Fruit and Vegetable Consumption Patterns among Children during School Lunch

Haley R. Riegel
Fruit and Vegetable Consumption Patterns among Children during School Lunch

Haley R. Riegel

Wright State University
Acknowledgments

I would like to acknowledge Dr. Marietta Orlowski and Dr. William Spears for their expertise and guidance with this project. Additionally, the Ohio Smarter Lunchrooms team for their assistance in data collection. Lastly, Dr. Nikki Rogers for her encouragement throughout this project. This project would not have been possible without their time and assistance.
Table of Contents

Abstract ............................................................................................................................................4
Introduction ......................................................................................................................................5
Statement of Purpose .......................................................................................................................6
Literature Review .............................................................................................................................6
Methods ..........................................................................................................................................16
Results ............................................................................................................................................22
Discussion ......................................................................................................................................35
References ......................................................................................................................................43
Appendices .....................................................................................................................................48
  Appendix A: IRB Waiver ..............................................................................................................48
  Appendix B: Smarter Lunchroom and USDA Coding ...............................................................49
  Appendix C: Food Waste Tables ...............................................................................................51
  Appendix D: List of Competencies Used in CE .......................................................................71
Abstract

Background: As the United States suffers from a childhood obesity epidemic, more attention has been given to school lunch nutrition. Federal requirements on school lunch are evolving to include a variety of fruits and vegetables, whereas other programs study ways to increase healthy food consumption during school lunch. This project categorizes fruits and vegetables by the United States Department of Agriculture (USDA) and Cornell University’s Smarter Lunchrooms school lunch categories in order to gain a better understanding of fruit and vegetable waste during school lunch.

Methods: Visual estimations of tray waste were collected across four school districts. Averages of fruit and vegetable waste within the USDA and Smarter Lunchrooms categories were compared from pre-kindergarten through high school.

Results and Discussion: Across all grades, students waste less fruits and vegetables as they age. The USDA food categories give a description for food consumption, while Smarter Lunchrooms is more useful for food production. As food service directors manage budgets, meal planning, and profit, the Smarter Lunchrooms behavioral strategies can decrease fruit and vegetable waste in USDA categories while managing a school lunch program.

Keywords: nutrition, waste, USDA, Smarter Lunchrooms
Fruit and Vegetable Consumption Patterns among Children during School Lunch

In the United States, 32% of children and adolescents are either overweight or obese (Ogden, Carroll, Kit, & Flegal, 2012). The Centers for Disease Control and Prevention (CDC) reports that 1 in 6 (16%) children and adolescents are obese. Looking into the future, 70% of obese children will be obese as adults as well (Pittman et al., 2012). Being overweight or obese increases a child’s risk of type 2 diabetes, heart disease, high blood pressure, and other severe health conditions (Belansky, Chriqui, & Schwartz, 2009). Such terrifying statistics is the reason why childhood obesity continues to be a major public health concern and why Healthy People 2020 has created “reducing the proportion of children and adolescents who are considered obese” as one of its objectives to accomplish (Healthy People 2020, 2013).

Children become overweight from too little physical activity and consuming too many calories (Centers for Disease Control and Prevention, 2013). Today, children are constantly influenced by an environment that promotes unhealthy foods, large servings, and overconsumption. It is difficult for a child to make healthy food choices when they are constantly exposed to calorie dense foods, whether it is at home, school, or another environment. Exposure to unhealthy food choices in several environments can make it difficult to target an intervention environment to help children make healthy food selections.

Many children consume at least half of their meals at school, explaining why schools are a popular choice for childhood obesity interventions (O’Brien et al., 2010). Schools encourage learning, making it a favorable environment to teach children about healthy eating choices. During school students can learn about the importance of consuming fruits and vegetables, while having access to these foods in their school cafeterias. As research identifies strategies to
increase healthy eating habits at school, government policies, such as the National School Lunch Program, are being implemented.

**Statement of Purpose**

The purpose of this research is to describe children’s consumption of fruits and vegetables in school lunchrooms. A variety of factors that influence school lunch programs will be explored. This includes government policies, issues that relate to school lunch consumption and measurement of meal consumption in public schools. Public health efforts to educate students about the importance fruits and vegetables and the lack emphasis on the amount of food consumed will be examined. Childhood obesity rates remain high. To learn how to address obesity it is important to explore how much of the fruits and vegetables placed on lunchroom trays are truly consumed.

**Literature Review**

**Government Policies**

**National School Lunch Program.**

The National School Lunch Program is a “federally assisted meal program implemented in over 100,000 public and nonprofit private schools and residential child care institutions” (United States Department of Agriculture [USDA] Food and Nutrition Service, 2013, p. 1). The USDA Food and Nutrition Service (2013) reports that the National School Lunch Program helped serve lunch to 31.6 million children in 2012. The program has served over 224 billion lunches since it began in 1946. The National School Lunch Program provides nutrient balanced meals at little or no cost to school-aged children all over the country.

In 1946, Congress passed the first school lunch legislation, the National School Lunch Act (USDA Food and Nutrition Service, n.d.a). The legislation aids schools with tools necessary
to manage nonprofit school lunch programs. Resources provided include a food supply, kitchen equipment, and the physical space necessary to provide lunch. Participating schools in the National School Lunch Program are required to provide students with minimal nutrition requirements established by the U.S. Secretary of State (USDA Food and Nutrition Service, 2013). The program required that lunches provide milk, a protein, fruit or vegetable, a whole grain or enriched flour food, and butter. In 1966, a new law, the Child Nutrition Act, was passed to initiate breakfast programs, centralize management of the National School Lunch Program to the USDA, and provide nonfood assistance funds. The nonfood assistance funds were provided subsidize at least one-fourth of the cost for purchasing equipment for preparing school lunches. Through the rest of the 20th century, revisions were made to the National School Lunch Program that has made it the program it is today.

The National School Lunch Program requires participating schools to meet the latest standards published in the *Dietary Guidelines for Americans* (USDA Food and Nutrition Service, 2013). The current standards emphasize fruits, vegetables, and whole grains. The guidelines also include restrictions on calorie and sodium consumption. Additionally, participating schools must offer lunch at a reduced price to eligible children. Children from families with incomes below 130% of the federal poverty level are eligible for free meals. Children from families with incomes between 130 and 185% of the federal poverty level are eligible to receive reduced-price meals (less than 40 cents per meal) (USDA Food and Nutrition Service, 2013).

Lunches that meet all federal requirements are called reimbursable meals. For each reimbursable meal sold, participating schools receive cash subsidies and USDA commodities. Schools that sell over 60% free or reduced lunches during a school year receive a higher cash reimbursement per meal (USDA Food and Nutrition Service, 2013). Schools can also receive
USDA commodities called “entitlement” foods. Entitlement foods are selected by each state from a list of foods that the USDA offers, including fresh produce. The National School Lunch Program legislation proscribes which schools receive entitlement foods at a value of approximately 23 cents per meal sold in a school year.

**Healthy, Hunger Free Kids Act.**

In 2010, the Healthy, Hunger Free Kids Act was enacted (USDA Food and Nutrition Service, n.d.b). The act authorizes funding levels and sets policy for USDA child nutrition programs, including the National School Lunch Program. The goal of the act is to increase children’s consumption of fruits, vegetables, and whole grains. The act mandates that the number of calories in a meal be reduced and the amount of saturated fat, sodium in food served be decreased. Schools can only serve lower-fat and nonfat milk, during school lunch periods (Duswalt, 2012). In addition, the Healthy, Hunger Free Kids Act allows the U.S. Department of Agriculture to make substantial improvements to school meals based on current nutrition guidelines. This legislation requires schools to offer a variety of vegetable colors every week, serve whole grains, and provide only low-fat or nonfat milk. Meats or meat alternatives, fruits, vegetables, grains, and milk are components of a reimbursable meal (USDA Food and Nutrition Service, n.d.b). To be considered a reimbursable meal, each lunch must include three of the five components. The fruit or vegetable component must be at least a ½ cup serving. In addition to providing the components of a reimbursable meal schools must ensure that the weekly average requirements for calories, sodium, and saturated fat are not exceeded in schools meals offered. Age specific requirements for calorie, sodium, fat, and serving are calculated to ensure optimal nutrition is provided in school meals. In the future, the policy will provide guidelines for “competitive food” items sold within schools. Competitive foods tend to be nutrition poor
snacks. The Health, Hunger Free Kids Act ensures that meals students eat at school are nutritious.

**School Lunch Consumption**

**What do children eat?**

The National School Lunch Program makes healthy foods accessible to children during school. The act does not mandate that healthy foods be consumed after being placed on the lunch tray. Food service directors are often times more focused on ease of preparing the foods than on the nutritional content of those foods. With tight budgets, to increase revenue, food service directors purchase foods they can sell to students. In today’s school cafeterias increasing profit often outweighs the importance of healthy food accessibility (Grainger, Senauer, & Runge, 2007).

Once students have purchased a school lunch little thought is given to whether the lunch is consumed. Understanding what is consumed is important because it demonstrates whether students are actually receiving the nutrition that school lunches intentionally provide. Cohen, Richardson, Austin, Economos, and Rimm (2013) observed food waste among three Boston school lunches and found that students wasted approximately 19% of their entrees, 47% of their fruit, 25% of their milk, and 73% of their vegetables. Approximately 80% of children who eat at school do not consume the recommended number of fruit and vegetable servings (O’Brien, Burgess-Champoux, Haines, Hannon, & Neumark-Sztainer, 2010). Fruit and vegetable waste becomes a problem when children consume over half of what they eat at school (O’Brien et al., 2010). The study also found that students consume an insufficient amount of calories, fiber, vitamins, and minerals. This information highlights the fact that children do not eat enough food to receive all of the nutrition they need.
In addition to their lunch entrees, students often have access to cookies, chips, pizza, and french fries during school lunch. This is especially true for middle and high schools. Compared to students who pack lunch, students who do receive school lunch are more likely to consume french fries, chips, soda, sports drinks, and candy even though they perceived fruit and vegetable access at school as important (Gosliner, Madsen, Woodward-Lopez, & Crawford 2011). This is significant because it shows that students do value fruit and vegetable offerings at school, but are still choosing unhealthy foods over fruits and vegetables.

Choice and consumption of healthy foods may vary by population characteristics. Female students are more likely to choose and consume fruits and vegetables at school than males (Grainger et al., 2007; Lazzeri et al., 2013). Lazzeri et al. (2013) found that 56.6% of females and 61.6% of males were considered were classified as low fruit consumers, with similar results for vegetable consumption. Fruit and vegetable intake changes as students get older. The proportion of girls with a low intake of fruits increases with age, but a similar association was not found among males (Lazzeri et al., 2013). Furthermore, 15-year-olds are one-half as likely to have regular fruit intake as younger children. Earlier studies speculate that daily fruit and vegetable intake lowers as children age because families have less influence on children’s eating habits as they mature (Larson, Neumark-Sztainer, Hannan, & Story, 2007). Younger children’s eating patterns are heavily influenced by their parents and school. This typically means that they consume more fruits and vegetables because nutritional needs are stressed more. Research that identifies consumption patterns among children has provided information to design the programs are now being implemented to help increase consumption levels of fruits and vegetables provided in school lunches.
Programs increasing school lunch consumption.

Cornell University’s Smarter Lunchrooms Movement has taken on the challenge of increasing healthy food consumption during school lunch by using evidence-based principles that encourage children to eat healthy foods. The Smarter Lunchrooms Movement goal is to create sustainable research-based lunchrooms that encourage smarter food choices (Smarter Lunchrooms Movement, 2009). Specifically, Smarter Lunchrooms focuses on creating interventions around the environment and those that are cost effective, sustainable, and guide healthy eating behaviors. The movement also focuses on interventions within the behavioral sciences, including psychology, behavioral economics, and behavioral business (Smarter Lunchrooms Movement, 2009). School cafeteria best practices focus on: vegetables, fruits, targeted entrées, reimbursable meals, and dairy. Smarter Lunchrooms strategies demonstrate that presenting creative, age-appropriate vegetables names increases vegetable intake during school lunch increase consumption of healthy foods. Students in elementary schools that named carrots “X-Ray Vision Carrots” instead of being unnamed or labeled as the “Food of the Day” ate twice the percentage of carrots (Wansink, Just, Payne, & Klinger, 2012). In addition to vegetable naming, Smarter Lunchrooms concepts include: placing milk in the front of the cooler, slicing fruit, and adding a “healthy choices only” convenience line (Smarter Lunchrooms Movement, 2009). Smarter Lunchrooms (2009) found that slicing fruit before serving it increased the number of students who ate more than half of their apple by 73%.

Another significant component of Smarter Lunchrooms is to maintain the power of choice for children. By maintaining a variety of healthy and unhealthy foods, children learn to choose the more nutritious option in all environments. Schools provide an excellent starting point for children to consume a balanced diet and, ultimately, make healthy eating choices.
outside of the lunchroom. The success of Smarter Lunchrooms has led the USDA to award Smarter Lunchrooms Movement with a federal grant to increase students’ healthy food consumption during school lunches across the nation (Redman, 2013).

Other programs have taken slightly different approaches to increasing healthy food consumption among students. The Every Day, Lots of Ways program focuses on increasing fruit and vegetable knowledge along with increasing vegetable consumption (Blom-Hoffman, Kelleher, Power, & Leff, 2004). The program incorporates classroom, home, and lunchtime behavior components. Lessons are taught in the classroom to teach students about the importance of eating fruits and vegetables. Newsletters are sent home with students to encourage parents to incorporate the lessons into meals at home. The lunchtime behavior component involves helping students identify fruits and vegetables at lunch and positive reinforcements for consuming fruits and vegetables in the form of praise and stickers. The Every Day, Lots of Ways program has proven to increase fruit and vegetable knowledge, but has moderate effects on increasing vegetable consumption (Blom-Hoffman et al., 2007). Other programs strategies include offering free fruits and vegetables at lunch, slicing fruit, and adding fresh salad bars to increase fruit and vegetable consumption (Coyle et al., 2009; Schimdt & McKinney, 2004; Wansink et al., 2012). With many ideas on how to increase fruit and vegetable consumption, another problem arises on how to measure consumption of such foods.

**Measuring consumption.**

Tray waste, or plate waste, is the food that was not consumed by a student and left on a tray to be discarded. School plate waste cost approximately $600 million in 2002 (Cohen, Richardson, Austin, Economos, & Rimm, 2013). It is difficult to reduce plate waste because schools want to maintain a profit, while offering nutritious lunches to students at the same time.
Furthermore, schools must ensure students enjoy the food offered so they continue to choose school lunches over packed lunches. Profitable sells ensure that cafeterias will continue to help children learn to eat healthier. To guarantee profitability school cafeterias need to understand both what children don’t eat as well as what they choose to go on their trays. Plate waste is a true indicator of the nutritional benefits that are lost from a school lunch (Marlette, Templeton, & Panemangalore, 2005).

Commonly, food consumption self-report methods are relied on to measure food waste. Self-report methods can be unreliable because people tend to underestimate food intake (Natarajan et al., 2010). Lutomski, van den Broeck, Harrington, Shiely, and Perry (2010) found that older age, overweight/obesity, and low socioeconomic status increased the odds of under-reporting food intake. Children also pose as a challenge to recall food intake because it relies on a child’s literacy and recall ability (Richter et al., 2012).

The most accurate method to measuring food intake is weighing foods before and after eating (Williamson et al., 2003). A typical serving of each food is weighed before the lunch service begins to know how much each student started with. At the end of the lunch service, food items left on each tray is weighed to determine how much food was wasted. This method is extremely time consuming and can disrupt the lunchroom environment. Furthermore, it can be difficult to weight items from the salad bar because students are taking their own amount of food, instead of being handed the same serving as every other student.

In addition to weighing food and self-reporting, direct visual estimation works well for school lunches because it involves observing just one meal. Direct visual estimation involves a trained individual observing and recording consumption or waste at the time it takes place. This
method of measuring consumption is gaining in popularity and proven to be relatively accurate (Shankar et al., 2001).

**Tray Waste**

Tray waste can be a true indicator of the nutritional benefits that are lost from a school lunch (Marlette et al., 2005). One example of collecting tray waste data involves trained observers rating each item on a student’s tray after it is turned in at the end of lunch (Comstock, Pierre, & Mackiernan, 1981). Ratings are based on how much of each food item is left on a tray. For example, “5” indicates that a full portion remained, “4” is most of the portion remained, “3” if three-quarters remained, “2” if half remained, “1” if one-quarter remained, and “0” if none remained (Comstock et al., 1981). This method involves little interaction because students simply leave their tray on a table instead of in the trash. Tray waste collection through direct observation can also involve photographing each tray once a student is finished, then recording waste at a later time. This is claimed to be less intrusive than recording in the cafeteria, which can be disruptive and create bias (Williamson et al., 2003).

While weighing plate waste after lunch is more accurate than rating based on visual observation, visual observation proves to have more benefits for recording purposes (Kirks & Wolff, 1985). Visual estimation proves to be more difficult to interpret, but is cheaper and faster than weighing each food individually. Since individual observers are recording waste, there are more chances for interpretations to vary between people. Comstock and Symington (1982) also found visual estimations of tray waste to correlate highly with weighed plate waste.

**Utilization of tray waste data.**

Tray waste data can be useful for a variety of reasons, including school lunch profitability and nutritional consumption among students. The federal government uses tray waste data to
help create improvements to the National School Lunch Program and to indicate behavior change resulting from classroom learning (Kirks & Wolff, 1985). If legislators find that students are not eating the meals provided, they can make adjustments to school lunch policies in an effort to increase lunch consumption. Additionally, if students at a particular grade start consuming more fruits and vegetables in can be associated with the nutrition information they have learned in the classroom. For example, Rosário et al. (2012) found that nutrition education in the classroom increased vegetables, green leafy vegetables, and fruit intake among students in grades 1 through 4.

Food service directors can also utilize tray waste consumption to increase participation in school lunches as well. Facing tight budgets and pressure to increase revenue from school lunch, food service directors can use tray waste data to decipher what foods students prefer and provide the best nutritional benefits (Grainger et al., 2007). Furthermore, Grainger, Senauer, and Runge (2007) explain that parents and the community can also benefit from tray waste data collection by knowing what their children are eating and how they can help improve their children’s health.

**Research Questions**

As childhood obesity continues to burden millions of children in the United States (Centers for Disease Control and Prevention [CDC], 2013), public health has focused on intervention efforts within the school, particularly school lunch. While over half of children’s fruit and vegetable consumption coming from school, school lunch consumption plays a significant role in childhood obesity (O’Brien et al., 2010). Measuring school lunch consumption can answer several questions about what children are eating, but qualitative studies regarding consumption patterns during school lunch is limited (Lazzeri et al., 2013). Understanding fruit and vegetable consumption patterns during school lunch can help maximize
fruit and vegetable intake. After analyzing fruit and vegetable consumption among sixteen school lunches in Ohio, the answers to the following questions will be explored.

1. During school lunch, does fruit and vegetable waste vary by grade level?
2. Are students more likely to waste vegetables as a side dish or as a component of the school lunch entrée?
3. Does fresh fruit or canned fruit leave the most waste?
4. Do USDA food categories provide more useful information than Smarter Lunchrooms for food consumption? Does breaking down entrees using USDA food categories provide better information about food consumption patterns?

The answers to these questions will supplement the prior research described in understanding fruit and vegetable consumption among children during school lunch and how it can be used to reduce childhood obesity.

**Methods**

**Study Design**

This study took place between September and November 2013 of 15 schools in four school districts throughout southwest Ohio. The study was part of the Ohio Smarter Lunchrooms project. This project was funded by the Ohio Department of Education to evaluate changes in food sales and consumption after applying changes to the cafeteria environment across Ohio. The Wright State University Institutional Review Board reviewed the Ohio Smarter Lunchrooms project (SC #5226) and found that it did not meet the definitions of human subjects research (see Appendix A).
Source of Data

Schools were recruited through the Ohio Department of Education’s Office of Child Health and Nutrition. The Office of Child Health and Nutrition distributed a request for applicants (RFA) for Team Nutrition Grants to all food service directors in Ohio. Interested food service directors of Ohio K-12 schools applied for the grants. Applicants agreed to participate in the Ohio Smarter Lunchrooms project. Participating school districts in southwest Ohio were assigned to Wright State University. Schools were visited one to three times during data collection, depending on when appointments could be made with schools and what would be offered for lunch on the day of data collection.

School lunch services were monitored by the project to determine the amount of food prepared by cafeteria staff and the amount of food wasted by students. After determining initial levels of production and waste the Smarter Lunchroom project will work with schools to implement intervention strategies to encourage students to consume more fruits and vegetables. Production and waste will be measured again to determine if students increased their consumption of fruits and vegetables. This project examined the initial levels of waste.

Data were collected from lunch services at seven elementary, one intermediate, one junior high, three middle, and four high schools. Schools were divided into the following groups for comparison: elementary, middle school/junior high, and high school.

Measurement

The two dependent variables within this study were fruits and vegetables. A fruit is the edible portion of a plant, tree, bush, or vine that contains the seeds and soft surrounding tissue and has a sweet or tart taste, while a vegetable is the edible part of a plant consumed raw or cooked (World Health Organization, International Agency for Research on Cancer, 2003). Both
fruits and vegetables were measured by coding the amount wasted using the USDA and Smarter Lunchroom categories.

Plate waste data was grouped using the Smarter Lunchrooms and USDA coding. Both food category systems designate between fruits, vegetables, entrees, and dairy (see Appendix B). Entrées were further divided into the components that make up the entrée and coded using the USDA categories. Coding entrées by their components helped account for the fruit and vegetables wasted within entrées. For example, a chef salad contains lettuce, tomatoes, ham, and cheese; a hamburger contains bread (grain), meat, lettuce, and tomato.

**Data Collection**

**Plate waste measurement.**

The WSU Smarter Lunchroom project used a strategy for measuring plate waste that followed methods established by the Cornell University Smarter Lunchroom project (Smarter Lunchrooms Movement, 2009). Each menu item was listed on a data collection spreadsheet and rated as: “0” when none was wasted, “1” when ¼ was wasted, “2” when ½ was wasted, “3” when ¾ was wasted, and “4” when all was wasted. If an entire food item had been eaten, evidence of what was on the plate, like crumbs or empty containers, helped identify what had been on the tray. If there was nothing left on the tray to indicate what had been eaten, “not applicable” was written on the plate waste spreadsheet. If only one bite was taken of a particular fruit or vegetable, it was determined that all of the food was wasted. Alternatively, if one bite remained of a food item, it was considered completely eaten.
Waste data collection.

Consumption data was collected by observing and recording plate waste measurements two separate days at each lunch service. Plate waste measurement was scheduled on regular school days in which similar menu items were offered on the days of plate waste collection. Regular school days are full school days with no special events or early release. One week before collecting plate waste, the kitchen staff at each school was informed of the process for plate waste collection. Separate tables were requested where students could bring trays for data collection. Prior to plate waste collection, spreadsheets were populated with the name of all the items being offered.

Tray waste method.

On the day of data collection, a sample standard portion of each fruit and vegetable was weighed or measured to help visualize what a sample standard portion looked like. Serving bowls and plates were weighed separately to ensure foods were weighed correctly. Weights of the serving bowls and plates were called the “tare weights.” Tare weights give knowledge of how much the food weighs individually without the serving plate. The weight of each fruit or vegetable was taken three times and then averaged for each item. Weights of fruits and vegetables were taken to understand how much fruits and vegetables students were given. Ideally, weights will be taken of plate waste to have a more accurate measurement of waste in future studies.

Plate waste measurement was collected by creating a plate waste layout. Trashcans were only used for students that packed lunch. A minimum of three people participated at each plate waste data collection. The first person directed the traffic flow and asked students to set lunch trays on the designated table. The second individual made visual estimates of food wasted. The
third person recorded visual estimates and ensured data organization. Each fruit and vegetable was observed and rated based upon how much food was wasted. If a lunch tray had two servings of a food, both items were coded. If students inquired about the purpose, simple statements like, “I want to know what students like to eat” or “I want to improve service in the cafeteria” were given. A combination of sales records, production records, and plate waste measurements gave accurate details to compare selection and consumption of fruits and vegetables across grade levels.

**Analysis**

Plate waste data was coded into two food categories groupings for easy comparison and analysis. Fruit and vegetable plate waste data was coded by Smarter Lunchrooms food groups and USDA food groups. Coding fruits and vegetables using both the USDA and Smarter Lunchrooms systems was performed to demonstrate which system gives better results and makes it easier to understand fruit and vegetable consumption.

For purposes of analysis, summaries of plate waste coding for each school district were developed by grade to summarize plate waste using. When a tray was double coded because there had been two servings of a fruit or vegetable, the first code was left and the second deleted for analyses. Additionally, when components were not coded separately, the coding from the whole entrée was assigned to each component item of that particular entrée. This provided coding for entrée components to continue comparison of vegetables as side dishes and entrée components.

Two summaries were developed for each school district. The first summary included all foods served during data collection. The second summary included entrée components. Each
FRUIT & VEGETABLE CONSUMPTION

summary listed school, grade, date, waste by Smarter Lunchroom categories, waste by USDA categories, tray totals, and the total number of waste codes one through four for each food item.

Summaries for each school district were compiled to determine the sum and number of times each food was coded by grade using SPSS. Three tables were created using Statistical Package for the Social Sciences (SPSS): Smarter Lunchroom categories by grade, USDA categories by grade, and USDA categories with entrée components.

Plate waste percentages were calculated in Excel for each food category by grade using the sum of each plate waste code and the total number of trays. Plate waste percentages were used for easy comprehension of plate waste data. For instance, 57.9% of fresh fruits were completed wasted in pre-kindergarten lunches, instead of 194 trays with fresh fruit were completed wasted.

For results, the “high waste” data was focused on, due to the primary focus of the project being plate waste, not consumption. “High waste” was the sum of 50, 75, and 100% waste for each food category. In addition to percentages, averages of high waste among different categories were compared. High waste was considered as foods made up of 50% or more waste. The standard deviation for each category was calculated as well to determine grades with high or low amounts of waste. Fruit and vegetable waste was considered high if it was above the average and standard deviation. On the other hand, waste was considered low if it was below the standard deviation and average. This method for determining high and low waste amounts provides a consistent measure to describe waste levels.

Plate waste summary tables were analyzed to determine the amount of vegetables as a side dish or as a component of the school lunch entrée students were more likely to consume. The USDA food categories associated with vegetables separately and as part of the entrée were
compared to compare which vegetables consistently had the highest levels of waste. Of particular interest was how the same vegetables compared when served individually or as a part of an entrée.

Using the Smarter Lunchrooms food categories, plate waste percentages were compared to establish whether students left the most waste when fresh fruit or canned fruit was served. The USDA food categories were not used in this particular analysis because it does not differentiate between fresh and canned fruit. Grade groups were also considered to observe to what degree student in different grade levels were more likely to eat fresh fruit or canned fruit.

USDA food categories were compared with Smarter Lunchrooms food categories to observe whether one approach provides more useful information about food consumption then the other. Answering the previous research questions aided in determining which food categories provided the most information about fruit and vegetable consumption among students. Comparing plate waste summary tables among grade groups aided in understanding fruit and vegetable consumption among children during school lunch.

Results

Smarter Lunchrooms by Grade

The Smarter Lunchrooms categories are represented by graphs, highlighting all waste and partial waste of fruits and vegetables. Fruits and vegetables that were 50 to 75% wasted were considered partial waste. The average waste level for each category is displayed with a dotted line as well. Results focused on fruits and vegetables, but waste levels of all foods were recorded during this project (Appendix C).
Fresh fruits.

On average, students wasted 47% of the fresh fruits they were served (Figure 1). Pears, apples, grapes, bananas, pineapples, and oranges, were the fresh fruits offered during data collection. Kindergarteners wasted 73% of fresh fruit, 58% was thrown away untouched. High school students wasted approximately 35% of fresh fruits, the least amount wasted. About one-half of that amount was thrown away without being touched. Among grade levels, sixth had the highest waste.

![Smarter Lunchrooms: Fresh Fruits](image)

*Figure 1. Smarter Lunchrooms: Percentage of fresh fruits wasted by students by grade level.*

Canned fruits.

Forty-seven percent of canned fruit was wasted (Figure 2). Applesauce, mandarin oranges, and pineapple tidbits, were common canned fruits offered during school lunch. This is the same amount of waste as fresh fruits. Fourth grade and high school lunches had the lowest
amount of canned fruit waste, 35% and 25%, respectively. Sixth grade had the highest level of canned fruit waste at 64%.

![Graph: Smarter Lunchrooms: Canned Fruits](image)

*Figure 2. Smarter Lunchrooms: Percentage of canned fruits wasted by students by grade level.*

**Hot vegetables.**

Fifty-nine percent of hot vegetables were wasted (Figure 3). Steamed broccoli, carrots, green beans, and cauliflower were common hot vegetables offered. Hot vegetable waste was highest among pre-kindergarten and kindergarten lunches. Across all grades, more hot vegetables were thrown away untouched than partially wasted. High school wasted 39% of hot vegetables, the least amount wasted. The early years of elementary school (pre-kindergarten through 2nd grade) wasted the highest amount of hot vegetables, while waste dropped and stayed in the 40% to 55% range through most of third to high school.
Figure 3. Smarter Lunchrooms: Percentage of hot vegetables wasted by students by grade level.

### Salad & cold vegetables.

Salad and cold vegetable waste among all grades was 65% (Figure 4). Chef salads, carrots, cauliflower, and celery sticks were common cold vegetables offered during on the days of data collection. Kindergarteners had the highest waste with 91% of salad and cold vegetables wasted and 78% thrown away untouched. First grade waste was high as well with 84% of salad and cold vegetables wasted. Fifth grade and high school had the lowest amount of waste with 46% and 50% respectively.
Figure 4. Smarter Lunchrooms: Percentage of salad and cold vegetables wasted by students by grade level.

**Starchy sides.**

Approximately 40% of starchy sides were wasted among all grades (Figure 5). French fries were the most common starchy side offered, but baked potatoes were offered as well. Following the same trend as cold vegetables and hot vegetables, kindergarten and first grade had the highest levels of waste, with 83% and 79% wasted respectively. Second through fourth grade had consistent waste levels around 22% before drastically decreasing among sixth through high school. Sixth grade wasted 14% of starchy sides, the lowest among all grades.
Figure 5. Smarter Lunchrooms: Percentage of starchy sides wasted by students by grade level.

**Fruit juice.**

Fruit juice waste levels averaged 26% (Figure 6). Fourth grade had by far the highest waste of fruit waste with 80% wasted. Second grade did not have high waste for fruit juice. First and third grade only had partial waste, with 33% and 20% respectively. It is important to note that first grade through fourth grade purchased 5 or less fruit juices in each grade.
USDA Categories by Grade Level

Waste levels by grade level are compared using the USDA fruit and vegetable categories as well. All lunch items offered were coded by USDA categories (Appendix C) but were not the focus of this project. Partial and all waste are represented to capture all fruit and vegetable waste within school lunches. After analyzing data for USDA entrée components, it was determined that the results did not significantly vary from USDA categories by grade level (Appendix C).

Fruit waste.

Forty-five percent of fruits were wasted among all lunches (Figure 7). Apples, bananas, canned pineapple, and applesauce were common fruits offered during data collection. Fruit waste was highest among kindergarten and sixth grade, with 57% and 61% respectively. High school wasted 31% of fruits, which was the lowest amount of fruit wasted.
Figure 7. USDA: Percentage of fruits wasted by students by grade level.

Dark green vegetable waste.

Approximately 70% of dark green vegetables were wasted (Figure 8). Broccoli and salads were the most common dark green vegetables offered in lunches to all grades. Pre-kindergarten and sixth grade lunches wasted the most dark green vegetables (Figure 7). There is a general trend to wasting less food in this category as grades increase. High school students and fifth graders wasted the least (47% and 50% respectively). Elementary lunches consistently produced the most dark green vegetable waste.
Figure 8. USDA: Percentage of dark green vegetables wasted by students by grade level.

**Starchy vegetable waste.**

Thirty-five percent of starchy vegetables were wasted among all grades (Figure 9). French fries were the most common starchy vegetable offered during middle and high school lunches. Seventy-nine percent of starchy vegetables were wasted among first grade lunches, which was the highest amount of starchy vegetables waste. Elementary school waste levels were all above average, while middle/junior high and high school waste was below average. High school wasted 13% of starchy vegetables, the lowest amount wasted. Mashed potatoes were the only starchy vegetable offered during first grade lunches.
Red & orange vegetable waste.

Red and orange vegetable waste was higher than most vegetables at 65% (Figure 10). Tomatoes, carrots, and sweet potato fries were the most common red and oranges vegetables offered. Red and orange vegetables waste was highest among kindergarten (83%), second grade (86%), and third grade (85%). Fifth grade wasted 40%, which was the lowest amount wasted.
Figure 10. USDA: Percentage of red and orange vegetables wasted by students by grade level.

**Beans & peas waste.**

Forty-four percent of beans and peas were wasted among all school lunches (Figure 11). Black beans and kidney beans were common beans and peas offered during school lunches. Pre-kindergarten and kindergarten wasted the most beans and peas with 88% and 87% respectively. Junior high and high school had similar waste levels as well. Baked beans were the only bean or pea offered during pre-kindergarten and kindergarten lunches.
Other vegetable waste.

Other vegetables waste across all grades was high, at 58% (Figure 12). Other vegetables offered during school lunches were: green beans, cauliflower, and celery. Fifth grade wasted 24% of other vegetables (the lowest) and first grade wasted 82% (the highest). All elementary grades, except fourth grade, had waste levels above average.
**Figure 12.** USDA: Percentage of other vegetables wasted by students by grade level.

**Mixed vegetable waste.**

Approximately half of mixed vegetables were wasted (Figure 13). Mixed vegetables included cauliflower, carrots, and broccoli, served together. Second grade wasted 75% of mixed vegetables, the highest amount wasted. Eighth grade wasted the least amount of vegetables, with 31% wasted. Elementary grades were above the average, while middle/junior high and high school was below the average.
Discussion

Overall, students wasted approximately 53% of vegetables and 53% of fruits during school lunch. Waste levels were lower than previous research findings in which 73% of vegetables and 47% of fruit was wasted (Cohen et al., 2013). Both Smarter Lunchrooms and the USDA both provide food categories, the system are designed for different purposes. Waste levels were compared using both systems with the intention that one program would prove to provide more useful information about fruit and vegetable waste during school lunches.

Explorations within the project included comparisons of fruit and vegetable waste by grade, fresh and canned fruit, vegetable components of entrees, and Smarter Lunchrooms versus USDA categories. Investigating fruit and vegetable waste during school lunches provides a better understanding of school lunch nutrition and provides information about where improvements are needed.
Research Questions

**Fruit and vegetable waste by grade.**

Generally, students are eating more fruits and vegetables as they get older. High school lunches consistently provided the lowest amount of fruit and vegetable waste, elementary lunches consistently had the highest amount of fruit and vegetable waste. While gender was not evaluated within this project, results otherwise agree with earlier studies that also found fruit and vegetable consumption to increase with age (Lazzeri et al., 2013). Although these results have a few exceptions to this finding, it is most likely due to the small number of trays served/counted on data collection days. For example, 6th grade lunch consistently has high percentages of waste, it is likely this is the result of only two sixth grade lunches being studied within the project.

Fruit and vegetable waste may also be decreasing with age because students in higher grade levels are given a larger number of food options at lunch. During data collection, Ohio Smarter Lunchrooms data collectors observed that middle/junior high schools and high schools were provided several different fruit and vegetables options, while elementary students typically had one or two fruit and vegetable choices. It maybe that higher grade levels create less waste because they are choosing fruits and vegetables they enjoy. For example, once school provided only one entrée for pre-kindergarten and kindergarten lunches on data collection days. On one date collection day, the student meal included baked beans as a vegetable and canned pineapple as a fruit. On another data collection day at another school students were offered five vegetable options and four fruit options during lunch. Perhaps considering increasing the number of choices offered during elementary lunches would have an impact on decreasing fruit and vegetable waste.
All fruit and vegetable waste reports showed an interesting trend across elementary, middle/junior high school, and high school. The early elementary years (pre-kindergarten through 2nd grade) typically produced the most waste and declined into the later elementary years (3rd through 5th grade). When students reach middle/junior high school, waste levels tended to increase to a higher level before beginning a declining to the high school level. One reason this trend could be happening is that students may be less familiar with the fruits and vegetables offered at school when they first start, and become familiar with the foods offered and what their preferences are by the end of elementary. When starting sixth grade, students start all over with more choices of fruits and vegetables being offered to older students. In addition, increased options results in greater competition between nutritional foods and junk foods (Gosliner et al., 2011).

During tray waste collection, it became apparent that elementary students struggle with eating lunch over talking with peers. Several elementary schools that were visited had a system for quieting students when the lunchroom got too noisy with the purpose of encouraging students to eat more instead of talking. It was observed that similar rules were not in place at the middle/junior high and high school level. Waste levels could be higher among elementary students because they have not learned to balance socializing and eating.

**Vegetable side or component.**

This study compared waste based on vegetables consumed as a side only and combining vegetables included as part of an entrée with side vegetables. There was little difference between vegetable waste as a side and vegetable waste as part of an entrée component. Vegetable waste levels changed very little when vegetable waste accounting for vegetables within components. Red and orange vegetable waste was the only vegetable category that had a significant change
when offered as a side versus as an entrée component. Vegetables within entrees produced less waste among all grades than when offered as a side dish. Red and orange vegetable waste within entrees could be low because these vegetables are typically offered as tomato sauce is pizza, pasta, and calzones. Pizza is one of the most common foods offered and consumed across all grade levels, which may heavily impact red and orange vegetable waste

As food service directors deal with tight budgets and meeting strict federal requirements (Grainger et al., 2007), finding cost effective ways to still meet nutritional requirements and decrease waste is important to food service directors and schools. The finding of this study suggests that providing red and orange vegetables within entrees creates less waste than providing carrots or tomatoes alone. This information may be helpful to food service director in meeting federal requirements, while also decreasing waste levels. Adding vegetables to entrées can be more difficult, because they can be easy for students to pick out of an entrée. For example, adding broccoli to pasta is easier to pick out than tomato sauce off a pizza. Adding vegetables to entrées can be an easy way for food service directors to meet federal requirements and decrease waste in some cases.

**Fresh vs. canned fruit.**

Across all grades, canned fruit produced less waste than fresh fruit. Both elementary and high school lunches completely wasted less canned fruit than fresh fruit, however, middle school/junior high had less fresh fruit waste. This suggests that more untouched whole fruit was wasted than portioned servings of canned fruit. These results are consistent with the Smarter Lunchrooms (2009) finding that slicing fruit before serving it decreases fresh fruit waste. Whole fruits can be more difficult to eat, especially for younger grade levels because students are missing teeth. Sliced fruit is easier to eat and more appealing during school lunch (Smarter
FRUIT & VEGETABLE CONSUMPTION

Lunchrooms Movement, 2009). During data collection, apples were a common fresh fruit option that was typically served whole. Canned fruit may have been wasted less because it was easier to eat during a lunch period than whole, fresh fruit.

USDA and Smarter Lunchrooms.

The USDA and Smarter Lunchrooms both provide categories for fruits and vegetables to benefit school lunch nutrition. The USDA focuses heavily on vegetables with five specific vegetable categories based on color and nutrition (USDA Food and Nutrition Service, 2013). Smarter Lunchrooms focuses more on how fruits and vegetables are prepared, with two vegetable categories, hot or cold vegetables (Smarter Lunchrooms Movement, 2009). After comparing waste levels of fruits and vegetables across grades, it was apparent that the USDA vegetable categories gave a better understanding of the amount of vegetable waste than did Smarter Lunchrooms categories. The USDA categories are more specific and pinpoint which vegetables are producing the most waste. For example, it is apparent that starchy vegetables, like French fries and corn, are wasted the least during school lunch. Smarter Lunchrooms, on the other hand, only differentiates between hot and cold vegetables, making it more difficult to know which vegetables contribute the most to waste.

Smarter Lunchroom categories were more appropriate to use when differentiated between fruits because fresh fruit, canned fruit, and fruit juice. The USDA only provides one category for fruit, so little differentiation can be determined from the results. Smarter Lunchroom categories give a better understanding of what fruit is being wasted and where improvements can be made. The Smarter Lunchrooms categories may be more useful for food service directors for food production purposes. The USDA categories may provide better information about student’s food consumption patterns.
**Study Limitations**

**Timeframe.**

Data collection for this particular project took place between September and October 2013. The amount of times at each school within that timeframe may have interfered with fruit and vegetable waste levels. District A schools were visited once, while elementary schools in the District B were visited three times. Perhaps on the particular day of data collection at a school in District A, students did not prefer the fruits and vegetables offered or waste was just atypical. Ideally, each school should have been visited the same amount of times to give the most accurate information.

**Double servings.**

In some instances, lunch trays had two servings of a fruit or vegetable. During data collection, both servings were coded, but this information could not be used when analyzing data. Double servings cannot be added as another tray, because that would make the total trays served incorrect. A process to how to utilize both servings would have increased the accuracy of the fruit and vegetable waste levels.

**Entrée components.**

Entrée components were not consistently coded throughout data collection. Several times, entrees were coded as only one item. For analytical purposes the components of entrées were identified and the waste codes for the entrée were assigned to the components. The entrees were removed from analyses. Assigning codes to all components does not interfere when comparing fruits and vegetables that were completely wasted, but analysis of partial waste may be affected if students pick-out some components and leave others.
Visual estimation of waste.

Weighing trays is the most accurate method for measuring tray waste that eliminates human discretion (Kirks & Wolff, 1985). Visual estimation of waste is a noninvasive, cheap, and efficient method for recording tray waste (Comstock & Symington, 1982). Visual observations of tray waste depend heavily on the coder’s interpretation of the amount of waste left behind. Using weights of tray waste when possible provides the best results. While studies show visual observation an accurate method for collecting tray waste (Comstock & Symington, 1982), it would be interesting to see if weighing plates provided the same results for this study. In the future, weighing tray waste would give the most accurate results of tray waste.

Application of Results

The findings from this project can be utilized by food service directors to provide the most cost effective and consumed fruits and vegetables to school lunches. Food service directors are constantly pressured to meet low budgets, meet USDA nutritional requirements, and accrue a profit from school lunches (Grainger et al., 2007). Using the results from this study, food service directors can gain a better understanding of the amount of fruits and vegetables that are wasted the most and find alternative ways to increase consumption of those fruits and vegetables. Additionally, if food service directors provide more of the fruits and vegetables that students eat, students may more because they prefer those fruits and vegetables. Food service directors can utilize fruit and vegetable waste data to improve school lunch nutrition, while meeting the demands of profit and federal requirements at the same time.

Food service directors can offer more fruits and vegetables that students prefer, however, nutritional requirements by the USDA must still be met. For example, dark green vegetable and red/orange vegetable waste was the highest, indicating the students do not prefer these vegetables
over starchy vegetables, which had the lowest waste. To still meet federal requirements, school lunches could utilize Smarter Lunchrooms strategies to reduce waste. Creating age-appropriate vegetable names, slicing fruit, and providing a healthy convenience line are all approaches to increase fruit and vegetable intake among children (Smarter Lunchrooms Movement, 2009). Offering more produce that students favor combined with Smarter Lunchrooms strategies can decrease the amount of waste within school lunchrooms.

**Conclusion**

Overall, fruit and vegetable waste among school lunches is high. Students are throwing away servings of fruits and vegetables untouched. As a result they miss the nutritional benefits. Time and money is wasted in planning and preparing these foods. Students eat more as they mature. It may be possible to decrease the amount of waste of fruits and vegetables within this context. Starchy vegetables are wasted the least among all vegetables, while dark green vegetable and red and orange vegetable waste is highest across all grade levels. Furthermore, fruit offered fresh or canned showed no difference in waste. Food service directors can utilize this information to decrease waste, improve nutrition, and increase sales, among fruit and vegetables served during school lunches.
References


doi:10.1016/j.ypmed.2012.07.012


Appendix A: IRB Waiver

Office of Research and Sponsored Programs
2013 University Hall
3640 Col. Glenn Hwy.
Dayton, OH 45435-0001
(937) 775-2425
(937) 775-3781 (FAX)
e-mail: rsp@wright.edu

DATE: July 10, 2013
TO: Marietta Orlowski, Ph.D., Faculty
Community Health
FROM: B. Laurel Elder
Chair, WSU-IRB
SUBJECT: SC# 5226
'Smarter Lunchrooms - Ohio'

Your study does not meet the definitions for human subjects research. Therefore the proposal submitted does not need approval from the Wright State University Institutional Review Board.

If you have any questions or require additional information, please call Robyn Wilks, IRB Coordinator at 775-4462.

Thank you!
Appendix B: Smarter Lunchroom and USDA Coding

Table 1. Fruit & Vegetable Consumption Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit</td>
<td>Edible part of a plant, tree, bush, or vine that contains the seeds and pulpy surrounding tissue and has a sweet or tart taste¹</td>
</tr>
<tr>
<td>Vegetable</td>
<td>Edible part of a plant consumed raw or cooked¹</td>
</tr>
</tbody>
</table>

*Measurement is the amount consumed based plate waste collection

Table 2. USDA Food Categories

<table>
<thead>
<tr>
<th>USDA Food Categories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark green vegetables</td>
<td>Leafy lettuce, kale, broccoli, spinach, bok choy, etc.²</td>
</tr>
<tr>
<td>Red/Orange vegetables</td>
<td>Tomatoes, squash, sweet potatoes, carrots, orange peppers, etc.²</td>
</tr>
<tr>
<td>Beans/Peas (legumes)</td>
<td>Black beans, kidney beans, split peas, chickpeas, lentils, etc.²</td>
</tr>
<tr>
<td>Starchy vegetables</td>
<td>Corn, potatoes, green peas, lima beans, etc.²</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>Asparagus, cucumbers, zucchini, celery, cauliflower, etc.²</td>
</tr>
<tr>
<td>Mixed Vegetables</td>
<td>California blend vegetables (broccoli, carrots, and cauliflower)²</td>
</tr>
<tr>
<td>Fruits</td>
<td>Fresh and canned fruits²</td>
</tr>
<tr>
<td>Grains</td>
<td>Bread, rice, pizza crust, etc.²</td>
</tr>
<tr>
<td>Meat or meat alternative (Entrees)</td>
<td>Chicken, beef, eggs, etc.²</td>
</tr>
<tr>
<td>Other condiments</td>
<td>Ketchup, salad dressing, etc.²</td>
</tr>
<tr>
<td>Fluid milk</td>
<td>Milk in cartons²</td>
</tr>
<tr>
<td>Other foods</td>
<td>Cookies, chips, jello, etc.²</td>
</tr>
<tr>
<td>Dairy</td>
<td>Cheese, yogurt, etc.²</td>
</tr>
</tbody>
</table>

*Source: ² United States Department of Agriculture, 2013
*Measurement is the amount consumed based plate waste collection
Table 3. *Smarter Lunchrooms Categories*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Examples*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entree</td>
<td>Pizza, hamburgers, popcorn chicken³</td>
</tr>
<tr>
<td>Fresh fruit</td>
<td>Whole fruit, sliced unprocessed fruit³</td>
</tr>
<tr>
<td>Canned fruit</td>
<td>Preserved and processed fruit ³</td>
</tr>
<tr>
<td>Hot vegetables</td>
<td>Cooked broccoli, carrots, etc. ³</td>
</tr>
<tr>
<td>Salad and cold vegetables</td>
<td>Tossed salad, raw carrots, celery, etc. ³</td>
</tr>
<tr>
<td>White milk</td>
<td>White milk in cartons³</td>
</tr>
<tr>
<td>Flavored milk</td>
<td>Chocolate, strawberry milk³</td>
</tr>
<tr>
<td>Starchy sides</td>
<td>Baked potatoes, sweet potatoes, etc.³</td>
</tr>
<tr>
<td>Desserts and snacks</td>
<td>Cookies, chips, etc.³</td>
</tr>
<tr>
<td>Fruit juice</td>
<td>Apple juice, orange juice, etc.³</td>
</tr>
<tr>
<td>Water</td>
<td>Bottled water⁴</td>
</tr>
<tr>
<td>Sugary Beverages</td>
<td>Sports drinks³</td>
</tr>
<tr>
<td>Dairy</td>
<td>Cheese, yogurt, etc.³</td>
</tr>
<tr>
<td>Grains</td>
<td>Bread, rice, rolls, etc.³</td>
</tr>
<tr>
<td>Other sides</td>
<td>Soup, pasta salad, potato salad³</td>
</tr>
<tr>
<td>Condiments</td>
<td>Ketchup, salad dressing, etc.³</td>
</tr>
</tbody>
</table>

*Source:* ³ Smarter Lunchrooms Movement, 2009

*Measurement is the amount consumed based plate waste collection
## Appendix C: Food Waste Tables

### Table 1. SL Category: Fresh Fruits

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>23.3</td>
<td>3.9</td>
<td>6.0</td>
<td>9.0</td>
<td>57.9</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>48.2</td>
<td>13.5</td>
<td>7.8</td>
<td>6.2</td>
<td>24.4</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>54.6</td>
<td>8.6</td>
<td>9.7</td>
<td>7.0</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>51.9</td>
<td>9.3</td>
<td>8.4</td>
<td>4.7</td>
<td>25.2</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>50.0</td>
<td>7.3</td>
<td>8.3</td>
<td>11.5</td>
<td>22.9</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>50.0</td>
<td>7.4</td>
<td>7.4</td>
<td>13.8</td>
<td>21.3</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>5.9</td>
<td>29.4</td>
<td>17.6</td>
<td>29.4</td>
<td>17.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>37.1</td>
<td>9.8</td>
<td>15.6</td>
<td>8.5</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>48.0</td>
<td>4.6</td>
<td>14.5</td>
<td>2.6</td>
<td>30.3</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>58.0</td>
<td>7.3</td>
<td>12.5</td>
<td>5.7</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47.3</td>
<td>7.9</td>
<td>10.6</td>
<td>7.1</td>
<td>27.1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>335</td>
<td>78</td>
<td>13</td>
<td>20</td>
<td>30</td>
<td>194</td>
</tr>
<tr>
<td>1st</td>
<td>193</td>
<td>93</td>
<td>26</td>
<td>15</td>
<td>12</td>
<td>47</td>
</tr>
<tr>
<td>2nd</td>
<td>185</td>
<td>101</td>
<td>16</td>
<td>18</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>3rd</td>
<td>214</td>
<td>111</td>
<td>20</td>
<td>18</td>
<td>10</td>
<td>54</td>
</tr>
<tr>
<td>4th</td>
<td>96</td>
<td>48</td>
<td>7</td>
<td>8</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>5th</td>
<td>94</td>
<td>47</td>
<td>7</td>
<td>7</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>6th</td>
<td>17</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>7th</td>
<td>224</td>
<td>83</td>
<td>22</td>
<td>35</td>
<td>19</td>
<td>65</td>
</tr>
<tr>
<td>8th</td>
<td>152</td>
<td>73</td>
<td>7</td>
<td>22</td>
<td>4</td>
<td>46</td>
</tr>
<tr>
<td>High School</td>
<td>742</td>
<td>430</td>
<td>54</td>
<td>93</td>
<td>42</td>
<td>123</td>
</tr>
<tr>
<td>Total</td>
<td>2,252</td>
<td>1,065</td>
<td>177</td>
<td>239</td>
<td>159</td>
<td>611</td>
</tr>
</tbody>
</table>

SL = Smarter Lunchroom
Table 2. *SL Category: Canned Fruits*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Kindergarten</td>
<td>36.8</td>
<td>8.8</td>
<td>10.3</td>
<td>13.2</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>41.8</td>
<td>9.2</td>
<td>8.8</td>
<td>12.3</td>
<td>28.0</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>38.4</td>
<td>12.4</td>
<td>9.5</td>
<td>19.0</td>
<td>20.7</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>38.5</td>
<td>5.6</td>
<td>15.6</td>
<td>17.3</td>
<td>22.9</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>45.5</td>
<td>9.8</td>
<td>12.9</td>
<td>6.3</td>
<td>25.4</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>54.5</td>
<td>10.6</td>
<td>10.6</td>
<td>10.6</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>37.4</td>
<td>14.4</td>
<td>18.7</td>
<td>10.8</td>
<td>18.7</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>29.2</td>
<td>6.7</td>
<td>6.7</td>
<td>13.8</td>
<td>43.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>44.2</td>
<td>8.5</td>
<td>6.3</td>
<td>9.8</td>
<td>31.2</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>48.0</td>
<td>8.2</td>
<td>6.9</td>
<td>8.9</td>
<td>28.0</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>62.2</td>
<td>13.2</td>
<td>7.1</td>
<td>6.1</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>45.9</td>
<td>9.8</td>
<td>9.1</td>
<td>10.7</td>
<td>24.4</td>
<td></td>
</tr>
</tbody>
</table>

|                | Number |      |           |           |           |            |
| Pre-Kindergarten | 68     | 25   | 6        | 7         | 9         | 21         |
| Kindergarten    | 261    | 109  | 24       | 23        | 32        | 73         |
| 1st             | 242    | 93   | 30       | 23        | 46        | 50         |
| 2nd             | 231    | 89   | 13       | 36        | 40        | 53         |
| 3rd             | 224    | 102  | 22       | 29        | 14        | 57         |
| 4th             | 132    | 72   | 14       | 14        | 14        | 18         |
| 5th             | 139    | 52   | 20       | 26        | 15        | 26         |
| 6th             | 195    | 57   | 13       | 13        | 27        | 85         |
| 7th             | 539    | 238  | 46       | 34        | 53        | 168        |
| 8th             | 404    | 194  | 33       | 28        | 36        | 113        |
| High School     | 537    | 334  | 71       | 38        | 33        | 61         |
| Total           | 2,972  | 1,365| 292      | 271       | 319       | 725        |

SL = Smarter Lunchroom
Table 3. *SL Category: Hot Vegetables*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td></td>
<td>9.0</td>
<td>3.0</td>
<td>6.0</td>
<td>17.2</td>
<td>64.9</td>
</tr>
<tr>
<td>Kindergarten</td>
<td></td>
<td>11.5</td>
<td>5.0</td>
<td>6.5</td>
<td>11.9</td>
<td>65.1</td>
</tr>
<tr>
<td>1st</td>
<td></td>
<td>21.6</td>
<td>9.5</td>
<td>7.8</td>
<td>6.9</td>
<td>54.3</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>24.8</td>
<td>6.4</td>
<td>5.6</td>
<td>8.0</td>
<td>55.2</td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td>42.3</td>
<td>10.6</td>
<td>6.7</td>
<td>5.8</td>
<td>34.6</td>
</tr>
<tr>
<td>4th</td>
<td>43.8</td>
<td>4.2</td>
<td>10.4</td>
<td>2.1</td>
<td>39.6</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>41.3</td>
<td>13.0</td>
<td>13.0</td>
<td>6.5</td>
<td>26.1</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>36.0</td>
<td>8.0</td>
<td>12.0</td>
<td>8.0</td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>39.4</td>
<td>13.6</td>
<td>5.2</td>
<td>9.4</td>
<td>32.4</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>38.2</td>
<td>12.1</td>
<td>6.0</td>
<td>6.0</td>
<td>37.7</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>49.7</td>
<td>11.1</td>
<td>10.8</td>
<td>6.3</td>
<td>22.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31.8</td>
<td>9.1</td>
<td>7.5</td>
<td>8.6</td>
<td>43.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>Pre-Kindergarten</th>
<th>Kindergarten</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>134</td>
<td>278</td>
<td>116</td>
<td>125</td>
<td>104</td>
<td>48</td>
<td>46</td>
<td>25</td>
<td>213</td>
<td>199</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>32</td>
<td>25</td>
<td>31</td>
<td>44</td>
<td>21</td>
<td>19</td>
<td>9</td>
<td>84</td>
<td>76</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>14</td>
<td>11</td>
<td>8</td>
<td>11</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>29</td>
<td>24</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>18</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>11</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td>33</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>20</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>87</td>
<td>181</td>
<td>63</td>
<td>69</td>
<td>36</td>
<td>19</td>
<td>12</td>
<td>9</td>
<td>69</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,604</td>
<td>510</td>
<td>146</td>
<td>120</td>
<td>138</td>
<td>690</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SL = Smarter Lunchroom
Table 4. *SL Category: Salad & Cold Vegetables*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>3.3</td>
<td>5.5</td>
<td>7.7</td>
<td>5.5</td>
<td>78.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>4.3</td>
<td>11.8</td>
<td>16.1</td>
<td>19.4</td>
<td>48.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>14.9</td>
<td>14.9</td>
<td>12.9</td>
<td>7.9</td>
<td>49.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>9.4</td>
<td>13.2</td>
<td>19.8</td>
<td>10.4</td>
<td>47.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>38.6</td>
<td>5.7</td>
<td>7.1</td>
<td>11.4</td>
<td>37.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>30.9</td>
<td>23.5</td>
<td>8.8</td>
<td>16.2</td>
<td>20.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>37.5</td>
<td>4.8</td>
<td>7.7</td>
<td>16.3</td>
<td>33.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>32.5</td>
<td>10.7</td>
<td>10.4</td>
<td>14.0</td>
<td>31.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>29.9</td>
<td>8.2</td>
<td>8.8</td>
<td>10.9</td>
<td>42.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>36.0</td>
<td>14.5</td>
<td>14.0</td>
<td>10.1</td>
<td>25.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27.5</td>
<td>11.6</td>
<td>11.8</td>
<td>12.0</td>
<td>37.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>91</td>
</tr>
<tr>
<td>1st</td>
<td>93</td>
</tr>
<tr>
<td>2nd</td>
<td>101</td>
</tr>
<tr>
<td>3rd</td>
<td>106</td>
</tr>
<tr>
<td>4th</td>
<td>70</td>
</tr>
<tr>
<td>5th</td>
<td>68</td>
</tr>
<tr>
<td>6th</td>
<td>104</td>
</tr>
<tr>
<td>7th</td>
<td>335</td>
</tr>
<tr>
<td>8th</td>
<td>147</td>
</tr>
<tr>
<td>High School</td>
<td>414</td>
</tr>
<tr>
<td>Total</td>
<td>1,529</td>
</tr>
</tbody>
</table>

SL = Smarter Lunchroom
### Table 5. *SL Category: Starchy Sides*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>14.9</td>
<td>2.3</td>
<td>10.3</td>
<td>4.6</td>
<td>67.8</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>17.0</td>
<td>3.8</td>
<td>5.7</td>
<td>7.5</td>
<td>66.0</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>43.1</td>
<td>10.3</td>
<td>13.8</td>
<td>10.3</td>
<td>22.4</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>39.6</td>
<td>12.5</td>
<td>14.6</td>
<td>10.4</td>
<td>22.9</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>62.5</td>
<td>0.0</td>
<td>4.2</td>
<td>12.5</td>
<td>20.8</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>69.4</td>
<td>16.7</td>
<td>2.8</td>
<td>8.3</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>74.5</td>
<td>7.6</td>
<td>7.1</td>
<td>5.4</td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>68.4</td>
<td>14.8</td>
<td>8.4</td>
<td>4.5</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>71.5</td>
<td>11.8</td>
<td>9.0</td>
<td>4.4</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60.4</td>
<td>9.9</td>
<td>8.6</td>
<td>5.9</td>
<td>15.2</td>
<td></td>
</tr>
<tr>
<td><strong>Number</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>87</td>
<td>13</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>59</td>
</tr>
<tr>
<td>1st</td>
<td>53</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>2nd</td>
<td>58</td>
<td>25</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>3rd</td>
<td>48</td>
<td>19</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>4th</td>
<td>48</td>
<td>30</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>6th</td>
<td>36</td>
<td>25</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>7th</td>
<td>184</td>
<td>137</td>
<td>14</td>
<td>13</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>8th</td>
<td>155</td>
<td>106</td>
<td>23</td>
<td>13</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>High School</td>
<td>365</td>
<td>261</td>
<td>43</td>
<td>33</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,034</td>
<td>625</td>
<td>102</td>
<td>89</td>
<td>61</td>
<td>157</td>
</tr>
</tbody>
</table>

SL = Smarter Lunchroom
### Table 6. SL Category: Fruit Juice

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>71.4</td>
<td>3.2</td>
<td>7.9</td>
<td>0.0</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>59.7</td>
<td>6.2</td>
<td>4.7</td>
<td>3.1</td>
<td>26.4</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>50.0</td>
<td>16.7</td>
<td>0.0</td>
<td>33.3</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>80.0</td>
<td>20.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>80.0</td>
<td>0.0</td>
<td>0.0</td>
<td>20.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>20.0</td>
<td>0.0</td>
<td>20.0</td>
<td>0.0</td>
<td>60.0</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>71.4</td>
<td>4.8</td>
<td>14.3</td>
<td>0.0</td>
<td>9.5</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>80.0</td>
<td>9.2</td>
<td>4.6</td>
<td>3.1</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>77.1</td>
<td>4.3</td>
<td>7.1</td>
<td>2.1</td>
<td>9.3</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>86.4</td>
<td>3.9</td>
<td>1.9</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75.1</td>
<td>5.6</td>
<td>5.2</td>
<td>3.0</td>
<td>11.1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>Pre-Kindergarten</th>
<th>63</th>
<th>45</th>
<th>2</th>
<th>5</th>
<th>0</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>129</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>21</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>130</td>
<td>104</td>
<td>12</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>140</td>
<td>108</td>
<td>6</td>
<td>10</td>
<td>3</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>154</td>
<td>133</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>140</td>
<td>108</td>
<td>6</td>
<td>10</td>
<td>3</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>154</td>
<td>133</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>154</td>
<td>133</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>658</td>
<td>494</td>
<td>37</td>
<td>34</td>
<td>20</td>
<td>73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SL = Smarter Lunchroom
Table 7. USDA Category: Fruits

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Kindergarten</td>
<td>53.4</td>
<td>6.1</td>
<td>9.2</td>
<td>6.9</td>
<td>24.4</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>36.4</td>
<td>6.2</td>
<td>6.8</td>
<td>9.1</td>
<td>41.5</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>42.9</td>
<td>12.9</td>
<td>8.6</td>
<td>13.6</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>46.1</td>
<td>7.1</td>
<td>12.8</td>
<td>12.6</td>
<td>21.4</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>49.1</td>
<td>9.5</td>
<td>10.6</td>
<td>5.4</td>
<td>25.1</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>52.4</td>
<td>9.1</td>
<td>10.0</td>
<td>10.8</td>
<td>17.7</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>42.5</td>
<td>11.6</td>
<td>14.2</td>
<td>12.0</td>
<td>19.7</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>31.3</td>
<td>8.2</td>
<td>8.2</td>
<td>13.7</td>
<td>38.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>42.3</td>
<td>8.8</td>
<td>8.1</td>
<td>9.8</td>
<td>31.1</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>48.2</td>
<td>7.0</td>
<td>7.4</td>
<td>8.0</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>59.1</td>
<td>10.1</td>
<td>9.5</td>
<td>6.2</td>
<td>15.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>46.8</td>
<td>8.9</td>
<td>9.2</td>
<td>9.2</td>
<td>25.9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Kindergarten</td>
<td>131</td>
<td>70</td>
<td>8</td>
<td>12</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>725</td>
<td>264</td>
<td>45</td>
<td>49</td>
<td>66</td>
<td>301</td>
</tr>
<tr>
<td>1st</td>
<td>441</td>
<td>189</td>
<td>57</td>
<td>38</td>
<td>60</td>
<td>97</td>
</tr>
<tr>
<td>2nd</td>
<td>421</td>
<td>194</td>
<td>30</td>
<td>54</td>
<td>53</td>
<td>90</td>
</tr>
<tr>
<td>3rd</td>
<td>442</td>
<td>217</td>
<td>42</td>
<td>47</td>
<td>24</td>
<td>111</td>
</tr>
<tr>
<td>4th</td>
<td>231</td>
<td>121</td>
<td>21</td>
<td>23</td>
<td>25</td>
<td>41</td>
</tr>
<tr>
<td>5th</td>
<td>233</td>
<td>99</td>
<td>27</td>
<td>33</td>
<td>28</td>
<td>46</td>
</tr>
<tr>
<td>6th</td>
<td>233</td>
<td>73</td>
<td>19</td>
<td>19</td>
<td>32</td>
<td>90</td>
</tr>
<tr>
<td>7th</td>
<td>705</td>
<td>298</td>
<td>62</td>
<td>57</td>
<td>69</td>
<td>219</td>
</tr>
<tr>
<td>8th</td>
<td>500</td>
<td>241</td>
<td>35</td>
<td>37</td>
<td>40</td>
<td>147</td>
</tr>
<tr>
<td>High School</td>
<td>1,117</td>
<td>660</td>
<td>113</td>
<td>106</td>
<td>69</td>
<td>169</td>
</tr>
<tr>
<td>Total</td>
<td>5,179</td>
<td>2,426</td>
<td>459</td>
<td>475</td>
<td>475</td>
<td>1,343</td>
</tr>
</tbody>
</table>
Table 8. USDA Category: Dark Green Vegetables

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Kindergarten</td>
<td>10.6</td>
<td>1.5</td>
<td>6.1</td>
<td>19.7</td>
<td>62.1</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>9.0</td>
<td>6.0</td>
<td>5.6</td>
<td>10.3</td>
<td>69.2</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>10.7</td>
<td>4.9</td>
<td>9.0</td>
<td>13.9</td>
<td>61.5</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>16.3</td>
<td>11.1</td>
<td>8.1</td>
<td>9.6</td>
<td>54.8</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>22.2</td>
<td>15.7</td>
<td>17.6</td>
<td>12.0</td>
<td>32.4</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>40.9</td>
<td>5.4</td>
<td>8.6</td>
<td>8.6</td>
<td>36.6</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>35.9</td>
<td>14.1</td>
<td>9.8</td>
<td>15.2</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>9.1</td>
<td>0.0</td>
<td>6.1</td>
<td>15.2</td>
<td>69.7</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>32.7</td>
<td>6.2</td>
<td>13.3</td>
<td>15.0</td>
<td>32.7</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>20.8</td>
<td>8.3</td>
<td>12.5</td>
<td>15.3</td>
<td>43.1</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>41.4</td>
<td>11.7</td>
<td>14.4</td>
<td>9.9</td>
<td>22.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.6</td>
<td>8.5</td>
<td>10.3</td>
<td>12.2</td>
<td>45.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Kindergarten</td>
<td>66</td>
<td>7</td>
<td>1</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>234</td>
<td>21</td>
<td>14</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>1st</td>
<td>122</td>
<td>13</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>2nd</td>
<td>135</td>
<td>22</td>
<td>15</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>3rd</td>
<td>108</td>
<td>24</td>
<td>17</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>4th</td>
<td>93</td>
<td>38</td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>5th</td>
<td>92</td>
<td>33</td>
<td>13</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>6th</td>
<td>33</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>7th</td>
<td>113</td>
<td>37</td>
<td>7</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>8th</td>
<td>72</td>
<td>15</td>
<td>6</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>High School</td>
<td>222</td>
<td>92</td>
<td>26</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>1,290</td>
<td>305</td>
<td>110</td>
<td>133</td>
<td>157</td>
</tr>
<tr>
<td>Grade</td>
<td>Trays</td>
<td>None</td>
<td>25% Waste</td>
<td>50% Waste</td>
<td>75% Waste</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>1st</td>
<td></td>
<td>17.0</td>
<td>3.8</td>
<td>5.7</td>
<td>7.5</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>43.1</td>
<td>10.3</td>
<td>13.8</td>
<td>10.3</td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td>39.6</td>
<td>12.5</td>
<td>14.6</td>
<td>10.4</td>
</tr>
<tr>
<td>4th</td>
<td></td>
<td>62.5</td>
<td>0.0</td>
<td>4.2</td>
<td>12.5</td>
</tr>
<tr>
<td>6th</td>
<td></td>
<td>69.4</td>
<td>16.7</td>
<td>2.8</td>
<td>8.3</td>
</tr>
<tr>
<td>7th</td>
<td></td>
<td>68.8</td>
<td>10.4</td>
<td>6.3</td>
<td>5.0</td>
</tr>
<tr>
<td>8th</td>
<td></td>
<td>63.4</td>
<td>12.9</td>
<td>7.4</td>
<td>4.0</td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td>74.8</td>
<td>12.3</td>
<td>9.4</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>63.6</td>
<td>11.0</td>
<td>8.1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>53</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2nd</td>
<td>58</td>
<td>25</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>3rd</td>
<td>48</td>
<td>19</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>4th</td>
<td>48</td>
<td>30</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>6th</td>
<td>36</td>
<td>25</td>
<td>6</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7th</td>
<td>221</td>
<td>152</td>
<td>23</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>8th</td>
<td>202</td>
<td>128</td>
<td>26</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>High School</td>
<td>318</td>
<td>238</td>
<td>39</td>
<td>30</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>984</td>
<td>626</td>
<td>108</td>
<td>80</td>
<td>52</td>
</tr>
</tbody>
</table>
Table 10. **USDA Category: Red & Orange Vegetables**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>14.9</td>
<td>2.3</td>
<td>10.3</td>
<td>4.6</td>
<td>67.8</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>0.0</td>
<td>30.0</td>
<td>10.0</td>
<td>15.0</td>
<td>45.0</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>0.0</td>
<td>14.3</td>
<td>4.8</td>
<td>9.5</td>
<td>71.4</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>5.1</td>
<td>10.3</td>
<td>12.8</td>
<td>10.3</td>
<td>61.5</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>37.5</td>
<td>0.0</td>
<td>12.5</td>
<td>0.0</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>20.0</td>
<td>40.0</td>
<td>0.0</td>
<td>0.0</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>42.9</td>
<td>4.8</td>
<td>14.3</td>
<td>9.5</td>
<td>28.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>28.2</td>
<td>13.0</td>
<td>3.1</td>
<td>9.9</td>
<td>45.8</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>28.7</td>
<td>12.3</td>
<td>3.3</td>
<td>9.8</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>33.6</td>
<td>12.0</td>
<td>8.8</td>
<td>9.6</td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24.5</td>
<td>11.2</td>
<td>6.9</td>
<td>9.0</td>
<td>48.4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>87</td>
</tr>
<tr>
<td>1st</td>
<td>20</td>
</tr>
<tr>
<td>2nd</td>
<td>21</td>
</tr>
<tr>
<td>3rd</td>
<td>39</td>
</tr>
<tr>
<td>4th</td>
<td>8</td>
</tr>
<tr>
<td>5th</td>
<td>5</td>
</tr>
<tr>
<td>6th</td>
<td>21</td>
</tr>
<tr>
<td>7th</td>
<td>131</td>
</tr>
<tr>
<td>8th</td>
<td>122</td>
</tr>
<tr>
<td>High School</td>
<td>125</td>
</tr>
<tr>
<td>Total</td>
<td>579</td>
</tr>
</tbody>
</table>

The table above shows the consumption and waste percentages of red and orange vegetables across different grades, along with the total number of trays used.
### Table 11. USDA Category: Beans & Peas

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>7.4</td>
<td>4.4</td>
<td>5.9</td>
<td>14.7</td>
<td>67.6</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>10.6</td>
<td>2.4</td>
<td>8.1</td>
<td>11.4</td>
<td>67.5</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>52.2</td>
<td>17.4</td>
<td>4.3</td>
<td>8.7</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>56.7</td>
<td>3.3</td>
<td>6.7</td>
<td>3.3</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>63.2</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
<td>34.2</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>52.8</td>
<td>7.5</td>
<td>5.7</td>
<td>15.1</td>
<td>18.9</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>56.9</td>
<td>7.8</td>
<td>5.9</td>
<td>0.0</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>45.6</td>
<td>13.2</td>
<td>8.8</td>
<td>4.4</td>
<td>27.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>35.2</td>
<td>6.4</td>
<td>6.4</td>
<td>8.4</td>
<td>43.7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>68 5 3 4 10 46</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>123 13 3 10 14 83</td>
</tr>
<tr>
<td>1st</td>
<td>23 12 4 1 2 4</td>
</tr>
<tr>
<td>2nd</td>
<td>30 17 1 2 1 9</td>
</tr>
<tr>
<td>3rd</td>
<td>38 24 1 0 0 13</td>
</tr>
<tr>
<td>4th</td>
<td>1 1 0 0 0 0</td>
</tr>
<tr>
<td>7th</td>
<td>53 28 4 3 8 10</td>
</tr>
<tr>
<td>8th</td>
<td>51 29 4 3 0 15</td>
</tr>
<tr>
<td>High School</td>
<td>68 31 9 6 3 19</td>
</tr>
<tr>
<td>Total</td>
<td>455 160 29 29 38 199</td>
</tr>
</tbody>
</table>
Table 12. *USDA Category: Other Vegetables*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade Grade</th>
<th>Trays</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>8.3</td>
<td>16.7</td>
<td>16.7</td>
<td>0.0</td>
<td>58.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>6.1</td>
<td>12.1</td>
<td>27.3</td>
<td>9.1</td>
<td>45.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>16.7</td>
<td>11.1</td>
<td>13.9</td>
<td>0.0</td>
<td>58.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>16.0</td>
<td>12.0</td>
<td>16.0</td>
<td>0.0</td>
<td>56.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>37.5</td>
<td>6.3</td>
<td>6.3</td>
<td>6.3</td>
<td>43.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>35.3</td>
<td>41.2</td>
<td>17.6</td>
<td>0.0</td>
<td>5.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>30.0</td>
<td>20.0</td>
<td>0.0</td>
<td>30.0</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>35.4</td>
<td>13.4</td>
<td>9.8</td>
<td>17.1</td>
<td>24.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>29.3</td>
<td>14.6</td>
<td>9.8</td>
<td>7.3</td>
<td>39.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>42.1</td>
<td>14.8</td>
<td>12.6</td>
<td>10.4</td>
<td>20.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>32.1</td>
<td>14.7</td>
<td>13.0</td>
<td>9.5</td>
<td>30.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1st</td>
<td>33</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>36</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>25</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>17</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7th</td>
<td>82</td>
<td>11</td>
<td>8</td>
<td>14</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>41</td>
<td>12</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>High School</td>
<td>183</td>
<td>27</td>
<td>23</td>
<td>19</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>455</td>
<td>67</td>
<td>59</td>
<td>43</td>
<td>140</td>
<td></td>
</tr>
</tbody>
</table>
Table 13. *USDA Category: Mixed Vegetables*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>18.2</td>
<td>18.2</td>
<td>9.1</td>
<td>9.1</td>
<td>45.5</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>25.0</td>
<td>0.0</td>
<td>25.0</td>
<td>50.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>50.8</td>
<td>6.2</td>
<td>9.2</td>
<td>13.8</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>35.6</td>
<td>12.9</td>
<td>11.4</td>
<td>10.6</td>
<td>28.8</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>53.8</td>
<td>15.4</td>
<td>23.1</td>
<td>7.7</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>48.6</td>
<td>12.0</td>
<td>13.1</td>
<td>7.1</td>
<td>19.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43.9</td>
<td>11.5</td>
<td>12.3</td>
<td>9.8</td>
<td>22.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2nd</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>6th</td>
<td>65</td>
<td>33</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>7th</td>
<td>132</td>
<td>47</td>
<td>17</td>
<td>15</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>8th</td>
<td>13</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>High School</td>
<td>183</td>
<td>89</td>
<td>22</td>
<td>24</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>408</td>
<td>179</td>
<td>47</td>
<td>50</td>
<td>40</td>
<td>91</td>
</tr>
</tbody>
</table>
Table 14. USDA Component Category: Fruits

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>53.4</td>
<td>6.1</td>
<td>9.2</td>
<td>6.9</td>
<td>24.4</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>36.4</td>
<td>6.2</td>
<td>6.8</td>
<td>9.1</td>
<td>41.5</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>42.9</td>
<td>12.9</td>
<td>8.6</td>
<td>13.6</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>46.1</td>
<td>7.1</td>
<td>12.8</td>
<td>12.6</td>
<td>21.4</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>49.1</td>
<td>9.5</td>
<td>10.6</td>
<td>5.4</td>
<td>25.1</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>52.4</td>
<td>9.1</td>
<td>10.0</td>
<td>10.8</td>
<td>17.7</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>42.5</td>
<td>11.6</td>
<td>14.2</td>
<td>12.0</td>
<td>19.7</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>31.3</td>
<td>8.2</td>
<td>8.2</td>
<td>13.7</td>
<td>38.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>43.5</td>
<td>8.9</td>
<td>7.8</td>
<td>9.6</td>
<td>30.2</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>48.2</td>
<td>7.0</td>
<td>7.4</td>
<td>8.0</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>59.1</td>
<td>10.1</td>
<td>9.5</td>
<td>6.2</td>
<td>15.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47.0</td>
<td>8.9</td>
<td>9.1</td>
<td>9.1</td>
<td>25.8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>131</td>
<td>70</td>
<td>8</td>
<td>12</td>
<td>9</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>725</td>
<td>264</td>
<td>45</td>
<td>49</td>
<td>66</td>
<td>301</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>441</td>
<td>189</td>
<td>57</td>
<td>38</td>
<td>60</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>421</td>
<td>194</td>
<td>30</td>
<td>54</td>
<td>53</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>442</td>
<td>217</td>
<td>42</td>
<td>47</td>
<td>24</td>
<td>111</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>231</td>
<td>121</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>233</td>
<td>99</td>
<td>27</td>
<td>33</td>
<td>28</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>233</td>
<td>73</td>
<td>19</td>
<td>19</td>
<td>32</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>676</td>
<td>294</td>
<td>60</td>
<td>53</td>
<td>65</td>
<td>204</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>500</td>
<td>241</td>
<td>35</td>
<td>37</td>
<td>40</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>1,117</td>
<td>660</td>
<td>113</td>
<td>106</td>
<td>69</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5,150</td>
<td>2,422</td>
<td>457</td>
<td>471</td>
<td>471</td>
<td>1,328</td>
<td></td>
</tr>
</tbody>
</table>
### Table 15. USDA Component Category: Dark Green Vegetables

<table>
<thead>
<tr>
<th>Grade</th>
<th>trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>10.6</td>
<td>1.5</td>
<td>6.1</td>
<td>19.7</td>
<td>62.1</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>9.0</td>
<td>6.0</td>
<td>5.6</td>
<td>10.3</td>
<td>69.2</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>10.7</td>
<td>4.9</td>
<td>9.0</td>
<td>13.9</td>
<td>61.5</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>16.3</td>
<td>11.1</td>
<td>8.1</td>
<td>9.6</td>
<td>54.8</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>22.0</td>
<td>15.6</td>
<td>18.3</td>
<td>11.9</td>
<td>32.1</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>40.4</td>
<td>5.3</td>
<td>9.6</td>
<td>8.5</td>
<td>36.2</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>39.2</td>
<td>13.4</td>
<td>9.3</td>
<td>14.4</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>9.1</td>
<td>0.0</td>
<td>6.1</td>
<td>15.2</td>
<td>69.7</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>37.2</td>
<td>5.1</td>
<td>12.4</td>
<td>15.3</td>
<td>29.9</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>25.0</td>
<td>9.5</td>
<td>13.1</td>
<td>13.1</td>
<td>39.3</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>41.4</td>
<td>11.7</td>
<td>14.4</td>
<td>9.9</td>
<td>22.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24.8</td>
<td>8.4</td>
<td>10.4</td>
<td>12.1</td>
<td>44.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>number</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>66</td>
<td>7</td>
<td>1</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>234</td>
<td>21</td>
<td>14</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>1st</td>
<td>122</td>
<td>13</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>2nd</td>
<td>135</td>
<td>22</td>
<td>15</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>3rd</td>
<td>109</td>
<td>24</td>
<td>17</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>4th</td>
<td>94</td>
<td>38</td>
<td>5</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>5th</td>
<td>97</td>
<td>38</td>
<td>13</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>6th</td>
<td>33</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>7th</td>
<td>137</td>
<td>51</td>
<td>7</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>8th</td>
<td>84</td>
<td>21</td>
<td>8</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>High School</td>
<td>222</td>
<td>92</td>
<td>26</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>1,333</td>
<td>330</td>
<td>112</td>
<td>139</td>
<td>161</td>
</tr>
</tbody>
</table>
Table 16. *USDA Component Category: Starchy Vegetables*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td></td>
<td>17.0</td>
<td>3.8</td>
<td>5.7</td>
<td>7.5</td>
<td>66.0</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>43.1</td>
<td>10.3</td>
<td>13.8</td>
<td>10.3</td>
<td>22.4</td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td>39.6</td>
<td>12.5</td>
<td>14.6</td>
<td>10.4</td>
<td>22.9</td>
</tr>
<tr>
<td>4th</td>
<td></td>
<td>62.5</td>
<td>0.0</td>
<td>4.2</td>
<td>12.5</td>
<td>20.8</td>
</tr>
<tr>
<td>6th</td>
<td></td>
<td>69.4</td>
<td>16.7</td>
<td>2.8</td>
<td>8.3</td>
<td>2.8</td>
</tr>
<tr>
<td>7th</td>
<td></td>
<td>68.8</td>
<td>10.4</td>
<td>6.3</td>
<td>5.0</td>
<td>9.5</td>
</tr>
<tr>
<td>8th</td>
<td></td>
<td>63.4</td>
<td>12.9</td>
<td>7.4</td>
<td>4.0</td>
<td>12.4</td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td>74.8</td>
<td>12.3</td>
<td>9.4</td>
<td>2.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>63.6</td>
<td>11.0</td>
<td>8.1</td>
<td>5.3</td>
<td>12.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>High School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>53</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>58</td>
<td>25</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>48</td>
<td>19</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>48</td>
<td>30</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>36</td>
<td>25</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>221</td>
<td>152</td>
<td>23</td>
<td>14</td>
<td>11</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>202</td>
<td>128</td>
<td>26</td>
<td>15</td>
<td>8</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>318</td>
<td>238</td>
<td>39</td>
<td>30</td>
<td>9</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>984</td>
<td>626</td>
<td>108</td>
<td>80</td>
<td>52</td>
<td>118</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17. **USDA Component Category: Red & Orange Vegetables**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>33.3</td>
<td>9.1</td>
<td>3.0</td>
<td>7.6</td>
<td>45.5</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>34.3</td>
<td>9.1</td>
<td>11.8</td>
<td>10.4</td>
<td>34.3</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>48.0</td>
<td>19.7</td>
<td>10.7</td>
<td>8.6</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>56.1</td>
<td>13.6</td>
<td>8.1</td>
<td>5.0</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>58.1</td>
<td>9.6</td>
<td>8.8</td>
<td>8.8</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>64.8</td>
<td>13.4</td>
<td>6.7</td>
<td>3.4</td>
<td>11.7</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>75.8</td>
<td>11.2</td>
<td>5.6</td>
<td>2.2</td>
<td>5.1</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>50.0</td>
<td>17.1</td>
<td>20.0</td>
<td>4.3</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>60.6</td>
<td>11.6</td>
<td>5.4</td>
<td>4.4</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>62.8</td>
<td>9.1</td>
<td>3.9</td>
<td>4.9</td>
<td>19.4</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>76.2</td>
<td>5.7</td>
<td>4.7</td>
<td>3.6</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58.7</td>
<td>10.8</td>
<td>7.4</td>
<td>5.8</td>
<td>17.2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>66</td>
<td>22</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>364</td>
<td>125</td>
</tr>
<tr>
<td>1st</td>
<td>244</td>
<td>43</td>
</tr>
<tr>
<td>2nd</td>
<td>221</td>
<td>18</td>
</tr>
<tr>
<td>3rd</td>
<td>272</td>
<td>24</td>
</tr>
<tr>
<td>4th</td>
<td>179</td>
<td>12</td>
</tr>
<tr>
<td>5th</td>
<td>178</td>
<td>10</td>
</tr>
<tr>
<td>6th</td>
<td>70</td>
<td>12</td>
</tr>
<tr>
<td>7th</td>
<td>406</td>
<td>47</td>
</tr>
<tr>
<td>8th</td>
<td>309</td>
<td>28</td>
</tr>
<tr>
<td>High School</td>
<td>470</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>2,779</td>
<td>301</td>
</tr>
</tbody>
</table>

Percent = \[ \frac{\text{Number of trays wasted}}{\text{Total number of trays}} \times 100 \]
Table 18. USDA Component Category: Beans & Peas

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>7.4</td>
<td>4.4</td>
<td>5.9</td>
<td>14.7</td>
<td>67.6</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>10.6</td>
<td>2.4</td>
<td>8.1</td>
<td>11.4</td>
<td>67.5</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>52.2</td>
<td>17.4</td>
<td>4.3</td>
<td>8.7</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>56.7</td>
<td>3.3</td>
<td>6.7</td>
<td>3.3</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>63.2</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
<td>34.2</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>27.1</td>
<td>6.3</td>
<td>12.5</td>
<td>14.6</td>
<td>39.6</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>48.5</td>
<td>9.1</td>
<td>24.2</td>
<td>15.2</td>
<td>18.2</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>56.6</td>
<td>7.5</td>
<td>5.7</td>
<td>0.0</td>
<td>30.2</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>45.6</td>
<td>13.2</td>
<td>8.8</td>
<td>4.4</td>
<td>27.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34.4</td>
<td>6.6</td>
<td>9.3</td>
<td>9.1</td>
<td>42.7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>68</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>46</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>123</td>
<td>13</td>
<td>3</td>
<td>10</td>
<td>14</td>
<td>83</td>
</tr>
<tr>
<td>1st</td>
<td>23</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2nd</td>
<td>30</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>3rd</td>
<td>38</td>
<td>24</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>4th</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6th</td>
<td>48</td>
<td>13</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>7th</td>
<td>66</td>
<td>32</td>
<td>6</td>
<td>16</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>8th</td>
<td>53</td>
<td>30</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>High School</td>
<td>68</td>
<td>31</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>518</td>
<td>178</td>
<td>34</td>
<td>48</td>
<td>47</td>
<td>221</td>
</tr>
</tbody>
</table>
Table 19. USDA Component Category: Other Vegetables

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>33.3</td>
<td>9.1</td>
<td>3.0</td>
<td>7.6</td>
<td>45.5</td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>34.0</td>
<td>5.0</td>
<td>12.1</td>
<td>6.4</td>
<td>42.6</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>6.1</td>
<td>12.1</td>
<td>27.3</td>
<td>9.1</td>
<td>45.5</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>16.7</td>
<td>11.1</td>
<td>13.9</td>
<td>0.0</td>
<td>58.3</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>16.7</td>
<td>12.5</td>
<td>12.5</td>
<td>0.0</td>
<td>58.3</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>40.0</td>
<td>6.7</td>
<td>0.0</td>
<td>6.7</td>
<td>46.7</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>8.3</td>
<td>58.3</td>
<td>25.0</td>
<td>0.0</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>29.1</td>
<td>9.1</td>
<td>10.9</td>
<td>14.5</td>
<td>36.4</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>35.0</td>
<td>14.0</td>
<td>21.0</td>
<td>16.0</td>
<td>24.0</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>35.1</td>
<td>14.0</td>
<td>14.0</td>
<td>7.0</td>
<td>29.8</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>44.6</td>
<td>14.5</td>
<td>11.9</td>
<td>9.8</td>
<td>19.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>33.6</td>
<td>11.9</td>
<td>13.3</td>
<td>8.9</td>
<td>33.6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Kindergarten</td>
<td>66</td>
<td>22</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>141</td>
<td>48</td>
<td>7</td>
<td>17</td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td>1st</td>
<td>33</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>2nd</td>
<td>36</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>3rd</td>
<td>24</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>4th</td>
<td>15</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>5th</td>
<td>12</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6th</td>
<td>55</td>
<td>16</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>7th</td>
<td>100</td>
<td>35</td>
<td>14</td>
<td>21</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>8th</td>
<td>57</td>
<td>20</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>High School</td>
<td>193</td>
<td>86</td>
<td>28</td>
<td>23</td>
<td>19</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>732</td>
<td>246</td>
<td>87</td>
<td>97</td>
<td>65</td>
<td>246</td>
</tr>
</tbody>
</table>
### Table 20. USDA Component Category: Mixed Vegetables

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td></td>
<td>18.2</td>
<td>18.2</td>
<td>9.1</td>
<td>9.1</td>
<td>45.5</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>25.0</td>
<td>0.0</td>
<td>25.0</td>
<td>50.0</td>
<td>0.0</td>
</tr>
<tr>
<td>6th</td>
<td></td>
<td>50.8</td>
<td>6.2</td>
<td>9.2</td>
<td>13.8</td>
<td>20.0</td>
</tr>
<tr>
<td>7th</td>
<td></td>
<td>35.9</td>
<td>12.5</td>
<td>11.7</td>
<td>10.9</td>
<td>28.1</td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td>48.6</td>
<td>12.0</td>
<td>13.1</td>
<td>7.1</td>
<td>19.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>43.7</td>
<td>11.3</td>
<td>12.0</td>
<td>10.0</td>
<td>22.8</td>
</tr>
</tbody>
</table>

#### Number

<table>
<thead>
<tr>
<th>Grade</th>
<th>Trays</th>
<th>None</th>
<th>25% Waste</th>
<th>50% Waste</th>
<th>75% Waste</th>
<th>All Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td></td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6th</td>
<td></td>
<td>65</td>
<td>33</td>
<td>4</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>7th</td>
<td></td>
<td>128</td>
<td>46</td>
<td>16</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td>183</td>
<td>89</td>
<td>22</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>391</td>
<td>171</td>
<td>44</td>
<td>47</td>
<td>39</td>
</tr>
</tbody>
</table>
### Tier 1 Core Public Health Competencies Applied

<table>
<thead>
<tr>
<th>Domain #1: Analytic/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the characteristics of a population-based health problem (e.g., equity, social determinants, environment)</td>
</tr>
<tr>
<td>Use variables that measure public health conditions</td>
</tr>
<tr>
<td>Use methods and instruments for collecting valid and reliable quantitative and qualitative data</td>
</tr>
<tr>
<td>Identify sources of public health data and information</td>
</tr>
<tr>
<td>Recognize the integrity and comparability of data</td>
</tr>
<tr>
<td>Identify gaps in data sources</td>
</tr>
<tr>
<td>Describe the public health applications of quantitative and qualitative data</td>
</tr>
<tr>
<td>Collect quantitative and qualitative community data (e.g., risks and benefits to the community, health and resource needs)</td>
</tr>
<tr>
<td>Use information technology to collect, store, and retrieve data</td>
</tr>
<tr>
<td>Describe how data are used to address scientific, political, ethical, and social public health issues</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain #2: Policy Development and Program Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gather information relevant to specific public health policy issues</td>
</tr>
<tr>
<td>Describe how policy options can influence public health programs</td>
</tr>
<tr>
<td>Explain the expected outcomes of policy options (e.g., health, fiscal, administrative, legal, ethical, social, political)</td>
</tr>
<tr>
<td>Gather information that will inform policy decisions (e.g., health, fiscal, administrative, legal, ethical, social, political)</td>
</tr>
<tr>
<td>Describe the public health laws and regulations governing public health programs</td>
</tr>
<tr>
<td>Incorporate policies and procedures into program plans and structures</td>
</tr>
<tr>
<td>Identify mechanisms to monitor and evaluate programs for their effectiveness and quality</td>
</tr>
<tr>
<td>Demonstrate the use of public health informatics practices and procedures (e.g., use of information systems infrastructure to improve health outcomes)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain #3: Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate in writing and orally, in person, and through electronic means, with linguistic and cultural proficiency</td>
</tr>
<tr>
<td>Solicit community-based input from individuals and organizations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain #4: Cultural Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain #5: Community Dimensions of Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborate with community partners to promote the health of the population</td>
</tr>
<tr>
<td>Maintain partnerships with key stakeholders</td>
</tr>
<tr>
<td>Use group processes to advance community involvement</td>
</tr>
<tr>
<td>Describe the role of governmental and non-governmental organizations in the delivery of community health services</td>
</tr>
<tr>
<td>Identify community assets and resources</td>
</tr>
<tr>
<td>Gather input from the community to inform the development of public health policy and programs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain #6: Public Health Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify prominent events in the history of the public health profession</td>
</tr>
<tr>
<td>Relate public health science skills to the Core Public Health Functions and Ten Essential Services of Public Health</td>
</tr>
<tr>
<td>Describe the scientific evidence related to a public health issue, concern, or intervention</td>
</tr>
<tr>
<td>Retrieve scientific evidence from a variety of text and electronic sources</td>
</tr>
<tr>
<td>Discuss the limitations of research findings (e.g., limitations of data sources, importance of observations and interrelationships)</td>
</tr>
<tr>
<td>Partner with other public health professionals in building the scientific base of public health</td>
</tr>
</tbody>
</table>
Tier 1 Core Public Health Competencies Applied (cont’d)

<table>
<thead>
<tr>
<th>Domain #7: Financial Planning and Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhere to the organization’s policies and procedures</td>
</tr>
<tr>
<td>Report program performance</td>
</tr>
<tr>
<td>Apply basic human relations skills to internal collaborations, motivation of colleagues, and resolution of conflicts</td>
</tr>
<tr>
<td>Demonstrate public health informatics skills to improve program and business operations (e.g., performance management and improvement)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain #8: Leadership and Systems Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporate ethical standards of practice as the basis of all interactions with organizations, communities, and individuals</td>
</tr>
<tr>
<td>Use individual, team and organizational learning opportunities for personal and professional development</td>
</tr>
<tr>
<td>Describe the impact of changes in the public health system, and larger social, political, economic environment on organizational practices</td>
</tr>
</tbody>
</table>

Concentration Competencies Applied

<table>
<thead>
<tr>
<th>Health Promotion and Education:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area 4: Conduct Evaluation and Research Related to Health Education</strong></td>
</tr>
<tr>
<td>4.1 Create purpose statement</td>
</tr>
<tr>
<td>4.2 Develop evaluation/research questions</td>
</tr>
<tr>
<td>4.3 Assess the merits and limitations of qualitative and quantitative data collection for research</td>
</tr>
<tr>
<td>4.4 Critique existing data collection instruments for research</td>
</tr>
<tr>
<td>4.6 Develop data analysis plan for research</td>
</tr>
<tr>
<td>4.8 Evaluate feasibility of implementing recommendations from evaluation</td>
</tr>
</tbody>
</table>