore Neighborhood Indicators Alliance	Associate Director, Jacob France Institute Research Assistant Professor, University of Baltimore (Dpt. of Finance and Economics)
Susan Kelly	Jacksonville Community Council Inc. (JCCI)	Director of Community Planning, JCCI
Tim Kuhn	Knoxville-Knox Metropolitan Planning Commission	GIS Manager, Knoxville-Knox MPC
Jessica Martin	Boston Foundation	Director, Boston Indicators Project
Sheila Martin	Portland State University	Director, Institute of Portland Metropolitan Studies
Tim McGourthy	Worcester Regional Research Bureau	Executive Director, WRRB
Chris O'Keeffe	Greater Worcester Community Foundation	Vice President for Program, GWCF
Erika Rosenberg	Center for Government Research (CGR)	Principal, CGR
Robert Ross	Clark University	Professor, Department of Sociology
Jim Walker	Central Texas Sustainable Indicators Project	Director of Sustainability, University of Texas - Austin Co-Director, CTSIP
Thomas White	Assumption College	Professor, Department of Economics & Global Studies
Janice "Jan" B. Yost	Health Foundation of Central Massachusetts	President & CEO, HFCM

Appendix D – Indicator Project Guidelines

Guidelines for an Indicators Program as identified by the Government Accountability Office;

1. ensure independence and accountability,
2. create a broad-based governing structure and actively involve key stakeholders,
3. secure stable and diversified funding sources,
4. design effective development and implementation processes,
5. identify and obtain needed indicators or data,
6. attract and retain staff with appropriate skills,
7. implement marketing and communications strategies for target audiences, and
8. acquire and leverage information technologies. (Hayes, p. 153, 2006)

Guidelines for an Indicators Program as identified at the 1996 international Rockefeller

Foundation's Study and Conference Center in Bellagio, Italy:

1. are guided by a clear vision and goals,
2. review the whole system as well as its parts and recognition of interaction among the parts,
3. consider equity and disparity within the current population and over generations,
4. have adequate scope,
5. have a practical focus,
6. involves openness,
7. have effective communication,
8. involve broad participation,
9. are an ongoing assessment, and
10. provide institutional capacity. (Hayes, p. 153, 2006)