

# School Meals in the 21<sup>st</sup> Century Using Technology & Design Innovation

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## Background:

Improving dietary intake among low income youth is critical as nearly one-third of U.S. children are obese. Schools are arguably the most important system in which to intervene.

Most school-age children in the U.S. spend half of their waking hours and consume up to half of their daily calories in school. Improving school meals is necessary for addressing social inequities to healthful food access, given that lower income children are most likely to participate in school meals.

Landmark federal legislation, the Healthy, Hunger-Free Kids Act (HHFKA), was passed in 2010 to improve child nutrition by better aligning school meal standards with the Dietary Guidelines for Americans.

To maximize school meal programs, changes to align school foods with HHFKA should increase school meal participation and reduce food waste.

School meals are healthier than ever before, but how do we get students to eat them when long lines, stigma and unhealthy alternatives abound?

## Intervention: Student-Centered Redesign

This is a quasi-experimental controlled trial of an innovative, student-centered redesign of San Francisco Unified School District's (SFUSD) middle- and high-school meal programs developed in partnership with University of California Cooperative Extension (UCCE) and IDEO, a global design firm. The redesign included:

- Cafeteria renovation** to encourage meal participation
- Additional points of sale of school meals** including vending machines and mobile carts to reduce wait times and increase convenience
- Teacher promotion** including a video to educate staff about the importance and quality of school meals, promotional flyers, taste tests, and coupons to eat with students

## Study Design

- 2-year quasi-experimental; cross-sectional
- 12 middle and 12 high schools; half assigned to intervention
- Linear regression used to compare changes 2016 to 2017
- Models of student survey data adjusted for race/ethnicity, gender, and grade
- Models for school lunch participation adjusted for student enrollment, free and reduced price meal enrollment, and race/ethnicity

## Primary Outcomes

- Increase school lunch participation
- Increase fruit and vegetable intake
- Decrease food waste

## Long Term Goals

Enhance the financial and social sustainability of school foodservices

Improve dietary intake and reduce obesity among low-income youth

## Preliminary Results: 2016 to 2017 changes between 12 intervention and 12 control schools

### Summary

The evaluation of the intervention to improve student perceptions & access to school meals shows that more students:

- Eat school breakfast
- Get school lunch from mobile carts
- Report school lunch tastes good
- Report school lunch healthier than what would eat otherwise
- Report school staff encouragement

Table 1. Student Characteristics	2016	2017
Number	8452	6920
Grade		
7 <sup>th</sup> grade	23%	13%
8 <sup>th</sup> grade	25%	27%
9 <sup>th</sup> grade	26%	32%
10 <sup>th</sup> grade	26%	28%
Race/Ethnicity		
Asian	50%	55%
Latino	17%	18%
White	10%	12%
African American	4%	4%

Table 2. Changes in Teacher Survey Responses 2016 to 2017	Estimate	P Value
Purchase food from student vending machines	0.25	0.008
Not purchase food from staff vending machines	-0.18	0.009
School meals healthy	0.05	NS
School meals tastes good	-0.17	NS
Discussed healthy eating with students	0.09	NS
Encourage students to eat school lunch	0.19	NS
Eat lunch with students in cafeteria	0.12	NS
Eat fruits or vegetables in front of students	0.02	NS

Figure 1. Student Meal Participation

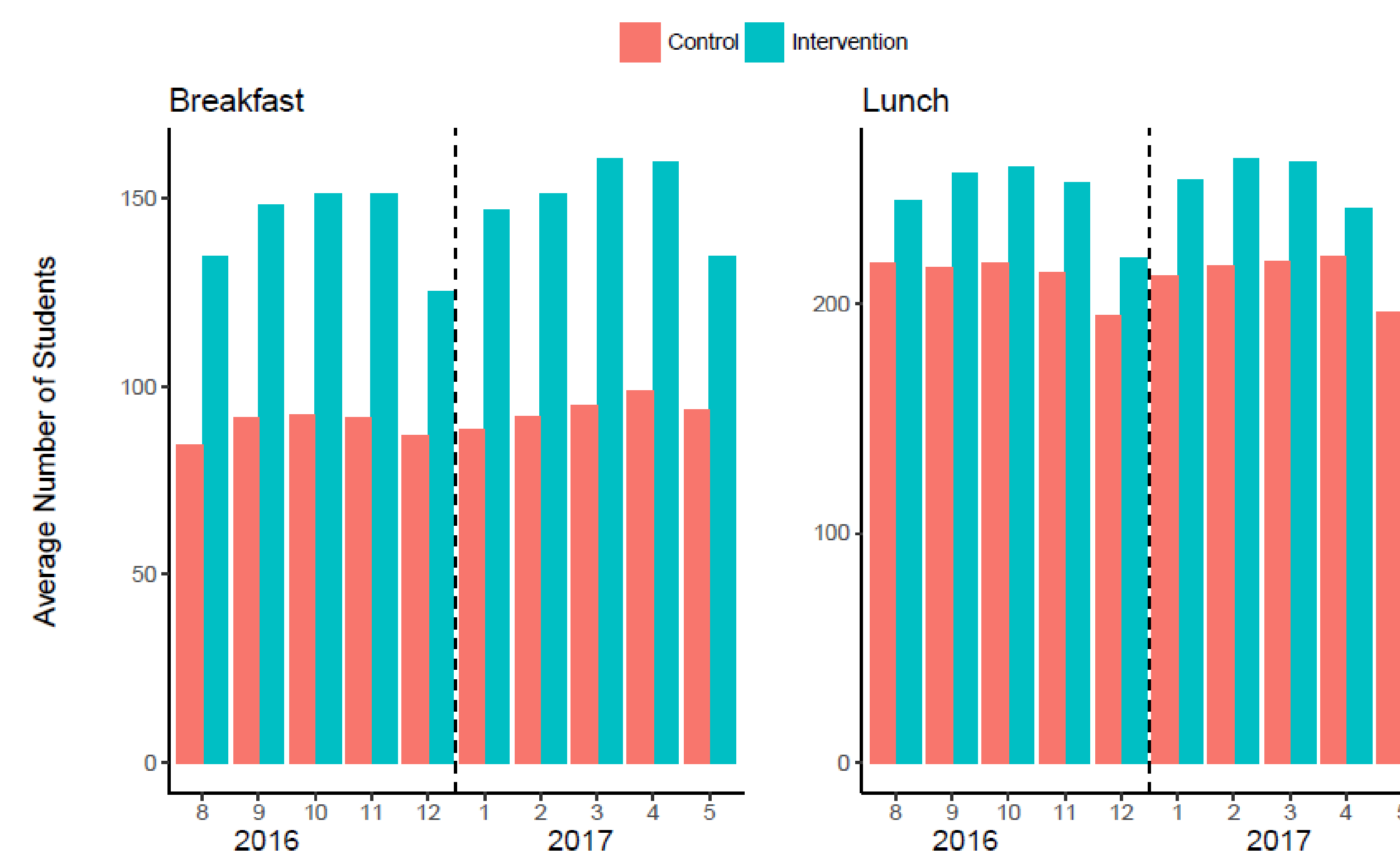


Table 3. Changes in Student Survey Responses 2016 to 2017	OR or Coef	P Value
Eat school breakfast yesterday	0.76	0.022
Usually get lunch at mobile cart	2.42	<0.001
School lunch tastes good	0.09	0.003
Friends eat school lunch	0.07	0.049
Lunch lines long	0.10	0.004
Like fruits served with lunch	0.12	<0.001
School lunch enough to make full	0.13	<0.001
At school adults encourage eating school lunch	0.18	<0.001
School lunch healthier than from home or off campus	0.06	0.049

