Food Insecurity and Obesity Incidence Across Connecticut

Zwick Center for Food and Resource Policy

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EXECUTIVE SUMMARY

Ensuring that all Connecticut residents and households are food secure is a critical public health goal. Studies of low-income populations in the U.S. find that food insecurity is associated with poorer diet quality. Often, low income individuals or households lack sufficient resources to afford enough food to meet their caloric and nutrient needs. If food insecure individuals' diet quality is compromised, their health could be at risk because a poor diet is linked to obesity, cardiovascular disease, diabetes, cancer, and poor bone health. In Connecticut rates of obesity and diet-related chronic diseases have risen steadily since the late 1990s. Statewide estimates of the incidence of food insecurity and obesity exist, but a deeper examination is necessary for targeting programs and policies to address these issues. Consequently, the primary objective of this report is to describe the prevalence of food insecurity and obesity across Connecticut's diverse population, its towns, and regions. Self-reported data on household food insecurity and the household respondent's body mass index (BMI) from the DataHaven 2015 Community Wellbeing Survey were used to conduct the analyses presented in this report.

KEY FINDINGS

- Overall, in 2015, 12.4% of Connecticut households reported not having sufficient funds in the last 12 months to purchase food. (These households are defined as food insecure in this report.)
    - Black, Hispanic/Latino, and other/multiple race households were significantly more likely to be food insecure than White and Asian households.
    - Households with children under 18 years old were more likely to be food insecure than households without children.
    - Food insecurity was high in Connecticut's urban centers and in some rural areas.
- 61.6% of Connecticut residents surveyed reported being overweight (36.0%) or obese (25.6%).
    - Black, Hispanic/Latino, and other/multiple-race residents surveyed were significantly more likely to be overweight or obese compared to White and Asian residents.

- Incidence of overweight and obesity was substantially more widespread across Connecticut's towns than food insecurity.
- Incidence of overweight was consistent across income classes, but the incidence of obesity is substantially lower for higher-income residents in Connecticut.

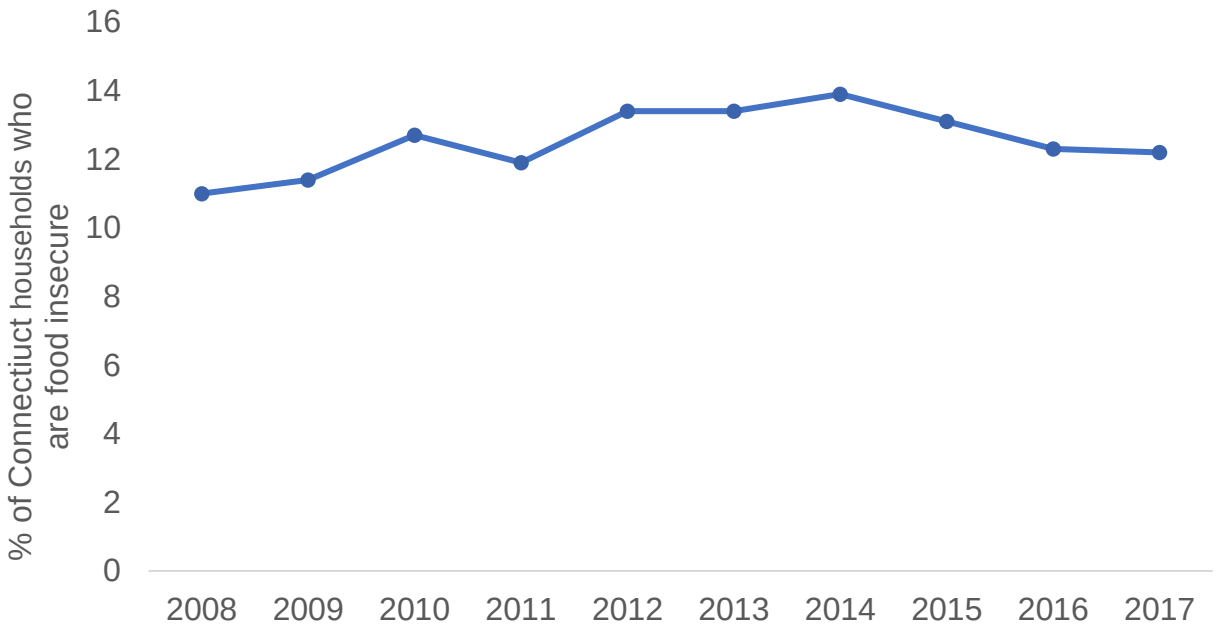
INTRODUCTION

Food security refers to access to nutritious and safe foods at all times through socially acceptable means (Coleman-Jensen et al., 2014). Ensuring that all Connecticut residents and households are food secure is a critical public health goal. Rates of food insecurity in Connecticut have remained relatively stable over the last five years (Figure 1), after the state recovered from the Great Recession, during which time food insecurity rates rose sharply in Connecticut and in other U.S. states. Between 2014 and 2016, 12.3% of Connecticut households reported having low (with reduced quality, variety or desirability of diet) or very low (with multiple indications of disrupted diet and reduced food intake) food security (Coleman-Jensen et al., 2018, 2017), a rate near the U.S. average. Between 2015 and 2017, 12.2% of Connecticut households reported being food insecure, only a negligible difference from 2014-2016 (Coleman-Jensen et al., 2017). By comparison, between 2011 and 2013, 13.4% of Connecticut households reported having low or very low food security (Coleman-Jensen et al., 2015). The state-level decline in food insecurity in Connecticut is encouraging, and it is important that this state-level indicator continues to be tracked by federal agencies. It is also important to determine which Connecticut sub-populations are most at risk of food insecurity since food insecurity has implications for diet quality, health, and quality of life. To date, only state-level estimates of food insecurity exist for Connecticut, which does not allow for an examination of where food insecurity is concentrated in the state's population, information that could be critical in targeting at-risk populations.

Studies of low-income populations in the U.S. find that food insecurity is associated with poorer diet quality (Bhattacharya et al., 2004; Hanson and Connor, 2014; Leung et al., 2014, 2012). Some studies indicate that food insecure individuals or households lack sufficient resources to purchase foods that compose a high quality diet (Leung et al., 2014). In turn, poor diet quality has implications for health. Obesity, cardiovascular disease, diabetes, cancer, and poor bone condition are chronic diseases caused by poor diet; currently nearly half of the U.S. adult population suffers from one or more of these conditions (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). Obesity, in

particular, has been implicated as a health pandemic, and reducing obesity has been the focus of local, state, and federal efforts over the last three decades.

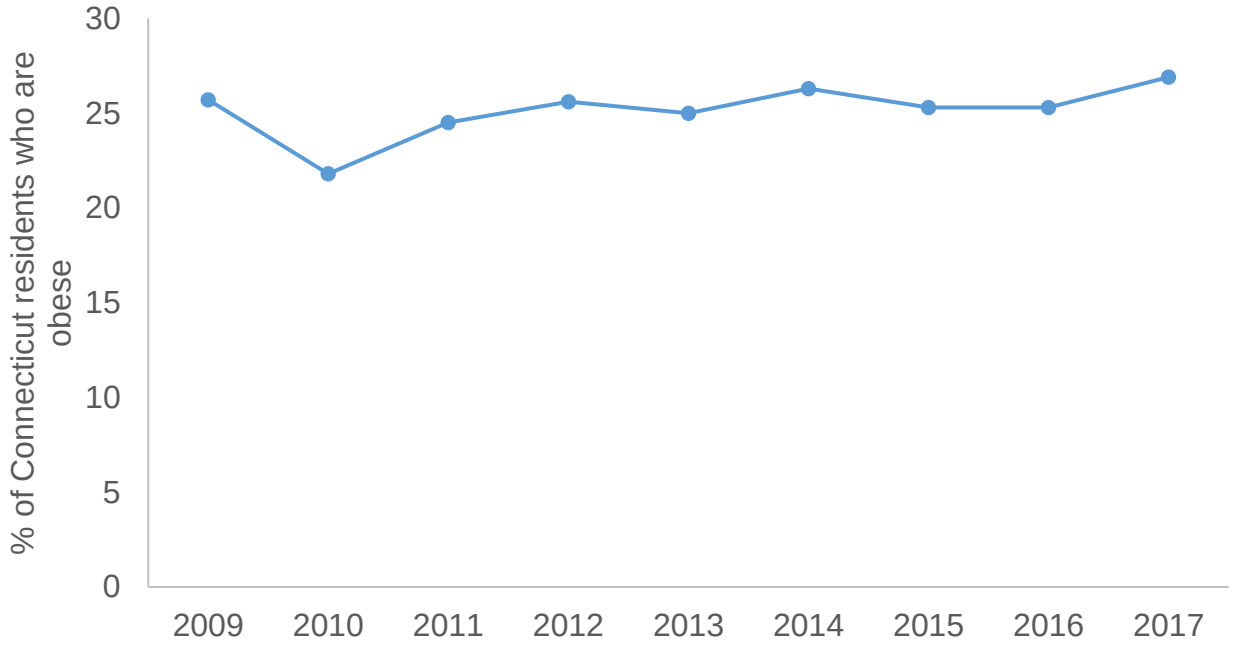
Figure 1. Incidence of food insecurity in Connecticut from 2008 to 2017.



Source: USDA, Economic Research Service Household Food Security in the U.S. Reports 2009 to 2018.

In Connecticut, obesity rates have steadily increased since the early 2000s, as shown in Figure 2. In 2016, the adult obesity rate climbed to 26.0%, compared to 21.8% in 2010 (Segal et al., 2017). Rates of obesity (excluding overweight) also increased among Connecticut high school students, from 10.2% in 2009 to 12.3% in 2015. Rates of other diet-related diseases among adults, such as diabetes and hypertension, have also increased in Connecticut over the last several years (U.S. Centers for Disease Control and Prevention, 2008-2018). Currently, 9.8% of adults in Connecticut have diabetes and 30.4% have hypertension (Segal et al., 2017). However, there is limited information on which populations in Connecticut are most at risk of obesity and other diet-related chronic diseases.

Figure 2. Incidence of Obesity in Connecticut from 2009 to 2017.



Source: U.S. Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2009-2018.

The current state-wide indicators of food insecurity and diet-related health outcomes demand a deeper examination of food insecurity and obesity among Connecticut residents by geographic and household demographic characteristics. This deeper examination is necessary so that resources for programs and policies to improve food access can be targeted to Connecticut's most at-risk populations. Consequently, the primary objective of this report is to describe the prevalence of food insecurity and obesity across Connecticut's diverse communities and residents.

METHODS

Data Sources and Data Analysis

Survey responses from the DataHaven 2015 Community Wellbeing Survey (CWS) were used to assess household food security status and household survey respondent weight status. The CWS is administered every three years by DataHaven, a non-profit organization based in New Haven, CT, that collects and studies public data on key social and economic indicators in the state. Approximately 15,000 randomly selected residents complete the survey by telephone. Survey questions assess residents' attitudes toward government and community services, civic engagement, health, economic security, transportation, housing, and employment to create a picture representative of the Connecticut population at the state level and in individual cities and towns.

Households participating in the CWS were asked: "Have there been times in the past 12 months when you did not have enough money to buy food that you or your family needed?" The household respondent could respond "Yes," "No," "Don't know," or they could refuse to respond. If the respondent answered "yes" to this question, the household was considered to have insufficient funds to buy food and classified as food insecure for the purpose of this report. The frequency of food insecurity was then assessed. A household responding "yes" to the prior question was asked, "How often did this happen?" Response options to this question included "Almost every month," "Some months but not every month," "1 or 2 months," "Don't know," or the respondent could refuse to answer the question. Using this metric as a measure of food insecurity, however, likely overestimates the percent of Connecticut households experiencing food insecurity, based on the U.S. Current Population Survey Food Security Supplement definition of food insecurity (Coleman-Jensen et al., 2017), which is administered to the U.S. population to assess food insecurity nationwide.[1]

[1] The CWS uses a 10-18 point questionnaire to assess both the frequency and severity of food insecurity. The limitations of the use of the CWS questionnaire are discussed in greater detail in the discussion section of this report.

Household respondents were also asked for their height and weight. Their body mass index (BMI) was calculated as weight (in kilograms) divided by the square of height (in meters) using self-reported measures. Calculated BMI percentile based on the age and gender of the household respondent was used to classify the household respondent as underweight (BMI $<5^{th}$ percentile), healthy weight (BMI percentile $\geq 5^{th}$ percentile to $<85^{th}$ percentile), overweight (BMI percentile $\geq 85^{th}$ percentile through $<95^{th}$ percentile), and obese (BMI percentile $>95^{th}$ percentile).

The percentage of households reporting insufficient funds to buy food (that is, those classified as being food insecure for this report) are assessed along the following characteristics of Connecticut's communities and residents:

- Town or Town-Clusters[2]
- Race/ethnicity of household survey respondent
- Frequency of food insecurity over the last 12 months for food insecure households
- Whether or not the household has any children under 18
- Household per capita annual income relative to the 2015 Federal Poverty Threshold

Rates of obesity and overweight of household respondents were assessed based on the following characteristics:

- Town or Town-Clusters
- Race/ethnicity
- Total household annual income
- Food security status of household

[2] Due to the sampling design of the CWS, some household responses were grouped into town-clusters to ensure appropriate sample size and representativeness of survey responses. Appendix A lists the town and town-clusters used in this report.

As described by DataHaven documentation (and Personal Communication with Mark Abraham, DataHaven, May 1, 2018), analytical survey weights were applied to estimate food insecurity and overweight and obesity rates at the town level for larger towns in Connecticut. For smaller towns, due to the sampling design of the CWS, some household responses were grouped into town-clusters to ensure appropriate sample size and representativeness of survey responses.

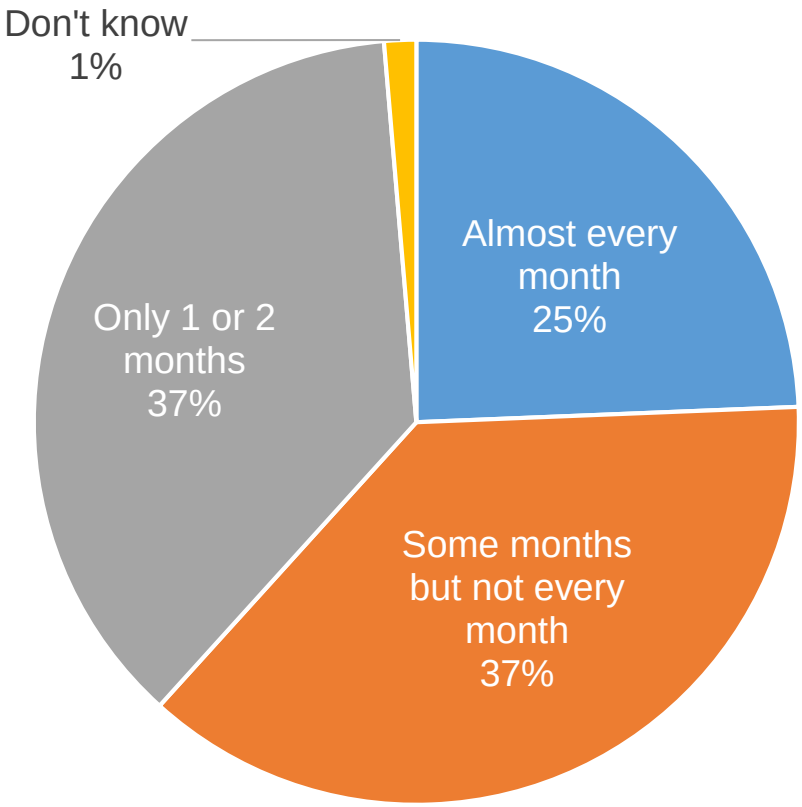
All data analyses were completed in Stata 15.1 SE (StataCorp, LP., College Station, Texas).

RESULTS

Incidence of Food Insecurity

Overall, 12.4% of Connecticut households reported not having enough money to buy food to meet their family needs in the last 12 months. Among the food insecure households, 61.6% reported that this happened almost every month or some months but not every month. Figure 3 shows the breakdown of households by the frequency with which they experienced food insecurity.

Figure 3. Frequency of food insecurity (i.e., insufficient funds to buy food in the last 12 months) for Connecticut households reporting any food insecurity in the last 12 months.

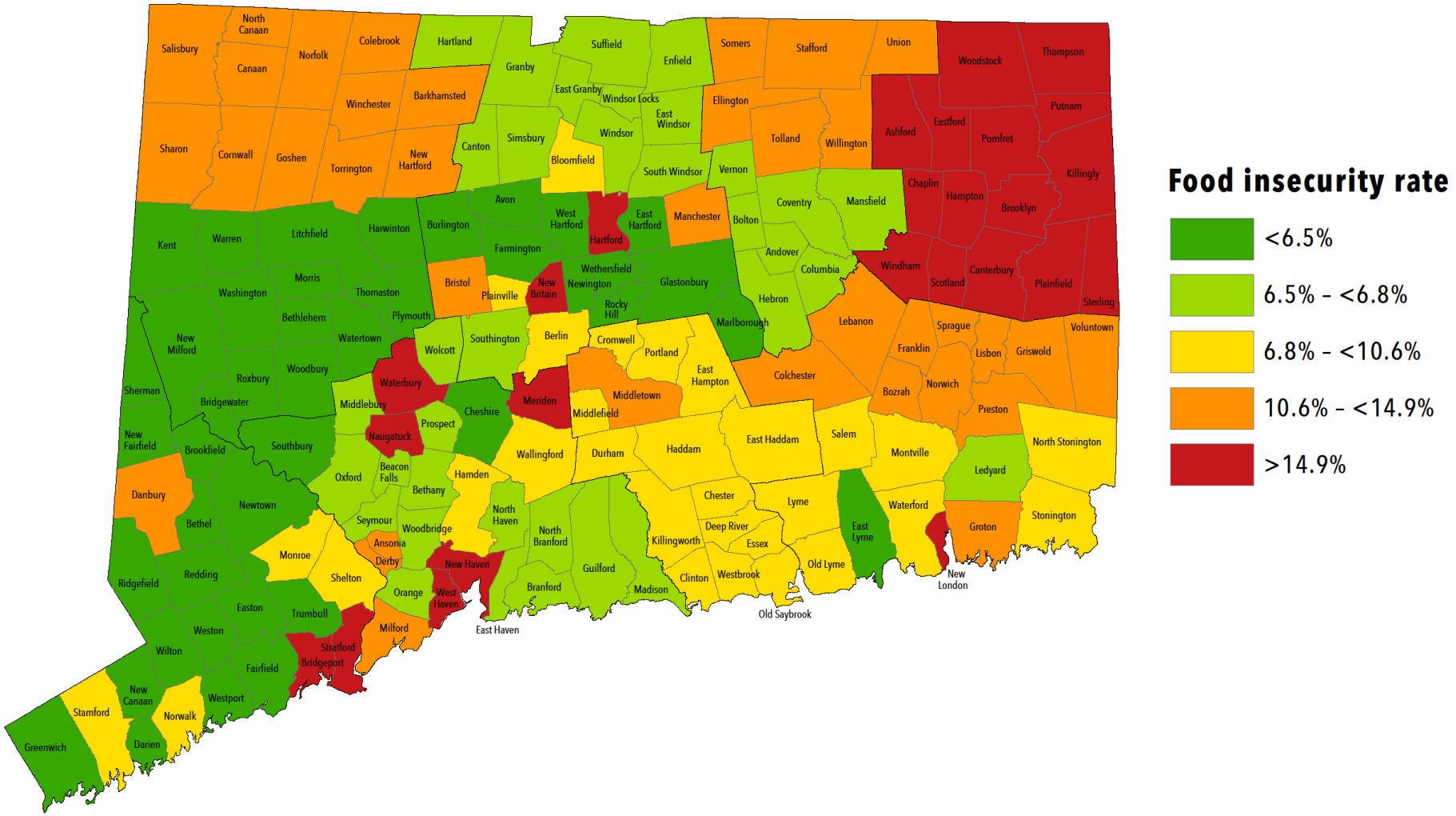


Notes: Just over 12 percent (12.4%) of households (n=1,823) responding to the survey reported being food insecure, and only these households responded to this question, while 0.2% (n=4) of reporting households refused to respond to this question. Source: DataHaven CWS, 2015.

Incidence of Food Insecurity across Connecticut Towns and Town-Clusters

Figure 4 shows the percentage of households that reported being food insecure in each town or town-cluster in Connecticut. The ten towns with the highest rates of food insecurity were: Hartford (33.3%), followed by Bridgeport (25.5%), New Britain (24.2%), West Haven (23.7%), New Haven (22.0%), Meriden (21.4%), Waterbury (19.9%), New London (19.9%), Stratford (16.2%), and Naugatuck (16.2%). Across Windham county, 15.1% of households reported being food insecure. Towns in Fairfield county had the lowest rates of food insecurity, ranging from between 2.1% and 3.0%

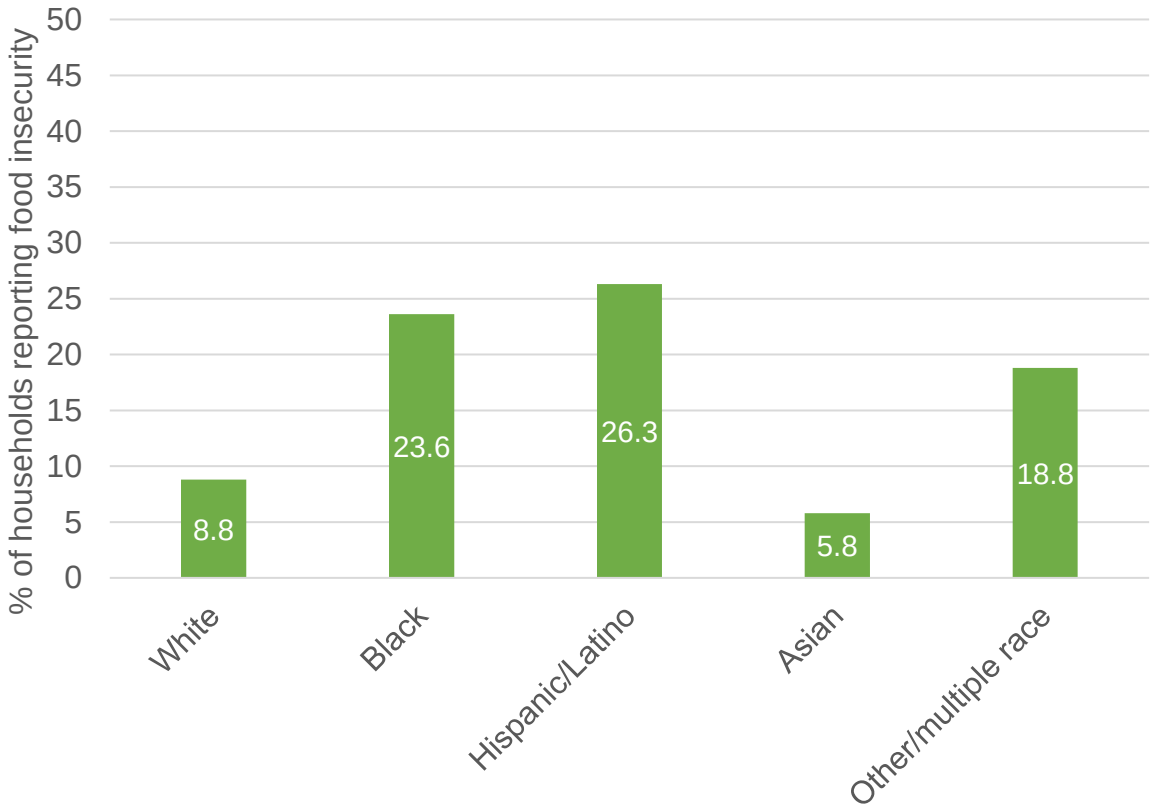
Figure 4. Percentage of Connecticut households reporting food insecurity (i.e., insufficient funds to buy food in the last 12 months) by town or town-cluster



Incidence of Food Insecurity by Race/Ethnicity of Household Respondent

Rates of food insecurity are substantially different across racial and ethnic groups in Connecticut. Black and Hispanic[3] households were three times more likely to be food insecure than White and Asian households. Asian households had the lowest rate of food insecurity compared to all other racial/ethnic groups. Figure 5 shows the rates of food insecurity across racial and ethnic groups in Connecticut.

Figure 5. Rates of Food Insecurity by Household Respondent Race/Ethnicity in Connecticut



Notes: Other/multiple race includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, or some other specified race.

[3] Hispanic is an ethnicity, whereas White, Asian, and Black refer to racial groups. Hispanic is not a mutually exclusive category to the racial groups.

Disparities in the frequency of food insecurity among households reporting any food insecurity for the last 12 months were found, although not in the expected direction. Surprisingly, White households were significantly more likely to report persistent food insecurity (defined as food insecurity occurring almost every month) than Black households: 26.6% of White households reported persistent food insecurity compared to 21.1% of Black households and 22.1% of Hispanic households, while 80.1% of food insecure Asian households reported it occurring only one or two months out of a 12-month period.

Incidence of Food Insecurity for Households with and without Children

Food insecurity rates in Connecticut are higher for households with than without children under 18, with 14.8% of Connecticut households with children reporting food insecurity in the last 12 months compared to 11.0% of household without children. Rates of food insecurity for households with children did not vary across racial/ethnic groups.

Incidence of Food Insecurity for Households with Per Capita Income Below 300% of the Federal Poverty Threshold

Households were classified as having per capita income at or below 100%, 200% or 300% of the Federal Poverty Threshold (FPT) in 2015. Per capita income at 100% of FPT was $11,700 in 2015 in Connecticut. Of households with annual per capita income at or below 100% of FPT 27.1% were food insecure. The rate of food insecurity drops substantially for households with annual per capita income at or below 200% and 300% of FPT; 8.1% of households between 101% and 200% of the FPT and 2.7% of households between 201% and 300% were food insecure.

Incidence of Overweight and Obesity

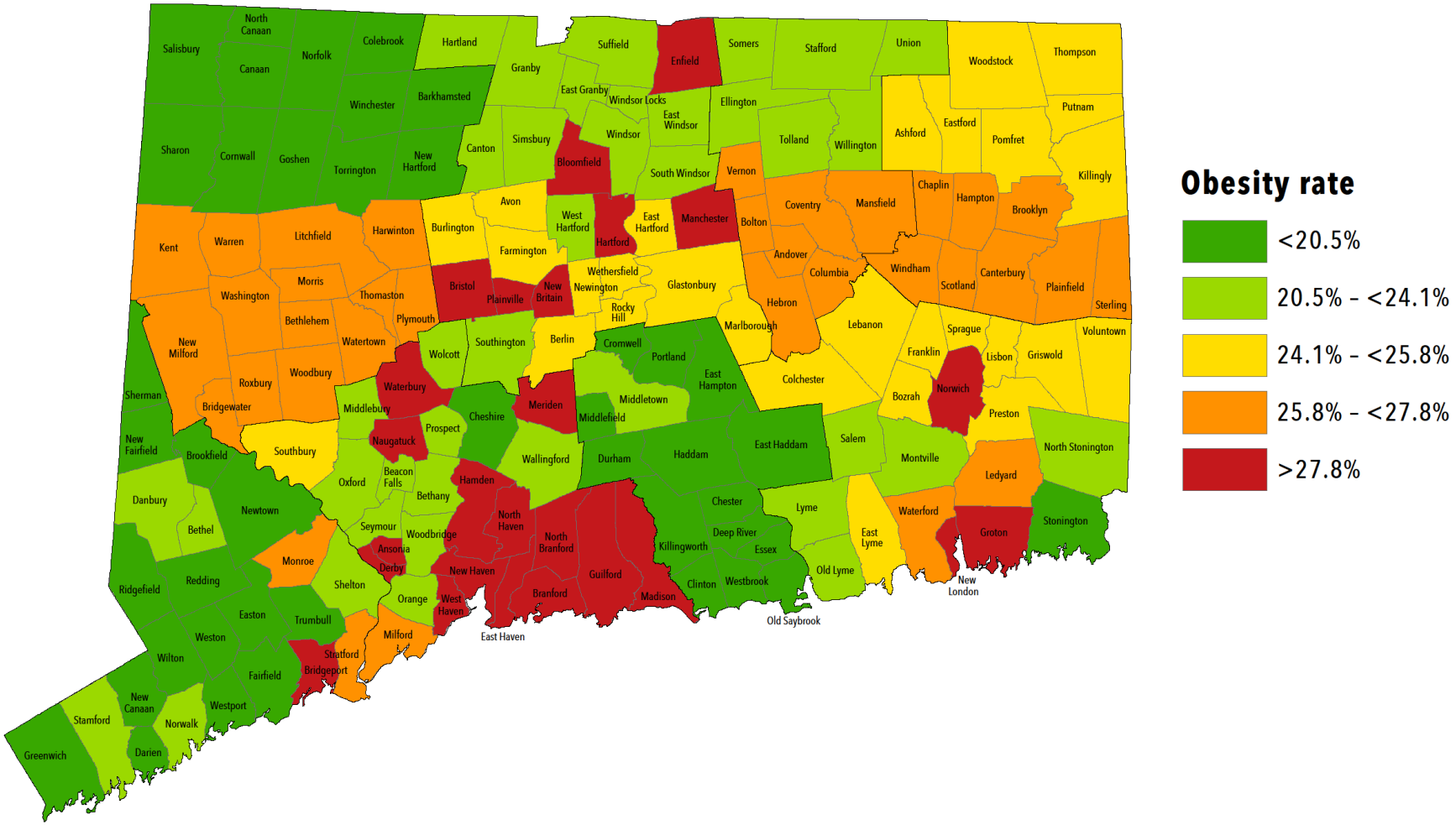
Close to 62 percent (61.7%) of household respondents reported a Body Mass Index that would classify them as being overweight (36.0%) or obese (25.6%).

Incidence of Obesity by Connecticut Town and Town-Clusters

Figure 6 shows the percentage of household respondents who reported being obese by Connecticut town or town-cluster (rates of overweight by town or town-cluster can be found in Appendix B). The ten towns with the highest rates of obesity include: Bridgeport (36.3%), Ansonia (35.6%), Norwich (35.3%),[4] New London (35.2%), New Britain (34.9%), Waterbury (33.4%), Hartford (32.6%), New Haven (32.1%), Manchester (31.7%), and West Haven (31.6%). Towns in the southern part of New Haven County also had high rates of obesity (28.5%). Towns in the southern portion of Fairfield County had the lowest rates of obesity (11.8%). The rate of obesity in Darien was the lowest in the state at 11.1%. Towns in the southern portion of Middlesex County had the fourth lowest rates of obesity in the state (13.8%).

[4] Obesity estimates for some towns were calculated without town-level or county-level survey weights. As a result, estimates have relatively high margins of error and should be interpreted carefully. Please see Appendix Table B for town or town-cluster level estimates for each town in Connecticut.

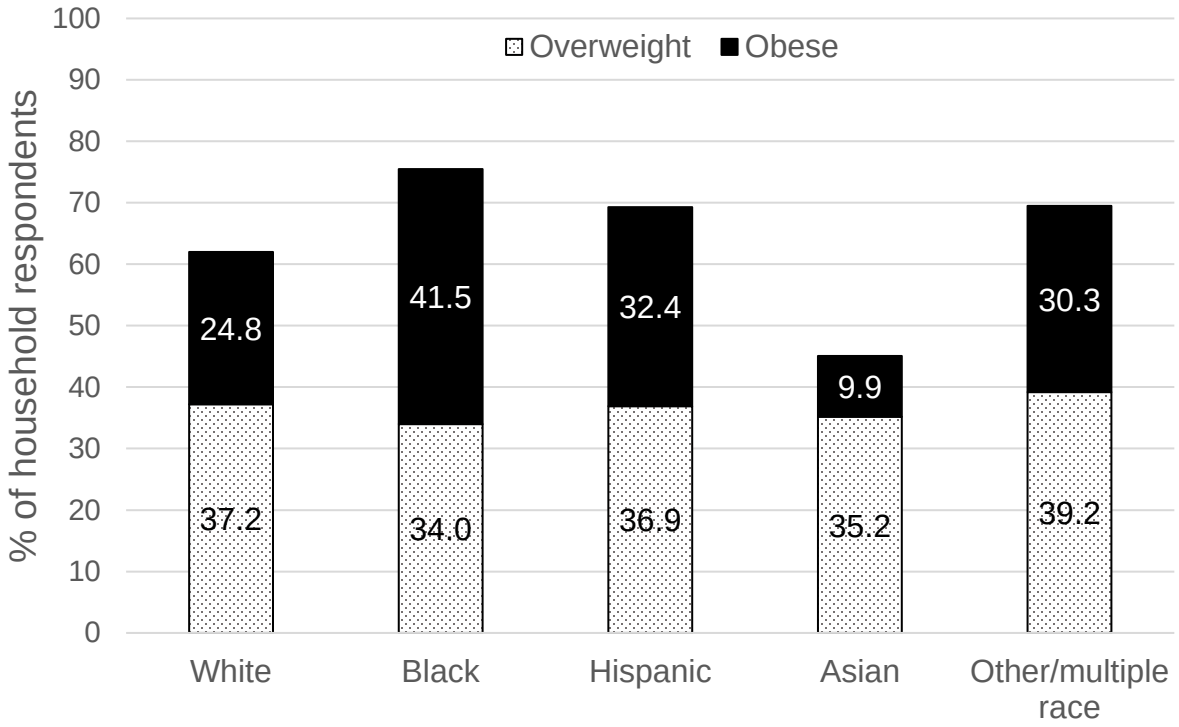
Figure 6. Percentage of Household Respondents Who Are Obese by Connecticut Town



Incidence of Overweight and Obesity by Race/Ethnicity of Household Respondent

Asian and White household respondents were the least likely to be overweight or obese compared to household respondents in other racial/ethnic groups. Black, Hispanic/Latino, and other/multiple race household respondents all had higher rates of overweight and obesity than White and Asian households. Figure 7 shows the incidence of overweight and obesity by the household respondent's race/ethnicity.

Figure 7. Percentage of Household Respondents Who Are Overweight or Obese by Race/Ethnicity

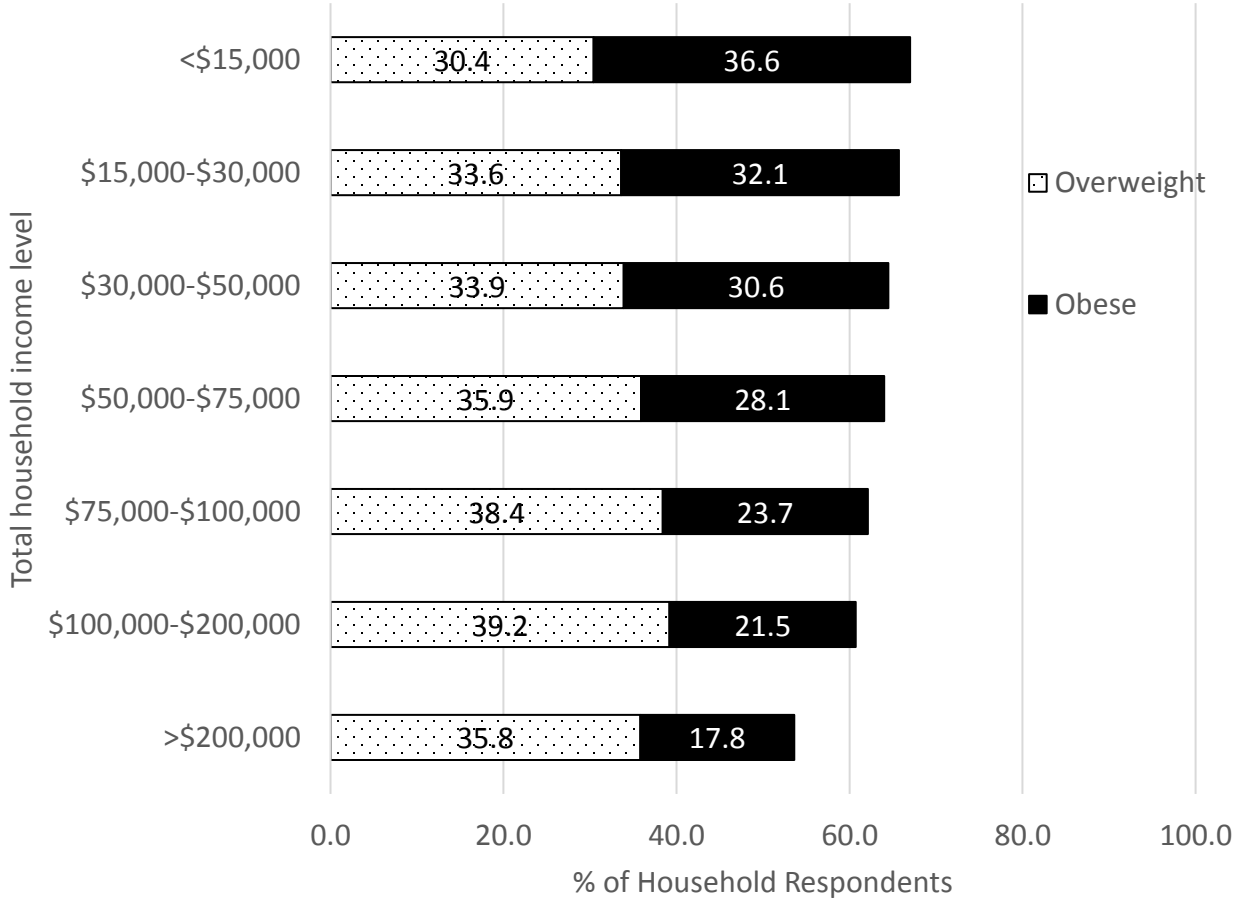


Incidence of Overweight and Obesity by Household Income Level and Food Security Status

Figure 8 shows the percentage of respondents who were overweight or obese by household income class. Rates of overweight were consistently lower for respondents with household annual incomes below $50,000, compared to respondents with higher household incomes. Conversely, rates of obesity were higher for respondents with lower incomes.

Overweight and obesity were also more common among respondents from food insecure households. Compared to 60.8% of respondents from food secure households, 67.4% of respondents from food insecure households were overweight or obese.

Figure 8. Percentage of Respondents Who Were Overweight or Obese by Household Income Class



DISCUSSION

The purpose of this study was to document the incidence of food insecurity and obesity across Connecticut. Data from the DataHaven 2015 Community Wellbeing Survey were used to assess rates of food insecurity and obesity both at the state level and across sub-populations in Connecticut. This study evaluates for the first time the incidence of food insecurity and obesity among Connecticut sub-populations, using self-reported data from a representative sample of households in the state. This offers

an advantage over previous reports that used community-level proxies to assess a community's risk for food insecurity and obesity. While the federal government monitors food insecurity and weight status at the state level, data are needed to assess the incidence of food insecurity and obesity among sub-populations in Connecticut so that policies, programs, and resources can be targeted to the populations most at risk of food insecurity or obesity.

Findings of this report indicate that food insecurity and obesity remain challenges in the state. Obesity was especially widespread across the Connecticut population, while food insecurity was more concentrated in urban centers and among specific sub-populations. Rates of both food insecurity and obesity were higher for lower-income groups and among minority populations. These disparities mirror those observed across racial, ethnic, and socioeconomic groups nationally. At the same time, White households reported more persistent food insecurity compared to non-White households. Why these households reported more persistent food insecurity should be further studied. Additionally, data indicated that while rates of overweight were consistent across income classes, obesity was substantially higher for low-income Connecticut households. Future work could also examine the association between overweight, obesity, and income to determine why overweight is so common, even among higher-income residents in Connecticut.

Although this study provides new information about the incidence of food insecurity and obesity across Connecticut's population, it has limitations that warrant discussion. First, the DataHaven CWS food insecurity questions used for these analyses are not validated measures to assess household food insecurity. While the 18-question Food Security Supplement (FSS) of the U.S. Department of Labor Current Population Survey, considered the highest quality questionnaire, is a validated instrument to assess household food insecurity among the U.S. population, the DataHaven survey did not use it to assess food insecurity. The CWS was focused on a variety of issues related to household wellbeing, not only food insecurity, so it could not administer the full 18-point CPS food security supplemental

questionnaire. Consequently, food insecurity rates reported in this study using CWS data should be interpreted carefully.

Nevertheless, future studies should continue to monitor food insecurity and obesity rates in Connecticut using DataHaven CWS responses. DataHaven recently launched the 2018 CWS, and data from this updated survey can be used in the future to examine changes over time in food insecurity and obesity across Connecticut's population. The association between food insecurity, obesity, and other diet-related diseases could also be conducted using DataHaven CWS responses, since household respondents are also asked to report whether or not they have hypertension, cardiovascular disease, and type 2 diabetes. Finally, DataHaven CWS household data could also be linked to measures of food access and the food environment to determine if there are associations between the prevalence of food insecurity and obesity across Connecticut's diverse populations.

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APPENDIX A - Town and town-clusters used to compute food insecurity and obesity rates

No cluster used		Town cluster names							
		North Fairfield	**North Hartford**	**North Litchfield**	**North Middlesex**	**North New Haven**	**North New London**	**North Tolland**	**North Windham**
Berlin	Bristol	New Fairfield	Hartland	North Canaan	East Haddam	Prospect	Colchester	Tolland	Eastford
Bloomfield	Darien	Sherman	East Windsor	Salisbury	Middlefield	Seymour	Griswold	Willington	Ashford
Cheshire	Bridgeport	Redding	Suffield	Cornwall	Cromwell	Oxford	Sprague	Union	Woodstock
Derby	New Haven	Brookfield	Simsbury	Torrington	Durham	Beacon Falls	Bozrah	Ellington	Pomfret
East Lyme	Fairfield	Ridgefield	Canton	Winchester	Portland	Middlebury	Lisbon	Stafford	Putnam
Enfield	Greenwich	Newtown	Windsor	Goshen	Haddam	Orange	Voluntown	Somers	Thompson
Hamden	Groton	Bethel	East Granby	New Hartford	East Hampton	Wolcott	Franklin		Killingly
Ledyard	Hamden		Granby	Colebrook		Bethany	Preston		
Monroe	Hartford		Windsor Locks	Barkhamsted		Woodbridge	Lebanon		
New Milford	Manchester		South Windsor	Canaan					
Norwich	Meriden			Norfolk					
Plainville	Middletown			Sharon					
Southbury	Milford								
Southington	Naugatuck	**South Fairfield**	**South Hartford**	**South Litchfield**	**South Middlesex**	**South New Haven**	**South New London**	**South Tolland**	**South Windham**
Stonington	New Britain	Weston	Newington	Morris	Clinton	Branford	Old Lyme	Hebron	Scotland
Trumbull	New London	New Canaan	Marlborough	Plymouth	Killingworth	North Haven	North Stonington	Coventry	Windham
Wallingford	Shelton	Wilton	Wethersfield	Warren	Old Saybrook	East Haven	Montville	Mansfield	Sterling
Waterford	Stratford	Easton	Glastonbury	Bridgewater	Chester	North Branford	Salem	Bolton	Chaplin
Watertown	Stamford		Burlington	Kent	Essex	Guilford	Lyme	Andover	Brooklyn
Westport	Waterbury		Rocky Hill	Roxbury	Westbrook	Madison		Vernon	Plainfield
Ansonia	West Hartford		East Hartford	Bethlehem	Deep River			Columbia	Canterbury
	West Haven		Farmington	Litchfield					Hampton
	Danbury		Avon	Harwinton					
	Norwalk			Washington					
				Woodbury					
				Thomaston					

APPENDIX B – Data Sorted by Town Obesity Rates*

Towns	Obesity	Overweight and Obesity	Food Insecurity	weighted	Town Cluster
Bridgeport	36.3%	71.3%	25.5%	1	N/A
Ansonia	35.6%	66.6%	14.8%	1	N/A
Norwich	35.3%	70.6%	14.1%	0	N/A
New London	35.2%	70.4%	19.9%	1	N/A
New Britain	34.9%	67.2%	24.2%	1	N/A
Waterbury	33.4%	70.6%	19.9%	1	N/A
Hartford	32.6%	68.3%	33.3%	1	N/A
New Haven	32.1%	60.9%	22.0%	1	N/A
Manchester	31.7%	64.1%	13.9%	1	N/A
West Haven	31.6%	69.5%	23.7%	1	N/A
Bloomfield	31.4%	67.4%	9.3%	0	N/A
Hamden	30.8%	76.2%	9.7%	0	N/A
Enfield	30.6%	68.2%	12.2%	0	N/A
Groton	30.4%	57.7%	12.2%	1	N/A
Hamden	30.2%	69.9%	11.2%	1	N/A
Meriden	29.9%	70.6%	21.4%	1	N/A
Plainville	29.5%	64.2%	8.6%	0	N/A
Derby	29.5%	67.8%	12.6%	0	N/A
Naugatuck	28.6%	66.7%	16.2%	1	N/A
Branford	29%	62%	7%	1	South New Haven
North Haven	29%	62%	7%	1	South New Haven
East Haven	29%	62%	7%	1	South New Haven
North Branford	29%	62%	7%	1	South New Haven
Guilford	29%	62%	7%	1	South New Haven
Madison	29%	62%	7%	1	South New Haven
Bristol	27.8%	65.4%	13.5%	1	N/A
Scotland	28%	67%	15%	1	South Windham
Windham	28%	67%	15%	1	South Windham
Sterling	28%	67%	15%	1	South Windham
Chaplin	28%	67%	15%	1	South Windham
Brooklyn	28%	67%	15%	1	South Windham
Plainfield	28%	67%	15%	1	South Windham
Canterbury	28%	67%	15%	1	South Windham
Hampton	28%	67%	15%	1	South Windham
Watertown	27.5%	63.7%	4.7%	0	N/A
Stratford	27.4%	64.2%	16.2%	1	N/A
Waterford	27.4%	63.7%	8.6%	0	N/A
Morris	27%	58%	6%	1	South Litchfield
Plymouth	27%	58%	6%	1	South Litchfield
Warren	27%	58%	6%	1	South Litchfield
Bridgewater	27%	58%	6%	1	South Litchfield
Kent	27%	58%	6%	1	South Litchfield
Roxbury	27%	58%	6%	1	South Litchfield
Bethlehem	27%	58%	6%	1	South Litchfield
Litchfield	27%	58%	6%	1	South Litchfield
Harwinton	27%	58%	6%	1	South Litchfield
Washington	27%	58%	6%	1	South Litchfield
Woodbury	27%	58%	6%	1	South Litchfield
Thomaston	27%	58%	6%	1	South Litchfield
New Milford	26.7%	67.5%	4.6%	0	N/A
Milford	26.6%	65.2%	13.6%	1	N/A
Ledyard	26.5%	65.9%	6.7%	0	N/A
Hebron	26%	57%	7%	1	South Tolland
Coventry	26%	57%	7%	1	South Tolland
Mansfield	26%	57%	7%	1	South Tolland
Bolton	26%	57%	7%	1	South Tolland
Andover	26%	57%	7%	1	South Tolland
Vernon	26%	57%	7%	1	South Tolland

Towns	Obesity	Overweight and Obesity	Food Insecurity	weighted	Town Cluster
Columbia	26%	57%	7%	1	South Tolland
Monroe	26.1%	68.2%	7.1%	0	N/A
Berlin	25.8%	60.1%	8.6%	0	N/A
Southbury	25.6%	58.7%	2.9%	0	N/A
Newington	25%	63%	6%	1	South Hartford
Marlborough	25%	63%	6%	1	South Hartford
Wethersfield	25%	63%	6%	1	South Hartford
Glastonbury	25%	63%	6%	1	South Hartford
Burlington	25%	63%	6%	1	South Hartford
Rocky Hill	25%	63%	6%	1	South Hartford
East Hartford	25%	63%	6%	1	South Hartford
Farmington	25%	63%	6%	1	South Hartford
Avon	25%	63%	6%	1	South Hartford
East Lyme	24.8%	60.9%	3.4%	0	N/A
Eastford	25%	64%	15%	1	North Windham
Ashford	25%	64%	15%	1	North Windham
Woodstock	25%	64%	15%	1	North Windham
Pomfret	25%	64%	15%	1	North Windham
Putnam	25%	64%	15%	1	North Windham
Thompson	25%	64%	15%	1	North Windham
Killingly	25%	64%	15%	1	North Windham
Colchester	24%	49%	15%	1	North New London
Griswold	24%	49%	15%	1	North New London
Sprague	24%	49%	15%	1	North New London
Bozrah	24%	49%	15%	1	North New London
Lisbon	24%	49%	15%	1	North New London
Voluntown	24%	49%	15%	1	North New London
Franklin	24%	49%	15%	1	North New London
Preston	24%	49%	15%	1	North New London
Lebanon	24%	49%	15%	1	North New London
Prospect	24%	60%	7%	1	North New Haven
Seymour	24%	60%	7%	1	North New Haven
Oxford	24%	60%	7%	1	North New Haven
Beacon Falls	24%	60%	7%	1	North New Haven
Middlebury	24%	60%	7%	1	North New Haven
Orange	24%	60%	7%	1	North New Haven
Wolcott	24%	60%	7%	1	North New Haven
Bethany	24%	60%	7%	1	North New Haven
Woodbridge	24%	60%	7%	1	North New Haven
Shelton	23.9%	65.4%	7.7%	1	N/A
Wallingford	23.0%	54.0%	7.3%	0	N/A
Bethel	23%	50%	3%	1	North Fairfield
Hartland	23%	68%	7%	1	North Hartford
East Windsor	23%	68%	7%	1	North Hartford
Suffield	23%	68%	7%	1	North Hartford
Simsbury	23%	68%	7%	1	North Hartford
Canton	23%	68%	7%	1	North Hartford
Windsor	23%	68%	7%	1	North Hartford
East Granby	23%	68%	7%	1	North Hartford
Granby	23%	68%	7%	1	North Hartford
Windsor Locks	23%	68%	7%	1	North Hartford
South Windsor	23%	68%	7%	1	North Hartford
Stamford	22.5%	56.8%	9.7%	1	N/A
Old Lyme	22%	54%	10%	1	South New London
North Stonington	22%	54%	10%	1	South New London
Montville	22%	54%	10%	1	South New London
Salem	22%	54%	10%	1	South New London
Lyme	22%	54%	10%	1	South New London
Tolland	22%	60%	14%	1	North Tolland
Willington	22%	60%	14%	1	North Tolland

Towns	Obesity	Overweight and Obesity	Food Insecurity	weighted	Town Cluster
Union	22%	60%	14%	1	North Tolland
Ellington	22%	60%	14%	1	North Tolland
Stafford	22%	60%	14%	1	North Tolland
Somers	22%	60%	14%	1	North Tolland
Norwalk	21.6%	59.9%	10.6%	1	N/A
Middletown	21.4%	59.6%	12.0%	1	N/A
West Hartford	21.3%	60.3%	6.2%	1	N/A
Southington	21.3%	61.7%	6.5%	0	N/A
Danbury	21.1%	63.2%	10.9%	1	N/A
East Haddam	21%	49%	8%	1	North Middlesex
Middlefield	21%	49%	8%	1	North Middlesex
Cromwell	21%	49%	8%	1	North Middlesex
Durham	21%	49%	8%	1	North Middlesex
Portland	21%	49%	8%	1	North Middlesex
Haddam	21%	49%	8%	1	North Middlesex
East Hampton	21%	49%	8%	1	North Middlesex
Stonington	20.2%	69.7%	8.7%	0	N/A
Greenwich	18.5%	51.1%	5.9%	1	N/A
Cheshire	17.1%	59.0%	6.3%	0	N/A
North Canaan	17%	54%	13%	1	North Litchfield
Salisbury	17%	54%	13%	1	North Litchfield
Cornwall	17%	54%	13%	1	North Litchfield
Torrington	17%	54%	13%	1	North Litchfield
Winchester	17%	54%	13%	1	North Litchfield
Goshen	17%	54%	13%	1	North Litchfield
New Hartford	17%	54%	13%	1	North Litchfield
Colebrook	17%	54%	13%	1	North Litchfield
Barkhamsted	17%	54%	13%	1	North Litchfield
Canaan	17%	54%	13%	1	North Litchfield
Norfolk	17%	54%	13%	1	North Litchfield
Sharon	17%	54%	13%	1	North Litchfield
Trumbull	16.4%	57.8%	5.4%	0	N/A
Fairfield	15.9%	48.9%	3.1%	1	N/A
New Fairfield	13.9%	50%	3%	1	North Fairfield
Sherman	13.9%	50%	3%	1	North Fairfield
Redding	13.9%	50%	3%	1	North Fairfield
Brookfield	13.9%	50%	3%	1	North Fairfield
Ridgefield	13.9%	50%	3%	1	North Fairfield
Newtown	13.9%	50%	3%	1	North Fairfield
Clinton	14%	62%	8%	1	South Middlesex
Killingworth	14%	62%	8%	1	South Middlesex
Old Saybrook	14%	62%	8%	1	South Middlesex
Chester	14%	62%	8%	1	South Middlesex
Essex	14%	62%	8%	1	South Middlesex
Westbrook	14%	62%	8%	1	South Middlesex
Deep River	14%	62%	8%	1	South Middlesex
Westport	13.3%	51.4%	2.6%	0	N/A
Weston	12%	44%	2%	1	South Fairfield
New Canaan	12%	44%	2%	1	South Fairfield
Wilton	12%	44%	2%	1	South Fairfield
Easton	12%	44%	2%	1	South Fairfield
Darien	11.1%	45.2%	4.8%	1	N/A
Connecticut weighted average	25.6%	61.6%	12.5%	1	-

*Measures of error or variance not reported. Please contact Rigoberto Lopez to obtain error or variance estimates for the point estimates listed in Appendix B at Rigoberto.lopez@uconn.edu