



# **Less is More**

**Adapting menus to lower sugar and sodium  
while preserving flavor and appeal**

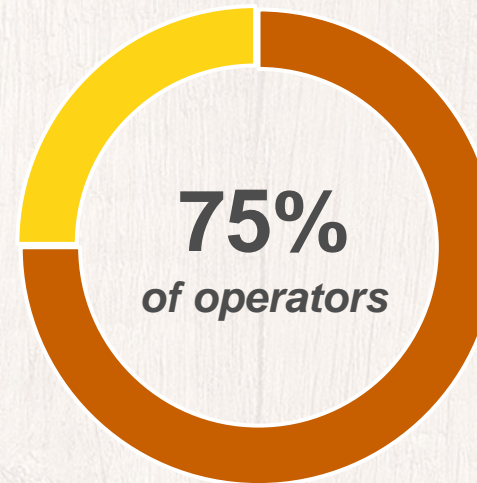
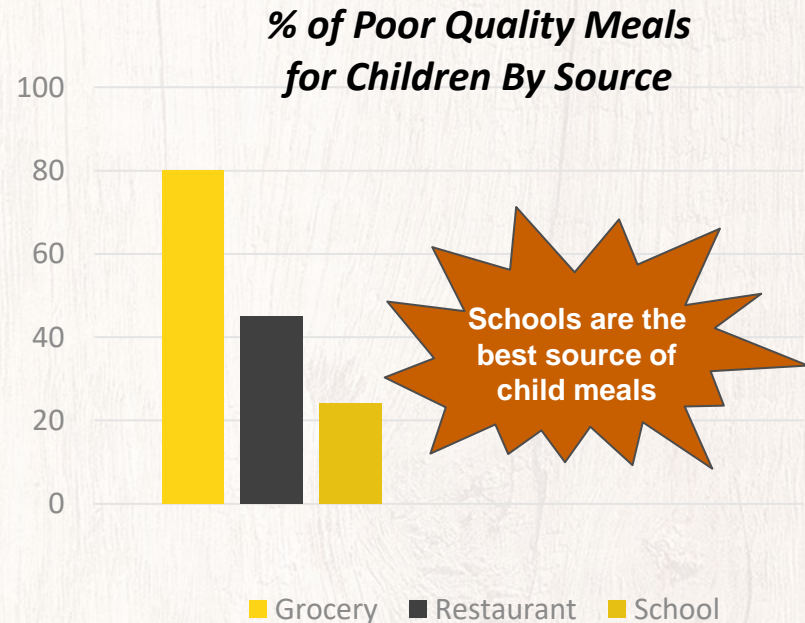
*Melanie Hall MS, RD*

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*Kellogg's Food Away From Home*

# Schools Overcome Operations Challenges to Deliver Quality Meals

- Schools are serving up the healthiest meals that US children have access to
- The lag time for manufacturer innovation requires additional planning to meet current and future nutrition requirements



**Seriously concerned about the availability of foods meeting target 1A sodium limits that are well accepted by students**

# Staffing and Equipment Limitations Make Low Sodium and Sugar Scratch Cooking a Challenge

Staff shortages are a significant challenge among

- 43.4% of smaller districts (fewer than 1,000 total students)
- 79.1% of larger districts (25,000+ students)

**33%**  
of Operators report using premade food to accommodate for staffing challenges

Top Pieces of Cooking Equipment in K-12	
Convection oven	93%
Steam tray/steam table	84%
Microwave oven	80%
Floor mixer	76%
Food processor	63%

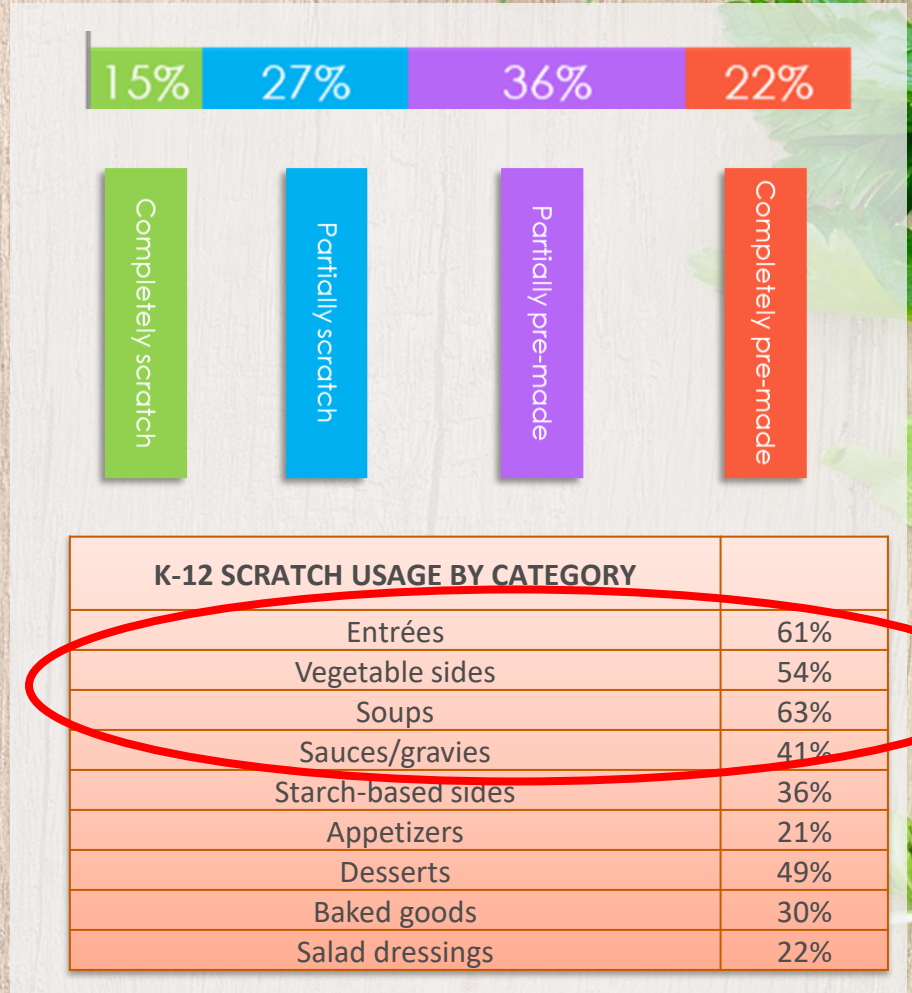
# Speed Scratch Cooking Makes Room for Using Pre-Made Foods Within Nutrition Guidelines

Most operators use a blend of scratch cooking and premade foods.

Identify focus categories to optimize equipment use and support staff training.

Strategic speed scratch cooking to address specific ingredient functions can help minimize average sodium and sugar use.

Datassential Pulse 2019: Operator Motivators, behavior, and challenges



4-pt scale, top two box, among those offering that category

# Functional Ingredients



Function	Salt	Sugar
Flavor	Hides Bitter/Sour	Hides Bitter/Sour
Preservative	Absorbs Water	Absorbs Water
Appearance	Maintains Color	Browns With High Heat
Stabilizer	Slows Fermentation	Fuels Yeast Growth
Texture	Softens Gels	Humectant

# How Taste Impacts Flavor



Dampens aftertaste  
by prolonging  
foretaste

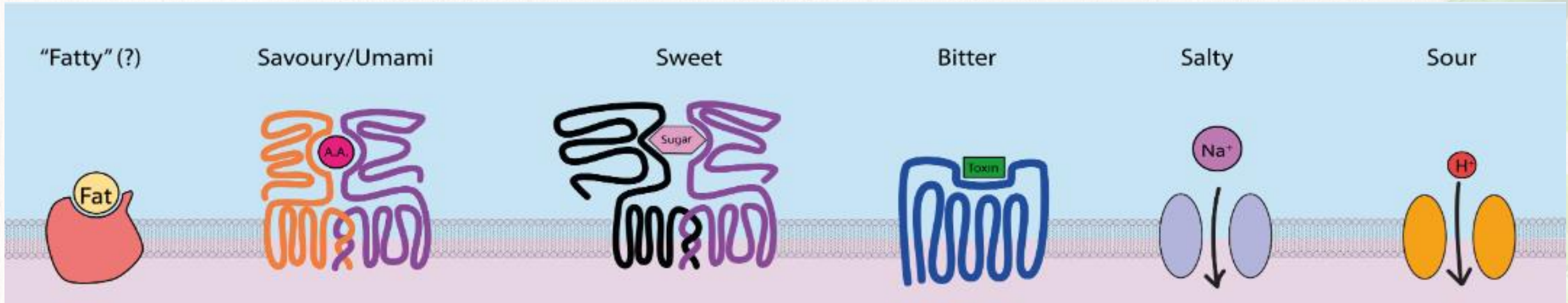
Glutamines= Umami  
Dampens bitter  
Enhances salty/sweet

Dampens bitter  
Dampens sour  
Enhanced by heat

Warns us of  
possible toxins  
Dampened by heat

Dampens bitter  
Dampens sour  
Dampened by heat

Acids = Sour  
Some acids “act  
like” salt



# Sodium Reduction Techniques For Flavor Enhancement: Acids

Confuse taste receptors

## Application

Add acids like lemon juice/zest



For this dish:	If original recipe calls for:	Replace with:	Sodium reduced by:
Vegetables	1 tsp. salt	$\frac{1}{4}$ tsp. salt + $\frac{1}{2}$ tsp. zest + $2\frac{1}{2}$ tsp. juice	75%
Pork, Fish, or Dressing	1 tsp. salt	$\frac{1}{2}$ tsp. salt + 1 tsp. zest + 5 tsp. juice	50%
Grains & Soups	1 tsp. salt	$\frac{2}{3}$ tsp. salt + $1\frac{1}{3}$ tsp. zest + $2\frac{2}{3}$ Tbsp. juice	30%
Beef & Chicken	1 tsp. salt	$\frac{2}{3}$ tsp. salt + $1\frac{1}{3}$ tsp. zest	30%

# Sodium Reduction Techniques For Flavor Enhancement: Herbs/ Spices

Add new flavors instead of enhancing existing ones

## Application

Indian	Sweet	Hot	Spicy	Pungent	Herbal
	Allspice Anise Cardamom Cinnamon Nutmeg	Chilies	Ginger Black Pepper	Garam Masala Garlic Coriander Cumin	

Mexican	Sweet	Hot	Spicy	Pungent	Herbal
	Cinnamon Nutmeg Mint	Cayenne Chilies		Cumin Fennel Coriander	Basil Thyme Sage Oregano

Italian	Sweet	Hot	Spicy	Pungent	Herbal
			Black Pepper	Garlic Fennel Parsley	Basil Thyme Rosemary Oregano Sage

### Spicy Blend

**Sodium:** 0.59 milligram per teaspoon

2 tablespoons dried savory, crushed  
1 tablespoon dry mustard  
2½ teaspoons onion powder  
1¾ teaspoons curry powder  
1¼ teaspoons ground pepper  
1¼ teaspoons ground cumin  
½ teaspoons garlic powder

### Shaker Spice Blend

**Sodium:** 1.78 milligrams per teaspoon

5 teaspoons onion powder  
2½ teaspoons garlic powder  
2½ teaspoons paprika  
2½ teaspoons dry mustard  
1¼ teaspoons thyme leaves, crushed  
½ teaspoon ground pepper  
¼ teaspoon celery seed

### Herbed Seasoning

**Sodium:** 0.65 milligrams per teaspoon

2 tablespoons dried dill weed or basil leaves, crumbled  
2 tablespoons onion powder  
1 teaspoon dried oregano leaves, crumbled  
1 teaspoon dried celery seed  
½ teaspoon lemon pepper (sodium-free)



# Sodium Reduction Techniques For Flavor Enhancement: Umami

Umami flavor from glutamates found in mushrooms, tomatoes Umami enhances existing flavors and mitigates bitter ones

## Application

- Mushrooms add umami notes and have umami boosting nucleotides
- Tomato paste
  - Aging or drying increases the concentration of glutamates so rehydrating dried tomatoes or using tomato powder has more umami than tomato paste
- Worcestershire Sauce



# Low Salt Doesn't Mean Low Flavor

## *Acid/Herbs/Umami*



### Marinara Sauce

- Tomato Paste, no salt added
- Water
- Dry Garlic
- Onion
- Oregano
- Basil
- Carrot (shreds)

*Amplify with tomato powder, mushroom powder, or caramelized onions*

Serve With:

- Whole Wheat Pasta
- Plant Based Crumbles

### Chimichurri Sauce

- Parsley
- Oregano, dried or fresh
- Cilantro, fresh
- Lime Juice
- Olive Oil blend
- Vinegar, Red or Cider
- Chili Flakes for spice

Serve With:

- Plant Based Nuggets
- Roasted Vegetables

### Peanut Sauce

- Peanut Butter, low sodium
- Chili Sauce
- Cider or Rice Vinegar
- Honey
- Ginger, ground
- Soy Sauce, low sodium
- Water, warm

*Amplify with mushroom powder*

Serve With:

- Plant Based Nuggets
- Steamed Broccoli

# Sodium Reduction Techniques For Flavor Enhancement: Ingredient Swaps

Use simple preparation methods to either layer flavor or dilute sodium

## Application

- Replace canned vegetables fresh vegetables roasted at high heat to caramelize natural sugars
- Cook bulk batches of dried beans or lentils to mix with plant-based crumbles

# Sodium Reduction Techniques For Leavening: Grain Swap

Swap out leavened grains for unleavened alternatives

## Application

Breakfast Pizza With Hashbrown Crust

- Hash brown crust
- Pasta based crust



## Breakfast Pizza with Whole Grain Crust

### Ingredients:

Eggs, large, beaten, or frozen  
Pasteurized eggs, thawed  
Green bell peppers, diced  
Sweet red peppers, diced  
Turkey Sausage with Italian Seasoning  
Whole grain flatbread  
Mozzarella, LMPS, shredded  
Cheddar cheese, yellow, shredded



Sodium: 523mg/serving

## Breakfast Pizza with Potato Hash Brown Crust

### Ingredients:

Turkey breast, ground  
Salt  
Dry Spices  
Red pepper flakes  
Coriander seeds, whole  
Canned applesauce, unsweetened  
Hash brown potatoes, frozen, thawed  
Whole eggs, frozen, thawed  
Cheddar cheese, low-fat  
Green onions, fresh, diced  
Red bell pepper, fresh



Sodium: 128mg/serving

# "Dilute" Sodium With Lentils or Beans

## Taco Burger Using Plant Based Crumbles

### Ingredients:

- Chopped onions
- Garlic, minced
- Chopped green pepper
- Vegetable oil
- **Sausage-style crumbles**
- Tomato sauce
- Ketchup
- Cumin, Chili powder
- Shredded cheese
- WG Hamburger buns



**Sodium: 809mg**

## Taco Burger Using Half Plant Based Crumbles and Half Lentils

### Ingredients:

- Chopped onions
- Garlic, minced
- Chopped green pepper
- Vegetable oil
- **Sausage-style crumbles**
- **Lentils**
- Tomato sauce
- Ketchup
- Cumin, Chili powder
- Shredded cheese
- WG Hamburger buns



**Sodium: 693mg**

# Sugar Reduction Techniques For Flavor Enhancement: Flavor Cues

Use “sweet” spices and smells to increase perceived sweetness

## Application

- Use other ‘flavor cues’ to increase perceived sweetness by 10-20% higher sweetness:
  - Vanilla or almond extract,
  - Cinnamon or nutmeg
  - Cocoa powder or chocolate

## Sweet spice mix recipes

Combination of cinnamon, nutmeg etc. to have on hand to add to breads or fruit sauces

# Sugar Reduction Techniques For Flavor Enhancement

Fruit Juices and Purees use natural sweetness to tame bitter notes from whole grains

## Application

- Swap out sugar for unsweetened applesauce or banana puree
  - For every cup of puree, reduce the liquid in your recipe by 1/4 cup.



### Pancakes USDA Recipe for Schools 50 SERVINGS

INGREDIENTS	Weight	Measure
Whole-wheat flour	2 lb	1 qt 3 ½ cups
Cinnamon		½ tsp
Baking powder		¼ cup
Salt		1 tsp
Instant nonfat dry milk	2 ½ oz	⅔ cup
<b>Sugar</b>	<b>4 ¼ oz</b>	<b>½ cup</b>
Frz whole eggs, thawed	14 oz	1 ½ cups 2 Tbsp
Vanilla extract		1 tsp
Water		1 qt 1 ⅓ cups
Canola oil	6 oz	⅔ cup

#### Variation:

**Fresh banana,  
whole, pureed**      **8 oz**      **¾ cup**

#### Variation:

**Apple sauce,  
unsweetened**      **1 lb**      **2 cups**



# Sugar Reduction Techniques For Flavor Enhancement: Juice/Puree

Use natural sweetness to tame bitter notes from whole grains

## Application

- Top waffles and pancakes with fruit purees.
  - Mash frozen fruit into applesauce to save time and money
  
- Make breakfast casseroles with frozen waffles or pancakes and fruit



# Sugar Reduction Techniques For Flavor Enhancement: Umami

Use umami for the same effect of balancing flavors

## Application

- Replace ketchup (7g sugar) with a pureed salsa or chunky pico de gallo (1.4g sugar)
- Top waffles and pancakes with umami foods like nut butter or scrambled eggs



# Sugar Reduction Techniques For Flavor Enhancement: Roasting

Fresh vegetables roasted or sautéed at high heat caramelize natural sugars for richer flavors

## Application

- Add caramelized onions or carrot puree to pasta sauces
  - Make onions in advance and freeze



## Marinara Sauce

- Tomato Paste, no salt added
- Water
- Dry Garlic, Onion, Oregano, Basil for flavor
- Carrot (shreds)

Serve With:

- Whole Wheat Pasta
- Plant Based Crumbles

# General Reduction Techniques For Flavor Enhancement: Delivery

Finish dishes with seasonings and sweeteners so that they hit the tongue first

Monitor temperatures to maximize taste perception through flavor sensitivity and smells

## Application

### Sodium:

- Season right before service
- Finish with herbed oils or purees



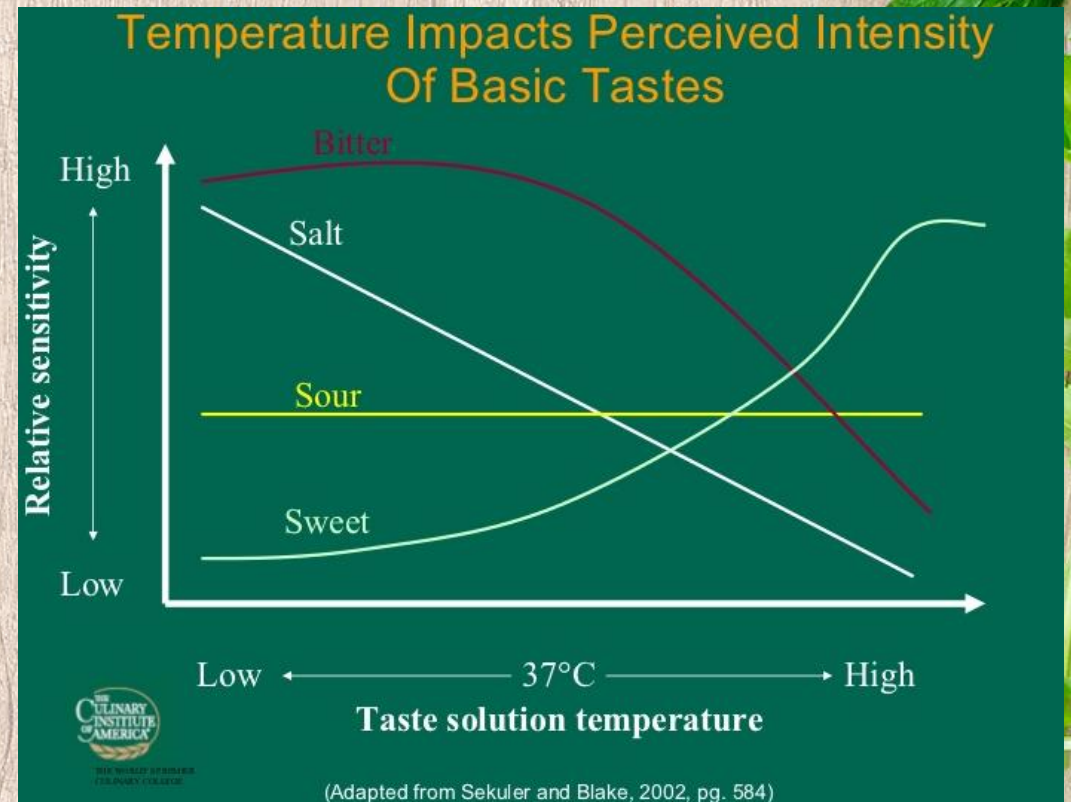
### Sugar:

- Layering or topping with fruit
- Glaze drizzle



### Temperature:

- We can't "cook" with steamtables, but they are vital to the flavor experience



# Summary

## **Be Strategic**

- Which ingredient functions will your staff/equipment constraints allow you to address?
- Which categories should you focus on?

## **Choose Your Tools Wisely**

- Leverage the science of taste/smell/temperature to maximize flavor
- Create speed-scratch hacks specific to your operation

## **Baby steps**

- Start small and build as your team masters each of your chosen speed scratch hacks
- As with any recipe modification, allow student tastes to adjust to one change before adding another



A top-down view of a wooden cutting board. On the left side, the blade and handle of a knife are visible. On the right side, there are fresh green herbs, including a sprig of rosemary and some flat-leaf parsley. The wood grain of the board is clearly visible.

**Questions??**