

# **Validating Portion Size Assessment Methods in Elementary Schools with Self-Service Salad Bars**

Kelsie Dunn

Department of Food Science and Human Nutrition

## **Abstract**

**Objectives:** The goals of this project were to determine the amount and variety of fruits and vegetables fourth grade students selected from school salad bars as measured by the “gold standard method” of weighing each fruit and vegetable taken and consumed; compare two less resource and time intensive methods of measuring the serving taken to this preferred standard; and determine which of the two methods most accurately approximates the weighed amount of each item selected.

**Methods:** Two methods, Pan Weight (PW) and Individual Food Weight (IFW) were tested against the gold standard Actual Weighed Amount (AWA) method. The PW method weighed the individual holding pans on the salad bar on a digital scale immediately before and after the fourth grade cohort went through the line. The IFW weighed three individual pieces of every item from the salad bar and averaged the weights. The AWA used plastic boats given to every third student to weigh fruits and vegetables selected from the salad bar before and after they ate. Student trays were tagged by research assistants as students left the lunch line with items taken from the salad bar, and the trays photographed after students had eaten. Two research assistants then viewed each photograph to determine percent food waste. Both methods were compared to the AWA method. A paired t-test was used to compare all three methods.

**Results:** No significant difference was found when comparing the PW and IFW methods to the AWA method. Both methods produced results that were close to the results produced by the AWA method, although the PW method underestimated the amount taken when compared the AWA method. The

comparison of amounts taken between the AWA and PW methods ( $P=0.09$ ) indicated no statistical significance, as did the comparison between the IFW and AWA methods ( $P=0.39$ ). The comparison of amounts consumed was also non-significant between the AWA and PW methods ( $P=0.14$ ) and AWA and IFW methods ( $P=0.74$ ).

**Conclusions and Implications:** For future plate waste studies, either the PW method or IFW method could be used, in conjunction with digital photography, to determine the amount of fruits and vegetables taken from the salad bar. Either method would be less intrusive to students and staff in the cafeteria and provide results that are similar to the more time intensive and intrusive AWA method.