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# Food Insecurity Among WPI Students

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# An Investigation of Food Insecurity at Worcester Polytechnic Institute

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# Abstract:

As the cost of living and the cost of education rise, students at colleges and universities may be encountering struggles with food insecurity. The goal of this project was to determine the magnitude of the issue at Worcester Polytechnic Institute (WPI), educate the WPI community on the issue, and propose sustainable solutions. The researchers developed a survey to uncover the extent of food insecurity at WPI, followed by interviews, and the project culminated with the presentation of sustainable solutions to be implemented in the WPI community.

# Acknowledgements:

Our team would like to thank the participants of the study for their time and honest answers. Their willingness to share sensitive information with the team is something for which we are very grateful. The impact of their statements was crucial to the formulation of this project and to attaining sustainable solutions.

We would also like to thank Shavaun Cloran, the nutritionist at WPI, as well as the rest of the Chartwells staff, who provided a lot of insight to the nature of the problem at WPI. Without their help, reaching a sustainable solution would have been near impossible.

We would like to thank our advisors, Dean Gregory Snoddy and Professor Kristin Boudreau, for bringing the group of us together and for their hard work on the project. We are especially appreciative of their ability to stay on a strict deadline self-imposed by the team and also provide elaborate editorial insight on every written submission.

Finally, we would like to thank the WPI community overall, for requiring every student to complete an IQP, yet also making it an experience that never feels forced. Without the inclusive nature at WPI, issues addressed in IQPs would never be solved, and many students would leave college without feeling as though their passage made a difference. In the case of our group and many others at WPI, the reaction and support of the community allowed the project to prosper, and for that we are grateful.

# Executive Summary:

Food Insecurity on the college level is an issue that continues to gain attention from universities and the general public alike. Existing studies report that food insecure students are at a detriment academically, socially, and physically as a direct result of their food insecurity. Activists call for aid for food insecure college students via their individual institutions, though it is difficult to predict which forms of aid would be most beneficial before implementation. The development of a survey to assess the need of a food insecure population, as well as the development of aid for those impacted, is complicated by the desired anonymity of this population as well as a proven lack of sustainable solutions to this issue.

At Worcester Polytechnic Institute (WPI), food insecure students are currently handled on an individual, case by case basis for only students that identify their need to the institution directly via the administration. With such a serious issue, a method to identify the needs of WPI students as well as solutions must be sustainable and implemented immediately. Therefore, the need for a food insecurity survey pertaining only to WPI students was necessary, as well as the implementation of sustainable solutions that have been proven successful elsewhere.

## Project Goals and Objectives

The goals of this project were to create a way to assess the number of food insecure students at WPI, determine the needs of those students, and develop sustainable solutions to lessen the needs of those students. The primary objectives of this project were to:

- Perform a review of existing research on food insecurity at other institutions and the impact of food insecurity on students' mental health, social health, and physical wellbeing;

- Develop a methodology to enable quantitative assessment related to the number of food insecure students at WPI, their demographic information, and which food insecure conditions they experienced;

- Implement this methodology in order to collect data on the number of food insecure students at WPI and their needs;

- Develop a methodology to gather qualitative data about students' experiences with food insecurity at WPI; and

- create the framework for the implementation of sustainable solutions.

## **Development of Methodology**

In order to fulfill the objectives of this project, we utilized several methods of research and study. Through assessment of existing studies on other campuses and review of surveys distributed both on other campuses and nation-wide, we were able to synthesize a WPI-specific food insecurity survey. Upon synthesis of this information, we designed our own food insecurity survey tailored to the specific requirements of being a WPI student.

After the design was complete, we sent the survey out via a mailing list to all students at WPI, with the goal of reaching as many students as possible. The survey also included a portion, completely separate from their food insecurity responses, where students could volunteer to be interviewed in person. We interviewed students one at a time in private locations. All interviews were filmed, with some of the footage being used to create a documentary on the subject.

The data gathered from the survey and the interviews allowed us to conceive several sustainable solutions to lessen the needs of food insecure students at WPI. We created a final presentation in order to convey these solutions to an audience and to provide a supplement to our documentary on food insecurity at WPI.

## Findings

- **24.3% of WPI students identify as food insecure.** While the WPI population is less food insecure than the national average for college students, nearly a quarter of all students have experienced food insecurity during their time at the university.

- **Minorities are more food insecure at WPI.** While this data follows the national trend, minorities at WPI experience food insecurity considerably more than their caucasian peers. Black/African/African American students experience 32% more food insecurity than their white peers. Similarly, Hispanic/Latinx students experience 15% more food insecurity than those same peers.

- **WPI students experienced a variety of food insecure conditions.** The most commonly reported conditions among food insecure students were:

  - Inability to afford balanced meals (94.9%)

  - Cut the size of or skipped meals regularly (84.3%)

  - Eating less than they thought they should (82.1%)

  - Fear that food would run out (78.4%)

- **A variety of factors caused students' food insecurity at WPI.** The most common causes in our interviews were:

  - Difficulty balancing the demands of a WPI course load with the time needed to eat healthy, balanced meals.

  - Lack of money for food after paying other bills or rent.

  - Lack of access to dining facilities during the times when students had availability to eat or in locations where students regularly were, such as dormitories far from main campus.

## Suggested Solutions

- **An increase in available aid resources.** Particularly for students without meal plans, resources such as a meal swipe donation bank or prepackaged frozen meals, free for use, would help alleviate food insecurity. The financial aid office could also run budgeting seminars and aid students through the process of applying for SNAP benefits.

- **An increase in access to food.** Students with meal plans or who are looking to purchase food on campus should be able to access food no matter the time or campus location. By adding twenty-four hour on the go locations in every residence hall, students would be able to have access to food no matter what part of campus they were on or when they needed to eat.

- **Implementation of a Food Insecurity Task Force.** This task force, comprising students, faculty, and staff, would assess the amount of food insecure students on campus yearly and determine the needs of those students. This task force would also be responsible for upholding the sustainability of any solutions implemented following this project and for recommending new solutions to the administration.

These suggestions, if implemented, could significantly lessen the need of food insecure students at WPI. Additionally, we hope that our research will aid future studies of this topic at WPI as well as at other universities. This research shows that food insecurity impacts college students on a significant scale, and that while aid can and should be implemented as soon as possible, further study is warranted to determine root causes of food insecurity among WPI's students as well as the effectiveness of food insecurity remediation methods.

# Authorship:

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# Chapter 1: Introduction

With the cost of living in the United States on the rise at an average rate of 3.35% per year, along with institutional tuition increases of 2-4% each year, financial hardship has impacted students at WPI (Consumer Price Index, 2018). For some college students, that means making the choice between eating for the week or purchasing textbooks, between paying the bills or having food until their next paycheck. For many of those students, especially those without full meal plans, there is no reliable source of food. This lack of food is highlighted in a study done by the Wisconsin Hope Lab which states that 33% of students at four-year universities are food insecure (Goldrick-Rab, Richardson, Schneider, Cady, & Hernandez, 2018). Full meal plans at WPI, defined in this project as those that would provide two or more meals every day, cost a minimum of $3,167 per semester and are required for all first-year residential students. Many upperclassmen students elect not to purchase meal plans to save money. In addition, some of these students may not have room left in their academic schedule to work more and still keep up in their classes, which may leave some of these students unable to eat. We postulate that this has created a well-hidden epidemic of food insecurity among students at WPI.

At institutions across the country, students have taken action. Service organizations and clubs have taken it upon themselves to start food pantries and raise funds for sustainable action projects, such as prepackaged meal delivery. Several national initiatives have also begun to prosper, with different programs reaching high schools and colleges with low-income students in areas where other services are not readily available.

However, as of August 24, 2018, WPI did not have a viable solution to student hunger on campus. Within the freshman class, on-campus students are required to have residential meal plans that should provide approximately two meals per day. Other than those meals, WPI had not

made a substantial effort to ensure that all students, particularly upperclassmen, were eating. The

lack of awareness regarding upperclassmen food insecurity is evidenced by the lack of a food

distribution center on campus, failure to set aside food service employment for otherwise would

not eat, and the absence of a campus-wide meal swipe bank where meal swipes or goat bucks can

be traded among students.

Our goal was to determine the number of food insecure students within the WPI

community and come up with solutions that would enhance students' ability to obtain healthy

meals in a confidential and simple way.

# Chapter 2: Background

**<u>Food Insecurity, Defined</u>**

The technical language for food insecurity topics originates from a series of working groups and cross-agency collaborations among government entities, research organizations, universities, and private sector partners over the last 30 years. At its broadest level, food security is defined as:

> *"access by all people at all times to enough food for an active, healthy life… [including] at a minimum: (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies). (Andersen/LSRO, 1990)"*

The Food Security Supplement of the U.S. Census Bureau's Current Population Survey (CPS FSS) is the United States government's primary source for food security measurement (Bickel, Nord, Price, Hamilton, & Cook, 2000). It was devised by the U.S. Food Security Measurement Project, an interorganizational task force involving, among others: the USDA, Census Bureau, Center for Disease Control, and Department of Health and Human Services. First administered in 1995, and repeated at least once annually every year since, the survey has remained remarkably consistent. The only changes to the FSS, throughout its history, have been in formatting and subject screening procedures; the composition of the 18 questions posed remain unaltered (USDA ERS, 2018). Given the wide reach and methodological thoroughness of the Census Bureau, the FSS has provided almost 25 years of continuous, rigorous study of the food security status of the population of the United States.

Table 1 defines the degrees of food insecurity, per the United States Department of

Agriculture's Economic Research Service (USDA ERS). Figure 1 shows the rates and trends of

U.S. household food insecurity (and its two sub-classifications) over the past twenty years.

Figure 2 details the incidence of selected characteristics of food insecure households, as found in

the 2017 FSS.

| | Food Secure | | Food Insecure | |
|---|---|---|---|---|
| | **High Food Security** | **Marginal Food Security** | **Low Food Security** | **Very Low Food Security** |
| Reported incidence of food insecurity | No reported food insecure conditions within study period | 1 – 2 reported food insecure conditions within study period | 3 – 5 reported food insecure conditions within study period | ≥6 reported food insecure conditions within study period |
| Reported implications of food insecurity | No reported indications of food-access problems or limitations. | Reports of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake. | Reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake. | Reports of multiple indications of disrupted eating patterns and reduced food intake. |

Table 1: USDA ERS survey thresholds for degrees of food insecurity and qualitative descriptions of food security status designations

Overall, 11.8% of United States households were food insecure at some point in 2017,

with 4.5% classified as experiencing "very low food security" (Coleman-Jensen, Rabbit,

Gregory, & Singh, 2018). Food insecurity jumps to 15.7% for families with children, 7.7% of

which reported food insecurity in both children and adults. Food security for the U.S. population

improved in 2017, falling 0.5% year-over-year, from 12.3% in 2016 to the 11.8% found in 2017.

This continues a trend of increased food security from its highest recorded point, in 2011, which

found 14.9% food insecurity (Coleman-Jensen, Rabbit, Gregory, & Singh, 2018). Food

insecurity remains above pre-recession levels but has shown marked improvement since 2014.

Figure 3 provides a summary of food insecurity in the U.S. population for a selection of

demographics splits
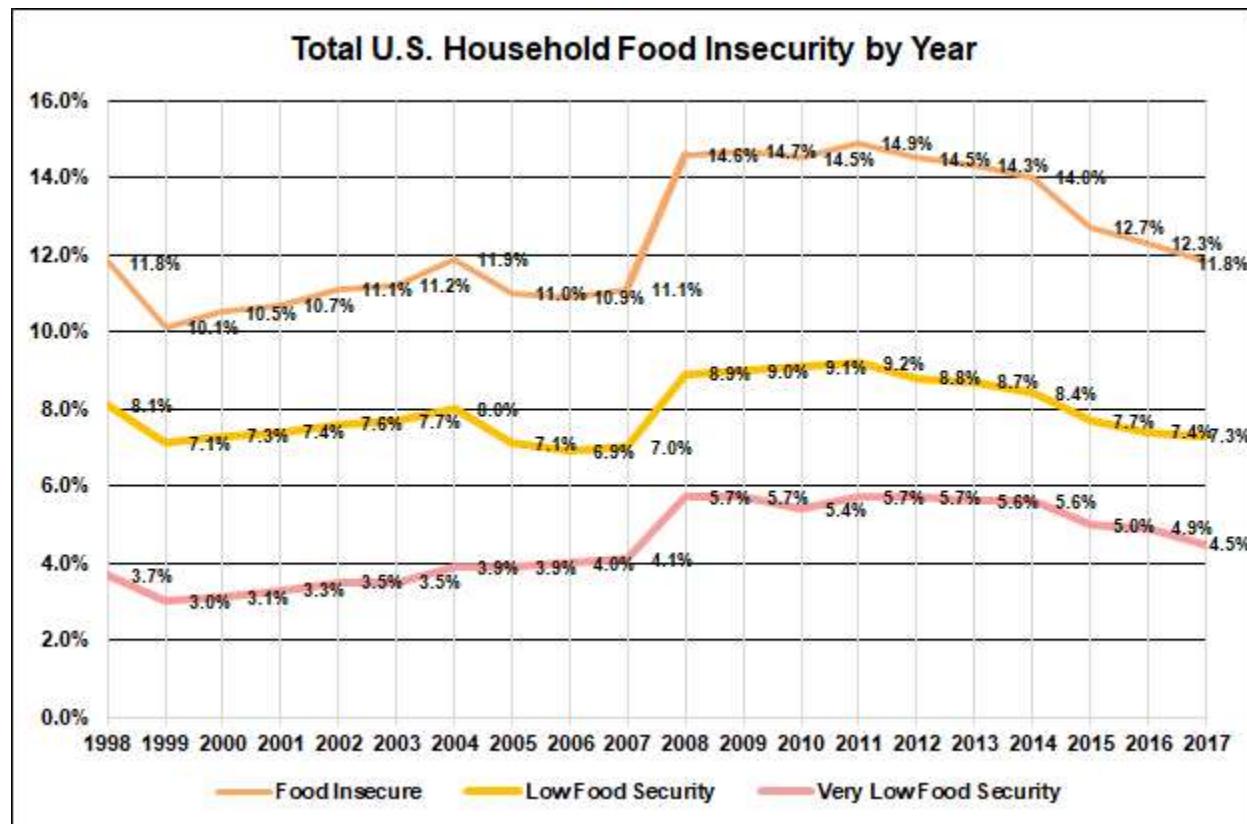
Figure 2: Household prevalence of food insecurity in the United States by year (USDA ERS, 2018)
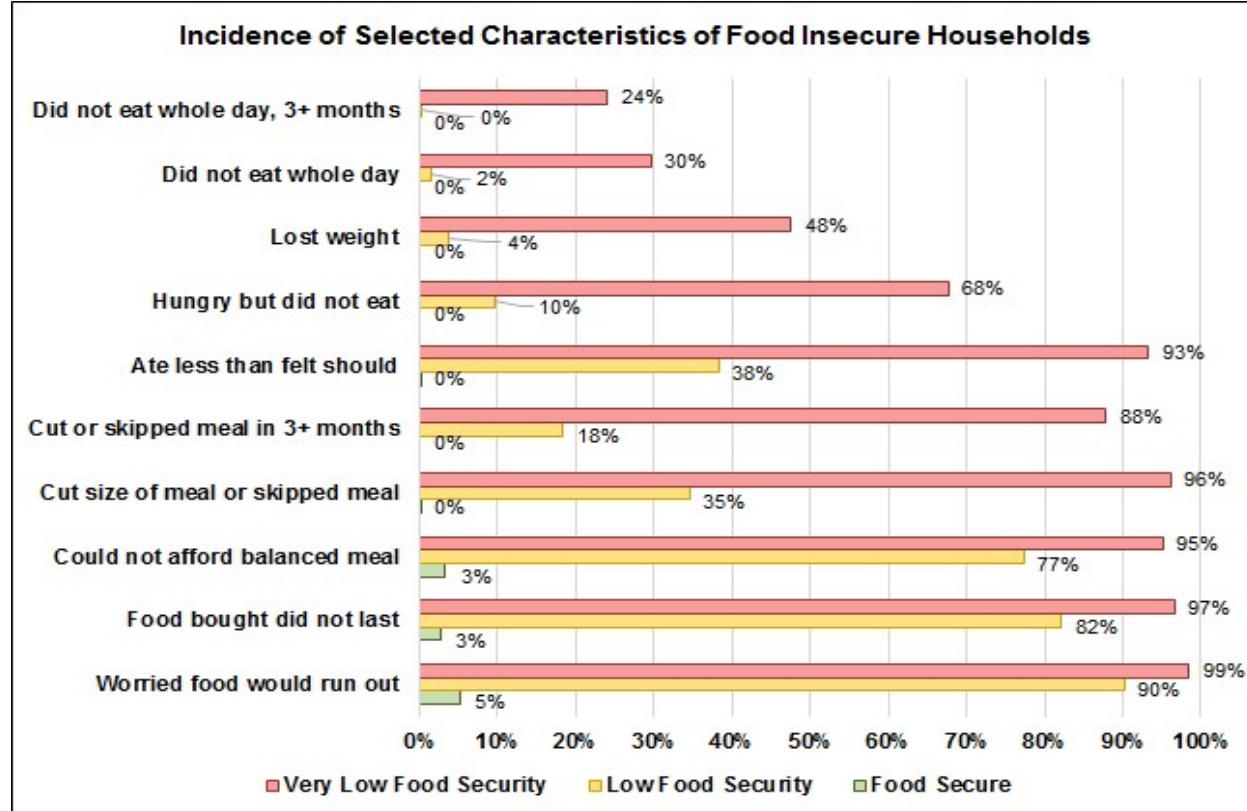


Figure 1: Incidence of selected characteristics of food insecure households, per 2017 CPS Food Security Supplement (USDA ERS, 2018)

Households with more than one adult, as well as men and women living alone, are of particular interest to our study. Many WPI students live with roommates, and the Current Population Survey definition of a household encompasses "all the people who occupy a housing unit… [including] the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit." (U.S. Census Bureau, 2015). The Food Security Supplement data contains more detailed information on race and country of origin, although it does not track other potential risk factors associated with food insecurity (namely, sexual orientation and transgender status) (Casselman, 2017).
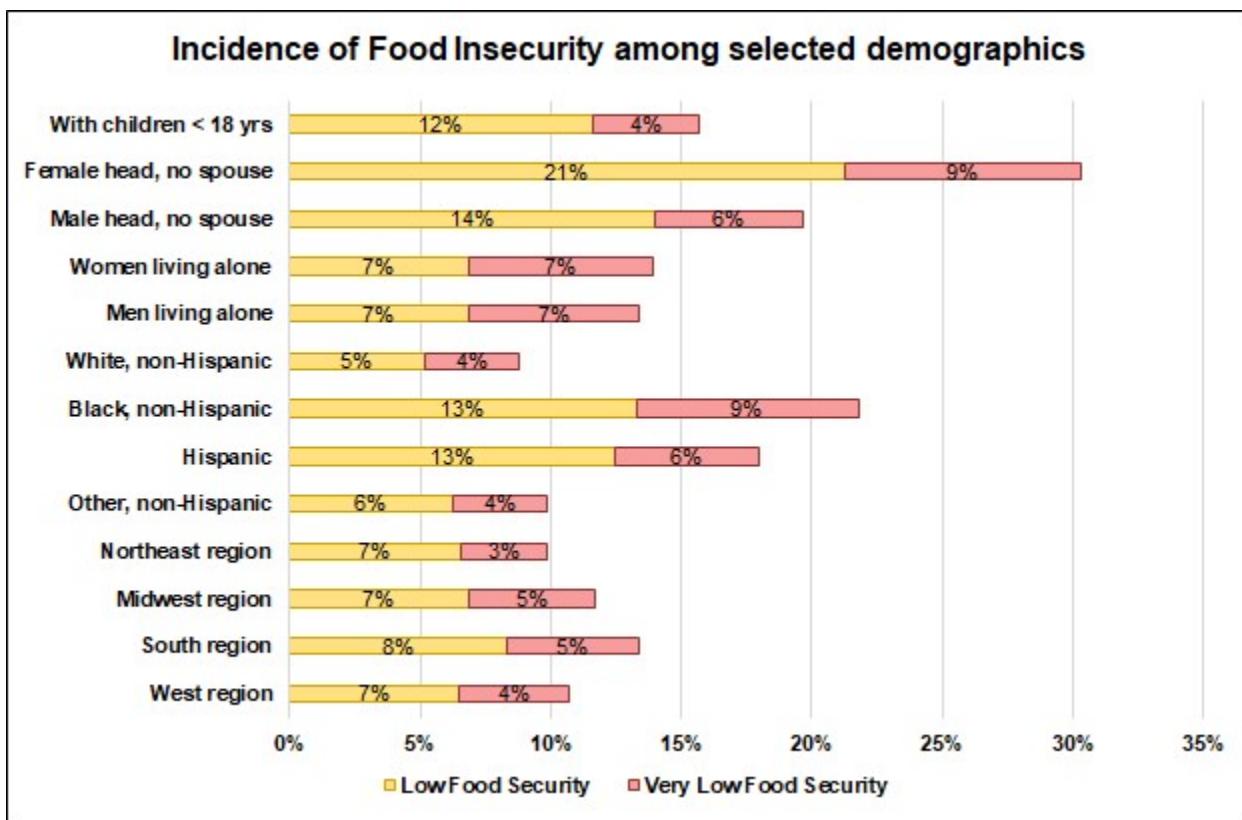


Figure 3: Incidence of food insecurity among selected demographics per the 2017 CPS FSS (USDA ERS, 2018)

## Food Insecurity in Massachusetts

The Census Bureau defines the Northeast Region as including the New England states, New York, New Jersey, and Pennsylvania. From 2015 through 2017 Massachusetts recorded a

slightly higher rate of food insecurity than the rest of its region (although well within the ±

1.21% margin of error), as seen in Figure 4 (Coleman-Jensen et al., 2018).
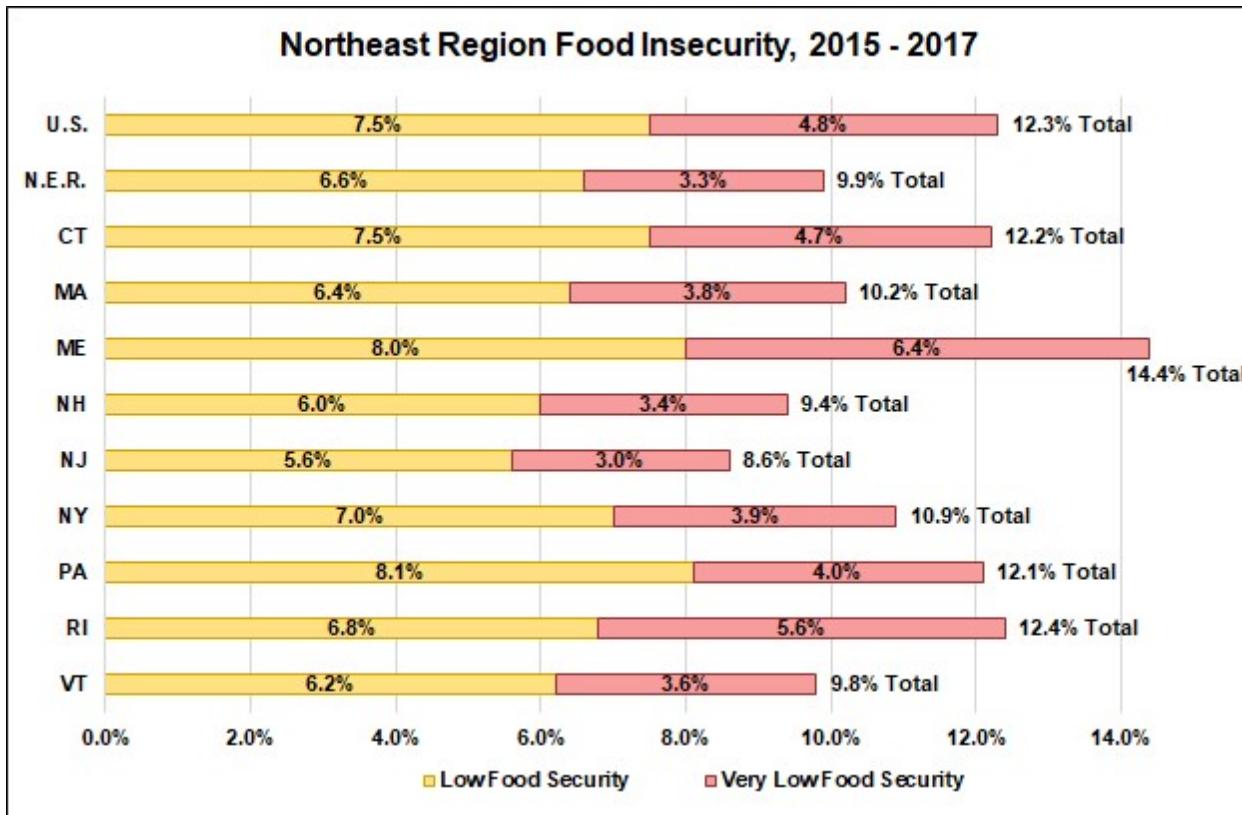


Figure 4: Incidence of food insecurity in Northeast Region states per the 2017 CPS FSS (USDA ERS, 2018)

     Massachusetts is one of only two states in the region to demonstrate a net decrease in

overall food security since the end of 2012, and it also had the second smallest decrease in Very

Low Food Security. This is a vexing result for one of our nation's wealthiest states, especially

one that has previously led the way on progressive causes such as marriage equality and

universal healthcare coverage (Chenevert, Gottschalck, Klee, & Zhang, 2017; Burge, 2003;

Anthony, 2017). During a period in which the United States saw widespread improvement in

food insecurity, Massachusetts lagged behind, as demonstrated in Figure 5.
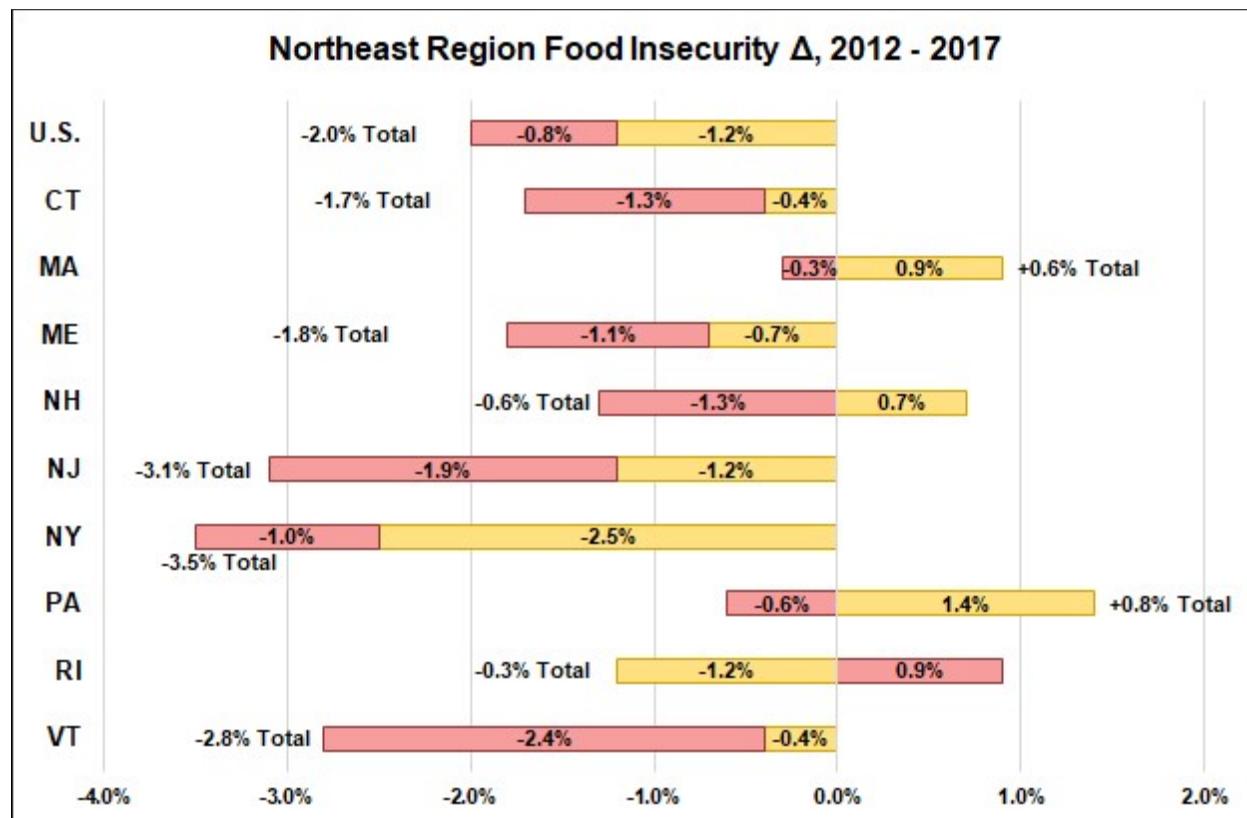
Figure 5: Change in the incidence of food insecurity in Northeast Region states, from 2012 - 2017, per the 2017 CPS FSS (USDA ERS, 2018)

## Food Insecurity on College Campuses

Beyond government statistics, the format and text of the FSS has proven robust enough to be adopted by other organizations seeking to study food insecurity in their own sub-populations. A sampling of these entities includes higher education institutions and consortiums of varied size, profile, and location, such as:

- California State University System (Martinez, Webb, Frongillo, & Ritchie, 2018)

- Illinois public universities: Northern, Southern, Eastern, and Western (Morris, Smith, Davis, & Null, 2016)

- The University of Saskatchewan (Olauson, Engler-Stringer, Vatanparast, & Hanoski, 2018)

- Appalachian State University (McArthur, Ball, Danek, & Holbert, 2017)

- The University of Alabama (Gaines, Robb, Knol, & Sickler, 2014)

- The Wisconsin Hope Lab (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018), covering

  - 72 colleges and universities including George Washington University, Georgia Tech, Ohio University, Temple University, University of Massachusetts locations including Boston, Dartmouth, and Lowell, Quinsigamond Community College, Front Range Community College, and the University of Maine

The profile of colleges and universities who have had the FSS applied to their student populations covers a number of different types of higher education institutions. The institutions include: flagship campuses of large public universities, two-year community colleges, urban and rural campuses, commuter-heavy schools, and liberal arts or STEM-focused curriculums. All of the studies mentioned above returned food insecurity incidence above national, population-wide averages.

In its sample, encompassing 43,000 students across 66 schools, the Wisconsin Hope Lab found that 36% of university and 42% of community college students experienced food insecurity in the 30 days preceding its 2017 study (Goldrick-Rab et al., 2018). The California State University System found that 44% of undergraduate students and 26% of graduate students experienced food insecurity (Martinez et al., 2018). The study at Appalachian State reported 46.2% of their respondents experienced food insecurity over the prior year (McArthur et al., 2017). The Illinois universities studied by Morris, Smith, Davis, and Null in 2015 found that 35% of their sample were food insecure in the prior 9 months. The researchers at the University of Saskatchewan found that 28.6% of their students experienced food insecurity, even with full-year tuition less than $6,000 USD in a country with a more robust social safety net.

Varying response rates continue to pose issues to campus food insecurity studies. Appalachian State's sample returned an 18.2% response, but the Illinois study received just 3.9% (McArthur, Ball, Danek, & Holbert, 2017; Morris, Smith, Davis, & Null, 2016). The Wisconsin Hope Lab reported a 7.3% response rate, yet is still confident in the validity of their results, stating that "The low response rates (often south of 10%) trouble us, but the estimates are likely conservative—our surveys do not explicitly recruit hungry or homeless students, and we expect that they have far less time or energy to give up for surveys." (Goldrick-Rab et al., 2018). There are factors cutting in both directions regarding how representative these studies may be, but the consistent reporting of high rates of food insecurity across institutions of varying size and profile lends credence to their results.

**Food Insecurity at Massachusetts Colleges and Universities**

The Wisconsin Hope Lab (WHL) differentiates their 2017 results for Massachusetts, giving us valuable insights into a relevant sample population. The WHL received 8,333 responses from Massachusetts college students, for a response rate of 6.4%. Overall, 33% of the four-year students and 44% of the community college students were classified as food insecure (Goldrick-Rab et al., 2018). The results also identified a number of other demographic correlations for food insecurity.

Among the disproportionately higher correlates regarding food insecurity of college students, a few stood out. Figure 6 provides a summary of this data for students at Massachusetts two and four-year colleges/universities. Women and non-binary four-year students were 10% and 15% more likely, respectively, to suffer food insecurity than their male classmates. LGBTQ+

students at four-year institutions were 15% more likely than their heterosexual counterparts to

suffer food insecurity. Black and Hispanic four-year students were both about 20% more likely
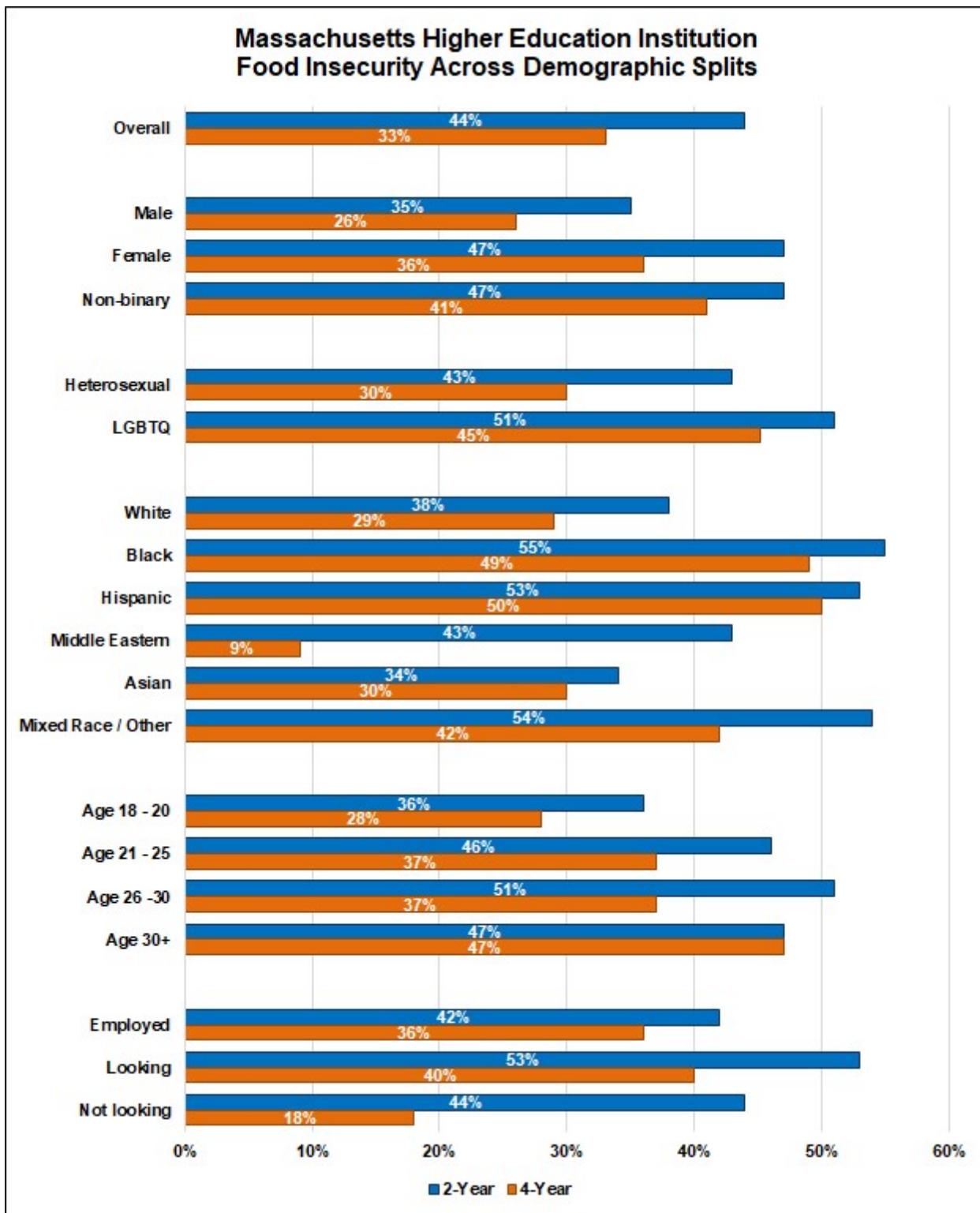


Figure 6: Incidence of food insecurity across selected demographic splits, MA two and four-year institutions, 2017 (Wisconsin Hope Lab, 2018)

to be food insecure than their white classmates (Goldrick-Rab, Richardson, Schneider, Cady, & Hernandez, 2018). Four-year students who were either employed or seeking employment were twice as likely to be food insecure, suggesting active attempts to remediate their condition.

**Food Insecurity at Worcester Polytechnic Institute (WPI)**

There is a significant gap in the research of food insecurity and its academic impacts on college-aged students. There have been extensive studies into perceived risk factors for poor academic performance. For example, studies of younger students have indicated that poor nutrition can lead to increased difficulty in class, health issues, and an overall sense of shame or emotional insecurity (Bernal, Frongillo, & Jaffe, 2016). Studies of people no longer within the education system have also indicated an increase in stress levels and health issues, both physical and mental (Martin, Maddocks, Chen, Gilman, & Colman, 2015; Gundersen & Ziliak, 2015). Even the most robust studies of food insecurity among college students have been hesitant to establish that food insecure conditions create a strong, direct causation of academic issues. A study of a university in Brisbane, Australia found that food insecure students reported they were three times as likely to have suspended their studies at some point, but did not study performance while enrolled (Gallegos, Ramsey, & Wen Ong, 2014). The UMass Boston study found that 44% of food insecure students were at risk of not attending class, compared to 3% of their food secure peers, and that 88% of food insecure students were affected in their ability to perform while in class (Silva et al., 2017). These are significant results, yet with a small sample size of 390 and a student population from an urban, almost entirely commuter campus, the results may not be universally translatable to other higher education institutions. The University of California system's report on their survey is typical of many regarding campus food insecurity, in that it applies great rigor to the incidence and correlates of food insecurity on their campuses but refers

to outside sources when discussing the impact of food insecurity. In particular, a study examining a cohort of children from kindergarten through third grade is often referred to as support for the potential for food insecurity to harm college students (Jyoti, Frongillo, & Jones, 2005). This study appeared a half-dozen of our cited sources alone.

There are valid potential explanations for this gap, such as the pressing desire over the past few years to build a strong body of evidence for the mere incidence of food insecurity on college campus, or the reasonable assumption that the widely-accepted effects of food insecurity would be obviously deleterious on academic performance. Without a strong statistical link between food insecurity and a decrease in academic performance, it is difficult to foster support and advocacy for resolving the issue at WPI.

## Major Stakeholders in Food Insecurity at WPI

Food insecurity impacts not only those that are currently experiencing the issue, but also the community as a whole. While many individuals are not actively concerned about going hungry every day, other topics relating to food insecurity have more of an impact on those students.

The most important stakeholders in the issue are the students at WPI currently experiencing food insecurity. Those students may often go hungry for several meals in a row, and often have no place to turn for sustenance. They are embarrassed to go to other students or members of the administration and feel like they cannot ask their families for additional help without potentially adding to their financial burden. These students feel voiceless, and oftentimes alone.

Students at risk for food insecurity also have a large stake in the way food insecurity is handled on campus, as they are right on the brink of needing assistance. These students may be

able to eat every day, but nutrition may take a back seat to cost, and they may need supplemental foods to fulfill their dietary needs. Without a place to turn on campus, especially, these students continue to barely scrape by, with little knowledge of whether they will be able to afford food the next week or not.

Another major stakeholder is WPI itself. Students who are hungry or malnourished cannot effectively study nor represent WPI in a positive light. This may ultimately impact the reputation of the university, as an institution's reputation has significant impact on admissions, which could decrease, resulting in the loss of a significant percentage of its funding.

In addition to the tangible losses the university may face, the leadership at WPI truly cares about the well-being of students. President Laurie Leshin referenced in the address she gave at the 2018 Parents Weekend that any incidences of food insecurity needed to be rectified on campus. Similarly, Dean Gregory Snoddy noted on several occasions that, "even one case of food insecurity" is concerning (D. Snoddy, personal communication, September 20, 2018).

**Food Insecurity at Institutions of Similar Nature and Size**

Food insecurity is not only limited to public or private universities, or inner-city community colleges, but is a widespread issue. One may assume that universities with large endowments would be less likely to have hungry students. According to a 2015 study at Cornell University over 20% of students reported that they skipped meals due to financial constraints. In the fall of 2017, the Food Insecurity Solutions Working Group (FISWG) was charged to investigate food insecurity at The Massachusetts Institute of Technology (MIT) and formulate potential solutions. The study reported that "…as many as 13% of undergraduates do not have enough to eat" (Food Insecurity Solutions Working Group, 2017, p. 1). Some of their solutions involved a food pantry, SwipeShare (allowing students with excess meal-swipes to share them)

and analyzing current food payment options. Their suggestion is to integrate multiple strategies in order to most effectively combat student food insecurity.

Unfortunately, simply establishing a food-pantry on campus, which is usually the easiest solution, is not a sustainable solution on its own. Zein, Matthews, House and Shelnutt (2018) outlined reasons students may be hesitant to utilize on-campus food pantries. A survey sent to students at the University of Florida, revealed that students that did not visit the food pantry "report[ed] the existence of barriers to use the food pantry [were] significantly associated with food security status" (Zein, Matthews, House & Shelnutt, 2018, p. 1163). Therefore, a more subtle and anonymous solution is desired.

These are the outlines of the broader societal issue of food insecurity, coupled with this same issue among college students. Our research demonstrates that food insecurity is impacting college students at universities of similar size and stature to WPI. It is, therefore, within reason to assume that food insecurity exists within the WPI community. It is the purpose of this study, using prior research as a basis, to determine the extent to which food insecurity exists within the student community at WPI via a study and propose strategies to decrease the level of food insecurity among students.

# Chapter 3: Methodology

## <u>Survey Method</u>

The researchers decided that an online distribution gave the survey its best chance at success. Low response rates have been a recurring issue for campus food insecurity studies (see: the cited studies by the Wisconsin Hope Lab (WHL) and in Oregon and Illinois), and those were exacerbating challenges to responses in common on Worcester Polytechnic Institute's campus. Time constraints imposed by the accelerated schedule and challenging curriculum under the WPI Plan often makes completion of surveys difficult for students. Furthermore, time commitments may have misrepresented food insecurity in past studies (as hypothesized by the WHL in their 2018 report "Still Hungry and Homeless in College). Food insecure students have been found to have higher rates of employment than food secure students (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018**)**, and therefore less time to complete a survey. Employed students may spend less time on campus and could be more prone to missing out on a paper or in-person survey.

By administering a study communicated via WPI email distribution lists, and via the Qualtrics online survey platform, we attempted to reach the entire student population. The regular checking of one's university email account is a necessity of enrollment, and students without a personal computer have access to public computers in the George C. Gordon Library, computer laboratories across campus, or in other campus spaces. Access to numerous devices that interact with the internet also allowed the survey to reach the vast population of WPI students, even considering the business of their schedules.

An online survey also offers other distinct advantage of anonymity. Food insecurity can bring with it feelings of shame (Bernal, Frongillo, & Jaffe, 2016), and a food insecure individual

may decline to report their true food security status out of personal embarrassment or for fear of social ostracization. By offering the study online, students can choose where and when they complete the survey. Online surveys also provide a lower risk of responses being illegible or damaged.

## Survey Design

The core text of our survey (Appendix #4) was adapted from the U.S. Census Bureau Current Population Survey Food Security Supplement (Appendix #1). The CPS FSS is the academic and agency standard for gauging food insecurity, forming the basis of almost every food security study we evaluated. The questions within have been applied (in one form or another) to numerous sample populations with acceptable results. When adapting the Census Bureau's questions for our study, we made only one major change: we individualized the questions to inquire about the food security status of the questioned subject alone. For example, references to "We" or "you or another adult in the household" were reduced to "I" or "you."  The CPS FSS is designed to study households and defines households as "all the people who occupy a housing unit… [including] the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit" (U.S. Census Bureau, 2015). A student population offers a particular set of challenges to this definition of household. While many students cohabitate with roommates or significant others in dormitories, fraternity/sorority houses, or in off-campus apartments, unrelated student cohabitants may have finances independent of each other. They may or may not share their food resources and expenses. Even if they do share resources and expenses, one member of the household may be food insecure and another may not. It is difficult to speculate on whether or not students would be aware of food insecurity in their cohabitants. Thus, while cohabitating WPI students may

meet the traditional Census Bureau definition of a household, we think it valuable to focus the survey questions on the individual students to avoid further complicating the survey and possibly reducing the response rate.

Demographic identification questions were composed to provide a strong demographic data set while also avoiding overly identifying personal details. The overall Current Population Survey collects detailed demographic data, and campus food security surveys have returned valuable insights into specific populations at risk for food insecurity on college campuses. In attempting to devise a proposed solution to food insecurity at WPI, we tried to identify specific cross-sections of the student population who could be at risk, in order to determine how best to reach and serve them.

In composing racial identification questions, we used the WHL's annual survey as our model in order to conform our data set to a larger control population. The WHL's findings have shown racial disparities in student food security, and potential local solutions can be better tailored to our population's needs if those food security tendencies are found on-campus. We attempted to provide broad inclusivity to potential international respondents by not limiting responses to American naming paradigms and including specific international populations (e.g. Canadian First Nations). The inclusion of a "Prefer not to say" option allows respondents not to disclose their racial status to continue the survey, yet still provide valuable data about food insecurity.

Similarly, gender identification and sexual orientation questions were composed to identify specific at-risk populations and help develop population-specific solutions. Studies of other college campuses have found female and non-binary students to be more prone to food insecurity (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018). The WHL also

observed that LGBTQ+ students experience food insecurity at higher rates than their heterosexual peers. As with our racial demographic identification questions, we attempted to be broadly inclusive of different gender identities and sexual orientations in order to generate as much actionable data about WPI subpopulations as possible. However, the questions were still broad enough to avoid over-segmentation of our demographic data or increasing the chance of reduced response with a seemingly-lengthy survey. In doing so, we referred to the Human Rights Campaign's guide on transgender-inclusive gender data collection (Human Rights Campaign, 2016).  In accordance with our strategy concerning racial demographic data, we included a "Prefer not to say" option as well as an "Other" with entry field option. Although this demographic data could be vital to the design and implementation of proposed food security measures on campus, students may have reasonable objections to sharing this information. The option to decline to identify allows us to still collect their food security information, which still benefits the survey overall.

## **Interpersonal Interviews**

In addition to the quantitative data provided by our survey, there was valuable qualitative information to be gained from personal interviews with food insecure students. The emotional and psychological effects of food insecurity may be communicated more clearly in a conversational, open answer setting, rather than an online survey. In addition, these personal narratives were compelling in garnering community resources and support for proposed food security solutions.

We solicited volunteer interviewees at the end of our food security survey, with an explanation of our interview process and an option to provide a contact email address. All participants were offered anonymity commensurate with their level of comfort, such as by the

use of a pseudonym or not revealing other personally identifying information such as age, grade

level, or major. All interviewees were required to complete a Consent to be Interviewed Form

(Appendix #2) and a Consent for the Use and Publication of Identifying Information form

(Appendix #3**)**. Interview subjects retained the right of refusal for any portrayal of their identity

or narrative intended for public presentation. In another attempt to provide anonymity to

interviewees, the responses to food insecurity questions within the researchers' survey were

dissociated with the response that a student wished to volunteer to be interviewed. This allowed a

student to share any information they wanted within the food insecurity of the survey with

confidence that they could not be identified by their volunteering to be interviewed.

With the permission of the interviewee, interviewers were able to capture video or audio

recordings of an interview for use in some form of a documentary media presentation. The

interviewers have undergone media training through the staff at the Foisie Innovation Studio. A

suggested list of questions was used in each interview, but the researchers excluded inapplicable

questions, offered follow ups on answers, or ventured further afield based on their best

discretion.

After each of the interviews were recorded, the researchers saved the footage on an

external hard drive and flagged the videos for important statements or anecdotes. These clips,

watched and discussed by the researchers alone, were edited to contain only the most pertinent

information, and these edited clips were shown to the individual student interviewee. That

interviewee was then able to revoke consent for the use of some of their footage in the

documentary portion of the project or revoke consent to appear in the documentary altogether.

After obtaining final approval from each interviewee, we compiled the final sequencing

of the documentary. Once this sequencing was in place, the documentary was considered to be fit

for public consumption. At this point, the researchers were able to obtain input from their

advisors and the media lab experts on both content and video editing.

Finally, the documentary was edited by the researchers both for the impact of the

standalone final product in educating the community about food insecurity and also for the

production value of the final presentation. This work was conducted largely by the researchers

themselves, with assistance from the digital media lab.

**Oversight and Working Procedure**

A submission to the WPI Institutional Review Board (IRB) was made detailing the above

listed survey and interview procedures for their review and comment. All researchers have

completed the National Institute of Health's required training for research involving human

subjects (Appendix #5). The full results of the survey data will be freely viewable only to the

researchers designated within our group's IRB approval forms. The group will provide

summary-level information to the other researchers and may, at their discretion and with written

explanation, disclose data sets to their fellow researchers for the purposes of further study.

A maximum of two encrypted external storage drives will be used by the researchers as

the central repositories for all sensitive digital materials including:

- Scanned consent forms

- Video and audio recordings

- Data files containing personally identifying information

Digital materials may be transferred to a researcher's computer during work on a portion

of the project, but will be deleted from personal devices upon completion of that task. No

sensitive digital materials will be retained in researchers' personal possession after the

conclusion of the project term. Original copies of any sensitive written materials (such as consent

forms) will be retained in a locked container in the possession of a researcher before being tendered to the proper institutional body for long-term retention at the conclusion of the project term.

The raw data from the survey conducted by the researchers will be stored by the proper institutional body for use in future projects. Once confirmation has been received that the data has been stored by the institution, the researchers will destroy the copies of the data that exist within their personal drives.

All raw video footage for which the researchers did not receive final consent to use for public presentation will be deleted upon the completion of the project. All raw video footage for which the researchers obtained final consent for public presentation will be transferred to the proper institutional authority at the completion of this project. After the footage has been transferred to the proper institutional authority, the raw footage will be deleted from the personal files of the researchers. The researchers' final documentary product will be stored in publicly accessible locations for the use of both the public and further study.

Overall, the methodology used by the researchers prioritized three key principles: maximizing the total information collected, allowing the survey taker as much anonymity as possible, and allowing the interviewee full control over their intellectual property up until their final release.

# Chapter 4: Findings

**<u>Survey Response</u>**

The distribution list "dl-students" reaches all undergraduate and graduate students at WPI. As of October 1st, 2018 WPI Institutional Research measured 4,571 undergraduate and 2,087 graduates, respectively, totaling a target population of 6,658 students (WPI Institutional Research, 2019). The survey received 643 total views, resulting in 554 responses. 94% of our impressions were via URL link or entry, with the remaining 6% utilizing the QR code link. Of that response figure, three incomplete responses were excluded from our analysis. None of the three completed the food security portion of the survey, and two of the three did not finish the demographic identification questions, leaving no useful data for analysis. This resulted in an 8.3% response rate for our target population, a result very much in line with other studies of food security on college campuses.

As a baseline, the Wisconsin Hope Lab's nationwide study returned a 7.3% response rate (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018), while they received a 6.4% rate of response for their Massachusetts study (Goldrick-Rab, Richardson, Schneider, Cady, & Hernandez, 2018). The now-defunct Wisconsin Hope Lab's studies are the widest samples of college/university food security on record, both locally and nationally. Their methodology greatly influenced ours, and their results provide valuable insight into our own. Given the healthy response rate to our survey, and our confidence in the robustness of our survey methodology, we believe it reasonable to infer a similar level and shape of food insecurity to the WPI student population at large.

**<u>Survey Results</u>**

Our survey of WPI students reported a 24.3% rate of food insecurity in our response sample, with 15.6% reporting Very Low Food Security (VLFS), significantly lower than the Wisconsin Hope Lab's Massachusetts 4-year college results. Figure 7 compares our results against the WHL's findings for four-year students both nationwide an in Massachusetts.
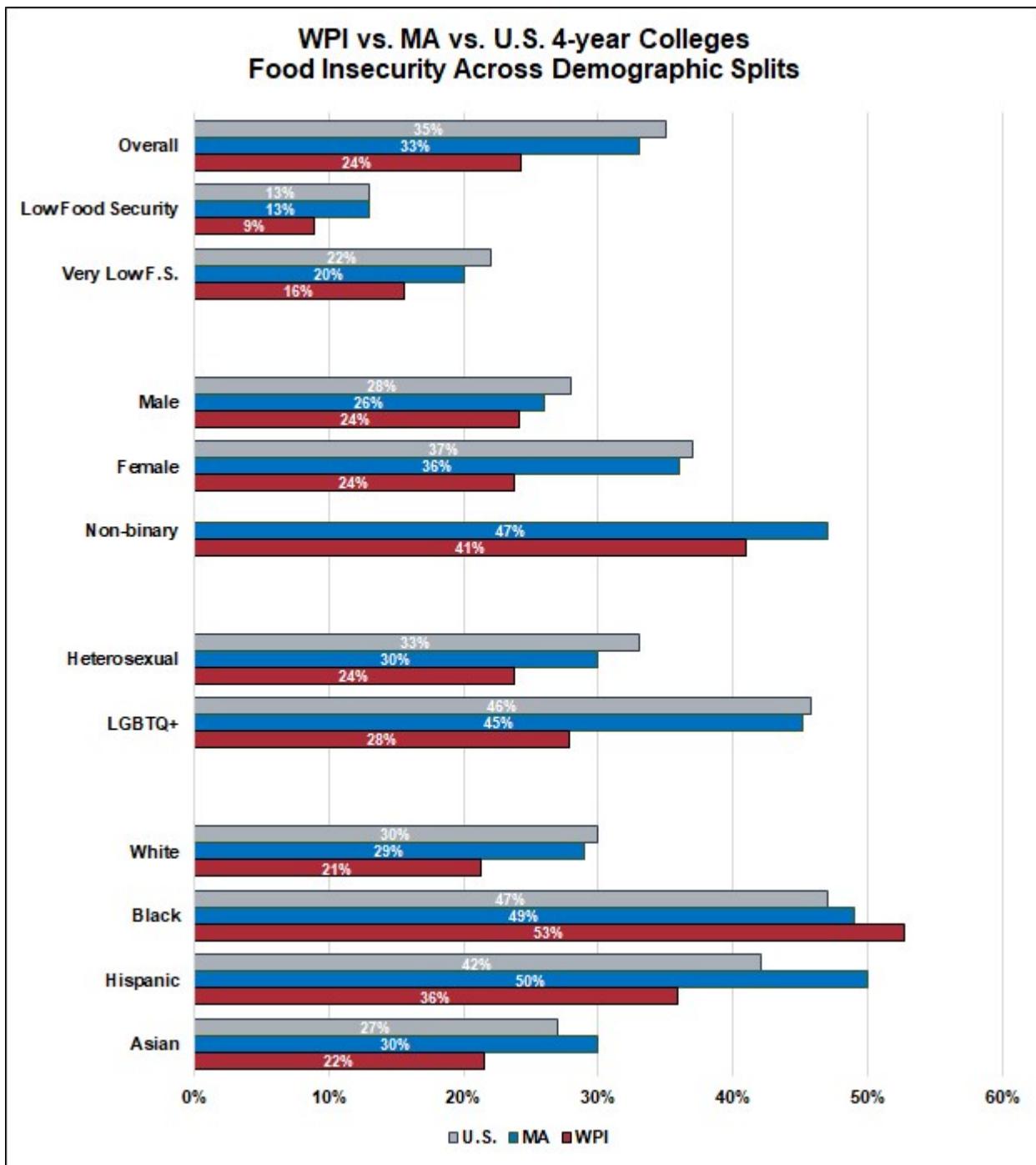


Figure 7: Authors' survey findings compared with MA 4-year college results across selected demographics (Wisconsin Hope Lab, 2018)

Many of the demographic trends prevalent in their report did not appear in WPI's population in a significant manner. Food insecurity did not significantly differ between male and female students at WPI. Neither did food insecurity significantly differ between LGBTQ+ students and the overall WPI student body, as well as their heterosexual peers. Asian and Asian-American students' food insecurity could not be said to significantly differ from the student body, nor from their white peers. No significant conclusions could be drawn about the severity of food insecurity across demographic lines. That is, while some conclusions could be properly drawn about overall Food Insecurity, comparing degrees of food insecurity (i.e. Low Food Security and Very Low Food Security) did not produce significant results.
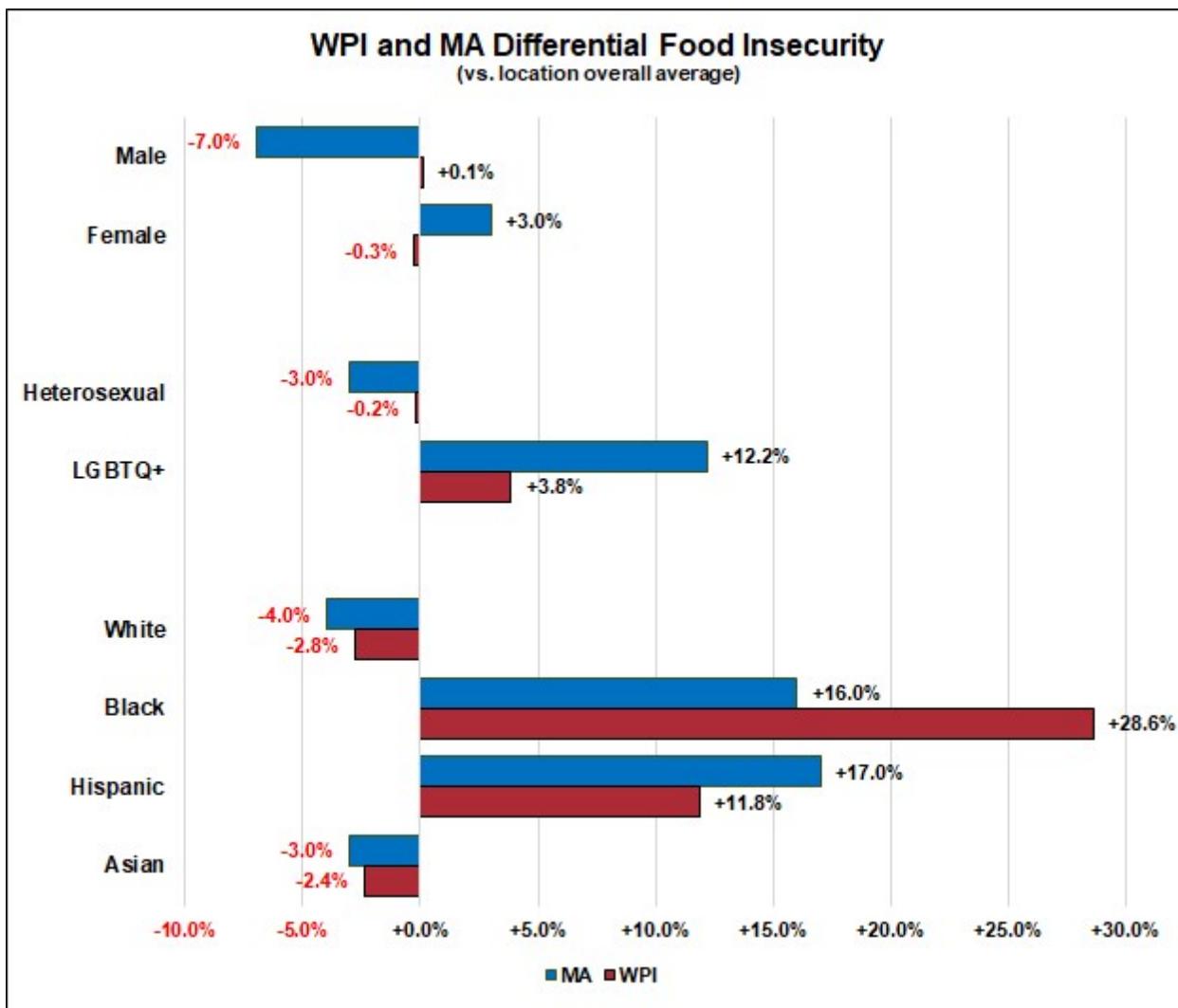


Figure 8: WPI and MA 4-year college results normalized to location overall Food Insecure average (Wisconsin Hope Lab, 2018)

Figure 8 compares demographic rates of food insecurity for Massachusetts and WPI against their location average. Our most significant results were the reports from our Black / African / African-American and Hispanic / Latinx respondents. Those two demographic groups were significantly more likely to be food insecure than both the WPI population and their white peers. Black students were the only demographic subgrouping at WPI to report food insecurity at a higher rate than their corresponding Massachusetts 4-year college average. Their 53% rate of food insecurity (29% higher than non-Black students) was the highest of any demographic split at WPI. Hispanic students (36% food insecurity, 12.8% higher than non-Hispanic students) showed similarly dramatic results within the WPI cohort, albeit at levels lower than the Massachusetts 4- year college average. When compared to the baseline food insecurity of the overall population, WPI generally showed less variation in food insecurity between racial demographics than the Wisconsin Hope Lab's results for Massachusetts 4-year colleges (Black students excepted).

Beyond census-type demographic splits, there are a number of population characteristics specific to college campuses with regard to food insecurity. Food insecurity rises with each successive grade level, from 10.3% food insecurity among freshman to 38.6% among seniors. The 62.5% food insecurity result for 5th year / other students is troubling, but ultimately based on just eight survey responses making it difficult to draw significant conclusions. The 16.7% food insecure figure for graduate students follows logically, as many graduate programs are funded, and many food insecure individuals may decline to pursue graduate studies in favor of seeking employment through which they can better meet their basic needs. Figure 9 compares the rates of food insecurity for U.S., Massachusetts, and WPI four-year college students across a variety of basic needs splits.
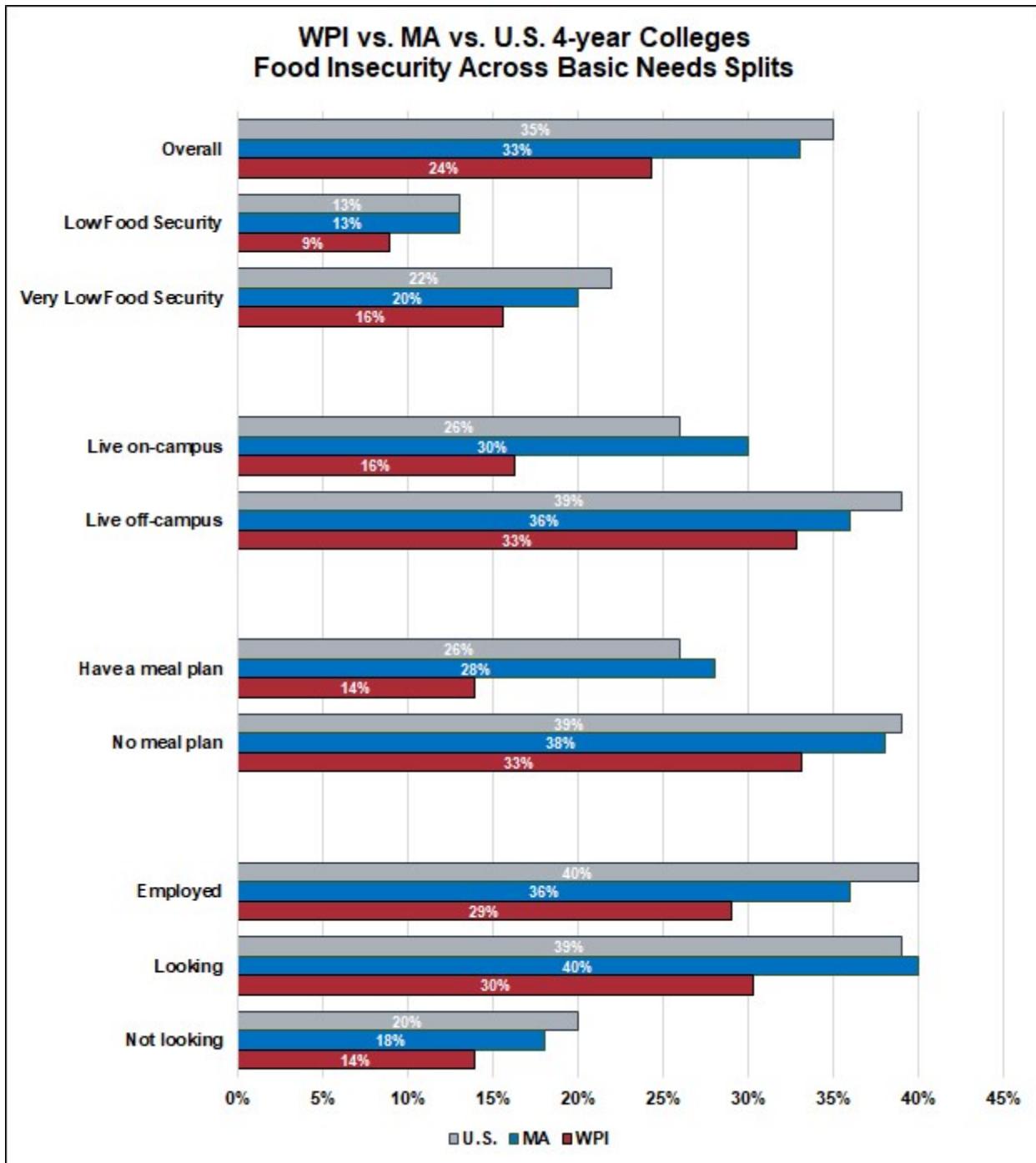
Figure 9: Authors' WPI survey findings compared with MA 4-year college results across basic needs splits (Wisconsin Hope Lab, 2018)

Students who live off campus were significantly more likely to be food insecure than students who live on campus, by a 16.5% margin (32.8% vs. 16.3%). This statistic seems to be largely influenced by the current campus housing system at WPI. Freshman are required to live on campus and purchase a meal plan (Worcester Polytechnic Institute, 2018), while the growth

trend of new-class enrollment (Gaffney, 2018) increasingly pushes more upperclassmen off

campus. Upperclassmen who live off campus were found to have a 32% rate of food insecurity,

compared to a 25.5% rate of food insecurity for on-campus upperclassmen. The disparities

across grade level and housing status at WPI (detailed in Figures 10, 11, and 12) are highly

intersectional with meal plan status, although those results indicate more complexities with food

insecurity than statistics about incidence can explain.
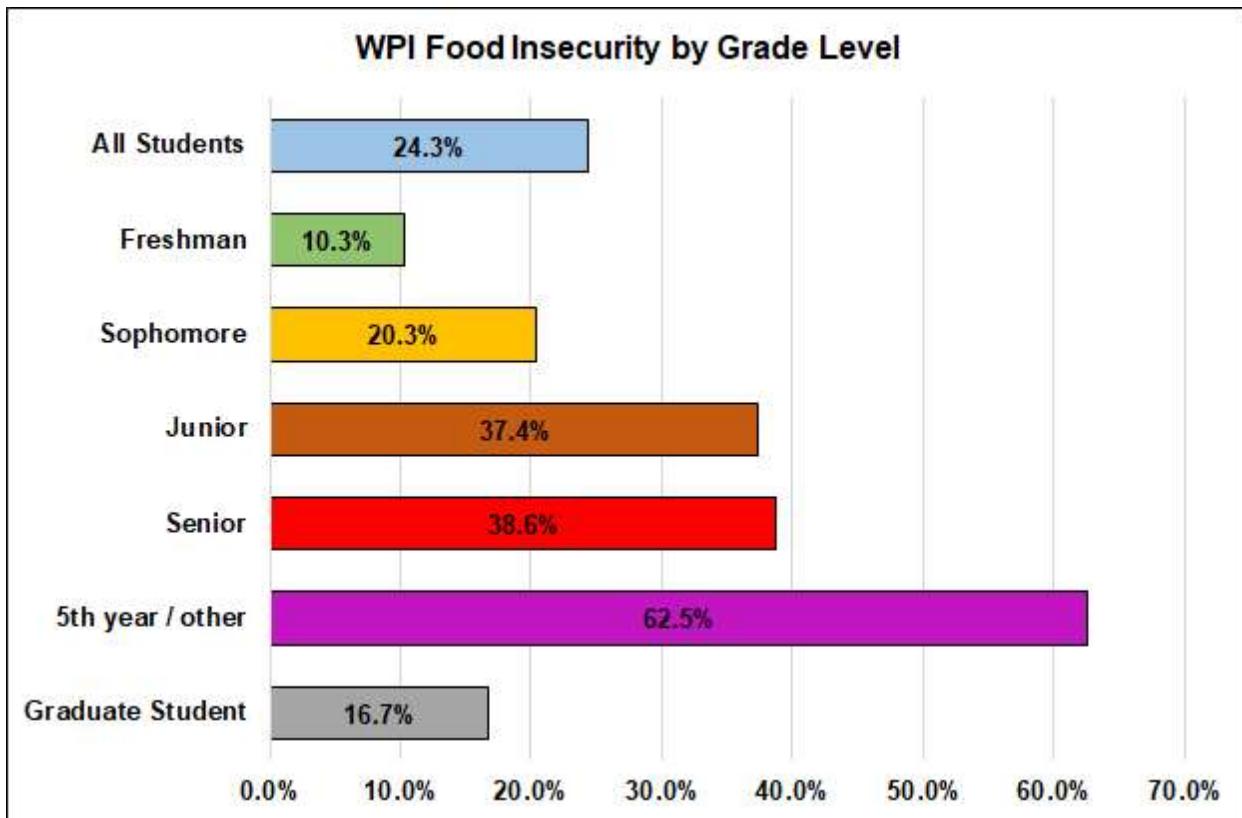


Figure 10: Authors' WPI survey findings by grade level

Students without a meal plan reported a 33.1% rate of food insecurity, compared to

13.9% for their peers with a meal plan. Furthermore, of those food insecure students with meal

plans, 68.6% live on campus. These figures seem counterintuitive, given that meal plans offer the

opportunity for all-you-can eat meals, generally accessible by students at all regular meal times

(just 10.8% of meal plan holders are restricted to lunch only by their plan). However, food

insecurity encompasses a wider range of food-related issues than just food availability.
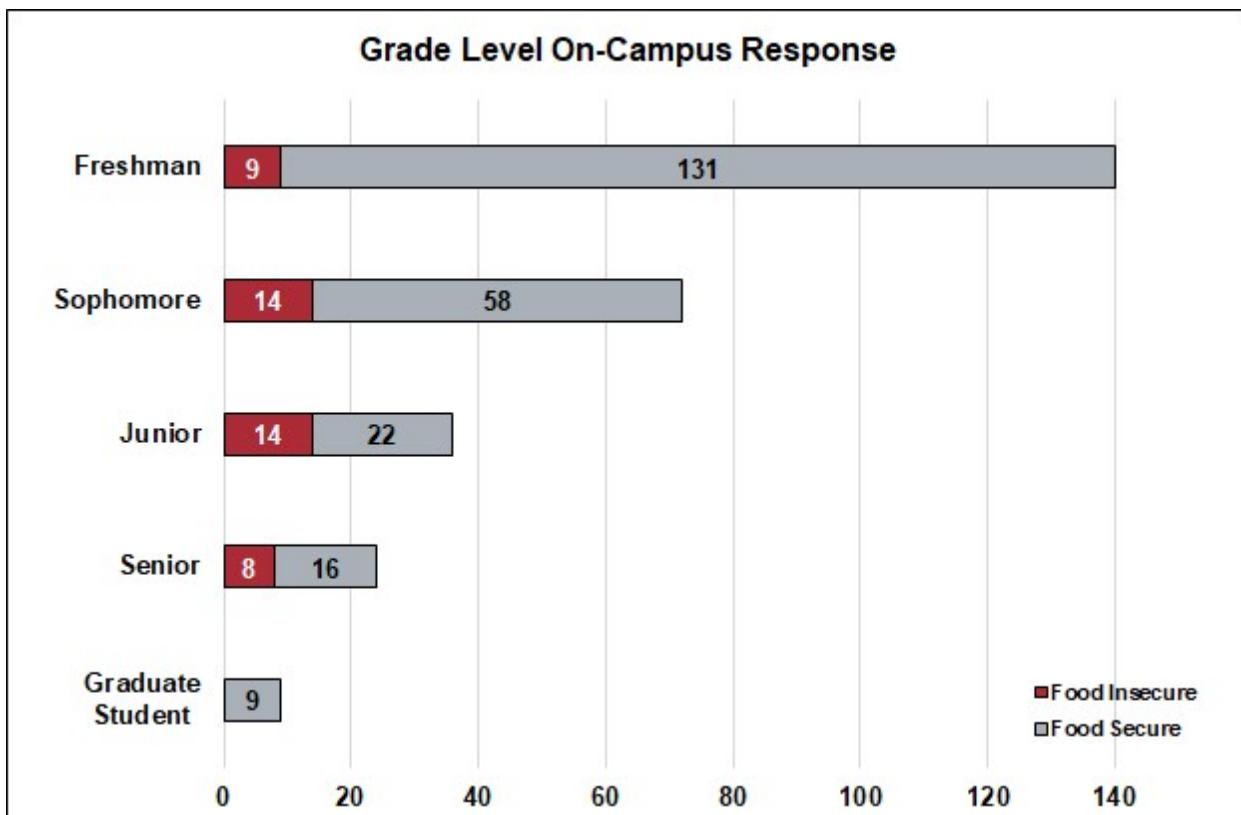
Figure 12: Survey results: on-campus raw response, by grade level
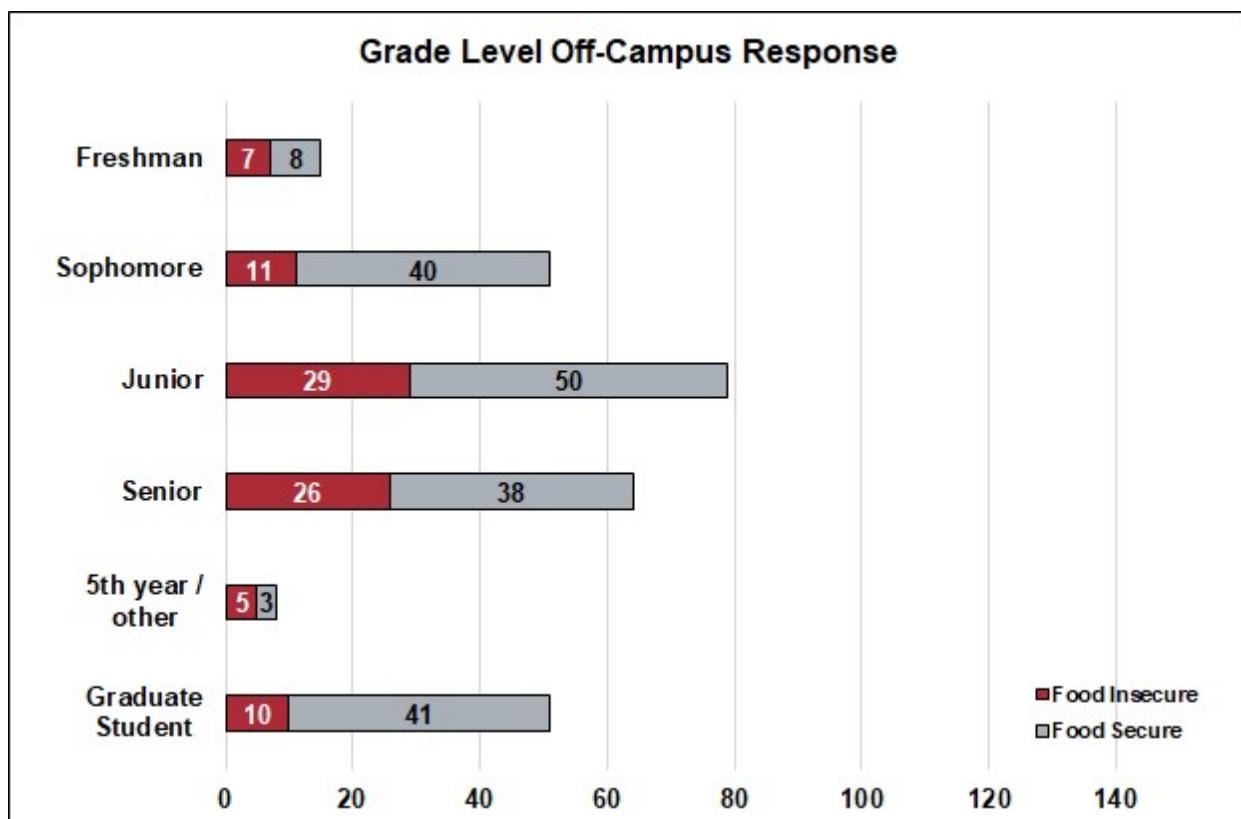


Figure 11: Survey results: off-campus raw response, by grade level

Food insecurity can result from conditions beyond a student's access to food of any kind. A lack of access to balanced meals, or to meals meeting a student's dietary requirements (e.g. meeting health-related needs or religious requirements) can contribute to food insecurity. Of the food insecure students at WPI, 94.8% reported the quality of their nutrition was impaired (question three within our survey's food security segment). Anxiety and social pressures surrounding food can also contribute to food insecurity. A student may eat less than they feel they should (question four) out of a desire to avoid weight gain, or skip meals altogether (question six) due to the time demands of their coursework and/or employment obligations. The responses to the first two questions in the survey ("worried food would run out", "food bought didn't last") could imply problems related to the new-found independence many college students are facing, learning to manage their household's logistics and budget on their own. Figure 13 shows the percentage of food insecure students reporting each food insecure condition.
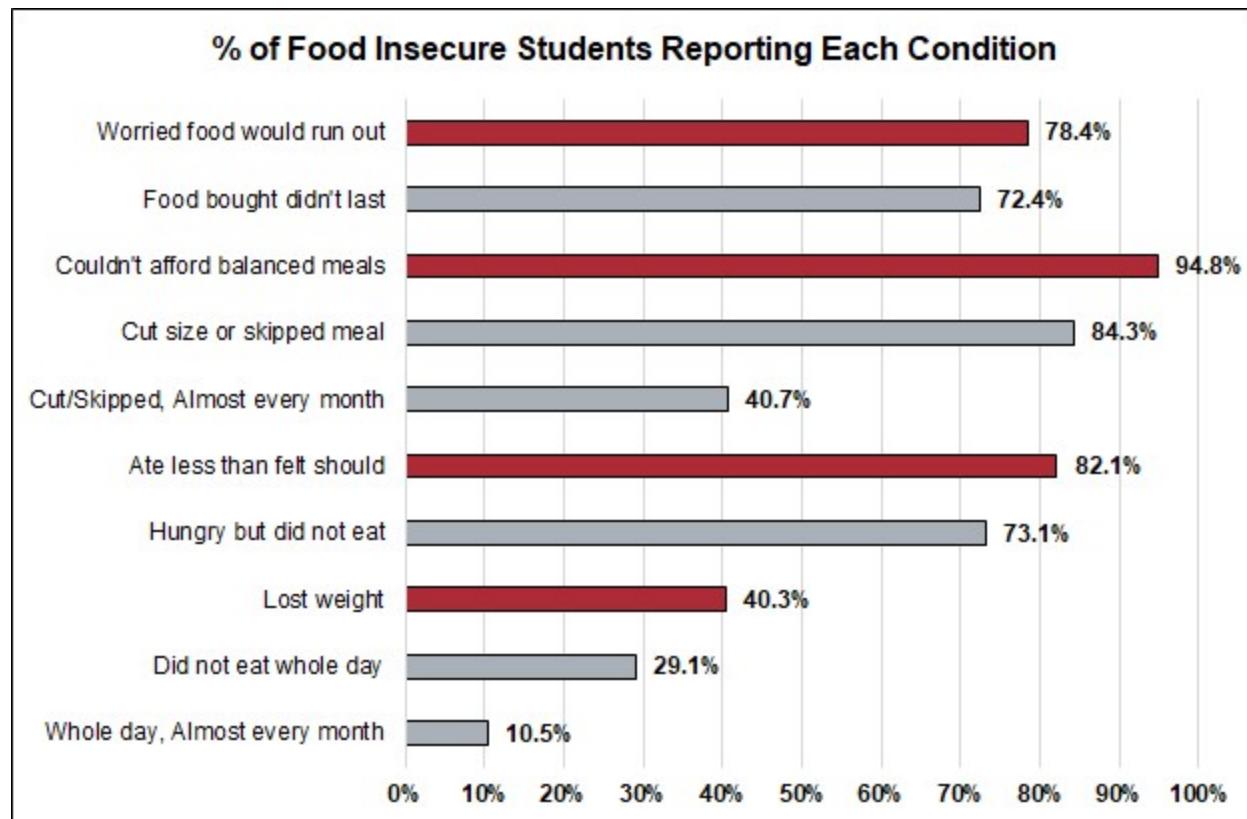


Figure 13: Survey results: percentage of food insecure students reporting selected food insecure conditions, in order of survey appearance

The formal food insecurity measurement portion of our survey was purposefully kept broad and categorical, to establish the incidence of food insecurity at WPI in accordance with the established methodology of the USDA Economic Research Service and the Wisconsin Hope Lab. Further study into factors contributing to food insecurity could develop a more granular picture of the issue on our campus.

## Student Testimony

Our survey provided several opportunities for respondents to describe how food insecurity affected their lives. A total of 125 students provided of 206 statements on the Social, Health, and Educational impact of food insecurity, many reiterating similar concerns about their health, well-being, and ability to thrive socially.

### Impact on Social Life

Among students who provided comments on the social impact of food insecurity in their lives, over a third specifically cited not being able to form relationships or socialize with their friends due to a lack of money for a meal plan or meals outside their home. When those students did dine out, they cited other concerns such as spending too much or embarrassment at spending too little. Students also routinely mentioned social anxiety or emotional effects of food insecurity that weighed on their social life. The comments cited being grumpy or irritable with their friends as a result of their hunger, and feeling uncomfortable talking to friends about their condition.

**Selected Comments:**

> *"I cannot participate in meals as a social event because I cannot afford more than groceries"*
>
> *"Cannot eat in Morgan to make friends/with friends due to lack of funds"*

*"Can't go out with friends who may go out to eat, what food I do have I feel*

*uncomfortable eating in front of others"*

*"When surrounded by other people, I can't eat the cheapest thing possible*

*because it is obvious what I am trying to do."*

*"people order food in social gatherings and I end up spending more in those*

*situations than I should"*

## Impact on Health

When asked about the impact of food insecurity on their health, students voiced a wide range of concerns. Over a dozen students cited undesired weight loss, and students with health issues like diabetes or severe food allergies felt that their health was adversely affected. The quality and selection of the food available on campus was an oft-repeated issue. Vegan and vegetarian students reported not having healthy or satisfying options available to them. Students felt that the food was overly processed and chosen by Dining Services for its cost-effectiveness rather than quality.

## Selected Comments:

*After my freshman year when I stopped using a meal plan, I saw a drastic*

*decline in my nutritional intake. As a result, over my sophomore year I*

*lost about 20 pounds and I only weighed 150 lbs. originally."*

*"My mental health: anxiety, worrying, and shame about how to pay for food*

*and all the other bills in my life."*

*"Self-conscious of body image"*

*"I don't trust the food we have here. It is never something worth the money but*

*sometimes I need to get it for time's sake."*

*"Difficult to purchase non-processed foods, expensive organic and healthy*

*foods, school always prioritizes cheap calorie foodstuffs for student meal*

*plans at Campus Center and Morgan Dining"*

*A majority of the food provided sits in nothing but grease. In order to avoid the*

*grease my food options become significantly limited and typically are the*

*less healthy options."*

## Impact on Studies

The most common concern voiced by students was an inability to focus or concentrate as a direct result of hunger. Over a quarter of all students who provided a comment cited decreased cognitive abilities due to poor nutrition. The next most common concern among students regarding food's intersection with their studies was a lack of time to eat or to do the work necessary to eat well, or their schedule's incompatibility with Dining Services'. Another repeated problem was the lack of late-night options, as students desired options for food after 11:00 pm.

**Selected Comments:**

*"Frequently, I find it hard to focus in classes the more time I spend feeling*

*hungry."*

*"Being hungry is distracting; eating poorly makes my brain feel foggy"*

*"It's super hard to focus on studying when you're wicked hungry and end up*

*spending an hour debating whether you should suck it up and get food on*

*campus because it is too expensive to be able to afford"*

*"Class timings clash with the times the dining area is open"*
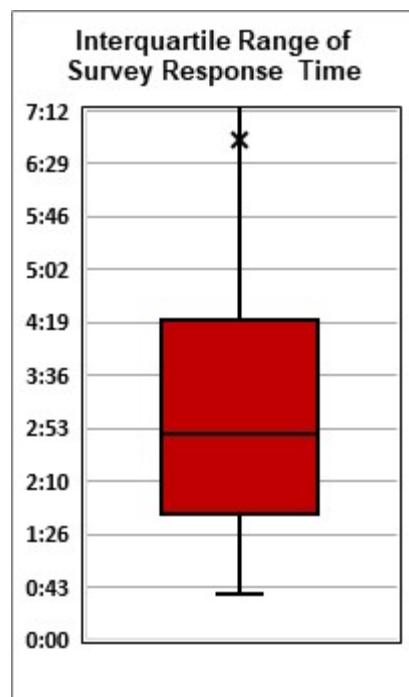
*"Don't have time to eat between classes. Campus food is expensive. If I don't*

*bring food myself, I might not buy any."*

*"Often dining halls are closed or inaccessible (cc food court) during the only*

*times I am busy and could eat"*

*"up late working and there is no food on campus after 11"*

## Causal Factors of Food Insecurity

Our survey was, from the beginning, designed to report incidence and correlation. As the first study into food insecurity among the WPI student population, we felt it important to establish significant statistical baseline data that conforms with the prominent mode of study on the issue. To that end, we strove to make the survey a minimal time investment for our respondents, in order to generate a high response rate, while producing a high-quality data set in line with the accepted definitions and methodologies of study into food insecurity, both nationwide and with regards to student populations. In service to this goal, we did not include questions we thought could unduly lower response rates as a result of personal aversion (e.g. disclosing detailed financial information or specific life circumstance) or an increased time commitment.



We believe that our previously mentioned 8.3% response rate was greatly influenced by the time-efficiency of our survey design. The median time to complete our survey was 2 minutes and 49 seconds (2:49), with an interquartile range from 1:42 to 4:21 (see Figure 14). The web-based nature of our survey means that extreme outliers in response time are likely to be a result of respondent multi-tasking or a survey being left open in an idle browser tab.

Figure 14: Box-and-whisker plot for IQR of survey response time

The open responses discussed above provide an opportunity to evaluate correlation with broad categorical factors that could contribute to food insecurity. Of the 134 students who rated as food insecure by the USDA ERS's methodology, 71 submitted open responses. These responses typically discussed the effects of food insecurity on their life, but in doing so the students often indicated factors that they felt contributed to their condition. In reviewing these responses, coupled with the feedback we received in interpersonal interviews with student subjects we identified three broad categories that could contribute to food insecurity, terming them Financial Need, Nutritional Need/Desire, and Access Issues. Of the 71 responses, 45 indicate at least one of the three contributing categories, and 17 recorded two or more. Table 2 is a color-coded chart indicating the incidence and coincidence of each category. A category's intersection with itself indicates that the condition appeared alone.

|  | Financial | Nutrition | Access | All 3 | Total |
|---|---|---|---|---|---|
| Financial | 13 | 9 | 3 | 1 | 26 |
| Nutrition | 9 | 10 | 4 | 1 | 24 |
| Access | 3 | 4 | 5 | 1 | 13 |

Table 2: Incidence and coincidence of causal conditions coded from open response

**Financial Need**

Financial issues were the most commonly reported factor among our respondents, tallying 58% of our coded responses. A response was counted in this category if it mentioned not being able to afford food in some way, or if budgeting negatively affected the subject's feeding behavior (e.g.

deleterious food choices or rationing behavior). Examples of a response indicating financial need are as follows:

> *"I may portion out foods and find that with my $30 groceries I can only pan out*
> *2/3 meals a day. Meaning I am hungry and unfocused in many classes."*
>
> *"I have developed anxiety surrounding eating due to the insecurity of money to*
> *pay for food"*
>
> *"Tons of social plans revolve around eating, and it can be really hard to explain*
> *to friends that you can't go out to eat with them because you can't even*
> *afford to buy groceries, let alone to splurge on dining out"*

**Nutritional Need/Desire**

Nutritional needs and desires were the second-most common problem students reported, at 53% of coded responses. Students often felt that they couldn't achieve the quality of food they wanted when confined to campus sources, or that the food they could obtain was unsatisfying. Examples of a response indicating nutrition issues are as follows:

> *"Healthy options aren't always readily available to me"*
>
> *"Poor nutrition from being forced to eat the things that are seen as "bad" for you*
> *to get in excess"*
>
> *"not getting enough diverse food"*
>
> *"Difficult to purchase non-processed foods, expensive organic and healthy*
> *foods…"*

**Access Issues**

We defined access issues as those exclusively concerning an ability to reach or access food they otherwise have the resources to obtain. This could include difficulty getting to the grocery store,

or work hours coinciding with dining hall meal times. 29% of coded responses indicated

problems with food access, examples of which are as follows:

> *"Often dining halls are closed or inaccessible (cc food court) during the only*
>
> *times I am busy and could eat"*
>
> *"Weekends are difficult as we only get 2 meals a day with the meal plan."*
>
> *"if I want to eat well, I need to take significant time out of my schedule to*
>
> *go shopping and cook food. less time = less studying"*

**Financial & Nutrition**

The most common bivariate occurrence was the coincidence between financial needs and

nutritional needs and desires, occurring in 22% of our coded responses. A common refrain

among students was an inability afford balanced/nutritional meals, or meals with the quality of

food they desired, which qualified under both financial and nutritional need.  Examples of a

response indicating financial need are as follows:

> *"I am definitely sick more often because I can only afford cheap highly processed*
>
> *food"*
>
> *"I end up eating less nutritious foods bc they are cheaper than $6 grapes."*
>
> *"As a vegetarian, I definitely don't eat as healthy as I should because of cost*
>
> *restraints"*

**Conclusion**

Of all the comments submitted to our study, there was one that summed up every challenge

facing food insecure students, in heartbreaking fashion:

> *"All of these areas [social, health, studies] are affected. I feel like a burden on the*
>
> *people around me. I feel like I cannot take care of my own needs."*

An inability to meet one's own basic needs can be painful. It robs students of their health, of their dignity, of camaraderie, and of the quality education WPI strives to offer. The above student tied for the highest level of food insecurity our survey recorded. Those are not the words of a student living out their college experience to the fullest extent possible. That is not an individual who is receiving the best Worcester Polytechnic Institute has to offer. The University and community cannot control what students carry with them to this campus, cannot prevent what social ills or economic issues may befall them before they arrive. What we can, and should, control is the kind of care and relief WPI provides. Food insecurity is one such axis of care and WPI should join other institutions in working toward the achievable outcome of lessening the need of food insecure students. No student should go hungry, for any reason.

# Chapter 5: Recommendations & Conclusions

**<u>Education for Freshmen</u>**

According to our survey, 10.3% of freshmen at WPI stated that they were food insecure via the definitions provided in the body of the survey. Since all freshmen living on campus are required to have a residential meal plan, the researchers concluded that part of the reason these freshmen indicated food insecure conditions was a lack of education in nutrition management, as the minimum fourteen meals per week is proven to be nutritionally viable when managed properly.

To help reduce the number of freshmen at WPI that experience food insecure conditions, we recommend that a nutrition management program be set up as a portion of New Student Orientation. Before matriculation, incoming freshmen are required to complete courses in other healthful topics, such as drugs, alcohol, and sexual assault. This curriculum consists of a series of online modules, as well as a discussion on each topic led by a resident advisor. A short class on nutrition management could be held in much the same format, perhaps with the culminating discussion held over a meal during New Student Orientation.

Modules in the online portion of the course could cover topics such as budgeting a typical residential meal plan over a week, building nutritious meals on campus, and resources to aid students with dietary concerns. The final conversation, similarly, could be held in the dining hall, so that the resident advisors leading the discussion could demonstrate some of the ways to create a filling, nutritionally viable meal with the foods present in the Morgan Dining Hall setting.

**<u>Eating Healthy on Campus with Dietary Restrictions</u>**

Many students, when asked about the food on campus, stated that there was an overwhelming lack of options for students with dietary restrictions. While the Morgan Hall

dining facility where the seven most common allergens are prohibited and offers gluten free and vegan options, often times there is only one choice for students facing these restrictions. The Goat's Head restaurant, similarly, has a greater variety of gluten free or vegan options, but individuals have to guess on allergen information most of the time. As for the Campus Center Food Court, it can be nearly impossible to find a full meal that is confirmed to be allergen or lifestyle friendly.

Morgan Hall is the campus dining location with the simplest solutions available. With continued implementation of food labeling practices, allergen information should be visible upon ordering. For students with the seven major allergies, issues digesting gluten, and those practicing vegetarianism, WPI should start a small task force. Students on this task force would be able to suggest items to stock in the dining hall that cater to specialized diets, and also aid the staff in the dining hall to get the word out about the ways that WPI caters to special dietary needs, such as through use of the dietician, the option to ask for a meal's ingredients, and the option to ask for something else if nothing served fits dietary needs.

In the Goat's Head, a menu board outside the main entrance, listing dishes and their ingredients, would address a lot of unnecessary dietary concerns. At the beginning of every term, the menu would be printed out and posted just outside the door, so that students don't have to guess which dishes are safe. This menu board would not only allow for students to know which foods were safe before entering the restaurant, but also reduce wait times, since additional questions about menu items would be answered before students entered the line to order.

In the Campus Center Food Court, ingredients should be posted for everything. Nutritional information should be placed in a binder in front of every food stall. Identification of gluten free items should also be placed obviously on hot foods in addition to the prepackaged

snacks. Finally, steps need to be taken to ensure that all staff members are trained in avoiding cross-contamination.

Campus-wide, actions can be taken to further ensure that food insecurity is lessened for students with dietary restrictions. Snacks without gluten or the seven major allergens should be available in vending machines across campus and clearly labeled. The online menu lookup for each of the dining locations should be updated daily to allow students to view their meal choices before selecting where to eat, and it should be accurate every day. Finally, WPI should have students take an anonymized survey on their dietary restrictions annually, so that the administration can properly assess the dietary needs of each class on a yearly basis and can prepare to have meal options at the ready.

## Increasing Food Accessibility on Campus

In our interviews we found that a number of students felt food insecure due to a lack of access to food. This issue stemmed both from the limited times at which food is available in some dining facilities on campus and also the lack of dining options near the further dormitories from campus, such as Faraday Hall or Salisbury Estates.

To address both of these issues, we suggest implementing takeaway meal kiosks in each of the dining locations, as well as in each of the residence halls. These kiosks would offer the equivalency of a meal swipe: one entree, two sides, and a drink; though the meals would be available at any time. This would allow students to get meals late at night, and have readily available food in many campus buildings.

## Meal Swipe Donation

One solution to alleviating student hunger is to reclaim a percentage of unused meal swipes at the end of a semester. Many students get to the end of a semester with remaining meal

swipes, purchased meals that disappear at the end of each semester. If unused meals swipes were stacked into a bank to be utilized by food insecure students, there would be multiple benefits. Most importantly, hungry students would have access to meals that they may otherwise not have access to. Secondly, both students and parents know that even though they didn't utilize all the meals they paid for, they were able to provide for some of their fellow humans, which strongly emulates the WPI philosophy of students aiding other students.. The feeling of generosity is in and of itself a great benefit of donation, it is the good feeling of assisting someone in need.

Possible implementations of an unused meal swipe bank could involve a mobile app, where students could directly deposit their meal swipes. Possibly an additional to the official WPI app or the GET app (used for checking meal swipe and Goat Bucks balance) would be a more sustainable option, since students already check both of these apps regularly. Also, physical donation locations would be beneficial. Set up near entry to common on-campus dining areas would encourage donations and remind students of the need. In order to maximize effectiveness of implementing a donation station, one would set them up during the final few weeks of the semester (shortly before meal swipes expire). This way the station would be noticed as something new that students aren't walking past every single day. Paired with obvious signage or posters to increase likelihood of grabbing student's attention, students will be reminded of extra meal swipes. In addition to signs, a form of poster with a stock image of a student thanking contributors would help to put a face to food insecurity, giving students an emotional attachment to the issue. Finally, there could be a couple emails sent out to the student body near the end of a semester reminding them to check their meal swipe balance and encourage donation.

Upfront costs of this solution would be minimal. A group of computer science or IMGD majors could build a new app or add meal swipe donation options to existing apps as part of an

MQP or an independent study project. Setting up a kiosk to display the amount of meal swipes

donated could be done by members of ECE department with an LED display. The materials to

build the kiosk would be the most expensive part, but pieces of that equipment could be reused

from dismantled projects or donated from alumni.

**Pre-Packaged Meal Donation**

Pre-packaged meals, composed food from the dining hall that would ordinarily be thrown

out, would aid in decreasing food insecurity while also preventing food waste. We proopose that,

at the end of each meal time, leftover food would be packaged up as meals to be frozen, rather

than discarded. These meals could go into freezers on campus which could then be staffed by

either students or WPI staff who could implement distribution to students with food needs.

Unlike the meal swipe donation plan, there is no additional software development costs up front

and could be implemented immediately.

The challenges of implementing this solution are distribution and packaging. Distribution

could be handled by student volunteers. The time students spend volunteering could be applied

toward fulfillment of required community service hours. Optionally, the responsibility of

distributing packaged meals to students could belong to staff. Chartwells staff or WPI staff could

potentially manage this position, though this would increase the cost of implementation

Students could apply for this benefit with the Dean of Students office, where the

conversation, inquiry and need can be kept private. Information regarding food insecurity could

be distributed to students during orientation in their first year, or brought to their attention by the

financial aid office during the application process. Signs could also be placed near dining

locations around campus to advertise assistance programs.

Packaging meals would only need to take place three times each day. At the end of the meal time, or after preparations for the next meal are underway, student volunteers or sustainability club members would work hand-in-hand with Chartwells staff to gain access to remaining food. This food would be promptly packaged into individual meal-sized containers and transported to a suitable storage location. Upon delivery into storage, a final count will be taken to establish a current inventory.

Upfront costs of the food recovery plan would be minimal. With training involved and the opportunity for work-study community service hours to be completed on campus, volunteers would be capable and plenty to avoid necessary staffing costs. In addition to potential staff payment, food storage containers would have to be purchased and constantly supplied. Reusable containers would help mitigate the recurring costs and can be tied directly into the current Reusable Container Program (RCP).

**Benefits for Upperclassmen Outside WPI**

Many upperclass students are unaware that their financial situation may allow them to receive government assistance to be able to afford food. The Massachusetts application for SNAP benefits, formerly known as Food Stamps, is a series of questions based upon the financial qualifications of a household.

A household, as defined by the Massachusetts Department of Transitional Assistance is, in relation to the individual applying for SNAP benefits, consists of dependents, spouses, or other individuals with which the applicant has at least two thirds of their meals. The income and expenses regarding the members of the household are taken into consideration in a brief twenty minute questionnaire.

Within five days of submitting the online questionnaire, a member of the Massachusetts Department of Transitional Assistance will contact the applicant to conduct a phone interview about their circumstances. After that phone call, the applicant will send in some supporting documentation, and be notified within thirty days if their household is qualified to receive SNAP benefits.

On average, SNAP benefits in Massachusetts are equal to $215 per month for a two person household. For an upperclassman, especially one without a meal plan, that level of assistance would revolutionize their eating habits. WPI's office of financial aid should offer assistance in applying for benefit programs while enrolled, to help ensure that students can afford food with nutritional substance.

## Clubs/Organizations

Any solution to food insecurity would be incomplete without a plan for sustainability. No one individual can support such a task of combating food insecurity. In order to prevent student hunger from sliding backwards, we must determine a long-term sustainability solution that will outlast any one student's tenure here at WPI. A possibility for organizations to be the leader in the battle of food insecurity would be student led clubs and organizations. Clubs such as the WPI Green Team and the Food Recovery Network have already taken steps parallel to the goals of eradicating food insecurity. Other student organizations that may have interest in assisting with the fight for food security would be the Students for a Just and Stable Future, Engineers Without Borders and The Global Humanitarian Alliance. Clubs and organizations change hands as students graduate, therefore their goals and ideals remain longer than those of individual students tenured at WPI, which would be beneficial toward combatting food insecurity.

## Food Insecurity Task Force

One of the major reasons that food insecurity runs so rampant on college campuses is that no one is talking about it. The sense of social shame about the issue prevents students from speaking up, even when food insecurity is a persistent problem in their lives. By formulating a task force specializing in the eradication of food insecurity, WPI would ensure that students, even when hesitant to come forward, have an advocate against food insecurity.

The food insecurity task force should be made up of WPI faculty and staff, students, at least one Chartwells administrator, and WPI alumni. These people would meet frequently to discuss the food insecurity needs of the campus on the whole, and to maintain the other solutions mentioned in this report. It should be the goal of this task force to maximize outreach to food insecure students while also maintaining the anonymity of such students amongst their peers.

## Conclusion

Sustainable implementation of the solutions mentioned in this report would greatly lessen the needs of food insecure students. It is the hope of the researchers that this work will be the first of many studies on this topic, and that as each study concludes, the number of food insecure students, as well as the needs of those students, decrease. Furthermore, the overall goal when studying food insecurity and proposing solutions at the university level is that no student ever has to choose between food and education.

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# Appendices:

## Appendix #1: U.S. Census Bureau Current Population Survey Food Security Supplement

### Questions Used To Assess the Food Security of Households in the CPS Food Security Supplement

1. "We worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for you in the last 12 months?

2. "The food that we bought just didn't last and we didn't have money to get more." Was that often, sometimes, or never true for you in the last 12 months?

3. "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 12 months?

4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? (Yes/No)

5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

6. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? (Yes/No)

7. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food? (Yes/No)

8. In the last 12 months, did you lose weight because there wasn't enough money for food? (Yes/No)

9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

*(Questions 11-18 were asked only if the household included children age 0-17)*

11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food." Was that often, sometimes, or never true for you in the last 12 months?

12. "We couldn't feed our children a balanced meal, because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?

13. "The children were not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for you in the last 12 months?

14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No)

15. In the last 12 months, were the children ever hungry but you just couldn't afford more food? (Yes/No)

16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No)

17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

18. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

## Appendix #2: Consent to be Interviewed form

Food Insecurity at Worcester Polytechnic Institute
Consent to be Interviewed Form

The purpose of this interview is to gather qualitative data about food insecurity at Worcester Polytechnic Institute. The purpose of this study, overall, is to determine the extent at which food insecurity exists at WPI and propose solutions to lessen the needs of food insecure students.

I, _____, voluntarily consent to be interviewed under the conditions that:

- I may discontinue my participation in the interview at any point or refuse to answer any question
- I may withdraw my participation from this study at any point up to one week after my interview has been conducted, and any and all recordings or documentation will be removed from the report and destroyed
- I have had the purpose of this study explained to me in writing and have had the opportunity to ask questions of the individuals conducting the study
- I understand that participating in this study will not directly benefit me financially or by any other means
- I agree to the interview being audio recorded, on the grounds that my identity is only revealed in publications regarding the study if I have signed the Consent for the Use of Identifying Information Form
- I understand that all information provided may be used in the form of quotations in a written report or within the multimedia presentation, but identifying information will be withheld unless I have signed the Consent for the Use of Identifying Information Form.
- I understand that if I report that myself or someone else is in danger, the administrators of this survey are required to report that information to the appropriate authorities.
- I understand that signed Consent to be Interviewed Forms and audio recordings will be stored in a secure document box in the possession of the administrators of this survey for up to one year
- I understand that I am entitled to access the information I have provided at any time while it is in storage
- I understand that I am free to contact any of the administrators of this survey to seek further information and clarification.
- For any questions about survey administration and oversight, please contact Human Protection Administrator Gabriel Johnson by Email at gjohnson@wpi.edu or by phone at 508-831-4989 or IRB Chair Kent Rissmiller by Email at kjr@wpi.edu or by phone at 508-831-5019.
- The individuals listed below are the administrators of this interview and their project advisors:

Maggie Gaffney                          Chris Renfro                          Daniel Suitor
Chemical Engineering              Aerospace Engineering         Management Engineering
Class of 2021                             Class of 2020                         Class of 2019
megaffney@wpi.edu                  crenfro@wpi.edu                   dansuitor@wpi.edu

          Gregory Snoddy                                    Kristin Boudreau
          Dean of Student Life                            Department Head, Humanities and Arts
          gsnoddy@wpi.edu                               kboudreau@wpi.edu


_____                    _____
Signature of Participant                                                          Date


_____                    _____
Signature of Administrator                                                      Date


**APPROVED BY**
**WPI IRB 1**
**11/30/2018 TO 11/29/2019**

## Appendix #3: Consent for the Use and Publication of Identifying Information form

Food Insecurity at Worcester Polytechnic Institute
Consent for the Use and Publication of Identifying Information

I, _____, voluntarily consent to the use and publication of information that can be used to identify me in any such way under the conditions that:

- All guidelines referenced in the Consent to be Interviewed Form are met
- Only portions of information disclosed on the record may be reproduced in written or multimedia form, whereby any information stated on the record and approved by the participant will be reproduced
- The administrators of this survey will shield the identities of individuals if there exists the possibility of harassment or other inappropriate conduct
- I retain the right to view footage, listen to audio recordings, or read passages pertaining to the information I disclosed within the one year storage period referenced in the Consent to be Interviewed document
- I have the right to refuse disclosure of any portion of my identity, including my picture, my voice, or any portion of my story that I wish to redact
- I understand that in volunteering the use of my identifying information, I waive the right to commence legal action against the administrators of this interview and/or WPI on the grounds of any potential damages endured during or resulting from my participation
- For any questions about survey administration and oversight, please contact Human Protection Administrator Gabriel Johnson by Email at gjohnson@wpi.edu or by phone at 508-831-4989 or IRB Chair Kent Rissmiller by Email at kjr@wpi.edu or by phone at 508-831-5019.

| | | |
|---|---|---|
| Maggie Gaffney | Chris Renfro | Daniel Suitor |
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| megaffney@wpi.edu | crenfro@wpi.edu | dansuitor@wpi.edu |

_____                    _____

Signature of Participant                                                                     Date

_____                    _____

Signature of Administrator                                                                Date

**APPROVED BY**
**WPI IRB 1**
**11/30/2018 TO 11/29/2019**

**<u>Appendix #4: WPI Food Insecurity Qualtrics Survey, Draft as of 10/05/2018</u>**

# Food Insecurity on Campus Survey

*Start of Block: Demographic Identification*

Q1 What year are you at WPI?
o       Freshman  (1)
o       Sophomore  (2)
o       Junior  (3)
o       Senior  (4)
o       5th year / other  (5)
o       Graduate Student  (6)


Q2 What is your age?
o       < 18  (1)
o       18 - 22  (2)
o       23 - 26  (3)
o       27 - 30  (4)
o       31 - 34  (5)
o       35 +  (6)



Q3 What is your country of origin?
▼ United States of America (0) ... Zimbabwe (1357)


Q4 How do you most closely identify your gender?
o       Male  (1)
o       Female  (2)
o       Non-Binary / Third gender  (3)
o       Prefer not to say  (4)
o       other  (5) _____


Q5 Do you identify as transgender?
o       Yes  (1)
o       No  (2)
o       Prefer not to say  (3)


Q6 How do you most closely identify your sexual orientation?
o       Straight / Heterosexual  (1)
o       LGBTQ+  (2)
o       Other  (8) _____
o       Prefer not to say  (9)

Q7 What is your racial or ethnic identity?
o        American Indian, Alaska Native or First Nations  (1)
o        Asian or Asian-American  (2)
o        Black, African or African-American  (3)
o        Hispanic or Latinx  (4)
o        Native Hawaiian or Pacific Islander  (5)
o        White  (6)
o        Prefer not to say  (7)
o        Other  (8) _____

*End of Block: Demographic Identification*

*Start of Block: Economic Data*

Q8 Do you have a job?
o        Yes (On-campus)  (1)
o        Yes (Off-campus)  (2)
o        No  (3)

*Display This Question:*
        *If Do you have a job? = Yes (On-campus)*
        *Or Do you have a job? = Yes (Off-campus)*

Q9 What type of employment do you have?
o        Work Study  (1)
o        Self-employed (such as Uber, Lyft, consulting etc.)  (2)
o        Domestic Employment (house cleaning, nanny etc.)  (3)
o        Private/Public Wage-earning Employment  (4)

*Display This Question:*
*If Do you have a job? = Yes (On-campus)*
*Or Do you have a job? = Yes (Off-campus)*

Q10 How many hours do you work in a typical week (at all jobs)?
o        Less than 20  (1)
o        20 - 40  (2)
o        40 or more  (3)

*Display This Question:*
*If Do you have a job? = No*

Q11 Are you searching for a job currently?
o        Yes  (1)
o        No  (2)

Q12 Do you have credit card debt?
o        Yes  (1)
o        No  (2)

Q13 How much debt do you have (estimated)
o        More than $5,000  (1)
o        $2,000 - $5,000  (2)
o        Less than $2,000  (3)

Q14 What is your housing situation (during the academic school year)?
o        On-Campus housing  (1)
o        Fraternity/Sorority  (2)
o        Off campus  (3)
o        With parents  (4)

Q15 How do you pay for housing? Check all that apply.
☐        Cash (parents / self-funded)  (1)
☐        Private/Institutional Scholarships  (2)
☐        Financial Aid Grants  (3)
☐        Federal Student Loans  (4)
☐        Private Student Loans  (5)

Q16 Do you have roommates?
o        Yes  (1)
o        No  (2)

Q17 How many roommates do you have?
o        1-2  (1)
o        3-4  (2)
o        5 or more  (3)

Q18 Do you have a WPI meal plan?
o        Yes  (1)

o        No  (2)

Q19 Which meal plan do you have?
o        The Gompei 190  (1)
o        ANY 40  (2)
o        The 75 Luncheon  (3)
o        The 50 Luncheon  (4)
o        Unsure  (5)

Q20 How do you pay for your food? Check all that apply.
☐        Cash (parents/self-funded)  (1)
☐        Student loans and financial aid  (2)
☐        Scholarships and grants  (3)
☐        State and/or Federal benefits (SNAP, WIC etc.)  (4)
☐        Charities (food pantries, community kitchens, etc.)  (5)

Q21 What proportion of your meals do you receive from Dining Services?
o        All  (1)
o        Most  (2)
o        Some  (3)
o        None  (4)

*End of Block: Economic Data*

*Start of Block: Establishing Food Insecurity*

Q22 Have you ever been unable to eat as much/often as you feel you need on campus?
o        Yes  (1)
o        Maybe  (2)
o        No  (3)

*End of Block: Establishing Food Insecurity*

*Start of Block: Other Questions*

Q23 In which other areas of your life would you say that food insecurity has had an effect?
(check all that apply and please briefly explain)
☐        Social  (1) _____
☐        Health  (2) _____
☐        Studies  (3) _____
☐        Other  (4) _____

Q24 Do you experience food insecurity while at home, or during the summer?
o        Yes  (1)
o        No  (2)
o        Prefer not to say  (3)


Q25 "My access to food is better while at school."
o        Definitely true  (1)
o        Probably true  (2)
o        Neither true nor false  (3)
o        Probably false  (4)
o        Definitely false  (5)


Q26 Do you or your family receive housing assistance while not at school (section 8, Low Income Public Housing etc.)?
o        Yes  (1)
o        No  (2)
o        Prefer not to say  (3)
o        Uncertain  (4)

*End of Block: Other Questions*

*Start of Block: Food Insecurity Status Questions (adapted from USDA ERS Study)*

Q27 "I was worried whether my food would run out before I got money to buy more."


Was that often, sometimes or never true for the past enrolled school year?
o        Often  (1)
o        Sometimes  (2)
o        Never  (3)



Q28 "The food that I bought just didn't last and I didn't have the money to get more."


Was that often, sometimes or never true for you for the past enrolled school year?
o        Often  (1)
o        Sometimes  (2)
o        Never  (3)


Q29 "I couldn't afford to eat balanced meals."


Was that often, sometimes or never true for you in the past enrolled school year?
o        Often  (1)

o        Sometimes  (2)
o        Never  (3)


Q30 In the last enrolled school year, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?
o        Yes  (1)
o        No  (2)

Q31 How often did this happen?
o        Almost every month  (1)
o        Some months but not every month  (2)
o        In only 1 or 2 months  (3)



Q32 In the last enrolled school year, did you ever eat less than you felt you should because there wasn't enough money for food?
o        Yes  (1)
o        No  (2)


Q33 In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?
o        Yes  (11)
o        No  (12)


Q34 In the last enrolled school year, did you lose weight because there wasn't enough money for food?
o        Yes  (1)
o        No  (2)


Q35 In the last enrolled school year, did you gain weight because there wasn't enough money to buy healthy food?
o        Yes  (1)
o        No  (2)


Q36 In the last enrolled school year, did you ever not eat for a whole day because there wasn't enough money for food?
o        Yes  (1)
o        No  (2)

Q37 How many consecutive days did you go without eating because there wasn't enough money for food?
o        1  (1)
o        2  (2)
o        3  (3)
o        4  (4)
o        5+  (5)

Q38 How often did this happen?
o        Almost every month  (1)
o        Some months  (2)
o        Only once or twice  (3)

Q39 May we contact you to discuss the details of your food insecurity?
(Identities will remain anonymous unless explicit permission is given)
o        Yes  (1)
o        No  (2)

Q40 Please enter your WPI email address
_____

*End of Block: Food Insecurity Status Questions (adapted from USDA ERS Study)*

## Appendix #5: Completion Certificates for NIH Human Research Course

### Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Maggie Gaffney** successfully completed the NIH Web-based training course "Protecting Human Research Participants."

**Date of Completion**: 09/15/2018

**Certification Number**: 2932993

NIH National Institutes of Health
Office of Extramural Research

### Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Christopher Renfro** successfully completed the NIH Web-based training course "Protecting Human Research Participants."

**Date of Completion**: 09/24/2018

**Certification Number**: 2920633

NIH National Institutes of Health
Office of Extramural Research

### Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Daniel Suitor** successfully completed the NIH Web-based training course "Protecting Human Research Participants."

**Date of Completion**: 08/27/2018

**Certification Number**: 2890889

NIH National Institutes of Health
Office of Extramural Research

**Appendix #6: Promotional Material for Survey**

# Food Insecurity at WPI – IQP study:

## Two randomly selected gift card winners!



Complete this short **survey** about food insecurity on WPI's campus *to be entered to win* one of two **$50 VISA** gift cards!

Food insecurity is the state of being without reliable access to a sufficient quantity of affordable, nutritious food.

Please help us determine the magnitude of food insecurity at WPI, and maybe win a gift card!

Scan the link below with Snapchat, Google Lens or other QR scanning app to take the survey and enter the giveaway (must complete the survey for entry).

*One entry per student.*



https://tinyurl.com/WPIfood                                           gr-foodinsecurity@wpi.edu

## Appendix #7: Invitation to Final Presentation

**WPI**

Dear,

_____

Daniel Suitor, Maggie Gaffney and Chris Renfro
Would like to invite you to our

# Food Insecurity
# Interactive Qualifying Project
# Presentation

February 26th, 2018
3:00 – 4:00
Rubin Campus Center
First Floor – Chairman's Room

Sponsors:
Greg Snoddy - *Dean of Students*
Kristin Boudreau - *Professor & Department Head, HUA*

gr-foodinsecurity@wpi.edu

**Appendix #8: Final Presentation Materials**

# An Investigation of Food Insecurity at WPI

1

# Background
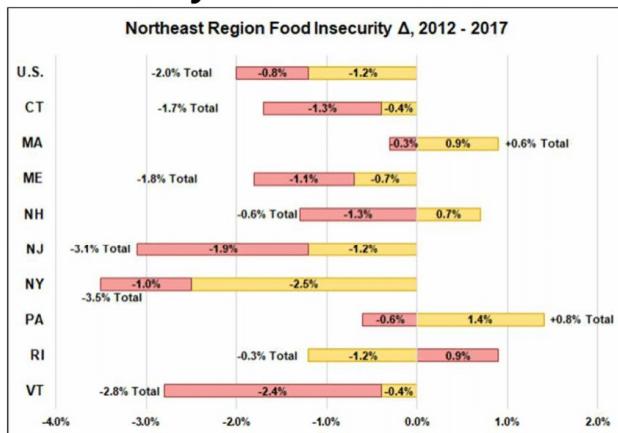
2

# Food Insecurity, Defined

| | Food Secure | | Food Insecure | |
|---|---|---|---|---|
| | **High Food Security** | **Marginal Food Security** | **Low Food Security** | **Very Low Food Security** |
| Reported incidence of Food Insecurity | No reported food insecure conditions | 1 – 2 reported food insecure conditions | 3 – 5 reported food insecure conditions | ≥6 reported food insecure conditions |
| Reported properties of Food Insecurity at corresponding degree | No reported indications of food-access problems or limitations. | Anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake. | Reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake. | Reports of multiple indications of disrupted eating patterns and reduced food intake. |

3

# Food Insecurity in Massachusetts



Northeast Region Food Insecurity Δ, 2012 - 2017

4

# Food Insecurity in College Students

### In Massachusetts:

- ❖ MIT
- ❖ Quinsigamond Community College
- ❖ Holy Cross

### Across the United States:

- ❖ California State University System
- ❖ Illinois Public Universities
- ❖ The Wisconsin Hope Lab

5

# Food Insecurity at WPI

- ❖ No Prior Research
- ❖ Administrative Concerns
- ❖ Demonstrated Need

6

# Methodology

7

## Survey

- ❖ Online Platform
- ❖ Design Basis
- ❖ Anonymous

8
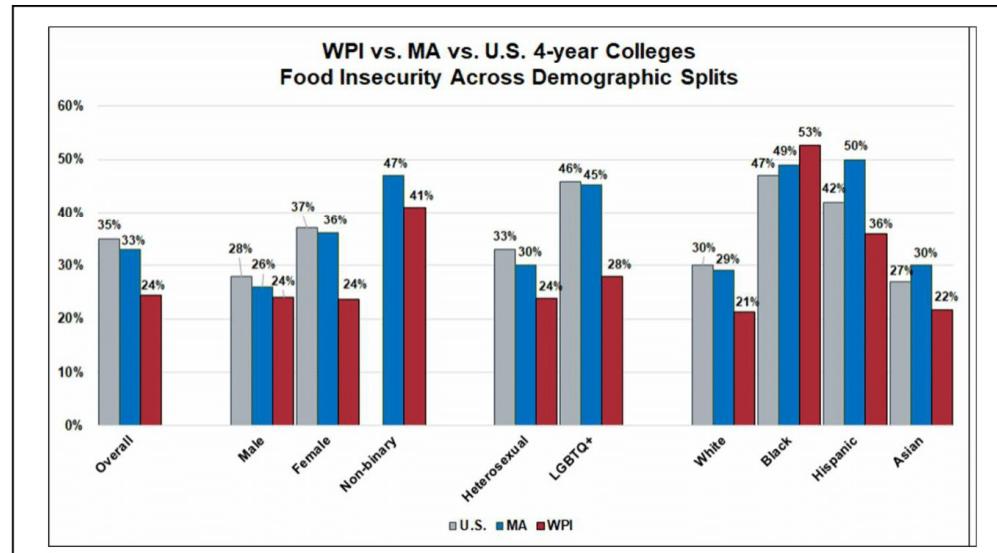
## Interviews

- ❖ Benefits of Interviews
- ❖ Students
- ❖ Professionals

9

# Findings

10

### WPI vs. MA vs. U.S. 4-year Colleges
### Food Insecurity Across Demographic Splits

Overall: U.S. 35%, MA 33%, WPI 24%
Male: U.S. 28%, MA 26%, WPI 24%
Female: U.S. 37%, MA 36%, WPI 24%
Non-binary: MA 47%, WPI 41%
Heterosexual: U.S. 33%, MA 30%, WPI 24%
LGBTQ+: U.S. 46%, MA 45%, WPI 28%
White: U.S. 30%, MA 29%, WPI 21%
Black: U.S. 47%, MA 49%, WPI 53%
Hispanic: U.S. 42%, MA 50%, WPI 36%
Asian: U.S. 27%, MA 30%, WPI 22%

Legend: U.S. / MA / WPI

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### WPI vs. MA vs. U.S. 4-year Colleges
### Food Insecurity Across Basic Needs Splits

Overall: U.S. 35%, MA 33%, WPI 24%
Live on-campus: U.S. 26%, MA 30%, WPI 16%
Live off-campus: U.S. 39%, MA 36%, WPI 33%
Have a meal plan: U.S. 26%, MA 28%, WPI 14%
No meal plan: U.S. 39%, MA 38%, WPI 33%

Legend: U.S. / MA / WPI

12

13



14

15



16

## Student Testimonials

❖ "*My mental health: anxiety, worrying, and shame about how to pay for food and all the other bills in my life.*"

❖ *"Cannot eat in Morgan to make friends/with friends due to lack of funds"*

❖ *"It's super hard to focus on studying when you're wicked hungry and end up spending an hour debating whether you should suck it up and get food on campus because it is too expensive to be able to afford."*

❖ *"All of these areas [social, health, studies] are affected. I feel like a burden on the people around me. I feel like I cannot take care of my own needs."*

17

# Recommendations

18

## Education For Freshmen

- ❖ Budgeting Meal Plans
- ❖ Nutrition
- ❖ Food-Related Resources

19

## Support for Dietary Restrictions

- ❖ Allergen-Free Options
- ❖ Minimization of Cross-Contamination
- ❖ Clear, Specific Food Labeling Practices.

20

## Increasing Access to Food

- Dorms Further From Main Campus
- Late-Night Hours
- Small, On-the-Go Meal-Swipe Kiosks

21

## Meal Swipe Donation App

- ❖ App Features
- ❖ Kiosk
- ❖ Methods for Student Donation

22

## Pre-Packaged Meal Donation

❖ Frozen, Sealed Food
❖ Accessible for Holidays and Breaks
❖ Requires Storage
❖ Reduces Overall Waste in Dining Facilities

23

## Benefits for Upperclassmen

❖ SNAP Benefits
❖ Application Process Information

24

## Clubs and Organizations

- Demographic Clubs
- Organizations to Implement Solutions

25

## Food Insecurity Task Force

- ❖ Demographic Composition
- ❖ Determines the Needs of Food Insecure Students
- ❖ Ensures the Sustainability of Solutions
- ❖ Implements New Solutions as Necessary

26

# Conclusion

27

## **Appendix #9: Notes From Final Presentation Discussion**

- Recommendation from student: create a meal plan that is cheaper, with smaller portions. For instance, this meal plan would charge $10 for an appetizer, one side, and a drink that could easily be eaten in one meal.

- Future Discussion: Open a dialogue with Chartwells about extending dining hall hours.

- Suggestion for future study: investigation into the causes of food insecurity could be pertinent to the implementation of future solutions, but was outside the scope of this initial study.

- Recommendation from researchers: Allow access to student members of the food insecurity task force, so that students facing issues related to food insecurity feel the task force is approachable.

- Solutions Implemented by Faculty Thus Far: To-Go Containers from the POD and Sunday dinners in Oasis House and a network to allow for students to recover food after meetings that would otherwise be wasted.