

Warren J. Baker Endowment for Excellence in Project-Based Learning

Robert D. Koob Endowment for Student Success

FINAL REPORT

I. **Project Title**

Eating on Campus: Assessing the Nutrition Environment for Students

II. **Student(s), Department(s), and Major(s)**

1. Kelsey DeGreef	Nutrition
2. Madison Fishler	Nutrition
3. Rachel Gipson	Nutrition
4. Kelly Koyano	Nutrition
5. Jansen Lei	Economics

III. **Faculty Advisor and Department**

Marilyn Tseng, PhD
Kinesiology and Center for Solutions Through Research in Diet and Exercise (STRIDE)

IV. **Cooperating Industry, Agency, Non-Profit, or University Organization(s)**

NA

V. **Executive Summary**

Background. The food environment is increasingly thought to have a major influence on eating behavior. University campuses offer a unique opportunity to study the extent to which food environments influence eating. However, in-depth characterizations of campus food environments are needed to identify potential targets for intervention, and such studies must be based on reliable measures. The objective of this project was to use a standard and reliable instrument, the Nutrition Environment Measures Survey (NEMS), to describe dining venues on the Cal Poly campus, and to compare Cal Poly food stores with off-campus alternatives.

Methods. The five student investigators on this multidisciplinary, team-based project were trained and certified to use standard protocols to apply the NEMS for Campus Dining (NEMS-CD) to 18 campus dining venues, and the NEMS for Stores (NEMS-S) to two campus food stores and ~40 off-campus supermarkets, groceries, and convenience stores in San Luis Obispo.

Repeat assessments were also conducted to allow for evaluation of inter-rater and test-retest reliability. We calculated prevalence of healthy and unhealthy constructs based on the NEMS and compared scores across different types of venues. *Results.* NEMS-CD scores ranged from 4 to 47 (mean (SD) 28.1 (16.3)) out of a possible maximum score of 97. Twelve percent of entrées and 36% of main dish salads served in these venues were classified as 'healthy.' NEMS-S score for the two on-campus food stores (24 for both) was intermediate between off-campus convenience stores (mean (SD) 12.0 (5.3)) and full-scale grocery stores (mean (SD) 31.1 (10.0)), with a possible maximum score of 54. *Conclusion.* Standardized environmental

evaluation provides important insights into both positive and negative aspects of campus community food venues. Positive aspects include the high proportion of venues offering healthy entrées, and the availability of nutrition information online. Areas for improvement include increasing the proportion of healthy entrées overall; improving the variety of healthy side dishes and beverages; making nutrition information available at point of purchase; and providing signage and implementing pricing strategies to facilitate more healthful eating choices. Our environmental assessment identifies potential targets for modification and baseline data for designing and implementing action-oriented research aimed at improving the campus food environment's support of healthful food choices among students. These findings will be used as a basis for future work to investigate the potential of modifying the Cal Poly food environment to facilitate students' healthful food choices.

VI. Major Accomplishments

The research team accomplished the following during the project period:

1. completed 8-10 hours of on-line training to use NEMS instruments, then conducted practice assessments to ensure reproducibility of results.
2. enumerated all campus dining venues, and all food markets both on campus and with the city of San Luis Obispo.
3. conducted assessments of all 18 campus dining venues, two campus food markets, and 37 food markets through the city of San Luis Obispo, including repeat assessments for test-retest and inter-rater reliability
4. entered and edited data, and used standard procedures to score all venues for analysis
5. presented preliminary findings as an oral presentation and as a poster at the Building Healthy Academic Communities conference held at UC Irvine in April 2015, and at the CSM student research conference in May 2015. The team's presentation at BHAC was highlighted in the STRIDE newsletter soon afterward (<http://stride.calpoly.edu/stride-science-stride-team-presents-national-conference>)
6. submitted a manuscript to *Preventing Chronic Disease*, a peer-reviewed, electronic journal established by the CDC (Centers for Disease Control and Prevention), in September 2015. The manuscript was returned for revision, accepted for publication in late November, and is currently in press.

VII. Expenditure of Funds

Travel. Funds (~\$1893) were used primarily to cover costs of travel to the Building Healthy Academic Communities National Summit at UC Irvine. A smaller amount (\$23) was spent on travel to food stores in and near San Luis Obispo. **Operating expenses and contracted services.** Funds (~\$890) were used to cover the cost of supplies needed for data collection, management, and storage; photocopying of protocols and assessment instruments; and printing the research poster presented at the BHAC and CSM student research conferences.

VIII. Impacts to Student's Learning

This research project was very impactful to my development of nutrition research experience. I gained skills in collecting data, analyzing results and disseminating our research findings. I learned a great deal about the status of our campus food environment and how it compares to local grocery and convenience stores in San Luis Obispo. Furthermore, the process of collecting data from local stores helped me become much more knowledgeable about the availability and content of certain food items that are sold at food stores. With this experience, I have a better understanding of the important factors to consider when trying to support and implement healthful food choices within a community. – Kelly Koyano