Measuring the Impact of Incentives on Aggregate Fruit and Vegetable Consumption for Lunch in Two Wisconsin Elementary Schools

**INTRODUCTION**

Background

Fruit and vegetable consumption has been shown to improve health and reduce the risk of a variety of costly chronic diseases. However, children’s fruit and vegetable intake in the United States is well below USDA recommended guidelines.

As a result, increasing children’s fruit and vegetable consumption has become an important focus among practitioners, policymakers, and researchers. There have been many school-based policies and interventions designed to increase children’s fruit and vegetable consumption.

In particular, recent research has begun to examine the influence of incentives to motivate children to eat more fruits and vegetables.

**Literature Review**

- Children’s low FV intake
  - National Cancer Institute, 2013; Centers for Disease Control and Prevention, 2013; Schulte et al., 2016; Cornish et al., 2014; Cornish et al., 2015
- FV intake increased with interventions in school such as nutritional education, school food service and teacher involvement
  - Perry et al., 2011; Rodeheffer et al., 2013; Chodrow-Ritter et al., 1991; Bronaugh et al., 1994
- Researchers separate FV waste into bus tubs by item
- FV intake increased with options/choices
- Using incentives to increase FV intake

**Current Research**

The research literature provides many examples of attempts to increase children’s fruit and vegetable consumption in a variety of settings and contexts. Although prior research has explored how incentives affect children’s fruit and vegetable consumption, most studies measured the effect at the individual level (reward to each student for individual behavior). In this study we have added to the existing literature through examining the use of group-level incentives to motivate children to eat more fruits and vegetables at the aggregate level. These efforts are in partnership with the administration, teachers, and food service staff from two Wisconsin elementary schools.

**METHOD**

**Participants**

- School I: 424 students and 20 teachers
- School II: 406 students and 20 teachers

Only the students who took the school lunch were observed, thus the number of student participants varied across days.

**Study Design**

- Self-serve salad bar at lunch
- Children must take two items
  - Three lunch periods, 2 grades each period
- Three observation days each week (M W F)

- Table set up at waste disposal area
- All children leave tray on table upon leaving
- Researchers separate FV waste into bus tubs by item
- All lunch periods, waste is weighed for each FV item

- All amounts weighed using digital scale (pounds)
- Pounds to ounces (multiply by 16)
- Ounces per lunch served divided by lunches served

**Incentives**

- Students: Free bowling/roller skating passes
  - Announcements, encouragement and incentives, 6 days (4 days)
  - Teacher asked to provide students with added encouragement
  - Letter sent home to parents
  - Posters and encouragement in cafeteria

**Fruit & Vegetable Offerings**

- Generally same in both schools, repeated through study phases
  - Apple Slices, Diced Peaches, Red Gapers, Diced Pears, Kiwi Halves, Fruit Cocktail, Pineapple Chunks, Banana
  - Baby Carrots, Green Salad, Cherry Tomatoes

**RESULTS**

**Study Phases**

- Initial baseline, 3 days
  - No intervention, just measuring
- Announcements, encouragement and incentives, 6 days (4 days)
  - Prizes if aggregate FV consumption increases
- Return to baseline, 3 days
  - Principal and teacher survey after all phases of study concluded
  - Participation, engagement, encouragement, enthusiasm

**Announcements and Encouragement**

- Daily morning announcement over PA system (general principal)
- Daily classroom announcement before lunch (specific, teachers)
- Teachers asked to provide students with added encouragement
- Letter sent home to parents
- Posters and encouragement in cafeteria

**Fruit & Vegetable Consumption**

- Baseline period compared to incentive period
  - Weighted average across items in each period

**DISCUSSION**

Our results show aggregate fruit and vegetable consumption increased in both schools during the incentive period. The increase in School I was statistically significant and much larger than the slight increase in School II which was not statistically significant. We also found that only School I sustained an increase in consumption during the return to baseline period, but this increase was limited to only fruit.

There were several strengths and successes of this research as well as some important limitations and a variety of challenges that we encountered leading to several recommendations for future research. Our next research examines and describes these successes, strengths, limitations and challenges as well as recommendations for future work in more detail.

Please see our second poster titled “Successes, Challenges and Recommendations Regarding Using Incentives to Increase Aggregate Fruit and Vegetable Consumption in Elementary Schools” for a presentation of the results from this extended research.

We gratefully acknowledge generous funding support from the UWEC Office of Research and Sponsored Programs, Blugold Commitment, Xcel Energy of Eau Claire, and Northwestern Bank of Chippewa Falls.