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The University of Maine Food and Fitness Environment: Is It Health Promoting?

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THE UNIVERSITY OF MAINE FOOD AND FITNESS ENVIRONMENT:
IS IT HEALTH PROMOTING?

by

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A Thesis Submitted in Partial Fulfillment
of the Requirements for a Degree with Honors
(Food Science and Human Nutrition)

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Abstract

Obesity impacts one in six young adults, ages 20-29, and is a major risk factor for chronic disease. An environmental audit of the University of Maine campus was conducted to identify supports for healthful lifestyles by assessing the vending, dining, and recreation environments. Instruments developed by a multistate research team were used to determine scores and percentages for the audit. Ten buildings were assessed in the vending assessment. The mean healthful snack percentage was 17% and the mean healthful beverage percentage was 18% of total items. Two on-campus and seven off-campus dining establishments were assessed. The on-campus dining establishments scored 72% and 67%, respectively, receiving the highest scores compared to the off-campus dining establishments where Margaritas, the local Mexican restaurant, scored 43% as the lowest scored dining establishment. One on-campus and three off-campus recreation facilities were assessed. The on-campus New Balance Recreation Center scored 78%, receiving the highest score compared to the off-campus recreation facilities, where Orchard Trails fitness center scored 46% as the lowest scored recreation facility primarily due to its small size with limited offerings. The overall on-campus fitness environment scored 88%. There were barriers in the off-campus food environment for supporting healthful lifestyles. For example, restaurants lacked a variety of healthful menu options and did not promote sustainability/green eating. The off-campus food and fitness environment lacks important characteristics to be deemed health promoting. Although there are areas for improvement, the current on-campus environment at the University of Maine is health promoting.

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Introduction

Young adults, aged 18-25, are at especially high risk for weight gain.¹⁻²

According to results from an American College Health Association study about a broad range of student health behavior, health indicators, and perceptions², weight gain is due to a variety of changes that occur in the lives of young adults, for many this includes moving onto college campuses where there may be barriers to making healthful lifestyle choices.¹⁻⁵ The newly independent lifestyle of college students and the associated food and exercise choices can increase the risk for unhealthy weight gain.⁶ Their eating and physical activity habits have been reported as being poor⁷ with only one in twenty students eating the recommended five or more daily servings of fruits and vegetables⁸ and only about half of all college students getting adequate physical activity.⁸ The recommendation for five or more servings daily of fruits and vegetables was only met by 5.9% of college students. Likewise, for physical activity, less than 50% were exercising vigorously for at least 20 minutes on three or more days per week or moderately for at least 30 minutes on five or more days per week.⁶

The impact of the built environment of college campuses on young adults' eating behaviors, physical activity habits, and risk for obesity is well-documented in the obesity literature.^{3-6,9} The built environment includes all of the physical parts of where we live and work (e.g., homes, buildings, streets, open spaces, and infrastructure). The built environment also influences a person's level of physical activity.¹⁰ Until recently, individuals were viewed as being solely responsible for their lifestyle choices and overall health without regard for the environments in which these choices were made. The built environment of a college campus encompasses a variety of components including

vending machines, dining halls, and the recreational facilities. These factors influence the ability and desire for people to be physically active and make beneficial food choices to lead healthful lifestyles.^{7,11,12}

One vital environmental factor is the food environment. According to Hill and Peters³ one way in which the overall environment promotes obesity is by providing more opportunities for the consumption of unlimited quantities of food. A variety of highly palatable, inexpensive foods is commonly available on college campuses. Based on a cross-sectional survey of young adults, frequency of eating at establishments that promote excessive food consumption such as all-you-can-eat dining halls and cafeterias was positively associated with obesity.⁴ Levitsky et al.⁵ suggested that the use of 'all-you-can-eat' dining halls may be responsible for much of the weight gain evident in freshmen as students felt that they ate more in the dining facilities because there was no limit to the amount they could eat. Also, dining hall hours of operation are limited on college campuses making the convenience of the vending machines abundant across campus particularly attractive to time-stressed, hungry students.¹¹ Based on analyses of vending machine options in workplaces, public recreation facilities, secondary schools, and health care facilities, most foods offered for sale were high calorie and nutrient poor.¹¹

Another notable environmental factor is the availability of recreational facilities. Campus recreation has evolved drastically since facilities were first seen on college campuses. Campus recreation facilities and policies have the potential to meet the athletic needs of students through intramural sports, club sports, and fitness programs.¹² University-wide access to recreation facilities is a very simple way to

promote health through physical as well as mental wellness on the college campus.¹² According to Warburton et al.,⁸ routine physical activity improves body composition and psychological well being. Body composition and psychological well being reduce stress, anxiety, and depression, as well as incidence of chronic diseases.

The food and recreation environments of college campuses can directly impact young adults' eating and physical activity habits.³⁻⁷ Findings from this study will be useful for University of Maine campus staff to create environmental changes through the development of policies and programs to support lifestyle choices leading to good health. This study is also used as a validation study for the instruments which will be implemented in the future for the multistate FRUVED grant from the USDA.¹³

Literature Review

The following is a review of the primary literature that documents 1) assessing the overall environment, 2) assessing the vending environment, 3) assessing the dining environment, and 4) assessing the recreation environment.

Assessing the Overall Environment

In 2004, Glanz et al.¹⁴ reviewed the literature to examine supermarket-based and community-based environmental policies and pricing strategies for increasing intake of fruits and vegetables. They identified likely strategies, research needs, and innovative opportunities for the future, highlighting the need to include point of purchase information, price reductions, coupons, and availability, variety, and convenience. Additionally they determined that promotion, advertising, and sustainability should be considered when planning interventions. Intervention strategies may include posters and table tents in the dining facilities as well as the use of social media to publicize the introduction of healthy menu items and recreation events.

Saelens and colleagues¹⁵ developed the Nutrition Environment Measures Survey (NEMS), a comprehensive set of tools that provide observational measures to assess the community and consumer nutrition environments in stores, restaurants, and dining facilities. The nutrition environment in grocery and convenience stores is measured with the NEMS-S and restaurants are measured with the NEMS-R.¹⁵ The measures focus on the availability of healthful choices and the overall healthfulness of the environment.¹⁴ Barriers to healthful eating such as all-you-can-eat promotions, the marketing and advertisements of unhealthful items or lack there of for healthful items, and differentials in pricing are assessed. Voss et al.¹⁶ found that overall, the NEMS

findings helps community leaders identify components of the environment where changes in policies and systems can help make healthy choices easy, safe, and affordable by changing policies, systems, and environments.

Oldenberg et al.¹⁷ developed the Checklist of Health Promotion Environments at Worksites (CHEW) to evaluate the characteristics of worksite environments that are recognized to influence behavioral choices. The CHEW is a 112-item checklist of environmental qualities that are assumed to be associated, positively and negatively, with individuals' lifestyle choices. The three areas assessed are physical characteristics of the work place, qualities of the information environment, and characteristics of the neighborhood right around the workplace. They found that vending machines, showers, bulletin boards, and signs prohibiting smoking were common across worksites. However, bicycle racks, visible stairways, and signs related to alcohol consumption, nutrition, and promoting healthful behaviors were uncommon. These findings are relevant for program planning and help to distinguish variability across worksites. The CHEW has the potential to help assess environmental influences on health behaviors and to evaluate workplace health promotion programs and policies.¹⁷

Dejoy et al.¹⁸ studied the development and reliability of the Environmental Assessment Tool (EAT) for assessing the physical and social environmental supports for obesity prevention at work sites. The items in EAT are broken down into three subscales relating to physical activity, nutrition/weight management, and organizational characteristics and support. The availability and accessibility of parking, facilities for securing bicycles, stairs and elevators, showers and changing facilities, signage and bulletin boards relevant to physical activity, and physical activity and fitness facilities

were assessed by the physical activity scale. Vending, cafeterias, other food service establishments, and signage about diet and weight management were assessed using the nutrition and weight management scale. General environment characteristics, rules, policies, and existing health promotion programming and services were assessed using the support scale.

Assessing the Vending Environment

While conducting a study using the NEMS,¹⁴ researchers observed that vending machines were influential in food choices particularly in school settings but there was no instrument to measure the healthfulness of vending machines. In some workplaces and in some schools, vending machines are the only sources of food for sale throughout the day. The researchers knew that it was necessary to see the label to determine if the food or beverage is a healthy choice. To fill the gap, the NEMS-V was developed by Voss et al.¹⁶ In developing NEMS-V some challenges in determining whether a food or beverage item is healthful, mainly they found that the nutrition facts label was not always visible to the consumer before purchase. They were also challenged by the need to keep a current list of healthy foods and beverages because of the fast rate that new products appeared in the market. Thus, the NEMS-V healthy choices calculator was developed to help researchers in categorizing the food and beverage offerings.¹⁶

Byrd-Bredbenner et al.¹⁰ were also interested in assessing the vending environment, specifically on college campuses. They conducted an audit of the variety and nutrient quality of the snacks and beverages sold in vending machines on thirteen college campuses and post-technical secondary schools. They evaluated buildings with the greatest student traffic flow at their universities. On each campus a student union,

library, and at least 5% of student academic buildings and residence halls were evaluated. In each beverage and snack machine surveyed, information was collected for all face front items including the product name, brand, and container size. They obtained calorie and nutrient content for each snack and beverage item using Nutrition Facts Labels, food manufacturers' websites and USDA databases^{19,20}. They developed a quality score for snacks and beverages by dividing the Nutrients to Maximize (e.g. protein, vitamin A, iron) score by the Nutrients to Minimize (e.g., saturated fat, sodium, sugar) score and multiplying by 100. With these calculations they determined the overall Nutritional Quality Scores for the snacks and beverages on each campus. Overall, the quality scores for the snacks and beverages in vending machines were low due to high calories, fat content, and sugar content. There were limited healthful choices in campus vending machines making high energy, low nutrient snacks the quick and easy choice for individuals.

Lawrence et al.²¹ assessed the healthfulness of foods sold in health care facility vending machines and how the health care facilities were using policies to create healthful food environments. Food and beverage machine assessments were conducted in 19 California health care facilities. The items offered were recorded at each facility with interviews conducted for information on vending policies. The majority of items found in the vending machines were candies and, thus, not healthful. In some health care facilities, policies were being developed to set nutrition standards for vending machines to increase access to healthful food and beverages in the work environment.

Gorton et al.²² studied the sales data and employee satisfaction of snack products in hospital vending machines (n=14) before and after nutrition guidelines were provided

for the vended products. They used the Better Vending for Health (BVFH) nutrition guidelines which focus on calories, saturated fat, sugar, sodium, and portion sizes of the snack items offered. There were two levels of classification, 'better' and 'other' choices. The 'better' choices were required to contain ≤ 191 kcal per packet, ≤ 1.5 g saturated fat per 100g, ≤ 450 mg sodium per 100g, and not be candy. The 'other' choice items were only required to be ≤ 191 kcal per packet. Vending machines were re-stocked with 50% 'better' choices and a staff survey was conducted to measure consumer satisfaction before and after this change of vending items. Additionally, sales were recorded pre- and post-intervention. There was a substantial reduction in the amount of calories, total fat, saturated fat, and total sugars per 100g of product sold to consumers. Additionally, the majority of the staff was more satisfied with the snacks offered in the vending machines post intervention with more healthy options being offered. Execution of nutrition guidelines in vending machines led to significant advances in nutrient content of vending products sold, as well as in the consumers' satisfaction. Since vending machines are likely to remain a part of the nutrition environment, implementing the BVFH guidelines can lead to improved snack consumption of the consumers with increased satisfaction while having no adverse impact on total sales. The guidelines were acceptable for both consumers and vending contractors.

Assessing the Dining Environment

Measures are needed that evaluate the wide variety of environmental stimuli within restaurants and on-campus dining facilities that may affect food choices. Saelens et al.¹⁵ developed and evaluated the NEMS-R (restaurants) instrument, designed to assess

the relative healthfulness of foods and beverages available on main and children's menus. This instrument highlights availability, facilitators, and supports for healthful eating, as well as barriers to healthful eating, pricing, and signage/promotion. The NEMS-R¹⁵ includes entrees, main-dish salads, side dishes, and beverages. The primary standard²³ was that items were assumed unhealthful unless specific healthful information was provided or if the item was a basic food group item, such as raw fruits or vegetables. The ability to eat healthfully at a restaurant was based on the information provided on the menu, including such things as having entrees labeled as being healthful (e.g. low fat or labeled with the American Heart Association "heart check"), availability of salad bars or reduced size portions; and encouraging entrée modification by special request. Barriers to healthful eating identified on the menu included encouraging larger portion sizes; overeating, prohibiting or charging for special requests; and promoting low-carbohydrate meals and all-you-can-eat or unlimited portions of any food item. Along with the review of the menu, food marketing was assessed including whether nutrition information was available at point of purchase; signs, table tents, other displays were used to highlight healthful menu items; and healthful or unhealthful choices; or overeating were encouraged. Fast food restaurants were more likely to offer a healthy main dish and have a higher proportion of healthy to total dish options. The sit down restaurants were more likely to have healthier versions of individual food and beverages (e.g. nonfried vegetables, 100% fruit juice, milk). Neither sit-down nor fast food restaurants were observed to have facilitators of healthy eating. A limitation of NEMS-R¹⁵ is that the actual healthiness of foods is not evaluated; which would require a laboratory analysis.

More specific nutrition information for menu items would be preferable instead of focusing on words such as “light” or “heart healthy” to designate foods as healthy.¹⁵

Horacek et al.²⁴ modified the NEMS-R¹⁵ to evaluate restaurants categorized as fast food, sit down, or fast casual, as well as campus dining establishments such as dining halls, student union, snack bars and cafes. Dining environments at thirteen university campuses, one residential post-secondary training program and one technical college were assessed. For off-campus restaurants, the NEMS-R (score range=24 to 66 points) was revised by deleting the “low carb” meal option and adding the availability of vegetarian options to reflect the current trends.²⁵ Children’s menu items were not assessed due to the focus on young adults. While unhealthful dining environments were prevalent, healthful eating was facilitated by identifying healthful entrees and providing nutrition information and reduced portion sizes. For on-campus dining facilities, the NEMS-R was modified by adding a detailed assessment of the salad bars. The modified instrument, the Nutrient Environment Measures Survey-Campus Dining (NEMS-CD) (score range= -29 to 100 points) also included availability of whole grains, varieties of 100% fruit juice, dairy alternatives, cereals, and vegetarian options.^{26,27} Dining halls provided the greatest variety of healthful entrees, side dishes, and beverages but also had barriers such as “all-you-can-eat” designed. Overall, on-campus dining venues offered more healthful options than off-campus environments and large-sized universities had significantly higher scores than smaller universities which possibly represents differences in how resources are distributed to dining services. The restaurants assessed facilitated healthful eating by identifying the healthful entrees and providing nutrition information and reduced portion sizes. These restaurants, however, also provided more barriers than

on-campus dining by offering larger portion sizes. A variety of dining options were available for students on and near campus with no appreciable differences in healthful choices among restaurant types. Ultimately, both on-campus dining and nearby restaurants had room for improvement by increasing healthful food and drink options and by decreasing the barriers that promote obesity and overeating. Point of purchase information, including nutrition facts, ingredients, allergens can positively influence students' food selections. Additionally by reducing the price of fruit and salad, the purchase of the more healthful options can substantially increase.²⁸

Devine et al.²⁹ used formative research to gain a broad understanding of the sociocultural role of food and eating among workers and workers' outlooks in order to develop effective interventions, food choices, and physical activity patterns. The aim of their study, "Images of a Healthy Worksite" was to provide easy access to healthful foods and reduce the sedentary lifestyles of workers at the site to prevent weight gain. Additionally, the influence of the individual, environmental, and sociocultural factors known to impact eating was assessed. Seventy-nine workers were interviewed about their perspectives on work demands, health and weight, food, eating, physical activity, and possible solutions to overcoming workplace barriers to healthful lifestyles. The major barriers to health, according to the participants, were stress-related eating and, in their words, "80% of the choices available are unhealthy" and "pizza is cheaper than salad." Workers were supportive of having healthier cafeteria food options, making healthful foods more accessible, and labeling the healthful options.

Assessing the Recreation Environment

Horacek et al.⁷ assessed the environmental supports for physical activity on thirteen campus environments using a newly developed and tested audit tool—the Physical Activity Campus Environmental Supports (PACES) audit. It was developed by modifying the (CHEW)¹⁷ and (EAT).¹⁸ PACES was designed to account for the presence of health-promoting characteristics of building and fitness centers, such as stairwells, signs, equipment, exercise classes, showers, and bike racks. Clear descriptions were developed and used to evaluate the physical condition and working condition of equipment, courts, and amenities. Hours of operation, condition of the exercise equipment, and the condition of the showers and locker rooms were assessed among other details. They concluded that PACES was a good, comprehensive tool to document the environmental supports for physical activity. The researchers reported that when results from PACES⁷ were shared with the campus community stakeholders, a third of the researchers began to influence decision making regarding obesity prevention.

Coday et al.³⁰ designed the Health Opportunities and Physical Exercise (HOPE) intervention to address the problem of sedentary behavior which is a major contributor to cardiovascular disease, some cancers, and other morbidities. HOPE was a randomized trial to test the effects of two supportive models of behavior change and how the environment and social interactions with peers increased motivation and reduced psychological anxiety related to initiating and maintaining physical activity habits. The changes in exercise behavior were documented through self-reported physical activity and confirmed by fitness testing at baseline, 6, 12, and 24 months during the 1 year of active intervention and 1 year of relapse prevention follow up. Aspects of the study

included delivery of socially based physical activity and interventions to an economically disadvantaged urban population, as well as reduction of environmental barriers to be physically active, and emphasis on social interactions influencing health habit change. They found that physical inactivity was not only an important contributor to disease, but achieving change in activity levels was difficult to elicit and sustain. The problem of sedentary behavior addressed by HOPE identifies the need for new mechanisms of change as well as inexpensive peer interventions to high risk populations.

Summary

Researchers have theorized that among the causes of the obesity epidemic, both lifestyle factors, such as food habits and physical activity, and environmental factors are paramount.¹⁴ For the college population, the university environment can be a major supporter or inhibitor to healthful lifestyles because many individuals both live and work there and have few options other than what is available on-campus for food choices and physical activity.³¹

Environments that are supportive of physical activity are places where being active is easy and accessible and include amenities such as sidewalks, trails, fields, tennis courts, and recreation facilities.^{14,31} Davidson and Lawson³² found that having trails and recreation areas close by and accessible related to an individual's total physical activity. However, Horacek et al.⁷ found that university campuses have extensive recreation services and programs overall, but lack the policies and the built environment to support healthful lifestyles.

Environments supportive of healthful food choices present messages about taste, satiety, body leanness, energy value and health,³³ have healthier food items priced lower

than less healthful options,^{34,35} and have nutrition labels present to guide choices.³⁶ Systematic evaluations of campus environments are necessary to allow informed decisions concerning the modifications needed to support healthful lifestyle choices.³⁷ When the campus environment supports healthful living, students and faculty may be more likely to use campus facilities and the benefit will be seen in reduced health care costs for individuals and for the university.³⁷⁻³⁹

Study Rationale and Significance

During the past two decades, a significant increase in obesity and obesity-related disorders such as type 2 diabetes, hypertension, and dyslipidemia has occurred among people in their teens and 20s.⁴⁰ This increase in obesity and the diseases associated with it, has negatively impacted our health care system. Even with continued advances in genomics and molecular medicine, scientists are unlikely to discover an effective, safe, and affordable drug that would cure or prevent obesity⁴⁰. Although obesity is generally acknowledged as a serious problem, many college administrators fail to acknowledge that the food and recreation environments of their campuses can directly impact the lifestyle habits of young adults. Findings from this study will be useful for campus staff to showcase health-promoting aspects of the University of Maine campus and facilitate the development of policies and programs for environmental changes that support lifestyle choices of young adults leading to good health while in school and in the future. Findings from this study will also be used in a multistate research project to validate instruments that will form an audit for determining a Healthy Campus Index for assessing campus characteristics and making cross-campus comparisons.¹³

Methodology

Goals and Objectives

The goal of this study was to identify the health-promoting attributes of the University of Maine nutrition and physical activity environment through a campus audit.

The objectives were to assess:

- campus snack and beverage machines
- on- and off-campus dining establishments.
- on- and off-campus recreation facilities.

Study Design

An audit of the food and recreation environment was conducted for the University of Maine campus. The audit consisted of four assessments: snack and beverage vending; recreation services: usage, conditions, and activity offerings; on-campus dining; and local restaurants. Data was collected in three phases starting in February 2014 and ending in September 2014. This study was part of a larger multistate research project on environmental audits of college campuses with the goal of creating a Healthy Campus Index which could be used to compare health promotion support provided within college environments. The audit methodology, which included protocols and data collection instruments (Appendices A, B, C, and D, pages 51, 89, 109, and 116), was developed by the multistate team. A letter describing the research was used as needed by the researcher as she visited different sites to conduct the audits (Appendices E, page 124).

Steering Committee

The researcher's thesis committee served in the role of a steering committee for the project. They guided the selection of eating facilities to be audited and confirmed the

site for assessing recreational services. This committee was comprised of Dr. Susan Sullivan, Dr. Eric Gallandt, Dr. Mark Haggerty, the researcher and her advisor, Dr. Adrienne White, who is a multi-state team member familiar with the audit instruments and who has tested them on the college campus. Figure 1 is a campus map that was used by the research team to identify the buildings used to assess the snack and beverage vending. The decision was based on the multistate criteria to use a recreation facility, student union, an office building, five academic buildings, and two residence halls with the most traffic.

Figure 1: Campus Map¹



¹ ○ = vending buildings, △ = dining establishments, □ = recreation facility

Training and Inter-rater Reliability

The researcher was trained for all phases of data collection and two other undergraduates were trained to assist with data collection. Training included review of the audit materials and participation in conference call training sessions conducted by researchers at Syracuse University, where the lead researcher for the project was employed.

Before assessment data were collected, the researcher and assistants practiced using the instruments in areas that were not being used for data collection. Inter-rater reliability was conducted to verify consistency between the data collectors. Inter-rater reliability was to be 80% or greater, in order for data collection to commence. Inter-rater reliability was computed to be greater than 90% for vending assessment, 90% for restaurant assessment and on-campus dining, and 100% for campus recreation.

Study Protocol and Instruments

The audit was conducted using Qualtrics, an online survey software program. To conduct the assessments the researcher downloaded hard copies for use in the field and then completed the online instrument using the data collected. The data were combined with that of other universities in the multistate research project and were available to the researcher as Excel files. The instruments for assessing dining, vending and recreation facilities are described below.

Vending Assessment

The Healthfulness Vending Evaluation for Nutrient-Density (VENDING) Audit was used to evaluate the nutrition environment of vending machines (snack, beverages, and prepared foods) based on nutrient density healthfulness scores and the availability of

environmental supports for making healthy vending decisions. In table 1 are the ten buildings identified by the researcher as characteristic of the campus for auditing purposes based on the multi-state project criteria for building selection. They were: the student union, a recreation facility, five academic buildings, one office building, and two residence halls.

Table 1: Types and Names of Buildings Selected for Vending Assessment

Building Type	Name
Student Union	Memorial Union
Residence Halls	Gannet Hall
	Hart Hall
Academic Buildings	Class of 1944 Hall
	Barrows Hall
	Deering Hall
	Donald P. Corbett Hall
	Little Hall
Recreation Facility	Memorial Gym
Office Building	Alumni Hall

One snack and one beverage machine per building were selected to assess the overall healthfulness of the vending environment. Machines were accessed for quantity, accessibility, price, product promotion, and health density of the items that were displayed first in each slot.

Quantity was assessed by using the Snack Vending Assessment Quick List (Appendix A.1, page 52) and the Beverage Vending Assessment Quick List (Appendix A.2, page 56). These two quick lists were Excel files provided by the multi-state project. The items in each vending machine were registered by the researcher in the score column. For example, if a 2.4 oz. Kit Kat bar was in one of the slots the researcher entered a 1 in the “# in machine column” if there were two rows of 2.4 oz. Kit Kat bars the researcher entered a 2.

After completing the quick lists for the ten snack and ten beverage machines, totals for snacks and beverages were computed automatically by equations in the Excel file for the following items:

- total number of items in machines
- total number of healthful items
- number of different healthful items
- percentage of healthful snacks (total sum of healthful items / total number of snacks x 100)
- percentage of variety of healthful snacks (count of healthful items/ sum of healthful items x 100)
- total healthy dense machine snack score
- average healthy dense machine snack score.

Criteria for determining healthfulness of the vending environment are shown in Appendix A.3, page 60 and include accessibility, pricing, product promotion, and health density of snacks and beverages. Using a hard copy of an online survey (Appendix A.3, page 60), the researcher determined the overall accessibility, pricing, and product promotion of snacks and beverages using the scoring in Appendix A.3, page 60. Scores for healthfulness were computed for each building and included one snack and one beverage machine: scores could range from a low of 5 to a high of 19 points. For example, a vending environment by building, which included one snack and one beverage machine could receive a score of 10 out of the possible 19 points based on the following:

- an accessibility score of 1 for items not being appropriately accessible
- a pricing score of 2 for healthful and unhealthful items being equally priced
- a product promotion score of 3 for negative promotion (nutrition information, logos, green eating promotion)
- mean health density score of 3 for snacks and 1 for beverages were (always automatically) computed from quick lists

Dining Assessment

The Full Restaurant Evaluation Supporting a Healthy (FRESH) Dining Environment Audit was used to assess the on- and off-campus eating environment (Appendix A.4, page 63). Rather than using a nutrient analysis perspective evaluations were made on the food and preparation descriptions to determine healthfulness of menu items. The availability and extensiveness of other supports for making healthy dining decisions was also considered. Overall accessibility, menu offerings, menu review, signage, pricing, sustainability/green eating, and source of nutrition information were included in the audit. To collect data, online information was used and site visits with a hard copy of the online survey were conducted during non-rush lunch or dinner hours. In scoring the criteria, a score of 1 indicated the least healthful and 5 the most healthful with 0 being not applicable. There were 30 items assessed for a total of 150 possible points. For example, one question asked was: “How many distinct lean meat options are available?,” with responses ranging from a low of 1-2 options to a high of ≥ 7 options.

In table 2 are the two dining facilities on-campus selected by the steering committee for the assessment. In table 3 are the names of the off-campus restaurants assessed. In Appendix A.4, page 63 are the criteria for determining the healthfulness of dining facilities.

Table 2: Types and Names of On-campus Dining Facilities for Assessment

Building Type	Name
Student Union	Memorial Union Bear’s Den
Dining Hall	Wells Central

Table 3: Types and Names of Restaurants Selected for Assessment

Restaurant Type	Name
Fast Food	Family Dog
	Subway
	Tim Horton's
Sit-Down	Margarita's
	Pat's Pizza
	Woodman's Bar and Grill
Delivery	Thai Kitchen

Recreation Assessment

The Physical Activity Campus Environmental Supports (PACES) Audit was used to evaluate the recreation facilities and programs and the availability and extensiveness of the environmental physical activity supports (Appendix A.5, page 76). In table 4 are the types and names of the recreation facilities assessed. Data on the facility, staff, equipment, and amenities were collected during site visits to the recreation facilities as well as from the fitness center managers. In scoring the criteria, a score of 1 was the lowest and 5 the highest with 0 being not applicable. The amenities that the recreation facility offered had 10 being the highest possible score instead of 5. There were 16 items assessed for a high score of 85 points. For example, one question asked was “When was the facility built?,” with responses ranging from a low of built > 15 years to a high of built <1 year ago.

An overall campus assessment of the recreation environment focused on accessibility, types and adequacy of outdoor and indoor facilities, health related offerings, and the use of social media. In scoring the criteria, a score of 1 was the lowest and 5 the highest with 0 being not applicable. There were 13 items assessed for a total 65 possible points. For example, one question asked: “How far away was the closest walking/biking

trail from the center of campus?,” with responses ranging from a low of no walking trail available to a high of <1/4 mile from center of campus.

Table 4: Types and Names of the Recreation Facilities

Recreation Type	Name
Main Recreation Facilities	New Balance Student Recreation Center
	Old Town-Orono YMCA
Secondary Facilities	Orchard Trails Community Center
	The Grove Fitness Center

Data Analysis

All data were entered into Qualtrics, an online survey software program, for analysis by Syracuse University researchers. The data were returned to the researcher in an Excel format and used to present findings in tabular and graphic formats. Descriptive statistics were generated from the researcher’s hard-copy files.

Results

The following are the results from the vending, dining, and recreation assessment conducted on and around the University of Maine campus over three phases from February through September, 2014.

Vending Assessment

Overall, the accessibility was appropriate for all ten buildings assessed, based on the definition of appropriately accessible being $\leq 25\%$ of the machine slots being empty. For the pricing assessment the healthful and unhealthful snack and beverage items were equally priced. For assessing product promotion, most of the buildings (n=8) scored 3 out of 9 points. Little Hall and the Memorial Gym received scores of 5 in product promotion due to the vending distribution being Dasani Water machines.

Table 5 shows assessment scores of the individual ten. The health density snack mean score was 60% while the beverage health density mean score was 35%.

Table 5: Characterization of Snack and Beverage Vending Options by Healthful Scoring Criteria¹

Name of Building	Health Density Snack Mean Score ²	Health Snack Percentage ³	Health Snack Variety Percentage ⁴	Health Density Beverage Mean Score ⁵	Health Beverage Percentage ³	Health Beverage Variety Percentage ⁴
Memorial Union	3.0	11%	50.0%	0.5	20%	17%
Gannet Hall	3.0	19%	40%	1.0	34%	22%
Hart Hall	3.0	15%	50%	0.5	11%	100%
Class of 1944 Hall	3.0	18%	33%	0.5	17%	50%
Barrows Hall	3.0	21%	29%	0.5	8%	100%
Deering Hall	3.0	14%	50%	1.0	17%	50%
Donald P. Corbett Hall	3.0	13%	50%	0.5	17%	50%
Little Hall	3.0	17%	33%	0.5	22%	20%
Memorial Gym	3.0	15%	40%	1	19%	33%
Alumni Hall	3.0	24%	33%	1	14%	100%
Mean	3.0 or 60%	17%	41%	0.70 or 35%	18%	54%

¹See Appendices A.1 and A.2, pages 52 and 56 for scoring

²Health density snack average score range from 5=healthy or 0=unhealthy.

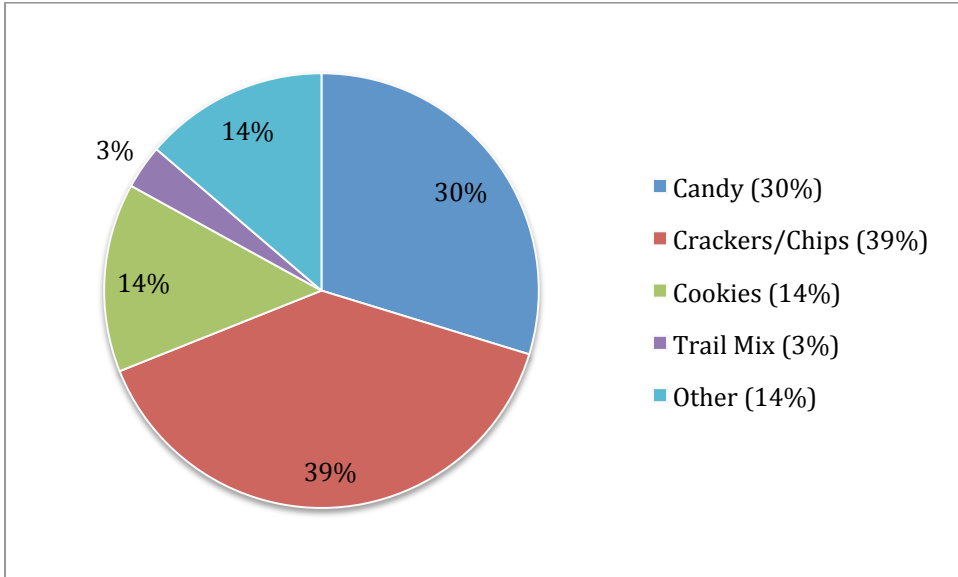
³Health snack and beverage percentage score range from 100%=all healthy options or 0%=no healthy options.

⁴Health snack and beverage variety percentage score range from 100%=a lot of variety of healthy options or 0%=no variety of healthy vending options.

⁵Health density beverage average score range from 2=healthy or 0=unhealthy.

Based on an overview of the vending environment, most of the snacks were candy, crackers and chips (Figure 2). Most of the beverages were regular soda, diet soda, or water (Figure 3).

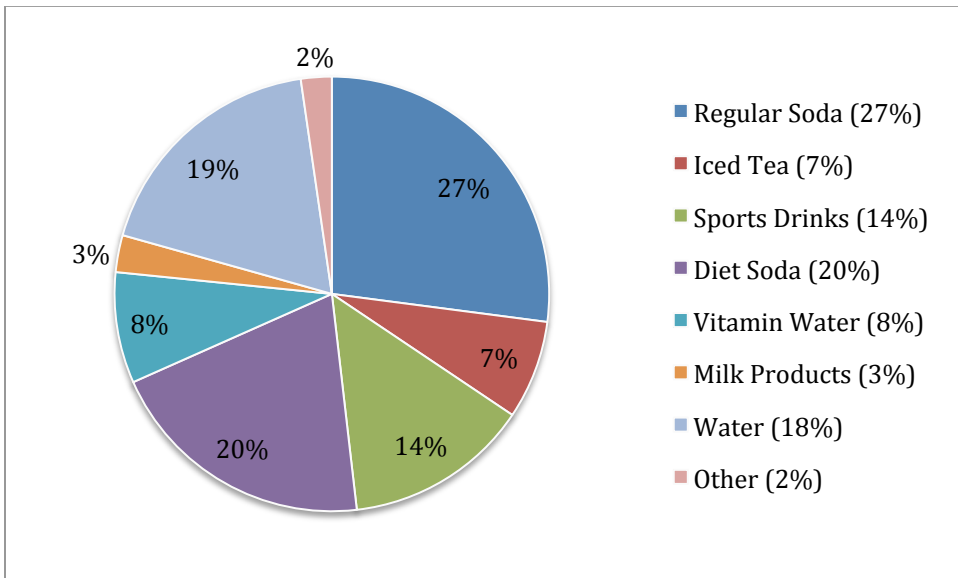
Figure 2: Overall Snack Distribution Options of the Vending Machines^{1,2}



¹See Appendix A.1, page 52 for scoring.

²Examples of other = fruit snacks, Danish, and beef jerky.

Figure 3: Overall Beverage Distribution Options of the Vending Machines^{1,2,3}



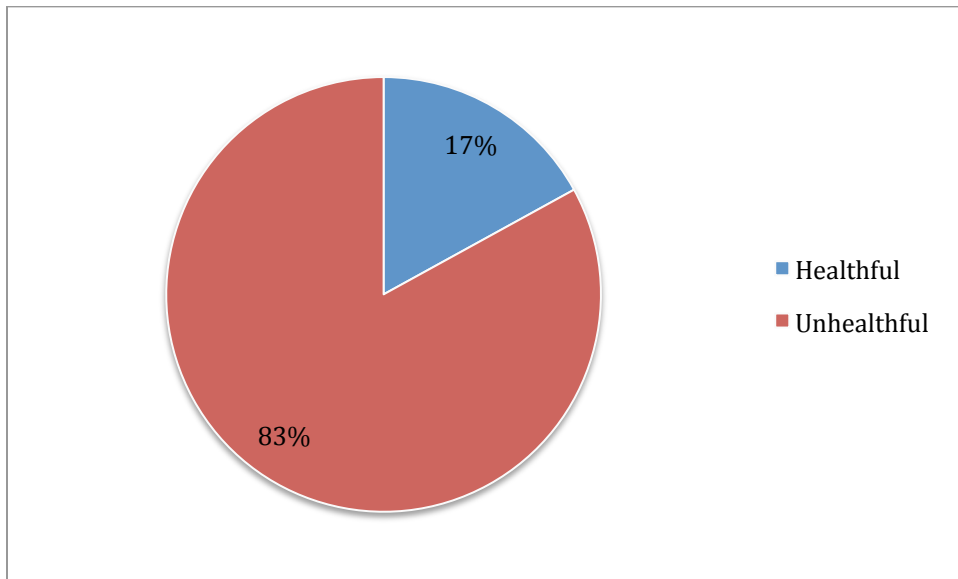
¹ Appendix A.2, page 56 for scoring.

³Examples of other=Fuze fruit flavored drinks

Based on the audit of ten buildings, overall 83% of snacks across vending machines were scored as unhealthy and 17% of snacks were scored as healthful (Figure

4). The snacks that met the guidelines for healthful snacks did so because the overall serving size was smaller than the traditional size. The pricing for healthful options was the same as the unhealthy options.

Figure 4: Overall Mean Percentage of Healthful vs. Unhealthful Snacks^{1,2}

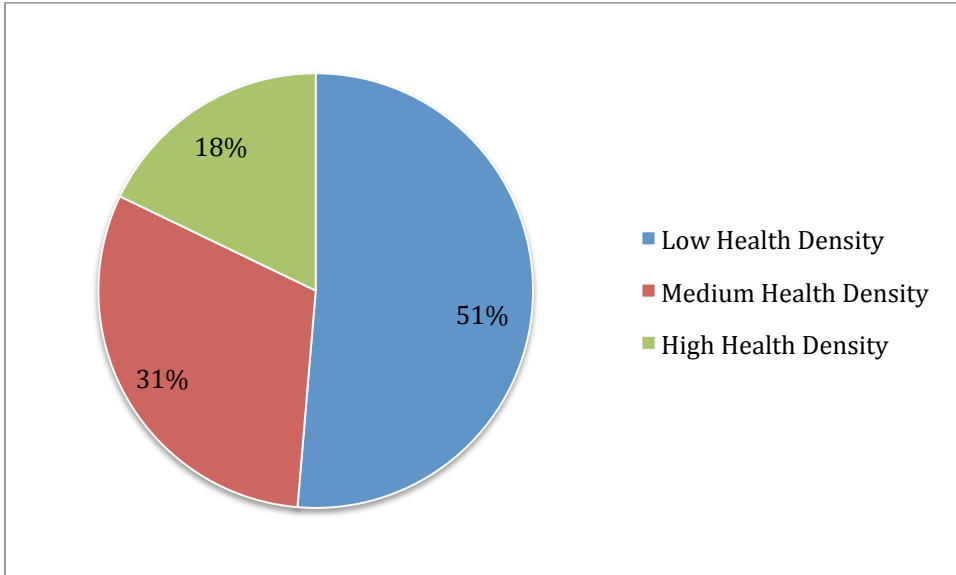


¹See Appendix A.1, page 52 for scoring

²Mean taken from the percentage of healthful vs. unhealthful snacks based on scores from ten vending machines.

Based on the audit of ten cold beverage machines in ten buildings, there were from 76-92% of beverages across the vending machines scored as unhealthy and 8-24% of beverages scored as healthy. Of the beverage machine options, 51% were low health density, 31% were medium health density, and 18% were high health density (Figure 5). The beverages that were low health density were regular sodas, iced tea, sports drinks, and milk products. The beverages that were medium health density were diet sodas, vitamin water, and one Fuze[®] flavored fruit drink (other). The beverages that were high health density were plain water products.

Figure 5: Beverage Vending Contents by Health Density Percent^{1,2}



¹See Appendix A.2, page 56 for scoring.

²Percents based on calorie guidelines

Results of the vending assessment are presented in Table 6 and in Figure 6, for the comparison of the vending buildings. Based on the score ranges of 5-19, with 5 meeting the least criteria and 19 meeting the most criteria, each building had similar accessibility, pricing, and health density of snacks and beverages. Product promotion was greater in the Memorial Gym and Little Hall because of the Dasani[®] water machines.

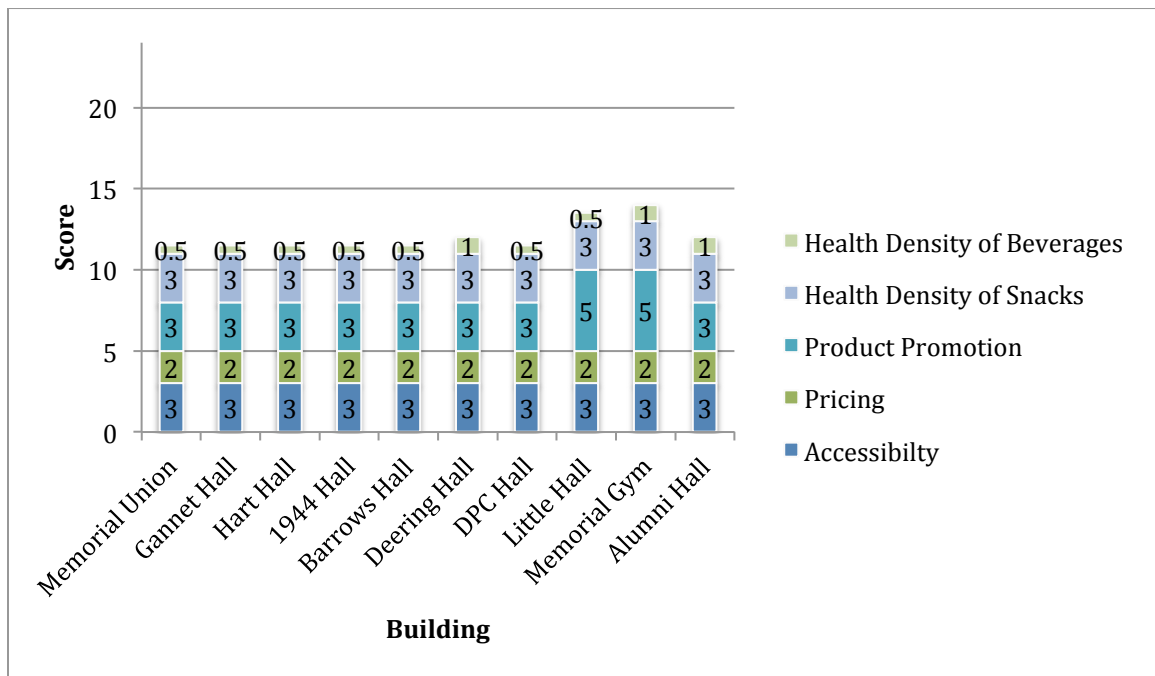
Table 6: Assessment Score of Vending Buildings¹

Vending Building	Score ²
Memorial Gym	14
Little Hall	13.5
Alumni Hall	12
Deering Hall	12
Barrows Hall	11.5
1944 Hall	11.5
Hart Hall	11.5
Gannet Hall	11.5
Memorial Union	11.5

¹See Appendix A.3, page 60 for scoring

²Possible score= 5-19 points based on accessibility, pricing, product promotion, and health density of snacks and beverages

Figure 6: Overall Assessment of Snack and Beverage Machines^{1,2,3}



¹See Appendix A.3, page 60 for scoring

²Possible score: 1-3 for accessibility, 1-3 for pricing, 3-9 for product promotion, 0-5 for health density of snacks, 0-2 for health density of beverages (total of 5-19 points)

³Graph is designed to be read from bottom to top.

Based on the audit, the vending environment is easily accessible to the population.

Most of the buildings (n=6, 60%) were open 12 hours daily. These were the academic

buildings and Alumni Hall. The Union and Memorial Gym were open 16 hours and 17 hours, respectively, and the two residential halls were open 24 hours to the residents. Each building assessed had one snack machine and one cold beverage machine, except for Memorial Gym which had two cold beverage machines (only one was assessed).

Dining Assessment

Results of the dining assessment on- and off-campus are presented in Table 7 and in Figure 7. Two on-campus and seven off-campus facilities were compared. Based on a possible range of 0 to 150 points, the mean overall dining score (n=9 establishments) was 80.8. The Memorial Union Bear's Den had the highest score of 108 (72%) and Margaritas the lowest score 64 (43%). The accessibility, menu offerings, menu review, signage, and source of nutrition information were similar at each on-campus establishment but differed within the off-campus establishments. The only difference seen in the on-campus establishments was the pricing and the sustainability/green eating. Wells Central is an all-you-care to eat establishment while the Union Bear's Den is a-la-carte pricing. The Union Bear's Den had disposable utensils, plates, and bowls. Both establishments had "Get Real Get Maine" signage supporting local products. The salad bars, only available at the on-campus establishments, had healthful choices including a variety of fruits and vegetables and salad dressings offered on the side. These options positively affected the dining scores at the on-campus establishments, yet nutrition information at point of purchase was absent at both on-and off-campus sit down establishments. Based on the menu review of both the Memorial Union Bear's Den and Wells Central, healthful options were encouraged by the DineSmart labeling and having neutral labeling descriptions.⁴¹

Scores for fast food restaurants (e.g., Subway) were lower than on-campus establishments but higher than sit-down restaurants. Fast food restaurants received points for having nutrition information at point of purchase as well as menu nutritional analysis online. They also had advertisements for healthful meal options in their menus and at point of purchase. Scores for sit down restaurants (e.g., Margaritas) were lower due to lack of nutrition information or labeling of healthful menu items. With no nutrition information available, it was harder to identify the healthful options. All off-campus establishments had equal pricing of healthful and unhealthy options. The sit down restaurants scored slightly higher in the sustainability/green eating component due to the reusable utensils, plates, bowls, and cups compared to the fast food restaurants and the take-out restaurant, Thai Kitchen. A lack of green eating/sustainability signage was common across all off-campus dining establishments.

Table 7: Assessment Score of Dining Establishments¹

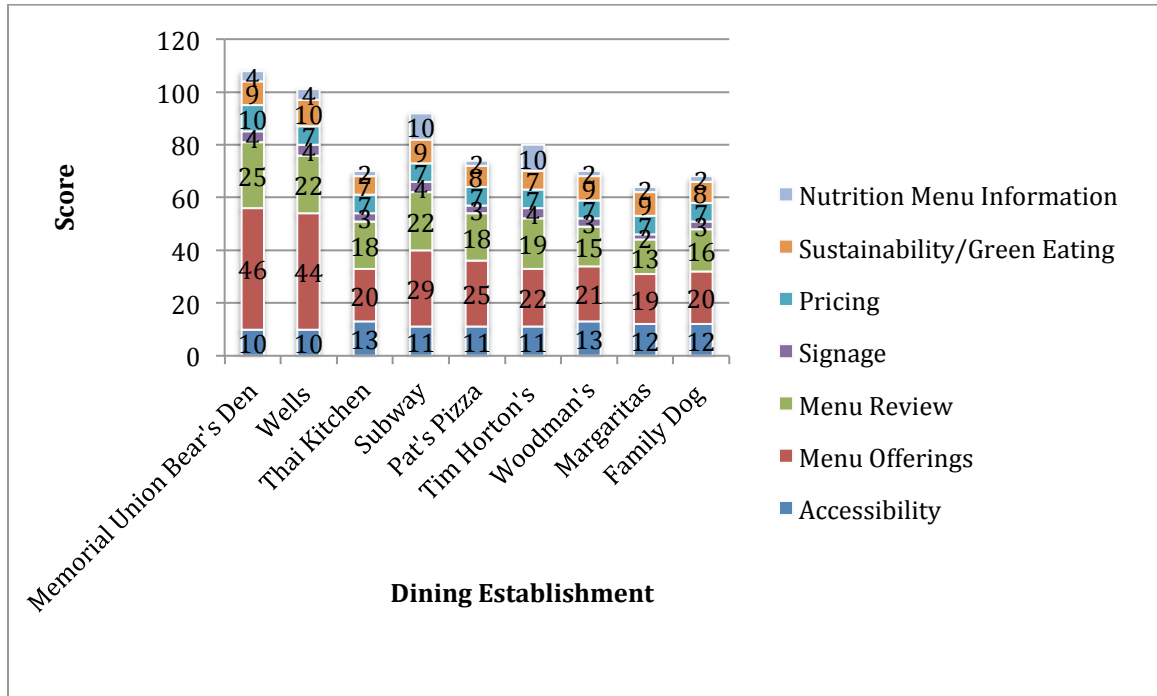
Dining Establishment	Score ²	Percent of Possible Score ³
Memorial Union Bear's Den	108	72%
Wells Central	101	67%
Subway	92	61%
Tim Horton's	80	53%
Pat's Pizza	74	49%
Thai Kitchen	70	47%
Woodman's	70	47%
Family Dog	68	45%
Margaritas	64	43%

¹See Appendix A.4, page 63 for scoring

²Possible score= 0-150 points based on accessibility, menu offerings, menu review, signage, pricing, sustainability/green eating, and menu nutrition information

³Determined by dividing score by total possible score.

Figure 7: Overall Assessment of Dining Establishments^{1,2,3}



¹See Appendix A.4, page 63 for scoring rubric

²Score range = 0-15 points for accessibility, 0-60 points for menu offerings, 0-30 points for menu review, 0-5 points for signage, 0-15 points for pricing, 0-15 points for sustainability/green eating, 0-10 for source of nutrition information (total of 0-150 points)

³Graph designed to be read from bottom to top.

Recreation Assessment

Based on general information collected about the recreational facilities, a majority of the consumers that use the New Balance Recreation Facility are students. According to data kept by the staff from May 2013 to May 2014, 337,167 people used the New Balance Recreation Facility and of those, 81% were students and 19% were non-students (i.e., employees, employees' families, community members). The New Balance Student Recreation center, the Grove, and Orchard Trails were less than ten years old and the facilities were in good condition with modern exercise and resistant equipment. The Old-Town Orono YMCA was older than 25 years old but had all the equipment and other

items assessed in the audit. Each facility was opened for less hours on the weekends than weekdays, except the Grove Fitness Center which was open 24 hours per day.

The total mean score for the recreation facilities (n=4) was 50.3 out of a possible 85 (see Appendix A.5, page 76). The New Balance Recreation Center had the highest score of 66 (78%) and the Orchard Trails fitness center scored 39 (46%) for the lowest scored recreation facility. Components of this score consisted of the amenities, equipment, staff, and facility.

At the main on-campus recreation facility (the New Balance Recreation Center), sports clubs, intramurals, and 14 out of the 24 fitness classes offered are free to members. The Recreation Center had a perfect score (10 points) for the staff accessibility and friendliness. The Recreation Center has fees for special fitness and recreation events and 10 fitness classes. The additional fee for some fitness classes, the lack of health-related offerings/education programs, and to lack of amenities (i.e., refillable water bottle station) were reasons the facility lost points. The overall University of Maine on-campus fitness environment scored a 57 out of a possible 65 points (88%) and was negatively impacted due to the lack of overall health-related classes offered during the week, lack of use of social media, and the additional fees for certain fitness classes and recreation center.

The Old Town-Orono YMCA score was impacted negatively on scoring for facility due to the older building, lack of aesthetics and a central stair feature. A central stair feature is one that is easily visible and accessible to the clients of the recreation facility. Similarly to the New Balance Recreation Center, the Old Town-Orono YMCA had a perfect score (10 points) for the staff accessibility and friendliness.

The Grove and Orchard Trails fitness centers received 0 points for staff because there were none present (not applicable). Additionally, the Grove and the Orchard Trails fitness centers' scores were negatively impacted due to having less equipment and amenities available.

In Table 8 are the overall scores of all recreation facilities. The overall assessment of the on- and off-campus recreation facilities is shown in Figure 8. Scores are based on a score range of 0-85, with 0 meaning not applicable and 85 meeting the most criteria.

Table 8: Assessment Score of Recreation Facilities¹

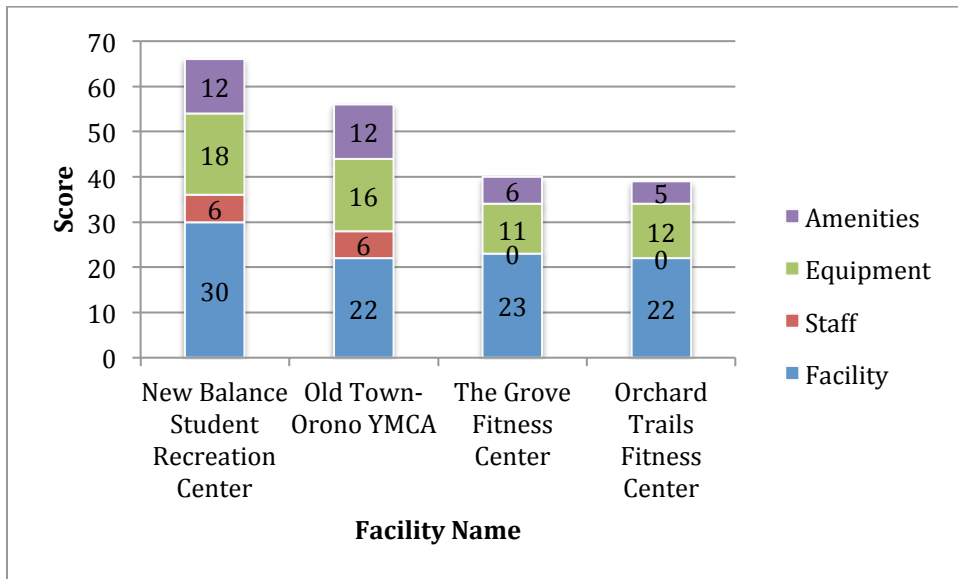
Facility Name	Score ²	Percent of Possible Score ³
New Balance Recreation Center	66	78%
Old Town-Orono YMCA	56	67%
The Grove Fitness Center	40	47%
Orchard Trails Fitness Center	39	46%

¹See Appendix A.5, page 76 for scoring.

²Possible score=0-85

³Determined by dividing score by total possible score.

Figure 8: Overall Assessment of the On and Off-campus Recreation Facilities^{1,2,3}



¹See Appendix A.5, page 76 for scoring.

² Possible score =0-85 points.

³Graph designed to be read from bottom to top.

Discussion

This audit was an evaluation of the University of Maine food and fitness environment to determine healthful supports for students and faculty that affect choices associated with obesity. Assessing vending, on-campus dining, restaurants, and the recreation facilities on-and off-campus provided the information to evaluate the environment. Based on the findings, the University of Maine campus provides better support for fitness than for healthful eating. The offerings and the cleanliness were important in the scoring of the fitness centers and the limited promotion for healthful eating in the vending machines, dining halls, and off-campus restaurants negatively affected the dining establishments. This is similar to Ouellete's 2008 findings.⁴²

Assessing the food and fitness environment provided insight to specific characteristics of the environment that with slight changes could impact students' and faculties' health and lifestyle habits. All of the snack and beverage machines assessed had a wide variety of choices but with limited healthful options. Modifications to improve the healthfulness of vending options needs to begin with increasing healthful items offered identifying these options through labeling. Typical college student eating behavior provides inadequate intake of fruits and vegetables but a high consumption of low-cost, processed foods.² The major source of processed foods on-campus is from the vending machines where there are misleading promotions or no nutrition labels to guide choices. For example, some of the beverage machines had vitamin waters that contain calorie dense sweeteners but the term "water" can mislead consumers into thinking they are calorie free. When comparing, the percentage for healthful options in the snack machines to unhealthy options (17% versus 83%) and in the beverage machines (16%

versus 84%), there has been no improvement from the 2008 environmental audit of the University of Maine campus.^{10, 42} In 2008, the University of Maine campus reported having 11% healthful snack options versus 89% of unhealthful snack options and having 29% healthful beverage options versus 71% unhealthful beverage options.⁴² As reported by Byrd-Bredbenner et al.,¹⁰ the University of Maine was comparable to other institutions in their offering of poor nutritional quality snacks and beverages in vending machines.

Increasing the percentage of healthful options in the vending machines would increase the chance that people would choose healthier options. Byrd-Bredbenner et al.¹⁰ suggested that a policy to increase the percentage of healthful options offered in the vending spaces or having the accessibility to a fresh fruit vending machine on-campus would decrease the consumer's likelihood of choosing the low nutrient and high energy dense snacks and would help to make the healthful choice the "easy" choice. If changes are to occur in the vending environment, the University must work with vending companies to increase the percent of healthful snack and beverage options in machines, Vending companies must also work with food labeling regulators such as the United States Department of Agriculture and the Food and Drug Administration to move nutrition facts to the front of the snack and beverage packaging. The ultimate goal of policies that should be implemented is to make healthful choices possible and easier.

The dining halls scores reflected the lack of nutrition information at point of purchase, besides the cereals and beverages, and signs or table tents to promote healthful choices. The University's "Dine Smart" labeling⁴¹ initiative has provided for labeling meals that meet certain nutrition criteria. This program has improved since 2008,⁴² since

originally “Dine Smart” had no specific criteria associated with it. Now the entrees have to be <600 calories, <24g of fat, no trans fats, <7g of saturated fat, and <800g of sodium. The entrees also must be prepared by grilling, broiling, baking, or steaming; contain only lean meats and proteins; and contain no heavy cream butter, trans fats, or hydrogenated oils. There is an additional emphasis on whole grains. This initiative helps students choose healthier options. Using table tents, posters and advertisements in the dining halls would be an easy additional way to promote the healthier options and encourage their selection.

Of the fast food restaurants assessed, Subway and Tim Horton’s scored higher overall due to the extent of the nutrition information at point of purchase and the advanced menu nutrition analysis online with the ability for consumers to adjust certain components of their meal to have an adequate calorie and nutrients analysis (e.g., subtract mayonnaise, add Italian dressing). The fast food restaurants assessed also scored higher in the menu offering and menu labeling categories because of the extent of their menus and the promotion of the healthy options on their menus. Subway and Tim Horton’s both offered a fruit option on their menus which most of the sit down restaurants lacked. Interestingly, Pat’s Pizza was the highest scoring sit down restaurant due to its healthy menu options and its overall extensive menu. All restaurants offered an extensive amount of healthful beverage choices but lacked healthful dessert options.

Similarly to the dining assessment by Horacek et al,²⁴ barriers to healthful eating were prevalent in both on-campus dining and off-campus restaurant establishments. The dining halls had a great variety of healthful options but also had great barrier to healthful eating, such as all-you-can-eat pricing which is common for campus dining halls across

the country.²⁴ Based on the University of Maine current findings and previous studies,^{15,24,42} our on-campus dining establishments had a higher variety of no sugar-added fruits and extensive healthful options on the salad bar. However, similar trends were seen in the barriers for healthy eating at the off-campus establishments where large portion sizes were offered and there was limited encouragement for healthful eating. Also of interest is that the fast food restaurants have many healthful offerings and signage encouraging healthful eating. Despite these improvements, there were no changes compared to Ouellette's⁴² environmental audit of the eating environment in 2008. Additional changes could help consumers choose healthier meals when eating out. Just by providing nutrition information at point of purchase, sit down restaurant owners could improve audit scores and provide increased support to consumers.

While most people know that they should eat healthfully, they often do not know how to make this happen. Hoy suggested that incorporating standard portion sizes of options, increasing convenience and visibility of healthful options, and enhancing taste expectations could be important ways to do just that.⁴³ Wansink⁴⁴ has conducted numerous studies on how the environment influences eating habits and preferences. Through his research he has found that the size of serving containers affects how much one eats and that simple changes could make differences in intake, especially over time. He found that using a short-wide glass compared with a tall-thin glass resulted in consumption of 30% more beverage.⁴⁴ Using a 16 ounce versus an 8 ounce bowl resulted in 44% more consumption of cereal both in adults and children.⁴⁵ Larger plates, bowls and utensils should be used to encourage people to consume more healthful foods such as fresh fruits and vegetables. Smaller serving utensils, plates, and bowls should be used

when food quantities should be limited. Additionally Wansink⁴⁶ found that in cafeterias, fruits and vegetables should be highlighted in a bowl by the registers or as walk in to the dining hall. He found that when whole fruit was in a bowl by the register the selection increased by more than double.⁴⁶ Showcasing fruits and vegetables in visible, convenient and high-traffic locations can promote students and staff to choose those options. In dining halls, this might mean placing fruits in a bowl on a table at eye level in the center of the dining hall, where people can see them and reach for them in passing. Conversely, for more unhealthful food choices, it may help to put them in locations that are not easy to see or reach.

Enhancing taste expectations is another effective way to promote consumption of healthful food and beverage items. Describing food as "tasting great" helps to prepare consumers for the dining experience.⁴⁷ For example, when vegetables were identified as "X-Ray Vision Carrots" or "California Blend Veggies" compared to just identified as the normal name selection and consumption rates almost doubled.⁴⁷

As indicated previously, the recreation environment supported healthful lifestyles overall. The New Balance Student Recreation and Fitness Center and Old Town-Orono YMCA received acceptable scores due to the variety of equipment, amenities, and fitness classes offered as well as the accessibility and friendliness of the staff. Having club sports, intramural sports, and a variety of equipment and amenities can be an encouragement to students to use the recreation facilities.⁴⁸ Additionally, the variety of recreation facilities available around the University of Maine and the proximity to residence halls and walking paths may help students stay more physically active overall.⁴⁸ Neither the New Balance Student Recreation Center nor the Old Town-Orono

YMCA offered initial fitness assessments for free. Once a semester, the New Balance Recreation Center offers a free fitness assessment including BMI, estimated body fat percentage, waist to hip measurements, and posture analysis. Some negative components to the recreation facilities were the lack of health-related programs and offerings during the week and the reduced hours of operations on the weekend, which is the time when students might like the flexibility of more open hours. The Grove and Orchard Trails fitness centers scored lower because they lacked a few amenities and types of equipment since they were smaller and not a main recreation facility.

Although the University currently has a wide variety of programs and equipment, in conducting the audit, there was nothing regarding physical activity as part of a student's program of study. In the mid 1960s, 90% of 4-year colleges included physical education as a graduation requirement, but today less than 40% have that requirement.⁴⁹

The audit was designed with a strong emphasis on nutrition labeling and menu labeling which was a major reason for the low scores of the overall food environment. Therefore the dining environment whether on-campus or off-campus could be improved with the addition of the menu labeling, signage with information about food offerings and promotion of healthful choices. Also a better promotion of locally grown food toward students and staff could increase their consumption and purchase. Currently, the University purchases >20% of local produce and beef. Signage could detail cost-effectiveness of purchasing locally grown foods. Having the technology to use Bear Bucks, the University's dining discount program at the university, and other dining funds at the farmers' markets would facilitate the ability and desire to shop there. For the dining environment, fast food restaurants scoring higher than the sit-down restaurants

emphasizes the importance of providing an environment with point of purchase information to allow the consumers to make knowledgeable decisions on healthful eating practices.

Overall, the University of Maine can implement broader changes to the environment such as a general education requirement for a nutrition class and implementing a mentoring program for students incorporated into college tuition to have a KPE major or certified personal trainer help them with their physical activity goals. This could be through the University's tutoring program where tutors are paid. Also having a dietitian available on-campus for students at a reduced or free price.

A limitation to this study was that the work was based on the use of instruments still in development. Findings from this work will be used in modifying the instruments for future studies. In the dining environment the audit did not have a place to include whole fruit smoothies, common in campus dining, as a fruit or healthy dessert option. Another limitation was that the recreation data was collected in the summer when student numbers are low. New items that were available in the fall of 2014 , after the assessment, were a phone app for the New Balance Student Recreation Center and free physical assessments offered on a limited basis. A new item for fall 2014 in the on-campus dining facilities was the local food listing poster outside of the Memorial Union. According to the University website,⁵⁰ local items incorporated into on-campus dining include 11,000 Maine beef hamburger patties, potatoes, apples, blueberries, and coffee. In addition, to get a more comprehensive picture of the campus, including the other parts of the audit would have been helpful. The parts of the audit that were not included in this study were convenience stores, walk and bike paths and policies.

In summary, the results of this audit were very similar to the environmental audit six years ago by Ouellette⁴² in that there is more support for physical activity than for healthful eating. Communicating the results of this audit to campus stakeholders could affect policies and influence improvements in the food and fitness environment. When the campus environment is supportive of healthful lifestyles, students and staff may be more likely to establish food and exercise habits that last a lifetime. This will lead to lower health care costs and better quality of life.

An important goal of health promotion on college campuses is to make it easier for people to make healthful choices. Based on the current research, the University of Maine on-campus environment is a place where healthful food and fitness choices are accessible to consumers. It is evident that efforts have been made since the 2008 audit. The scores for on-campus dining establishments were better than those for off-campus establishments, indicating that the barriers in the food environment come from the off-campus environment. Additionally, the vending environment on-campus definitely needs some improvement by offering healthier options (i.e., fresh fruit vending machines). These suggestions for change can be useful to administrators when setting policies to support the on-campus food and fitness environment. Advocacy for supportive restaurant environments could be something the Nutrition Club or other interested groups could take on as a project.

Is the University of Maine food and fitness environment health promoting? The off-campus food environment is where barriers were seen in supporting healthful lifestyles. The fast food restaurants had thorough nutrition analysis software and point of purchase nutrition information but lacked a variety of menu options and

sustainability/green eating promotion. For the sit-down restaurants, menu offerings, healthful item promotion and signage, and sustainability/green eating promotion were lacking. The off-campus food and fitness environment lacks important characteristics to be deemed health promoting.

The on-campus dining environment has an abundant variety of menu options to allow consumers to choose satisfying, delicious, and well-balanced meals. It is important to the dining employees that the University of Maine consumers are satisfied with their dining experience.⁴¹ The University of Maine on-campus fitness staff envision a community that is healthy, engaged, and physically fit and they desire to provide excellent programs and services.⁵¹ Providing the findings from this audit to both the food and fitness employees could result in even more supports for healthful lifestyles. Although there are areas for improvement, the current on-campus environment at the University of Maine is health promoting.

Conclusion

An audit of the University of Maine campus food and fitness environment was conducted to identify supports for healthful lifestyles and areas for improvement. Three assessments were conducted using instruments developed by a multistate research team studying campus environments to determine scores and percentages for the audit. A steering committee of researchers, staff, and undergraduate students identified high use academic buildings, dining establishments, and the recreation facilities.

For the ten buildings assessed in the vending assessment, the mean healthful snack percentage was 17% and the mean healthful beverage percentage was 18%. The majority of the snacks offered were crackers and chips, candies, and cookies not meeting the audit guidelines for healthful snacks. The majority of the beverages offered were regular soda and sports drinks not meeting the study guidelines for healthful beverages. For the overall vending environment, the machines were easily accessible to the campus community.

For the nine dining establishments assessed, scores ranged from 43%-72% with a mean of 54% of the total points possible. The on-campus dining establishments, the Memorial Union Bear's Den and Wells Central, scored 72% and 67% respectively receiving the highest scores. On-campus dining establishments lost points due to the lack of point of purchase nutrition information, labeling of menus, and lack of healthful eating signage.

For the four recreation facilities assessed, scores ranged from 46%-78% with a mean of 59% of the total points possible. The on-campus New Balance Recreation Center scored 78% receiving the highest score. The off-campus recreation facility at

Orchard Trails fitness center scored 46% for the lowest scored recreation facility. The overall on-campus fitness environment scored 88% based off the Physical Activity Campus Environmental Supports (PACES) audit. Some negative components to on-campus fitness environment were the lack of health-related offerings during the week and the reduced hours of operations on the weekend, which is the time when students might like the flexibility of more open hours.

The on-campus dining environment has an abundant variety of menu options to allow consumers to choose satisfying, delicious, and well-balanced meals. It is important to the dining employees that the University of Maine consumers are satisfied with their dining experience.⁴¹ The University of Maine on-campus fitness staff envision a community that is healthy, engaged, and physically fit and they desire to provide excellent programs and services.⁵¹ Providing the findings from this audit to both the food and fitness employees could result in even more supports for healthful lifestyles.

The off-campus food environment is where barriers were seen in supporting healthful lifestyles. The fast food restaurants had thorough nutrition analysis software and point of purchase nutrition information but lacked a variety of menu options and sustainability/green eating promotion. For the sit-down restaurants, menu offerings, healthful item promotion and signage, and sustainability/green eating promotion were lacking.

Is the University of Maine food and fitness environment health promoting? Although there are areas for improvement, the current on-campus environment at the University of Maine is health promoting. The off-campus food and fitness environment lacks important characteristics to be deemed health promoting.

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Appendix A: Data Collection Instruments

A.1: Snack Vending Assessment Instrument Quick List

# in Machine	Score	Name and Flavor	Brand Name	Package Size (oz.)
	1	Kit Kat Bar	Hershey's	2.04
	1	Mini Sandwich Cremes Vanilla Cookies	Grandma's	3.71/4.1
	1	Oreo Cookies	Nabisco	2.4
	1	Shortbread Cookies (Blueberry or Raspberry)	Knotts Berry Farm	2.00/3.00
	1	Snickers	Mars	2.07
	1	Take 5	Hershey's	1.75
	1	Twix	Mars	2
	1	Other		
	2	3 Musketeers	Mars	2/2.13
	2	Baby Ruth	Nestle	2.1
	2	Butterfinger	Nestle	2.1
	2	Butterfinger Minis	Nestle	3.5
	2	Cheetos (Crunchy)	Frito Lay	2
	2	Chocolate Chip Cookies	Famous Amos	3
	2	Combos (Cheddar Cheese or Pizzeria Pretzel)	Mars	1.8
	2	Crunch Bar	Nestle	1.9
	2	Doritos (Cool Ranch, Four Cheese, or Nacho Cheese)	Frito Lay	1.75
	2	Fritos (Corn Chips or Honey BBQ or Spicy Jalapeno Twists)	Frito Lay	2/2.1
	2	Hershey's Milk Chocolate Candy Bar	Hershey's	1.55
	2	Kit Kat (Extra Crispy)	Hershey's	1.61
	2	Lorna Doone Shortbread Cookie	Nabisco	1.5
	2	M & M's (Plain or Peanut Butter)	Hershey's	1.69/1.74
	2	Milky Way	Mars	2.05
	2	Nutter Butter Cookies	Nabisco	5.25
	2	Payday	Hershey's	2
	2	Reese's Fast Break Candy Bar	Hershey's	2
	2	Reese's Nutrageous	Hershey's	1.8

	2	Reese's Peanut Butter Cups	Hershey's	2.1
	2	Reese's Pieces	Hershey's	1.53
	2	Twizzlers (Original)	Hershey's	2.5
	2	Vanilla Sandwich Cookies	Grandma's	3.71
	2	Zoo Animal Crackers	Austin's	1
	2	Other		
	3	100 Grand Bar	Nestle	1.5
	3	Almond Joy	Hershey's	2
	3	Cheez It Crackers (Baked White Cheddar)	Sunshine	3
	3	Cream Cheese Bagel	Bagel Time	4.6
	3	Doritos (Buffalo Ranch or Nacho Cheese)	Frito Lay	1.38
	3	Duplex Cremes Cookies	Uncle Al's	5
	3	Friday's Potato Skins (Bacon Cheddar)	TGI Friday's	1.95
	3	Gummy Bears or Worms (Regular or Sour)	Sconza	4
	3	Ham and Swiss Cheese Sandwich	Outtakes	4.5
	3	Hard Candy	Jolly Rancher	3
	3	Junior Mints	Tootsie Roll	4
	3	M & M's (Peanut)	Hershey's	1.74
	3	Poptarts (Brown Sugar)	Kellogg's	3.52/3.67
	3	Pretzels (Plain)	Snyder's Hanover	2.25
	3	Pringles (Original, Cheddar Cheese, or Sour Cream and Onion)	Pringles	1.41
	3	Reese's Pieces	Hershey's	3.5
	3	Snackwells Vanilla Cookie Sandwich	Nabisco	1.7
	3	Tootsie Roll Twin Bar Pack	Tootsie Roll	2
	3	White Cheddar Popcorn	Smart Food	1
	3	Other		
	4	Baked Doritos (Nacho)	Frito Lay	1.125/1.38/1.75
	4	Beef Jerky (Teriyaki Flavor)	Trail's Best	1
	4	Cheez It Crackers (Baked Cheese)	Sunshine	3
	4	Chocolate Chip Cookies	Famous	2

			Amos	
	4	Chuckles Jelly Candy	Chuckles	2
	4	Friday's Potato Skins (Bacon Cheddar)	TGI Friday's	1
	4	Fruit Snacks – Fat Free	Welch's	2.25
	4	Gardetto's Original Snack Mix	General Mills	1.6
	4	Good 'n Plenty Licorice Candy	Hershey's	1.8
	4	Lays Potato Chips (Classic)	Frito Lay	1.5
	4	Payday	Hershey's	2.4
	4	Peanut Butter and Cheese Crackers	Frito Lay	1.38
	4	Peanut Butter Crackers	Frito Lay	1.38
	4	Peppermint Patties	York	1.43
	4	Poptarts (Frosted Cherry or Frosted Strawberry)	Kellogg's	3.52/3.67
	4	Potato Chips (Plain or Garlic and Herb)	Dirty	2
	4	Pretzels (Plain)	Rold Gold	1.5
	4	Pringles (Original, Cheddar Cheese, or Sour Cream and Onion)	Pringles	1.3
	4	Quaker Oatmeal Bar (Brown Sugar & Cinnamon)	Frito Lay	1.4
	4	Raisinets	Nestle	1.58
	4	Ruffles Potato Chips (Thick Cut Cheddar)	Frito Lay	1.5
	4	Sea Salt Chips	Miss Vickies	1.75
	4	Skittles	Mars	2.17
	4	Starburst	Mars	2.07
	4	Sunchips (French Onion, Garden Salsa, or Harvest Cheddar)	Frito Lay	2
	4	Swedish Fish	Swedish Fish	2
	4	Tuna Salad	Outtakes	4.5
	4	Veggie Chips	EatSmart or Flat Earth	1.25
	4	Veggie Crisps	Veggie Chips	1.25
	4	Wheat Thins (Original or Veggie Toasted Chips)	Nabisco	1.75

	4	Other		
	5	Baked Lays Potato Chips (Plain, BBQ, or Sour Cream Onion)	Frito Lay	1.125
	5	Bruschetta Chips	Jensen's Orchard	1
	5	Cashews (Salted)	Planters	1.5
	5	Chex Mix (Traditional, Sweet n Salty, Bold, or Pretzel Mix)	General Mills	1.75
	5	Coffee Cake	Drake's Hostess	1
	5	Granola Bar (Oats and Honey)	Nature Valley	1.5
	5	Granola Bar (Strawberry Yogurt)	Nature Valley	1.2
	5	Granola Bar (Sweet & Salty Nut Almond)	Nature Valley	1.2
	5	Low Sodium Ham Sandwich (12 Grain Bread)	Balanced Choices	6
	5	Muffin (Banana Nut, Blueberry, or Chocolate)	Daisy's	5.75
	5	Nutrigrain Bar (Blueberry or Strawberry)	Kellogg's	1.3
	5	Peanuts (Salted)	Planters	1.5
	5	Pita Chips (Salted or Parmesan Garlic)	Stacy's	1.375
	5	Popcorn (Unpopped Light Butter)	Act II	2.75
	5	Pretzels (Hard Sourdough)	Snyder's Hanover	1.65
	5	Pretzels (Honey Wheat)	Rold Gold	2
	5	Quaker Rice Cakes (Plain or Chocolate)	Frito Lay	0.91
	5	Quaker Rice Snack	Frito Lay	0.95
	5	Rice Krispies Treats	Kellogg's	1.7
	5	Trail Mix	Mr. Nature	2
	5	Trail Mix (Salty)	Lear's	2
	5	Trail Mix (Sweet n Salty Mix)	Kar's	2
	5	Trail Mix (Unsalted Energizer Mix)	Mr. Nature	2
	5	Trail Mix (Unsalted)	Mr. Nature	2

	5	Other		
	6	Banana Nut Bar	Odwalla	2
	6	Berries GoMega Bar	Odwalla	2
	6	Cashews (Roasted and Salted)	Kar's	1
	6	Corn Muffin	Daisy's	5.75
	6	Doritos (Cool Ranch)	Frito Lay	1
	6	Fruit 'n Yogurt Snacks	Welch's	1.9
	6	Granola Bar (Crunchy Peanut Butter)	Nature Valley	1.5
	6	Pita Chips (Cinnamon Sugar)	Stacy's	1.375
	6	Other		
	7	Apple (whole fruit)		
	7	Banana (whole fruit)		
	7	Orange (whole fruit)		
	7	Other		

0	Total # of Snacks in Machine
0	Total # Healthy Snacks (Sum \geq 5)
0	# Different Healthy Snacks (Count \geq 5)
0	Percentage Healthy Snacks $[(\text{Total Sum} \geq 5 / \text{Total \# Snacks}) \times 100]$
0	Percentage of Variety of Healthy Snacks $[(\text{Count} \geq 5 / \text{Sum} \geq 5) \times 100]$
0	Total Healthy Dense Machine Snack Score
0	Average Healthy Dense Machine Snack Score

≤ 200 Calories	$\leq 10\%$ DV Saturated Fat	0% Trans Fat	≤ 12.5 g Sugar	$\leq 10\%$ DV Sodium	$\geq 10\%$ DV Fiber	$\geq 10\%$ DV Calcium	$\geq 10\%$ DV Iron	$\geq 10\%$ Potassium	$\geq 10\%$ DV Vitamin C	$\geq 10\%$ DV Vitamin D	$\geq 10\%$ DV Vitamin E	Score
												0
												0
												0

A.2: Beverage Vending Assessment Quick List

	0	7 Up	7 Up	20
	0	Arnold Palmer	Arizona	20
	0	Barq's Root Beer	Coca-Cola	20
	0	Brisk Iced Tea (Any Flavor)	Lipton	12, 16 or 20
	0	Coke (Original or Cherry)	Coca-Cola	20
	0	Cream Soda (Vanilla)	A&W	20
	0	Double Shot Energy (Mocha)	Starbucks	15

	0	Dr. Pepper	Dr. Pepper	20
	0	Energy Drink (Any Flavor)	Big Red Jack or SoBe	16
	0	Fanta (Orange)	Coca-Cola	20
	0	Frappucino (Any Flavor)	Starbucks	9.5 or 13.7
	0	Fresca	Coca-Cola	12
	0	Full Throttle	Coca-Cola	16
	0	Gatorade (Any Flavor)	PepsiCo	20
	0	Ginger Ale	Seagram's	20
	0	Grape Soda	Crush	20
	0	Grapico	PepsiCo	12
	0	Iced Black Tea	Tazo	16
	0	Iced Green Tea	Tazo	16
	0	Lemonade	Tropicana, Minute Maid, or Country Time	20
	0	Lizard Lava	SoBe	20
	0	Mellow Yellow	Coca-Cola	20
	0	Monster Energy Drink (Lo Carb)	Monster	16
	0	Mountain Dew (Any Flavor)	PepsiCo	12 or 20
	0	Mountain Dew Amp (Any Flavor)	PepsiCo	16
	0	Moxie	PepsiCo	20
	0	Nestea	Coca-Cola	20
	0	Orange Soda	Crush	20
	0	Pepsi (Regular or Wild Cherry)	PepsiCo	12 or 20
	0	Pibb Xtra	Coca-Cola	12
	0	Pibb Zero	Coca-Cola	20
	0	Pink Lemonade	Country Time or Tropicana	20
	0	Powerade (Any Flavor)	Coca-Cola	20
	0	Pureleaf Tea (Peach or Raspberry)	Lipton	16
	0	Riptide Rush	PepsiCo	20
	0	Root Beer	A&W or Mug	20
	0	Schwepps Ginger Ale	PepsiCo	20
	0	Sierra Mist (Lemon Lime or Cranberry Splash)	PepsiCo	12 or 20
	0	Sprite	PepsiCo	20
	0	Squirt	Squirt	20

	0	Strawberry Melon Soda	Tropicana	20
	0	Sunkist (Any Flavor)	Sunkist	12 or 20
	0	Twister Orange Soda	Tropicana	20
	0	Vault	Coca-Cola	20
	0	Other		
	1	Arizona Lemonade (Light)	Arizona	20
	1	Black Tea (Unsweetened)	Lipton	16
	1	Chocolate Drink (YooHoo)	YooHoo	11
	1	Chocolate Milk (1%)	Babcock	8 or 16
	1	Citrus Punch	Sunny D	20
	1	Coke Zero	Coca-Cola	20
	1	Coke Zero (Vanilla)	Coca-Cola	12
	1	Cran-Grape or Cranberry Juice	OceanSpray	15.2
	1	Cranberry Juice Cocktail	OceanSpray	15.2
	1	Diet Coke	Coca-Cola	20
	1	Diet Dr. Pepper (Plain or Cherry Vanilla)	Dr. Pepper	20
	1	Diet Ginger Ale	Seagram's	20
	1	Diet Green Tea with Citrus	Lipton	20
	1	Diet Iced Tea (Lemon)	Lipton	20
	1	Diet Mountain Dew	PepsiCo	12
	1	Diet Pepsi (Plain or Wild Cherry)	PepsiCo	12 or 20
	1	Diet Pepsi Max	PepsiCo	20
	1	Diet Root Beer	A&W	20
	1	Diet Sierra Mist	PepsiCo	12
	1	Fanta Zero	Coca-Cola	20
	1	Gatorade G2 (Any Flavor)	PepsiCo	16 or 20
	1	Green Tea (Citrus or With Honey)	Lipton or SoBe	16 or 20
	1	Hawaiian Punch (Any Flavor)	Hawaiian Punch	20
	1	Iced Tea (Sweetened)	Arizona or Lipton	16 or 20
	1	Iced Tea (Unsweetened (Plain or Lemon)	Lipton	16
	1	Lemonade (Light)	Minute Maid	20
	1	Life Water (Any Flavor)	SoBe	20

	1	Orange Pineapple Juice	Welch's	15.2
	1	Orange Strawberry Banana Juice	Florida Natural	16
	1	Orangeade	Tropicana	20
	1	Powerade Zero (Any Flavor)	Coca-Cola	20
	1	Strawberry Kiwi Juice Cocktail	OceanSpray	15.2
	1	Vitamin Water (Any Flavor)	Coca-Cola	20
	1	Wild Berry Juice (non-100%)	Dole	15.2
	1	Other		
	2	100% Apple Juice	Any Brand	Any Size
	2	100% Cranberry Juice	Any Brand	Any Size
	2	100% Grape Juice	Any Brand	Any Size
	2	100% Orange Juice	Any Brand	Any Size
	2	100% Pineapple Peach Mango Juice	Any Brand	Any Size
	2	100% Ruby Red Grapefruit Juice	Any Brand	Any Size
	2	100% Strawberry Kiwi Juice	Any Brand	Any Size
	2	Aquafina (Plain Purified Water or Any Flavor Splash)	PepsiCo	20
	2	Dasani Flavored Water (Any Flavor)	Coca-Cola	16.9
	2	Dasani Water	Coca-Cola	20
	2	Jack's Water	Chippiwa	20
	2	Kiarburnn Water	Kiarburnn	20
	2	Milk (2% Milk)	Babcock	8
	2	Milk (Skim, Fat-free Reduced Fat 1%)	Any Brand	8 or 16
	2	Poland Springs Water	Poland Springs	20
	2	Propel Water (Any Flavor)	PepsiCo	20
	2	V8 Splash (Any Flavor)	V8	16 or 20
	2	V8 Vegetable Juice	V8	11.5
	2	Other		

0	Total # of Beverages in Machine
0	Total # Healthy Beverages (Sum of Score 2)
0	# Different Healthy Beverages (Count of Score 2)
#DIV/0!	Percentage Healthy Beverages [(Total Sum of 2/Total # Beverages x 100)]
#DIV/0!	Percentage of Variety of Healthy Beverages [(Count of 2/Sum of 2) x 100]
0	Total Healthy Dense Machine Beverage Score
#DIV/0!	Average Healthy Dense Machine Beverage Score

Score of 0		Score of 1				Score	
Sports drinks/life water/vitamin water (>50 calories per 8 fl. oz.)	Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (>10 calories per 8 fl. oz.)	Non-100% fruit or vegetable juice	Milk/flavored milk/non-dairy milk alternatives (>150 calories per 8 fl. oz.)	Sports drinks/life water/vitamin water (<50 calories per 8 fl. oz.)	Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (<10 calories per 8 fl. oz.)	Water/flavored water	100% fr vegetable

A.3: Criteria and Survey for Accessibility, Pricing, Product Promotion, Health Density of items

Criteria for Assessing the Vending Environment

Criteria	Scoring and Description
Accessibility	1= Not appropriately accessible ($\geq 50\%$ of vending machine slots are empty), 2= somewhat accessible (25-50% of machine slots are empty), 3= appropriately accessible ($\leq 25\%$ of the machine slots are empty)
Pricing	1= Healthy more expensive than unhealthy 2= Healthy and unhealthy equally priced 3= Healthy less expensive than unhealthy.
Product Promotion	3-9 ¹
Mean Health Density of Snacks ²	0-2=unhealthy snacks 3 or 4= healthy dense snack score 5=healthy snacks
Mean Health Density of Beverage	0=>50 calories per 8 fl. Oz. Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced teas (>10 calories per 8 fl. Oz) 1= Non-100% fruit or vegetable juices, milk/milk alternatives (>150 calories per 8

	<p>fl. Oz.), Sports drinks/life water/vitamin water (≤ 50 calories per 8 fl. oz.) Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (≤ 10 calories per 8 fl. oz.)</p> <p>2= Water/flavored water, 100% fruit or vegetable juice, Milk/flavored milk/non-dairy milk alternatives (≤ 150 calories per 8 fl. oz.)</p>
--	--

¹ Presence of nutrition information on vending machines and vending machine products, presence of product logos on vending machines, presence of green eating (local, organic, sustainable) health promotion information information about products in machines

² Calories: ≤ 200 calories per package, Saturated Fat: $\leq 10\%$ of DV (Daily Value), Trans Fat: 0% , Sugar: $\leq 12.5g$, Sodium: $\leq 10\%$ DV , Fiber: $\geq 10\%$ of the DV , Calcium: $\geq 10\%$ of DV, Iron: $\geq 10\%$ of DV, Potassium: $\geq 10\%$ of DV, Vitamin C, D, E: $\geq 10\%$ DV

Not appropriate if machine is on for $\geq 50\%$ of the school day.
Somewhat appropriate if machine is on for 25-50% of the school day.
Appropriate if machine is on for $\leq 25\%$ of the school day.

All Other:
Not appropriate if $\geq 50\%$ of machine items are empty by the end of the day (when building closes).
Somewhat appropriate if 25-50% of machine items are empty by the end of the day (when building closes).
Appropriate if $\leq 25\%$ of the machine items are empty by the end of the day (when building closes).

Not Appropriately Accessible Somewhat Accessible Appropriately Accessible

Product Price
Average prices of similar type/size healthy and unhealthy products in vending machines

Healthy more expensive than Unhealthy Healthy and Unhealthy equally priced Healthy less expensive than Unhealthy

Product Promotion

Presence of nutrition information on vending machine and vending machine products

No nutrition information General nutrition information on machines Specific nutrition information about products in machines

Product Promotion

Presence of product logos on vending machines

Specific/large product logos on front & side of machine	Healthy and unhealthy product logos on machine	Only healthy or No product logos anywhere on machine
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Product Promotion

Presence of green eating (local, organic, sustainable) health promotion information

No green eating promotion	General promotion of green eating on machine	Creative/original promotion of specific green eating products
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Average Healthy Dense Snack Score

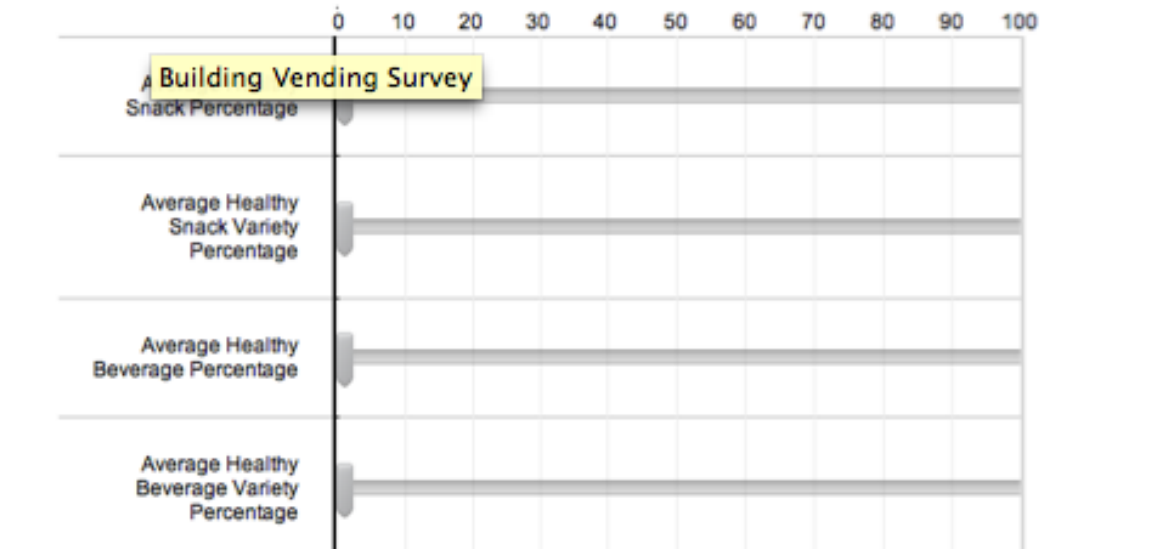
No Healthy Snacks		Mix of Primarily Unhealthy Snacks		Equal Mix of Unhealthy, Moderate, and Healthy Snacks		Mix of Mostly Healthy With Few Unhealthy Snacks		All Healthy Snacks
1	1.5	2	2.5	3	3.5	4	4.5	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Average Healthy Dense Beverage Score

No Healthy Beverages	Mix of Primarily Unhealthy Beverages	Equal Mix of Unhealthy, Moderate, and Healthy Beverages	Mix of Mostly Healthy Beverages With Few Unhealthy Beverages	All Healthy Beverages
0	0.5	1	1.5	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Healthy Product Availability

Track the percentages of "healthy" products available based on the information obtained in snack and beverage audits of individual machines.



A.4: Dining Assessment Criteria and the Full Restaurant Evaluation Supporting a Healthy (FRESH) Dining Environment Audit

Criteria for Assessing the On and Off-campus Dining Environment

Criteria	Scoring ¹	Description
Accessibility	0-15	Overall accessibility of venue (ie only accessible by car, in walking distance), distance from center of campus, parking available.
Menu offerings	0-60	Lean meat options, vegetarian entrée options, type of fruit available, vegetable side options, labeled whole grain options, healthy beverages, healthy desserts, fried foods, healthy cereal options, fresh vegetables on salad bar, quality of lettuce, extensiveness of healthy additions
Menu Review	0-30	Healthy and unhealthy descriptions on menu, how side dishes are included, substitutions available, menu labels, portion sizes of main entrees, how are salad dressings served.
Signage	0-5	Healthy and unhealthy signage (ie posters, advertisements, table signs)
Pricing	0-15	General pricing system (ie all you can eat buffet, items priced individually), price

		differences for healthy and unhealthy, pricing of items by weight.
Sustainability/Green Eating	0-15	Signs, labels, or information on website, plates/flatware, trays
Source of Nutrition Information	0-10	Nutrition information (ie provided online only, visible on site), Menu planning/nutrient analysis tool

¹Possible score range: 0-150.

Evaluator Name

Date Facility Evaluated (MM/DD/YYYY)?

Type of Audit

- Individual Data Collection
- Data Duplicate for Inter-Rater Reliability

State

Type of environment

Elementary school

Secondary school

College/university

Worksite

Community

Name of Organization (Worksite/University)?

Restaurant or dining establishment located on campus?

YES

NO

Type of Restaurant/ Dining Establishment

Fast food

Sit down restaurant

Dining hall/Cafeteria/Buffer

Delivery

Venue Organization

Free standing: Each station/restaurant has its own cash register

Dining Hall

Food court: Variety of restaurants or buffet that share cash registers and seating

Name of facility

Facility zip code

Facility zip code

Average number of hours open per day

Weekdays

Weekends

Time facility evaluated?

Was data entered at the facility?

Facility ID (eight digits: venue organization, type of facility, on-off campus, facility number)

Accessibility

How would you describe the accessibility of the venue?

Only accessible by car 1	2	Accessible via public transportation 3	4	Accessible within walking distance (10 minute walk or 2/3 mile radius) 5	Not Applicable (ie delivery)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Distance of facility from center of campus?

> 5.2 miles	3.9-5.1 miles	2.6-3.8 miles	1.3-2.5 miles	< 1.2 mile	Not Applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Parking Available

No parking lot specifically for this facility	Very limited parking in facility lot (permit only)	Street Parking or Deck Parking	Establishment has own parking lot/sufficient spaces	Drive thru	Not Applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Healthy Entrees

Which of the following most closely describes the menu at this establishment?

Specific description of food items that primarily	Specific description of food items that slightly	Neutral/general food description or equal, specific descriptions of healthy and unhealthy	Specific description of food items that slightly	Specific descriptions of food items that primarily
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

promotes unhealthy items	promotes unhealthy items	items	promotes healthy items	promotes healthy items
1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How Many Distinct Lean Meat Options are Available?

Healthy Descriptors:

- Baked / broiled / roasted
- Grilled / smoked
- Sautéed / stir-fried
- Steamed / boiled / poached
- Labeled Lean or Extra lean
- No breading or sauce
- Not fried

And these types of meat:

- Skinless poultry (chicken, turkey)
- Lamb / beef / pork: tender or sirloin only
- Wild game: venison, bison, rabbit, duck, emu, goat, ostrich
- Fish / seafood
- Deli meat (poultry, ham and/or roast beef) = one option total

None available	1-2 options	3-4 options	5-6 options	≥7 options	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How many vegetarian entree options are available?

- Labeled or in a separate section
- "Vegetarian, Veggie, Vegan, or Meatless"
- Entree may contain no meat/poultry/fish
- Vegetarian might have eggs and/or cheese
- Vegan (no dairy, egg or any animal products)
- Ingredients may include tempeh, tofu, soy
- Smart Dog, Veggie Burgers

Healthy descriptors:

- Baked / broiled / roasted
- Grilled / smoked
- Sautéed / stir-fried
- Steamed / boiled / poached
- Lean

None	1-2 options	3-4 options	5-6 options	≥7 options	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Healthy Side Dishes

How are side dishes included with the meal?

Entrees automatically come with a side that cannot be substituted		Entrees automatically come with a side that can be substituted upon request		Sides are selected by the consumer from a list (side is not automatically selected/offered)	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What type of fruit is available?

None	Only processed (added sugars or syrup) or dried fruits available	One fresh fruit available with no added sugars or syrup	Two fresh fruits available with no added sugars or syrups	> 3 Fresh fruits available with no added sugars or syrup	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What are the vegetable side options?

Healthy descriptors:

- Fresh
- Baked / Broiled / Roasted
- Grilled / Steamed
- Sautéed / Stir-fried
- Light or no mayo / sauce
- Broth-based
- Labeled low-fat

Includes:

- Hot vegetables
- Vegetable soups
- Prepared salads
- Vegetable toppings for pizza = one option

Do not include salad bar offerings in this category.

None	1-2 options	3-4 options	5-6 options	≥7 options	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Labeled Whole Grain options

Bread products: bagels, bread, English muffins, count as one option. (Maximum 2 if extensive variety)

Count each unique option available in main or side dishes:

- Amaranth / barley / buckwheat
- Millet / oats / quinoa
- Teff / triticale / sorghum
- Brown or wild rice
- Wheat

(You may also find these in pancakes, pizza, or tortillas.)

None 1	1-2 options 2	3-4 options 3	5-6 options 4	≥7 options 5	Not Applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How many low sugar, whole grain/high fiber cereal options are available?

Examples include:

- Cheerios
- Puffed wheat
- Shredded wheat
- Bran
- Oatmeal

None 1	1 options 2	2 options 3	3 options 4	≥4 options 5	Not applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Count the number of fresh vegetables on the salad bar.

- Not canned vegetables or contained in recipes.

None 1	1-4 2	5-8 3	9-12 4	≥13 5	Not applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The lettuce on the salad bar was fresh and appealing.

Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5	Not Applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How extensive are the healthy additions to the vegetables on the Salad Bar?

Healthy items include:

- Fruit with no added sauce/sugar
- Low-fat dairy (yogurt, cottage cheese)
- Lean meats (tuna)
- Meat alternatives (legumes, beans, tofu)
- Labeled Light or no mayo/dressing prepared salads
- Low & non-fat salad dressings

None 1	1-4 2	5-8 3	9-12 4	≥13 5	Not applicable
-----------	----------	----------	-----------	----------	----------------

How are high fat condiments / salad dressings served?

Placed automatically on entree, side dish, or salad	More items are served on the entree, etc.	Served on the side by request	More items served on the side or self- served	Self-served or served on the side automatically	Not applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Healthy Beverages

How many healthy beverage categories are offered?

Examples:

- Free water available
- Plain bottled water
- Carbonated, seltzer, or flavored water
- Non-fat or 1% milk
- Non-fat or 1% flavored milk
- Low fat milk alternatives (soy/rice/almond)
- 100% fruit or vegetable juice
- Unsweetened tea or coffee
- Do not include alcohol

None	1-2 options	3-4 options	5-6 options	≥7 options	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Healthy Desserts

How many healthy dessert categories (not individual flavors) are offered?

Examples:

- Fresh fruit
- Soft serve frozen yogurt
- Low-fat ice cream
- Low-fat ice cream novelties
- Low-fat non-dairy desserts
- Sherbet
- Angel food cake
- Low fat cookies/cakes
- Mini dessert sizes

None	1 option	2 options	3 options	≥4 options	Not Applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Nutrition Information

Nutrition Information

No information provided	Information provided online only	Information not visible: provided in take-away sources, by request, or via scannable link/kiosk	Information visible at site: provided at point of purchase, menu, or board	Information provided on site and at least one additional source	Not applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Menu planning / nutrient analysis tools

No menu planning tools available	Only static nutrition information for each menu item available	Simple nutrient analysis tool to show total fat or calories for a meal choice	Can adjust serving sizes to adjust contribution of items selected to overall analysis	Dynamic menu nutrient analysis / menu tool; allows you to delete sauces or add more nutrients in designing a meal	Not applicable
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Substitutions: Review website and ask server/food preparer if substitutions are available.

None		Able to make substitutions for an extra fee	Able to make substitutions free of charge if inquired	Ability to make any substitutions is advertised or promoted and free of charge
1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Healthy Eating Facilitators and Barriers

Signage: posters / art work, printed napkins, advertisements, table signs

Healthy promotes:

- Dietary guidelines
- 5-a-day, low-fat
- Nutrient dense, moderation, balance, variety etc.
- Meatless Monday

Unhealthy promotes:

- All you can eat / overeating
- Meal deals / \$5 footlong
- Supersize
- High fat / high calorie options

	Majority unhealthy signage that encourages overeating and/or unhealthy food choices with limited healthy signage encouraging healthy eating behaviors and/or healthy food choices	Neutral, equal, or no unhealthy signage and healthy signage	Majority healthy signage that encourages healthy eating behaviors and/or healthy food choices with limited unhealthy signage that encourages overeating and/or unhealthy food choices	All healthy signage that encourages healthy eating behaviors and/or healthy food choices	Not Applicable
All unhealthy signage that encourages overeating and/or unhealthy food choices					
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Board / Menu labeling

Healthy labels might include:

- Weight Watchers
- Low calorie / low fat / light
- Healthier choices
- Calorie saving choices
- Guiding Stars, American Heart Association

Unhealthy labels advocate:

- Overeating
- Adding excessive fat
- Lots of free side dishes

	Majority unhealthy labels that encourage overeating and/or unhealthy food choices with limited healthy labels encouraging healthy eating behaviors and/or healthy food choices	Neutral, equal, or no labels to encourage unhealthy or healthy choices	Majority healthy labels that encourage healthy eating behaviors and/or healthy food choices with limited unhealthy labels that encourage overeating and/or unhealthy food choices	All healthy labels that encourage healthy eating behaviors and/or healthy food choices	Not Applicable
All unhealthy labels that encourage overeating and/or unhealthy food choices					
1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Portion Sizes of main entrees

Super-size, extra-large, or larger size portions available	Only one portion size option available	Small, medium, or large portion size options	Option to share portions available (ie "Dinner for Two")	Option for smaller size portions available
--	--	--	--	--

Fried Food main & side menu options

Unhealthy descriptors:

- Fried / pan fried / deep fried
- Battered / crispy

≥7 options 1	5-6 options 2	3-4 options 3	1-2 options 4	None 5	Not Applicable
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**General facility pricing system
(Check all that apply)**

All-you can eat buffet or one card swipe for all you can eat 1	Combo meals (add a side or drink at a reduced cost than items would total individually) 2	One meal card swipe for one meal 3	Items are priced individually 4	Items priced by weight 5	Not Applicable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Price differences for individually-priced meals or items

Healthy options cost more than unhealthy options and additional costs to make healthy substitutions 1	Healthy options cost more than unhealthy options and no additional costs to make healthy substitutions 2	Healthy options and unhealthy options equally priced 3	Healthy options cost less than unhealthy options with additional costs to make healthy substitutions 4	Healthy options cost less than unhealthy options with no additional costs to make healthy substitutions 5	Not Applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Price differences for individually-priced meals or items

Healthy options cost more than unhealthy options and additional costs to make healthy substitutions

1



Healthy options cost more than unhealthy options and no additional costs to make healthy substitutions

2



Healthy options and unhealthy options equally priced

3



Healthy options cost less than unhealthy options with additional costs to make healthy substitutions

4



Healthy options cost less than unhealthy options with no additional costs to make healthy substitutions

5



Not Applicable



Pricing of items by weight for a comparable weight (per pound)

Healthier options cost more

1



2



All items priced individually

3



4



Healthier options cost less

5



Not Applicable



Comments:

Green Eating and Sustainability

Sustainability / Green Eating: Signs, labels or information provided on the website and on site.

Types:

- Organic / local
- Fair trade
- Composting

No green eating signage, labels, or indicators

1



2



One type of green eating signage, label, or indicator present

3



4



≥2 types of green eating signage, label, or indicator present

5



Comments

Sustainability

Which of the following best describes the plates/flatware used in this establishment?

Disposable 1
 Mixed 2
 Reusable 3
 4
 Reusable with nutrition message (ie MyPlate graphic) 5
 Not applicable

Which of the following best describes the trays used in this establishment?

Disposable 1
 2
 Reusable 3
 4
 Trayless 5
 Not applicable

A.5: Recreation Facility Criteria and Physical Activity Campus Environmental Supports (PACES) audit.

Criteria for Assessing the On and Off-campus Recreation Environment

Criteria	Scoring ¹	Description
Facility	0-40	Date erected, adequacy of outdoor aesthetics, bike rack availability and adequacy, stair qualities (centrally located, safety, aesthetically pleasing, signage, accessible), meet needs for disabilities (provide exercise equipment, allow personal assistant in for free), cleanliness, initial fitness assessment offered,
Staff	0-10	Competency of staff (ie make eye contact, professional mannerisms), accessibility of staff
Equipment	0-20	Aerobic equipment (ie treadmill, bike, air rower, stair stepper, elliptical), accessibility, strength training equipment (ie resistance machines, free weights, barbells, >100 square feet open, raised platforms, reservations
Amenities	0-15	Availability of drinking fountains, amenities (ie locker rooms, showers, hand towels, etc.),

¹Possible score= 0-85.

Demographics

This Facility Recreation Audit is completed for each facility your team decided to assess on your campus; one entry per facility listed on your enumeration sheet. In addition complete one Campus Recreation Audit per campus.

Evaluator name

Evaluator email address

Date evaluated (MM/DD/YY)

Type of audit

- Individual data collection
- Data duplicate for interrater reliability
- Practice

Institution Name

Name of campus (school/work site) if not listed above

State

Street, city, state, zip code of recreation facility

Type of recreation facility

- On-campus main facility
- On-campus secondary/satellite facility
- Off-campus main facility
- Off-campus secondary/satellite facility
- A component of facilities

Name of facility

Facility ID

(eight digits: facility structure, type of facility, on vs off, facility #) Just 8 digits- no spaces or dashes

Was data entered at facility?

Yes

No

Time facility evaluated?

Community-Specific Questions

Facility hours open per day

Hours/day

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Tuesday																										
Saturday																										
Sunday																										

When was this recreation facility built?

- Built >15 years
- Built 11-15 years
- Built 6-10 years
- Built 1-5 years
- Built <1 year

Adequacy of outdoor aesthetics of recreation facility

Adequacy should be based on:

- If windows providing an outdoor view are present in recreation area
- Building is free standing and separated from other buildings in the proximity
 - Closest building should be at least 200 feet away.
- Attractive view from inside facility

- Strongly disagree
- Disagree
- Neutral

- Agree
- Strongly agree

Bike rack availability around recreation facility

- ≤ 1 rack around the building - only one by entrance
- Racks by 50% of entrances
- Bike rack at every entrance

Adequacy of bike racks

- No bike racks available
- 0-25% spots available
- 26-50% spots available
- 51-75% spots available
- 76-100% spots available

Check box for each stair feature present (check all that apply)

- Centrally Located
- Safety
- Aesthetically Pleasing
- Signage
- Accessible
- Check here if N/A

Aerobic equipment available (check all that apply)

- Treadmill
- Bike
- Air rower (rowing machine)
- Stair stepper
- Elliptical
- Cycle ergometer

List other Aerobic equipment available:

Accessibility of aerobic equipment (% open machines)

- 0-19%
- 20-39%
- 40-59%
- 60-79%
- 80-100%
- Check here if N/A

The amount of aerobic equipment is adequate given the number of people using the facility?

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Check here if N/A

Strength training equipment available (select all that apply)

- Resistance machines
- Free weights
- Barbells
- At least 100 square ft. of open space
- Raised Platforms
- Check here if N/A

Competency of staff

Inform the staff member that you are doing the audit and ask the staff member to show you around and to tell you where all of the equipment is located. Assess if the staff member provided assistance in a professional manner,

made eye contact when speaking, and how knowledgeable the staff member seemed about the equipment and use of it.

Staff was not able to assist

Staff was willing to assist, but could not provide accurate/correct guidance

Staff was willing to assist and provided accurate/correct guidance

Accessibility of the staff

- No staff present
- Staff present, but busy with other consumers or otherwise unavailable
- Staff present and available

How well does the facility meet the needs for people with disabilities? (select all that apply)

- Does the facility provide exercise equipment that does not require transfer from wheelchair to machine?
- Are pool lift controls accessible from the deck level? Does the pool have a ledge to hold onto when entering the water?
- Can a consumer's personal assistant be allowed to enter the facility without incurring additional charges?

Availability of drinking fountains

No drinking fountains available

Drinking fountains publicly available

Refillable bottle stations available

Check box for each amenity offered (check all that apply)

- Locker room
- Lockers outside locker room
- Showers
- Hand towels
- Televisions
- Reading material
- Hand sanitizer
- Music
- Disinfectant spray
- Other

Cleanliness in specified areas

- Restrooms
- Weight room
- Locker room
- Activity courts (all-purpose)
- Indoor track
- Racquetball courts
- Entrance/hallways
- Pool(s)

Strongly disagree
 Disagree
 Neutral
 Agree
 Strongly agree

Is an initial fitness assessment offered? (select all that apply)

No fitness assessment
 Additional charge for fitness assessment
 Fitness assessment is mandatory
 Fitness assessment at no charge
 Fitness assessment with workout plan/recommendation

How is recreation equipment reserved? (select all that apply)

First come, first serve
 Paper-based reservation
 Computerized/online reservation
 Call-based reservation

Additional comments

Criteria Used to Assess Overall On-campus Recreation Environment

Criteria	Scoring ¹	Description
Facilities	0-35	When most recent facility was built, closest walking path, types of indoor/outdoor facilities (ie track, pool, skating rink, baseball or softball, etc), adequacy of facilities (ie availability, size, condition, sufficiency), residence halls within 2/3 mile.
Offerings	0-25	Health related on Tue. And Wed. (ie lectures,

		guest speakers, outings, group sports), varieties of fitness classes, intramural/club sports (ie subgroups, variety of sports, ability to waitlist, ability to create teams, ability to create teams during season), adequacy of intramural/club sports, reservation of programs (ie first come first serve, paper based, online, call based)
Social Media	0-5	No social media, used periodically, 1 update daily, 2 updates daily, >2 updates daily.

¹Possible score =0-65.

Check all sub-populations which have access to your recreation facilities and programs.

- Students
- Employees
- Employees' families
- Community
- Alumni

Total percentage (%) of each sub-population served by the school/work site recreation facilities and programs.

Students	<input type="text"/>
Employees	<input type="text"/>
Employees' families	<input type="text"/>
Community	<input type="text"/>
Alumni	<input type="text"/>

What is the distribution of sub-populations using the recreation facilities on an average day (total equals 100%)

Students	<input type="text" value="0"/>
Employees	<input type="text" value="0"/>
Community	<input type="text" value="0"/>
Employees' families/Alumni	<input type="text" value="0"/>
Total	<input type="text" value="0"/>

Campus Questions

Check box for each item that requires a fee (check all that apply)

	Fitness classes	Sports clubs	Intramurals	Fitness center/gym	Special fitness/recreation events
Students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees' families	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alumni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

When was the most recent recreation facility built?

- New facility built >15 years
- New facility built 11-15 years
- New facility built 6-10 years
- New facility built 1-5 years
- New facility built <1 year

How far is the closest walking/biking trail from the center of campus?
Use Google Maps or similar mapping service to determine distance

- No walking trail available
- <1 mile from center of campus
- <3/4 mile from center of campus
- <1/2 mile from center of campus
- <1/4 mile from center of campus

Indoor/outdoor facilities available (select all that apply)

Track	<input type="checkbox"/>
Volleyball	<input type="checkbox"/>
Baseball/softball	<input type="checkbox"/>
All-purpose	<input type="checkbox"/>
Pool	<input type="checkbox"/>
Basketball	<input type="checkbox"/>
Football	<input type="checkbox"/>
Tennis	<input type="checkbox"/>
Skating Rink	<input type="checkbox"/>
Climbing Wall	<input type="checkbox"/>
Other	<input type="checkbox"/>
<input type="text"/>	

Adequacy of indoor/outdoor facilities

Adequacy of the fields should be based on:

- Availability
- Size
- Condition
- Sufficiency

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

If on-campus housing is available, how many residence halls are there within 2/3 mile?

Use Google Maps or similar mapping service to determine distance

- None
- 1 Residence Hall
- 2 Residence Halls
- 3 Residence Halls
- >3 Residence Halls
- N/A

How many health-related offerings are available for Tuesday and Wednesday combined?

A two-day snapshot will be used to determine the adequacy of health-related offerings

Ex. Lectures, guest speakers, workshops, outings, free fitness classes (yoga, tai chi, etc), group sports (basketball, kickball, capture the flag), other (anything health related)

- No health-related offerings
- 1-2 health-related offerings
- 3-4 health-related offerings
- 5-6 health-related offerings
- >6 health-related offerings

How many different varieties of fitness classes are offered? (Count all offerings campus-wide)

Do not combine classes offered in the spring and fall. Assess varieties of classes offered for one semester, preferably the current semester at the time of assessment. If semesters do not exist, evaluate programs offered over the last 4 months.

- 0-9 varieties of fitness classes offered
- 10-14 varieties of fitness classes offered
- 15-19 varieties of fitness classes offered
- 20-25 varieties of fitness classes offered
- >25 varieties of fitness classes offered

Intramural and club sports (select all that apply)

- Variety of subgroups within sports (Men, women, Greek, recreational, competitive, faculty)
- Variety of sports offered
- Ability for groups to create teams
- Ability to waitlist if all team slots are filled (absence of excessive waitlisted teams)
- Ability to create/add teams to meet demand during the season

Adequacy of intramural and club sports

Adequacy should be based on # of responses selected in previous question including:

- **Variety of subgroups within sports**
- **Variety of sports offered**
- **Ability for faculty to create teams**
- **Ability to waitlist if all team slots are filled**
- **Ability to create/add teams to meet demand during the season**

- Strongly Disagree

- Disagree
- Neutral
- Agree
- Strongly Agree

How are recreation programs reserved? (select all that apply)

- First come, first serve
- Paper-based reservation
- Computerized/online reservation
- Call-based reservation

How frequently is social media used to promote recreation facilities and programs?

- No social media exists
- Social media exists, but used periodically
- 1 update daily
- 2 updates daily
- >2 updates daily

Additional comments

Appendix B: Vending Audit Instructions

Health Density Vending Audit Tool: Quick Form Training Instructions

The nutritional quality of food and beverage products sold in vending machines has been implicated as a contributing factor to the development of an obesogenic food environment (1-12). How comprehensive, reliable, and valid are the current assessment tools for vending machines to support or refute these claims? A wide range of tools and methods were found to be currently available to measure different vending machine components. However, the substantial variability in methodology and healthfulness criteria makes it impossible to compare results between studies. Few previous assessment tools have comprehensively incorporated an evaluation of machine accessibility, healthy product availability, promotion, price, and package/serving size (13-33). Assessment tools should evaluate healthy product availability, promotion, price, and package/serving size. Previously established healthfulness criteria for vended products have been either too lenient or too strict and may not accurately assess product healthfulness. Healthfulness criteria should include an evaluation of caloric content, fat content, sugar content, and key indicator nutrient content, but a product does not necessarily have to meet all criteria to be considered healthy. A universal, valid, and reliable vending machine assessment tool that is comprehensive yet user-friendly is recommended.

This tool will help you assess the vending machines in your building(s) and environment(s). This tool is designed for use in a variety of different environments including, but not limited to primary schools, secondary schools, colleges/universities, office buildings, recreation facilities, malls, hotels, and community service buildings . This information will help you evaluate a component of your overall food environment, which influences healthy food options and choices at your location.

Purpose of this Document

1. Descriptions of how to use the healthy dense vending audit tool
2. Training protocol
3. Explanation of the pilot testing and validation study for this audit tool
 - a. This begins on page 19 of this document

Accompanying Files

- B_Training Powerpoint
- C_Example of Vending Machine Photographs
- C_Example of Completed Quick Snack and Beverage Spreadsheet
- D_Quick Snack and Beverage Spreadsheet
- E_PDF Copy of Qualtrics Building Vending Survey (The link for the survey noted later)
- F_Detailed Form Protocol (for validation study)
- G_Detailed Snack Spreadsheet (for validation study)
- H_Detailed Beverage Spreadsheet (for validation study)
- I_NEMS-V Protocol (for validation study)
- J_NEMS-V Spreadsheet (for validation study)

Timeline

- Week 1
 - Select building(s) that will be evaluated in your audit
- Weeks 2-3
 - Survey the building(s) you are evaluating for vending machines
 - Select vending machines for evaluation in your building(s) (at least one snack and one beverage per building)
 - Take photographs of selected vending machines
- Weeks 4-6
 - Complete the **Quick Snack and Beverages Spreadsheet** in Excel
 - Complete the **Quick Snack List** and **Unlisted Snacks Table** for snack products found in the vending machines in your building
 - Complete the **Quick Beverage List** and **Unlisted Beverages Table** for beverage products found in the vending machine in your building
 - Complete the **Building Vending Survey** in Qualtrics

Protocol for Completing the Vending Evaluation

Selecting Buildings

This tool can be used to evaluate all of the buildings in your environment or a subsample of the total buildings in your environment. Identify the building(s) in your environment that you would like to use in your evaluation; you may use this tool to evaluate one building or multiple buildings. It is recommended that you evaluate a variety of different types of buildings in order to conduct a more complete assessment of the vending machine environment in your overall environment. For example, as part of the validation and implementation study for this audit tool, vending machines were selected from different buildings commonly accessed by students and/or faculty located on the Syracuse University campus. Specifically, vending machines located in five different types of buildings (student union, library, residence hall, academic building, and recreation facility) were evaluated. For each building being evaluated in your audit, assign a different numerical building code.

Surveying a Building

Next, you will survey and record information regarding each building you have selected to include in your audit. When surveying a building, print off the **PDF copy of the Qualtrics Building Survey** and bring it with you to survey and explore the building. Use a different **Building Vending Survey** for each different building included in your evaluation. The information collected on the PDF copy will later be entered into the online **Building Vending Survey** on Qualtrics. Collect and record the following necessary information when surveying each building on the **PDF copy of the Qualtrics Building Survey**:

- **Evaluator Name:** Name of the person completing the evaluation.

- **Type of Audit:** Type of audit being conduct on the vending machines in the building.
 - Select one of the following options: individual data collection, pilot test, or data duplicate for inter-rater reliability.
- **Type of Data Collection:** The type of data collection method used to gather the data being used to complete the survey.
 - **Quick Form:** The primary data collection method that will be used for this audit, which uses a simplified, condensed, and quick data collection form.
 - **Detailed Form:** The data collection method used for evaluator training and to validate the results of the quick form data collection method, which uses a more extensive and in depth data collection form.
- **State:** State in which the building is located.
- **Building Name:** Name of the building being evaluated.
- **Type of Building:** Building type that is being evaluated.
 - Select from the following options: residential, library, recreation facility, academic, manufacturing, office, multifunctional (ex. union), or other (if other please specify type of building).
 - More than one response may be appropriate, select all options that apply to the building.
- **Type of Environment:** Type of environment being evaluated.
 - Select from the following options: elementary school, middle school, high school, community or technical college, college or university, work site, mall, hotel/motel, community services, or other (if other please specify type of building).
 - More than one response may be appropriate, select all options that apply to the environment.
- **Total Number of Buildings:** The total number of buildings evaluated in your audit. If you are evaluating more than one building in your audit, enter the total number of buildings you are evaluating.
- **Building Code Number:** Record the specific code number that you have assigned to the building being evaluated. This is particularly important if you are evaluating more than one building.
- **Building Hours:** The normal hours of operation for the building on a typical day.
 - Select one the following options: <8 hours/day, 8 hours/day, 9-12 hours/day, 13-18 hours/day, or 19-24 hours/day.
- **Machine Accessibility:** How readily available vending machines and machine products are to s in the building being evaluated.
 - Select one of the following options dependent on the type of environment (primary or secondary schools vs. all others) being evaluated: not appropriately accessible, somewhat accessible, or appropriately accessible.
 - **Not Appropriately Accessible**
 - Primary and Secondary Schools: if machine is on for $\geq 50\%$ of the school day
 - All Other Environments: if $\geq 50\%$ of vending machine slots are empty by the end of the day (when building closes)

- **Somewhat Accessible**
 - Primary and Secondary Schools: if machine is on for 25-50% of the school day
 - All Other Environments: if 25-50% of machine slots are empty by the end of the day (when building closes)
- **Appropriately Accessible**
 - Primary and Secondary Schools: if machine is on for $\leq 25\%$ of the school day
 - All Other Environments: if $\leq 25\%$ of the machine slots are empty by the end of the day (when building closes)
- *In order to determine machine accessibility, vending machines selected for evaluation will need to be visited **multiple times** throughout the day.*
- *Also, note that primary and secondary schools refer to elementary, middle, junior high, and high schools. Colleges and universities are not considered primary or secondary schools.*
- **Machine Availability:** Record and tally the number of each different type of vending machine and the total number of vending machines in the building. Also record and tally the number of each different type of vending machine you are evaluating in the building.
 - Different types of vending machines include cold beverage, snack, prepared food, dairy, hot beverage, and mixed snack and beverage. If a different type of vending machine is found please record the type of vending machine found in the building under “other.”

Vending Machine Selection

This audit tool can be used to evaluate the total number of the vending machines in your environment or a subsample of the total vending machines in your environment. To select vending machines for evaluation consider machine placement and who uses them. If you are evaluating **one building**, all vending machines within the building should be evaluated. If you are evaluating **multiple buildings**, vending machines with the most traffic flow should be evaluated and at least two different vending machines (ideally one snack and one beverage) from each type of building should be evaluated in your assessment of your vending machine environment. If there is not an individual snack and/or beverage machine you can use a mixed snack/beverage machine and conduct separate evaluations on the snack and beverage products using the later described protocol. Additionally, the vending machines with the highest traffic flow should be used for your evaluation. If a unique or novel vending machine is found in a building (prepared food, sandwiches, frozen food, ice cream, etc.) evaluate that vending machine as well.

Example of a vending machine with high traffic flow: machine on the main floor of building

Assign a different numerical machine code number to each different vending machine being evaluated. More specifically, assign a **Machine ID** to each vending machine evaluated using the state in which the assessment is being conducted, the building code number, and the machine code number (State Abbreviation – Building Code Number – Machine Code Number). Assigning a **Machine ID** to each vending machine is extremely important, the **Machine ID** keeps all data collected on an individual vending machine tied together in order to determine inter-rater reliability and for validation purposes (quick vs. long, quick vs. NEMS-V).

Photographing the Vending Machines

After you have surveyed your building for vending machines and after you have chosen an appropriate vending machine to evaluate (one with high traffic flow), carefully photograph the vending machine and its contents using a **digital camera or smartphone**. Follow these guidelines when taking photographs of the vending machine and its contents to ensure clarity, quality, and integrity of the images.

1. Take photographs of the front, right side, and left side of the vending machine.
2. Take photographs of the contents of the vending machine:
 - a. Get as close to the vending machine as possible; this will reduce any reflections that may interfere with picture quality.
 - b. Do **not** use flash; the light will create a glare that will interfere with picture quality.
 - c. Multiple pictures may need to be taken in order to capture all of the vending machines' contents.
 - d. You may need to take pictures of each row or product separately
3. **Carefully check each picture after it is taken in order to make sure that you have clearly captured all of the necessary information regarding the vending machine's contents.**
 - a. Before leaving the machine, make sure all of the required information has been captured in your photographs:
 - Product Name
 - Product Label
 - Product Package Size
 - Product Price
 - b. Make sure that anything that you can see when standing right in front of the machine has been captured in the photographs.
4. Upload all of the images for each vending machine onto a computer, create a file, and label each file using each machine's assigned **Machine ID** and **time at which the photograph was taken**.

Completing the Quick Snack and Beverage Spreadsheet

In order to complete the rest of the **Building Vending Survey** you will have to use the photographs you have taken of the vending machine(s) you have selected for evaluation in the building to complete the **Quick Snack and Beverage Spreadsheet** in Excel. The **Quick Snack and Beverage Spreadsheet** is a simple data collection method that will allow you to easily record and organize vending machine products based on product healthfulness. If a vending machine contains both snacks and beverages, use the **Quick Snack List** for the snack products and use the **Quick Beverage List** for the beverage products.

Complete one **Quick Snack List** for one snack or mixed vending machine; each different vending machine should be evaluated using a new **Quick Snack List**. Similarly, complete one **Quick Beverage List** for one beverage or mixed vending machine; each different vending machine should be evaluated using a new **Quick Beverage List**. On each **Quick Snack List** and each **Quick Beverage List** record the following information:

- **Building Code Number:** Numerical code number assigned to the building being evaluated.
- **Machine ID:** Identification number that has been assigned to each individual vending machine (State Abbreviation – Building Code # - Machine #)
- **Time:** Time photographs of machine were taken
- **Evaluator Name:** Name of the individual completing the Quick Snack List
- **Total Number of Snacks/Beverages:** Total number of snack or beverage products in the machine
- **Total Number of Different Snacks/Beverages:** Number of different snack or beverage products in the machine

Completing the Quick Snack List

In order to evaluate **healthy snack availability** of the snack products in the vending machine(s) in the building use the photographs you have taken of the vending machine(s) and **Quick Snack List**, which is located in the **Quick Snack and Beverage Spreadsheet**. The **Quick Snack List** is a compilation of snacks commonly found in vending machines that was developed following a survey of vending machines and their contents prior to pilot testing of this tool. Following this survey of vending machines, for each snack found the product name, brand, serving size in oz., and package size in oz. was determined and recorded. Nutritional analysis was then conducted on each product based on product package size to determine the number of individual healthfulness criterion met. Each snack product was then assigned a **healthy dense snack score** based on the total number of individual healthfulness criterion met. The **Quick Snack List** was then generated to include the product name, brand, package size in oz., and healthy dense snack score for each commonly found snack. Snack products on the **Quick Snack List** are listed alphabetically according to **healthy dense snack score**.

Each snack product in the vending machine(s) will be evaluated for healthfulness and receive a **healthy dense snack score** (0-12) based on the presence of the following healthfulness criteria in the snack product:

1. **Calories:** The product must contain ≤ 200 calories per package.
2. **Saturated Fat:** The product must contain $\leq 10\%$ of the DV for saturated fat per package.¹
3. **Trans Fat:** The product must contain 0% trans fat per package
4. **Sugar:** The product must contain ≤ 12.5 g of sugar per package.^{2,3}
5. **Sodium:** The product must contain $\leq 10\%$ of the DV for sodium per package.
6. **Fiber:** The product must contain $\geq 10\%$ of the DV for fiber per package.
7. **Calcium:** The product must contain $\geq 10\%$ of the DV for calcium per package.
8. **Iron:** The product must contain $\geq 10\%$ of the DV for iron per package.
9. **Potassium:** The product must contain $\geq 10\%$ of the DV for potassium per package.
10. **Vitamin C:** The product must contain $\geq 10\%$ of the DV for vitamin C per package.
11. **Vitamin D:** The product must contain $\geq 10\%$ of the DV for vitamin D per package.
12. **Vitamin E:** The product must contain $\geq 10\%$ of the DV for vitamin E per package.

¹ In accordance with the *Smart Snacks in School: USDA's "All Foods Sold in School" Standards* exemptions to the saturated fat standard include reduced fat cheese (including part-skim mozzarella), nuts, seeds, nut or seed butters, products containing only dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats, and seafood with no added fats. These products will automatically meet the saturated fat standard and receive 1 point for meeting the saturated fat criteria.

² Although not consistent with IOM criteria, the 12.5g criteria was selected because it is equivalent to 25% of the recommended DV for sugar and establishes a simple cut-off point to quickly and effectively evaluate snack products.

³ In accordance with the *Smart Snacks in School: USDA's "All Foods Sold in School" Standards* exemptions to the sugar standard include dried whole fruits or vegetables, dried whole fruit or vegetable pieces, dehydrated fruits with no added nutritive sweeteners, dried whole fruits or pieces with nutritive sweeteners that are required for processing and/or palatability purposes (cranberries, tart cherries, blueberries, etc.), and products consisting of dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats. These products will automatically meet the sugar standard and receive 1 point for meeting the sugar criteria.

Each snack product will receive **one point for each individual healthfulness criterion met**, and the number of points a snack product receives will be totaled to give each product a **healthy dense snack score**. The **healthy dense snack score** is based on a 12-point scoring system, with 12 being the highest and healthiest score a snack can receive and 0 being the lowest and unhealthiest score a snack can receive. *As a general rule all gum and breath mint products are not considered to have any nutritional value, and so are these products will be excluded from this audit tool.* For scoring purposes, **healthy snacks** are snacks that receive a **healthy dense snack score ≥ 5** . Somewhat healthy

snacks are snacks that receive a **healthy dense snack score of 3 or 4**. **Unhealthy snacks** are snacks that receive a **healthy dense snack score of ≤ 2** .

To complete the **Quick Snack List** only evaluate, record, and tally the face front products visible to s, if there is a different product behind one of the products, do not evaluate it. If there are different flavors of the same product, evaluate the two products separately. (ie. If there are different flavors of Lays Potato Chips, the two flavors will count as different products.) For each face front snack product identified from the images of the vending machine's contents check the **Quick Snack List** to determine if the snack has already been listed, evaluated for healthfulness, and assigned a **healthy dense snack score**. When looking up products make sure to pay close attention to package size and flavor of the snacks on the **Quick Snack List**, as package size and flavor can impact a product's **healthy dense snack score**.

Use the **Quick Snack List** to record and tally all of the snack products in a vending machine based on the photographs you have taken of the machine. Snacks on the **Quick Snack List** are arranged alphabetically according to **healthy dense snack score**. Make sure to pay close attention to product package size, as this can affect the **healthy dense snack score**. Once a listed snack has been located on the **Quick Snack List** record the number of slots that are occupied by that particular snack in the vending machine. Continue this process until all snack products in the vending machine have been accounted for. *Remember that different flavors of the same product are considered two different products.*

Completing the Unlisted Snacks Table

If a snack is not listed on the **Quick Snack List**, you can purchase the snack to read the nutrition label to determine the product's serving size and nutritional information or you can look up the serving size and nutritional information for the product online. Use the following websites, in the following order, to determine an unlisted product's serving size and nutritional information.

1. USDA Nutrient Database for Standard Reference (www.ndb.nal.usda.gov)
2. USDA SuperTracker (www.supertracker.usda.gov)
3. MyFitnessPal (www.myfitnesspal.com)
4. Calorie Count (<http://caloriecount.about.com>)
5. Product Brand's Website (ie. www.fritolay.com, www.kelloggs.com, etc)

If the serving size information for a product cannot be determined, assume that the package contains one serving of the product.

For unlisted snacks for which serving size and nutritional information could be determined from the aforementioned online resources complete the **Unlisted Snacks Table**, which is located in the **Quick Snack and Beverage Spreadsheet** in Excel. This will allow you to determine and calculate **healthy dense snack scores** for each unlisted snack product. The **Unlisted Snacks Table** can be printed out and completed by hand or

it can be filled out in the Excel file. For each unlisted snack product record the product name, number of slots occupied in the vending machine, the serving size, and the package size. Next use the nutritional analysis information obtained from one of the aforementioned websites to evaluate the healthfulness of the unlisted product. Each product will be evaluated for the presence of the following 12 individual healthfulness criterion.

1. **Calories:** The product must contain ≤ 200 calories per package.
2. **Saturated Fat:** The product must contain $\leq 10\%$ of the DV for saturated fat per package.¹
3. **Trans Fat:** The product must contain 0% trans fat per package.
4. **Sugar:** The product must contain $\leq 12.5\text{g}$ of sugar per package.^{2,3}
5. **Sodium:** The product must contain $\leq 10\%$ of the DV for sodium per package.
6. **Fiber:** The product must contain $\geq 10\%$ of the DV for fiber per package.
7. **Calcium:** The product must contain $\geq 10\%$ of the DV for calcium per package.
8. **Iron:** The product must contain $\geq 10\%$ of the DV for iron per package.
9. **Potassium:** The product must contain $\geq 10\%$ of the DV for potassium per package.
10. **Vitamin C:** The product must contain $\geq 10\%$ of the DV for vitamin C per package.
11. **Vitamin D:** The product must contain $\geq 10\%$ of the DV for vitamin D per package.
12. **Vitamin E:** The product must contain $\geq 10\%$ of the DV for vitamin E per package.

¹ In accordance with the *Smart Snacks in School: USDA's "All Foods Sold in School" Standards* exemptions to the saturated fat standard include reduced fat cheese (including part-skim mozzarella), nuts, seeds, nut or seed butters, products containing only dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats, and seafood with no added fats. These products will automatically meet the saturated fat standard and receive 1 point for meeting the saturated fat criteria.

² Although not consistent with IOM criteria, the 12.5g criteria was selected because it is equivalent to 25% of the recommended DV for sugar and establishes a simple cut-off point to quickly and effectively evaluate snack products.

³ In accordance with the *Smart Snacks in School: USDA's "All Foods Sold in School" Standards* exemptions to the sugar standard include dried whole fruits or vegetables, dried whole fruit or vegetable pieces, dehydrated fruits with no added nutritive sweeteners, dried whole fruits or pieces with nutritive sweeteners that are required for processing and/or palatability purposes (cranberries, tart cherries, blueberries, etc.), and products consisting of dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats. These products will automatically meet the sugar standard and receive 1 point for meeting the sugar criteria.

If a product meets the specified healthfulness criterion, enter a 1 into the table. If a product does not meet the specified healthfulness criterion, enter a 0 into the table. Add up the number of healthfulness criterion met by the product to determine a score for the

unlisted product. Therefore, each snack product will receive **one point for each individual healthfulness criterion met**, and the number of points a product receives will be totaled to give each product a **healthy dense snack score**. The **healthy dense snack score** is based on a 12-point scoring system, with 12 being the highest and healthiest score a snack can receive and 0 being the lowest and unhealthiest score a snack can receive. Again, all gum and mint products are excluded in this audit. Following completion of the **Unlisted Snacks Table** for a product and once a **healthy dense snack score** has been assigned to an unlisted snack enter the total number of slots occupied by that product into the “other” option in the corresponding **healthy dense snack score**.

Once all snacks and the number of slots occupied by each snack in the vending machine have been recorded in the **Quick Snack List** in Excel, the total number of snacks in the machine with each **healthy dense snack score** will be generated. Additionally, healthy dense machine snack subscore for each **healthy dense snack score** will also be generated. To generate each subscore, each healthy dense snack score is multiplied by the number of total snacks with that score in the vending machine.

Next, use the information you have collected on **Quick Snack List** to evaluate **healthy snack availability**. The following information will be calculated within the Excel file:

1. The total number of snacks
 - a. Tally of the number of snacks recorded in the **Quick Snack List** for a machine.
 - b. Since gum and breath mints have been excluded from this audit, the total number of snacks refers the total number of snacks in the machine minus the number of gum and breath mint products.
2. The total number of healthy snack slots in the vending machine
 - a. Tally of the total number of snacks that received a **healthy dense snack score of ≥ 5** .
3. The total number of different healthy snacks in the vending machine
 - a. Count of the number of different snacks that received a **healthy dense snack score of ≥ 5** .
4. The percentage of healthy snacks in the vending machine
 - a. Percentage calculated by dividing the number of healthy snack slots by the total number of snack slots in the machine and then multiplying by 100
5. The variety of healthy snack percentage in the vending machine
 - a. Percentage calculated by dividing the number of different healthy snack slots by the total number of healthy snack slots and then multiplying by 100
6. The total healthy dense machine snack score
 - a. Sum of the healthy dense machine snack subscores
7. The average healthy dense machine snack score
 - a. Calculated by dividing the total healthy dense machine snack score by the total number of snack products in the vending machine.

Completing the Quick Beverage List

In order to evaluate **healthy beverage availability** of the beverage products in the vending machine(s) in the building use the photographs you have taken of the vending machine(s) and **Quick Beverage List**, which is located in the **Quick Snack and Beverage Spreadsheet**. The **Quick Beverage List** is a compilation of beverages commonly found in vending machines that was developed following a survey of vending machines and their contents prior to pilot testing of this tool. Following this survey of vending machines, for each snack found the product name, brand, serving size in fl. oz., and package size in fl. oz. was determined and recorded. Nutritional analysis was then conducted on each product based on product package size to determine the number of individual healthfulness criterion met. Each beverage product was then assigned a **healthy dense beverage score** based on beverage type and/or caloric content. The **Quick Beverage List** was then generated to include the product name, brand, package size in oz., and healthy dense beverage score for each commonly found beverage. Beverage products on the **Quick Beverage List** are listed alphabetically according to **healthy dense beverage score**.

Each beverage product in the vending machine will be evaluated for healthfulness and receive a **healthy dense beverage score** (0-2) based on beverage type and/or caloric content.

- **Healthy Dense Beverage Scores**
 - Score of 0
 - Sports drinks/life water/vitamin water (>50 calories per 8 fl. oz.)
 - Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (>10 calories per 8 fl. oz.)
 - Score of 1
 - Non-100% fruit or vegetable juice
 - Ex. fruit juice cocktails
 - Milk/flavored milk/non-dairy milk alternatives (>150 calories per 8 fl. oz.)
 - Sports drinks/life water/vitamin water (≤50 calories per 8 fl. oz.)
 - Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (≤10 calories per 8 fl. oz.)
 - Score of 2
 - Water/flavored water
 - 100% fruit or vegetable juice
 - Milk/flavored milk/non-dairy milk alternatives (≤150 calories per 8 fl. oz.)

The **healthy dense beverage score** is based on a 2-point scoring system, with 2 being the highest and healthiest score a beverage can receive and 0 being the lowest and

unhealthiest score a beverage can receive. For scoring purposes, **healthy beverages** are beverages that receive a **healthy dense beverage score of 2**. Somewhat healthy beverages are beverages that receive a **healthy dense beverage score of 1**. **Unhealthy beverages** are beverages that receive a **healthy dense beverage score of 0**.

For the **beverage product availability** only evaluate, record, and tally the face front products visible to s, if there is a different product behind one of the products, do not evaluate it. If there are different flavors of the same product, evaluate the two products separately. (ie. If there are different flavors of Gatorade, the two flavors will count as different products.) For each face front beverage product identified from the images of the vending machine's contents check the **Quick Beverage List** to determine if the snack has already been listed, evaluated for healthfulness, and assigned a **healthy dense beverage score**. When looking up products make sure to pay close attention to package size and flavor of the beverages on the **Quick Beverage List**, as package size and flavor can impact a product's **healthy dense beverage score**.

Use the **Snack Beverage List** to record and tally all of the beverage products in a vending machine based on the photographs you have taken of the machine. Beverages on the **Quick Beverage List** are arranged alphabetically according to **healthy dense beverage score**. Once a listed beverage has been located on the **Quick Beverage List** record the number of slots that are occupied by that particular beverage in the vending machine. Continue this process until all beverage products in the vending machine have been accounted for. *Remember that different flavors of the same product are considered two different products.*

Completing the Unlisted Beverages Table

If a beverage is not listed on the **Quick Beverage List**, you can purchase the beverage to read the nutrition label to determine the product's serving size and nutritional information or you can look up the serving size and nutritional information for the product online. Use the following websites in the following order to determine a product's serving size and nutritional information.

1. USDA Nutrient Database for Standard Reference (www.ndb.nal.usda.gov)
2. USDA SuperTracker (www.supertracker.usda.gov)
3. MyFitnessPal (www.myfitnesspal.com)
4. Calorie Count (www.caloriecount.about.com)
5. Product Brand's Website (ie. www.pepsico.com, www.coca-cola.com, etc)

If the serving size information for a product cannot be determined, assume the package contains one serving of the product.

For unlisted beverages for which serving size and nutritional information could be determined from the aforementioned online sources, complete the **Unlisted Beverages Table**, which is located in the **Quick Snack and Beverage Spreadsheet** to determine **healthy dense beverage scores**. For each unlisted beverage product record the product name, number of slots occupied in the vending machine, the serving size, and the package size. Next use the product type and/or the nutritional information obtained from

one of the aforementioned websites to evaluate the healthfulness of the unlisted product. Each product will be evaluated for healthfulness in the **Beverage Healthfulness Evaluation Table** in the following way:

- **Healthy Dense Beverage Scores**
 - Score of 0
 - Sports drinks/life water/vitamin water (>50 calories per 8 fl. oz.)
 - Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (>10 calories per 8 fl. oz.)
 - Score of 1
 - Non-100% fruit or vegetable juice
 - Ex. fruit juice cocktails
 - Milk/flavored milk/non-dairy milk alternatives (>150 calories per 8 fl. oz.)
 - Sports drinks/life water/vitamin water (\leq 50 calories per 8 fl. oz.)
 - Sugar sweetened beverages/energy drinks/coffee drinks/lemonade/iced tea/all other beverages (\leq 10 calories per 8 fl. oz.)
 - Score of 2
 - Water/flavored water
 - 100% fruit or vegetable juice
 - Milk/flavored milk/non-dairy milk alternatives (\leq 150 calories per 8 fl. oz.)

Following completion of the **Unlisted Beverages Table** for a product and once a **healthy dense beverage score** has been assigned to an unlisted beverage enter the total number of slots occupied by that product into the “other” option in the corresponding **healthy dense beverage score**. Once all beverages and the number of slots occupied by each beverage in the vending machine have been recorded in the **Quick Beverage List** tally and record the total number of beverages in the machine with each **healthy dense beverage score**. Additionally calculate a healthy dense machine beverage subscore for each **healthy dense beverage score**. To do this, multiply each healthy dense beverage score by the number of total beverages with that score in the vending machine.

Next, use the information you have collected on **Quick Beverage List** to evaluate **healthy beverage availability**.

1. The total number of beverage slots in the vending machine by
 - a. Tally of the number of beverage slots recorded in the **Quick Beverage List** for each machine
2. The total number of healthy beverage slots in the vending machine
 - a. Tally of the total number of beverage slots that received a **healthy dense beverage score of 2**.
3. The total number of different healthy beverages in the vending machine
 - a. Count of the number of different beverages that received a **healthy dense beverage score of 2**.

4. The percentage of healthy beverage slots in the vending machine
 - a. Percentage calculated by dividing the number of healthy beverage slots by the total number of beverage slots in the machine and then multiplying by 100
5. The variety of healthy beverage percentage in the vending machine
 - a. Percentage calculated by dividing the number of different healthy beverages by the total number of healthy beverages and then multiplying by 100
6. The total healthy dense machine beverage score
 - a. Sum of the healthy dense machine beverage subscores
7. The average healthy dense machine beverage score
 - a. Calculated by dividing the total healthy dense machine beverage score by the total number of beverage products in the vending machine

Completing the Building Vending Survey

After the **Quick Snack List** has been completed for all vending machines evaluated in the building, record the calculated **Average Healthy Dense Snack Score**, **Average Healthy Snack Percentage**, and **Average Healthy Snack Variety Percentage** on the **Building Vending Survey** in Qualtrics. If multiple **Quick Snack Lists** have been completed for multiple snack machines in the building, estimate or average the values of the snack machines in the building. Similarly, after the **Quick Beverage List** has been completed for all vending machines evaluated in the building, record the calculated **Average Healthy Dense Beverage Score**, **Average Healthy Beverage Percentage**, and **Average Healthy Beverage Variety Percentage** on the **Building Vending Survey** in Qualtrics. If multiple **Quick Beverage Lists** have been completed for multiple beverage machines in the building, average the calculated values.

Next, use the photographs of the vending machine contents to evaluate product price on the **Building Vending Survey**. For this section, the prices of similar healthy and unhealthy snacks and beverages will be compared. For snacks, observe the prices of healthy snacks (snacks with a **healthy dense snack score ≥ 5**) and unhealthy snacks (snacks with a **healthy dense snack score ≤ 2**) of comparable type and size. For example, chips should be compared to chips and granola bars should be compared to granola bars. For beverages observe the prices of healthy beverages (beverages with a **healthy dense beverage score of 2**) and unhealthy beverages (beverages with a **healthy dense beverage score of 0**) of comparable type and size. For example, soda should be compared to soda and sports drink should be compared to sports drink. The package size of healthy and unhealthy beverages being compared should also be similar. Based on the photographs, indicate whether the prices of healthy products are more expensive, equal to, or less expensive than the prices of unhealthy products.

Select the most appropriate response.

- Healthy more expensive than Unhealthy
 - when healthy snacks/beverages cost more than unhealthy snacks/beverages
- Healthy and Unhealthy equally priced
 - when healthy snacks/beverages cost the same as unhealthy snacks/beverages
- Healthy less expensive than Unhealthy
 - when healthy snacks/beverages cost less than unhealthy snacks/beverages

Next, use the photographs of the vending machine contents to evaluate product promotion on the **Building Vending Survey**. Look at the photographs of the snack and beverage vending machines' contents to identify nutrition promotional labels on snack and beverage products that could promote or influence an individual's decision to purchase the product. Examples of nutrition promotional labels that may be found on beverage products include, but are not limited to the following: no/low/reduced calories, no/low/reduced sugar, no/low/reduced sodium, high/good source of vitamins, high/good source of minerals/ fruit/vegetable servings, organic, and new or improved. Only labels that are visible on vended beverages at the point-of-purchase (visible when looking directly at the products in the vending machine) should be recorded. Based on your photographs indicate the level of nutrition promotion on vending machine products in the building.

Select the most appropriate response.

- No nutrition information on machine or products
 - no nutrition information displayed anywhere on the machine or vended products
- General nutrition information on machine only
 - generalized nutrition information is displayed on the vending machine itself or on the vended products
- Specific nutrition information on machine and/or products
 - specific nutrition information is displayed on vending machine itself or on the vended products

Additionally, use the photographs to look at the front and sides of the evaluated snack and beverage vending machines to identify product logos. Based on your photographs indicate the healthfulness of the product logos on vending machines in the building.

Select the most appropriate response.

- Unhealthy product logo on front and/or sides of machine

- Pepsi®
- Healthy and unhealthy logos on front and/or sides of the machine
 - ex. both Aquafina® and Pepsi® logos on machine
- Healthy or no product logos on front and/or sides of the machine
 - ex. Aquafina®

Finally, use the photographs of the vending machine and the vending machine's contents to identify green eating labels on the vending machine or machine products. Examples of green eating labels include, but are limited to the following: local, organic, and sustainable. Only labels that are visible on vended snacks and beverages at the point-of-purchase (visible when looking directly at the products in the vending machine) should be recorded. Based on your photographs indicate the level of green eating promotion on vending machine products in the building.

Select the most appropriate response.

- No green eating promotion
 - no local, organic, or sustainable labels on the machine itself or any vended products
- General promotion of green eating on machine
 - Local, organic, or sustainable labels on the machine itself or any vended products
- Creative/original promotion of specific green eating products
 - Detailed information pertaining to local, organic, or sustainable products

This will now complete the **Building Vending Survey**. To actually enter your data in the Qualtrics survey – here is the link

https://syracuseuniversity.qualtrics.com/SE/?SID=SV_6J4sNDuY4lucIiV

Examples of the machines (via pictures) and a completed **Quick Snack List** and a **Quick Beverage List Beverage** have been provided in the **Quick Snack and Beverage Spreadsheet** and also on a separate handout for your reference.

How to Train Evaluators:

- Read through the above **Quick Form Protocol**
- Practice using the **Quick Snack and Beverages Spreadsheet** to complete the **Building Vending Survey** on Qualtrics for at least 2 vending machines.
- Practice completing entire **Quick Form Protocol** and **Building Vending Survey** until 80% inter-rater reliability (IRR) can be established between 2 evaluators.

Inter-Rater Reliability for Training/Practice:

The IRR for the **Quick Form Protocol** is located in the **Quick Snack and Beverage Spreadsheet**. For IRR record the results of two evaluators for the same snack or beverage machine regarding the number of snacks/beverages, number of healthy snacks/beverages, number of different healthy snacks/beverages, percentage of healthy snacks/beverages, percentage variety of healthy snacks/beverages, total healthy dense score, and average healthy dense score. Each snack and beverage machine will have 2 evaluators, and you will divide the higher value achieved by one of the evaluators by the lower value achieved by the other evaluator. The goal is to achieve a score >0.8 between two evaluators for any given machine during practice before advancing to the actual validation study. When evaluating IRR, the machine must be evaluated at the same time by each evaluator (they must use the same photographs). This same method may be used to establish IRR during your vending machine audit.

Pilot Testing:

This tool is to be pilot tested by the primary researcher, research assistants, and experts in the field of nutrition. This tool will be pilot tested in a variety of different settings such as campuses, schools, worksites, and community buildings to test for generalizability. The tool will be assessed for both reliability and validity.

Primary Investigators: Please review all of the vending audit protocol/surveys and provide feedback regarding:

- **Construct Validity:**
 - Do the snack and beverage healthy dense scores and the vending survey items actually measure healthfulness?
 - How do we define healthy?
 - Given all other standards maintain a snack must meet all healthful criteria to be called healthy, how will our density score be accepted?
- **Content Validity:**
 - Are the Qualtrics survey items/healthy dense scores assessing what should be assessed to determine healthfulness of vending?
- **Representation Validity:**
 - How useful will this tool be in other environments?
 - Will others be able to implement/use these tools?
- **Face Validity**
 - How effective is criteria for assessing healthy?
- **Criterion Validity:**
 - Have we captured “healthy snacks”?
 - The snacks with a score ≥ 5 , how can they contribute to a healthful diet?
- **Concurrent Validity:**
 - By comparing these three tools: Quick, Detailed, and NEMS-V, have we sufficiently established validity?
- Is there anything confusing or unclear with the protocol or surveys?

Please provide all feedback by 12/20/13

During this pilot testing period the primary researcher and research assistants will survey products in vending machines in order to compile master lists of common vended snacks and common vended beverages. The nutrition information for all snacks and beverages found in these vending machines will be determined and recorded and each product will be assigned a **healthy dense snack score** or a **healthy dense beverage score** in the master lists. Additionally, from the snack master list the frequency distribution of snack scores will determine the appropriate score distributions for classifying snack products as healthy, somewhat healthy, and unhealthy.

Validation Study:

Timeline

- The validation study will be conducted from January 15th until February 15th, 2014
 - December 2013 – January 2014
 - i. Distribute protocol and accompanying files for expert review by experts in the field of nutrition
 - ii. PIs should begin training research assistants/evaluators on the above Quick Form protocol
 - iii. Research assistants/evaluators should practice using the Quick Form protocol to complete the Qualtrics Building Vending Survey on at least 2 vending machines
https://syracuseuniversity.qualtrics.com/SE/?SID=SV_6J4sNDuY4lucliV
 - iv. IRR (>80%) should be established between two raters for at least one vending machine in order to move forward with study
 - v. Select buildings and vending machines for evaluation (preferably at least one snack and one beverage machine from each building)
 - vi. Photograph each vending machine, upload photos, and label photos appropriately with Machine ID and time the photograph was taken.
 - vii. Evaluate all selected vending machines using the Quick Form protocol to complete the Building Vending Survey in Qualtrics
 - viii. Evaluate a subsample, at least 25% of your vending machine sample with the Detailed Form protocol to complete the Building Vending Survey in Qualtrics
https://syracuseuniversity.qualtrics.com/SE/?SID=SV_6J4sNDuY4lucliV
 - ix. Evaluate a subsample, at least 50% of vending machines using the NEMS-V protocol and NEMS-V spreadsheet
 - x. **Note, at subsample of at least 4 vending machines (2 snack and 2 beverage) should be evaluated using all three methods by two different evaluators, using photographs of machine and machine contents taken at the same time point.*
- **All data is due for analysis on February 15th, 2014**
Qualtrics data and accompanying excel data sheets for quick, detailed and NEMS-V assessments.

For the validation study a total of twenty (20) vending machines from each campus location will be selected for inclusion in this study. Vending machines will be selected from different buildings on each participating university campus. Specifically, the vending machines with the most traffic flow in the student union, libraries, residence halls, academic buildings, and recreation facilities will be evaluated. At least one snack machine and one beverage machine from each type of building will be assessed. Two different individuals (the primary researcher and/or research assistants) will evaluate the selected vending machines in order to establish inter-rater reliability. One vending machine will be evaluated at a time. All selected vending machines at each location will be evaluated using the **Quick Method Protocol**. A subset of at least 25% of vending machines at each location will be evaluated using the **Detailed Method Protocol**. Additionally, a subset of at least 50% of vending machines will be evaluated using a previously validated and reliable vending machine assessment tool, the NEMS-V tool (7). Each vending machine must be evaluated on the same day at the same time using all necessary methods to ensure accurate results. (Evaluators will need to use the same photographs of the machine and its contents when completing all evaluations.)

Per campus:

- Evaluate at least 20 vending machines (Quick Method Protocol)
- Evaluate a randomly selected subsample of at least 25% of the vending machines using the Detailed Method Protocol
- Evaluate a randomly selected subsample of at least 50% of the vending machines using the NEMS-V Protocol
 - *Remember at least 4 machines (2 snack and 2 beverage) should be evaluated using the full protocol (Quick, Detailed, NEMS-V) must be completed by two different raters, using photographs taken of machine and machine contents at the same time point.*

Appendix C: Dining Instrument Instructions

Dining Environment Healthfulness Audit
Melissa Matthews and Tanya Horacek
Syracuse University

Purpose: This audit is designed to rate the dining nutrition environment of restaurants (fast food, sit down, cafes) and dining halls/cafeterias and food courts/student union. It can be used in worksites, malls, college campuses, hospital, airport, etc. It can be used to simply evaluate one venue or to understand your entire dining environment by evaluating a sampling of venues.

Orientation: Although most published restaurant/dining environment audits only classify items as healthy based upon a predetermined nutrient profile, this is not realistic or practical. When s make eating decisions, nutrient information is only one piece of the data and may or may not be used or readily available. Therefore, this audit is based upon the literature regarding the most important dining environmental variables that might influence behavior. Specifically the audit evaluates the food and preparation descriptions to determine healthfulness of menu items and the availability/extensiveness of other supports for making healthy dining decisions.

Campus team: This is the team you gather at your worksite, campus, or school environment to help you evaluate your dining nutrition environment. The team would decide which venues to evaluate, complete the training and practice using the audit, implement the audit, interpret your results and make recommendations to improve your dining nutrition environment. The team might be the wellness/health committee but should also include representatives of the served population and community partners.

Defining your audit environment: To decide which venues to evaluate, you and your campus team should decide which dining establishments (dining halls and restaurants) are most frequented by your population. At minimum, you should assess **approximately 30% of each type of dining establishment within a 1.5 mile radius**, depending on your campus environment. Each campus needs to decide, with their community partners, what is a representative sample for assessment of eating and food outlets. Your community team might dictate a restaurant beyond the 1.5 miles radius needs to be evaluated because it is popular with your campus population.

Venue Definitions:

Off-Campus Restaurants: These could be free standing or located within bookstores, stores, grocery stores, museum, etc.

Sit-Down: Food orders are taken and served by waitstaff at your table.

Fast Casual: Orders are placed at counter/window and delivered to your table. These could be national chains or local establishments.

Fast Food: Orders are placed at counter/window and either picked up at the counter/window. These could include food trucks. They may be organized as a food court, but each has their own cash register.

Delivery: Orders are placed by phone or web and delivered to home or office. This would be a menu review only.

Venues on your work or school campus:

Dining halls: Typically these are available only to people with a pre-paid dining contract or you pay a set fee upon entering. Many campus dining halls have the same offerings, but if your campus has dining halls that are different, or have specialties (the “vegan” dining hall vs the “steak” dining hall, for example), you might want to decide that you need to do more than 30% to get a valid representation of what is offered on your campus.

Cafeteria: These are different from dining halls in that they are usually (although not always or exclusively) separate from dining hall eating plans, and individuals must pay by the item. They would be located in a student union rather than a residence hall. Often they are conglomerations of fast food establishments mixed with some “snack shop” items. If a restaurant in a food court/union has their own cash register or is a chain restaurant establishment treat it as a separate fast food restaurant and evaluate each of them separately in the union type environment. If all stations are funneled to one set of cash registers and do not have chain restaurants– then treat that environment as a cafeteria and evaluate it as a whole (Since a patron can easily pick and choose from all vendors to make their plate).

Any of the off-campus restaurant venues might also be appropriate definitions for the venues on your campus.

Venue organization: free standing versus food court (shared seating between a variety of venues)

Training will require reading through all these files and practicing on two-three establishments until Interrater Reliability (IRR) is greater than 80%.

How to Assess

- 1. Create your enumeration sheet – list of restaurants and dining venues to be evaluated with their facility ID numbers . See attached.**
- 2. Print off the excel version of this survey to start your data collection, but actually enter all data into Qualtrics.**
3. Look online first for a menu and/or nutrient information. For dining hall/cateteria, if you cannot locate nutrient information, call the food services director and ask if it is available.

4. You may need to arrange for a visit for access to dining halls on-campus that are usually on a contract or pay-by-the-meal basis. The campus team leader should call the campus food director to set up times for raters. Try to be sure that they are during lunch or dinner, when all the regular food items will be available, but not during a “rush” period.
5. Bring with you a letter describing the research project with the PI’s phone number. For some of the audit items you may need to ask your server or the manager.
6. Bring all necessary forms. It will be handy to have the instructions.
7. We are using the concept of Photovoice to document evidence of unusual or interesting healthfulness supports. Submit pictures with a description to document this.
8. All data will be entered in to Qualtrics. At this xxxxxxxxxxxxxxxxxxxx It can be collected right on your mobile phone or I pad at the location- which will then stamp the GIS coordinates.

Evaluator Name

Date completed

State

Type of environment Elementary school, secondary school....

Location on or off-campus

Type of facility Dining Hall Cafeteria

Free standing or Food Court

Name of facility

Zip code

Was data entered at facility? Yes No

Hours open ?

Facility ID (six digits: state number, type of facility, facility number)

Definitions

Healthy Entrees^{20,21}

- **Menu Description**
 - **The amount of detail used to describe menu items, which can influence desirability of the menu items to s.**
 - **Examples of Menu Items**

General	Specific – Promoting Unhealthy	Specific – Promoting Healthy
Beef Burrito	5-layer burrito loaded with seasoned ground beef, beans, cheddar cheese, cool sour cream, and creamy nacho cheese in a white tortilla	Marinated and sliced sirloin steak with crisp romaine lettuce, flavorful black beans, homemade guacamole, roasted corn, and fresh pico de gallo in a whole wheat tortilla

Chicken Sandwich	Breaded and fried crispy chicken sandwich topped with melted Swiss cheese, 3 slices of crisp bacon, iceberg lettuce, tomato, and creamy ranch dressing	Tender wood-fire grilled chicken sandwich topped with freshly sliced tomato, crisp romaine lettuce, red onions, fresh avocado, and light mayo
Cheese Pizza	Ultimate cheese lover's pizza covered with creamy Alfredo sauce and topped with 5 layers of delicious cheeses	Margherita pizza with olive oil, fresh mozzarella, fresh tomatoes, and fresh basil

- **Substitutions**
 - **The ability for s to substitute for healthier options such as:**
 - **Whole wheat grains for white grains**
 - **Vegetarian/vegan options**
 - **Lean meat alternatives for meats**
 - **Steamed, grilled, and broiled preparation, rather than fried or sautéed**
 - **Clear and broth-based soups instead of cream soups**
 - **Option to have dressings/sauces on the side**
- **Lighter Fare Sections**
 - **The presence of a menu section highlighting healthier menu items**
 - **Examples**
 - **Weight Watchers**
 - **Low Calorie/Low Fat**
 - **Healthier Choices**

Healthy Side Dishes^{20,21}

- **Whole Grains²²**
 - **Whole grains or foods made from there contain all the essential parts and naturally-occurring nutrients of the entire grain seed in their original proportions. If the grain has been processed (cracked, crushed, rolled, extruded, and/or cooked), the food product should deliver the same rich balance of nutrients are found in the original grain seed. This means that 100% of the original kernel (bran, germ, endosperm) must be present to qualify as a whole grain.**
 - **Examples**
 - **Amaranth**
 - **Barley**
 - **Buckwheat**
 - **Corn (including whole cornmeal and popcorn)**
 - **Millet**
 - **Oats (including oatmeal)**
 - **Quinoa**

- Rice (brown rice and colored rice)
 - Rye
 - Sorghum (milo)
 - Teff
 - Triticale
 - Wheat
 - Wild rice
- **Cereals**
 - **Count the total number of cereals and the total number of healthy cereals (low sugar and high fiber) available. Divide the number of healthy options by the total number of options and multiply by 100.**
 - **Low sugar/high fiber examples:**
 - General Mills Cheerios
 - Kashi Go Lean
 - Kashi Heart to Heart
 - Fiber One
 - All Bran
 - Raisin Bran
 - Shredded Wheat
- **Salad Bar**
 - **Count the total number of options (slots) in the salad bar and the total number of healthy options (slots) in the salad bar. Divide the number of healthy options by the total number of options and multiply by 100.**
 - **Healthy Options**
 - Low and/or non-fat salad dressings
 - Fresh vegetables with no added salt or fats
 - Fresh fruit with no added sugars or syrups
 - Lean meats
 - Meat alternatives (beans, legumes, etc.)

Healthy Beverages^{20,21}

- Plain water
- Carbonated or seltzer water
- Milk/flavored milk/milk alternatives
- 100% fruit or vegetable juice
- Unsweetened tea or coffee
- Diet soda

Healthy Desserts^{20,21}

- **Options**
 - Fresh Fruit
 - Sherbet
 - Low and/or non-fat dairy options

- **Angel food cake**
- **Mini/small dessert sizes**
- **Lighter fare (low calorie, low fat, Weight watchers)**

Green Eating Signage

- **Types**
 - **Local**
 - **Organic**
 - **Fair Trade**
 - **Vegetarian**
 - **Vegan**

Appendix D: Recreation Facility Instructions

Directions

-Population size of campus

-At least one recreation facility must be evaluated. Additional facilities can be included and is recommended if possible.

(1) Hours of operation

- Hours of operation should be assessed for both weekdays and weekends.
- If hours vary depending on the day of the week, add all days of the week/weekend and generate an average.
- If facility is not open on weekends or weekdays check box for N/A
- If facility is a complex of facilities, only evaluate hours for the fitness center.
- Hours of operation should be assessed for the primary recreational facility and secondary recreational facility.

(2) Aerobic equipment

- Check boxes for each type of aerobic machines available
- The greater variety of equipment correlates with a higher score
- For availability, assess between 4PM-6PM and divide total number of open machines by amount of total cardiovascular machines. Multiply by 100.
- Check box N/A if no aerobic equipment exists.
- Aerobic equipment should be assessed for the primary recreational facility and secondary recreational facility.

(3) Strength Training Equipment

- Check boxes for each strength training equipment variable applicable
- Square footage can be calculated by the use of a tape measure.
 - Open space should have no equipment or weights obstructing the area
- Inclusion of barbells must include available loadable weight plates.
- Free weights should include a variety of dumbbells (at least 10 different weight varieties)
- Check box N/A if no strength training equipment exists.
- Strength training equipment should be assessed for the primary recreational facility and secondary recreational facility.

(4) Stairs

- Check boxes for each stair feature applicable
- Check box N/A if no stairs exist.

Definitions:

- Centrally located: stairs being visible from the front entrance of building
- Accessible: unlocked stairs, stair width sufficient for 2 people
 - **All** of the following needed to satisfy this item
- Aesthetically pleasing: creative lighting, decorative, carpeted, bright colored walls, artwork, motivational signs, music
 - **Any** one of the following would satisfy this item

- Safety: Well lit, rubber treading on steps (slip resistant), hand rail fully extended length of stairs
 - **Any** two of the following would satisfy this item
- Signage: Signage to steps, signage for emergency exit (if applicable), numbered floors in stairwell
 - **Any** one of the following would satisfy this item
- Stairs should be assessed for the primary recreational facility and secondary recreational facility.

http://genome.med.harvard.edu/images/directions/Stairs_Down_to_NRB_Basement.jpg

Example:

Centrally Located: Unknown

Accessible: Unblocked stairs

Aesthetically pleasing: No

Safety: Rubber treading, hand rail fully extended

Example:
Centrally Located: Unknown

Signage: Unknown

Accessible: Unblocked stairs, sufficient for 2 people

Aesthetically pleasing: Creative lighting, bright colored walls

Safety: Well lit, rubber treading, hand rail fully extended

Signage: No

<http://www.ramsa.com/images/content/5/6/56286.jpg>

(5) Intramurals & Club Sports

- Evaluator must use the scale (strongly disagree → neutral → strongly agree) to evaluate the adequacy of club sports and intramurals in general.
- Adequacy should be based on the prevalence of the following variables:
 - Variety of subgroups within sports
 - Men, women, greek, recreational, competitive, faculty
 - Variety of sports offered
 - Ability for faculty to create teams
 - Ability to waitlist if all team slots are filled
 - Absence of excessive waitlisted teams
 - Ability to create/add teams to meet demand during the season

(6) Adequacy of Outdoor Facilities

- Outdoor facilities can include: All purpose (lacrosse, soccer, field hockey, frisbee etc.), baseball/softball, basketball, football, tennis track, skating rink, volleyball, and pool. If an outdoor field exists but is not listed above, please indicate type of field(s) in other category.
- Facilities must be available for all students/faculty to use.
- Evaluator must use the scale (strongly disagree → neutral → strongly agree) to evaluate the adequacy of all available outdoor facilities in general.
 - Adequacy of the fields should be based on:
 - Availability
 - Condition
 - Size
 - Sufficiency

- Check box N/A if no outdoor facilities exist.

(7) Recent construction of a new recreation facility

- Student recreation center (SRC) can be defined as any facility that consists of at least one of the following: cardiovascular equipment, resistance equipment, all purpose area (e.g. basketball court), pool, ice rink, track.
- If an SRC was recently built but does not have the above qualifications, please indicate type of SRC in other category.

(8) Drinking fountains

- Drinking fountains must be separate from bathroom and available near recreation area for general use.
- A refillable bottle station is a water fountain that allows support for filling up reusable bottles. These can range in styles.
- Drinking fountains should be assessed for the primary recreational facility and secondary recreational facility.

<http://damontucker.files.wordpress.com/2011/11/water-bottle-refill-station.jpg>

http://sustainability.umich.edu/media/images/refill-station_2.jpg

(9) Cleanliness

- The amount of trash should be assessed for the following areas (if available):
 - Restrooms
 - Weight room
 - Locker room
 - Activity courts (all purpose)
 - Indoor track
 - Racquetball courts
 - Entrance/hallways
- Trash can be defined as any discarded or unwanted matter.
- Adequacy of cleanliness should use the scale (strongly disagree → neutral → strongly agree).
- Evaluator should use their personal judgment to agree or disagree with the adequacy of the cleanliness.
- Cleanliness should be assessed for the primary recreational facility and secondary recreational facility.

(10) Competency of Staff (Assistance)

- Test administrator should request assistance on how to set up and operate a piece of cardiovascular equipment, such as a treadmill.
 - Ex: *“Hi, could you please assist me in setting up a treadmill please?”*
- Staff member should be unaware of the current assessment
- This should be done in conjunction with part 3 of Accessibility (11), listed below.
- Competency of staff should be assessed for the primary recreational facility and secondary recreational facility.

(11) Accessibility to recreation facility for people with disabilities

- The following should be assessed for accessibility for people with disabilities:
 1. Does the facility provide exercise equipment that does not require transfer from wheelchair to machine? (Equipment)
 2. Are pool lift controls accessible from the deck level? Does the pool have a ledge to hold onto when entering the water? (Swimming pool)
 3. Did the staff member make eye contact when speaking to s? Did staff members provide assistance in a professional manner? (Professional Behavior)
 - Done in conjunction with item 10
 4. Can a 's personal assistant be allowed to enter the facility without incurring additional charges? (Fitness Center policy)
- Accessibility for people with disabilities should be assessed for the primary recreational facility and secondary recreational facility.
-

(12) Outdoor Aesthetics

- Adequacy of the recreation facility's aesthetics should use the scale (strongly disagree → neutral → strongly agree).
- Adequacy should be based on:
 - If windows providing an outdoor view are present in recreation area
 - Building is free standing and separated from other buildings in the proximity
 - Closest building should be at least 200 feet away.
 - Attractive view from inside facility
 - Attractive view can be defined as having one or more of the following qualities: foliage, campus view, city view, etc. If an attractive view can be justified, please indicate it next to score.
- Evaluator should use their personal judgment to agree or disagree with the adequacy of the outdoor aesthetics.
- Outdoor Aesthetics should be assessed for the primary recreational facility and secondary recreational facility

<http://images.asiatravel.com/Hotel/1891/fitness1891.jpg>

http://www.rochester.edu/athletics/assets/images/facilities/fitness_center_large.jpg

Example of a recreation facility with windows in recreation area in addition to an attractive view
Example of a recreation facility without windows in recreation area and no attractive view

(13) Bike racks availability

- Size of bike rack is unrelated
- All possible entrances to facility must be assessed
- Check box N/A if no bike racks exist

- Bike racks should be assessed for the primary recreational facility and secondary recreational facility

(14) Bike rack adequacy

- Divide total number of open bike slots by amount of total bike slots. Multiply by 100.
- Bike rack outside recreation facility should be assessed.
- Should be assessed between the hours of 8am-5pm

(16) Trails

- Trails must be marked and/or have signage.
- A campus map or an online map such as Google Maps can take measurement.
- Measurement must be taken from recreation facility to the beginning of the trail.
- Length of trail must be at least ½ mile in length. Can be a circuit or non-continuous
- Does not have to be scenic or attractive. Trail can be through campus or city as long as it is a marked trail.
- Trails should be assessed for the primary recreational facility and secondary recreational facility

(17) Proximity

- Measurement can be taken by a campus map or a an online map such as Google Maps
- Distance must be calculated from recreation facility to closest residence hall.
- Proximity should be assessed for the primary recreational facility and secondary recreational facility

(18) Health related offerings

- A two-day snapshot will be used to determine the adequacy of health related offerings.
 - Tuesday and Wednesday consecutively will be assessed for health related offerings
 - Evaluator should count the amount of health related offerings on-campus for that day (Tuesday and Wednesday)
 - Score must be based on the total for both days (Tuesday and Wednesday)
 - Areas to look for health related offerings include:
 - Health services
 - Recreation services
 - Student activity calendars
 - Fitness centers
 - Student services
 - Health related offerings can include a wide range of activities such as:
 - Lectures
 - Guest speakers
 - Workshops
 - Outings

- Free fitness classes (yoga, tai chi, etc)
- Group sports (basketball, kickball, capture the flag)
- Other (anything health related)

(19) Cost/Fee for access to additional recreation services

- Check boxes for each variable that a fee applies to.
- Fees for fitness classes, fitness center, intramurals, and sports clubs can be found on the campus recreation website or by calling the facility.
- Recreation fees integrated in the student tuition does not classify as a cost/fee for this assessment.

(20) Group Fitness Classes

- Fitness class information can be found within recreational facility or on the Internet.
- Do not combine classes offered in the spring and fall. Assess varieties of classes offered for one semester, preferably the current semester at the time of assessment.
- Different varieties of the same class count as two separate classes. For example, morning yoga and power yoga would count as two separate classes.
- Fitness classes include but are not limited to: yoga, zumba, spinning, platies, tai chi, swimming, etc.
- If fitness class is not listed but may qualify, indicate class type(s) next to score.

(21) Program Scheduling

- Reservation for recreation equipment or programs should be found within recreational facility or online.
- Programs can include but not limited to: fitness classes, personal training, club sports, intramurals, excursions, etc.
- Recreation equipment can include but not limited to: cardiovascular machines, multi-purpose rooms, resistance equipment, etc.
- Scheduling should be assessed for the primary recreational facility and secondary recreational facility

(22) Social Media

- Social media must be assessed for the campus's primary recreation page.
- Social media platforms can include Facebook, twitter, instagram, Google+. If social media platform is not listed but is in periodic use, please list platform next to score.
- Valid social media updates can includes tweets, status updates, pictures, videos, and surveys.
- Social media updates must be relevant to recreation services. They should be related to events, offerings, and highlights.
- The sample of updates to be assessed should be based on the day previous to the assessment.

<https://twitter.com/unccampusrec>

(23) Amenities

- Check boxes for each amenity that is offered at the recreation facility.
- Calculate total amount of amenities offered and select appropriate choice.
- Amenities should be assessed for the primary recreational facility and secondary recreational facility

Example: UNC's twitter for the recreation department has >3 updates daily.

Appendix E: Letters to Facilities

E.1: Letter to Restaurants

September 8, 2014

Dear Dining Center Manager:

Our project group at the University of Maine is visiting dining centers/cafeterias in the area to measure the foods that employees/students have available to them. Members of our project team are visiting dining centers/cafeterias to look at certain things such as the menu and signage.

We are not inspectors or evaluators, nor are we connected with our competitors. We follow strict rules to protect any information we collect. We will assign an identification (ID) number to your dining center/cafeteria, and only the project staff will see your individual information. Information about your dining center/cafeteria will be combined with others before it is shared outside, and the name of your facility/organization will not be used.

Thank you for allowing us to spend a few minutes in your dining center/cafeteria, recording information. We may wish to schedule a time to ask you additional questions. Your participation is voluntary, and you may inform us at any time if you do not wish to participate. If you have questions or concerns, please contact me at 207-581-3134 or awhite@maine.edu.

Best regards,

Adrienne A. White, PhD, RD
Professor
University of Maine, Orono.

E.2: Letter to Recreation Facilities

July 24, 2014

Dear Recreation Facility Manager:

Our project group at the University of Maine is visiting recreation facilities in the area to measure the physical activity options that employees/students have available to them. Members of our project team are visiting recreation facilities to look at certain things such as the equipment, programs, and amenities.

We are **not** inspectors or evaluators, nor are we connected with your competitors. We follow strict rules to protect any information we collect. We will assign an identification (ID) number to your recreation facility, and only the project staff will see your individual information. Information about your recreation facility will be combined with others before it is shared outside, and the name of your facility/organization will not be used.

Thank you for allowing us to spend a few minutes in your recreation facility, recording this information. We may wish to schedule a time to ask you additional questions. Your participation is voluntary, and you may inform us at any time if you do not wish to participate. If you have questions or concerns, please contact me the Primary Investigator for this study at awhite@maine.edu

Best regards,

Adrienne A. White, PhD, RD
Professor
School of Food and Agriculture
207-581-3134

Author's Biography

Carolyn Anne Stocker was born in Springfield, Massachusetts on November 27, 1992. She was raised in Western Massachusetts and graduated from Westfield High School in 2011. Carolyn majored in food science and human nutrition, was a member of the women's varsity cross country and track and field teams, and was named to Team Maine for having the highest individual GPA on the women's cross country and track and field teams in 2013 and 2014. She has worked as undergraduate researcher in the multistate iCook-4H research study and the multistate environmental audit research study. Upon graduation, her plan is to continue her education in a dietetic internship and a masters program to become a registered dietitian at the University of Massachusetts, Amherst. Later, she hopes to complete a PhD program in human nutrition or public health nutrition.