



DIETARY HABITS IN THE REGION - THE PREVALENCE OF DIABETES AND HYPERTENSION ON LONG ISLAND AND THEIR CORRELATION WITH NUTRITION/EATING HABITS

Second in a series of quarterly data reports examining trends and patterns of selected health topics
Published by the Long Island Health Collaborative
Quarter 2 2018

Introduction

According to the CDC, following a diet rich in fruits and vegetables can help protect against a number of chronic diseases. Good nutrition has been shown to decrease the risk of heart disease, type 2 diabetes, some cancers, and obesity.¹ Yet despite known health benefits, only 1 in 10 adults consumes enough fruits and vegetables in their daily diet.²

The Long Island Health Collaborative (LIHC) is a coalition of hospitals, county health departments, dozens of community-based health and social service organizations, health plans, colleges and schools, libraries, local municipalities, businesses, and others working voluntarily since 2013 to lessen the burden of chronic disease among Long Island residents of all ages. The LIHC and its partners have embraced nutrition as one of the foundational pillars for interventions and strategies designed to motivate behavior change.

The LIHC is an initiative overseen by the Nassau-Suffolk Hospital Council, the association that advocates for fair and reasonable healthcare legislation and regulation that affects hospitals on Long Island. Funding for the Collaborative's activities comes from the Population Health Improvement Program (PHIP) grant, via the New York State Department of Health.

Data collection and analysis is one of the most important functions of the Collaborative. Pulling from national, regional, and state secondary data sets, as well as primary data collection, this report draws a picture of the dietary habits in which Long Island residents engage, and the trends that have emerged related to these habits during the past few years.

Report Highlights

- Nassau and Suffolk Counties had lower levels of hypertension and diabetes in 2015 compared to New York State and the nation, though more research will be needed to see if this trend continues.
- Between 2013 and 2015 in Nassau and Suffolk Counties, the percentages of those eating less than 1 fruit and less than 1 vegetable a day were increasing.
- Data collected throughout Long Island show select zip codes where residents desire more health screenings, education, and information related to healthy food choices.
- Analysis of two sample wellness programs showed improvement in various healthy diet and weight metrics when examined through a pre- and post-process.

¹ <https://www.cdc.gov/nutrition/data-statistics/2018-state-indicator-report-fruits-vegetables.htm>

² <https://www.cdc.gov/nccdphp/dnpao/division-information/media-tools/adults-fruits-vegetables.html>

The Prevalence of Diabetes and Hypertension on Long Island and Their Correlation with Nutrition/Eating Habits

There are numerous benefits to proper nutrition – the most important being reduction in the risk of developing chronic diseases like type 2 diabetes, hypertension, heart disease, cancer, and obesity. Good nutrition combined with increased activity can largely impact overall health outcomes.

There is a common misconception that people who are in their healthy weight range are less likely to have these chronic conditions. Even if a person maintains a healthy weight, poor diet is still associated with many health risks.¹ Proper nutrition helps reduce the likelihood of developing chronic diseases,¹ and supports the management of these diseases after diagnosis.

Type 2 diabetes is the most common type of diabetes. It develops when the pancreas stops producing adequate amounts of insulin, or when the body becomes resistant to insulin.² One of the biggest risk factors for type 2 diabetes is overweight or obesity and a healthy diet can lower the risk of developing this chronic disease.³

High blood pressure, also called hypertension, is a common but serious medical condition that occurs when the force of blood pumping through the arteries is too strong. When the heart beats, it pushes blood through arteries to the rest of the body.⁴ When the blood pushes harder against the walls of the arteries, blood pressure goes up.⁴ A person's blood pressure may be different at different times of the day and is usually higher when waking up, after exercise, or when under stress.⁴ Having higher blood pressure for short amounts of time is normal; however, when a person's blood pressure stays high it can cause serious health problems.⁴

High blood pressure can affect adults of all ages but is more common in those over the age 65. Around 76.4 million people in the United States have hypertension, and about 7 million people die each year from illnesses caused by high blood pressure.⁴ Lowering blood pressure decreases a person's chance of heart attack, heart failure, stroke, and other health problems.⁴

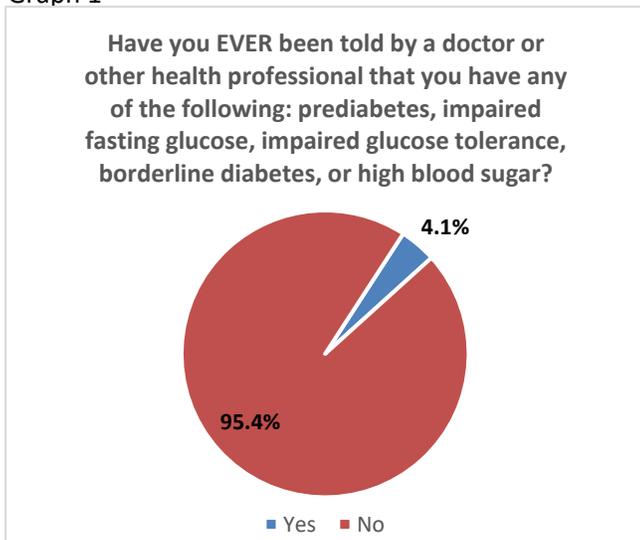
For a healthy diet based on 2,000 calories per day, adults should consume 2.5 cups of vegetables and 2 cups of fruit daily. According to data from the 2015 Behavioral Risk Factor Surveillance System, 37.4% of adults in New York State do not consume fruit daily, and 22.4% do not consume vegetables daily. The percentage of adults who do not consume fruits and vegetables daily was highest for those ages 18 to 24, with 45.6% of individuals in this age group reporting they consume fruits and vegetables less than one time per day. While the amount of fruit required for a healthy diet depends on a person's age, sex, and level of physical activity, there are nutrition recommendations for every lifestyle. You can visit www.choosemyplate.gov/fruit or www.choosemyplate.gov/vegetables to find your CDC daily recommendations.⁵

National Health Interview Survey (NHIS)

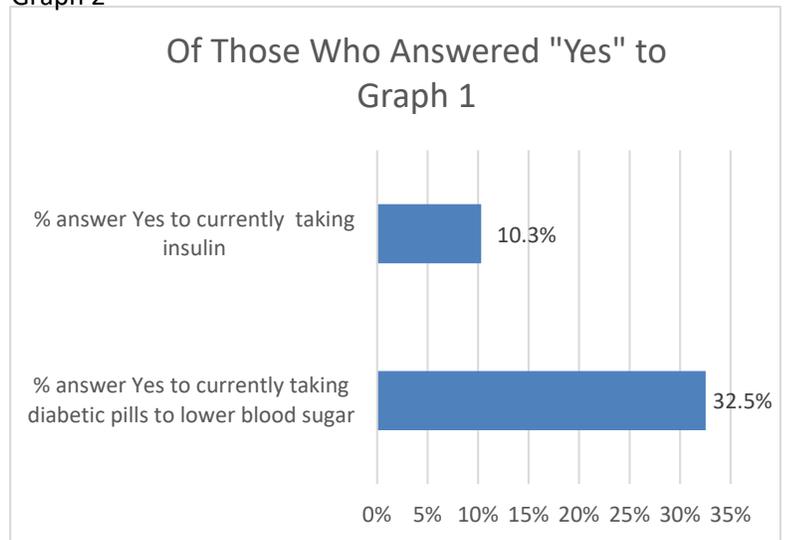
The National Health Interview Survey (NHIS) has been in use since 1957, and for over 50 years the U.S. Census Bureau has used it to monitor the health of Americans. It is a cross-sectional household interview survey that collects data on a broad range of health topics. *Graph 1* shows the 2016 percentage of Americans who had ever been told by a doctor or other health professional that they have prediabetes, impaired fasting glucose, impaired glucose tolerance, borderline diabetes, or high blood sugar, according to the survey. To put this in perspective, the US population in 2016 totaled 323.4 million people,⁶ making the 4.1% who answered “Yes” to the question on *Graph 1* equal to 13.26 million individuals. Of those who answered yes to this question, 32.5% (4.3 million) said they were currently taking diabetic pills and 10.3% (1.4 million) were currently taking insulin to manage their blood sugar levels (*Graph 2*).

Graph 3 shows the 2016 percentage of Americans who had ever been told by a doctor or other health professional that they had hypertension or high blood pressure. 21.3% equates to 68.9 million Americans responding yes to this question. Of those who answered yes, 74.9% (51.6 million) said they had hypertension during the past 12 months and 80.4% (55.4 million) had taken medicine prescribed by their doctor for this chronic disease (*Graph 4*). This shows a general picture of the burden of diabetes-related conditions as well as hypertension across the nation, with some of the most up to date publicly available data available at this time.

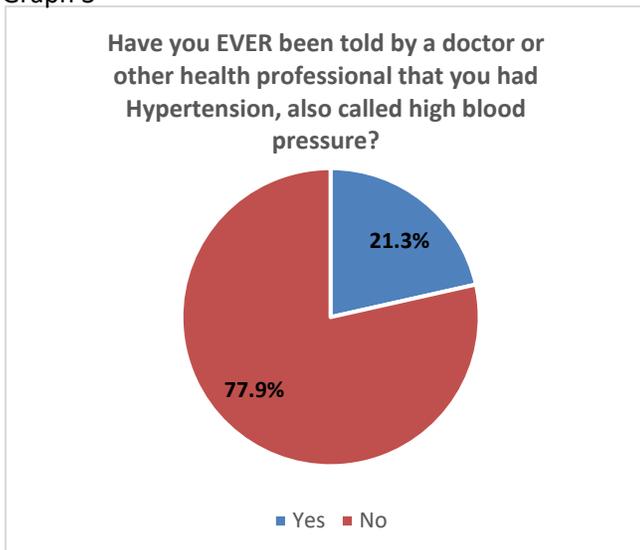
Graph 1



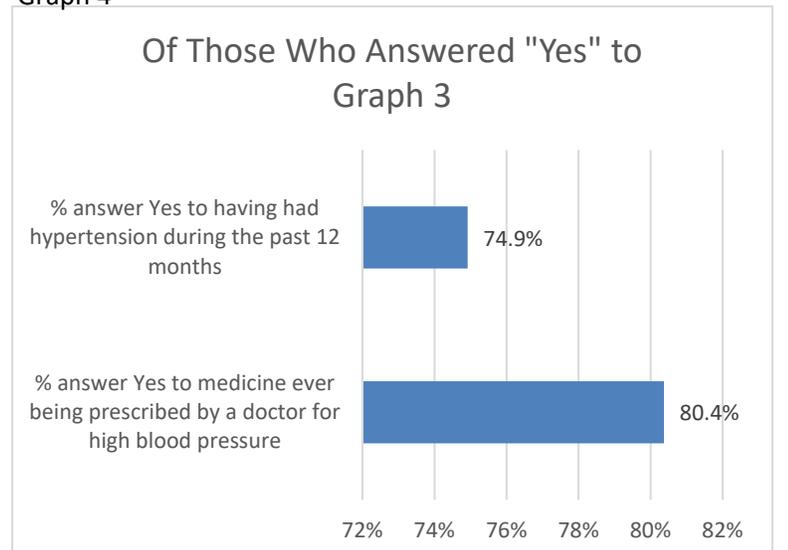
Graph 2



Graph 3



Graph 4

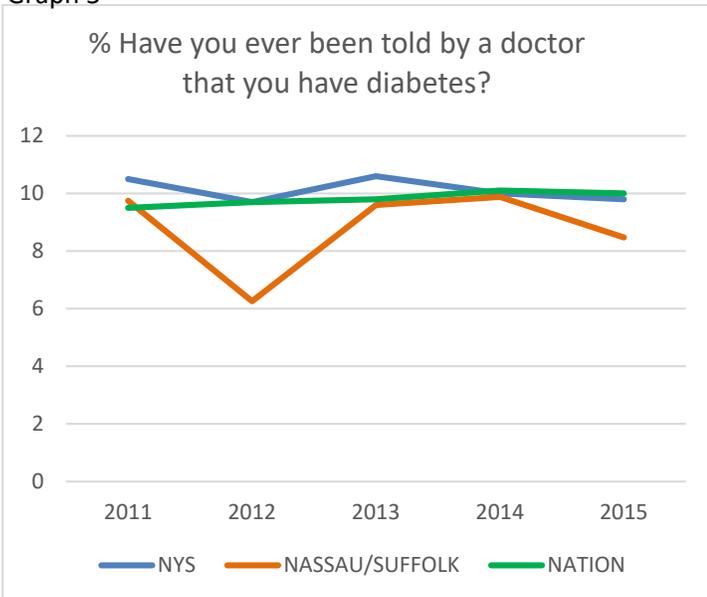


Behavioral Risk Factor Surveillance System

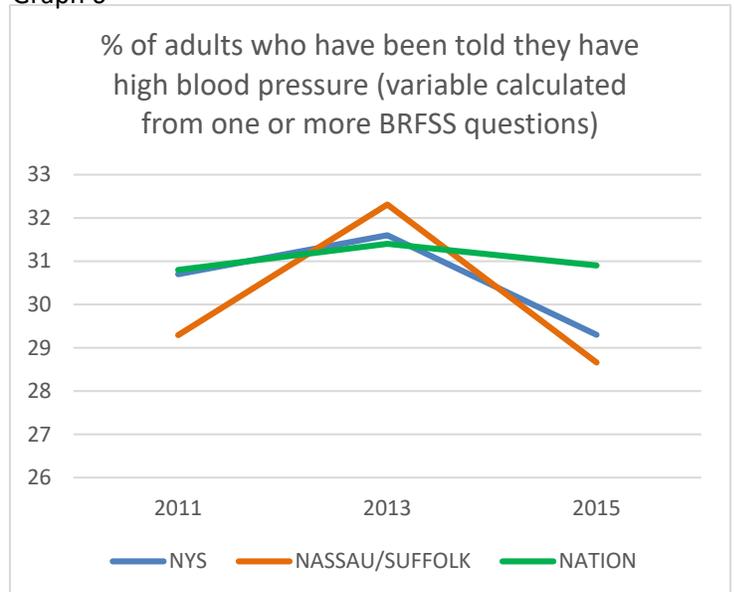
The Behavioral Risk Factor Surveillance System (BRFSS), run by the CDC, is the largest continually conducted survey system in the world. It focuses on collecting behavioral health risk data. Each year the BRFSS asks survey respondents if they have ever been told they have diabetes or high blood pressure (hypertension), as well as how often they consume fruits and vegetables. This survey can be used to compare New York State (NYS) to Long Island (Nassau/Suffolk) and to the nation as a whole over multiple years.

Year to year, the percentage of individuals told by a doctor that they have diabetes varies more on Long Island than it does within the state and within the nation, *according to Graph 5*. However, Long Island has an overall lower percentage through the years. When it comes to high blood pressure percentages, *Graph 6* shows a similar trend, where Long Island is more variable than the larger state and nation. The most recent time the BRFSS asked these questions, 2015, results show Long Island at a considerably lower percentage for high blood pressure diagnoses compared to the larger regions.

Graph 5



Graph 6



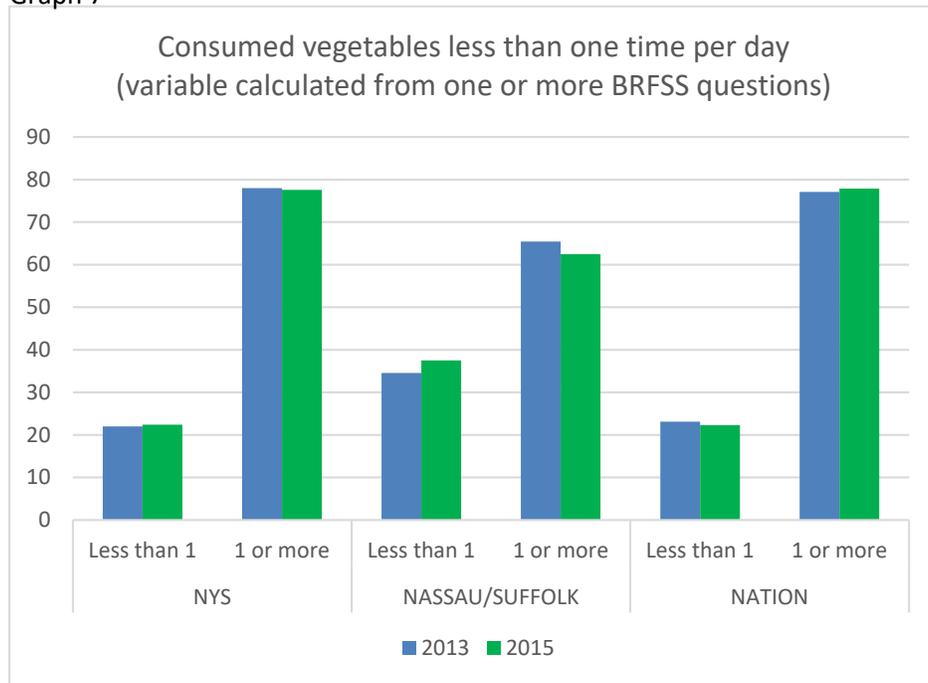
The BRFSS tracks how many fruits or vegetables individuals eat in a day. For a healthy diet based on 2,000 calories per day, adults should consume 2.5 cups of vegetables and 2 cups of fruit daily. Which means that even if a person eats a fruit or vegetable each day, they may not be consuming enough to meet the healthy dietary recommendations.

Graph 7 shows vegetable consumption on Long Island, in New York State, and in the overall US during 2013 and 2015. Surprisingly, across the different regions 60-80% of individuals report consuming vegetables 1 or more times a day. However, the Long Island region has a lower percentage of individuals doing so when compared to New York State and the nation. Additionally, the percentage of those consuming less than 1 vegetable a day increased from 2013 to 2015 on Long Island, while the

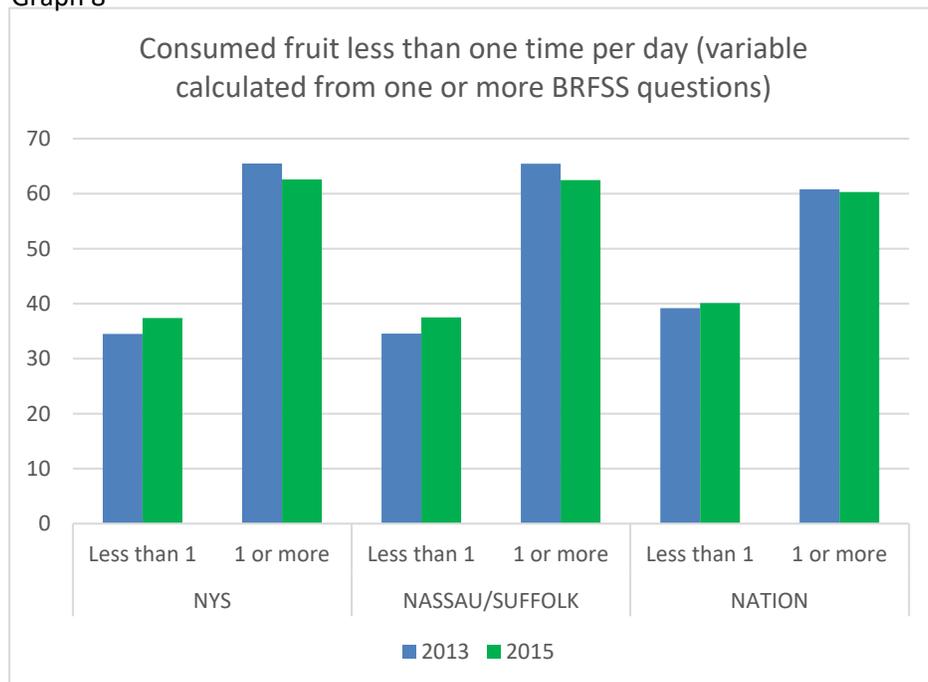
percentage of those consuming 1 or more vegetable decreased. More work needs to be done to increase Long Island’s percentages in this category to match the state and nation.

Graph 8 shows fruit consumption on Long Island, New York State, and the overall US during 2013 and 2015. Consumption of fruit daily is lower than vegetables across the board, with all three regions having between 60% and 70% of individuals having 1 or more fruit daily. As opposed to vegetable consumption, Long Island’s daily fruit consumption is on par with the state, and above the national levels, for 2013 and 2015. However, there is a similar trend with the percentage of those consuming 1 or more fruits decreasing from 2013 to 2015.

Graph 7



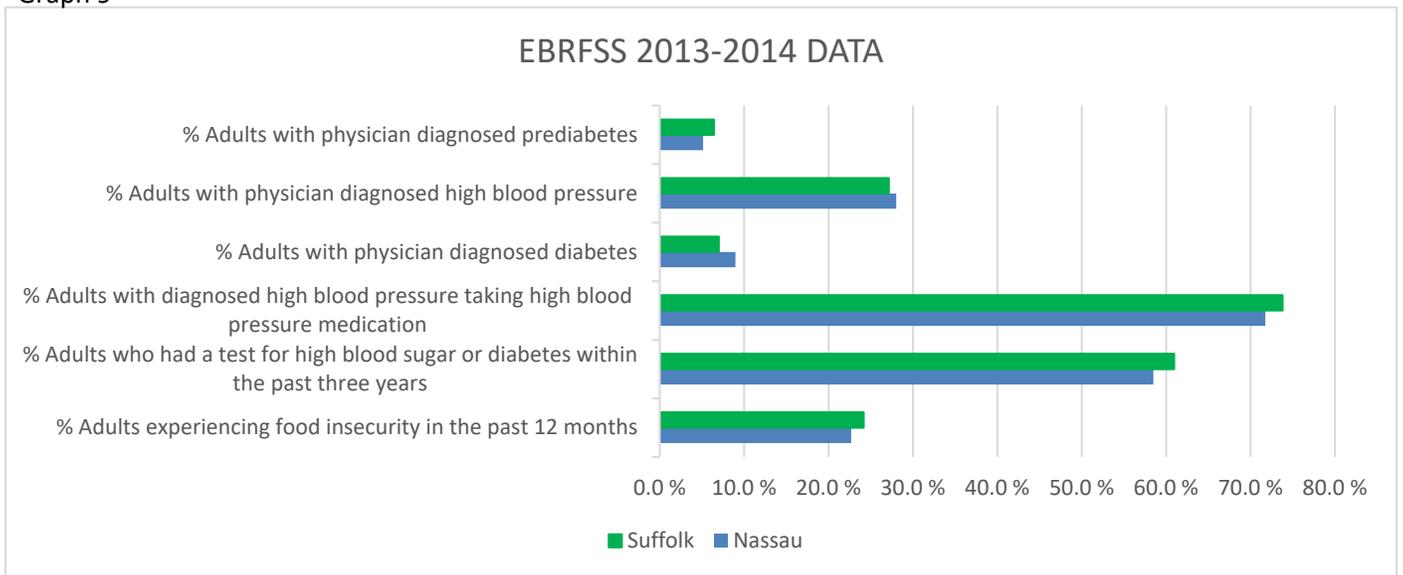
Graph 8



Expanded Behavioral Risk Factor Surveillance System

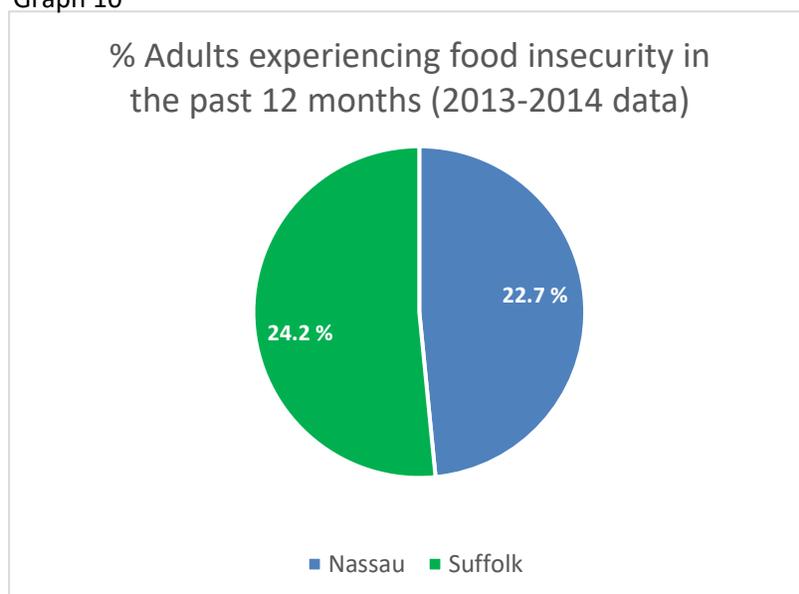
The Expanded Behavioral Risk Factor Surveillance System (eBRFSS), an expansion of the national BRFSS survey, collects county-level information specific to New York. *Graph 9* uses 2013-2014 eBRFSS data to compare Nassau and Suffolk Counties on various diabetes, hypertension, and food insecurity measures, in order to paint a picture of how these issues are affecting Long Island specifically. Food insecurity is defined as consistently lacking access to enough food to lead a healthy lifestyle.⁷ Suffolk County has slightly higher percentages of food insecurity and prediabetes, while Nassau County's percentages are higher for adults diagnosed with both diabetes and high blood pressure.

Graph 9



Graph 10 pulls out the percentage of adults experiencing food insecurity in the past 12 months from *Graph 9*. 22.7% equates to approximately 310,000 individuals within Nassau County experiencing food insecurity during 2013-2014, and 24.3% equates to around 360,000 individuals in Suffolk County.

Graph 10



Long Island and Eastern Queens Community Health Assessment Survey

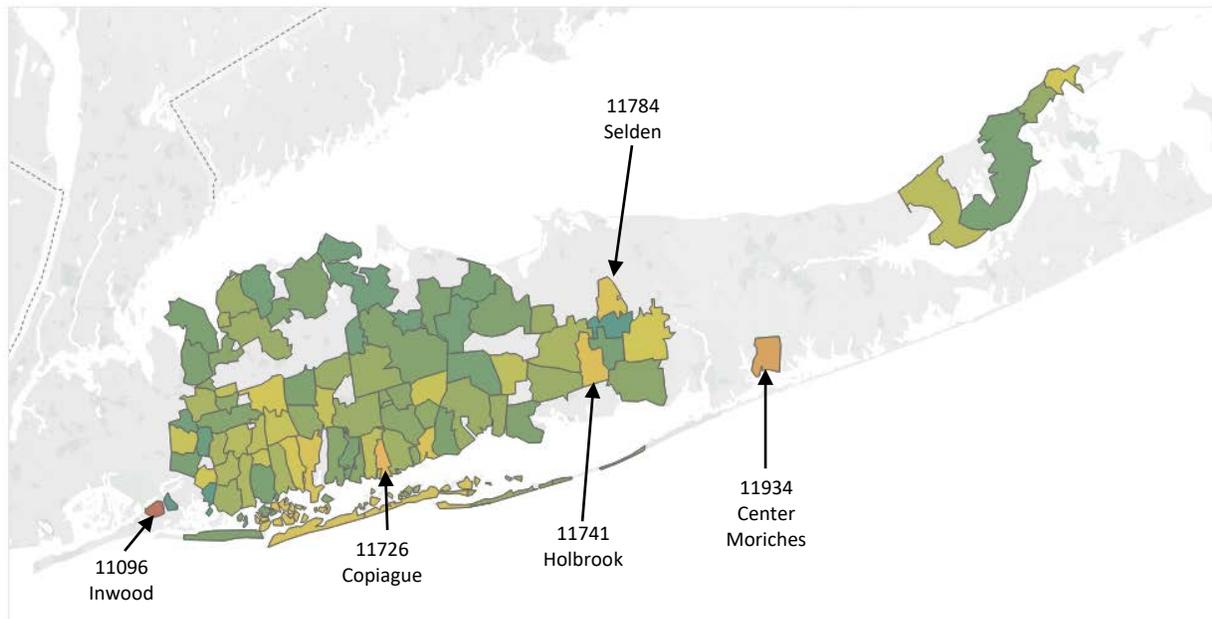
In order to gain insight at the zip code level of Long Island, the Long Island Health Collaborative's own Community Health Assessment Survey was used. In addition to collecting basic demographic data, the survey asks six main questions related to individual-perceived and community-perceived information regarding access and barriers to care, major health concerns, education and screenings, and programs/services needed. This survey is continually distributed and collected by Collaborative partners across the region with over 12,000 surveys collected to date. Long Island community residents over the age of 18 are invited to complete the survey through this link <https://www.surveymonkey.com/r/CMLICHAS>.

Within the six questions, respondents have a variety of answer choices, including choices about what is most needed to improve the health of their communities. For this report, we analyzed data from 2017 and 2018. The analysis was conducted by DataGen, a division of the Healthcare Association of New York State, and mapped (Map 1). This map shows the percentage of respondents who believe healthier food choices are most needed in their community, above all other answer choices. Zip codes with less than five (5) responses were suppressed. The zip codes in yellow and orange are where healthier food is reportedly most needed, according to those who live in that community. The highest need zip codes have been labeled.



Map 1

Percent of Respondents that Believe Healthier Food Choices are what is Most Needed to Improve the Health of Their Community



The map is based on longitude and latitude. The color shows the % of respondents that believe healthier food choices are what is most needed to improve the health of their community, for each Zip Code. Zip Codes with less than 5 total responses are not shown on the map.

Percent of Responses

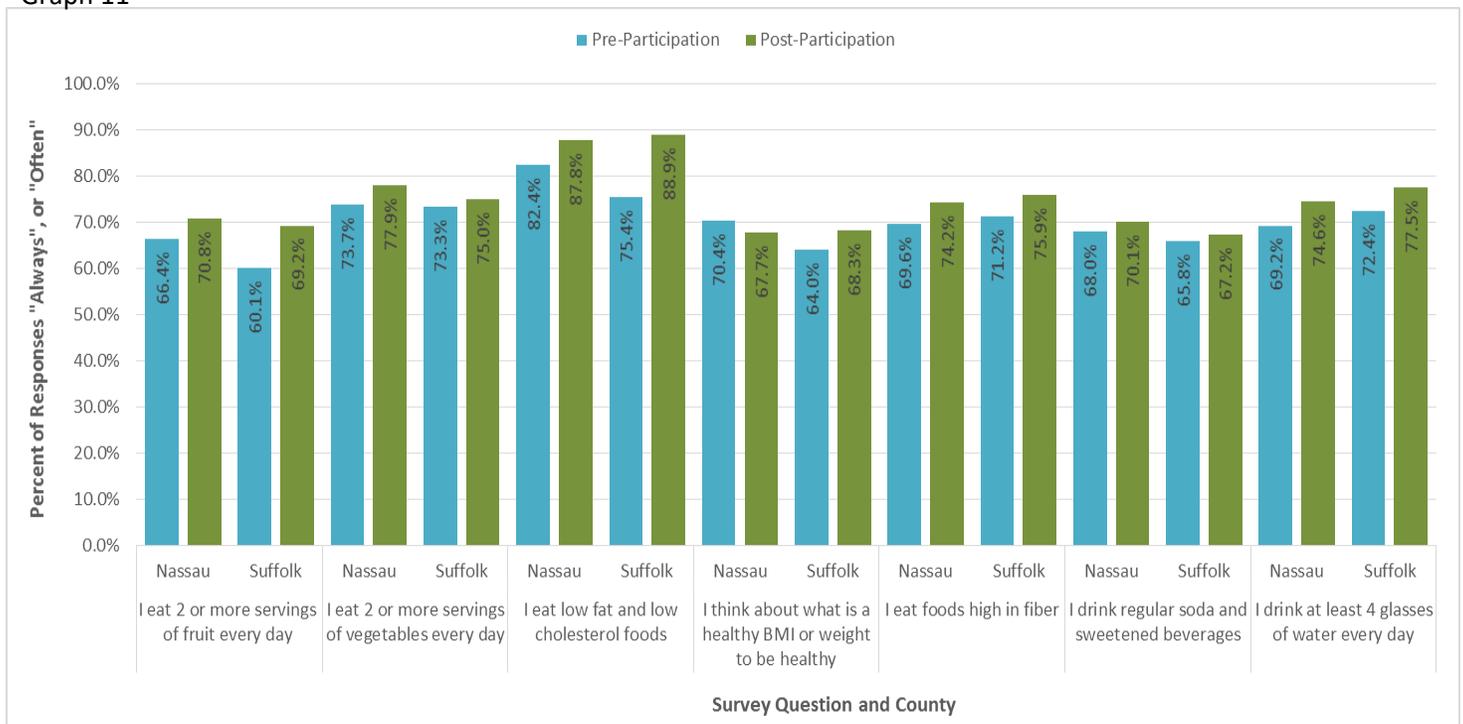


Wellness Portal

Also analyzed were results from the Long Island Health Collaborative’s Wellness Survey and Wellness Portal, which capture data about nutritional habits and exercise habits of Long Island adults. The Wellness Survey is administered via paper both pre and post-program to individual attendees, and the results are recorded on the LIHC’s online Wellness Portal. The results are used to determine the effectiveness of chronic disease self-management and wellness programs offered by local hospitals, CBOs, and other organizations. The portal was built by Collaborative partner Stony Brook University, and meets all HIPAA requirements including the de-identification of data and results. This analysis included portal data from January 2015-November 2017. During this time frame, two hospitals in the region participated consistently enough to provide valid data on their wellness programs. The survey asks participants various nutrition-related questions. Comparing the percentage of pre- vs post-survey responses of “Yes”, “Always”, or “Often” to these questions, it is clear these wellness programs increase the healthy diet and weight metrics seen in *Graph 11*.

The Wellness Survey and Wellness Portal are available at no cost to organizations that provide chronic disease self-management programs. It is a useful evaluative tool which helps inform future programming, resource allocation, program effectiveness, and grant applications. Analysis of program results are also provided for participating organizations. For questions regarding the Long Island Health Collaborative’s Wellness Survey and Portal, contact the staff of the LIHC.

Graph 11



(Please Note: Graph 11 and Maps 2 through 5 present data for only two hospital-based chronic disease self-management programs. Therefore, this data is not representative of the Long Island population.)

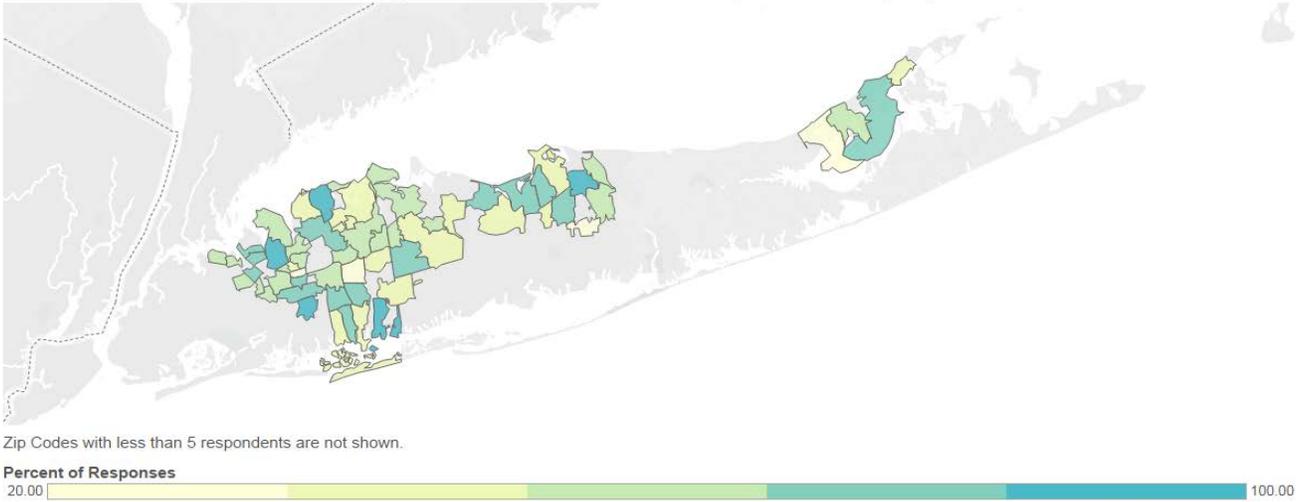
Wellness Portal Zip Code Level Pre and Post Maps

The following pages include breakdowns of zip code-level responses to specific questions asked on the LIHC Wellness Survey – “I eat 2 or more servings of fruit every day,” and “I eat 2 or more servings of vegetables every day.” Each map shows the change from pre- to post-survey responses, with the darker blue representing a higher percentage of responses in that zip code answering “always” or “often.” Zip codes with less than five responses have been suppressed. As the maps show, there is a small change from pre to post at the zip code level, with more dark blue present.



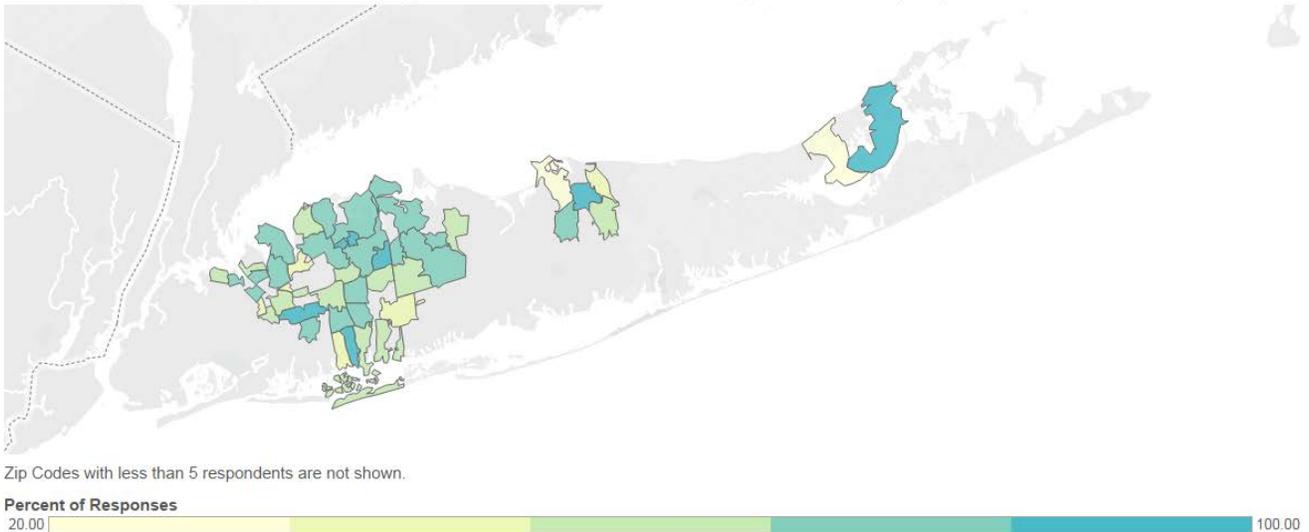
Map 2

Pre-Participation "Always & Often" responses to: I eat 2 or more servings of fruit every day



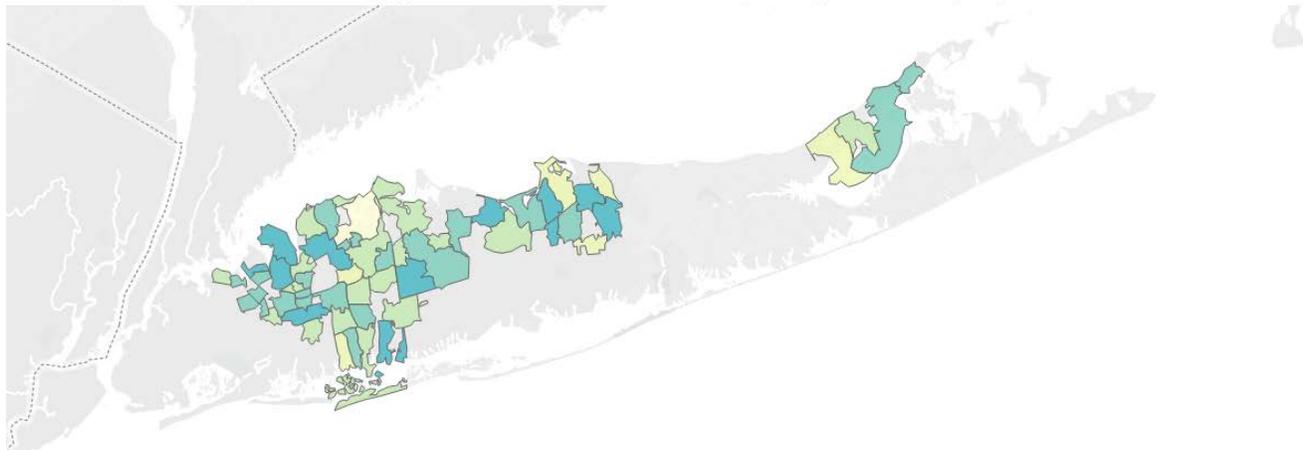
Map 3

Post-Participation "Always & Often" responses to: I eat 2 or more servings of fruit every day





Pre-Participation "Always & Often" responses to: I eat 2 or more servings of vegetables every day

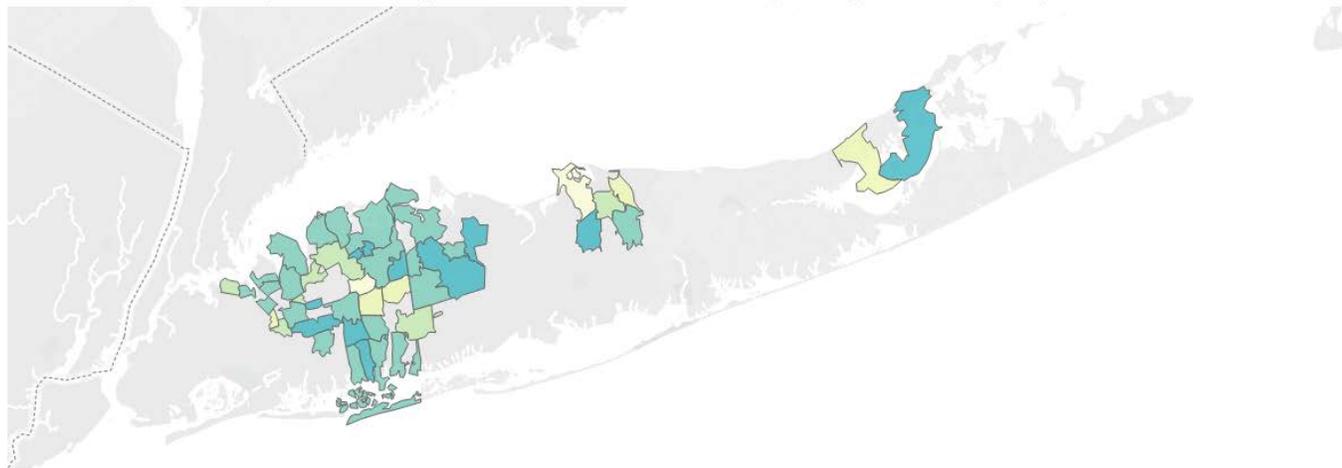


Zip Codes with less than 5 respondents are not shown.

Percent of Responses



Post-Participation "Always & Often" responses to: I eat 2 or more servings of vegetables every day



Zip Codes with less than 5 respondents are not shown.

Percent of Responses



Conclusion

Because hypertension and diabetes have such a high prevalence among Long Islanders, data that delves into lifestyle habits such as diet and nutrition is important for healthcare providers. Targeted information allows providers to better design and/or locate programs and services that meet the health needs of the population they serve. Multiple intervention and prevention programs currently exist, but with zip code-based data, those current efforts can be improved and enhanced. Further, these localized data collection activities uncover pockets where health disparities exist, whether due to income, race, education or other factors. This collective approach is the first step toward improving the health of the entire Long Island population.

Sources:

¹ <https://www.hhs.gov/fitness/eat-healthy/importance-of-good-nutrition/index.html>

² <https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/symptoms-causes/syc-20351193>

³ <https://www.niddk.nih.gov/health-information/diabetes/overview/risk-factors-type-2-diabetes>

⁴ <https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0041082/#conssmbp.s3>

⁵ <https://www.lihealthcollab.org/news-and-blog/do-new-yorkers-have-a-healthy-diet>

⁶ <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

⁷ <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx>

About the Authors



About the [Long Island Health Collaborative](#)

The Long Island Health Collaborative is a partnership of Long Island's hospitals, county health departments, physicians, health providers, community-based health and social service organizations, human service organizations, academic institutions, health plans, local government, and the business sector, all engaged in improving the health of Long Islanders. The initiatives of the LIHC draw funding from the New York State Department of Health through the Population Health Improvement Program grant. Work of the LIHC is concentrated in the following areas:

- Convening diverse partners
- Engaging in primary and secondary data collection and analyses
- Conducting consumer and provider-facing public information/awareness campaigns
- Supporting adoption of policies related to healthier living
- Promoting chronic disease self-care
- Providing a free web-based walking initiative for use by the public and organizations seeking a platform in which to engage patients/clients/employees in a walking program



About [DataGen](#)

For more than a decade, DataGen has been an essential partner to healthcare organizations across the country, illustrating the financial implications of payment policy changes and promoting a pragmatic view of how changes will affect revenue and profitability. DataGen provides data analytic support to hospitals, health systems, state hospital associations, and other healthcare groups across the nation as they strive to improve quality, outcomes, and financial performance. Drawing on specialized health policy and payment expertise, as well as in-depth understanding of the power of analytics to drive change, DataGen simplifies the complexities of healthcare payment change.

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