



# Short-term impact of a motivational nutrition education session on intent to purchase fruits and vegetables



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## Abstract

Economics and uncertain preparation techniques are barriers to consuming fruits/vegetables (f/v). Through collaborations with a family-oriented commercial radio station, a 1-hour interactive program was developed to address these barriers. Based upon the 5 A Day "Put a Rainbow on Your Plate" theme, a character chef delivered the scripted program in English and Spanish which included nutrition, purchasing, and preparation tips segmented into five f/v color groups. Programming, punctuated by bursts of exercise set to music and led by the Captain 5 A Day superhero, was delivered at preschool centers to 329 food stamp eligible adults and 425 children. Before the program, participants reported the frequency of consuming f/v. During the program, adults were instructed to complete a bi-lingual survey, color-coded to the f/v segment, with questions on f/v preference, knowledge acquired, and motivation to purchase. The program impact was also evaluated through qualitative interviews with preschool center administrators. From 181 completed surveys, the majority of participants (71%) reported f/v consumption averaging between 1-6 svgs/wk. An average of one in three participants (34%) preferred a majority of the fruits and vegetables in all the color groups. Over half gave correct responses to questions concerning economical f/v purchasing (52%) and selection (74%). Nearly all reported learning a new way to prepare vegetables; over half (60%) reported increased desire to purchase f/v. Center administrators reported the program complimented school-based initiatives to improve dietary and physical activity behaviors of families. These results suggest a single, motivational program raises awareness to improve desire to purchase f/v among those who are low consumers of these nutritious foods.

## Background

- More than 75% of US adults do not meet the recommended minimum 5 svgs of fruits and vegetables (f/v) per day (Serdula, 2004; Patterson 1990). Fewer than 15% of US elementary aged children eat 5 f/v svgs per day (Krebs-Smith et al 1996).
- Low-income individuals may consume even fewer f/v (USDA ERS 2004; Patterson 1990). Barriers to intake include lack of knowledge and preparation techniques, affordability, and family likes/dislikes (Reicks et al, 1994; Anderson, 2001; Neumark-Sztainer, 2003; Dibsall 2003).
- Consuming a diet high in a variety of f/v and whole grains may decrease risk of cardiovascular diseases, some cancers, and may assist with weight regulation (Williams 2005; Albert 2005; Ray 2005; Genkinger 2004; Donaldson 2004; Jansen et al 2004).
- Awareness, motivation, self-efficacy, and perceived benefits play significant roles in positive behaviors towards f/v (Gibson 1998; Van Duyn 2001; Dibsall 2003).
- Motivational and interactive foci with behaviorally-focused messages on healthy eating and active lifestyles can impact the dietary behaviors of low-income populations (Dibsall 2003; Bhargava 2004). Combining entertainment and education (ie, "enter-education") can reach large numbers of individuals with prevention messages (Center for Communications Programs, Johns Hopkins University).
- Community-based approaches and partnerships that utilize social marketing tools may be the most successful in changing attitudes and dietary behaviors among low-income populations (Anderson, 2001; Pomerleau, 2005 FSNE Guiding Principles, 2006).

## Aim

The objective of this USDA FSNE-sponsored, community-based collaborative programming was to motivate the participants and increase the likelihood that they would improve their f/v consumption consistent with the Dietary Guidelines for Americans 2005 (FSNE Nutr Prog Facts, 2006). The impact of the program was measured via a pre/post test after a single "enter-education" event.

## Methods



**Participants:** Three hundred twenty-nine ethnically diverse food stamp eligibles from 10 Head Start and School Readiness sites; most were mothers of preschoolers. Approximately 425 children also attended. Sites were chosen based on participation in the CT Department of Public Health *Adventures of Captain 5 A Day Program*, as well as state School Readiness sites that consistently provided nutrition education to preschoolers in the classroom. Participants were recruited over 6 weeks via informational flyers sent home with children and strategically placed in school sites, as well as via word-of-mouth through the sites. Incentives for workshop participation at each site included: time and convenience; raffles to win grocery store gift certificates and radio-station "prize packs;" nutrition education materials and recipes; and take home fruit and "bags" for children with Captain 5 A Day give-aways. **The study was conducted in accordance with the University of Connecticut Institutional Review Board.**

**Intervention:** The one-hour interactive, educational and motivational session emceed by "Jess the 5 A Day Chef" focused on increasing the variety and color of f/v into meals and snacks for both adults and children. Tips on economical purchase and food preparation were offered. Program segments were strategically interrupted by exercise to music that included f/v or popular and recognizable preschool themes (eg, "Wheels on the Bus").

**Evaluation:** The short-term impact of the workshop was assessed by participant report and preschool site director impressions.

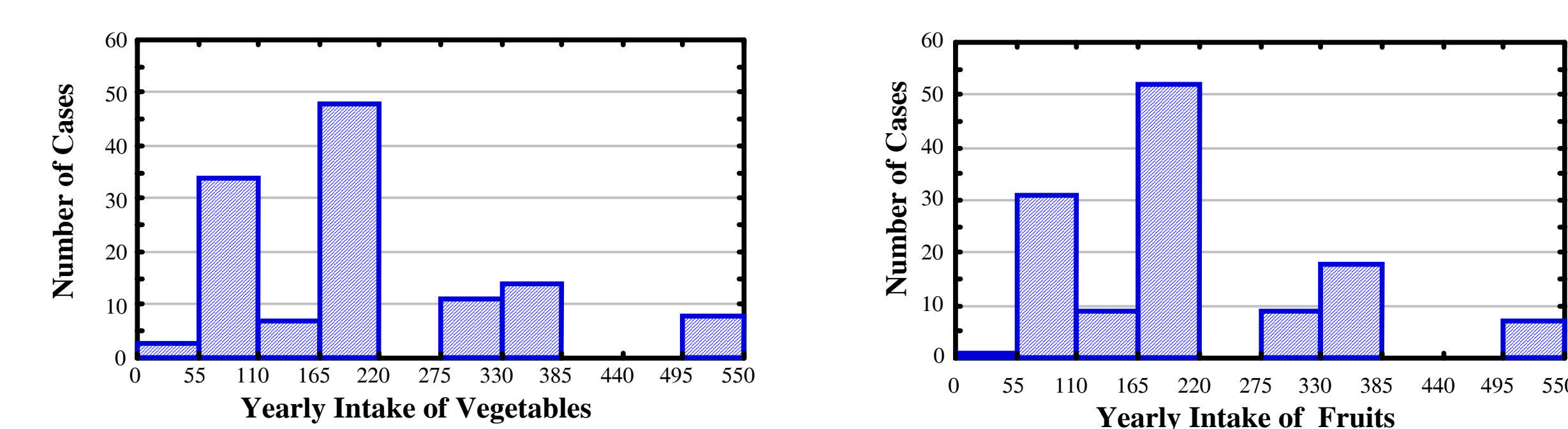
Participants completed the following:

- Before** the program---how often they consumed f/v svgs following the Block Food Frequency general intake questions.
- During** the program and via emcee instruction---completing a color-coded survey according to f/v color groups, answering f/v preference questions, a f/v knowledge question, and willingness to change f/v purchasing behaviors.
- Post-programming**---Preschool site directors were contacted within two weeks of the workshop to comment verbally on impression of program and perceived worth of program to site, parents and children.

**Statistical analyses:** Responses to the survey questions are described. Using qualitative analyses techniques, directors' responses were analyzed for common response themes and are described in results section.

## Results

### Reported Fruit and Vegetable Consumption: Pre-Workshop



**Vegetable question:** About how many servings (svgs) of vegetables do you eat, per day or per week, not counting salad or potatoes? (n=125)

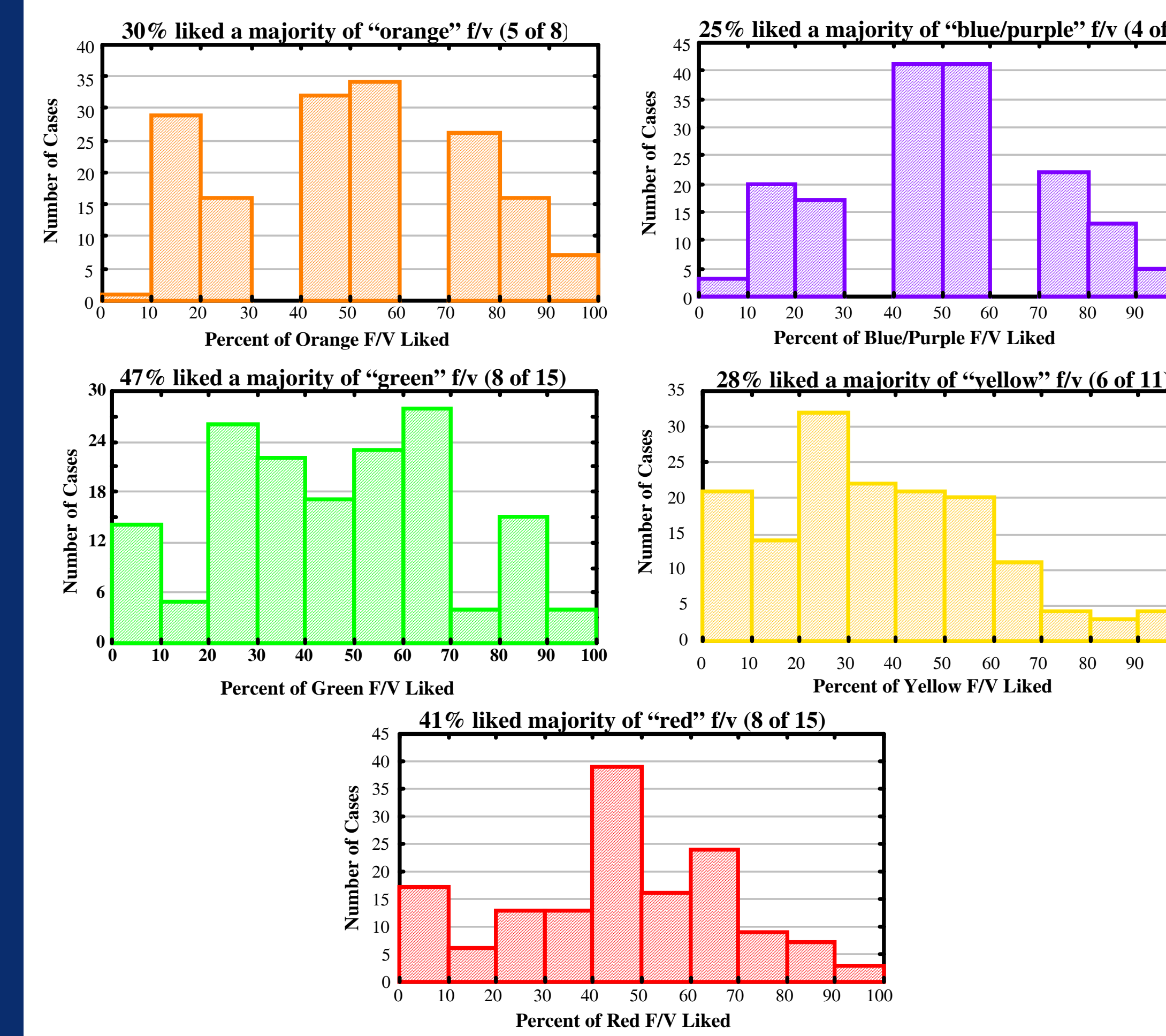
- 1 of 4 (26%) reported consuming 1-2 svgs of vegetables/wk (55-110 svgs/yr)
- Nearly half (45%) reported consuming 3-6 svgs of vegetables/wk (110-220 svgs/yr)
- Six percent (6%) reported consuming 1.5 svgs of vegetables/day (495-550 svgs/yr)

**Fruit question:** How many svgs of fruit do you eat, not counting juices? (n=127)

- 1 out of 4 (24%) reported consuming 1-2 svgs of fruits/wk (55-110 svgs/yr)
- Nearly half (47%) reported consuming 3-6 svgs of fruits/wk (110-220 svgs/yr)
- Six percent (6%) reported consuming 1.5 svgs of fruits/day (495-550 svgs/yr)

## Results

For each "color," participants were asked to "circle the fruits/vegetables of this color you like to eat."

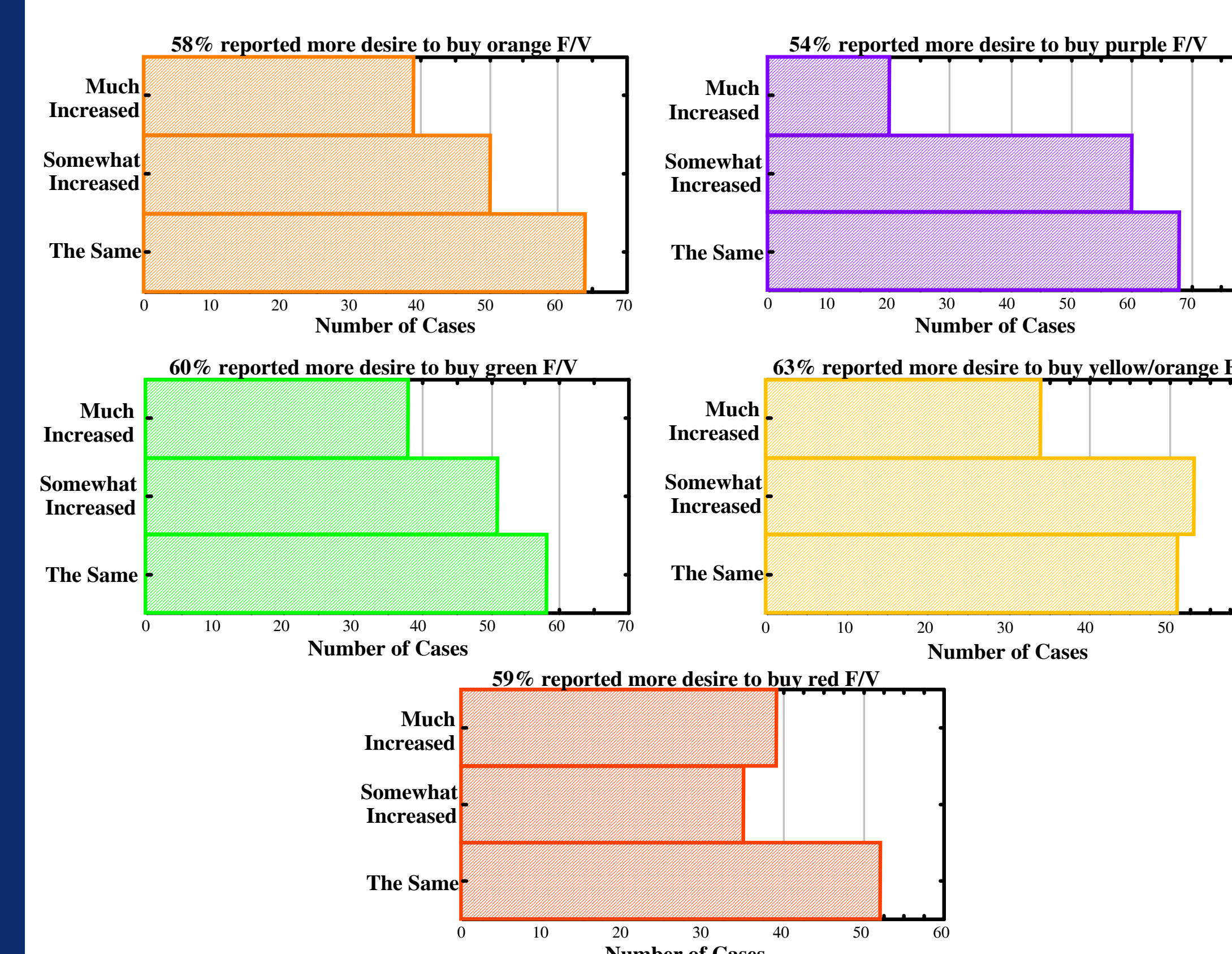


### Assessing Participant Knowledge

Most participants responded correctly to over one-half of the questions on knowledge of economical f/v purchasing.

Program Knowledge Assessment	Blue	Green	Green	Yellow/Orange	Red
Question: Which orange juice is the best buy?	Which blueberry or berry purchase is the best buy in February?	Which is the best way to purchase green vegetables for longer storage?	Which is the best way to purchase nutritious greens to add to soups and stews?	Which is the best way to purchase yellow/orange vegetables for longest storage?	Circle all those that are the best buys: *many responses possible
Correct Response: Frozen	Correct Response: Frozen	Correct Response: Canned or Frozen	Correct Response: Frozen	Correct Response: Canned or Frozen	Correct Response: Fresh Rasp July 37% Fr Tomato Aug 43% Froz Straw Jan 36% Canned Beets 16% Watermelon Feb 83% Fr Tomato Jan 87%
Participant Responses: Frozen 53% Ready to drink 47%	Participant Responses: Frozen 60% Fresh 40%	Participant Responses: Canned 35% Frozen 25% Fresh 40%	Participant Responses: Frozen 22% Fresh 78%	Participant Responses: Canned 31% Frozen 22% Fresh 41%	

Participants responded to, "Following Jess the 5 A Day Chef presentation, my desire to buy (COLOR) fruits/vegetables is:"



## Post Program Interviews

\*Phone interviews with 8 of the 10 site directors were categorized for themes. The most common (>50%) response themes to the following open-ended questions are listed below:

1. What component (s) of the program left you with the most significant impression for the parents and for the children?

Response Themes:

- Presentation style: The interaction and dialogue Jess the 5 A Day Chef utilized with participants
- Presentation in Spanish when necessary
- Live music and exercise segments
- Incentives offered during programming
- Take-home nutrition education materials and recipes

2. In your opinion, what were the overall perceived benefits from the program for your site, the parents and the children?

Response Themes:

- Workshops were a fun, educational activity for parents and children to attend and enjoy together at the preschool site
- The parents and staff were able to gain and reinforce nutrition knowledge
- The children were able to gain nutrition knowledge
- The workshop was a great way to engage in follow-up dialogue with parents on nutrition topics

## Conclusions and Discussion

The need for nutrition education intervention

■ **Poor F/V intake:** Food stamp eligible program participants reported F/V consumption between 1 and 6 servings *per week*, even less than the reportedly low national percentage of Americans (25%) who consume 5 or more *per day*.

■ **Discrepancy between preference and intake:** More participants (25%-47%) reported liking most of the f/v listed from the five color groups, indicating a much greater preference for f/v than actual intake. The discrepancy suggests the opportunity for nutrition education.

Barriers to f/v consumption addressed in a "palatable" format

■ Participation was excellent. Workshops were offered at the preschool sites during convenient times for parents, with incentives for participation such as chances to win grocery store gift certificates.

■ Based on informal participant feedback and program director interviews, those who attended enjoyed the interactive and motivational format.

■ The workshops addressed knowledge barriers to consuming f/v, including economical purchasing and preparation ideas. Most participants responded correctly to questions on information given in the workshops. Since baseline knowledge was unknown, these results only suggest that workshop material was absorbed.

■ Nonetheless, nearly all participants reported learning a new way to prepare vegetables. Sixty-percent of participants reported increased desire to purchase f/v.

Summary

The evaluation suggested that a one-time motivational program raises awareness and improves knowledge, which may increase desire to purchase f/v among those who are low f/v consumers. Program directors viewed the workshop as part of overall nutrition education efforts to decrease the barriers for food stamp eligibles to meet dietary recommendations for consuming fruits and vegetables.

## Acknowledgements

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