Analysis of Madison's Neighborhood Indicator Data

Prepared for City of Madison Finance Department

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Table of Contents

List of Tables v
List of Figures v
Foreword vi
Acknowledgments vii
Executive Summary viii
Introduction 1
Relevant Literature 2
History of Neighborhood Indicator Programs 2
Neighborhood Indicator Organizations 3
National Neighborhood Indicators Partnership 3
Baltimore Neighborhood Indicators Alliance 4
Minnesota Compass 4
What Works Cities 5
Defining Neighborhoods 5
Neighborhood Impacts 6
Shortcomings of Measuring Neighborhood Impacts 7
Approaches to Assessing Neighborhood Indicators 8
Quantitative Analysis of Madison Neighborhood Indicators Data 8
Data 8
Data Analysis Methodology 10
Findings 15
Discussion 18
Limitations 21
Qualitative Approach 22
Collecting Qualitative Data 23
Recommendations 26
Recommendation 1: Strengthen Ties with Outside Organizations 26
University of Wisconsin-Madison 26
Applied Population Laboratory 26
Wisconsin Research Data Center 26
What Works Cities Initiative 27
Recommendation 2: Bolster Collection of Additional Data 27
Community Action and Involvement 27

Housing 28
Safety 28
Health and Family Well-Being 28
Economic Vitality 28
Transportation 29
Recommendation 3: Look to Other Cities Using Neighborhood Data 29
Housing: Baltimore CitiStat Trash Pickup 29
Public Safety: Minneapolis Block Clubs 30
Health and Family Well Being: B'More for Healthy Babies 30
Economic Vitality: Baltimore Drilldown/Atlanta Project 31
Transportation: Cleveland Welfare-to-Work Transportation 31
Recommendation 4: Enhance the Quantity and Ease of Access of Data 32
Conclusion 33
Appendix A: APL Data Description 34
2014 Madison Neighborhood Indicators Data Definitions 34
Appendix B: APL Data Limitations 40
Relative Size of Block Groups and NRT Areas 40
Partial Block Groups 40
Appendix C: Detailed Community Index Methodology 41
Appendix D: Detailed NRT Descriptive Statistics 43
Appendix E: Sampson Survey 46
Appendix F: Comparison of Neighborhood Indicators 48
References 53

List of Tables

Table 1. Community Index Metric Categories.....11
Table 2. NRT Demographic Change, Versus City Average.....13
Table 3. Comparison Geographies.....14
Table 4. Aggregate NRT Descriptive Statistics.....15
Table 5. Community Index Results.....17
Table C1. Community Index Metric Categories.....44
Table D1. Detailed NRT Descriptive Statistics.....45
Table F1. Comparison of Neighborhood Indicators.....51

List of Figures

Figure 1. Map of Comparison Geographies.....14
Figure B1. Madison Block Groups.....42

Foreword

This report is the result of collaboration between the La Follette School of Public Affairs at the University of Wisconsin–Madison and the City of Madison, Wisconsin. Our objective is to provide graduate students at La Follette the opportunity to improve their policy analysis skills while providing City of Madison policymakers with an analysis of how the City can better incorporate data in their neighborhood indicators project.

The La Follette School offers a two-year graduate program leading to a master's degree in public affairs. Students study policy analysis and public management, and they can choose to pursue a concentration in a policy focus area. They spend the first year and a half of the program taking courses in which they develop the expertise needed to analyze public policies. The authors of this report all are in their final semester of their degree program and are enrolled in Public Affairs 869 Workshop in Public Affairs. Although acquiring a set of policy analysis skills is important, there is no substitute for doing policy analysis as a means of learning policy analysis. Public Affairs 869 gives graduate students that opportunity.

This year, the Workshop students were divided into eight teams. Other teams completed projects for the Wisconsin Department of Public Instruction and Department of Children and Families; the UW-Madison School of Medicine and Public Health; the Wisconsin Department of Natural Resources; the Wisconsin Department of Health Services; the Legal Assistance to Institutionalized Persons Project at the University of Wisconsin Law School; the Millennium Challenge Corporation; and the University of Notre Dame Environmental Change Initiative.

Seeking to build on the City of Madison's existing neighborhood indicators project, this report provides a detailed assessment of how the City can better incorporate data in assessing neighborhoods and evaluating policies and programs. The report introduces a Madison "Community Index," which incorporates a range of measures in five substantive areas into a single measure of neighborhood well-being. In generating this index, the report illustrates one way in which the City can leverage data to better identify patterns in neighborhood and resident well-being across space and over time. In addition to detailing best practices in the use of data from cities across the country, the report includes a series of recommendations for improving the collection of data and its potential use in policy and programmatic decisions specific to the City of Madison.

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Executive Summary

Neighborhood characteristics are correlated with a wide variety of individual outcomes, including educational attainment, employment, and income. As a result, many cities across the country have utilized data-driven programs to improve their understanding of the characteristics of their neighborhoods. One notable example of this trend is the Madison Neighborhood Indicators Project, launched in 2007 with the goal of helping the City understand its neighborhoods and tailor solutions to particular neighborhood needs. This report provides an assessment of Madison's neighborhood indicator data, demonstrates the level of suitability of these indicators for characterizing Madison's neighborhoods and informing decision-making, and outlines best practices for Madison related to neighborhood-level data collection and analysis from other communities.

As an example of a quantitative analysis of neighborhood indicators, we conduct a preliminary analysis of Madison's neighborhood-level data, creating a composite index, called the Community Index, based on demographic and socio-economic data housed at UW-Madison's Applied Population Lab (APL). We use Madison's Neighborhood Resource Team (NRT) focus areas as a case study for this index. The Community Index we designed synthesizes the APL data into a single measure of neighborhood well-being, incorporating five subcategories used by the APL: housing, safety, health and family well-being, economic vitality, and transportation. We use the Community Index to characterize Madison's NRT neighborhoods on each of these subcategories and provide a preliminary discussion of additional geographies within the City that may have needs similar to the NRT neighborhoods.

We highlight four recommendations to help the City best develop and use its neighborhood indicator data:

First, we recommend that the City strengthen its ties with outside organizations to help manage and use its data. In particular, we recommend that it strengthen its relationship with UW-Madison's Applied Population Laboratory, Wisconsin Research Data Center, and the What Works Cities initiative.

Second, we recommend that the City bolster its collection of data in order to provide a richer and more thorough picture of neighborhood well-being and livability. For each subcategory used in the Community Index, we've compared the data Madison collects to that collected by Baltimore and Minnesota, and we identified areas where Madison's data collection could be expanded as well as areas where it could emulate these other places. We anticipate this involving both additional quantitative data collection and new qualitative sources of data.

Third, we recommend that the City look to other communities using neighborhood data to inform local decision-making. We detail five programs that utilize data from each of the Community Index subcategories. While the City of Madison's differing goals and budgetary constraints will limit the potential to adopt some of these suggestions, these programs should be viewed primarily as potential options for the future and a means by which to learn about decision-making processes used by other communities.

Finally, we recommend that the City continue its emphasis on data availability and enhance both the quantity of data it provides publicly and the ease of use as the Neighborhood Indicators program expands.

Taken together, these recommendations provide a menu of best practices and avenues for further reflection and study that Madison's leadership can take into consideration as guidance for moving forward.

Introduction

Neighborhood environments have been shown to influence a wide array of outcomes for their residents, ranging from educational attainment to crime to employment. These outcomes, along with other intangible elements related to place and the persons within it, contribute to overall neighborhood well-being. Today, many cities across the country turn to data-driven programs to better understand their neighborhoods. Often in concert with nonprofit organizations and foundations, community groups, and universities, they gather data on indicators related to individual and community well-being. The analysis of this information is intended to provide insights into unique characteristics of neighborhoods and to highlight trends within neighborhoods over time and between neighborhoods. This, in turn, provides policymakers, community groups, and residents with a strong foundation from which they can develop and implement programs designed to address key findings and improve the overall quality of life in the community.

One notable recent data-driven initiative is the City of Madison Neighborhood Indicators Project. The Neighborhood Indicators Project was launched in 2007, after a period of significant public input regarding the specific roster of indicators. The Neighborhood Indicators Project is charged with focusing on the following four goals:

- Give the City of Madison a better understanding of City neighborhoods
- Assist the City in tailoring solutions to a neighborhood's particular needs or characteristics
- Define emerging trends over time
- Give the City early warning signs of stress so that problems can be addressed quickly, effectively, and less expensively

The project was not intended to serve as a substitute for local knowledge or the personal experiences of residents, but rather as a resource that could provide a more comprehensive view of neighborhood conditions. The UW-Madison Applied Population Laboratory (APL) currently provides data sets for the Neighborhood Indicators Project (City of Madison 2014).

In addition to making this information available to the public, the City of Madison seeks to utilize these data internally. Programs across the city, including the Neighborhood Resource Teams (NRT) program, take into account both the data provided by the APL and strong connections directly with residents to address systemic barriers, support neighborhood empowerment, promote equity, and improve quality of life for residents (City of Madison n.d.).

This report provides an assessment of Madison's neighborhood indicator data and discusses their capability to characterize Madison's neighborhoods and inform decision-making. In particular, it demonstrates how these data can be used to describe NRT focus areas and identify other geographies that might benefit from NRT programming. Although we find the neighborhood indicator data to be limited in their capacity to provide a holistic account of neighborhood well-being, we nonetheless seek to provide the City with a framework for using these data. Our analysis involves collapsing the dimensions of the data into a single indicator meant to represent well-being at the neighborhood level. We demonstrate how this indicator can enable program administrators to identify trends within areas currently receiving specially tailored services or to identify new areas with specific characteristics that may benefit from these or other targeted services. We discuss the merits and drawbacks of such an analysis and in doing so, hope to provide the City with the tools to replicate such an analysis in the future.

The report also outlines several best practices related to data collection and analysis from other communities. We highlight ways in which Madison could use these practices as a guide for developing a

more robust Neighborhood Indicators Project. Finally, we highlight several programs that other cities have implemented based on the findings of their own indicators projects, and provide insights into how Madison may use and benefit from similar initiatives.

Relevant Literature

The study of neighborhoods and their influence on outcomes for youths and adults is not a new phenomenon. For decades, social scientists have utilized the simple fact that people define themselves, in at least some fashion, by the areas in which they live. From this basic assumption, researchers and policymakers have looked to neighborhood-level studies and data to serve as the basic research unit of choice. The vast majority of these studies have found that individual outcomes, ranging from crime and violence, educational attainment, and employment and income, are correlated with a variety of neighborhood conditions and indicators. Below, we provide highlights from the literature about measuring neighborhood well-being and impacts before turning to approaches to analyzing Madison's NRTs.

History of Neighborhood Indicator Programs

While the roots of data-driven social indicator research can be traced to the early 20th century, the field gained significant momentum beginning in the 1960s (Kingsley 1999). Many social scientists felt that traditional economic indicators, such as the gross domestic product, did not accurately reflect what was happening in the United States at the local level. They theorized that a group of social indicators equally reliant on statistics (like health, poverty, mobility, education, and the physical environment) could supplement traditional economic indicators and allow government better tools to evaluate specific social programs and subsequently determine their impact (Bauer 1966; Dluhy and Swartz 2006).

These analysts tended to focus on units such as cities, counties, states, and even nations (Sawicki and Flynn 1996). However, in the early 1970s this analytic focus began to narrow down to the neighborhood level, due in large part to significant improvements in computer capacity and a marked shift in responsibilities for citizen socio-economic welfare from the federal level to the state and local levels. These trends have continued to the present day (Kingsley 1999; Sawicki and Flynn 1996).

Often, the major thrust of these research efforts on the local level was the collection of disaggregated information for specific interest groups and audiences, as well as the publication of profiles, needs assessments, and state-of-the-city report cards (Sawicki and Flynn 1996). The use of social and local neighborhood indicators grew in popularity nationwide throughout the 1970s, but the initial excitement over the analytic promise of these indicators may have led to some unrealistic expectations by both government and the general public.

The social-indicators movement declined in popularity in the 1980s, largely due to budget cuts and a lack of interest in the movement at the federal level, and the early period "top-down" national approach began to be replaced by a more "bottom-up" approach that focused on the use of indicators for improving the quality of life at the community level (Dluhy and Swartz 2006; Ferris 1988).

The use of social indicators increased again in the early 1990s, coinciding with a renewed focus on effective monitoring and accountability by the federal government. This focus crystallized in the passage of the Government Performance and Results Act of 1993, a bipartisan legislative effort that substantially expanded performance measurement, data collection, and reporting mandates to federal agencies (Kingsley 1999). State and local agencies also began to focus on performance management and data-driven analysis, aided by exponential improvements in computing capabilities at significantly lower costs.

This user-friendliness allowed a more diverse group of stakeholders to receive hands-on access to social-indicator analysis. Local social-indicator projects started to become more collaborative efforts involving state and city government officials, private-sector business leaders, community activists, academics and educators, church leaders, and everyday citizens who were concerned about the quality of life in their communities (Sawicki and Flynn 1996). This trend toward collaborative local efforts and neighborhood analysis projects has continued to the present day. In Madison, the emphasis on collecting information on neighborhoods through the Neighborhood Indicators Project and on an even smaller scale through the NRT program itself serves as an example of this trend.

Neighborhood Indicator Organizations

As neighborhood indicators programs have become more commonplace across the country, several institutions have arisen to support their development. Some indicator programs are managed by backbone organizations, put together to serve as repositories for information and to help highlight best practices from members. Others are run by philanthropic organizations and serve largely as funders for cities to develop or expand their data-driven efforts. Still others are organized and managed by local governments, as is the case with Madison's Neighborhood Indicators Project. We will highlight several of these organizations below.

National Neighborhood Indicators Partnership

One major contributor to neighborhood-indicator research has been the National Neighborhood Indicators Partnership (NNIP), founded in 1995. The NNIP, a collaborative effort by the Urban Institute and 35 local partner institutions, including regional or local government agencies, nonprofit organizations, universities, research centers, and foundations, strives to "further the development and use of neighborhood-level information systems in community-building and policymaking" (National Neighborhood Indicators Partnership 2015a). The NNIP partner institutions, and the NNIP as a convening organization, have been revolutionary not only in their methods for collecting, analyzing, and distributing quantitative data but also in their strong focus on qualitative data. Each of the partner institutions has a unique and robust method for collecting and utilizing these deeper sets of information, which makes them prime organizations for Madison to look to in developing and using its neighborhood-indicators data.

These types of projects can generate statistics that measure meaningful change in neighborhoods or across cities, evaluate the likely impact of existing or proposed policies on neighborhoods and residents, measure social inequality on a spatial basis, set goals for improvement, and highlight the role that the geographic mobility of residents plays in long-term neighborhood welfare (Sawicki and Flynn 1996). The NNIP's primary focus is on facilitating and encouraging the direct, practical use of this information by cities, community leaders, and the neighborhoods themselves, rather than the development of research reports.

Each partner institution represented by the NNIP has utilized neighborhood-indicator data to learn more about the communities in their jurisdiction. They are then able to collaborate with city governments as well as nonprofit organizations to develop and implement unique programs designed to meet the specific needs within these cities and their neighborhoods.

While the NNIP model is a useful and robust one to examine, it should be noted that in many cases its member institutions differ significantly from Madison's setup. Most notably, Madison's Neighborhood Indicators Project is a city-run entity. The majority of NNIP partners are non-governmental institutions whose employees are not directly affiliated with city government. These organizations collect data, conduct analyses, and partner extensively with other non-governmental and governmental partners to facilitate change. Madison is somewhat unique in that it has a partnership between the city and a public university to undertake these efforts. Though Madison staff members work extensively with non-

governmental actors, including nonprofit organizations, the fact that City government employees are at the forefront of this project is somewhat out of the ordinary.

Additionally, Madison has demonstrated a keen interest in analyzing data from areas smaller than what most NNIP partner institutions traditionally define as neighborhoods. The majority of NNIP institutions focus on areas encompassing an entire city, metropolitan area, or larger space (National Neighborhood Indicators Partnership 2015b). Although information is collected and analyzed by the APL on the traditional neighborhood level, Madison has also placed emphasis on smaller areas through the NRT program. These areas have much smaller populations, ranging from 500 to 2,000, and are not constrained by traditionally recognized neighborhood boundary lines or census block group boundaries (Soglin 2014). This difference is notable because it creates specific challenges to data collection for the City of Madison and it allows for significantly more targeted programs to be implemented.

Baltimore Neighborhood Indicators Alliance

Baltimore, Maryland, has been on the forefront of social-indicator research since the late-1990s. The Baltimore Neighborhood Indicators Alliance (BNIA), formed in 2000, serves as a prime example of how social-indicator research and data-driven management systems can guide and inform local policy. The mission of the organization was to provide a common way of understanding neighborhood changes and to democratize public neighborhood data by making community-based indicators available to anyone interested in moving the city in a positive direction (Burnstein and Iyer 2014).

In 2002, the BNIA published its first *Vital Signs* report. This comprehensive report tabulated local outcome indicators in a well-organized format that allowed community groups and citizens to see an integration of information that previously had been very difficult to obtain and visualize. This report has since been released on an annual basis by BNIA (BNIA-Jacob France Institute 2015). In 2010, the city of Baltimore announced plans for the Open Baltimore data portal, an effort meant to "provide, to the public, access to city data in an effort that supports government transparency, openness and innovative uses that will help improve the lives of Baltimore residents, visitors, and businesses through the use of technology" (Open Baltimore 2016).

Minnesota Compass

Another social-indicators backbone organization serving as a hub for data collection, analysis, and dissemination is the Minnesota Compass, an outgrowth of the 2008 Twin Cities Compass initiative. Minnesota Compass is a social-indicators project committed to giving all state residents a common foundation to identify, understand, and act on issues at the community level. It tracks data, identifies trends over time, and gives measureable and searchable information on 15 topic areas, including aging, children and youth, civic engagement, early childhood, education, environment, health, housing, transportation, and public safety. For each topic area on the Minnesota Compass website, there is an "Ideas at Work" section which shows various local and national strategies and initiatives, all backed by research and evaluation, that have been implemented by groups and municipalities (Minnesota Compass 2016a). For example, Compass provides a link to the Minneapolis Community Crime Prevention Program, which focuses on providing resources and tools to enable neighbors to engage in community policing and to develop internal neighborhood crime-prevention strategies (City of Minneapolis 2012).

Data and trends are searchable on a statewide level, over 7 Minnesota Initiative Foundation (MIF) regions, by all 87 counties, and for some selected larger cities. Expert advisory groups, with leaders from both the business world and academia, selected the key measures and indicators used by Minnesota Compass for each of the topic areas. The indicators are measured over time so that trends in the data can be easily identified. Minnesota Compass believes that identification of these trends can help groups and

municipalities in the state learn where they are today, inspire action to improve quality of life, and measure progress toward goals over time (Minnesota Compass 2016a). The initiative uses a variety of sources for data, including quantitative data from the U.S. Census Bureau, Minnesota Demographic Center, various State of Minnesota departments, as well as survey data from the U.S. Census Bureau's American Community Survey (Minnesota Compass 2016a).

What Works Cities

A more recent effort on the use of neighborhood indicators and data in the public sector is the What Works Cities (WWC) initiative, launched in 2015. Founded by former New York City Mayor Michael Bloomberg, WWC is a national initiative that will eventually help 100 mid-sized American cities enhance their use of data and evidence to improve services, inform local decision-making, and engage residents (What Works Cities 2016a). Bloomberg Philanthropies is partnering with a number of leading worldwide practitioners of evidence-based policymaking for the $42 million initiative, including the U.K. Behavioral Insights Team, the Harvard Kennedy School of Government, and the Johns Hopkins University Center for Government Excellence.

Currently WWC is partnering with 27 cities (including Milwaukee) in 18 states and is actively recruiting cities to join the initiative. WWC is looking to ensure their member list has a good cross-section of cities from all regions of the country that have local leadership focused on making better use of data, regardless of the extent to which they currently use data for evidence-based decision-making (What Works Cities 2016b).

The WWC initiative provides member cities with technical assistance, tools, and resources, and helps identify local challenges municipalities may have in using data as well as potential solutions (Gallagher 2016). Madison has been invited to participate in the What Works Cities program and will be able to take advantage of this technical assistance to build a strategic management framework connecting the way the city spends its money with the programmatic outcomes it seeks to deliver.

Defining Neighborhoods

The use of neighborhood data allows for policy makers to more easily discern particular patterns that may arise in small pockets of a community and thus address conditions in a more targeted manner. While city-wide averages of many indicators (for example, poverty) are typically easier and less expensive to collect and analyze, they do not necessarily reflect the realities experienced by all residents. Rather, in most cities, poverty is often concentrated in a smaller number of areas within a community and this concentration has increased in recent decades (Kingsley 1999). In order to direct city resources in a more effective manner, using neighborhood-level data is crucial.

As this research field has grown, the definition of the neighborhood has changed, both on paper and in practice. A neighborhood can be identified by census information or local knowledge of governmental boundaries, including police or school districts. While the use of these structural and physical boundaries is most common within social science and policy literature, additional considerations ought to be given to what they define as the "social-organizational characteristics" of neighborhoods. In order to measure these aspects of neighborhoods, which include things like neighbor willingness to intervene if children are delinquent and/or committing acts of vandalism, or the level of physical and social disorder (i.e., garbage piling up or abandoned cars in the neighborhood), researchers must look at a smaller scale than census tract levels. In these cases, the unit may be as small as the individual street on which a person lives (Leventhal and Brooks-Gunn 2000).

Though no immediate consensus exists on the proper definition of the neighborhood or the method by which researchers can accurately pinpoint the boundaries of any one neighborhood, the vast majority of

studies on the influence of these small communities have found significant correlations between their characteristics and the outcomes of their residents.

Neighborhood Impacts

Neighborhoods affect residents in different ways, depending on their life stage and family status. For example, it is likely that infants and small children are impacted in a limited manner by the neighborhood environment in which they are being raised because both their exposure to and comprehension of the environment and its benefits or potential deficiencies are similarly limited (Ellen and Turner 1997). These young children generally are much more influenced by their homes and family relationships. However, as they age, the influence of the immediate family decreases and the importance of neighborhood peers and adults grows (Berndt 1996; Ellen and Turner 1997). These peer influences and extended social networks are distinct mechanisms through which neighborhood conditions may influence individual outcomes, along with other neighborhood variables such as crime and violence levels, physical distance/isolation, and the overall quality of local services like public schools, available medical and child care, and community centers (Ellen and Turner 1997).

Theoretical arguments for the importance of neighborhood effects are supported by empirical research such as the Moving to Opportunity (MTO) experiment conducted by the Department of Housing and Urban Development in the mid-1990s. The MTO experiment offered randomly selected families living in high-poverty housing projects subsidized housing vouchers to move to lower-poverty neighborhoods. The experiment took place in five major U.S. cities: Baltimore, Boston, Chicago, Los Angeles, and New York. A recent analysis of data from the MTO experiment found robust evidence that children who moved to lower-poverty areas when they were younger than 13 were more likely to attend college and to have higher incomes as adults. These children were also more likely to live in better neighborhoods themselves as adults. MTO had little effect, however, on adults' economic outcomes and actually had a slightly negative effect on older children who moved, which suggests that neighborhood effects have a particularly significant impact on children earlier in life (Chetty et al. 2016).

Additional empirical support for the importance of neighborhood effects comes from the Panel Study of Income Dynamics, a longitudinal data set following 4,154 students and measuring neighborhood context for each student once per year from age 1-17. These data are able to detect the effects of different durations of neighborhood exposure by accounting for length of residence. One study found that sustained exposure to disadvantaged neighborhoods throughout a child's lifetime had a tremendously negative impact on high school graduation rates. According to the analysis, growing up in the most disadvantaged quintile of neighborhoods compared to the least disadvantaged reduces the probability of graduation by 20 percentage points for black children and 8 percentage points for nonblack children. This finding suggests that neighborhood effects are cumulative in their impact and impose a disproportionate burden on black families (Wodtke et al. 2011).

Ellen and Turner (1997) narrow the focus of neighborhood impacts on individual well-being down to three different mechanisms:

1. *Quality of local services*

The set of services available to a neighborhood varies considerably, and includes those institutions and services provided by government bodies, nonprofit partners, and private entities. The availability and quality of these resources has been found to correlate closely to outcomes for youth. For example, community centers, literacy programs, and family resource centers that allow parents and other caretakers

to provide learning experiences for their children have been found to improve educational attainment for youth (Ellen and Turner 1997). Public parks, sports leagues, and art programs provide an outlet and a space for adolescents to avoid riskier behaviors and instead focus on more positive activities (Ellen and Turner 1997).

The availability and quality of these local services and resources is not uniform across cities, including Madison. Residents in neighborhoods that are relatively isolated or lack these quality resources do not have the same opportunities as those in other areas better connected to high-quality services.

2. Socialization

Socialization teaches children what behaviors are considered "acceptable" and which are to be avoided. As children grow and become more aware of the neighborhoods in which they reside, both as a physical space and as a community, they internalize the social norms they witness (Ellen and Turner 1997). In a neighborhood in which there is a relatively high crime rate or little emphasis on education, a perception of these behaviors as normal or acceptable can be present (Ellen and Turner 1997). Additionally, these behaviors in older neighborhood youth can have a serious impact on younger children, as young children often look up to older youth. This again can perpetuate a cycle of negative outcomes.

3. Social networks

In many densely populated or largely isolated neighborhoods, community networks are established largely out of mutual trust, a desire for community safety, and other shared values. In those neighborhoods that are cohesive, studies have found that residents are more likely to look out for neighbors, care for them during hardships, and share information about the community or external opportunities (Sampson 1997). This spread of information is often by word of mouth. If few members of that community have extensive external networks, the influx of useful information, especially regarding social programs or economic opportunities is deeply impacted (Ellen and Turner 1997).

Expanding the networks of residents of a neighborhood and developing a strong communication network within the neighborhood may provide vital resources for expanded opportunities for the neighborhood's inhabitants as a whole. Additionally, by developing, articulating, and acting upon shared values that do not tolerate crime and violence, social networks within a community have been found to positively address a significant portion of the connection between social disorder and crime (Yang 2010).

Shortcomings of Measuring Neighborhood Impacts

Measuring the effects of neighborhoods on outcomes, using either census-tracts or smaller-scale boundaries, comes with some inherent difficulties. While overarching trends within neighborhoods can be found, these studies typically lack family- or individual-level data. These omitted variables are often difficult and time-consuming to collect; therefore, their collection and use remains infeasible for most academic studies and in practice. However, these unmeasured characteristics, including motivations, emotional and mental health, literacy, and more, could be significant factors that affect outcomes attributed to neighborhoods (Leventhal and Brooks-Gunn 2000). As a result, effects often attributed to neighborhoods are commonly overestimated.

One approach to mitigating some of these issues is to utilize randomized controlled trials (RCTs), generally viewed as the "gold standard" in social science research. RCTs involve forming two randomly selected groups, one of which receives a given treatment and one of which does not. The benefit of a randomized experiment is that the two groups should have nearly identical characteristics, except for the

treatment in question, meaning that any difference in outcome between the two groups is the effect of the treatment (Rossi et al. 2004). In this context, an RCT would mean randomly assigning some Madison residents to live in specific neighborhoods and others to live elsewhere, and examining any differences in outcomes for the two groups. While ideal for research, this proposal is ethically and practically infeasible. As a result, we highlight other, nonexperimental methods that may be used to characterize Madison's neighborhood characteristics and NRT program.

Despite these drawbacks, neighborhood impact measurements nonetheless provide valuable information to policymakers and practitioners. These measurements may allow for a rich quantitative and qualitative analysis that highlights both socio-economic impacts and community voice. Such neighborhood impact evaluations may therefore serve as a launching point for fostering strong mutual relationships between a city and its citizens. In the section that follows, we highlight approaches to analyzing Madison's neighborhood indicators data with an eye toward how they can be used to characterize neighborhood well-being and potentially be used to inform decision-making.

Approaches to Assessing Neighborhood Indicators

The following section will discuss both quantitative and qualitative approaches to analyzing neighborhood indicators. Quantitative analysis can be highly valuable in informing program construction and ensuring goals are met. Qualitative analysis better captures less-tangible measures of neighborhood change and enhances the validity of quantitative data. Taken together, these methods highlight both measurable outcomes and citizen perceptions and experiences, providing a rich characterization of neighborhoods.

Quantitative Analysis of Madison Neighborhood Indicators Data

As an example of how to engage in a quantitative analysis of neighborhood indicators, we perform a preliminary analysis of the City of Madison neighborhood indicator data. Although limited by data availability, we highlight ways the City can use its data to characterize neighborhoods and inform decision-making. In particular, we use the Madison NRTs as a case study for developing a composite index for the neighborhood indicator data. Although using such an indicator has limitations, we hope that our preliminary analysis will nonetheless provide the City with the tools needed to develop a similar indicator in the future or provide ideas about how to use the data it has.

Data

The APL houses demographic and socio-economic data for the City of Madison as a part of the Neighborhood Indicators Project. These data encompass key characteristics and indicators that relate to quality of life in the City of Madison and its neighborhoods. They come from a variety of national and local sources, including the U.S. Census Bureau, City of Madison Planning & Development Unit, and Madison Metropolitan School District. Data are regularly collected from these entities and updated annually on the APL website.[1]

For our analysis, the APL provided us with public-use data at the neighborhood and census block group levels to characterize geographies within the City of Madison, including NRT areas. The physical area of the NRT geographies is much smaller than census block groups. Although this challenged our ability to make direct comparisons between these geographies, the analysis that follows is nonetheless informative with respect to describing the relative well-being among areas of Madison.[2]

[1] The public-use APL Neighborhood Indicator Project data can be accessed online: http://madison.apl.wisc.edu/profile.php.

[2] Appendix B provides a detailed description of the APL data and its limitations.

The APL data are broken into subcategories: demographics and geography, housing quality and availability, public safety, health and family well-being, economic vitality, transportation, and community action and involvement. These subcategories were used as the basis for developing an index to describe various facets of well-being with City geographies. Appendix A lists the individual metrics contained in the APL data and provides variable definitions and sources.

Although the APL data span a large variety of metrics, several of the variables were suppressed. There were two main reasons for this. First, several of the indicators were suppressed to protect citizen confidentiality due to small population sizes or frequencies. Second, some of the block groups in the APL data extend beyond the City of Madison boundaries, as census block groups do not necessarily fit within City limits. As such, data for these areas may not be representative of the portion of the block group within the City itself. Because our analysis focuses on geographies within the City of Madison, metrics stemming from American Community Survey (ACS) data for block groups with less than 90 percent of their area within Madison boundaries were suppressed to avoid misrepresentation of the within-Madison portion of the geography.

The volume of suppressed data in the APL data set posed challenges for our analysis. Because of representativeness concerns regarding the portion of block groups within Madison boundaries, we restricted our analysis to block groups with at least 90 percent of their area within Madison City limits.[3] Furthermore, data suppression limited our ability to use raw frequencies and counts in our analysis, as these data are not publicly available out of confidentiality concerns.

Due to the large amount of suppressed data, we acquired quintile data for each indicator from the APL. These data were meant to substitute for the raw frequency data that are publicly unavailable. Each geography unit in the City of Madison was assigned a quintile value with respect to all NRT areas and census block groups.[4] Quintile scores range from 1 to 5, with 1 representing the bottom 20 percent and 5 representing the highest 20 percent of all geographies. Variables are coded so that higher quintile values are associated with a better performance on an indicator.[5] These quintile values were used as the basis of our analysis. Although this has limitations, as discussed below, we feel these quintile data are informative for measuring neighborhood well-being.

Data Analysis Methodology

The sections below highlight the methodology used to analyze the APL data for the City of Madison. To condense the wide array of APL data into a digestible format, we developed an index, the Community Index (CI), to characterize geographies within the city. This index is intended to serve as a quantitative measure of neighborhood well-being. As will be discussed below, the CI is not meant to serve as a stand-alone measure of success; rather, it is best used as one element of a broader quantitative and qualitative approach to capturing the quality of life in Madison neighborhoods. The sections below highlight the theoretical motivations for and outline the construction of the CI.

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[3] Four percent of block groups have less than 90 percent of their area within city boundaries.

[4] We acknowledge that pooling all NRT geographies and census block groups for the construction of quintiles has its limitations due to the different geographical areas of each unit. However, for purposes of this report, we deemed it worthwhile to move forward our analysis. In the future, the city might consider additional analyses with more comparable geographic areas. This is discussed in Appendix B.

[5] Appendix C provides a list of variables reverse-coded for our analysis.

Composite Indicators in the Social Sciences

Composite indicators such as the index we construct are frequently used in the social science literature to improve policy analysis and facilitate public communication. Analysts use indices to identify key trends in available data and compare the relative positions of the units being measured, from countries to neighborhoods to individuals. Composite indicators also provide a simple comparison that may be easier for the general public to understand than a series of separate indicators (Saltelli 2007).

Composite indicators offer a number of advantages for social scientists and policymakers. They allow multi-dimensional data to be compressed into a single summarized value, supporting decision-makers by reducing the number of indicators to digest without dropping the underlying information behind the variables that make up the index. The index can draw attention to trends over time and, by virtue of being readily understandable, can help ensure that the issues they relate to remain at the center of the policy agenda (OECD 2008).

However, composite indicators can offer misleading messages or invite overly simplistic conclusions. Any single measure of a broad concept such as neighborhood well-being may mask important trends or relationships among subcategories of the data. Composite indicators may also provide a biased picture of reality by failing to account for variables or dimensions of performance that are difficult to measure and therefore not included in the index. In summary, composite indicators have both advantages and disadvantages, and their features are determined by the craft decisions of the modeler rather than by strict scientific rules.

In constructing our index, we turned to the available literature on neighborhood composite indicators to justify the variables we chose. A sound theoretical framework is the first step in creating a composite indicator such as the one we use. A number of established area-level indices have been used by social scientists to evaluate area-level socio-economic status or neighborhood deprivation. Two widely utilized area-level indices, both developed in the United Kingdom, are the Townsend Material Deprivation Score and the Carstairs Deprivation Index. The Townsend Score, widely used in public health contexts, is constructed as the sum of the standardized log-proportions of total unemployment and households with more than one person per room, the proportions of households without a car, and of non-owner-occupied main residences (Townsend et al. 1987). The Carstairs Index, which was developed to help explain differences in mortality between regions in Scotland, England, and Wales, is constructed as the sum of the standardized proportions of total unemployment, of households without a car, of households with more than one person per room, and of blue-collar workers (Carstairs and Morris 1989). Although these indices have largely been used for public health applications rather than the broader neighborhood well-being concept we seek to measure, the variables they include offer an indication of what social scientists have found to be important in evaluating at least some dimensions of neighborhood well-being.

Another indication of which variables are important in determining neighborhood well-being can be found in an extensive literature review from the Journal of Urban Health in 2006. This review explored existing literature on neighborhood socio-economic status and racial disparities in birth outcomes. According to this review, poverty/income, racial/ethnic composition, education, employment, and occupation appeared consistently while housing/crowding and residential stability appear in a handful of studies (Messer et al. 2006).

One source of contention in the literature involves the best way to approach the relative weighting of indicators in a composite index. In fact, one key objection some social scientists level against the use of composite indicators is the seemingly arbitrary nature of this weighting process (Sharpe 2004). Analysts may choose to give certain indicators more or less weight depending on expert opinion, theoretical factors, or policymakers' preferences. There is no single "objective" way to assign weights to indicators. According to the Organisation for Economic Co-operation and Development (OECD), most composite

indicators rely on equal weighting, implying that all variables are worth the same in the composite. In the absence of consensus about which indicators are most important, some analysts weight variables to reflect the statistical quality of the data (for an example, see Messer et al. 2006). This technique can, however, create a bias toward the most readily available indicators, placing higher weight on those variables that are easier to collect and penalizing information that is more difficult to gather (OECD 2008). This bias can be avoided by using equal weighting, although it may be desirable to assign greater weight to certain indicators if there is a sound theoretical reason to do so.

Community Index Construction

The Community Index was constructed to synthesize the APL data into a single measure of neighborhood well-being. The CI score for a geography incorporates information about five subcategories of indicators in the APL data: housing quality and affordability, public safety, health and family well-being, economic vitality, and transportation. The metrics within each subcategory are listed in Table 1. We chose to use these subcategories to maintain consistency with the data published on the Neighborhood Indicators Project website so that individuals can easily match the indicator categories and findings with the public use data online. However, we were not able to incorporate the community action and involvement subcategory into the CI due to lack of available data. Furthermore, three of the economic vitality metrics

Table 1. Community Index Metric Categories

Housing Quality and Availability	Public Safety	Health and Family Well-Being	Economic Vitality	Transportation
Median Year Built	Crimes Against Persons	% Kindergarten Preparedness	% Economically Disadvantaged Students	% Area with Transit Stop Access
Average Housing Value	Crimes Against Property	Parent Education: % No HS/GED	Number of Basic Goods and Services (hospital, pharmacy, bank, grocery, child care)	Available Transit Service: Total Trips per Dwelling Unit
Square Foot Housing Value	Crimes Against Society	Parent Education: % College Graduate		% Households with Vehicle
Assisted Housing Units	Crashes	% High Mobility Students		% Bike Path Access
Property Foreclosures	Calls for EMS/Fire Service	% Term or Near Term Births		Pavement Condition
Community Pride Violations		% Appropriate Maternal Care		

Source: Applied Population Laboratory, 2014

– median household income, family poverty, and unemployment – were suppressed for the NRT areas. Therefore, we omitted these measures from the CI but instead included the percent of students from economically disadvantaged households as a proxy for poverty.[6]

In constructing the CI, we averaged the indicators within each subcategory, assigning equal weight to each, to create five subindices. This approach is in line with the OECD recommendations to follow an equal-weighting scheme when limited data are available (OECD 2008). We then averaged the five

[6] The percent of students from economically disadvantaged households is classified under health and family well-being in the APL data. However, we deemed it most fitting under the economic vitality category and reclassified it as an economic indicator for our analysis.

subindices to create an overall composite index. Our detailed methodology for constructing the CI is provided in Appendix C.

Identifying Similar Geographies

One of the requests of the City of Madison was to provide an analysis of block groups to identify additional geographies in the City that have needs based on the indicators in the APL data. However, the amount of data suppression limits our ability to perform a robust analysis; as such, this task is beyond the scope of this report. What we do provide here is an outline of steps the City could use to produce such an analysis in the future and a preliminary analysis of the APL data with respect to the comparison geographies we select here. The limitations of our analysis will be detailed in the discussion section.

Our analysis of the block group data centered on selecting geographies within Madison that are comparable to the NRT areas demographically. By looking at areas with similar demographics, we hoped to see how areas without NRTs fare compared to those with NRTs and use this as a launching point for future analyses involving the identification of best practices. Our intent is that by applying the index to these areas, policy makers and practitioners could get a feel for the neighborhood well-being in comparable areas of the City and use this to inform further development of the NRT program.

Selecting comparable neighborhoods within the City of Madison is challenged by the changing demographics of the City and diversity of neighborhood characteristics. Furthermore, the metrics for originally selecting NRT areas do not strictly align with the data we have at our disposal. The NRT focus areas were identified based on economic data, housing quality, building inspection calls, and police calls, though these data were not available in raw form to allow for selecting comparison geographies in a similar manner. Additionally, a large amount of discussion among City leaders and citizens went into choosing these NRT focus areas, something we cannot replicate ourselves. However, we do know that the NRT areas have been characterized as having distinctive demographic trends, so we focused on these aspects of Madison geographies in selecting comparison neighborhoods.

In selecting comparison geographies, we focused on areas experiencing similar demographic shifts as the NRT focus areas between the 2000 and 2010 censuses. We chose not to select areas based on the social and economic factors included in the CI so as not to bias our subsequent analyses of these geographies once we applied the CI to them. Furthermore, the suppression of many of these factors limits our ability to do so. As such, we chose solely to rely on demographic features in selecting comparison geographies. We emphasize that these demographic features are not meant to be proxies for social or economic well-being. Our intent was that by selecting geographies with a similar demographic profile as the NRT areas, we could apply the CI to these areas as an exercise in seeing how they are characterized.

For our comparison geography selection, we looked for areas experiencing similar changes in population and minority composition as the NRT areas between 2000 and 2010 (Table 2). Because NRT focus areas are smaller in size than census block groups, we chose to focus on percent change between these two time points instead of raw numbers so that trends in demographic composition were the basis of our selection rather than raw population numbers.[7] We then selected geographies within 10 percentage points of the aggregate NRT change on these measures.[8] As a whole, the NRT areas experienced a 3.0 percent

[7] It is worth noting that identifying similar areas by looking at percent change can be affected by geographies with small populations, in that a slight increase in population in an area with relatively few residents would yield a larger percent increase than an area with more residents.

[8] We also tried restricting our ranges to geographies within 5 percentage points of NRT neighborhoods, but no block groups met these criteria. Additionally, we attempted selecting geographies based on the change in the share of female-headed families with children, in addition to changes in population and nonwhite residents, but only two block groups fell within 10 percentage points of the NRTs on all three categories. These geographies are 0004071 and 0004072, which overlap with the Hammersley-Theresa-Bettys Lane and Park Edge-Park Ridge NRTs.

population reduction between 2000 and 2010 and a 51.6 percent increase in the proportion of non-white residents; therefore, our comparison geographies experienced between a -13.0 percent and 7.0 percent population change and 41.6 percent and 61.6 percent change in the share of nonwhite residents.

Table 2. NRT Demographic Change, Versus City Average

	All NRTs			Madison City		
	% Change[1]	2000	2010	% Change	2000	2010
Population	-3.0%	798	774	11.4%	208,859	232,663
% Pre-School Age (Age 0-4)	36.8%	8	11	11.7%	5.2	5.8
% Youth (Age 0-17)	21.8%	30	37	-2.6%	17.9	17.5
% Senior (Age 65+)	-29.5%	5	3	4.1%	9.2	9.6
% White	-43.5%	54	31	-7.6%	81.9	75.6
% Non-White	51.6%	46	69	34.3%	18.1	24.4
% Black or African American	68.9%	25	42	22.3%	5.8	7.1
% Hispanic or Latino	88.4%	9	16	65.3%	4.1	6.9
Total Households	-5.5%	319	302	14.2%	89,574	102,252
% Family Households	14.4%	55	62	-2.1%	47.7	46.7
% Female Headed Families with Children	55.7%	17	26	5.4%	5.0	5.3
% Owner Occupied Homes	-14.2%	19	17	3.7%	47.5	49.3

Source: Applied Population Laboratory, 2014

[1]NRT change represents aggregate NRT change. For example, population change represents the change in the entire NRT population from 2000-2010, not the mean of the individual NRT changes. Percent change is calculated as: % change = (2010 value - 2000 value) / 2000 value.

Nine census block groups fit these criteria; however, four of these comparison geographies overlapped with NRT areas.[9] To avoid contaminating our subsequent analysis, we excluded these areas from our comparison group.[10] This left us with five comparison geographies,[11] which are listed in Table 3 and geographically displayed in Figure 1. Two of these comparison geographies are in north Madison, which is home to four NRTs. The remaining three comparison geographies are in areas of Madison with no nearby NRTs.

Table 3. Comparison Geographies[1]

Geography[2]	Population Change	Percent Non-White Change
0002051	-11.1%	46.2%
0009011	-0.3%	54.9%
0016044	-6.6%	58.2%
0025002	6.5%	44.7%

[9] These census block groups overlapped with the Hammersley-Theresa-Bettys Lane, Park Edge-Park Ridge, and Leopold NRTs.

[10] Each of the four omitted comparison geographies was in south Madison. Restricting these areas from our comparison group left us with no comparison geographies near the six NRTs on the south side of the city.

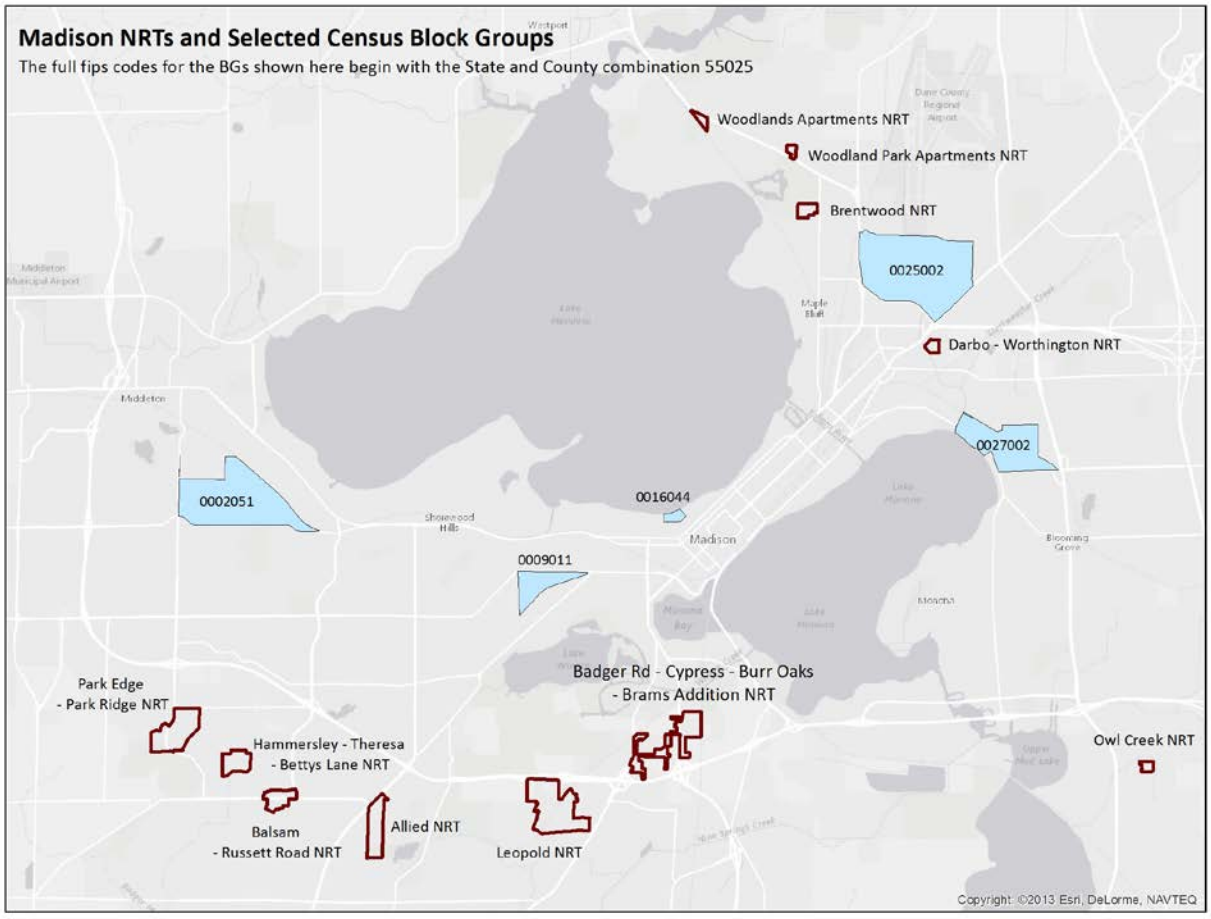
[11] Our data contained 177 census block groups, so the five comparison geographies represent 3 percent of all block groups in the data.

0027002	-2.0%	42.0%
All NRTs	-3.0%	51.6%

Source: Applied Population Laboratory, 2014.

[1]Table represents geographies within +/- 10 percentage points of the aggregate NRT change on both population and percent nonwhite between 2000 and 2010, i.e. areas that experienced a -8.0-2.0% population change and a 46.6%-56.6% change in the proportion of nonwhite residents.
[2]The first six digits of the comparison geography code represent the census tract code for an area, and the last digit represents the census block.

Figure 1. Map of Comparison Geographies



Source: Applied Population Laboratory, 2016.

Findings

Descriptive Statistics

Table 4 displays the general demographic and socioeconomic descriptive statistics for the NRT geographies, City of Madison as a whole, and the comparison geographies. Appendix D provides detailed descriptive statistics for each NRT geography separately. According to 2010 U.S. Census figures, 69.0 percent of all NRT area residents are non-white, compared to 24.4 percent of all Madison residents and 18.1 percent of residents in the comparison geographies. NRT areas also tend to be younger than the Madison City at large and comparison areas. Furthermore, NRT areas have a higher proportion of single

mother families with children than Madison and comparison areas (26.0 versus 5.3 and 3.7 percent, respectively) and a lower proportion of owner-occupied homes (17.0 versus 49.3 and 58.2 percent, respectively).

Table 4. Aggregate NRT Descriptive Statistics[1]

	All NRTs	Madison City	All Comparison Geographies
Demographics (2000)			
Population	798	208,859	1,270
% Pre-School Age (Age 0-4)	8	5.2	4.3
% Youth (Age 0-17)	30	17.9	17.0
% Senior (Age 65+)	5	9.2	9.2
% White	54	81.9	87.8
% Non-White	46	18.1	12.2
% Black or African American	25	5.8	3.8
% Hispanic or Latino	9	4.1	3.5
Total Households	319	89,574	519
% Family Households	55	47.7	48.1
% Female-Headed Families with Children	17	5.0	3.8
% Owner Occupied Homes	19	47.5	57.4
Demographics (2010)			
Population	774	232,663	1,213
% Pre-School Age (Age 0-4)	11	5.8	4.9
% Youth (Age 0-17)	37	17.5	15.3
% Senior (Age 65+)	3	9.6	10.0
% White	31	75.6	81.9
% Non-White	69	24.4	18.1
% Black or African American	42	7.1	3.9
% Hispanic or Latino	16	6.9	6.6
Total Households	302	102,252	527
% Family Households	62	46.7	46.1
% Female-Headed Families with Children	26	5.3	3.7
% Owner-Occupied Homes	17	49.3	58.2

Housing Quality and Availability			
Median Year Built	1972	1972	1963
Average Housing Value ($)	149,756	240,319	226,604
Square Foot Housing Value ($)	(2)	127	113
Assisted Housing Units	96	6,416	4
Property Foreclosures	(3)	N/A	(3)
Community Pride Violations	31	3,072	16
Public Safety			
Crimes Against Persons	19	1,767	4
Crimes Against Property	51	9,582	41
Crimes Against Society	109	9,474	18
Crashes	20	10,897	16
Calls for EMS/Fire Service	193	25,210	139
Health and Family Well-Being			
% Kindergarten Preparedness	(1)	85.5	(3)
Parent Education: % No HS/GED	(1)	6.3	(2)
Parent Education: % College Graduate	(1)	52.6	(4)
% High Mobility Students	(1)	15.0	(2)
% Economically Disadvantaged Students	(1)	46.4	(3)
% Term or Near Term Births	(3)	98.2	(4)
% Appropriate Maternal Care	(1)	93.1	(4)
Economic Vitality			
Median Household Income	.	53,464	67,493
% Families in Poverty	.	9.3	22.6
% Unemployed	.	6.3	6.4
Hospital?	0	1	0
Pharmacies?	1	1	1
Banks?	1	1	1
Groceries?	1	1	1
Child Care?	1	1	1
Sum of Basic Goods and Services	4	5	4
Transportation			
% Area with Transit Stop Access	100	63.7	88.1
Available Transit Service: Total Trips	509	12,468	1,056
Available Transit Service: Total Trips per Dwelling Unit	1.5	0.1	2.3
% Households with Vehicle	.	87.2	85.8
% Bike Path Access	69	80.9	90.6
Pavement Condition	7.1	6.6	6.5

Source: Applied Population Laboratory, 2014

[1]Table provides descriptive statistics, when available. Bracketed values indicate quintile scores, and period symbols indicate missing data for a particular metric.

Data-availability constraints limit the ability to compare directly NRT areas with City and comparison averages on the housing, public safety, health and well-being, and economic dimensions. However, the

City has rich transportation indicator data, which reveal that NRT areas have on average greater access to public transit, though fewer NRT households have bike path access.

CI Results

The average CI score for NRT areas was 2.3 (Table 5), with a low value of 1.7 for the Park Edge-Park Ridge NRT and a high value of 2.9 for Owl Creek. All NRT CI scores were below the City average of 3.0.[12] In contrast, CI scores for the nine comparison geographies ranged from 2.6 to 4.2, with an average score of 3.4.

Table 5. Community Index Results

	Housing	Public Safety	Health & Family Well-Being	Economic Vitality	Transportation	Composite
NRT Areas						
Allied	2.2	1.6	1.2	2.0	4.0	2.2
Badger Rd-Cypress-Burr Oaks-Brams Addition	1.5	1.0	1.3	2.5	3.0	1.9
Balsam-Russett Road	2.2	1.6	1.2	2.0	3.8	2.1
Brentwood[1]	2.0	2.6	1.8	1.5	3.5	2.3
Darbo-Worthington	2.7	3.6	1.8	1.5	2.5	2.4
Hammersley-Theresa-Bettys Lane	2.2	3.2	1.5	1.0	2.8	2.1
Leopold	2.2	1.0	1.7	2.0	3.5	2.1
Owl Creek	3.5	4.6	2.2	0.5	3.5	2.9
Park Edge-Park Ridge	2.2	1.0	1.3	1.5	2.5	1.7
Woodland Park Apartments[1]	3.0	4.0	1.7	1.0	4.3	2.8
Woodlands Apartments[1]	3.2	4.6	1.8	1.0	3.5	2.8
NRT Average	*2.4*	*2.6*	*1.6*	*1.5*	*3.3*	*2.3*
Comparison Geographies[2]						
0002051	3.3	4.2	4.8	3.5	1.8	3.5
0009011	4.0	4.8	4.3	4.0	4.0	4.2
0016044	2.8	2.8	4.0	2.0	4.0	3.1
0025002	2.8	2.2	1.8	2.5	3.5	2.6
0027002	2.5	3.6	3.7	4.0	3.3	3.4
Comparison Geography Average	*3.1*	*3.5*	*3.7*	*3.2*	*3.3*	*3.4*

Source: Applied Population Laboratory, 2014.
[1]Brentwood, Woodland Park Apartments, and Woodlands Apartments belong to the same NRT, though data are available for these three individual areas. We provided CI scores for the three areas separately.
[2]The first six digits of the comparison geography code represent the census tract code for an area, and the last digit represents the census block.

[12] Recall that, by construction, a CI score of 3.0 represents the average quintile value. As such, geographies scoring below 3.0 are below the city average for the CI, while those scoring above 3.0 are above average.

The NRT scores lagged behind those of the comparison geographies on all subcategories except transportation, which was equivalent for the two groups: the average housing subindex scores were 2.4 and 3.1 for the NRTs and comparison geographies, respectively; 2.6 and 3.5 for public safety; 1.6 and 3.7 for health and family well-being; 1.5 and 3.2 for economic vitality; and 3.3 and 3.3 for transportation.

The NRT areas significantly lagged behind the comparison geographies on health and family well-being and economic vitality. Recall that the economic vitality subindex incorporates information about the number of basic goods and services in a neighborhood and the percentage of students from economically disadvantaged households. As such, this score discrepancy suggests that the residents in NRTs are less connected to economic services and are living in poorer communities.

Discussion

The following section provides a discussion of the CI findings with respect to the five subcategories of indicators. Here, we detail what can be gleaned from the metrics used to construct the CI and its subindices. We discuss the limitations of interpreting the raw CI scores and use this information as a launching point for recommendations for the City about how to bolster its neighborhood indicators data.

Housing Quality and Affordability

The housing quality and affordability subcategory includes data from six indicators: median year built, average housing value, square-foot housing value, assisted housing units, property foreclosures, and community pride violations (see Table 1). The category of "community pride violations" is rather unique; City of Madison Building Inspection Unit staff familiar with Madison neighborhoods have selected several types of property maintenance and zoning violations that they believe meaningfully impact neighborhood well-being. These violations include graffiti, parking on lawns, inoperable vehicles, trash carts, and weeds/overgrowth. While some of these violations may seem trivial, unit staff note that they have historically been associated with other neighborhood challenges (see Appendix A).

As might be expected, average housing values for NRT areas are well below the City average, at $149,756 for NRT areas compared to $240,319 for the city. The NRT areas also accounted for approximately 11 percent of all community pride violations despite representing only about 2 percent of the city's population. The median year built for housing in the NRT areas is actually identical to the median year for the City in general, at 1972, although there is significant variation among NRT areas on this measure. As such, the CI scores for this subindex for NRT areas also fell below the City average of 3.0. The NRT areas scored 2.4, suggesting they fare more poorly than the City average of 3.0 (Table 5). The comparison geographies also scored better than the City average on this measure, receiving a CI value of 3.1, suggesting better aspects of housing quality in these areas.

Although the CI incorporates a fair amount of data on housing quality and affordability, some concerns and limitations remain. For example, because community pride violations can originate from planned surveys and inspections of certain areas, it may be that areas receiving more frequent planned inspections have artificially high violation rates. Accounting for this factor may make community pride violations a more meaningful measure of neighborhood well-being. Additionally, data for square-foot housing values and property foreclosures are available only in quintile form due to data suppression. Finally, there may be concerns with incorporating the median year built of housing into the CI. Although this metric reflects the age of a housing stock, it may not reflect the condition of the housing. Many Madisonians live in refurbished older homes in more affluent neighborhoods, while others live in older housing units in subpar condition. As such, this metric is best interpreted with respect to the average wealth or affluence of a neighborhood.

Public Safety

The public safety subcategory of the CI includes five indicators: crimes against persons, crimes against property, crimes against society, crashes, and calls for EMS/Fire Service (see Table 1). These crimes are measured by the number of incidents reported to the Madison Police Department, which are georeferenced by the APL based on the addresses associated with the incidents. Not all incidents can be successfully matched to a geography due to flaws in geocoding services and missing details in some police reports, but in 2013 over 90 percent of incidents were successfully geomatched (see Appendix A). Six NRT areas were in the bottom two quintiles of the CI with respect to the overall public safety score, although Owl Creek, Woodlands, and Woodland Park were actually in the top quintile, bringing the overall CI measure for the NRT areas up to a 2.6, just below the City average of 3.0. In contrast, two of the five comparison areas fared worse than the City average, with the comparison geographies receiving an average score of 3.5 (Table 5).

Although the number of crimes, crashes, and calls for emergency services are important measures of neighborhood well-being, these data should still be interpreted with caution. Crime reports can, in some circumstances, offer a misleading interpretation of community well-being. For example, a neighborhood such as State Street might have particularly high rates of crime reports or emergency calls due to its status as an entertainment and nightlife center for the City, but this does not necessarily make it a particularly dangerous or unlivable neighborhood. It is important to keep geographical context closely in mind when considering public safety statistics.

Health and Family Well-Being

The health and family well-being subcategory includes seven indicators, each of which is measured as a percentage and is available only in quintile form. These indicators are: kindergarten preparedness, parents with no high school degree, parents who are college graduates, high mobility students, economically disadvantaged students, term or near-term births (after the 32nd week of gestation), and appropriate maternal care (see Table 1). Several of these terms require unpacking. “Kindergarten preparedness” is measured as the percentage of kindergarteners who met the fall Phonological Awareness Literacy Screening performance benchmark, summarized from 2012-15. “High mobility students” are public school students with two or more between-school transfers in the last three years, reflecting frequent moves from neighborhood to neighborhood. These variables were created and measured by the Madison Metropolitan School District. “Appropriate maternal care” is defined as receiving prenatal care that began by the end of the fourth month of gestation and included at least 80 percent of visits recommended by the American College of Obstetricians and Gynecologists.

These data are unfortunately available only in quintile form due to suppression. For nearly all health and family well-being indicators, the NRT area average was in the bottom quintile, meaning that NRT area students were less likely than the City average to be prepared for kindergarten or have parents with high school degrees and more likely to be economically disadvantaged or move frequently. The NRT area average is in the middle quintile only with respect to the indicator for term or near-term births. The NRT geographies fared much worse than the comparison geographies on their CI scores for this subcategory, with the NRTs scoring 1.6 and the comparison areas 3.7 (Table 5).

On a conceptual level, this health and family well-being subcategory contains two broad categories of information: education measures and health measures. With sufficient data, these two domains could be split into stand-alone categories. However, in its current state, four of the six metrics in this subcategory are related to education. Due to the equal weighting construction of the CI, interpretation of these subindex scores is biased toward education measures.

Economic Vitality

The economic vitality subcategory includes two pieces of information: the percentage of students from economically disadvantaged households and the number of basic goods and services in or near the neighborhood (see Table 1).[13] The APL also houses unemployment rate, percentage of households in poverty, and median household income indicators in this subcategory, but these data are not available for the NRT areas and were left out of the CI. The NRT areas on average fell at 1.5 with respect to this economic vitality subindex, whereas the comparison geographies scored 3.2 (Table 5).

Our measure of economic vitality faces two major limitations. First, the absence of data on unemployment rate, median family income, and percentage of families in poverty eliminates important measures of neighborhood well-being. In the social science literature, indices such as the Carstairs Index or the Townsend Index that seek to measure social well-being typically include poverty or unemployment as an important variable. Fortunately, we do have access to the percentage of economically disadvantaged students in the school district, at least in quintile form, which likely tracks closely with family poverty.

Second, the indicator for the number of basic goods and services, while useful, is far from a complete measure. This indicator accurately measures whether one of the services in question is located within a quarter mile of the NRT (see also Appendix A), but the indicator is not able to measure whether the service is truly affordable or otherwise available to NRT residents. Measuring the availability of hospitals is particularly difficult, and due to the variety of factors such as insurance status that mediate ability to access health care, the geographic location of a hospital is only a crude measure of its true availability to the local population. Additionally, it may be useful for this subcategory to include a variable measuring "undesirable" economic services, such as check-cashing businesses, payday lenders, or liquor stores, in order to provide a more complete measure of the economic vitality of the area.

Transportation

The transportation subcategory includes six indicators: percentage of area with transit-stop access, total trips available, total trips per dwelling, percentage of households with a vehicle, percentage of area with bike path access, and pavement condition (see Table 1). Bike path access is measured as the percentage of housing units within a half mile of a bike network segment, while transit-stop access is measured as the percentage of land area within one-quarter mile of a regular transit stop. Total trips available is defined as the total number of scheduled transit stops that would allow a passenger to board over a one-week period. Pavement condition is measured based on the UW Pavement Surface Evaluation and Rating (PASER) system, where 10 represents the best condition, measured for all city-maintained street segments within or adjacent to the area in question .

The transportation subcategory was the area where Madison's NRT areas performed the strongest, with an overall average quintile score of 3.3, slightly above the City average. The comparison geographies also scored 3.3 (Table 5). This impressive performance was driven in part by the extensive transit stop access in the NRT areas, with nearly 100 percent of NRT land area within one-quarter mile of a transit stop. Pavement condition in the NRT areas is also rated slightly above the City average, with an average UW PASER score of 7.1 compared to a 6.6 for the city. Data on percentage of households with a vehicle was not available and is not reflected in this score.

Although the relatively high scores of NRT areas in the transportation subcategory are encouraging, these results must be interpreted with caution. While NRT areas seem to have access to a large number of

[13] The number of basic goods and services in a neighborhood is a summation of indicators for the presence of a hospital, pharmacy, bank, grocery store, or child care center in or near a neighborhood.

transit stops, these data do not shine light on the average length of transit trips, number of transfers required to reach certain parts of the city, level of crowding on buses, or financial burden of purchasing transit passes. Geographical proximity to transit stops is a necessary but not sufficient condition for a transit system to be truly accessible, and factors such as those listed above play an important role in mediating transportation accessibility.

Limitations

The quantitative analysis we perform here has several limitations, many of which have been mentioned above. As discussed previously, we were limited by the quality of the APL data. The amount of data suppression posed an ongoing concern throughout our analysis, and we have attempted to be as explicit as possible about how this has limited what we can ascertain about well-being in Madison neighborhoods from the data we were provided.

The CI findings presented above provide a framework for quantitatively characterizing NRT areas. Such data analysis, however, cannot fully capture quality of life within an area, so we caution against relying solely on the CI to define the NRT areas. Much of our data analysis was limited by the availability of public-use data on the NRT areas and census block groups within the City of Madison. Each of the five CI subcategories contains information only about the metrics with unsuppressed data. For example, in its current state, the CI's economic vitality subscore contains information only about the presence of basic goods and services within a particular geography and uses the percentage of economically disadvantaged students as a proxy for poverty. This subscore value would be more informative if data were available for other economic domains, especially income, poverty, and unemployment. Additionally, the community action and involvement subcategory of the APL data could not be incorporated into the CI due to data suppression. As such, the index fails to convey information about important aspects of citizen engagement, namely voter turnout.[14]

The equal weighting construction methodology attempts to minimize the bias in the CI with regard to data availability. However, because the public safety and transportation subcategories are defined by the most metrics, these dimensions are inherently overrepresented in the CI. By incorporating more metrics into each index subcategory, the CI would provide richer information about the relative well-being of Madison's communities on each of these domains. Furthermore, obtaining time-series neighborhood data from the last several years would allow for constructing a series of CIs that would allow for highlighting trends in NRT areas over time.

Additionally, our CI construction relied on quintile data, which while informative, only capture relative comparisons between areas instead of raw information. This restricts the interpretation of CI values to their distance from the average value of 3.0, in which scores below 3.0 represent areas faring worse than the City at large. Additionally, such an index construction limits the ability to monitor aggregate improvements among NRT areas. For example, if the City were to invest substantial resources to improve health and family well-being in NRT areas but other geographies within the City of Madison remained unchanged on these measures, the quintile values for the NRTs may or may not change depending on the scale of the improvement relative to the rest of the city. Although the NRTs would witness positive improvements on this measure, such effects might not be captured by the CI.

Despite its limitations, the CI is nonetheless a useful tool both for policy analysis and for public communication and discussion about neighborhood well-being. The CI is intended to serve as a starting

[14] Citizen engagement is difficult to characterize with quantitative measures and would be better ascertained through qualitative surveys and interviews. See our recommendations section of the report for additional details.

point for describing NRT areas, which the City may choose to augment with more qualitative data at a later date, use internally to track trends in the available data, or share as a public resource. The City could follow our CI framework to construct its own index based on the restricted data. This alternate index construction would necessitate standardizing the raw data before averaging them into a composite index. Subindex scores may not be reportable, though, due to the restricted nature of the data. It may nonetheless be worthwhile to construct a standardized index measure for internal purposes that can be used to capture NRT well-being and better depict changes over time.

More qualitative data systematically gathered from interviews, surveys, or other sources would enhance the validity of the CI and shine more light on aspects of well-being not captured by the available data. Additionally, if the City were to gather and code additional survey data, it could incorporate these data into an index using a similar method as outlined above. Such an analysis would allow the City to collapse qualitative findings into a digestible measure of well-being. Ideas about which data to collect are provided in the recommendations section of this report.

Furthermore, we attempted to be as robust as possible in our analysis comparing NRT areas with comparison geographies. However, we caution against drawing direct comparisons between these two groups. As previously discussed, our selection methods for identifying comparison areas did not perfectly parallel how the NRTs were originally selected. Although we attempted to mimic the NRT selection process by identifying areas experiencing similar demographic trends, our selection methods do not capture the intangible elements that went into choosing the NRTs, such as discussions and deliberations among City personnel. Our methods rely only on demographic changes between two time points and do not intend to include measures highlighting aspects of social or economic well-being.

Additionally, the limitations in the CI itself become especially important to consider when attempting to compare City geographies. One must take care to recognize the flaws of the CI and understand what it does and does not measure when comparing certain facets of neighborhood well-being. Although the comparison geographies scored on average better than or on par with the NRT areas on all subscores, one must consider that data availability and the measures that went into the CI may be driving these outcomes instead of more holistic aspects of well-being. As such, our comparison geography discussion best serves as a template for future analysis. Our methods exemplify the general approach to selecting similar areas, but this exercise is best done with more robust data so that the City can more fully mimic the NRT selection process.

Finally, on a conceptual level, characterizing the well-being of neighborhoods in the City would be best performed through a geospatial analysis. Although neighborhoods are defined by physical boundaries, the availability of and access to goods and services often extends beyond these areas. For example, residents in a particular neighborhood without a grocery store may be able to access a store in a nearby neighborhood relatively easily due to efficient public transportation. Such information is not captured by the APL data. While these data indicate the presence of community services in particular geographies, they cannot convey how these services are connected from one area to the next. Furthermore, our limited knowledge of and familiarity with these geographic units in the City inhibited our ability to perform our analysis with a certain spatial reference or intuition. In the future, the City may consider collaborating with partners at APL or other individuals familiar with geospatial analysis in further examining well-being within Madison’s neighborhoods.

Qualitative Approach

Neighborhood indicator and other programs focused on the collection of information and direct-service provision to specific areas depend on data to assess strengths and needs and to make determinations about focus areas, programs, and resource allocations. While quantitative data is a crucial element in these analyses, it is not sufficient. The use of qualitative data creates a more robust understanding of the

characteristics of neighborhoods, characteristics that may not be readily apparent simply through an examination of quantitative data. This section provides some qualitative best practices from other cities and organizations that the City of Madison can draw from to better inform decision-making at the neighborhood level.

Collecting Qualitative Data

The neighborhood indicators programs referenced in the above literature review – NNIP, Baltimore Neighborhood Indicators Alliance, and Minnesota Compass – each utilize different data-collection processes to gather information about the well-being of their cities. These include a range of tools, questions, communication strategies, storage methods, and dissemination tactics. The data collected by these systems comes from three primary sources: U.S. Census data, administrative records collected and maintained by public agencies, and special surveys or other methods to collect qualitative data (Kingsley 1999).

The various NNIP partner institutions, Baltimore Vital Signs, and Minnesota Compass utilize the first two of these sources in similar manners. While not all institutions collect the same data, the majority of sites include vital statistics (including birth and death information), police and crime data, statistics on public assistance program uptake, school and educational attainment data, tax and property value information, and building code violations (Kingsley 1999; BNIA 2015; Minnesota Compass 2016a). This information provides descriptive information about each area being assessed but does not address many underlying factors and characteristics of a neighborhood, especially as seen through the eyes of its residents.

Resident Surveys

Resident surveys are one tool commonly used by cities to collect supplemental quantitative and qualitative data for analysis and measure the effectiveness of neighborhood initiatives. Often, these resident surveys are rooted in the concept of informal social control and closely related to the crime-prevention theory known as *collective efficacy*. Developed by sociologist Robert J. Sampson in the 1990s, collective efficacy emphasizes shared beliefs in neighbors' joint capability for action to achieve an intended effect and focuses on the linkage of trust and cohesion with shared expectations for community control. Without this trust and these shared expectations, people are unlikely to take actions promoting social control in a neighborhood context (Sampson and Raudenbush 1999). It follows that successful neighborhood initiatives could raise these levels of collective efficacy and influence purposive resident actions.

The organizations conducting these surveys and their target audiences vary. For example, the Minnesota Compass project utilizes responses from the Minnesota Student Survey, conducted every three years by a multi-agency team including members from the Minnesota Departments of Health, Education, Human Services, and Public Safety (Minnesota Center for Health Statistics n.d.). In addition to basic demographic information, it seeks to gather additional information to shed light on many issues that common quantitative studies would not reach. For example, while student drop-out rates are available through administrative data, the Minnesota Student Survey asks students to provide information that may provide insights into why a student would leave school, including how important they see education being, whether they feel safe and supported by adults in their school environment, and whether there are outside activities they participate in to enhance or supplement their educational experiences (Oehrlein and Kinney 2013).

The City of Baltimore has also focused on the collection of qualitative survey information. After the release of the first *Vital Signs* report in 2002, BNIA organized a series of focus groups consisting of

neighborhood residents, policymakers, and community leaders from all neighborhoods in Baltimore. During these focus group sessions participants were asked to answer two major questions:

1. If you knew you would leave your neighborhood and would come back in 10 years, what is the vision you would want to see?
2. What will tell you we are successful in getting there? What are the indicators and measures that will tell us we are moving in the right direction? (BNIA 2014)

By asking these questions, BNIA attempted to challenge stakeholders to think differently about the future of their neighborhoods and to build consensus on long-term neighborhood goals and the indicators that were most important relative to specific topic areas (BNIA 2014). This effort to engage residents and obtain community input has remained an important focus of the organization up to the present day (BNIA-Jacob France Institute 2015).

This type of information provides policymakers and administrators with a deeper dive into what may be underlying causes for the quantitative data they are collecting and can provide guidance as to the kinds of programs that could address these issues. Additionally, by breaking down the information regionally, policymakers will have a better understanding of those areas where programs would be most effective or most impactful.

Currently, the Wisconsin Department of Public Instruction conducts a biennial Wisconsin Youth Risk Behavior Survey in conjunction with a national effort by the U.S Centers for Disease Control and Prevention. It provides similar insights to those gleaned by the Minnesota Student Survey, including a deeper dive into the underlying activities, preferences, and attitudes of students across the state (Wisconsin Department of Public Instruction n.d.). However, the data collected from this survey is available only on at the state level, which does not meet the needs of Madison's Neighborhood Indicators Project. A further breakdown of the data at a micro-level could be a useful tool in gaining a richer picture of Madison's students and the neighborhoods in which they live.

Surveys of adult residents that seek to gain further insight into less-easily quantified characteristics of specific areas are also a commonly used tool for neighborhood-indicator and well-being programs. One nearby neighborhood-based organization that utilizes this type of resident survey to measure collective efficacy levels is the nonprofit Safe & Sound program in the City of Milwaukee. Safe & Sound was developed initially as a pilot program from the recommendations of a City of Milwaukee task force on violent crime in the early 1990s, and it has since evolved into a long-standing nonprofit, public-private partnership. The stated mission of the organization is to unite residents, youth, law enforcement, and community resources to build safe and empowered neighborhoods. The two primary measureable goals of the organization, therefore, are a decrease in crime and an increase in collective efficacy (Safe & Sound n.d.).

Safe & Sound currently focuses on eight target neighborhoods in Milwaukee, a strategy very similar to the one used by the Madison NRTs. Safe & Sound organizers canvass these neighborhoods, meeting directly with residents at their homes and at coordinated community meetings. The organization measures collective efficacy through a validated survey tool, administered twice a year, which is based on the initial collective efficacy survey used in Chicago by Robert Sampson (see Appendix E). These surveys measure informal control by asking respondents the comment on following types of information about their neighbors:

1. This is a close-knit neighborhood
2. People around here are willing to help their neighbors
3. People in this neighborhood do not share the same values

4. People in this neighborhood can be trusted

The survey also asks various questions regarding expected neighbor behaviors including social cohesiveness, a strong sense of community, and how neighbors work together to develop a strong set of positive social norms (Sampson et al. 2002).

Safe & Sound has not historically collected baseline survey data when first entering targeted neighborhoods, which does weaken any potential evaluation of the survey data. Care also needs to be taken when interpreting the results of these types of surveys. In the Chicago study, Sampson concluded that these informal social-control measurements are open to bias related to the face-to-face nature of the survey, as well as bias related to respondent characteristics like home ownership, age, and socio-economic status (Sampson et al. 1997).

Democratizing Information

Neighborhood-indicators programs have become more common over recent years, thanks in large part to technological advances that make the collection and analysis of information with this level of granularity feasible. The abundance of administrative data collected and maintained by municipalities, including Madison, and computer-based address-matching programs make this possible (Kingsley 1997).

For example, NNIP partner institutions routinely collect administrative data from a number of agencies and then integrate them into neighborhood information systems. However, these institutions emphasize more than just the importance of collecting this information, stressing the need to democratize information, facilitating its use by stakeholders ranging from community groups to government officials (Kingsley 1997). Program leaders at The Atlanta Project (TAP), an NNIP partner program serving the greater Atlanta area, have been instrumental in defining and demonstrating this principle. The program's data and policy leader, Professor David Sawicki, coined the term, defining it as "providing factual information directly for use by poor people and poor communities who have historically been denied access to the data they need to plan for their own futures effectively" (Kingsley 1999). Publicly available data is important not only to provide foundations for those living in these areas, but for the public as a whole to understand how cities are functioning.

The Minnesota Compass program works in a similar manner. Information from local and statewide organizations, the U.S. Census, and other sources is incorporated into a single information system. The program then analyzes this information, providing visual representations of the data and tools to the public to utilize it independently of any government agency or authority. Compass goes one step further, providing information to the public about programs in the area related to these indicators, including those run by nonprofit organizations, academic institutions, and government agencies. This extra step allows for residents of the community not only to understand the status of their areas and trends within them, but to connect with programs that may be able to help address these data.

In essence, TAP, Compass, and other neighborhood-indicators projects see one of their primary benefits as serving as a backbone institution, using their resources and expertise to collect and, to some degree, analyze data, and then to return this information to the public so that those on the ground can use it. As discussed above, it is these communities themselves that are better-equipped to understand the difficult-to-measure characteristics and assets within a neighborhood that may enhance understanding or clarify the underlying reasons for quantitative data collected. The democratization of data allows neighborhoods to better advocate for their own needs and well-being.

Recommendations

Informed by our review of the literature surrounding the quantitative and qualitative approaches to measuring neighborhood well-being, we have developed a series of recommendations for how the City of Madison could best utilize its data and develop means for collecting and analyzing additional data. These fall into four main categories, which will be elaborated upon below:

1. Strengthen ties with outside organizations to manage and collaborate about data
2. Bolster collection of additional data
3. Look to programs in which other cities have used neighborhood data
4. Enhance the quantity and ease of access of data

Recommendation 1: Strengthen Ties with Outside Organizations

The City of Madison has access to a large supply of quantitative data from both national surveys and local public and community organizations. Best utilizing these data can be challenging because obtaining access to local information and applying it to local contexts require time and resources. We, therefore, recommend the City collaborate with the University of Wisconsin-Madison and other organizations to manage and use its data. In particular, we recommend that the City strengthen its relationship with the UW-Madison Applied Population Laboratory (APL), Wisconsin Research Data Center (WiscRDC), and What Works Cities initiative.

University of Wisconsin-Madison

Madison is home to one of the premier research organizations in the world. A guiding force behind much of UW-Madison's research is the Wisconsin Idea, through which a strong commitment to academic-community partnerships pervades. Organizations at UW-Madison such as the Center for Community and Nonprofit Studies, Wisconsin Center for Education Research, and the Morgridge Center for Public Service have faculty and staff affiliates that are eager to connect with community leaders. Furthermore, academic departments such as the Department of Community and Environmental Sociology, School of Social Work, La Follette School of Public Affairs, and School of Medicine and Public Health all have faculty participating in translational research. We, therefore, recommend that the City build partnerships with such community-engaged researchers performing both quantitative and qualitative work in analyzing and developing its policies and practices.

Applied Population Laboratory

The City of Madison has already established relationships with the APL at UW-Madison. The APL has rich expertise using geospatial data; therefore, in looking how best to use its data to inform decision-making at the neighborhood level, we recommend that the City continue to develop its engagement with the APL. In particular, we recommend that the City consult with APL staff when assessing current initiatives and looking to expand or reform City programs. Such consultation and collaboration would require regular contact between a City representative and the APL. Furthermore, the City may have to budget for these services with the APL.

Wisconsin Research Data Center

The University of Wisconsin-Madison is fortunate to house a Federal Statistical Research Data Center funded by the Center for Economic Studies at the U.S. Census Bureau. The WiscRDC aims to support research using microdata from several large national surveys, including the U.S. Census. Researchers are required to apply for access to these data, which are available at the street and neighborhood level (University of Wisconsin-Madison 2016).

Using microdata is a powerful way to glean insights into neighborhood functioning and well-being. Minnesota Compass, for example, has social indicators at the neighborhood level for Minneapolis-St. Paul, which have proven to be informative for its research and dissemination efforts. When looking to develop partnerships with researchers at UW-Madison, we encourage the City to promote usage of microdata housed at the WiscRDC to best inform City policies at a local level.

What Works Cities Initiative

As a recently invited participant in the What Works Cities initiative, Madison will have access to a highly esteemed group of practitioners and researchers. These partners will help the City best use its data and improve policies and programming. We encourage the City to consider the findings and recommendations of this report and be deliberate about developing its relationship with What Works Cities partners.

Recommendation 2: Bolster Collection of Additional Data

Our analysis has allowed us to identify several areas where the City could bolster its data on neighborhood indicators to help provide a rich, thorough picture of neighborhood well-being and livability. The CI uses five subcategories of indicators, as discussed above, and analysis of each subcategory would benefit from additional data sources. These data sources could include additional quantitative data as well as new sources of qualitative survey data. We recognize that there is a nearly unlimited number of indicators on which the City could focus, and budget and time constraints limit the amount of data the City can feasibly collect and analyze. The following suggestions are intended as a sort of "cafeteria-style" list of options the City could consider on an individual basis with respect to bolstering its data-collection processes. It is likely not reasonable for the City to proceed with all of these recommendations at once, but it can select priority indicators and areas of focus, which may change in the future. We have provided a detailed table comparing the types of data Madison collects to the types of data collected by Minneapolis and Baltimore, broken down by the subcategories listed below. The City may find this list helpful in selecting key indicators on which to focus (see Appendix F).

Community Action and Involvement

First, we recommend that the City supplement the quantitative neighborhood-indicators data it collects with a qualitative survey tool similar to the one used by Milwaukee's Safe & Sound program. As mentioned above, this tool is based on the collective efficacy survey used in Chicago by Robert Sampson, which seeks to measure social cohesiveness and a strong sense of community by asking respondents questions such as the following about expected neighbor behaviors:

1. If a group of neighborhood children were skipping school and hanging out on a street corner, how likely is it that your neighbors would do something about it?
2. If some children were spray-painting graffiti on a local building, how likely is it that people in your neighborhood would do something about it?
3. If a child was showing disrespect to an adult, how likely is it that people in your neighborhood would scold that child?

These types of questions measure the level of trust and cohesion in a given neighborhood – important measures of neighborhood well-being because without this type of trust, residents are unlikely to take actions together to promote social control (Sampson 1999). The data from this survey could be used as a partial measure of community action and involvement, an important category we weren't able to include in the CI. In Milwaukee, this survey is conducted via canvassers going door-to-door in eight selected neighborhoods twice per year (Safe & Sound n.d.). A full analysis of the budgetary implications of a

survey like this is beyond the scope of this project, but the major expenditures would include wages for paid canvassers and additional time for the APL to process and analyze the data.

Housing

For the "community pride violations" variable, the City should try to account for the frequency of planned inspections/surveys because areas with more frequent inspections may have an artificially high violation rate. The City should also consider either eliminating the variable for "median year built" for housing or controlling for neighborhood affluence, since many high quality Madison homes are older but refurbished or renovated, which makes the "median age" variable difficult to interpret on its own.

Safety

The City could consider collecting more survey-based data on how neighborhood residents perceive their level of safety. Perceptions of crime can be nearly as important as actual crime rates, as employers are more likely to locate businesses in communities their customers perceive as safe, and residents who view their neighborhoods as safe are more likely to engage in social and volunteer activities (Minnesota Compass 2016c). For example, the Minnesota Compass website collects survey data for different regions of the state asking adults whether they generally think it is safe to walk on their street after dark. The City could modify the Sampson survey discussed above to include a question such as "Think about the street where you live. Do you generally feel it is safe to walk on your street after dark?"

Health and Family Well-Being

Right now, the indicators in the APL's health and family well-being subcategory combine two distinct concepts, education and health. Because the CI weights all subcategories equally and four of the six indicators are in the education realm, this implicitly over-emphasizes education over health. In its analysis of indicators data, the City should consider splitting this category into two, for health and education, and collecting more data on health that goes beyond measuring maternal care and premature births. For example, the city of Baltimore's Vital Signs project uses data from Maryland's Department of the Environment on the number of children under the age of 6 tested for lead poisoning and the percentage of children with elevated levels of lead in their bloodstreams (BNIA-Jacob France Institute 2015). The Minnesota Compass project uses data from the Centers for Disease Control and Prevention on the percentage of adults who are obese (Minnesota Compass 2016b).

Economic Vitality

When constructing the CI, we did not have access to unemployment rate, family income, or poverty level, but the City should use this data to the extent it is able because, as the literature discussed above suggests, they are very important measures of neighborhood well-being. The City might also consider incorporating a measure of "undesirable" economic services in or near a neighborhood, such as check-cashing businesses, liquor stores, or payday lenders, in order to give a more complete picture of a neighborhood's economic vitality. Additionally, it would be helpful to have some measures of the true availability of hospital services beyond the simple geographic proximity of hospitals – what percentage of neighborhood residents are insured? What percentage has a regular primary care provider? How often do residents go to the ER? Do residents have access to quality mental health facilities and resources? The U.S. Census Bureau's Small Area Health Insurance Estimates provide information on health insurance coverage for Dane County, but do not break this information down to the City or neighborhood level (U.S. Census Bureau 2016b). These are questions that the City might consider adding to a potential survey. Additionally, the City could include questions within this survey seeking to understand underlying thoughts and perceptions about these indicators and why they are or are not significant in the lives of residents.

Transportation

The CI incorporates thorough data on the number of transit stops in or near various neighborhoods, but the City does not seem to have data on the average length of a transit commute, number of transfers needed for a typical commuter to reach his or her destination, crowding on buses, and financial burden of buying transit passes. This data would help make the transportation category more robust and tell us more about whether residents in the areas in question truly have meaningful access to quality transit services. For example, Minnesota Compass uses data from the U.S. Census Bureau and the American Community Survey on the average commute time to work for residents of Minneapolis and other areas (U.S. Census Bureau 2016a). Because this data is not currently available at the neighborhood level, Madison might consider adding questions on average commute time to a survey instrument.

The above data-collection suggestions could be considered on an individual basis, along with the indicators listed in Appendix F. Taken together, they offer a variety of ideas for the City to bolster its data-collection processes and provide a more rich and thorough picture of neighborhood well-being and livability.

Recommendation 3: Look to Other Cities Using Neighborhood Data

There are numerous examples from other cities where neighborhood data has informed local decision-making and has been used to enhance specific social programs. The following section details programs that utilize data from each of the five subcategories of social indicators discussed above, as well as one program that is also designed to spur resident civic engagement. As mentioned above, we recognize that the City of Madison will have budgetary and departmental constraints that will limit the potential adoption of some of these suggestions, and these programs should be viewed primarily as best-practice options for the future.

Housing: Baltimore CitiStat Trash Pickup

The city of Baltimore has used its data-driven city management system to facilitate both service levels and accountability in the sanitation department. In June 2000, Baltimore began using CitiStat, an integrated computer software tool capable of tracking a multitude of government performance indicators (Perez and Rushing 2007). CitiStat enables Baltimore to produce a biweekly report of locations showing where trash was not collected on a particular day, and this information is then used to create the BNIA "vital sign" measuring the rate of dirty streets and alleys within the city. The city uses this report during biweekly planning meetings to redeploy city resources to facilitate future trash-pickup schedules, and can also use the datasets and the BNIA dirty street "vital sign" as a means to hold the sanitation department accountable (Ramos and Jones 2005). If the rate for a specific neighborhood decreases on an annual basis, the area is seen as getting cleaner. City officials and neighborhood residents can use these "vital signs" to measure the effect of targeted neighborhood strategies, such as local sanitation-education efforts (Ramos and Jones 2005). While the *Vital Signs* report is only produced by BNIA annually, the datasets themselves are continually updated throughout the year and can be used by the city for departmental performance measurement on an ongoing basis.

If Madison chooses to introduce this type of data-management system, there are some associated budgetary costs. CitiStat interfaces with basic MS Office programs (as well as with standard GIS mapping software) and total costs for Baltimore were estimated at $285,000 (in 2000 dollars) for setup costs that included a renovated meeting room and annual costs of roughly $400,000, mostly for staff salaries (Perez and Rushing 2007). This CitiStat annual staff salary figure supports a director-level position, as well as a half-dozen dedicated analyst- and investigator-level positions (Behn 2006). Because Madison is already collecting data on "community pride violations" that includes trash carts, expanding to include additional information on trash collection should not entail significant administrative burden. This

type of information could also provide insight on neighborhood social-cohesion levels. Additionally, sanitation department service-level improvements could have a positive effect on perceptions of some neighborhoods and neighborhood median home values.

Public Safety: Minneapolis Block Clubs

The city of Minneapolis Police Department utilizes indicator data related to crime rates and public safety to enable citizens to participate in their own neighborhood policing through their Minneapolis Block Clubs and Apartment Clubs program. In the program, Block Leaders, who are residents of these areas ranging from single city blocks to a specific apartment building, are given indicator data and training from police department crime prevention specialists. They are then tasked with developing strategies to encourage crime prevention and report crime activity within the neighborhood, without direct intervention from the police department (City of Minneapolis 2012).

It is important to note that the city itself does not directly assess indicator data for this program. Instead, it serves as a hub for the data, providing it to community leaders and residents to help them make informed decisions about their own communities. This has the potential to shift socialization of the neighborhood, by establishing new community-developed norms of behavior. Additionally, these block leaders could serve as role models, emphasizing and demonstrating the importance of caring for one another, caring for the block, and maintaining a safe community.

In Madison, this program could be included as an extension of the Trust-Based Initiatives currently being undertaken as a part of the Madison Police Department's (MPD) Community Policing efforts (Koval 2015). While Madison does currently collect data on police calls within neighborhoods, and the Madison Police Department (MPD) does conduct an annual resident survey focusing largely on satisfaction with City services, the City would also benefit from data derived from the previously recommended survey focusing on social-cohesiveness and efficacy levels. These types of information collectively could provide insights into those areas where relatively high rates of crime are present and a strong sense of community is lacking, which may suggest an opportunity for a block club to help ameliorate the situation and create that cohesion. There would likely be several costs associated with the development and maintenance of a program like this, including the additional data collection, staff time to determine which neighborhoods include key characteristics that suggest possible receptivity to the program, police time to develop curricula and serve as liaisons with block leaders, and technological tools to push out up-to-date crime information to block leaders.

Health and Family Well-Being: B'More for Healthy Babies

The city of Baltimore has also used indicator data to help address infant mortality at the neighborhood level with its B'More for Healthy Babies (BHB) Initiative. The BHB strategy involved bringing community members directly into the decision-making process, holding strategy meetings to review neighborhood-level *Vital Signs* data on infant mortality rates and create action plans. Baltimore Neighborhood Action Teams focus on high-impact areas where interventions that lessen cultural, linguistic, and economic barriers will result in better infant health outcomes. The Baltimore infant mortality rate has declined each year since the program's inception, to the lowest recorded rate in the city's history in the most recent 2012 data (B'More for Healthy Babies 2014).

Community-level programs similar to these, but lacking the data-driven focus, have already been shown to be effective in the City of Madison. The South Madison Health & Family Center-Harambee, an extremely popular community maternal care clinic and shopping zone, was associated with (and given anecdotal credit for) a historic drop in African-American infant mortality rates in the 1990s and early 2000s. Between 1990 and 2007, Madison and Dane County had reduced infant mortality by 66 percent, and had become the first area in the nation to essentially eliminate the racial infant mortality gap (Conant

2009). The closing of the Harambee center in 2007 was subsequently correlated with a spike in these same rates.

In Madison, a data-driven initiative could be included as an extension of the Safe to Sleep Program and the Dane County Safe Sleep Initiative currently being undertaken as a part of the Public Health Madison & Dane County (PHMDC) efforts. While Madison does currently collect data on maternal care and term/near-term births, it would also benefit from collection of additional quantitative data such as birthweight and maternal health, as well as information that could potentially be collected from the previously mentioned qualitative survey. This initiative could help reduce infant mortality rates generally, as well as reduce demographic disparities. Given that the PHMDC Safe to Sleep/Sleep Initiative framework already exists, the major budgetary impact would be related to additional data collection and analysis costs, with some additional impact related to community outreach and partnering costs.

Economic Vitality: Baltimore Drilldown/Atlanta Project

Baltimore and Atlanta have used social-indicator data to stimulate private market investment in targeted communities. The Baltimore Neighborhood Market DrillDown is an assets-based market analysis conducted by Social Compact, a national nonprofit corporation, in partnership with BNIA and the Baltimore City Department of Planning. The initiative utilizes data collected by Baltimore VitalSigns (such as population, income, crime, and building-permit information) to provide up-to-date profiles of market strength, stability and opportunity for small, community-level geographies within the city (Social Compact, Inc. 2008). The Drilldown findings, combined with the intuitive knowledge of local market leaders, then serve as the foundation for community economic development initiatives sponsored by both city government and the private sector.

The Atlanta Project has also successfully utilized several indicators to identify small economically disadvantaged pockets within larger areas. Thanks to this statistical analysis, local governments were able to approve these specific concentrated poverty zones for special tax credits designed to encourage job creation, whereas previously they remained ineligible because of the relative economic stability of the larger region in which they were located (Kingsley 1999). There is an opportunity for the City of Madison Department of Planning, Community & Economic Development (DPCED) to launch similar initiatives to aid the decision-making process in Madison after the appropriate social-indicator data have been collected for analysis.

Transportation: Cleveland Welfare-to-Work Transportation

The Center for Urban Poverty and Social Change, Cleveland's NNIP partner institution, has utilized indicator data to adjust its public transit system to better meet the needs of vulnerable residents. By using street-level data to map the residences of individuals receiving welfare benefits, the city was able to determine that large numbers of these individuals lived in concentrated areas within the city. By contrast, indicator data related to job availability and employment opportunities within neighborhoods showed that the majority of entry-level jobs likely to be relevant to these residents were located in entirely different portions of the metropolitan area. When policymakers were made aware of this spatial mismatch, they were able to quickly identify some potential transportation-related solutions designed to meet the needs of this population. The state subsequently increased funding for transportation assistance and transportation planners in Cleveland began conducting additional studies to determine whether adjustments to the city's public transit system could further ameliorate the issue (Kingsley 1997).

In Madison, the collection of additional transportation information as highlighted above, including indicators such as commute time, number of transfers required to reach jobs, and even economic information providing insights into neighborhood or nearby job markets could enable the City to conduct a similar analysis and adjust transportation-related programs and resource allocations as necessary.

Recommendation 4: Enhance the Quantity and Ease of Access of Data

The City of Madison currently provides a significant amount of data related to the Neighborhood Indicators Project to the public. Its program website, housed within the APL's website, allows users to see data collected by neighborhood and goes a step further with its neighborhood comparison feature. Though the City is seeking to utilize the data collected to inform its own decision-making processes, providing the data to the public is important for three key groups of stakeholders:

- Residents of Madison's neighborhoods can use this data as a foundation from which they can gain an understanding of the assets and potential opportunities for their own neighborhoods and advocate for themselves.
- The public in general can use this data to understand not only trends within the city, but how efficient and effective City programs have been. Availability of data for the public is a crucial step in transparency and public engagement.
- Policymakers can use this data to understand trends within the City to identify strengths and needs, and to inform future decision-making regarding programs and resource allocation. The City can also use this data as a platform to demonstrate effectiveness of programs and advocate for changes or continuity of programs and resource allocations based on the effects they have on these trends.

We recommend that the City of Madison continue its emphasis on data availability, and enhance both the quantity of data it provides and ease of use as the Neighborhood Indicators Project expands.

The previous recommendations center largely around the City of Madison collecting additional information related to neighborhood indicators. We recommend Madison and its data partners work to incorporate these new data in any public-facing sources. This would include adding data from new indicators, both quantitative and qualitative, into the existing website. We recognize that this already occurs with existing data, but encourage the City of Madison and the APL to work together to determine how the additional information can best be included based on its specific content and format. Additionally, these new indicators should be explained in detail in subsequent versions of the APL annual report along with explanations of their importance, collection methods, and how they relate to City programs or priorities to ensure that users from all stakeholder groups are well-versed in them.

This process would likely fall under the purview of the APL and its staff, and therefore would not require additional resources from the City of Madison. However, there are concerns about privacy issues related to this additional data. Currently, several indicators are suppressed because the sample size is sufficiently small that it may contain identifying information. Some current NRT focus areas, for example, have relatively few residents when compared to larger neighborhoods or census tracts, contributing to the volume of data suppression. This may continue to occur with new data sets, and may be exacerbated by the inclusion of qualitative information. Madison could consider including this more-sensitive data at a less-granular level; for example, at the census-tract level only. However, this will reduce some of its usefulness in identifying characteristics of specific neighborhoods or smaller focus areas. It may also prove beneficial to discuss privacy issues with administrators of other neighborhood-indicators programs, including those within the NNIP and Compass, to determine if additional solutions to data privacy concerns have been identified.

In addition to publishing the additional neighborhood-indicators data, we recommend the City of Madison follow the example set by Minnesota Compass in the "Ideas at Work" section of their website. Madison could incorporate resources, including programs administered by public agencies and nonprofit organizations intended to address these neighborhood indicator categories, into either the Neighborhood Indicators Program website through the APL or the Mayor's Office. This provides an opportunity for the

City to highlight its focus on empowering neighborhoods and increasing equity across the City and reduces barriers for residents to connect directly with available resources.

There are some key limitations to this portion of the recommendation. First, given the volume of programs around Madison and the need not to overwhelm users, not all programs or nonprofit organizations could be included in this listing. The City should develop a rubric for selecting programs and be prepared to articulate why some programs were chosen and others were not. Second, this is a project that will take time up front to enact and will need to be monitored to some degree. However, we believe the initial research would be the perfect exercise for an intern, and it could be accomplished over a summer. The maintenance of this list would be minimal, consisting mostly of ensuring that these programs are still in existence and have not changed their missions, and noting additions when they arise. Again, this may be work well-suited to an intern, thereby reducing the costs to the city.

Conclusion

The City of Madison has done significant work to build strong neighborhoods with the capacity to improve the quality of life for residents. In doing so, City leaders have taken care to note the unique nature of these neighborhoods, and in many cases smaller areas with their own characteristics and communities, and have incorporated these aspects into planning and development. This report seeks to build on this work, providing insights into how the City might use its current data collection and analysis structures to improve understanding of these neighborhoods, and recommendations as to how Madison could further its work meeting the needs of residents across the City through a data-driven decision-making process.

We intend for the initial assessment of Madison's neighborhood-indicators data to guide discussions in the City about how to best develop, analyze, and use the data it has. Although our analysis was limited by data constraints, it nonetheless provides a framework the City can employ in the future to analyze its data and communicate findings to stakeholders.

Additionally, this report gives a snapshot of the larger neighborhood-indicators field of research. Just as Madison's neighborhoods are unique, so too are the cities that have begun to use data to drive their own strategic planning. As a result, we have sought to incorporate examples of strategies, processes, and programs from across the country that align with Madison's priorities and the realities of the city's demographics, culture, and budgetary constraints. The recommendations included should therefore be viewed as a menu of options, intended to provide best practices and avenues for further reflection and study. Our hope is that Madison's leadership will take into consideration the larger themes of this report as guidance for moving forward as it seeks to create more equitable, livable neighborhoods for all of Madison's residents.

Appendix A: APL Data Description

This appendix highlights the features of the APL data and the metrics it contains. The APL provided us with a data set for 177 census block groups within the City of Madison as well as 11 NRT geographies.[15] Block groups of less than 10 acres were removed from the data set.

The remaining pages of this appendix contain the data dictionary provided by APL. These definitions pertain to the 2014 data we were provided with and detail the variable definitions for the metrics in the data and indicates the original sources of the data.

2014 Madison Neighborhood Indicators Data Definitions

Tabulation geography: The Neighborhood Indicators project provides data for neighborhood associations and planning districts within the City of Madison. Because many of the indicators rely on City of Madison data providers, the geographies represented here include only those areas that lie within Madison City limits. Portions of the planning district and neighborhood boundaries that lie outside the City are not included in the maps nor are they part of the statistical tabulations presented in this report.
Source: Neighborhood association and planning district boundaries: City of Madison Planning & Development Unit, received 8/19/2014.

Geographic Boundary Change 2014: "Yes" signifies a 2% or greater change in the coverage area of the tabulation area boundary from the previous year. Such changes may account for some of the observed differences in indicator values over time.
Source: APL calculation based on tabulation geography boundary files.

Land area (acres): The land area in acres.
Source: APL calculation based on tabulation geography boundary files.

Number of housing units (Census 2000 and 2010): Estimated total housing units. The Census Bureau defines a housing unit as a house, an apartment, a mobile home or trailer, a group of rooms, or a single room occupied as separate living quarters, or if vacant, intended for occupancy as separate living quarters.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Owner Occupied Homes (Census 2000 and 2010): Estimated number of owner occupied housing units and owner occupied units as a percentage of all occupied units.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Total population (Census 2000 and 2010): Estimated total population.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Young Children - Age 0 to 4 (Census 2000 and 2010): Estimated number and percent of persons age 4 and under.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Youth Population - Age 0 to 17 (Census 2000 and 2010): Estimated number and percent of persons age 17 and under.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

[15] Note that the APL provided separate neighborhood data for Brentwood, Woodland Park Apartments, and Woodlands apartments, although these three neighborhoods together comprise one NRT.

Senior Population - Age 65 and over (Census 2000 and 2010): Estimated number and percent of persons age 65 and over.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

White (Census 2000 and 2010): Estimated number and percent of persons in the *White alone* race category. *White alone* population shown for non-Hispanics only; Hispanic population of all races shown separately.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Black or African American (Census 2000 and 2010): Estimated number and percent of persons in the *Black or African American alone* race category. *Black or African American alone* category population shown for non-Hispanics only; Hispanic population of all races shown separately.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Asian (Census 2000 and 2010): Estimated number and percent of persons in the *Asian alone* race category. *Asian alone* population shown for non-Hispanics only; Hispanic population of all races shown separately.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Other Races or Multiracial (Census 2000 and 2010): Estimated number and percent of persons in the American Indian alone, Pacific Islander alone, Other Race alone or Two or More Races categories. Other Race or Multiracial population shown for non-Hispanics only; Hispanic population of all races shown separately.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Hispanic or Latino (Census 2000 and 2010): Estimated number and percent of the persons *of any race* who identify as Hispanic or Latino.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Total households (Census 2000 and 2010): Estimated number of households. The Census Bureau defines a household as an occupied housing unit and includes all the people who occupy that housing unit as their usual place of residence.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Family households (Census 2000 and 2010): Estimated number of families and families as a percentage of all households. The Census Bureau defines a family as two or more people who reside together and who are related by birth, marriage, or adoption.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Families with children (Census 2000 and 2010): Estimated number of families with children and families with children as a percentage of all households.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Female headed families with children (Census 2000 and 2010): Estimated number of female headed households with children (no husband present) and female headed households with children as a percent of all households.
Source: Census 2000 and 2010 block data, APL interpolation to 2014 tabulation geography.

Madison Dwelling Units: Dwelling units contained in City of Madison property databases.
Source: City of Madison Dwelling Units: City of Madison Planning & Development Unit, Situs database, received 08/19/2014.

Campus Dwelling Units: Estimated campus dwelling units in UW-Madison and Edgewood College residential housing facilities.
Source: UW and Edgewood Campus Dwelling Units, received 11/05/2014.

Community Pride Violations: Total community pride violations in 2013. Note: Community pride violations for this year are not comparable with violations from 2009 and earlier. Community pride violation types include a subset of Property Maintenance Violations (Exterior Housing, Graffiti, Junk/Trash/Debris, Trash Carts, and Weeds/Overgrowth) and Zoning Violations (Fences, Inoperable Vehicles, and Parking on Lawn). Violation data have various origins: complaint, survey, referred, programmed, field observation, and other. Snow- and ice-related violations are excluded due to weather dependent year-to-year variation.
Source: City of Madison Building Inspection Unit, received 08/07/2014.

Property Foreclosures: Total foreclosure cases in 2013. The data represent only the initial foreclosure filing (i.e. initial legal action) against a property owner and should not be confused with sheriff sales (only a share of these cases go all the way through the legal process to a sheriff sale). Some foreclosure actions against a property owner may actually reflect numerous properties (i.e. in the case of a landlord who owns several rental properties). These duplicate properties will not be found in the data set. There were 30 Dane County foreclosure cases that could not be reconciled with a physical property location. Overall geocoding match rate for Dane County foreclosures: 96%.
Source: Russ Kashian, Fiscal and Economic Research Center - University of Wisconsin-Whitewater, and Matt Kures UW-Extension Center for Community Economic Development, received 05/21/2015.

Assisted Housing Units: Housing units to which any of the following assistance categories apply: Public Housing CDA (Community Development Authority), Private Projects - Section 8 Project Subsidies, Section 8 Tenant Based Vouchers, or Section 42 Tax Credits.
Source: City of Madison Planning & Development Unit, received 01/11/2013. These data have not been updated in the last two years.

Average house value: Average assessed value (land and improvements) among single dwelling unit, owner occupied housing units.
Source: City of Madison Planning & Development Unit, Situs database, received 08/19/2014.

Square foot value of housing: Total housing value (land and improvements) among single dwelling, owner occupied units divided by the total finished floor area.
Source: City of Madison Dwelling Units: City of Madison Planning & Development Unit, Situs database, received 09/19/2014; Floor area: bldflr database, received, 08/19/2014.

Median year built: Median year built for dwelling units including both single family dwelling units and multi-family units.
Source: City of Madison Planning & Development Unit, Situs database, received 08/19/2014.

Kindergarten preparedness: Percent of Madison Metropolitan School District (MMSD) kindergarteners who met the fall Phonological Awareness Literacy Screening (PALS) performance benchmark, summarized over a three-year period, including the 2012-13, 2013-14, and 2014-15 school years. Kindergarteners in the Dual Language Immersion (DLI) programs take the Spanish version of PALS regardless of their native language. Current year data source and tabulation method differ from previous year.
Source: MMSD, received 12/19/2014; APL interpolation to 2014 tabulation geography.

Parent education level: no high school diploma / GED: Number and percent of MMSD students in households in which highest level of parent educational attainment was less than a high school diploma or GED; limited to students for whom data were available. Data available for 92% of MMSD students in the City of Madison.
Source: MMSD, received 12/19/2014; APL interpolation to 2014 tabulation geography.

Parent education level: college graduate: Number and percent of MMSD student households in which highest level of parent educational attainment was a bachelor's, graduate or professional degree; limited to students for whom data were available. Data available for 92% of MMSD students in the City of Madison.
Source: MMSD, 12/19/2014; APL interpolation to 2014 tabulation geography.

High mobility students: Percent of MMSD students with two or more between-school transfers in the past three years (for the 2011- 12, 2012-13, and 2013-14 school years combined). Current-year data source and tabulation method differ from previous year.
Source: MMSD, received 01/15/2015; APL interpolation to 2014 tabulation geography.

Economically disadvantaged students: Percent of MMSD students that were economically disadvantaged. Data available for 100% of MMSD students in the City of Madison.
Source: MMSD, received 12/19/2014; APL interpolation to 2014 tabulation geography.

Infant health: term or near term: Percent of all 2010-2012 births occurring after the complete 32nd week of gestation. Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Overall match rate for Dane County birth data: 97%.
Source: Public Health Madison & Dane County; Wisconsin Department of Health Services, received 12/15/2014.

Maternal health: appropriate care: Percent of all 2010-2012 births receiving prenatal care that began by the end of the 4th month of gestation and received 80% or more of the American College of Obstetricians and Gynecologists' recommended visits. Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Overall match rate for Dane County birth data: 97%.
Source: Public Health Madison & Dane County; Wisconsin Department of Health Services, received 12/15/2014.

Voter turn-out: This item is not available for this indicator year. It is only included for years following a presidential election

Median Household Income (2009-2013): Estimated median household income (in 2013 inflation-adjusted dollars).
Source: 2013 American Community Survey, 5-Year Block Group and Madison Estimates (Data for small tabulation area may be unreliable and are withheld in some instances; year-to-year comparisons with five-year estimates are not recommended), APL interpolation to 2014 tabulation geography.

Families in Poverty (2009-2013): Estimated number and percent of families in poverty.
Source: 2013 American Community Survey, 5-Year Block Group and Madison Estimates (Data for small tabulation area may be unreliable and are withheld in some instances; year-to-year comparisons with five-year estimates are not recommended), APL interpolation to 2014 tabulation geography.

Basic goods and services: Basic goods and services found within one mile of tabulation geography. The presence of businesses is denoted with the corresponding letter: Hospital (H), Pharmacy (P), Credit Union or Bank (B), Grocery Store (G), and Childcare Provider (C).
Source: InfoUSA data from Madison Area Transportation Planning Board, 10/27/2014; APL proximity calculation.

Crimes against persons: Total crimes against persons in 2013 (such as robbery, battery, sexual assault). Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Overall geocoding match rate for crimes against persons: 93%.
Source: 2013 Incidents Records from Madison Police Department (MPD), received 08/08/2014; geocoded by MPD and APL.

Crimes against property: Total crimes against property in 2013 (such as residential burglary, retail burglary, auto theft). Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Overall geocoding match rate for crimes against property: 98%.
Source: 2013 Incidents Records from MPD, received 08/08/2014; geocoded by MPD and APL.

Crimes against society: Total crimes against society in 2013 (such as disturbances, liquor violations, and drug incidents). Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Overall geocoding match rate for crimes against society: 90%.
Source: 2013 Incidents Records from MPD, received 08/08/2014; geocoded by MPD and APL.

Crashes: Total automobile crashes in 2013. Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Overall geocoding match rate for crashes is low: 43%.
Source: 2013 Incidents Records from MPD, received 08/08/2014; geocoded by MPD and APL.

Calls for EMS/Fire service: Total calls for emergency medical service and fire service in 2013 that are inside of or within 250 feet of tabulation area boundary (Inclusion of 250 foot buffer is new in 2014). Data for tabulation geographies other than Madison citywide are limited to incidents successfully geocoded. Madison citywide total reflects estimated number of responses inside City of Madison boundaries. Overall match rate for EMS/Fire calls: 95%.
Source: Madison Fire Department, received 12/12/2014; geocoded by APL.

Transit stop access: Percent of land area that lies within one-quarter mile of a regularly scheduled transit stop. Does not include transit stops served less than 12 months per year.
Source: City of Madison - Metro Transit, 11/07/2014; APL land area calculation based on tabulation geography boundary file.

Available transit service: Total number of regularly scheduled transit trips that would permit a passenger boarding, using any of the transit stop locations that are within or adjacent to the area, summarized over the course of a typical seven-day week (Monday-Sunday).
Source: City of Madison - Metro Transit, 11/07/2014.

Households with Access to a Vehicle (2009-2013): Number and percent of households with access to a private vehicle at home.
Source: 2013 American Community Survey, 5-Year Block Group and Madison Estimates (Data for small tabulation area may be unreliable and are withheld in some instances; year-to-year comparisons with 5-year estimates are not recommended), APL interpolation to 2014 tabulation geography.

Bike path access: Percent of dwelling units that fall within one-half mile of a bike network segment; this includes off-street paths and higher level on-street facilities such as bike boulevards and buffered bike lanes. Current year data source and tabulation method are different from previous year.
Source: City of Madison Dwelling Units: City of Madison Planning & Development Unit, Situs database, received 08/19/2014; UW-Madison and Edgewood Campus Dwelling Units, received 11/05/2014; Bike Network: Madison Metropolitan Planning Organization, received 12/02/2014; APL proximity calculation.

Pavement condition: Average condition rating of City of Madison maintained street segments within or immediately adjacent to tabulation area. Scoring is based on UW PASER rating system where 10 is the best condition.
Source: City of Madison Engineering Division, received 01/15/2015; APL summary calculation.
Definitions last updated: June 9, 2015.

Appendix B: APL Data Limitations

This appendix provides additional information about the limitations of the APL data.[16] Here, we focus on the relative size of census block groups and NRT areas and how this limited our analysis. Additionally, we discuss the challenge of including block groups only partially within City boundaries in our analysis.

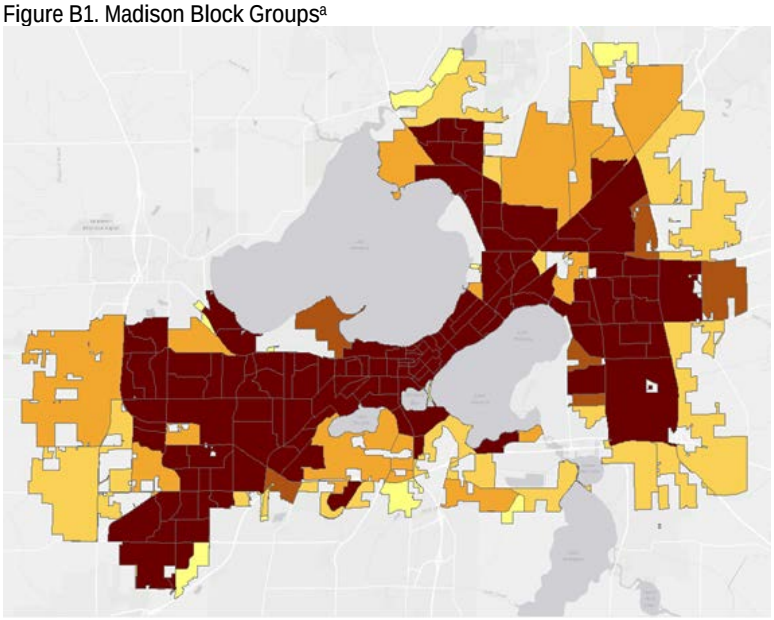
Relative Size of Block Groups and NRT Areas

NRT geographies are smaller than census block groups. Therefore, one would expect to see more variance in the rates and percentages for these areas due to their smaller size. This poses conceptual limitations with regard to combining NRT areas and census block groups in the quintile computations. Since NRTs are nested in census block group geographies, their indicator attributes are in sense being double-counted. Despite this limitation, analyzing quintile data has its merits with respect to conveying information about relative aspects of well-being within City geographies.

Partial Block Groups

Some block groups in the APL data are only partially within the City of Madison boundary. The lightest shaded areas of the map in Figure B1 correspond to block groups with less than 90 percent of their area within the city. The ACS-based estimates for the Madison portion of these block groups are less reliable than those for block groups entirely within the City boundaries. As such, ACS data for these block groups were suppressed. Additionally, ACS estimates for noncensus block group geographies under 250 acres were also suppressed. The particular ACS variables suppressed are: median household income, number of families in poverty, percent families in poverty, number unemployed, percent unemployed, number of households with access to a vehicle, percent of households with access to a vehicle. This posed direct implications for the construction of the CI, particularly with respect to the economic vitality subindex. Although we included the percentage of economically disadvantaged students as a proxy measure for poverty, our analysis would have been strengthened if these ACS variables had been included.

Figure B1. Madison Block Groups[a]



Source: Applied Population Laboratory

[a]Lightest shaded block groups represent areas with less than 90 percent of their area within City of Madison boundaries.

[16] See Appendix A: APL Data Description for specific information about the APL data themselves, and a copy of the data dictionary provided by the APL.

Appendix C: Detailed Community Index Methodology

Below, we detail our methodology for constructing the Community Index (CI) and identifying similar geographies to the NRT areas. Our hope is to make our analysis reproducible and to have transparency in our techniques in the event that the City wishes to modify our analysis in the future. Our approach could be amended to fit additional data or employ different analysis strategies.

The CI incorporates five subcategories of indicators corresponding to those chosen for the publication of the APL data: housing quality and affordability, public safety, health and family well-being, economic vitality, and transportation. We chose these indicators so that the CI reflects how the data are displayed on the APL website. In reality, any grouping of metrics could form a subindex. Because NRTs served as the primary case example in our analysis of APL data, the metrics included in the CI are reflective of the data available for the NRT areas. If the City were to analyze additional geographies, it might consider incorporating other metrics that are available for those areas. Median household income, family poverty, unemployment, and percent with a vehicle were not included in the CI because no data were available for the NRT geographies. Additionally, we did not include the available transit service variables because these are reflective of the size of the geography instead of the percentage of the population with access to mass transportation.

The CI was constructed using an equal-weighting scheme, in that all of the metrics within a particular subindex category were averaged to create a subindex score. An alternative approach would be to weight certain metrics so as to give them more emphasis within the subindex. Weighting schemes could be derived from the relative socio-economic literature. For example, within a public safety index, one might choose to assign more weight to homicides over police traffic stops, if these data were available.

We chose to follow the Organisation for Economic Co-operation and Development (2008) recommendations of assigning equal weights when constructing composite indices. The OECD advocates for this approach so that an index is not biased toward metrics that are readily available. In the case of the APL public safety data, the available metrics were crimes against persons, crimes against property, crimes against society, crashes, and calls for emergency medical service (EMS) or fire service. Because these five metrics themselves do not paint a holistic picture of "public safety," we assigned equal weight to each in the public safety subindex so as to avoid overemphasizing a particular metric or making the subindex inappropriately reflect a certain facet of public safety.

Due to data suppression among much of the data, we constructed the CI solely from quintile data.[17] To ensure all quintiles were on the same scale, namely with a quintile of 1 representing the bottom 20 percent of geographies and a quintile of 5 representing the top 20 percent, with higher quintile values representing a better performance on a measure, we reverse-coded certain variables. The following variables were reverse-coded:

- Assisted housing units
- Property foreclosures
- Community pride violations
- Number of crimes against persons
- Number of crimes against property
- Number of crimes against society

[17] In the presence of higher quality data, one might instead standardize raw values so as to put them all on the same scale, and average these standardized values.

- Number of crashes
- Calls for EMS/fire service
- Parent education level: percent with no high school diploma or GED
- Percent high mobility students
- Percent economically disadvantaged students
- Percent families in poverty
- Unemployment rate

In constructing the CI, we first averaged the quintile values for all metrics within a particular subcategory to create a subindex score. We then averaged the five subindex scores to create the overall composite CI. Rounding was reserved until the final stage so as to preserve precision. Table C1 displays the metrics used to construct the CI subindices.

Table C1. Community Index Metric Categories

Housing Quality and Availability	Public Safety	Health and Family Well-Being	Economic Vitality	Transportation
Median Year Built	Crimes Against Persons	% Kindergarten Preparedness	% Economically Disadvantaged Students	% Area with Transit Stop Access
Average Housing Value	Crimes Against Property	Parent Education: % No HS/GED	Number of Basic Goods and Services (hospital, pharmacy, bank, grocery, child care)	Available Transit Service: Total Trips per Dwelling Unit
Square Foot Housing Value	Crimes Against Society	Parent Education: % College Graduate		% Households with Vehicle
Assisted Housing Units	Crashes	% High Mobility Students		% Bike Path Access
Property Foreclosures	Calls for EMS/Fire Service	% Term or Near-Term Births		Pavement Condition
Community Pride Violations		% Appropriate Maternal Care		

Source: Applied Population Laboratory, 2014

Appendix D: Detailed NRT Descriptive Statistics

Table D1. Detailed NRT Descriptive Statistics[a]

	Allied	Badger Rd-Cypress-Burr Oaks-Brams Addition	Balsam-Russett Road	Brentwood[2]	Darbo-Worthington	Hammersley-Theresa-Bettys Lane	Leopold	Owl Creek	Park Edge-Park Ridge	Woodland Park Apartments[2]	Woodlands Apartments[2]
Demographics (2000)											
Population	1,583	1,894	593	384	278	695	1,844	1	1,157	211	143
% Pre-School Age (Age 0-4)	13.4	9.4	7.2	8.5	9.6	10.4	7.0	0.0	6.3	7.3	12.9
% Youth (Age 0-17)	47.4	32.2	25.0	19.6	44.9	42.2	20.0	16.7	22.5	21.9	38.6
% Senior (Age 65+)	1.1	6.7	5.2	13.7	1.6	3.3	7.8	8.3	3.4	1.7	1.3
% White	17.1	27.3	69.1	69.1	24.7	48.3	66.2	100.0	64.6	74.0	36.3
% Non-White	82.9	72.7	30.9	30.9	75.3	51.7	33.8	0.0	35.4	26.0	63.7
% Black or African American	44.8	32.5	13.8	13.8	61.3	27.3	18.1	0.0	13.9	10.8	35.5
% Hispanic or Latino	12.9	15.5	7.0	7.6	5.7	5.8	6.1	0.0	10.7	8.9	15.9
Total Households	479	733	273	197	95	188	890	0	514	91	50
% Family Households	67.2	48.9	47.2	44.6	63.6	84.2	40.2	50.0	46.8	38.6	68.4
% Female Headed Families with Children	30.7	13.7	15.0	9.6	30.7	19.3	11.2	0.0	8.7	16.5	29.7
% Owner Occupied Homes	1.3	14.4	8.0	12.9	2.5	39.9	20.6	70.0	39.1	1.2	3.2
Demographics (2010)											
Population	1,094	1,697	608	401	281	694	1,874	94	1,421	52	303
% Pre-School Age (Age 0-4)	13.6	9.1	10.5	9.8	15.7	11.8	9.4	13.5	10.8	7.4	14.3
% Youth (Age 0-17)	40.5	30.1	35.5	25.6	49.3	45.1	25.6	57.9	28.3	30.2	35.0
% Senior (Age 65+)	1.4	6.8	2.5	7.5	0.8	2.0	5.9	0.2	3.6	4.8	2.5
% White	10.3	21.1	34.7	51.8	8.3	24.8	48.0	25.9	48.3	35.8	28.1
% Non-White	89.7	78.9	65.3	48.2	91.7	75.2	52.0	74.1	51.7	64.2	71.9
% Black or African American	39.1	26.1	32.4	28.5	80.7	41.8	25.5	65.0	26.2	37.9	56.3
% Hispanic or Latino	38.7	30.2	20.3	10.4	5.4	16.4	16.5	1.6	14.9	18.3	8.6
Total Households	377	672	220	183	88	186	826	21	603	20	122

	Allied	Badger Rd-Cypress-Burr Oaks-Brams Addition	Balsam-Russett Road	Brentwood[2]	Darbo-Worthington	Hammersley-Theresa-Bettys Lane	Leopold	Owl Creek	Park Edge-Park Ridge	Woodland Park Apartments[2]	Woodlands Apartments[2]
% Family Households	62.9	49.7	63.5	49.9	74.7	80.8	47.9	85.9	49.4	62.7	58.6
% Female Headed Families with Children	28.3	14.0	18.8	20.7	49.4	30.1	15.6	54.2	14.2	14.4	28.4
% Owner Occupied Homes	5.3	12.1	8.9	12.6	0.1	39.9	22.2	16.4	39.0	26.2	0.1
Housing Quality and Availability											
Median Year Built	1964	1962	1963	1963	1960	1971	1972	2006	1987	1970	1972
Average Housing Value ($)		107,835	133,800			165,369	133,200	172,800	185,529		
Square Foot Housing Value ($)	(1)	(2)	(2)	(1)	(1)	(2)	(3)	(2)	(2)	(1)	(1)
Assisted Housing Units	184	262	46	21	12	52	176	14	265	12	10
Property Foreclosures	(5)	(1)	(3)	(3)	(5)	(2)	(2)	(5)	(1)	(5)	(5)
Community Pride Violations	16	48	71	22	0	33	82	8	64	0	1
Public Safety											
Crimes Against Persons	34	33	20	18	17	15	36	1	26	11	1
Crimes Against Property	62	142	55	37	14	27	75	10	110	14	13
Crimes Against Society	174	187	184	115	56	84	159	10	182	37	16
Crashes	20	48	23	10	0	3	69	1	44	4	2
Calls for EMS/Fire Service	239	513	230	120	75	112	327	12	343	67	83
Health and Family Well-Being											
% Kindergarten Preparedness	(1)	(1)	(1)	(1)	(3)	(1)	(1)	(2)	(1)	(1)	(2)
Parent Education: % No HS/GED	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(2)	(2)
Parent Education: % College Graduate	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
% High Mobility Students	(1)	(2)	(1)	(1)	(1)	(1)	(2)	(4)	(2)	(1)	(1)
% Economically Disadvantaged Students	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
% Term or Near Term Births	(2)	(2)	(2)	(4)	(4)	(4)	(2)	(4)	(1)	(4)	(4)
% Appropriate Maternal Care	(1)	(1)	(1)	(3)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

	Allied	Badger Rd-Cypress-Burr Oaks-Brams Addition	Balsam-Russett Road	Brentwood[2]	Darbo-Worthington	Hammersley-Theresa-Bettys Lane	Leopold	Owl Creek	Park Edge-Park Ridge	Woodland Park Apartments[2]	Woodlands Apartments[2]
Economic Vitality											
Median Household Income	.	.	.	.	.	.	.	.	.	.	.
% Families in Poverty	.	.	.	.	.	.	.	.	.	.	.
% Unemployed	.	.	.	.	.	.	.	.	.	.	.
Hospital?	0	0	0	0	0	0	0	0	0	0	0
Pharmacies?	1	1	1	0	1	0	0	0	0	0	0
Banks?	1	1	1	1	0	0	1	0	1	0	0
Groceries?	0	1	0	1	0	0	1	0	1	1	0
Child Care?	1	1	1	0	1	1	1	0	1	0	1
Sum of Basic Goods and Services	3	4	3	2	2	1	3	0	3	1	1
Transportation											
% Area with Transit Stop Access	100.0	100.0	100.0	98.5	100.0	100.0	100.0	100.0	99.9	100.0	100.0
Available Transit Service: Total Trips	675	1,910	951	258	0	263	491	55	266	474	258
Available Transit Service: Total Trips per Dwelling Unit	1.3	2.0	2.7	0.8	0.0	1.1	0.4	1.7	0.3	3.7	2.0
% Households with Vehicle	.	.	.	.	.	.	.	.	.	.	.
% Bike Path Access	100.0	60.3	0.0	100.0	100.0	94.8	100.0	0.0	100.0	100.0	0.0
Pavement Condition	7.0	6.6	7.7	8.5	5.7	6.0	7.7	8.0	6.1	6.8	8.0

Source: Applied Population Laboratory, 2014

[a]Table provides descriptive statistics, when available. Bracketed values indicate quintile scores, and period symbols indicate missing data for a particular metric.

[b]Brentwood, Woodland Park Apartments, and Woodlands Apartments belong to the same NRT, though data are available for these three individual areas. We provided CI scores for the three areas separately.

Appendix E: Sampson Survey

Community Involvement & Collective Efficacy
[PC cohort 00 - 12]

1	**In the past year**, since (refer to month 1 year ago) how often have you attended a meeting for a local board, council, or organization that deals with any community problems? Would you say...	Never.....1 Once.....2 Two or three times.....3 About once a month.....4 More than once a month.....5

2	**In the past year**, have you served in a voluntary capacity on any local board, council, or organization that deals with community problems? (*If asked: voluntary = for no pay at all or for only a token amount*)	Yes.....Continue.....1 No.....Go to Q (4).....2

3	What kind of board or council is that -- that is, what is it about? If you have volunteered on more than one, please tell me about the one that you spend the most time on or that you feel is most important. (record verbatim)
	--- --- --- --- ---

(4) Aside from membership on a board or council, I'd like to ask also about informal activity in your community or neighborhood.

4	**In the past year**, have you gotten together informally with or worked with others in your community or neighborhood to try to deal with some community issues or problems?	Yes.....1 No.....2

5	How important do you consider voting to be? Would you say...	Very important.....1 Somewhat important.....2 Not very important.....3

Now I am going to read some statements about things that people in your neighborhood may or may not do.

Hand response card # 19

For each of these statements, please tell me whether you strongly agree, agree, disagree, or strongly disagree.

6	This is a close-knit neighborhood.	Strongly Agree.....1 Agree.....2 Neither Agree nor Disagree.....3 Disagree.....4 Strongly Disagree.....5
7	People around here are willing to help their neighbors	Strongly Agree.....1 Agree.....2 Neither Agree nor Disagree.....3 Disagree.....4 Strongly Disagree.....5
8	People in this neighborhood do not share the same values.	Strongly Agree.....1 Agree.....2 Neither Agree nor Disagree.....3 Disagree.....4 Strongly Disagree.....5
9	People in this neighborhood can be trusted.	Strongly Agree.....1 Agree.....2 Neither Agree nor Disagree.....3 Disagree.....4 Strongly Disagree.....5

Hand response card # 20

For each of the following, please tell me if it is very likely, likely, unlikely or very unlikely that people in your neighborhood would act in the following manner.

10	If a group of neighborhood children were skipping school and hanging out on a street corner, how likely is it that your neighbors would do something about it? Would you say it is....	Very likely.....1 Likely.....2 Neither likely nor unlikely.....3 Unlikely.....4 Very unlikely.....5
11	If some children were spray-painting graffiti on a local building, how likely is it that your neighbors would do something about it?	Very likely.....1 Likely.....2 Neither likely nor unlikely.....3 Unlikely.....4 Very unlikely.....5
12	If a child was showing disrespect to an adult, how likely is it that people in your neighborhood would scold that child?	Very likely.....1 Likely.....2 Neither likely nor unlikely.....3 Unlikely.....4 Very unlikely.....5
13	If there was a fight in front of your house and someone was being beaten or threatened, how likely is it that your neighbors would break it up?	Very likely.....1 Likely.....2 Neither likely nor unlikely.....3 Unlikely.....4 Very unlikely.....5
14	Suppose that because of budget cuts the fire station closest to your home was going to be closed down by the city. How likely is it that neighborhood residents would organize to try to do something to keep the fire station open?	Very likely.....1 Likely.....2 Neither likely nor unlikely.....3 Unlikely.....4 Very unlikely.....5

Source: Sampson et al. 2002

Appendix F: Comparison of Neighborhood Indicators

Table F1 highlights the indicators collected and made publicly available in Madison, Baltimore, and Minnesota. These indicators are broken down by the five subcategories included in the CI: public safety, economic vitality, health and family well-being, housing quality and availability, and transportation. This table is intended to give the City of Madison information about the types of data being collected elsewhere and used to evaluate and promote neighborhood well-being.

Table F1. Comparison of Neighborhood Indicators

	Madison	Baltimore[a]	Minnesota Compass
Public Safety	Crimes against persons Crimes against property Crimes against society Crashes Calls for service (EMS /fire)	General Crime and Safety • Part 1 crime rate • Violent crime rate • Property crime • Rate of gun-related homicides Juvenile Crime • Juvenile arrest rate • Juvenile arrest rate for drug-related offenses • Juvenile arrest rate for violent offenses Specific Crime Incidents Calls for Service • Rate of domestic violence calls • Rate of shootings calls • Rate of common assault calls • Rate of narcotics-related calls • Rate of motor vehicle accident calls	Crime rates Fear of crime Traffic injuries and deaths Victimization rates

	Madison	Baltimore[a]	Minnesota Compass
Economic Vitality	Median household income Percent families in poverty Percent unemployed Presence of basic goods and services • Hospital • Pharmacies • Banks • Grocery stores • Child care	Demographic Information • Median household income • Percent of households in specified income brackets • Percent of households living below poverty line • Percent of children living below poverty line Labor Force Participation and Employment • Percent of population employed • Percent of population unemployed and looking for work • Percent of population not in the labor market • Unemployment rate • Percent of adult population under community supervision Educational Attainment of the Labor Force • Percent of population with less than HS diploma or GED • Percent of population with HS diploma, some college, or associate degree • Percent of population with a bachelor's degree or above Commercial Investment Activity • Total number commercial properties • Percent of commercial properties with rehabilitation permits over $5,000 Business Size and Age • Total number of businesses • Total number of employees • Total number of businesses with fewer than 50 employees • Percent of businesses that are one/two/four year(s) old or less Neighborhood Business • Number of neighborhood businesses • Total number employees of neighborhood businesses • Number of banks and bank branches per 1,000 residents Regional Dynamics • Percent of employed residents who work outside of Baltimore city	Proportion of adults working Economic output (GDP) Jobs Median income Poverty

	Madison	Baltimore[a]	Minnesota Compass
Health and Family Well-Being	Percent kindergarten preparedness Parental education (% no HS or GED) Parental education (% college grad) Percent of high mobility students Percent of economically disadvantaged students Percent of term or near-term births Percent appropriate maternal care	Birth Outcomes • Teen pregnancy rate • Percent of births delivered at term • Percent of babies born with satisfactory birth weight • Percent of births where mother received early prenatal care Life Expectancy and Mortality • Life expectancy at birth • Infant mortality • Mortality by age Lead Poisoning • Number of children tested for elevated blood lead levels • Percent of children with elevated blood lead levels Built Environment and Food Security • Liquor outlet density • Fast food outlet density • Average healthy food availability index Social Assistance • Percentage families receiving TANF	Early childhood screening Low birth weight Test scores High school graduation Connection to caring adults Enrichment activities Educational attainment

	Madison	Baltimore[a]	Minnesota Compass
Housing Quality and Availability	Median year built Average housing value Square foot housing value Assisted housing units Property foreclosures Community pride violations	Housing Market • Median price of homes sold • Total number of homes sold • Median number of days on the market • Percent of homes sold in foreclosure • Percent of homes sold for cash • Percent of properties under mortgage foreclosure • Percentage of properties that are owner-occupied • Percent of residential properties that do not receive mail Housing Affordability • Percent of cost-burdened households (mortgage and rent) Housing Tax Credits • Rate of properties receiving Homestead Tax Credit • Rate of properties receiving Homeowners Tax Credit • Number of residential properties receiving historic tax credits Housing Permits and Code Enforcement • Rate of new construction permits • Percentage of residential probability with large rehabilitation permits • Rate of demolition permits • Percentage of residential properties receiving housing violations • Percent of residential properties that are vacant or abandoned • Percent of vacant properties owned by Baltimore city Sanitation • Rate of dirty street and alley reports • Rate of clogged storm drain reports	Number of homeless persons Cost-burdened households Homeownership gap
Transportation	Percent area with transit stop access Available transit service total trips Total trips per dwelling unit Percent of households with vehicle Percent bike path access Pavement condition	Percent of population driving alone to work Percent of population carpooling to work Percent of population using public transportation to commute to work Percent of population that walks to work Percent of population that uses other means to commute to work Percent of households with no vehicles available Travel time to work Walk score (convenience to various amenities) Bike lane miles	Access to places of employment by public transportation Congestion Pavement condition Transportation expensive

Madison	Baltimore[a]	Minnesota Compass
Other	Education and youth Arts and culture Sustainability • Green space and water use • Energy and weatherization Community (civic) engagement	Civic engagement Aging Immigration Environment

Sources: Applied Population Laboratory, 2014; BNIA-JFI *Vital Signs 13*; Minnesota Compass, 2016
[a] Additional information about Baltimore's neighborhood data is included in the *Vital Stat* reports.

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