

---

# Measurement to Promote a Healthier New Brunswick

Survey of New Brunswick, N.J. Data

---

Maria B. Pellerano, M.A., M.B.A., M.P.H.

Eric Jahn, M.D.

---

Rutgers Robert Wood Johnson Medical School

---

December 2014

**RUTGERS**  
Robert Wood Johnson  
Medical School

**NBT**  New Brunswick  
Tomorrow

*Johnson & Johnson*



THE LEADERSHIP TEAM

## Acknowledgements:

The authors would like to thank our community partners for their assistance and input throughout the year with this project. We would particularly like to thank Mayor James Cahill, Russell Marchetta, and Glenn Patterson of the City of New Brunswick, Bonnie Petrauskas of Johnson & Johnson Corporate Contributions, and Jeffrey Vega and Jaymie Santiago of New Brunswick Tomorrow. We would also like to thank New Brunswick resident Vincent Rifici for his careful review of the many data tables that this project generated and Susan Brownlee, PhD of the Rutgers Center for State Health Policy for her careful reading of the report and appendices.

## Note to Readers:

For this survey, the authors attempted to do a complete review of all health-related assessments of New Brunswick conducted from 2010 to 2013. If there are any omissions, we would appreciate it if you would contact Ms. Pellerano at [maria.pellerano@rutgers.edu](mailto:maria.pellerano@rutgers.edu).

Synopsis: Section I briefly describes the population of New Brunswick, comparing it to the populations of neighboring municipalities and of Middlesex County. Here we also introduce the concepts of “shared measurement” for “collective impact.” In section II, we review previous studies of health and health-related conditions affecting residents of New Brunswick, to learn what is known and not known. In Section III we describe “leading health indicators” of communities recommended by five authoritative state and national organizations. In Section IV we offer recommendations for measuring and displaying information about health and health-related conditions affecting residents of New Brunswick and provide a process to move forward with shared measurement for collective impact.

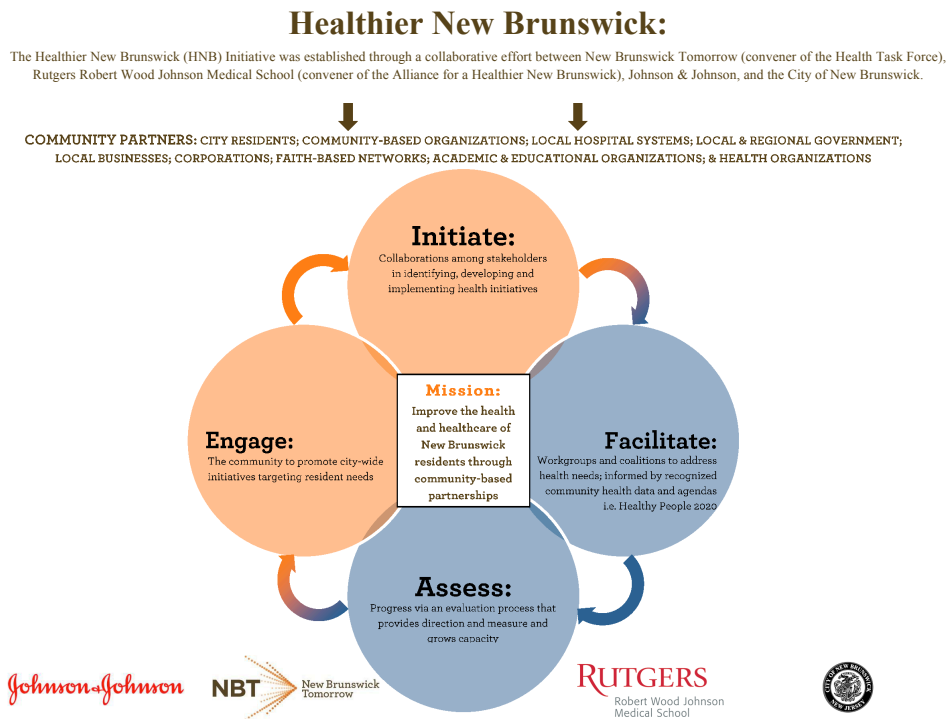
## TABLE OF CONTENTS

<b>I. FOREWORD—ABOUT HEALTHIER NEW BRUNSWICK.....</b>	<b>1</b>
<b>II. BACKGROUND AND INTRODUCTION.....</b>	<b>4</b>
A. Introduction to New Brunswick .....	4
B. Two Definitions .....	5
C. Introduction to Shared Measurement for Collective Impact.....	5
D. Why Collect New Brunswick Data? .....	6
E. New Brunswick is Similar to Other Urban Areas .....	7
F. New Brunswick is Different from Middlesex County .....	7
G. New Brunswick Health Resources .....	8
<b>III. WHAT DO WE KNOW ABOUT THE HEALTH OF NEW BRUNSWICK RESIDENTS?.....</b>	<b>11</b>
A. Existing Data Relevant to Healthier New Brunswick Projects .....	11
B. Lessons Learned from Reviewing Assessments of the Health of New Brunswick Residents.....	18
<b>IV. USING LEADING HEALTH INDICATORS FOR SHARED MEASUREMENT.....</b>	<b>21</b>
A. Indicator Review .....	21
B. Lessons Learned from the Indicator Review .....	25
<b>V. CREATING A SHARED MEASUREMENT INDICATOR SET .....</b>	<b>26</b>
A. Suggested Community Indicators for Healthier New Brunswick .....	26
B. Conclusion and Next Steps .....	30
<b>VI. REFERENCES.....</b>	<b>31</b>

## I. FOREWORD—ABOUT HEALTHIER NEW BRUNSWICK

This report supports the mission of Healthier New Brunswick (HNB), an initiative established in 2001 to improve the health and health care of New Brunswick residents through community-based partnerships. Healthier New Brunswick was established by New Brunswick Tomorrow, Rutgers Robert Wood Johnson Medical School, Johnson & Johnson, and the City of New Brunswick. HNB is committed to engaging community members in the process of developing a systems approach to health improvement - both to inform and to be informed - fostering mutual, reciprocal relationships that include educational, preventive and other community based interventions. See Figure 1 for a drawing of Healthier New Brunswick.

**Figure 1:** Schematic of Healthier New Brunswick



Improving the health of a community requires building partnerships across multiple sectors, increasing collaboration among nonprofit organizations, strengthening the voice

of community members, developing community champions, and engaging diverse populations at policy tables. The initiative provides community partners with a shared understanding of how their work serving different populations contributes to achieving the broader goals of the HNB initiative.

Using a collective impact approach, HNB mobilizes community members and organizations via multiple entities; primarily through the Rutgers Robert Wood Johnson Medical School, convener of the Alliance for a Healthier New Brunswick (Alliance) and New Brunswick Tomorrow's Health Task Force. In addition, Healthier New Brunswick benefits from the leadership provided by the initiative's corporate partner, Johnson & Johnson, and the City of New Brunswick. These four entities play an important role in connecting and mobilizing action related to health and wellness efforts in the City.

The Alliance sponsors workgroups and coalitions addressing asthma, mental health, substance abuse, nutrition and physical activity, and tobacco. In addition, the Alliance supports the New Brunswick Domestic Violence Awareness Coalition and maintains awareness about other priority areas such as lead and STDs, HIV and reproductive health.

The Health Task Force, one of three task forces created by New Brunswick Tomorrow, engages the community on a broad range of issues relevant to city residents and stakeholders, currently focusing on diabetes and access to health care. In addition, NBT also co-sponsors, with the Raritan Valley YMCA, the New Jersey Partnership for Healthy Kids - New Brunswick (NJPHK-NB) program, which addresses environmental and policy issues concerning childhood obesity.

Corporate partner Johnson & Johnson works in the community through collaborative partnerships that pool resources and leverage expertise across organizations to address priority health issues. Initiatives focus on: 1) addressing disease prevention and management including wellness initiatives that promote healthy life choices; 2) raising student achievement and preparing students for health care careers; and 3) galvanizing collaborative networks and building capacity of local partners to contribute

to a healthy and livable community. This includes community-wide initiatives such as The New Brunswick Community Farmers Market, The New Brunswick Community Food Alliance, Healthier New Brunswick and New Brunswick Ciclovía (see “New Brunswick Health Resources” for more information).

With the support and involvement of the City of New Brunswick, Healthier New Brunswick benefits from the City's platform of active lifestyles and healthy options. The City of New Brunswick has worked with community stakeholders on wellness initiatives such as Complete Streets, the New Brunswick Community Farmers Market, and New Brunswick Ciclovía. In addition it has worked with developers on the Wellness Plaza (for details about all of these initiatives, see the “New Brunswick Health Resources” section in the Background and Introduction).

Evaluation is a key element and vital component of a collective impact approach because it provides an understanding and appreciation of the total impact of these community efforts. This report provides baseline data as a starting point for measuring and communicating the impact that the work of many is having on the health of the community and its residents. Lastly, this report proposes a core set of indicators that are designed to help measure the future success of health and wellness efforts in the City of New Brunswick.

## **II. BACKGROUND AND INTRODUCTION**

### **A. Introduction to New Brunswick**

New Brunswick is a small city (pop.  $\approx$  55,000) located on the southwestern bank of the Raritan River in central New Jersey. The county seat of Middlesex County, and home to Rutgers, The State University of New Jersey and to Johnson & Johnson's Worldwide Headquarters, New Brunswick is often referred to as the "Healthcare City" because of the large number of health-related academic institutions, medical facilities, and pharmaceutical companies within its borders. The City is home to a mix of small businesses, large corporations, non-profit organizations, educational institutions, hospitals and government agencies. The City estimates that its population triples each day with employees, university students, and visitors (R. Marchetta, personal communication, January 8, 2014).

The City is home to a culturally and racially diverse population of homeowners, renters, and students. New Brunswick has a long history of attracting immigrants and today is home to a large immigrant population (36.8% foreign born) originating primarily from Latin America (82.9% of the foreign born). Almost 50% of the population self identifies as Hispanic (49.9%) and Spanish is spoken at home by 45.5% of the population (U.S. Census, 2010).

Within this complex picture, we reviewed all surveys, assessments, and studies of the health of residents of New Brunswick conducted from 2010 to 2013 aiming to help community partners develop a shared measurement strategy for New Brunswick. Shared measurement has been defined as "the use of a common set of measures to monitor performance, track progress toward goals, and learn what is or is not working" (Hanleybrown, Kania, & Kramer, 2012). A comprehensive and consistent set of indicators is the centerpiece of shared measurement and requires participation by all stakeholders in measurement system design and data collection.

## B. Two Definitions

Two words used throughout this report are indicators and metrics. When we use the word “indicator” we mean the characteristic of an individual, population, or environment, which is subject to measurement (directly or indirectly) and can be used to describe one or more aspects of the health of an individual or population. For example, the percentage of New Brunswick children who are obese is an indicator. When we use the word “metric” we mean a standard of measurement. For example, the number of adults who have a body mass index (BMI) greater than or equal to 30.

## C. Introduction to Shared Measurement for Collective Impact

The nonprofit consulting firm FSG (2013) defines collective impact as “the commitment of a group of actors from different sectors to a common agenda for solving a complex social problem.” Research has shown that successful collective impact requires five conditions (Hanleybrown et al., 2012):

- **Shared measurement:** Participants collecting data and measuring results consistently to ensure that efforts remain aligned and participants hold one another accountable.
- **A common agenda:** Participants have a shared vision for change, including a common understanding of the problem and a joint approach to solving it through agreed-upon actions.
- **Mutually reinforcing activities:** Participant activities, while differentiated, are coordinated through a mutually reinforcing plan of action.
- **Continuous communication:** Consistent and open communication is needed among the many players, to build trust, assure mutual objectives, and create common motivation.
- **Backbone support:** Organizations with staff and specific skills serve as the backbone for the initiative and coordinate participating organizations and agencies.

This report provides background data and recommendations for measuring and displaying community health indicators as part of an effort to achieve collective impact for improving the health of the New Brunswick community.



## D. Why Collect New Brunswick Data?

The state and federal governments often collect county data as the smallest geographical unit for most health data points. New Brunswick, while similar to other New Jersey similarly-sized urban areas, has a demographic composition different from Middlesex County's. For this study we reviewed demographic data for Middlesex County, New Brunswick and four similarly-sized urban areas including Irvington, East Orange, Passaic, and Perth Amboy. See Table 1 for demographic data. All demographic data used in the table and this section is from the U.S. Census Bureau 2009-2011 American Community Survey 3-Year Estimates.

**Table 1: Demographic Data (U.S. Census Bureau ACS, 2009-2011)**

	Middlesex County	New Brunswick	East Orange	Irvington	Passaic City	Perth Amboy
<b>Population</b> (2009-2011)	810,056	55,120	64,387	54,052	69,689	50,846
Adults	74.0%	68.8%	72.1%	71.2%	63.6%	70.7%
Children (to 19 years old)	26.0%	31.2%	27.9%	28.8%	36.4%	29.3%
<b>Racial / Ethnic Composition</b> (2009-2011)						
White persons	63.1%	68.2%	4.4%	8.2%	36.5%	74.6%
Black persons	9.4%	16.1%	88.7%	84.6%	8.3%	8.9%
American Indian & Alaska Native persons	0.2%	0.1%	0.4%	0.1%	0.5%	0.0%
Asian persons	21.7%	7.8%	0.5%	1.1%	4.5%	1.0%
Native Hawaiian and Other Pacific Islander persons	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Persons reporting some other race	3.3%	5.8%	4.5%	4.3%	48.3%	12.3%
Persons reporting two or more races	2.3%	2.0%	1.6%	1.6%	1.8%	3.1%
Persons of Hispanic or Latino origin	18.5%	50.7%	9.0%	10.7%	70.4%	79.4%
White persons not Hispanic	49.2%	24.2%	2.1%	2.6%	17.8%	11.9%
<b>Income</b> (2009-2011)						
Median household income (dollars)	\$ 77,311	\$ 39,878	\$ 37,580	\$ 37,792	\$ 29,485	\$42,155
Per capita income (mean dollars)	\$ 33,455	\$ 14,743	\$ 20,549	\$ 18,837	\$ 13,912	\$18,621
Percent of all persons below poverty level	8.2%	30.9%	19.5%	22.2%	29.7%	22.8%
Percent of all persons below poverty level excluding college students not living with relatives (Bishaw, 2013)	7.3%	21.9%	19.4%	Unavailable	29.7%	22.7%
Unemployed in labor force	6.3%	7.1%	13.6%	13.3%	6.4%	4.9%
<b>Education</b> (2009-2011)						
12th grade or less, no diploma	11.2%	33.4%	15.5%	18.5%	37.7%	31.4%
High school graduate only, % of persons age 25+	27.9%	32.5%	36.1%	38.2%	32.6%	35.0%
Bachelor's degree or higher, % of persons age 25+	39.2%	19.9%	15.7%	12.8%	13.7%	15.1%
<b>Home ownership</b> (2009-2011)						
Home ownership rate	66.3%	24.6%	25.8%	32.7%	25.0%	35.0%

## E. New Brunswick is Similar to Other Urban Areas

As Table 1 indicates, New Brunswick is very similar to the four urban areas chosen for comparison in this report. New Brunswick city officials often compare New Brunswick to eleven other urban “HOME Entitlement Cities”<sup>1</sup> (G. Patterson, personal communication, January 31, 2013). Of the eleven cities, we chose to review East Orange, Irvington, Passaic City, and Perth Amboy because they had population sizes similar to New Brunswick’s. Other cities either had smaller populations (for example Atlantic City has a population of 39,625) or larger populations (for example Trenton City has a population of 84,949). New Brunswick is also similar to East Orange, Irvington, Passaic City, and Perth Amboy in that it has a majority-minority population.<sup>2</sup> In the case of New Brunswick, Passaic City, and Perth Amboy, Hispanic persons are a majority-minority and in the case of East Orange and Irvington black persons are the majority-minority. In addition, New Brunswick shares similar income levels, poverty levels,<sup>3</sup> educational attainment rates, and rates of home ownership with East Orange, Irvington, Passaic City, and Perth Amboy.

Within Middlesex County, New Brunswick shares a similar population density with Perth Amboy. There are 9,597 people per square mile in New Brunswick and 9,829 people per square mile in Perth Amboy (NJDOH DMHSAS, 2013).

## F. New Brunswick is Different from Middlesex County

Table 1 also demonstrates that New Brunswick shares one similarity with Middlesex County: the ratio of adults to children with 69% adults and 31% children compared to Middlesex’s 74% adults and 26% children. New Brunswick’s population is racially /

---

<sup>1</sup> The HOME Entitlement Cities included are Atlantic City, Camden, East Orange, Elizabeth, Irvington, Jersey City, Newark, Passaic City, Paterson, Perth Amboy, and Trenton

<sup>2</sup> Majority-minority populations are those where one or more racial / ethnic minorities make up the majority of the population.

<sup>3</sup> In New Brunswick, the U.S. Census captures a large number of college students not living with relatives. In a recent report, *Examining the Effect of Off-Campus College Students on Poverty Rates*, a U.S. Census researcher examined the impact of college students not living with relatives on the poverty rates of cities and counties (Bishaw, 2013). As noted in the table, the poverty rate in New Brunswick is reduced when the college students are not included in the calculation.

ethnically different, is poorer, has attained less education, and has a lower rate of home ownership (a measure of municipal stability) than Middlesex County's. These differences mean that information about Middlesex County's population health outcomes and individual health status metrics cannot tell us much about New Brunswick. Therefore, New Brunswick needs to develop its own shared measurement data set and collection mechanism to be able to assess population health outcomes and community health indicators over time.

### G. New Brunswick Health Resources

From a health care perspective, New Brunswick is sometimes described as "resource rich." However, these resources may not always be well coordinated or well communicated, so some residents may be unaware of them.

New Brunswick is a 5.2 square mile city that is home to many large health care establishments including Robert Wood Johnson Medical School, the school's Child Health Institute; School of Public Health; Ernest Mario School of Pharmacy; Cancer Institute of New Jersey; School of Nursing; and Institute for Health, Health Care Policy and Aging Research, each a unit of Rutgers, The State University of New Jersey; also, Robert Wood Johnson University Hospital and its Bristol-Myers Squibb Children's Hospital; PSE&G Children's Specialized Hospital; and Saint Peter's

*"Well, obviously we have a lot of resources, and that's a strength. We have some of the largest and highest quality health care providers in the state, and probably the nation, right here in our community. And, you know, who could ask for more than that? We have on the part of the hospitals tremendous outreach efforts. They're out in the community; they've been terrific supporters of what happens here. You know, we have regular and ongoing interactions with RWJUH health promotion; SPUH mobile unit. The Promise Clinic, which is, you know, the medical school student-run health clinic, was created and operates across the street in St. John's, about to move down to Chandler, which services the patrons of the soup kitchen exclusively, that fall through the cracks. So, you know, we've got this really resource-rich outreach-oriented kind of health care system in town, and clearly health care providers that value outreach and connecting with populations. So that piece is there, and you know, they do a wonderful job."*

*Community stakeholder, 2012*

University Hospital. In addition, it is home to two major pharmaceutical companies, Johnson & Johnson and Bristol-Myers Squibb. Some of these institutions provide inpatient

and outpatient care throughout the city. The centers that serve the more vulnerable populations include the Eric B. Chandler Health Center and its two satellite offices on Church Street and in New Brunswick High School,<sup>4</sup> Family Medicine at Monument Square, and the Promise Clinic, all part of Rutgers Robert Wood Johnson Medical School; and Saint Peter's Healthcare System's Family Health Center at How Lane. In addition, New Brunswick is home to many community-based organizations, some of which participate in workgroups, coalitions, task forces, and activities that contribute to better health and wellness.

Despite all of these resources, there is a sense that they are geographically concentrated and not always well coordinated. In the recent *Community Health Needs Assessment for Saint Peter's University Hospital & Robert Wood Johnson University Hospital*, researchers found that most resources in the hospitals' patient catchment area (all of Middlesex County plus Somerset Township and South Brunswick Township) were concentrated in New Brunswick and sometimes within a single neighborhood in New Brunswick (Chakravarty, Brownlee, Tong, Pellerano, Howard, Shaw, Chase, & Crabtree, 2012). One community stakeholder described how health fairs are held repeatedly in one part of the city while some neighborhoods rarely if ever have access to a health fair (Chakravarty et al., 2012). Focus group participants from this same community health needs assessment recommended better communication and coordination between the City's two hospitals, academia, health care and public health organizations, community medical offices, and home care (Chakravarty et al., 2012).

In recent years, the city has seen a resurgence of interest in health and wellness. The city's revitalization initiatives include the Wellness Plaza, which was developed by the New Brunswick Development Corporation (DEVCO) and is owned and operated by the New Brunswick Parking Authority. The Wellness Plaza is home to the Robert Wood Johnson Fitness & Wellness Center, a full service health and wellness center. The City of New Brunswick has worked with the Center's management to provide city residents

---

<sup>4</sup> The healthcare providers at Eric B. Chandler Health Center's satellite office at New Brunswick High School provide services to local residents in addition to the students.

reduced cost memberships to its exercise and physical activity facility, free educational programming, and free swim lessons for all fourth grade New Brunswick public school students (Cahill, J., 2014). Furthermore, many city residents are organizing themselves to improve health and wellness. For example, the New Brunswick Community Food Alliance and the New Brunswick Community Farmer's Market are dedicated to addressing issues of food insecurity in the city by developing programs to provide access to low cost healthy foods, particularly fruits and vegetables. In October 2013, New Brunswick started Ciclovía, a citywide effort that created safe open space in which thousands of people participated (N.J. Bicycle & Pedestrian Resource Center, 2013). To date, the city has held four Ciclovía events with more planned for 2015.

### **III. WHAT DO WE KNOW ABOUT THE HEALTH OF NEW BRUNSWICK RESIDENTS?**

#### **A. Existing Data Relevant to Healthier New Brunswick Projects**

Healthier New Brunswick facilitates its work through the Alliance for a Healthier New Brunswick's workgroups and coalitions and New Brunswick Tomorrow's Health Task Force (HTF). The workgroups, coalitions, and taskforces currently focus on asthma; mental health and substance abuse; nutrition and physical activity; tobacco; domestic violence; lead exposure; STDs, HIV, and reproductive health; diabetes; and access to care. In support of this work, we focused our review on New Brunswick data that is relevant to these program areas. The complete resulting data set is included as Appendix A and is briefly summarized in the body of this report. Appendix B provides detailed information about each of the studies or assessments that are referenced in this report.

#### ***Asthma***

Most asthma data is collected on the county level by the state and federal governments, so data for asthma specific to New Brunswick is scarce. When two separate surveys conducted in New Brunswick asked the question, "Does anyone in your household have asthma," rates of 29.2% and 18% resulted (Weiner, MacKinnon, & Puniello, 2011 and Redlawsk, 2012 respectively<sup>5</sup>). Middlesex County rates reported by the state (8.4%) and federal governments (7.5%) differ greatly from the reported New Brunswick rates (New Jersey Asthma Awareness and Education Program, 2010 and CDC, 2010a respectively). New Brunswick has a low rate of avoidable inpatient hospitalizations for asthma in young adults (64 per 100,000 population) compared to the State (81 per 100,000 population) and to 13 low-income communities in New Jersey (whose rates vary from 72 to 275 per 100,000 population) according to the Rutgers Center for State Health Policy (Chakravarty, Cantor, Tong, DeLia, Lontok, & Nova, 2013). The variability of these New Brunswick data is perplexing and suggests that more careful collection of additional data is needed.

---

<sup>5</sup> These two surveys were conducted for New Brunswick Tomorrow. Weiner, MacKinnon & Puniello, 2011 was conducted by The Bloustein School of Planning and Public Policy at the Rutgers Edward J. Bloustein School of Planning and Redlawsk, 2012 was conducted by the Rutgers Eagleton Center for Public Interest Polling.

### ***Mental Health and Substance Abuse***

Approximately a quarter of New Brunswick residents (26.4%) report that someone in their household has depression, anxiety, or other mental health condition (Weiner, et al., 2011) compared to fewer than ten percent of Middlesex County residents (8.1%) who reported that they saw a provider for an emotional or mental health problem in the past 12 months (Chakravarty, et al., 2012). Researchers found that in the New Brunswick area a third of high utilizing admitted hospital patients had mental health comorbidities (33.9%) but emergency department high utilizers had fewer (16.8%) mental health comorbidities (Chakravarty, et al., 2013).

We have primary data on substance abuse treatment in New Brunswick because the State of New Jersey regularly publishes data for substance abuse admissions by type of primary drug and municipality of residence. In 2012, five hundred New Brunswick residents were admitted into treatment programs of which 32% were for alcohol, 31% for heroin and opiates, 25.8% for marijuana, 7.6% for cocaine, and 3.6% for other (Zhu, 2013). Information on substance abuse behaviors is available for New Jersey counties but is unavailable for municipalities. For example, 10.6% of adult Middlesex County residents report being a binge drinker (males having five or more drinks and females having four or more drinks on one occasion) and 3.1% of the same adults in Middlesex County report being heavy drinkers (males having more than two and females having more than one drink per day) (CDC, 2010a).

In addition, the State of New Jersey publishes data on substance abuse social indicators for New Jersey counties and municipalities. These social indicators include crime attributable to alcohol and drug use and alcohol and tobacco retail availability. In 2010, there were 2.17 crimes attributable to alcohol per 1,000 New Brunswick residents and 9.95 attributable to drugs per 1,000 New Brunswick residents. In 2009, there were 1.29 licensed alcohol retailers per 1,000 New Brunswick residents and 1.5 licensed cigarette retailers per 1,000 residents. In New Jersey, there are .95 licensed alcohol retailers per 1,000 residents and 1.21 licensed cigarette retailers per 1,000 residents (NJDOH DMHSAS, 2013).

## ***Nutrition and Physical Activity***

The New Jersey Childhood Obesity Study (2010), funded by the Robert Wood Johnson Foundation, provides us with detailed information on weight status, nutrition, and physical data for children in New Brunswick (Lloyd, Ohri-Vachaspati, Brownlee, Yedidia, Gaboda, & Chou, 2010 and Ohri-Vachaspati, Lloyd, Chou, Petlick, Brownlee & Yedidia, 2010). The New Jersey Childhood Obesity Study collected BMI (body mass index) data for all public school children in New Brunswick (from school year 2008-2009) and conducted a survey of 208 parents in the community about their child's (ages 3-18) nutrition and physical activity behaviors and environments (data collected in 2009-2010). In contrast, the only data for adults is self-reported weight. The New Jersey Childhood Obesity Study found that substantial numbers of school children in all age groups (3-19)<sup>6</sup> in New Brunswick have weight issues. Almost half of the New Brunswick public school children in every age group (46.4% average for all ages) are overweight or obese with the highest rates (47.9%) seen among the youngest, ages 3-5, and the lowest rates (44.0%) among the oldest, ages 12-19 (Ohri-Vachaspati et al., 2010). Parents' perceptions were different from measured weight status; for example, 92% of parents of children ages 3-5 said that their child was not overweight, 8% said their child was slightly overweight, and none said their child was very overweight (Lloyd et al., 2010).

The New Jersey Childhood Obesity Study also provides detailed information about food behaviors and environments and physical activity behaviors and environments. Children in New Brunswick have very low rates of fruit (including 100% juice) and vegetable consumption with 45% consuming fewer than two servings of fruit per day and 70% consuming fewer than two servings of vegetables per day (Lloyd et al., 2010). Other food behaviors of New Brunswick children include 12% making two or more visits to a fast-food establishment per week, 11% drinking two or more sugar-sweetened beverages per day and 21% not eating breakfast daily (Lloyd et al., 2010). In contrast, 51% of parents strongly agree and 39% somewhat agree that their child eats healthy

---

<sup>6</sup> For this study, BMI data was collected for all students in New Brunswick public schools including those 19 years of age. The survey, described above, defined children as ages 3-18.



and only 10% somewhat or strongly disagree that their child eats healthy (Lloyd et al., 2010). A large percentage (72%) of parents shop at grocery stores but 23% of Hispanic parents shop at corner stores or bodegas for most of their food. Parents also report that their main food store does not have a large selection of fruits and vegetables (53%) or low-fat foods (48%). In addition, parents cite cost as a barrier to purchasing fruits and vegetables (53%) and low-fat foods (46%) at their main food store (Lloyd et al., 2010). Twenty-eight percent of parents with children ages 3-18 report that they are sometimes food insecure<sup>7</sup> with higher rates reported by Hispanic (38%) than non-Hispanic black (21%) parents.

Children in New Brunswick appear to be getting less physical activity than is recommended (see Table 2). The U.S. Department of Health and Human Services recommended in 2008 that all children get 60 minutes of physical activity a day (USDHHS, 2008) yet parents report that only 19% of New Brunswick children meet this guideline (Lloyd et al., 2010). Barriers reported by parents included traffic (41%), criminal activity (36%), unpleasant conditions (25%) and lack of any exercise facilities such as parks in their neighborhoods (42%) (Lloyd et al., 2010).

As noted above, the only weight and physical activity data for adults are self-reported. For example, 21% of New Brunswick residents surveyed said that someone in their household has obesity or weight-related issues (Redlawsk, 2012). Approximately sixty percent (59.9%) of New Brunswick adults surveyed said that they were told to exercise regularly by their physician and over forty percent (43.2%) reported having an indoor place to regularly exercise (Weiner et al., 2011)

---

<sup>7</sup> Defined as “sometimes or often do not have enough food at home to eat.”

**Table 2: Physical Activity of New Brunswick Children, Ages 3-18 (Lloyd et al., 2010)**

Percentage not active at least 60 minutes a day 6-7 days a week	81%
Percentage not active at least 30 minutes a day 6-7 days a week	57%
Percentage who never walk, bike, or skateboard to school	56%
Percentage who get physical activity at school 2 or fewer days per week	55%
Percentage who spend more than 2 hours a day on weekdays on TV, computer, or video games	18%
Percentage who spend more than 2 hours a day on weekend days on TV, computer, or video games	47%
<b>Parent believe that their child gets enough physical activity</b>	
Strongly agree	54%
Somewhat agree	36%
Somewhat or strongly disagree	10%

### **Tobacco**

There is scant data about tobacco use in New Brunswick because the State of New Jersey does not report tobacco use data at the municipal level. Consequently, we only have self-reported data on surveys for New Brunswick and Middlesex County. In 2011, 20.9% of those surveyed in New Brunswick reported that someone in the household smokes (Weiner, et al., 2011).

### **Domestic Violence**

Each year, the New Jersey State Police Uniform Crime Reporting Unit compiles and publishes data on domestic violence, including municipal data. In 2011, there were 550 domestic violence offenses reported in New Brunswick, up from 528 in 2010. New Brunswick accounts for approximately ten percent (10.7%) of Middlesex County's 5,143 domestic violence offenses even though it makes up only 6.8% of Middlesex County's population (State Police of New Jersey, 2011). In contrast, there were only 267 domestic violence offenses reported in Perth Amboy. In addition, we have New Brunswick data for substantiated child maltreatment reports to the State of New Jersey's Department of Children and Families child abuse hotline. In calendar year 2011, 11.1% of the New Brunswick abuse/neglect reports (110 out of 989) were

substantiated after each was investigated. New Brunswick accounted for almost twenty percent (19.3%) of Middlesex County's 570 substantiated child abuse/neglect reports (NJ DCF, 2011).

### ***Lead Exposure***

Rates for lead screening and elevated blood lead levels are reported for the State of New Jersey, Middlesex County and New Brunswick (NJDOH Lead, 2011). For children 6 to 29 months old, New Jersey screens 48%, Middlesex County screens 37%, and New Brunswick 69% for blood lead levels (NJDOH Lead, 2012). Among the screened children ages 6 to 29 months, New Jersey has 3.6% with confirmed blood lead of  $\geq 5$   $\mu\text{g}/\text{dL}$ <sup>8</sup>, Middlesex County has 2.5% and New Brunswick has 4.5% (NJDOH Lead, 2012). For children less than 6 years old, New Jersey screens 28%, Middlesex County screens 22%, and New Brunswick 40% for blood lead levels (NJDOH Lead, 2012). Among screened children less than six years of age with confirmed blood lead of  $\geq 5$   $\mu\text{g}/\text{dL}$ , New Jersey has 3.8%, Middlesex County has 2.6% and New Brunswick has 4.6% (NJDOH Lead, 2012). It is important to note that these percentages apply only to children who were screened for lead, not to the general population of children, whose lead levels remain unknown.

It is believed that New Brunswick children have higher rates than those in Middlesex County because the city's housing stock (a surrogate for lead poisoning) is older than that of other municipalities in Middlesex County. There is a concern that young children are exposed to lead dust in homes where lead paint exists, mostly in housing built before 1951. Almost sixty percent (58.5%) of New Brunswick's housing was built before 1951 compared to Middlesex County (37.2%) (U.S. Census, 2010).

### ***STDs, HIV, and Reproductive Health***

The State of New Jersey maintains registries for several sexually transmitted diseases (STDs) and HIV/AIDS and annually reports these data for each county and municipality.

---

<sup>8</sup> Five micrograms / deciliter of blood (5  $\mu\text{g}/\text{dL}$ ) is the standard used by the federal government as of January 2012.

New Brunswick accounts for 20.4% of gonorrhea cases and 18.8% of chlamydia cases in Middlesex County (NJDOH STD, 2012). In addition, New Brunswick residents account for almost a quarter (22.9%) of the diagnosed HIV/AIDS cases reported in Middlesex County during 2012 (NJ DOH HIV, 2012a and 2012b).

### ***Diabetes***

Most diabetes data is collected by the state and federal governments on the county level, so there currently is little data available for diabetes in New Brunswick. When two separate surveys in New Brunswick asked the question, “Does anyone in your household have diabetes,” varying rates of 36.9% and 24% resulted (Weiner et al., 2011 and Redlawsk, 2012 respectively). These rates differ greatly from those reported by the federal government, 8.1% for Middlesex County and 8.8% for New Jersey (CDC, 2011). We see a greater reporting of diabetes by residents in New Brunswick compared to the state and county averages. According to the 2012 Eagleton Poll, a disproportionate number of the most vulnerable populations have poor health. Households in the lowest income bracket (< \$20,000 a year) were three times more likely to have “poor” health status (as defined by the Eagleton researchers) than those making between \$20,000 and \$50,000 (Redlawsk, 2012).

According to the Rutgers Center for State Health Policy, New Brunswick has a relatively low rate of avoidable inpatient hospitalizations for Diabetes Mellitus (57 per 100,000 population) compared to the 99 per 100,000 population average for 13 low-income communities in New Jersey (where rates vary from 45 to 219 per 100,000 population) (Chakravarty et al., 2013). As with the asthma data, the variability of the New Brunswick diabetes data is perplexing and can only be resolved by the careful collection of additional data.

### ***Access to Healthcare***

Most data about access to healthcare in New Brunswick is collected by surveys. In 2012, almost a quarter (24.0%) of New Brunswick residents told surveyors that they use the emergency room as their primary location of care (Redlawsk, 2012) but in 2011

fewer than ten percent (9.6%) said they normally received care at the emergency room (Weiner et al., 2011). A fifth said it was somewhat hard (14.0%) or very hard (6.0%) to obtain health care (Redlawsk, 2012). The U.S. Census estimates that 32.6% of New Brunswick's civilian noninstitutionalized population has no health insurance coverage (U.S. Census Bureau ACS, 2012). In 2012, Redlawsk reported that New Brunswick residents cited barriers to receiving care that included lack of insurance (54.0%), excessive wait time or no doctors (35.0%), lack of residency status (4.0%) or other (8.0%).

## **B. Lessons Learned from Reviewing Assessments of the Health of New Brunswick Residents**

### ***Information Not Collected Consistently Over Time***

As part of our review, we looked back at two previous health assessments of New Brunswick conducted in 2004 (Cantor, Guarnaccia, Brownlee, Schneider, & Nova, 2006) and 2001 (Middlesex PHD, 2001). Some of the information collected during these earlier assessments is no longer collected or is not collected in a manner that provides the detailed information found in the earlier assessments. For example, the 2006 study provided information about children's dental health, mental health, second hand smoke exposure, and lead exposure (Cantor et al., 2006) but to our knowledge studies conducted since 2006 in New Brunswick have not collected this data. In addition, the 2006 study included information from focus groups (conducted in 2004), which shed light on some of the health problems reported in the numerical data. For example, during focus groups oral health was the most frequently mentioned problem among school age children, particularly by school nurses. Researchers concluded that poor oral health was a result of a combination of lack of access to dental care, diets that fostered tooth decay, and lack of fluoride in New Brunswick's water supply. Focus group participants noted that dental problems can lead to a range of consequences including children unable to eat well because of dental deterioration, which in turn can lead to low energy and inability to concentrate in school. In addition, dental decay also affected children's self-esteem because it affected how they looked and smiled (Guarnaccia, P., Martinez, I., Silberberg, M., Cantor, J.C., & Davis, D., 2004).

In 2001, the Middlesex County Public Health Department conducted a Community Needs Assessment in each of the 20 municipalities for which it was responsible (Middlesex PHD, 2001). Each of these municipal assessments provided detailed information about physical, mental, and dental health as well as many specific health conditions (for example hypertension and cholesterol), health screenings and precautions (for example immunization and cancer screenings), and health behaviors (for example seat belt use and daily exercise/diet). This type of assessment is no longer conducted so today each community has to aggregate data across multiple studies, assessments and surveys, making it difficult or impossible to track improvements in a community over time.

***New Brunswick's Shifting Demographics Make it Difficult to Assess over Time***

Since 2001, the New Brunswick population has increased by almost 33% and its demographics have shifted substantially (see Table 3). These rapid changes challenge us to compare population health outcomes over time because some characteristics of a population can influence health outcomes. For example, according to the latest decennial U.S. Census we know that 36.8% of New Brunswick's population are foreign-born and 80.9% of the foreign-born population are not U.S. citizens (U.S. Census, 2010). Some researchers have shown that immigrants are vulnerable to inadequate health care because of socioeconomic background, immigration status, limited English proficiency, lack of access to Federal assistance programs, residential location, and stigma and marginalization. These vulnerabilities can lead to poor health outcomes (Derose, Escarce, & Lurie, 2007). Whether or not New Brunswick will continue to see dramatic demographic shifts is unknown but we are challenged to develop an indicator set that will still allow us to compare data points from one year to another.

**Table 3: Population Demographics for New Brunswick in 2010 and as reported in 2001 by Middlesex County**

	<b>2001</b>	<b>2010</b>
<b>Population</b>	41,711	55,223
Adults	66.1%	70.1%
Children	33.9%	29.9%
<b>Racial / Ethnic Composition</b>		
White	57.4%	45.5%
Black	29.6%	16.0%
American Indian and Alaska Native persons	0.5%	0.9%
Asian or Pacific Islander	3.9%	7.6%
Hispanic origin	18.6%	49.9%

### ***Model Data Set Provides a Way Forward***

In the “Nutrition and Physical Activity” data section we have provided information from the New Jersey Childhood Obesity Study conducted in New Brunswick (see Ohri-Vachaspati et al., 2010 and Lloyd et al., 2010). This data set provides a model for future work because it not only provides us with physical data (BMIs of all public school children) but also information on physical activity, food behaviors, and environments. This data set provides information about both the “what” and the “why” of obesity, gives us information on reality vs. perception, and elucidates barriers to healthy living. In addition, researchers are now following up this study with two more BMI data collections and a survey about perceptions, behaviors, and environments (M. Kennedy, personal communication, September 27, 2013). This type of data collection is a uniquely valuable approach to problem solving because it collects data that clarifies the characteristics and causes of a problem.

## **IV. USING LEADING HEALTH INDICATORS FOR SHARED MEASUREMENT**

### **A. Indicator Review**

We reviewed national and state "leading health indicators" to inform the development of a shared measurement data set for collective impact in New Brunswick. The Institute of Medicine defines leading health indicators as "measurements of health-related concepts that reflect major public health concerns" (IOM, 2011). For this study, we reviewed five efforts: the federally-sponsored Healthy People 2020, the state-sponsored Healthy New Jersey 2020, the National Prevention Strategy, a set of indicators developed by Kaiser Permanente for its California hospitals, and the County Health Rankings & Roadmaps developed by the University of Wisconsin, Population Health Institute. For each of these indicator sets we have created a table that provides information for each indicator including the indicator and/or its objective; data where available for the baseline value, target value, and New Brunswick value; and data showing the indicators that are relevant to the Alliance Workgroups and Coalitions and the Health Task Force (see Appendix C, Tables 1 to 5).

#### ***Healthy People 2020***

Historically, the work of Healthier New Brunswick has been informed by the federal Healthy People program, a national set of goals and objectives with 10-year targets intended to guide health promotion and disease prevention efforts around the country. The overarching goals of Healthy People 2020 are to:

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve the health of all groups.
- Create social and physical environments that promote good health for all.
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

For Healthy People 2020, the U.S. Department of Health and Human Services (USDHHS) developed health indicators for nearly 600 objectives contained in 42 topic areas and recommending approximately 1,200 measurements. USDHHS selected a



smaller set of 26 indicators called Leading Health Indicators (see Figure 2) as high priority health issues to motivate action at the national, state, and community levels (USDHHS, 2013). The leading health indicators align closely with the workgroups, coalitions, and task forces of Healthier New Brunswick (see Appendix C, Table 1 for the Healthy People 2020 Leading Health Indicators)..

**Figure 2: Healthy People 2020: Leading Health Indicators**

Leading Health Indicators	
12 Topic Areas	26 Leading Health Indicators
Access to Health Services	<ul style="list-style-type: none"> <li>Persons with medical insurance</li> <li>Persons with a usual primary care provider</li> </ul>
Clinical Preventive Services	<ul style="list-style-type: none"> <li>Adults who receive a colorectal cancer screening based on the most recent guidelines</li> <li>Adults with hypertension whose blood pressure is under control</li> <li>Adult diabetic population with an A1c value greater than 9 percent</li> <li>Children aged 19 to 35 months who receive the recommended doses of diphtheria, tetanus, and pertussis (DTaP); polio; measles, mumps, and rubella (MMR); Haemophilus influenzae type b (Hib); hepatitis B; varicella; and pneumococcal conjugate (PCV) vaccines</li> </ul>
Environmental Quality	<ul style="list-style-type: none"> <li>Air Quality Index (AQI) exceeding 100</li> <li>Children aged 3 to 11 years exposed to secondhand smoke</li> </ul>
Injury and Violence	<ul style="list-style-type: none"> <li>Fatal injuries</li> <li>Homicides</li> </ul>
Maternal, Infant, and Child Health	<ul style="list-style-type: none"> <li>Infant deaths</li> <li>Preterm births</li> </ul>
Mental Health	<ul style="list-style-type: none"> <li>Suicides</li> <li>Adolescents who experience major depressive episodes (MDEs)</li> </ul>
Nutrition, Physical Activity, and Obesity	<ul style="list-style-type: none"> <li>Adults who meet current Federal physical activity guidelines for aerobic physical activity and muscle-strengthening activity</li> <li>Adults who are obese</li> <li>Children and adolescents who are considered obese</li> <li>Total vegetable intake for persons aged 2 years and older</li> </ul>
Oral Health	<ul style="list-style-type: none"> <li>Persons aged 2 years and older who used the oral health care system in the past 12 months</li> </ul>
Reproductive and Sexual Health	<ul style="list-style-type: none"> <li>Sexually active females aged 15–44 years who received reproductive health services in the past 12 months</li> <li>Persons living with HIV who know their serostatus</li> </ul>
Social Determinants	<ul style="list-style-type: none"> <li>Students who graduate with a regular diploma 4 years after starting ninth grade</li> </ul>
Substance Abuse	<ul style="list-style-type: none"> <li>Adolescents using alcohol or any illicit drugs during the past 30 days</li> <li>Adults engaging in binge drinking during the past 30 days</li> </ul>
Tobacco	<ul style="list-style-type: none"> <li>Adults who are current cigarette smokers</li> <li>Adolescents who smoked cigarettes in the past 30 days</li> </ul>

### **Healthy New Jersey 2020**

The New Jersey Department of Health has created its own set of five Leading Health Indicators as part of the Healthy New Jersey 2020 effort (see Appendix C, Table 2). These indicators communicate high-priority health issues and reflect the state’s major public health concerns (NJ Health, 2013). Healthy New Jersey 2020 is focusing on access to primary care, birth outcomes, childhood immunization, heart disease, and obesity.

### **National Prevention Strategy**

We reviewed the National Prevention, Health Promotion and Public Health Council’s, National Prevention Strategy (NPS), which categorizes 56 objectives for four strategic directions and seven priorities (see Figure 3 for an illustration of “America’s Plan for Better Health and Wellness”). We have included these indicators because the National Prevention Strategy’s seven priorities align closely with those of the workgroups, coalitions, and task forces of Healthier New Brunswick (see Appendix C, Table 3).

**Figure 3:** The National Prevention Strategy – The four Strategic Directions circle the center and the Seven Priorities are in the exterior circle.



Note that some of the National Prevention Strategy Indicators are the same as or similar to the Healthy People 2020 Leading Health Indicators (NPC, 2011).

### ***Kaiser Permanente***

We reviewed a set of indicators that Kaiser Permanente created for the Community Benefit requirements of its California hospitals (see Appendix C, Table 4). We present this indicator set because it not only includes health indicators (for outcomes, behaviors, and access) but also indicators of demographic, social and economic factors, plus the physical environment. These additional indicators align with Healthy People 2020's goal to "create social and physical environments that promote good health for all." The non-health indicators are important to health outcomes because they can either inhibit or support good behaviors and outcomes. For example, walkability of a community is very important to physical activity and grocery store access is very important to nutrition. In addition, Kaiser Permanente has identified three "Key Driver Indicators" as being most predictive of poor health outcomes. These three indicators are available at the sub-county geographic level (down to the census block), which allows people to understand details at the neighborhood level and/or for specific populations including in New Brunswick. Kaiser Permanente's three key driver indicators are:

- Percent of the population below 100% of the federal poverty level;
- Percent of adults age 25+ without a high school diploma or equivalent; and
- Percent of uninsured population (Kaiser Permanente, 2012).

### ***County Health Rankings & Roadmaps***

Lastly we reviewed an indicator set created by the University of Wisconsin's Population Health Institute (see Appendix C, Table 5). The County Health Rankings & Roadmaps rank the health of nearly every county in the United States. This indicator set "is based on a model of population health that emphasizes the many factors that, if improved, can help make communities healthier places to live, learn, work and play." This conceptual model of population health includes both health outcomes (length and quality of life) and health factors (determinants of health). These outcomes and factors are broken down into components, which are broken down into subcomponents called focus areas (noted in parentheses). These include mortality; morbidity; health behaviors (tobacco use, diet and exercise, alcohol use, and sexual activity); clinical care (access to care and quality of care); social and economic factors (education, employment, income, family and social

support, and community safety); and the physical environment (environmental quality and built environment) (UWPHI, 2013). The University of Wisconsin, Population Health Institute has further ranked these components and factors by weighting them (see Figure 4 in Appendix D).

## **B. Lessons Learned from the Indicator Review**

When we start developing a shared measurement set of indicators for collective impact in New Brunswick, there are two important considerations.

First, many of the recommended indicators are currently not collected at the municipal level or are collected in a manner that does not provide us with enough detailed information to guide action. By reviewing the tables of indicators (see Appendix C) one can see that more than 80% are not now being collected. In addition, some of the survey data is collected at the household level rather than at the individual level so we cannot ascertain a true prevalence rate. (Prevalence rate is the proportion of a population found to have a particular condition or behavior, such as diabetes, heart disease, or smoking habit.)

Secondly, there are no national leading health indicators for some current issues of concern in New Brunswick. For example, none of the reviewed indicator sets includes lead poisoning in children – an issue of concern in New Brunswick because of its older housing stock. An indicator might need to be developed for lead poisoning – and perhaps other issues as well – if community stakeholders decide we need to track such information.

## **V. CREATING A SHARED MEASUREMENT INDICATOR SET**

To facilitate the creation of a shared measurement indicator set, here we offer a tentative list of indicators for consideration and Appendix D to guide stakeholders as they develop and display an indicator set.

### **A. Suggested Community Indicators for Healthier New Brunswick**

We have drafted a tentative list of indicators for consideration by members of the Healthier New Brunswick initiative as we discuss an indicator set for shared measurement for collective impact (see Table 4). We have marked these indicators according to the methods by which they might be collected, including: 1) those “already collected” periodically by other organizations, 2) those that could be collected by Healthier New Brunswick using surveys and / or focus groups; and 3) those that could be collected from electronic health records (EHR), emergency room utilization data sets (ER utilization), and insurance billing data (insurance).

As noted in Appendix D, we feel it is important to consider using quantitative and qualitative data, particularly focus groups, to flesh out the statistics more fully and to learn about important changes in or early warnings for health outcomes in New Brunswick.

#### ***Explanation of Table 4***

Table 4 includes notations in parentheses after some of the indicators. For the “already collected” indicators, these notations describe the entity that collects the data. For the “Survey/Focus Groups” indicators, these notations describe the BRFSS question number from the 2013 set of questions (BRFSS, 2012). For the “electronic health records” indicators, these notations describe the records most likely to include the indicator.

**Table 4: Suggested Set of Indicators**

	Already Collected	Surveys/Focus Groups	Electronic Health Records
<b>Demographics (including income and education)</b>	✓		
Population demographics for adults and children (U.S. Census)	✓		
Race / ethnicity composition (U.S. Census)	✓		
Median household income (U.S. Census)	✓		
Per capita income (U.S. Census)	✓		
Percent of all persons below poverty level (U.S. Census)	✓		
Percent of children under age 18 in poverty (U.S. Census)	✓		
Homeownership rate (U.S. Census)	✓		
Unemployed in civilian labor force (U.S. Census)	✓		
High school graduate or higher, percent of persons age 25 and over (U.S. Census)	✓		
School reading proficiency – 4 <sup>th</sup> grade (NJ Dept. of Education)	✓		
Percent of 9th grade cohort that graduates in 4 years (NJ Dept. of Education)	✓		
<b>General Health Status</b>			
Proportion of adults reporting fair or poor health (BRFSS 1.1)		✓	
<b>Asthma</b>			
Diagnosed with asthma (BRFSS 7.4 & 7.5)		✓	
Number of days the Air Quality Index (AQI) exceeds 100 (NJ Dept. of Environmental Protection)	✓		
<b>Mental Health &amp; Substance Abuse</b>			
Proportion of adults with a depression disorder (BRFSS 7.10)		✓	
Percent of adults without social/emotional support (BRFSS Module 22, question 1)		✓	
Proportion of adults who binge drink during the past two weeks (BRFSS 10.3)		✓	
Proportion of persons aged 12 years or older who reported nonmedical use of any psychotherapeutic drug in the past year		✓	
Proportion of youth aged 12 to 17 years who have used illicit drugs in the past 30 days		✓	
Proportion of primary care physician office visits that screen adults and youth for depression (EHR and insurance)			✓
<b>Nutrition &amp; Physical Activity</b>			
Proportion of adults and children who are obese		✓	

	Already Collected	Surveys/Focus Groups	Electronic Health Records
Proportion of adults and children who meet physical activity guidelines for aerobic physical activity (BRFSS 12.1, 12.3 & 12.4)		✓	
Fruit/vegetable consumption by adults and children (BRFSS 11.2 & 11.3-11.6 collapsed)		✓	
Soft drink consumption		✓	
Percent of all restaurants that are fast-food establishments (Middlesex County Health)	✓		
Percent of population who are low-income and do not live close (< 1 mile) to a grocery store (U.S. Census and Middlesex County Health)	✓		
Liquor store access (NJ Alcohol Beverage Control)	✓		
Access to recreational facilities (City of New Brunswick)	✓	✓	
Neighborhood safety		✓	
Proportion of infants who are breastfed exclusively through 6 months (EHR)			✓
<b>Tobacco</b>			
Reduce the proportion of children aged 3 to 11 years exposed to secondhand smoke		✓	
Adult smoking (EHR)			✓
Youth smoking (EHR)			✓
<b>Domestic Violence</b>			
Domestic violence reports (NJ State Troopers)	✓		
Rate of homicides (FBI)	✓		
Violent crime rate per 100,000 population (FBI)	✓		
Proportion of children exposed to violence within the past year, either directly or indirectly (e.g., as a witness to a violent act; a threat against their home or school)		✓	
<b>Lead</b>			
Percent of housing built before 1979 (U.S. Census)	✓		
Percent of children with elevated blood lead levels ( $\geq 10\mu\text{g/dL}$ )			✓
<b>STDs, HIV &amp; Reproductive Health</b>			
Percent of live births with low birth weight of < 2,500 grams (NJ SHAD)	✓		
Proportion of pregnant females who received early and adequate prenatal care (NJ SHAD)	✓		
Pregnancy rates among adolescent females (NJ SHAD)	✓		
Proportion of sexually active females aged 15 to 44 years who received reproductive health services in the past 12 month (EHR)			✓

	Already Collected	Surveys/Focus Groups	Electronic Health Records
Rate of infant mortality per 1,000 live births (EHR)			✓
<b>Access to Care</b>			
Proportion of population that is uninsured (BRFSS 3.1)		✓	
Proportion of persons with a usual primary care provider (BRFSS 3.2)		✓	
Proportion of individuals who are unable to obtain or delay in obtaining necessary medical care, dental care, or prescription medicines (BRFSS 3.3)		✓	
Proportion of persons who report their health care provider always listens carefully		✓	
Proportion of persons who report their health care providers always explained things so they could understand them		✓	
<b>Diabetes</b>			
Diagnosed with diabetes (BRFSS 7.12)		✓	
Proportion of persons (ages 18 and older) with diabetes with an A1c value greater than 9 percent (EHR)			✓
<b>Oral Health</b>			
Proportion of New Brunswick residents reporting poor dental health		✓	
Proportion of children, adolescents, and adults who used oral health care system in past year		✓	
<b>Quality of Care</b>			
Vaccination rates (EHR)			✓
Proportion of adults aged 18 years and older with hypertension whose blood pressure is under control (EHR)			✓
Proportion of adults aged 20 years and older with high low-density lipoprotein (LDL) cholesterol whose LDL is at or below recommended levels (EHR)			✓
Proportion of adults aged 50 to 75 years who receive colorectal cancer screening based on the most recent guidelines (EHR)			✓
Proportion of persons using ER using it for ambulatory care conditions (ER utilization and insurance)			✓
<b>Built Environment</b>			
Percent of all restaurants that are fast-food establishments	✓		
Percent of population who are low-income and do not live close to (< 1 mile) a grocery store	✓		
Liquor store density	✓		
Rate of recreational facilities	✓		
Walkability	✓		
Percent of safe routes to school	✓		
Percent of complete streets	✓		



After a set of indicators has been chosen, then data collection can begin. The result should be an ability to see whether or not efforts within the community are improving the health of New Brunswick residents.

## **B. Conclusion and Next Steps**

A community health indicator set for New Brunswick can provide direction for, measure progress towards, and increase the capacity of Healthier New Brunswick's community health improvement efforts. As illustrated in the Suggested Set of Indicators, some of this data is readily available while other data will need to be collected or mined from existing data sets. Community stakeholders working in partnership with the Alliance for a Healthier New Brunswick and New Brunswick Tomorrow's Health Task Force can develop a plan to collect and maintain these indicators. The indicators will provide stakeholders an opportunity to understand trends over time and will result in a shared data set for collective impact.

Appendix D provides more information for workgroups, coalitions, and taskforces as they continue their work developing indicators. This appendix discusses why New Brunswick must create its own indicators separate from Middlesex County's; getting the questions and methods right; categories of indicators; information accessibility; primary concerns in New Brunswick; and a detailed process for creating a long-term indicator project.

## VI. REFERENCES

Advocates for Children of New Jersey (2013a). *Newark Kids Count 2012-2013: A City Profile of Child Well-Being*. Newark, N.J.: Advocates for Children of New Jersey.

Advocates for Children of New Jersey (2013b). *The Pocket Guide 2013 New Jersey Kids Count: the State of Our Counties*. Newark, N.J.: Advocates for Children of New Jersey.

Besleme, K. & Mullin, M. (1997). Community Indicators and Healthy Communities. *National Civic Review*; 86(1), 43-52.

Bishaw, A. (May 1, 2013). *Examining the Effect of Off-Campus College Students on Poverty Rates*. Washington, D.C.: U.S. Census Bureau, Economic & Housing Statistics Division, Poverty Statistics Branch.

BRFSS (December 28, 2012). *2013 Behavioral Risk Factor Surveillance System Questionnaire*. Retrieved December 23, 2013 from [http://www.cdc.gov/brfss/questionnaires/pdf-ques/2013%20BRFSS\\_English.pdf](http://www.cdc.gov/brfss/questionnaires/pdf-ques/2013%20BRFSS_English.pdf)

Cahill, J. (April 2014). New Brunswick Ciclovía: Fun & Fitness in the Streets. *NJ Municipalities*.

Cantor, J.C., Guarnaccia, P., Brownlee, S., Schneider, C., & Nova, J. (April 2006). *Health and Health Care of New Brunswick's Children: A Chartbook*. New Brunswick, N.J.: Rutgers Center for State Health Policy and Healthier New Brunswick 2010.

CDC – Centers for Disease Control and Prevention. (2011). Data for Middlesex County, N.J. *Behavioral Risk Factor Surveillance System (BRFSS)*. Retrieved November 28, 2013 from <http://www.cdc.gov/brfss/>

CDC – Centers for Disease Control and Prevention. (2010a). Data for Middlesex County, N.J. *Behavioral Risk Factor Surveillance System (BRFSS)*. Retrieved June 7, 2013 from <http://www.cdc.gov/brfss/>

CDC (2010b). *About Healthy Places*. Retrieved December 12, 2013 from <http://www.cdc.gov/healthyplaces/about.htm>

Chakravarty, S., Brownlee, S., Tong, J., Pellerano, M.B., Howard, J., Shaw, E.K., Chase, S. & Crabtree, B.F. (December 2012). *A Community Health Needs Assessment for Saint Peter's University Hospital & Robert Wood Johnson University Hospital: Findings from the Behavioral Risk Factor & Surveillance System (BRFSS), Hospital Discharge Data, A Community Survey, Key Informant Interviews, and Community Member Focus Groups*. New Brunswick, N.J.: Rutgers Center for State Health Policy and UMDNJ-Robert Wood Johnson Medical School, Department of Family Medicine and Community Health.

Chakravarty, S., Cantor, J.C., Tong, J., DeLia, D., Lontok, O., & Nova, J. (March 2013). *Hospital Utilization Patterns in 13 Low Income Communities in New Jersey: Opportunities for Better Care and Lower Costs*. New Brunswick, N.J.: Rutgers Center for State Health Policy.

Derose, K.P., Escarce, J.J., & Lurie, N. (2007). Immigrants and Health Care: Sources of Vulnerability. *Health Affairs*; 26(5), 1258-1268.

DEVCO, (2013). About Us. DEVCO: New Brunswick Development Company. Retrieved November 27, 2013 from <http://www.devco.org/aboutus/index.shtml>

FBI – Federal Bureau of Investigation (2012). Uniform Crime Reports. Table 8: New Jersey Offenses Known to Law Enforcement by City. *Crime in the United States 2012*. Retrieved December 5, 2013 from [http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2012/crime-in-the-u.s.-2012/tables/8tabledatadecpdf/table-8-state-cuts/table\\_8\\_offenses\\_known\\_to\\_law\\_enforcement\\_by\\_new\\_jersey\\_by\\_city\\_2012.xls](http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2012/crime-in-the-u.s.-2012/tables/8tabledatadecpdf/table-8-state-cuts/table_8_offenses_known_to_law_enforcement_by_new_jersey_by_city_2012.xls)

FSG (2013). What Is Collective Impact? Retrieved November 27, 2013 from <http://www.fsg.org/OurApproach/WhatIsCollectiveImpact.aspx>

Guarnaccia, P., Martinez, I., Silberberg, M., Cantor, J.C., & Davis, D. (Fall 2004). Health and Health Care for the Residents of New Brunswick: Focus Group Perspectives; A Report of the New Brunswick Community Health Assessment. New Brunswick, N.J.: Rutgers Center for State Health Policy.

Hanleybrown, F., Kania, J., & Kramer, M. (2012). Channeling Change: Making Collective Impact Work. *Stanford Social Innovation Review*.

Heyer Gruel & Associates (December 2011). *The City of New Brunswick: Master Plan Reexamination Report*. New Brunswick, N.J.: City of New Brunswick.

IOM – Institute of Medicine (March 2011). Leading Health Indicators for Healthy People 2020: Letter Report. *Report Brief*. Retrieved December 6, 2013 from <http://www.integration.samhsa.gov/images/res/Leading%20Health%20Indicators%20for%20Healthy%20People%202010.pdf>

Kaiser Permanente, Community Benefit Program (August 2012). Community Health Needs Assessment Toolkit – Part I: Pre-Assessment & Data Collection.

Lloyd, K., Ohri-Vachaspati, P., Brownlee, S., Yedidia, M., Gaboda, D., and Chou, J. (2010). *New Jersey Childhood Obesity Survey Chartbook: New Brunswick*. New Brunswick, N.J.: Rutgers Center for State Health Policy.

Middlesex PHD – Middlesex County Public Health Department (2001). *Community Health Needs Assessment for New Brunswick: A Comprehensive Report on the Health*

*of the Residents of New Brunswick, New Jersey.* New Brunswick: Middlesex County Public Health Department.

New Jersey Asthma Awareness and Education Program. (November 2010). *Asthma in New Jersey.* Trenton, N.J.: New Jersey Department of Health. Retrieved June 3, 2013 from [http://www.state.nj.us/health/fhs/asthma/asthma\\_resources.shtml](http://www.state.nj.us/health/fhs/asthma/asthma_resources.shtml)

N.J. Bicycle & Pedestrian Resource Center. (November 1, 2013). Scenes from Ciclovía. Retrieved January 5, 2014 from <http://njbikeped.org/scenes-from-ciclovía/>

NJ DCF – State of New Jersey, Department of Children and Families. (2011). *Child Abuse and Neglect Substantiations, Calendar Year 2011.* Trenton, N.J.: State of New Jersey, Department of Children and Families.

NJDOH DMHSAS (2013). New Jersey Department of Human Services, Division of Mental Health and Addiction Services (May 2013). *The New Jersey Chartbook of Substance Abuse Related Social Indicators: Middlesex County.* Trenton, N.J.: New Jersey Department of Human Services.

NJDOH HIV – Division of HIV, STD, and TB Services – Sexually Transmitted Diseases Program. (2012a). New Brunswick Residents at Diagnosis: HIV/AIDS Cases Reported as of December 31, 2012. Retrieved June 6, 2013 from [http://www.state.nj.us/health/aids/rep/allcities/documents/new\\_brunswick.pdf](http://www.state.nj.us/health/aids/rep/allcities/documents/new_brunswick.pdf)

NJDOH HIV – Division of HIV, STD, and TB Services-Sexually Transmitted Diseases Program. (2012b). Middlesex County Residents at Diagnosis: HIV/AIDS Cases Reported as of December 31, 2012. Retrieved June 6, 2013 from <http://www.state.nj.us/health/aids/rep/county/documents/middlesex.pdf>

NJDOH Lead – Child and Adolescent Health Program, Childhood Lead Poisoning Prevention (July 2012). *Childhood Lead Poisoning in New Jersey, Annual Report: State Fiscal Year 2012, July 1, 2011 to June 30, 2012.* Retrieved January 5, 2014 from <http://dSPACE.njstatelib.org:8080/xmlui/bitstream/handle/10929/27549/childhoodlead2012.pdf?sequence=1>

NJDOH STD – Division of HIV, STD, and TB Services-Sexually Transmitted Diseases Program. (2012). Reported Sexually Transmitted Diseases Morbidity in Middlesex County by Municipality for Reporting Year 2012. Retrieved November 29, 2013 from <http://www.state.nj.us/health/std/stdstats/stdstats2012/middlesex.pdf>

NJDOH WIC – New Jersey Department Of Health, Public Health Services Branch, Family Health Services, WIC Services (2013). *Special Supplemental Nutrition Program For Women, Infants And Children (WIC), FFY 2014: State Strategic Plan.* Trenton, N.J.: New Jersey Department Of Health, Public Health Services Branch, Family Health Services, WIC Services.

NJ Health (March 2013). What Are the Leading Health Indicators? Retrieved November 26, 2013 from <http://www.state.nj.us/health/chs/hnj2020/lhi.pdf>

NJ SHAD (2012a). Data for Percent of Children Tested for Lead Poisoning Before 3 Years of Age, by County, among Children Born in 2008. Retrieved June 3, 2013 from [http://www4.state.nj.us/dhss-shad/indicator/view\\_numbers/Pb\\_test\\_cov.pcnt\\_co\\_b04.html](http://www4.state.nj.us/dhss-shad/indicator/view_numbers/Pb_test_cov.pcnt_co_b04.html)

NJ SHAD (2012b). Data for Percent of Tested Children under 3 Years of Age with Confirmed Blood Lead of  $\geq 10$   $\mu\text{g}/\text{dL}$ , Children Born in 2008 by County. Retrieved June 3, 2013 from [http://www4.state.nj.us/dhss-shad/indicator/view\\_numbers/Pb\\_blood\\_lev.Pb\\_GE10.html](http://www4.state.nj.us/dhss-shad/indicator/view_numbers/Pb_blood_lev.Pb_GE10.html)

NPC – National Prevention Council. (June 2011). *National Prevention Strategy*. Washington, D.C.: U.S. Department of Health and Human Services, Office of the Surgeon General.

Ohri-Vachaspati, P., Lloyd, K., Chou, J., Petlick, N., Brownlee, S., & Yedidia, M. (2010). *The New Jersey Childhood Obesity Study: New Brunswick School BMI Data*. New Brunswick, N.J.: Rutgers Center for State Health Policy.

Redlawsk, D.P. (October 2012). *New Brunswick Tomorrow Final Report*. New Brunswick, N.J.: Rutgers Eagleton Center for Public Interest Polling.

Rutgers School of Social Work and PRAB (2013). *Middlesex County Human Services Needs Assessment*. New Brunswick, N.J.: Rutgers School of Social Work and PRAB.

State Police of New Jersey, Uniform Crime Unit. (2011). *Domestic Violence in New Jersey, For the Year Ending December 31, 2011*. Trenton, N.J.: State of New Jersey, Department of Law and Public Safety, State Police of New Jersey, Uniform Crime Unit.

University of Wisconsin, Population Health Institute and Robert Wood Johnson Foundation (2013) County Health Rankings & Roadmaps. Data for Middlesex County, N.J. retrieved June 6, 2013 from <http://www.countyhealthrankings.org/app/new-jersey/2013/middlesex/county/outcomes/overall/snapshot/by-rank>

UWPHI – University of Wisconsin, Population Health Institute and Robert Wood Johnson Foundation (2012). “Rankings Background,” County Health Rankings & Roadmaps retrieved December 20, 2013 from <http://www.countyhealthrankings.org/about-project/rankings-background>

U.S. Census Bureau, 2010. American FactFinder. Retrieved November 26 and 27, 2013 from <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

U.S. Census Bureau ACS, 2012. 2010-2012 American Community Survey 3-Year Estimates. DP03 Selected Economic Characteristics. and DP04 Selected Housing

Characteristics. Retrieved January 5, 2014 from  
<http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

U.S. Census Bureau ACS, 2011. 2009-2011 American Community Survey 3-Year Estimates. DP02 Selected Social Characteristics in the United States, DP03 Selected Economic Characteristics, DP04 Selected Housing Characteristics, and DP05 ACS Demographic and Housing Estimates. Retrieved February 3, 2014 from  
<http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

USDHHS – U.S. Department of Health and Human Services (2013). *Leading Health Indicators – Healthy People 2020*. Retrieved December 6, 2013 from  
<http://healthypeople.gov/2020/lhi/default.aspx>

USDHHS (2008). *2008 Physical Activity Guidelines for Americans: Chapter 3*. Retrieved November 29, 2013 from  
<http://www.health.gov/paguidelines/guidelines/chapter3.aspx>

Weiner, M.D., MacKinnon, T.D., & Puniello, O.T. (March 2011). *New Brunswick Tomorrow 2011 Needs Assessment*. New Brunswick, N.J.: Rutgers Edward J. Bloustein School of Planning and Public Policy, The Bloustein Center for Survey Research.

Zhu, L., (June 2013). *Substance Abuse Overview 2012: Middlesex County*. Trenton, N.J.: Department of Human Services, Division of Mental Health and Addiction Services. Retrieved November 20, 2013 from  
[http://www.state.nj.us/humanservices/das/news/reports/statistical/Substance%20Abuse%20Overview%20Reports%202012/Sub Abuse Overview 2012 Midd.pdf](http://www.state.nj.us/humanservices/das/news/reports/statistical/Substance%20Abuse%20Overview%20Reports%202012/Sub%20Abuse%20Overview%202012%20Midd.pdf)