

MICHIGAN

Section 1: School Demographics

School Name

Cranbrook-Kingswood Upper School

Principal's name

Dr. Ara Brown

School Address

39221 Woodward Avenue
Bloomfield Hills, Michigan 48303
United States

[Map It](#)

Number of students (total enrollment)

801

Lowest grade

9

Highest grade

12

This school is:

- A private school

Please explain:

Number of students by grade level

Elementary or lower	Middle grades	High or upper school
0	0	801

Number (or percent) of students eligible for free or reduced lunch

Free lunch	Reduced lunch	Neither free nor reduced lunch
0	0	801

Section 2: Background about school lunch

How many students buy lunch in the school's cafeteria?

Less than 10 percent

How many minutes do students have to eat lunch?

35

Are students allowed to eat lunch in rooms/buildings other than the cafeteria?

Yes

Are students allowed to leave campus for lunch?

No

Which students are allowed to leave campus for lunch?

Are there any times during the school year when breakfast or lunch is free to all students?

No

Please explain:

Who controls the portions and servings students receive?

Students (buffet style or open access allows students to choose their own portion)

Please explain:

Does the school serve set meals (e.g. chicken nuggets with potatoes and carrots) or can students choose what they want from the menu?

The students can pick which sides they would like, if any

Please explain:

Are fruits/vegetables required with every meal?

Yes, fruits/vegetables are included in the price

In your teams' opinion, are students content with the meal options at school?

Neutral

Please explain:

Since there are two separate buffet-style cafeterias and a pay-as-you-eat cafe at our school, we often get varied responses about the meal options. Some students like the many options, others would prefer to have just one in order to simplify things and gain more access to a variety of food.

What type of utensils do students use to eat?

Reusable utensils, such as metal

Please explain:

What type of plates/trays are used to serve the food?

Reusable plates or trays, such as plastic

Please explain:

Section 3: Food waste activities at the school

Does the school use any of the following waste reduction activities?

- Procedures put in place to reduce food over-purchasing
- Procedures put in place to reduce food loss to expiration
- Offer smaller portions for students who may want less food
- Unopened food is recovered for afterschool or supplemental snacks

Please explain:

Has the school performed a food waste audit previously?

Yes, the school has performed a waste audit (including cafeteria waste)

Please explain:

Which of the following generates the majority of food waste at your school?

Student food waste

Please explain:

On average, do you think food waste is an issue at your school?

Yes, somewhat important

Section 4: School Waste Data Form

School name

Cranbrook-Kingswood Upper School

Date of audit

04/11/2017

Students in attendance on day of audit

786

Numbers of lunches served on day of audit

715 (393 at the Cranbrook dining-hall and 322 at the Kingswood dining-hall)

Menu served on day of audit

MENU (both dining-halls):

Dry Rubbed Baby Back Ribs

Tomato Basil Backed Cod

Homemade Tartar Sauce

Mushroom Asparagus Quiche

Thyme Roasted Potatoes

Roasted Broccoli

Steamed Carrots

Vegetarian Minestrone Soup

Classic Cheese Pizza

Margherita Flatbread with Roasted Garlic

ADDITIONAL OPTIONS:

Salad Bar (both dining-halls)

Wrap Bar (both dining-halls)

Burger/Fries at the Grill (only at Cranbrook's dining-hall)

Waste type: Unopened food

A: Type of food	B: Number of items	C: Weight of empty bin	D: Total weight	E: Net weight (Total - Empty)
Fruid sides	0	0.30 pounds	0.30 pounds	0 pounds
Yogurt	12 containers	0 pounds	1.9 pounds	1.9 pounds
Wraps (sandwiches not offered)	29 wraps	0 pounds	4.38 pounds	4.38 pounds

Total net weight of unopened food

6.28

Notes regarding unopened food

School does not offer vegetable sides, chips, crackers, or milk cartons.

Waste type: Food waste

A: Bin/Bag Number	B: Weight of empty bin	C: Total weight	D: Net weight (Total - Empty)	E: Picture taken of the bin? (Y/N)	F: Percent full
1 (from the Cranbrook dining hall)	0.24 pounds	17.8 pounds	17.56 pounds	Y	100%
2 (from the Cranbrook dining hall)	0.24 pounds	14.6 pounds	14.36 pounds	Y	100%
3 (from Cranbrook dining-hall)	0.24 pounds	5.1 pounds	4.86 pounds	Y	30%
4 (from Kingswood dining-hall)	0.24 pounds	16.1 pounds	15.86 pounds	Y	100%
5 (from Kingswood dining-hall)	0.24 pounds	4.9 pounds	4.66 pounds	Y	45%

Total net weight of food waste

57.3

Waste type: Liquid waste

A: Bin/Bag Number	B: Weight of empty bin	C: Total weight	D: Net weight (Total - Empty)	E: Picture taken of the bin? (Y/N)	F: Percent full
1 (from Cranbrook dining-hall)	0.60 pounds	12.2 pounds	11.6 pounds	Y	100%
2 (from Cranbrook dining-hall)	0.60 pounds	11.8 pounds	11.2 pounds	N	90%
3 (from Kingswood dining-hall)	3.1 pounds	19.21 pounds	16.11 pounds	N	50%

Total net weight of liquid waste

38.91

Waste type: Recycling

A: Bin/Bag Number	B: Weight of empty bin	C: Total weight	D: Net weight (Total - Empty)	E: Picture taken of the bin? (Y/N)	F: Percent full
1 (from Cranbrook dining-hall)	0.29 pounds	4.1 pounds	3.81 pounds	Y	80%
2 (from Kingswood dining-hall)	0.29 pounds	3.0 pounds	2.71 pounds	Y	60%

Total net weight of recycling

6.52

Waste type: Other (Landfill)

A: Bin/Bag Number	B: Weight of empty bin	C: Total weight	D: Net weight (Total - Empty)	E: Picture taken of the bin? (Y/N)	F: Percent full
1 (from Cranbrook dining-hall)	0.24 pounds	2.1 pounds	1.86 pounds	Y	10%
2 (from Kingswood dining-hall)	0.24 pounds	0.91 pounds	0.67 pounds	Y	5%

Total net weight of other wastes (landfill)

2.53

Notes regarding food, recycling, and other (landfill) wastes

As we are given reusable dining materials (e.g. ceramic plates and metal utensils), the amount of recyclables and landfill wastes are relatively low.

Describe the process you used to establish clear guidelines for students to follow to sort their food waste.

Students typically throw their foods away into garbage cans. In preparation, at each campus, we labeled three different garbage cans with "Food," "Trash," and "Recyclables" labels. We also got containers and buckets for liquids and labeled them appropriately. Moreover, Tuesday4 is an assembly day at our school and we were given permission to briefly explain what we were doing and provide basic instructions to the entire student body.

During lunch, we split up so that half of our members were at the Cranbrook dining-hall and the other two members were at the Kingswood dining-hall. We guided people on where to distribute their remains and helped them identify the category that their waste belonged to. Basically, anything that was edible was categorized in the food waste category. This comprised the majority of our waste. Anything that was recyclable (mainly napkins and a few plastic spoons) were designated to the recyclable category. Anything that was not edible nor recyclable (mainly fruit peels and containers) were placed in the trash category. Throughout the process, we made sure that students were correctly placing their waste in order to eliminate any errors from student mistake.

Upload photos

- [14-final-data.png](#)
- [13-thanking-on-the-staff-the-next-day.png](#)
- [12-specific-bags.JPG](#)
- [11-specific-bags.JPG](#)
- [10-specific-bags.JPG](#)
- [9-weighed-waste-bags.JPG](#)
- [8-transporting-and-weighing.JPG](#)
- [7-transporting-and-weighing.JPG](#)
- [6-instructing-students-on-proper-procedure.JPG](#)
- [5-preparing-for-brief-presentation.JPG](#)
- [4-Kingswood-setup.JPG](#)
- [3-Kingwood-setup.JPG](#)
- [2-Cranbrook-setup.JPG](#)
- [1-Cranbrook-setup.JPG](#)

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Would your team be interested in being part of the food waste panel at Nationals?

Yes

Section 5: Critical Thinking

Based on your observations during the food waste audit, make three recommendations to your School Board to reduce food waste.

As mentioned before, our high school is unique because we have two separate cafeterias on our campus (the Cranbrook dining-hall and the Kingswood dining-hall) as well as a recently-opened café. Moreover, by contacting the administration and Chartwells, the contractor which provides food for our school, we were able to obtain a rudimentary food audit conducted as part of "Scraps Days" in 2013 and 2014.

Of course, as part of our waste audit, we noticed certain obvious trends. For example, food was a more serious contributor to waste than liquids and virtually no sides were left open. We could have drawn very simple conclusions and suggestions on how to reduce food waste from this data; for example, we might suggest that food should be more stringently served or that sides should be more abundant. However, given the uniqueness of our school, the intensity of our audit, and the comparative data we had available, we were able to look much deeper and conclude certain correlations which allowed us to give more thorough suggestions to our school's administration. Here is the data we found, an outline of our analysis process, and our conclusions.

1.) Make students aware of prices.

There was a significant drop in food and liquid waste at the Kingswood dining-hall between the 2013/2014 Scrap Days audit and our audit. We had a few hypotheses which we discussed among ourselves in order to potentially explain the cause of this phenomenon: (1) recent food waste education only on Kingswood, (2) some demographics difference between the campuses, or (3) a drop in Kingswood dining-hall attendance.

We quickly eliminated the first and second hypotheses through analysis of the empirical evidence and logic.

For our first hypothesis, we noticed that there were no educational food waste signs on either campus. Similarly, there had not been any educational events directed at any of our students on the harms of food waste within the last few years. Paradoxically, during the months prior to Scrap Days in 2013/2014 there had been massive effort on the administration to reduce food waste; this would seem to suggest that food waste education actually caused more food waste on the Kingswood campus. However, a comparison to Cranbrook's dining-hall which saw an increase in food waste in the absence of these educational programs quickly eliminated this possibility. Clearly, we realized that, whether or not food waste education was effective, there was some other variable which was contributing to this drop in waste at Kingswood which was not mimicked at Cranbrook.

We eliminated the second hypothesis by simply looking at the accounts of the students who ate at either campus on 4/11/17. Since students pay for the meals by swiping their I.D. cards, our school's system automatically puts where students eat at into a database. We were able to contact Robert, the head of food logistics at our school who allowed us to take a brief look at the students who ate at either campus. Unfortunately, due to legal issues, we were not allowed to take the data with us. However, we noticed that there was no noticeable disparity in gender or seniority between the eaters at the two campuses. Although we could not find the swipe data from Scrap Days, through basic induction, we concluded that a demographic shift was unlikely to be the cause of the drop.

Our third hypothesis turned out to be correct. Between Scrap Days in 2013/2014 and our audit 2017 there had been no major changes in food policy at Kingswood—except that a new café was built within the Kingswood campus which, unlike the dining hall, was not all-you-can-eat. We concluded that the introduction of this this new café (built at the end of the 2016 school year) was the impetus behind the food waste reduction between 2013/2014 and 2017. By looking at the data and eliminating other possibilities, we empirically linked these events with a high degree of certainty; however, we wanted to understand why. After much discussion, we concluded that the reason why food waste was less with the café was precisely because students were more aware of the price they paid for their food.

Whereas, at the Kingswood dining-hall, students swiped once and piled their plates, at the Kingswood café, students had to carefully purchase food items within their respective budgets. Indeed, the consciousness of students to the price of food caused a massive drop of food waste.

Our suggestion to our administration was to make students more aware of the price that they directly pay for the food. One way to do this might be to move completely off a buffet style dining-hall system into a more traditional style—however, this would be extremely slow and unpopular with all parties involved. Rather, we decided that the best way to make students price-conscious would through a more educational approach. We suggested that the administration should mandate that Chartwells post signs above each food item which details the price of the food or, at least, the cost of producing it. This could be done on both the Cranbrook and Kingswood campuses (and even at the two middle schools) and would result in reductions in food waste similar to what we saw with the introduction of the Kingswood café.

2.) Reduce food options at Cranbrook.

Even when controlling for the difference in attendance rates at the Cranbrook campus and at the Kingswood campus (by dividing waste by swipes), we still saw that Cranbrook had consistently more waste than Kingswood. Essentially, if a student ate at the Cranbrook dining-hall, he would waste more food than if he had gone to the Kingswood dining-hall (assuming he did not go to the café).

We previously eliminated the possibility of education playing a role in this disparity and the possibility of a demographic difference causing it. Since we controlled for attendance rates at the dining-halls but still noticed this difference, we concluded that even the students who opted out of the Kingswood café and ate at the Kingswood dining-hall still had some reason to waste less than their Cranbrook counterparts. We quickly realized that there was no statistic which we might obtain objectively that could explain this difference. As a result, we were forced to turn to our qualitative reasoning. We realized that the only difference in food between the Cranbrook and Kingswood dining-halls was that Cranbrook had a “grill” which served burgers everyday. Other than that food option, Chartwells provided the exact same food (prepared in the exact same ways) to both Cranbrook and Kingswood. Other explanations such as the lighting in the cafeterias or the difficulty of the classes at each campus were not satisfactory. Thus, we decided that, somehow, the presence of a grill at Cranbrook resulted in more food waste. We hypothesized that more variability in food options results in greater food waste because eaters will naturally want a little bit of everything—regardless of whether or not they can finish it. Logically, this made a lot of sense and would explain the disparity between the dining-hall’s respective wastes levels controlled for attendance; however, we wanted to see confirm our suspicions somehow. Without any data that we could collect, we instead looked to other studies performed through the industry. In particular, a study by Witzel et al titled “Consumer-Related Food Waste: Causes and Potential for Action” supported our conclusion. Witzel et al concluded that higher income levels (which have more food variability) correlated with increased food waste. Other studies similarly supported our conclusion.

Thus, another suggestion we had for the administration was to reduce food variability. Specifically, we recommended that they pay attention to which foods were most popular and eliminate the least popular ones altogether. Seeing less options, students would be better able to portion themselves better since they would have less incentive to get a bite of everything. This could also be implemented at both campuses, the middle schools, and even at the café.

3.) Increase the size of cups.

We noticed that there is a very significant amount of liquid waste, much higher than what we have initially expected. We had predicted that students are more likely to finish their drinks than their food as it is much easier to gulp down a couple cups of water than to finish few pieces of chicken. However, we found that the amount of liquid waste was only marginally lower than the amount of food waste. One cause of this may be that students are less likely to be concerned about liquid waste than solid and, as a result, are more likely to dump whole glasses of liquid as waste. Another reason that is more specific to our school is the size of our cups. The dining hall glasses are around 2 inches in diameter, and barely hold two sips of a drink. Because of this, students often take 3 or 4 glasses at a time. With more glasses, it is easier to leave half a glass or so at every meal without minding too much. This amount of liquid waste being left from each student quickly adds up. Our final suggestion for our school is to use larger glasses. This will allow students to gauge liquid portion sizes more easily and will prevent a large portion of our school's liquid waste while at the same time making lunchtime more convenient for students.

Justify a school's role in teaching children about food waste and the impact food waste has on school budgets, the environment, and hunger in the community.

As a background, Cranbrook-Kingswood is a private school in the "Bloomfield Bubble" of southeastern Michigan. In fact, the median income level of families who send students to Cranbrook is significantly higher than any other school in Michigan. As a result, in Cranbrook-Kingswood, hunger is never an issue for anyone. Indeed, based on studies about intergenerational income-levels which suggest that income rarely decrease between generations, Cranbrook-Kingswood students, statistically, are extremely less likely to ever face budget problems from food waste, the effects of environmental problems from food waste, or hunger. Unlike Cranbrook-Kingswood, the students at many other schools—specifically public schools in inner cities—might benefit directly themselves from reducing their food waste since they deal with its effects on an everyday basis. Naturally, this might suggest that our school, unlike public schools, has no need to teach its students about the damages of food waste—after all, Cranbrook-Kingswood students will most likely never feel its effects. However, on the contrary, the privileged status of its students only furthers the moral and educational obligations that Cranbrook-Kingswood has on teaching its students about food waste.

The instruction in areas like food waste that schools like ours provide is not provided with the goal of helping students themselves cope with a lack of resources; rather, the instruction is there to teach us about the very real problems facing others in our society. It is instruction on empathy and compassion for others. Insofar as any educational institution's fundamental purpose is to produce informed, upstanding, and responsible citizens, things like food waste must be taught—regardless of how likely the student body is to face such problems. Only by understanding the strife of all people, not just those of ourselves and our neighbors, can we hope to move forwards as a society. Only by connecting with those less fortunate than us can we truly be grateful for the plentiful resources allotted to us. Only by knowing the problems which are faced everyday by others can we hope to use our privileged education in order to help alleviate their unjust burdens. Indeed, education into the problems of others is perhaps more important than education about our own—and, thus, is a responsibility that all schools ought to continually uphold.

The US Environmental Protection Agency has set a goal to reduce food waste by 50% by the year 2030. Based upon your experience conducting this food waste audit, will the US meet this goal? Explain why or why not.

Detail two or three findings or observations that surprised you. Describe how conducting this food waste audit has impacted you and your team, and the way you think about food in America.

What is one obstacle your team faced during the audit and how did you work to resolve it? If the issue went unresolved, what steps would you take to reevaluate your approach?

Although the audit eventually proved both enlightening and fulfilling, our team faced some obstacles along the way. One such roadblock appeared in our effort to expand the waste management policies to the Kingswood Cafe, one of the eating establishments we have on campus. Unlike the Cranbrook Dining Hall and the Kingswood Dining Hall, the cafe presented an obstacle to us because it was owned by a third party organization that offered its services to our school to enrich the campus. Although we can definitely say that the cafe has served to the betterment of our community, both in the rich social atmosphere it lends to the campus and the healthy eating options it provides to the students, it was a challenge to apply our environmentally-conscious waste management plan to it. While we had already gained the support of our school administration after meetings with our school's food service providers and with our dining hall management teams, we could not extend our new model for waste management to this external establishment. After recognizing the hurdle that we faced, we began to brainstorm ideas on how to approach and demonstrate the benefits of our plan, in a much more formal setting than to what we had grown accustomed. We were no longer creating a change within our school - we were creating a change in our community. Although we were intimidated at first by the prospects of approaching an organization with dozens of locations as mere high school students, we quickly realized that although we were new to this revolutionary mode of thought, our ideas have merit. It is the confidence in our ideals, our resolve, and our plan to make the school more environmentally conscious that led us over this hurdle and allowed us to expand our impact on the community around us. We arranged a meeting with the managers of the Cranbrook location of the Cafe, and we explained our ideas in detail to the administrators. We held hope that not only our ideas, but also our passion for this project would become evident to the managers, and that it would work in our favor in reaching an agreeable solution with the managers to effect the change we envision in our school. Through perseverance, confidence in our ideas, pride in our mission, and passion for the subject, we were able to fully convince the managers of the cafe to adopt our plan for the waste management system. We were able to propagate our idea one more step. Looking back, our team realizes that we learned many important lessons from facing this obstacle. We are even grateful to have faced it, as it opened the door to a realm we have yet to influence - outside our school community. We carry this experience forward and use the lessons we learned in our quest to spread awareness, our mindset, and our solution as far as we can. We have influenced our school, but we have a world to go.

Bonus Question

Should all schools be required to do food waste audits on a regular basis? Why or why not?

Support your answer.

No. While clearly there are significant benefits to conducting a food audit which would likely reduce food waste in any school type, the government should not spread its influence beyond the public sector. Since public schools are funded by the government, a requirement imposed on them to perform food audits is perfectly justifiable and would likely significantly reduce costs while helping educate students. What this means is that government has the ability—maybe even the duty—to legally require public schools to perform food waste audits; but, it should have no jurisdiction over the food waste auditing plans of private schools. Like in all private markets, governmental interference comes at the

cost of inefficiency, taxpayer dollars, and loss of liberty. Any serious administrative effort to check every private and charter school for compliance throughout the entire country would undoubtedly be a logistical nightmare and rife with inconsistencies and its own waste. It ought to be by the initiative of private schools that beneficial programs, like a food waste audit, should be implemented—not by government compulsion. If private schools cannot be convinced of the benefits of a food waste audit, then we have no right to coerce them via arbitrary governmental authority; it is the imperative of each private school to do what they think is best, even if the government accepts certain programs to be beneficial. Instead, let the free markets work. Schools, especially private ones, have the incentive to produce the most educational and accommodating atmosphere for their students at the lowest cost. This means that, if programs like food waste audits are truly beneficial and effectively educate students on food waste while reducing the cost of providing meals, private institutions would be extremely receptive to rapidly implementing and funding them. Private schools, especially within the United States, have already begun conducting food audits and similar things like anti-bullying instructions, not from government intervention but from positive, natural incentives. Indeed, given how much we were able to conclude from a few comparable sets of data, a long-term investment in conducting food waste audits seems entirely aligned with the natural aims of private schools. Especially with the advent of big data, cloud computing, and neural networks, private institutions are able to analyze data trends faster and more thoroughly than ever before. As technology improves and collecting food waste data becomes more and more beneficial to schools, we will naturally see private schools begin conducting them voluntarily. It is only becoming an easier task for us to convince private school administrators of the benefits of food waste audits without the injustices of government compulsion. Thus, private schools should not be required to perform food waste audits on a regular basis.