Background on CalCHEEPS

Introduction
The *California Children's Healthy Eating and Exercise Practices Surveys* (*CalCHEEPS*) is the most comprehensive dietary and physical activity assessment of 6- to 11-year-old children in the state of California. *CalCHEEPS* began in 1999 and is administered biennially in odd years. This survey is housed at the California Department of Public Health's *Nutrition Education and Obesity Prevention Branch's* (*NEOPB*). The *CalCHEEPS* was designed to monitor dietary trends, especially fruit and vegetable consumption, among California children for evaluating their progress toward meeting the *2010 Dietary Guidelines for Americans*, *Healthy People 2020* Objectives, and 2008 *Physical Activity Guidelines for Americans*.

Study Design
In 2013, a telephone-based, parent-assisted 24-hour recall interview conducted in English and Spanish was used to capture dietary intake, physical activity, screen time, weight status, and related factors among a random sample of 6- to 11-year-old children from California households receiving *CalFresh* (n=651; 51.5% response rate). A pilot study of this method was conducted in 2011 with 334 children (9 to 11 years). From 1999 to 2009, a two-day, parent-assisted food and activity diary was mailed to a demographically balanced sample of California households with 9- to 11-year-old children from a market research panel (n=~700), with a subset of respondents also completing a telephone interview to assess children's unassisted knowledge, attitudes, and beliefs (n=~400). The study design changed in 2011, because the market research panel used in previous years only included English-language households and became too small to draw a representative, population-based sample.

Survey Administration
Parental consent and child assent were secured for all participants. In 2013, dietary intake was collected using a 24-hour dietary recall interview conducted over the telephone and administered in English or Spanish. Prior to the telephone interview, participants were mailed a two-dimensional food models booklet for estimating portion sizes during the interview and a paper tape measure to assist parents in measuring their child's height. Dialing hours were from 5:00 to 8:00 pm using a 24-hour dietary recall method with the child being the primary respondent with parental assistance for older children (9 to 11 years). The recall sequence began by collecting children's intake after they got up in the morning the day of the interview and proceeding up to the present time. Then, the interviewer asks about intake from the afternoon until the child went to bed from the previous day to obtain a complete 24 hours. Recalls focused on time of day markers (before, during, and after school; when you got up; before you went to bed; after dinner; etc.) rather than clock-based times of day (7:00 am, 12:00 pm, 5:00 pm, etc.) to assist children in their recall. For younger children (6 to 8 years), parents were the primary respondents with child assistance and the dietary recall followed the standard midnight to midnight sequence. Dialing hours for younger children (6 to 8 years) were from 5:00 to 8:00 pm on weekdays and 7:00 am to 8:00 pm on weekends. During past years (1999-2009), parents were asked to assist their child in keeping a diary of foods that the child ate and the physical activities the child engaged in on two consecutive school days.

The consumption questions were followed by questions that assessed physical activity and screen time; height and weight (parent-reported); awareness of the California *Children's Power Play! Campaign* and *Harvest of the* Month; food preferences, behavioral capability, modeling, and social norms; and home, school, and neighborhood environments. Body mass index (BMI) [weight (kg)/height^2 (m)] was used to classify population segments as overweight or obese based on age- and sex-specific BMI percentiles. A BMI at or above the 85th percentile up to the 95th percentile represented overweight, while those at or above the 95th percentile were obese.

Sampling Methods
Randomly selected households with a 6- to 11-year-old child were recruited via postcard and telephone from a current list of *CalFresh* participants. Approximately 650 children were interviewed by telephone between the months of January and June. Older children (9 to 11 years) completed the interview with parent assistance. For younger children (6 to 8 years), the parent was the primary respondent and

completed the interview with their child present to help answer questions and confirm food details. Demographic data included gender, ethnicity, parent education level, overweight status, physical activity level, participation in school breakfast and lunch, consumption of fast food, and receiving nutrition lessons. In 2013, data were oversampled for white and black children to provide sufficient samples to examine findings among these race/ethnic subgroups. In 2007 and 2009, data were oversampled for low-income households to provide greater sensitivity for analyzing trends among the *NEOPB's* target populations.

Statistical Analysis

The 2013 data were weighted by age and race/ethnicity to reflect the population of household in California with 6- to 11-year-old children receiving CalFresh in the Medi-Cal Eligibility Data System (MEDS). In 2011, data were not weighted because the sample mirrored the MEDS population of household with 9- to 11-year-old children. In previous years, data were weighted to reflect the most recent Current Population Survey of California households with 9- to 11-year-old children in order to provide representative data for the state based on race/ethnicity (1999-2009), number of 9- to 11-year-old children (1999-2005), household income (1999-2005), federal poverty level (FPL) (2007-2009), and *CalFresh* participation (2007-2009). The inclusion of low-income oversamples in 2007 required that the data be weighted by FPL and *CalFresh* participation, rather than household income.

Variables which were either continuous or ordinal and summarized as means were analyzed for differences between demographic subgroups using either t-test or one-way ANOVA. The t-test was used for variables with two categories (i.e., gender); while the one-way ANOVA compared differences among three or more categories (i.e., parent education). If statistically significant, the ANOVA was followed up with Tukey's Standardized Range Test at a procedure-wise error rate of five percent. Variables that were dichotomous or categorical and summarized as proportions were examined for differences among demographic subgroups using Chi-Square test of independence. The *CalCHEEPS* data tables present unadjusted bivariate relationships. Statistical significance was indicated if differences were detected at the $p<.05$ level or greater. If a cell states "Insufficient Sample Size" this implies there are less than 20 subjects in the cell or an expected value less than five, and thus, these results cannot be generalized to the group as a whole.

Limitations

A limitation of *CalCHEEPS* is the inability of a single 24-hour recall to directly estimate the distribution of usual intakes in a population due to within-person variance. However, the recall is useful for estimating a population's mean usual daily intake as a marker of progress toward meeting recommendations. Cross-sectional surveys cannot infer causality. Compared to measured data, parent-reported height and weight tend to overestimate childhood overweight with the discrepancy primarily resulting from underreported height. To improve the accuracy of parent-reported height, paper tape measures were provided to families participating in this study. In 2011 and 2013, the study sample was limited to *CalFresh* recipients and therefore may not be generalizable to all children in the State. Lastly, there are both self-report and social desirability biases that may impact the data reported by respondents.

Applications

Recent applications of the survey data guide the development and enhancement of the *NEOPB* and its targeted social marketing campaigns, such as the *Children's Power Play! Campaign* and *Harvest of the Month*, to help improve the health of low-income Californians. Findings on fruit and vegetable intake, physical activity, and specific demographic groups help the campaigns identify barriers and facilitators to achieving the recommended health behaviors by the target audience, as well as prioritize and refine activities to maximize the impact. The *NEOPB* uses survey data to identify effective policy, system, and environmental strategies that support nutrition education including access to fruits and vegetables where people live, work, learn, and play.

Technical Assistance

For technical assistance regarding the *CalCHEEPS,* contact Angie Jo Keihner, MS, at Angie.Keihner@cdph.ca.gov.