Summary of Secondary Data Analyses of National EFNEP Data Years 2007-2014

In 2015, the Department of Food Science and Human Nutrition at Colorado State University requested and received a copy of data from the Expanded Food and Nutrition Education Program (EFNEP) for the years 2007-2014 reported through WebNEERS. Each year had multiple participant files (behavior checklist, dietary recall, demographics, food assistance program participation, etc.) with no straightforward means to merge them within or across years; thus, substantial time and expenses were required to clean and check files before merging. In addition, some of the variables were labeled differently in different years and the Healthy Eating Index (HEI) variables were based on the 2000 or 2005 Dietary Guidelines HEI depending on the year. However, we were able to create a data set of 512,899 subjects with complete data from pre/post EFNEP class series, including matched Behavior Checklist (BCL) and 24-hour (24 HR) dietary recall data.

Given this large data set, virtually any comparison would yield statistically significant findings, though not necessarily practically significant. Researchers made the decision to initially look at broad patterns and trends rather than within state comparisons. This summary is a report on several demographic variables, change score patterns for the Healthy Eating Index (HEI), scores on Food Resource Management, Food Safety, and Nutrition, and fruit and vegetable intakes.

EFNEP calculates the Healthy Eating Index (HEI) for pre and post as well as a change score (post minus pre). For 2007-2012, the HEI was based on the 2000 Dietary Guidelines for Americans (DGA) and for 2013-2014, it was based on the 2005 DGA. Although both HEIs had a maximum score of 100, they were based on different variables and cutoffs, therefore, the scores are not directly comparable. Improvements in HEI ranged from 1 point to almost 12 points depending on the state. However, 70% of the improvements ranged from 3-7 points and 16% from 1-3 points.

One pattern that was evident was the consistent pretest scores over time – both from the BCL and the 24 HR recall (HEI total), i.e., within states, participants tended to have similar pretest scores over the 8 years of data. The observation that pretest scores are consistent over time suggests that the reported positive outcomes, based on pre to post differences, would still be seen if a comparison group was included since the populations base (pre-test) scores don't appear to change over time. This observation might help to mitigate concerns that EFNEP does not use a comparison group when reporting outcomes.

Across the country, about 30% of EFNEP participants self-identified as White, Black, or Hispanic (Table 1). However, the percentages differ by region: the Northeast (22%) and West (5%) have fewer Blacks while the South has a higher percentage of Blacks (42%). In contrast, the West is much higher in Hispanics (57%). About one-third of all participants have less than a high school education but that percentage is higher in the West (40%). Nationally, over 25% have some post-secondary education. These variations in race/ethnicity and education could present challenges for educators when selecting materials and managing classes.

Self-reported changes in monthly food cost savings generally range from $5-30 (a few states report higher savings). These estimates are obviously not precise but they are consistent, suggesting some behavior changes related to food resource management.

National data from 2007-2014 show consistent, modest increases in BCL subscale scores pre to post – mostly a 0.5-1 point increase on a 5 point scale (Table 2). The practical implications of such increases are unclear as the scales tend to have a ceiling effect. These findings, while positive, do support the ongoing efforts by several committees to develop a new behavior checklist with questions that are reflective of later Dietary Guidelines and are more sensitive for measuring change.

Table 1. Race/Ethnicity and education percentages according to region for years 2007-2014 inclusive.

Demographic Variable	**North Central Region**	**Northeast Region**	**South Region**	**West Region**	**Total**
Education Level (years)					
≤ 11	33%	32%	30%	40%	33%
12	39%	37%	41%	33%	38%
13-15	23%	24%	23%	21%	23%
16+	5%	7%	6%	6%	6%
Race/Ethnicity					
White	36%	38%	31%	24%	32%
Black	34%	22%	42%	5%	29%
Hispanic	22%	33%	23%	57%	31%
Other	8%	7%	3%	15%	7%
Common ranges for monthly reported food cost savings	$5-20	$10-20	$10-20	$10-30	

Table 2. National change score ranges for 2007-2014 inclusive.

Range of Improvements	**Food Resource Management**	**Nutrition**	**Food Safety**	**Vegetable Intake**	**Fruit Intake**
< 0.5	29%	23%	25%	88%	73%
0.5-1	69%	77%	65%	12%	27%

> 1	2%	--	10%	--	

The combined increase in fruit and vegetable intake reflected in the 24 HR recalls range from a half to 1 serving. Gills' et al. work investigating how 24 HR recalls are collected and how the data is entered indicate the need for more rigor and fidelity in all aspects of dietary data collection in EFNEP.[1]

EFNEP's database, which includes a huge number of individuals, multiple years of data and large number of variables, is an asset that has not been fully examined. Groups or individuals with strong statistics and statistical software capabilities could run much more sophisticated analyses than we have performed. We recommend that EFNEP explore options for enhanced analyses of their database. These analyses might include contrasting outcomes for different regions or ethnic/racial groups; examining the association of participation in food assistance programs; and contrasting different education levels.

However, it should be noted again that EFNEP, through several committees, is currently testing a new BCL and the HEI calculation will likely soon be based on the 2010 or 2015 Dietary Guideline recommendations. Thus, any comparisons of future EFNEP data to this data set would be based on different outcome tools.

[1] Gills, S., Baker, S., Auld, G. (in review). Collection methods of the 24-hour dietary recall as used in the Expanded Food and Nutrition Program, J Nutrition Education and Behavior.