



# School Tray Audit Guide

When we throw away or compost food that could have been eaten, all the resources that went into making the food are also wasted. We have the chance to keep a large amount of food from going to waste in our schools and to be part of the solution. Before your school can prevent the amount of food wasted every day, it's important to first understand how much is being wasted and why.

A tray audit is a measurement technique to assess the wasted food coming from student lunch trays. Audits can help answer questions such as:

- How much food and beverage items are not eaten?
- Which types of food are being wasted the most?
- Why are students not eating particular food items?
- Which lunch period or grade wastes the most? What are the reasons behind this?

Based on the findings of a tray audit, opportunities to reduce wasted food naturally appear.

## STEP 1 – PLAN YOUR TRAY AUDIT

### Assign a project lead or coordinator

The project lead will develop plans, recruit a team, ensure accountability, and execute follow through.

### Set your goals

Work with the school principal, kitchen and custodial staff, and interested leaders to set a goal for your tray audits. This will help you get everyone on board and narrow down how much you want to measure. Determine areas within the school where food is wasted. This is often in the cafeteria and kitchen areas, but can also be in classrooms and other common areas.

### Define your sample size

Choose a sample size of meal periods and menu options to audit. For example, you may want to audit all menu options for breakfast and lunch periods for one day or you may want to target one lunch period or grade level for multiple days. More sample days and meal periods offer you more information to address wasted food prevention efforts.

### Select the right date(s) and meal(s)

Ask kitchen staff for recommendations on which meals would be best to audit. Pick a meal that is served regularly so that it can be tested in the future.

The dates you choose to conduct a tray audit should not coincide with non-routine events. Avoid days when a large number of students are out on a field trip and are not eating lunch at school. Speak with your food service manager to ensure that the meal served on the date chosen for the tray audit is a part of the regular meal schedule. Future tray audits should be done on days where the same meal is served.

### Work with your kitchen staff

Ask kitchen staff to provide a list of all food choices to be served on the day of the audit so that you can prepare proper signage and the number of buckets. Reusable trays and silverware may take longer to be returned to kitchen staff for washing during the tray audit days.

If applicable, explain that any unopened, uneaten items placed on a Share Table during the days of the audit must be counted and recorded before being sanitized or redistributed back into the meal program.

### Pick the audit station area

Identify where the tray audit station can be set up. It should be near the area where food waste is normally thrown away and in an area that can accommodate small messes (avoid carpet). Ensure that you have enough space for up to three long tables for food sorting and up to two tables for interviews.

Ask custodial staff to recommend a space to place your tray audit sorting line and assist you during the audit by emptying large organics, recycling and trash bins. If your audit will occur over multiple days, ensure to pick a location where tables, tarps and buckets can stay overnight. Make sure that staff know what is being measured so they do not accidentally dispose of something.

## **Recruit volunteers**

Volunteers will be needed to help sort, weigh and record student tray waste. School Green Teams, student councils, PTO volunteers, and Dakota County Master Recycler Composter volunteers are good places to start recruiting volunteers. Tray audits typically take place during all periods of a meal service, plus time for set up and clean up.

### Typical roles

- Food sorters: 3-4 volunteers for emptying milk cartons, sorting food into different buckets
- Interviewers: 2-3 interviewer volunteers depending on the size of the lunch period
- Recorders (after lunch period): 3-4 volunteers (can be the food sorters and interviewers)
  - 1 volunteer writing on Tray Audit Weight Log
  - 1-2 volunteers collecting, weighing and emptying buckets
  - 1 volunteer counting empty trays that had no leftovers
  - 1 volunteer counting trays that had leftovers

## **Make an announcement**

Before the audit begins, let students know what to expect. Include a message during the morning announcements or ask teachers to talk to their classrooms before lunch. Explain that the cafeteria will look different today and students may be asked questions about their leftovers. Make it clear that they are not in trouble for not finishing their food that day and explain that the goal is to see if we can improve our lunchrooms.

## **STEP 2 – SET UP THE AUDIT STATION**

### **Gather the following materials prior to the day of the audit**

- |  |   |
|--|---|
| <input type="checkbox"/> Two 32-gallon organics bins to empty food buckets (if applicable)                 | <input type="checkbox"/> Cleanup supplies such as cleaning spray, rags, mops and brooms |
| <input type="checkbox"/> Two 32-gallon recycling bins  | <input type="checkbox"/> Student interview sheets:                                      |
| <input type="checkbox"/> Two 32-gallon trash bins  | <input type="checkbox"/> Paper student record sheet, clipboards, and pens               |
| <input type="checkbox"/> Large bags to collect recycling and trash   | OR  |
| <input type="checkbox"/> Large certified-compostable bags for organics recycling (if applicable)           | <input type="checkbox"/> Online form, such as a Google Form, and iPads                  |
| <input type="checkbox"/> Small bags for buckets with messy foods (use certified-compostable if applicable) | <input type="checkbox"/> Weight log sheets and clipboards                               |
| <input type="checkbox"/> 2-5 long tables   | <input type="checkbox"/> Gloves   |
| <input type="checkbox"/> 10-20 5-gallon buckets  | <input type="checkbox"/> Aprons   |
| <input type="checkbox"/> Scale   | <input type="checkbox"/> First aid kit  |
| <input type="checkbox"/> Signs directing students to tray audit station (if needed)                        | <input type="checkbox"/> Tarps  |
| <input type="checkbox"/> Bucket signs with images of specific food items                                   | <input type="checkbox"/> Tape for bucket signs  |
|  | <input type="checkbox"/> Markers  |
|  | <input type="checkbox"/> Extra paper  |
|  | <input type="checkbox"/> Camera or phone  |



**Prepare the audit station an hour before the first meal period**

- Set up 2-3 long tables in a line
- Place a tarp on top of the tables for easy clean up
- Place buckets on top of the tables. Label each bucket for each item being served that day. We suggest the following order for your buckets, but you can adjust the flow once you get started:
  - Whole, unopened, packaged items like unopened milk cartons.
  - Milk (empty milk into bucket; put empty cartons elsewhere)
  - Entrée(s) - each entrée needs its own bucket
  - Sides and salad bar - each side needs its own bucket
  - Fruits and vegetables– each item type needs its own bucket
- Use bags in buckets with messy foods for easy clean up. Use certified-compostable bags if your school collects organics.
- A tray audit does not count food you can't eat like banana peels or apple cores. Set up separate buckets near the sorting line for:
  - Inedible food scraps and napkins. If you do not have organics recycling, these items go in the trash.
  - Recycling for empty milk cartons and other recyclables,
  - Trash for wrappers or other items.
- Place a scale at the end of the line of buckets.
- Weigh an empty bucket and record on your weight record log.

**Train your volunteers**

Tray audits are fun, but can be hectic and fast paced. Assign volunteers to specific tasks to reduce confusion. For example, one person may be in charge of directing students to the interview and audit stations. A few people may be assigned to interview students. In the sorting line, each person may have a different task depending on their location in the sorting line, like taking off non-food items like wrappers or emptying milk cartons into the bucket labeled for wasted milk.

Give aprons and gloves to volunteers handling food.



### Prepare kitchen collection

Coordinate with your kitchen staff to record the weight of unserved edible food if possible. Give a collection bucket to kitchen staff to collect food that was wasted during meal prep.

## STEP 3 – DURING THE TRAY AUDIT

### Direct students to the audit station

When students are done eating their meal, direct them to be interviewed by an audit volunteer. Have 2-3 interview volunteers ready depending on the size of the lunch period.

### Interview students

A volunteer will ask the student what is left on their tray and why they were not able to finish it. Encourage thoughtful answers from students without putting words in their mouths. A student being interviewed simply saying “I didn’t like it” isn’t as helpful, so follow up with a question of “Why?” or “What could have been better?” Record answers on the interview log.

Interviewing every student may not be possible. You can opt to interview a sample of students. Regardless, all students will have their food sorted.



### Sort food

After being interviewed, interviewers will direct students to drop their trays off at the beginning of the audit station. It is helpful to have extra table space before the bucket line to allow for multiple trays in case sorting volunteers get backed up.

#### Suggested sorting process

1. Collect trays that had no leftovers into one pile and do not pass them down the sorting line to keep this count separate. You may remove napkins and inedible foods like apple cores from the trays before stacking.
2. Remove unopened, packaged foods or whole, uneaten fruit off the tray and place in a designated area to count later.
3. Remove opened milk cartons from trays and pour milk into the first bucket. Put empty cartons in a recycling bucket nearby.
4. Remove wrappers, napkins and inedible foods from the tray and sort them into trash and organics buckets nearby.
5. Pass trays with leftovers down the sorting line until everything is sorted into buckets. It is best if each volunteer has the responsibility to sort specific items so that trays can be passed down the line quickly. Empty food out of packages if applicable. Items that take longer to un-package like frozen yogurt can be piled up until a volunteer is free to sort.



6. Stack sorted trays at the end of the line to be counted after the lunch period.

### Take pictures

Take pictures throughout the sorting process to record and document anything interesting.

## STEP 4: RECORD DATA

### Weigh buckets

Have one volunteer in charge of recording weights from the scale after each lunch period while other volunteers gather buckets, put them on the scale, and then empty buckets into appropriate larger collection bins. Make sure to note the food item for the corresponding bucket weight. You will subtract the weight of the bucket later.

If a bucket gets full in the middle of a lunch period, record the full bucket weigh before emptying and returning it. Only allow liquid buckets to get half full to prevent spills.

### Track unopened items

Record how many unopened, uneaten, packaged items were collected on the weight record log. These items include unopened milk, uneaten fruit, and packaged carrots and yogurt.

If your school uses a Share Table or something similar, record how many unopened items get placed on the Share Table during each lunch period compared to how many unopened items come to the audit station. This will help you understand if students are using the Share Table properly.

### Measure kitchen wasted food

Gather and weigh the collected food from kitchen prep area.

### Count trays

Record the number of trays that did not have leftovers and the number of trays that had food waste. The total number of trays represents the number of students who ate a lunch provided by the school.



## STEP 5: CLEAN UP

Clean up any messes. Dispose of collected materials as appropriate and wipe down tarps and tables. Schools often have a mop room where buckets can be brought for easy cleaning.

Thank the volunteers and staff for a job well done.

If you're doing a tray audit for multiple consecutive days, ask lunch room and facilities staff to leave the tables, tarps and containers where they are.

## STEP 6: ANALYZE DATA

Analyze the data you collected and determine the best ways to address wasted food in your school.

### Food weights

Subtract the weight of the empty bucket from the weights of the buckets with wasted food. These are your final wasted food weights by food item.

Group the weights of similar foods together, such as adding up all the weights of fruits. This will give you a better idea of what category of food is being wasted the most.

For example, Table A details the weight of all food items collected in Kindergarten and 1<sup>st</sup> Grade. Table B combines the weights of food categories together. Table B represents the same data shown in Table A.

**Table A.**

Food item	Grade: Kindergarten		Grade: 1	
	With bucket (lbs.)	Without bucket (lbs.)	With bucket (lbs.)	Without bucket (lbs.)
Teriyaki Chicken	5.4	3.2	4.4	2.2
PB+J	2.6	0.4	2.4	0.2
Fried Rice	3.6	1.4	3.6	1.4
Fortune Cookie	2.2	0.0	2.4	0.2
Salad	2.4	0.2	3.0	0.8
Carrots	2.6	0.4	3.2	1.0
Broccoli	3.0	0.8	3.0	0.8
Canned Fruit	3.2	1.0	2.8	0.6
Apples	3.6	1.4	4.4	2.2
Milk	15.2	13	9.4	7.2
<b>Total</b>	<b>43.8</b>	<b>21.8</b>	<b>38.6</b>	<b>16.6</b>

**Table B.**

Food category	Grade: Kindergarten		Grade: 1	
	With bucket (lbs.)	Without bucket (lbs.)	With bucket (lbs.)	Without bucket (lbs.)
Entrees	8.0	3.6	6.8	2.4
Sides	5.8	1.4	6.0	1.6
Vegetables	8.0	1.4	9.2	2.6
Fruit	6.8	2.4	7.2	2.8
Milk	15.2	13	9.4	7.2
<b>Total</b>	<b>43.8</b>	<b>21.8</b>	<b>38.6</b>	<b>16.6</b>

### Wasted food per student

Divide the total weight of food collected by the number of students served to get the weight of food wasted per student. You can multiply this number by the number of students and the number of school

days in a year to approximate how much food is wasted every year. This is a powerful way to communicate your school's wasted food impact.

### **Example**

30 pounds of milk was collected during one day of tray audits (from recording log)

300 students had school lunch that day and participated in the tray audit (based on counting trays)

180 days of school in a year

30 pounds wasted milk / 300 students = 0.1 pounds of wasted milk per student

0.1 pounds of wasted milk per student x 300 students x 180 school days = 5,400 pounds of wasted milk for the school year

### **Review interview responses**

Common responses from the interview portion of the audit are a starting point in creating solutions to reducing wasted food in your school. Group common answers together such as "Not enough time" or "I was full".

### **Report results**

Share the results of the tray audit with everyone that was involved in the process in addition to management, administrators and peers. If you have the ability to compile a brief report on your findings with pictures, this will assist in communicating the needs for next steps. Examples are available at [www.dakotacounty.us](http://www.dakotacounty.us), search *school wasted food*.

## **NEXT STEPS**

Based on your tray audit results, implement strategies to reduce wasted food in your school. Check out Dakota County resources and tips at [www.dakotacount.us](http://www.dakotacount.us), search *school wasted food*.

After implementing prevention strategies for at least 2-4 weeks, measure the success in reducing wasted food by coordinating another tray audit measuring the same meal served as the original audit. Compare the results of your pre- and post-audits to track your success. Compare your pre- and post-audits by using the percent change formula.