

A Model Menu with Potatoes: Getting at the Root of Healthier School Menus



Introduction

Recent reports from the Institute of Medicine have recommended limiting starchy vegetables, like potatoes, to two servings (1 cup) per week in school lunch, and eliminating them from school breakfast. However, a menu modeling exercise illustrates that offering potatoes in kids' school meals 4 days per week (and an additional starchy vegetable on the 5th day) actually meets or exceeds the IOM's nutrient targets, therefore proving that limiting potatoes is not warranted.

Potatoes Add Key Nutrients to Kids' Diets

IOM Sample Lunch Menus modified to offer starchy vegetables for five days per week can improve nutrient intake for elementary school children.

Menus with potatoes offered four days per week provided greater amounts of potassium and similar, if not slightly higher amounts of fiber, both identified by the 2010 Dietary Guidelines Advisory Committee as nutrients of concern for children.

- Potassium increased by a daily average of 129 mg, translating to an increase of 646 mg over one week, and 2584 mg over one month.
- Fiber was essentially the same, with a slight daily bump of 0.3 g. However, while we know that potatoes are a popularly consumed vegetable, the analysis assumes that kids are consuming 100% of all other non-starchy vegetable choices.

Other key nutrients improved with increased potato options in school lunch: magnesium, vitamin B6, and niacin.

Daily average of total fat is 10% less in the menus offering potatoes four days per week. Average daily calories and saturated fat were similar for both menus and within IOM targets.

Average daily sodium in the menus was essentially the same – 1175 mg in the menu with potatoes offered four days per week compared with 1176 mg in the original IOM menu.

- In fact, the menu with potatoes offered four days per week had a better sodium-potassium ratio than the original IOM menu (0.88 vs. 0.98, ideal is ~0.5).
- Both menus exceeded the recommended target of 640 mg sodium by 2020.

Lunch Menus

Menu 1. Original IOM Week One Menu* – Elementary School (1 cup of starchy vegetables offered/week)

Monday	Tuesday	Wednesday	Thursday	Friday
Mini Turkey Corn Dogs* (1.6 oz)	Cheeseburger (1.5 oz, 10% fat) on WW bun (2 oz)	Soy Baked Chicken Nuggets* (5)	Chef Salad w/Grilled Chicken Strips (1 oz) (1 c romaine, 0.5 oz LF mozzarella cheese)	WW Spaghetti Noodles (1/2 c) with Meat Sauce (1/2 c)
Cucumber Slices (1/4 c)	Baked Potato Wedges (1/2 c)	Sweet Potato Fries (1/2 c)	WW Soft Pretzel Sticks (2 oz)	Green Beans (1/2 c)
Steamed Broccoli (1/2 c)	Mixed Baby Greens Salad (1/2 c)	Baked Beans (1/2 c)	Baby Carrots (1/2 c)	Raw Broccoli and Cauliflower (1/8 c each)
Pineapple Tidbits (1/2 c)	Fresh Apple Slices (1/2 c)	Seedless Red Grapes (1/2 c)	Whole Kernel Corn (1/2 c)	Kiwi Halves (1/2 c)
Lowfat Milk (8 oz)	Chocolate Skim Milk (8 oz)	Skim Milk (8 oz)	Sliced Peaches (1/2 c)	Lowfat Milk (8 oz)
Ketchup (9 g)	Ketchup (9 g)	BBQ Sauce (1 oz)	Lowfat Milk (8 oz)	Parmesan Cheese (1 oz)
Mustard (9 g)	Light Italian Dressing (1 oz)		Light Ranch Dressing (1 oz)	Light Ranch Dip (1 oz)

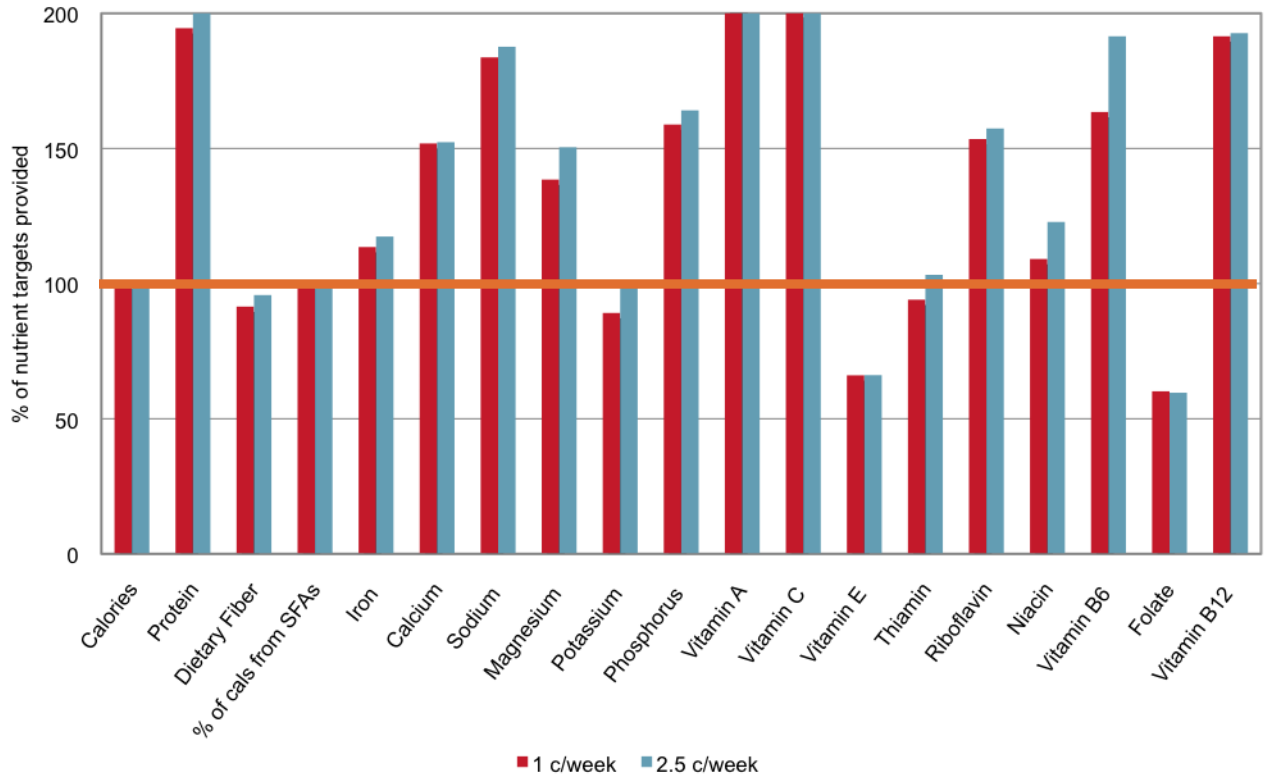
*IOM (Institute of Medicine). 2010. School Meals: Building Blocks for Healthy Children. Washington, DC: The National Academies Press.

Menu 2. Modified IOM Week One Menu – Elementary School (2.5 cups of starchy vegetables offered/week)

Monday	Tuesday	Wednesday	Thursday	Friday
Mini Turkey Corn Dogs* (1.6 oz)	Cheeseburger (1.5 oz, 10% fat) on WW bun (2 oz)	Soy Baked Chicken Nuggets* (5)	Chef Salad w/Grilled Chicken Strips (1 oz) (1 c romaine, 0.5 oz LF mozzarella cheese)	WW Spaghetti Noodles (1/2 c) with Meat Sauce (1/2 c)
Roasted Red Potatoes (1/2 c)	Baked Potato Wedges (1/2 c)	Mashed Potatoes (1/2 c)	WW Soft Pretzel Sticks (2 oz)	Green Beans (1/2 c)
Steamed Broccoli (1/2 c)	Mixed Baby Greens Salad (1/2 c)	Baked Beans (1/2 c)	Baby Carrots (1/2 c)	Baked Potato Wedges (1/2 c)
Pineapple Tidbits (1/2 c)	Fresh Apple Slices (1/2 c)	Seedless Red Grapes (1/2 c)	Whole Kernel Corn (1/2 c)	Kiwi Halves (1/2 c)
Lowfat Milk (8 oz)	Chocolate Skim Milk (8 oz)	Skim Milk (8 oz)	Sliced Peaches (1/2 c)	Lowfat Milk (8 oz)
Ketchup (9 g)	Ketchup (9 g)	BBQ Sauce (1 oz)	Lowfat Milk (8 oz)	Parmesan Cheese (1 oz)
Mustard (9 g)	Light Italian Dressing (1 oz)		Light Ranch Dressing (1 oz)	

* Note: Whole grain/whole wheat varieties of these items were not available in USDA's National Nutrient Database for Standard Reference

Comparison of 1 cup versus 2.5 cups Starchy Vegetable Servings/week at Lunch in Meeting IOM Nutrient Targets



Comparison of Nutrients Provided to IOM Lunch Targets when 1 cup vs. 2.5 cups* of Starchy Vegetables are Offered Per Week (*2 cups of Potatoes)

IOM Lunch Nutrient Targets		Modified IOM Sample Menu	% of Target Modified Menu	IOM Original Menu	% of Target Sample Menu	Daily Nutrient Benefit-Potatoes 2c/wk	Weekly Nutrient Benefit-Potatoes 2c/wk	Monthly Nutrient Benefit-Potatoes 2c/wk
550-650	Calories	621	100	609	100			
15	Protein (g)	30	199	29	195			
	Total Carbohydrates (g)	87		82				
9	Dietary Fiber (g)	8.5	95	8.2	91	0.3	1.4	5.6
	Sugars (g)	36		37				
	Total Fat (g)	19		21				
	Saturated Fat (g)	6		6				
<10	% of total calcs	9	100	9	100			
	Trans Fat (g)	0		0				
	Cholesterol (mg)	47		48				
3.4	Iron (mg)	4	118	4	114			
332	Calcium (mg)	504	152	504	152			
640	Sodium (mg)	1175	184	1176	184			
72	Magnesium (mg)	106	147	100	138	6.3	31.4	125.5
1353	Potassium (mg)	1335	99	1206	89	129	646	2584
361	Phosphorus (mg)	584	162	573	159			
192	Vitamin A (mcg RAE)	345	180	745	388			
24	Vitamin C (mg)	48	202	48	200			
3	Vitamin E (mg)	1.8	59	2.0	66			
0.37	Thiamin (mg)	0.4	104	0.35	94			
0.46	Riboflavin (mg)	0.7	156	0.71	153			
4.7	Niacin (mg)	5.8	123	5.1	109	0.7	3.3	13
0.4	Vitamin B6 (mg)	0.8	191	0.7	164			
136	Folate (mcg)	83	61	82	60			
1.2	Vitamin B12 (mcg)	2.3	191	2.3	192			
	% calcs from protein	19		18.5				
	% calcs from carbs	55		51.9				
	% calcs from fat	27		29.6				

Potatoes at Breakfast Mean More Veggies For Kids

Vegetables like potatoes, as part of school breakfast menus, provide another meal occasion to increase the number of vegetable servings that children consume each week.

When potatoes are included in school breakfast menus there is an increase in several nutrients provided, including potassium.

- Potatoes at breakfast lead to an average daily increase in potassium of 43 mg compared to no vegetables offered at breakfast – that’s an additional 214 mg over one week and 855 mg over one month.
- The average daily potassium provided at breakfast when potatoes are included was 945 mg, which meets the IOM Nutrient Target for breakfast of 909 mg, but is notably more than the 711 mg that students consumed in the most recent School Nutrition and Dietary Assessment Survey in 2005 (SNDA-III).

Other nutrients provided in greater amounts in the breakfast menus with potatoes included magnesium, phosphorus, niacin, and vitamin E.

Potatoes do not significantly alter the fat, saturated fat, sodium or calories provided and depending on which foods they replace on the breakfast menu (i.e., pancakes, waffles, bagels, cereals and other foods consumed with syrups and jellies or that contain added sugar), could provide a solution to reducing added sugar consumption at breakfast.

According to the National Cancer Institute, “the public should be told that additional servings of grains, fruits, and vegetables need to replace sources of added sugars and discretionary fat. Intakes of these components are currently higher than recommended.”

Breakfast Menus

Menu 1. Original IOM Week One Menu* – Elementary School (NO vegetable offerings)

Monday	Tuesday	Wednesday	Thursday	Friday
Orange Juice (4 oz)	Apple Juice (4 oz)	Orange Juice (4 oz)	Apple Juice (4 oz)	Orange Juice (4 oz)
Sliced Peaches (1/2 c)	Mandarin Oranges (1/2 c)	Petite Banana	Diced Pears (1/2 c)	Applesauce (1/2 c)
Grilled Egg Patty (1.25 oz) w/ Turkey Ham (0.5 oz) on WW English Muffin	WW French Toast Sticks (2 oz)	Reduced Sugar Frosted Flakes (3/4 c)	WW Waffle (2 oz)	Cheese Omelet Wrap (1.25 oz egg and cheese, tortilla)
Lowfat Milk (8 oz)	Skim Milk (8 oz)	LF Mozzarella String Cheese (1 oz)	LF Vanilla Yogurt (4 oz)	Lowfat Milk (8 oz)
	LC Syrup (1.5 oz)	Lowfat Milk (8 oz)	Skim Milk (8 oz)	Salsa (2 oz)
			LC Syrup (1.5 oz)	

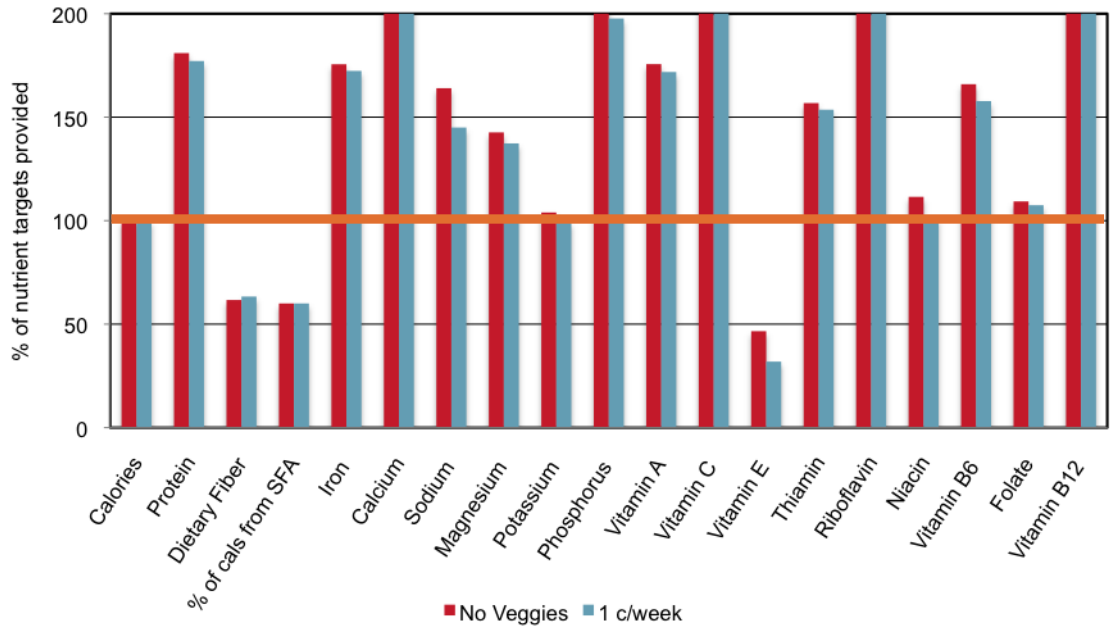
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Menu 2. Modified IOM Week One Menu – Elementary School - (One cup of vegetables offered per week)

Monday	Tuesday	Wednesday	Thursday	Friday
Orange Juice (4 oz)	Mandarin Oranges (1/2 c)	Orange Juice (4 oz)	Apple Juice (4 oz)	Orange Juice (4 oz)
Sliced Peaches (1/2 c)	Mini Potato Pancakes (3 oz)	Petite Banana	Diced Pears (1/2 c)	Mini Potato Pancakes (3 oz)
Grilled Egg Patty (1.25 oz) w/ Turkey Ham (0.5 oz) on WW English Muffin	WW French Toast Sticks (2 oz)	Red. Sugar Frosted Flakes (3/4 c)	WW Waffle (2 oz)	Cheese Omelet Wrap (1.25 oz egg and cheese, tortilla)
Lowfat Milk (8 oz)	Skim Milk (8 oz)	LF Mozzarella String Cheese (1 oz)	LF Vanilla Yogurt (4 oz)	Lowfat Milk (8 oz)
	LC Syrup (1.5 oz)	Lowfat Milk (8 oz)	Skim Milk (8 oz)	Salsa (2 oz)
			LC Syrup (1.5 oz)	

*Note: Whole grain/whole wheat varieties of these items were not available in USDA's National Nutrient Database for Standard Reference

Comparison of NO vegetables versus 1 cup Starchy Vegetable Servings/week at Breakfast in Meeting IOM Nutrient Targets



Comparison of Nutrients Provided to IOM Breakfast Targets when NO vegetables vs. 1 cup of Starchy Vegetables are Offered Per Week (*1 cup of Potatoes)

IOM Breakfast Nutrient Targets		Modified IOM Menu (1 c/wk)	% of Target Modified Menu	IOM Original Menu	% of Target Sample Menu	Daily Nutrient Benefit-Potatoes 1c/wk	Weekly Nutrient Benefit-Potatoes 1c/wk	Monthly Nutrient Benefit-Potatoes 1c/wk
350-500	Calories	455	100	434	100			
10	Protein (g)	18	181	18	177			
	Total Carbohydrates (g)	79		77				
6	Dietary Fiber (g)	3.7	62	3.8	63			
	Sugars (g)	46		48				
	Total Fat (g)	9		7				
	Saturated Fat (g)	3		3				
<10	% of total cals	6	60	6	60			
	Trans Fat (g)	0		0				
	Cholesterol (mg)	78		78				
2.3	Iron (mg)	4	176	4	172			
223	Calcium (mg)	489	219	486	218			
<430	Sodium (mg)	704	164	622	145			
49	Magnesium (mg)	70	143	67	137			
909	Potassium (mg)	945	104	902	99	43	214	855
242	Phosphorus (mg)	499	206	478	198	21	103	411
129	Vitamin A (mcg RAE)	227	176	222	172			
16	Vitamin C (mg)	42	262	46	289			
2	Vitamin E (mg)	0.9	47	0.6	32	0.29	1.47	5.88
0.25	Thiamin (mg)	0.4	157	0.4	154			
0.31	Riboflavin (mg)	0.8	244	0.8	245			
3.2	Niacin (mg)	3.6	112	3.2	101	0.3	1.7	6.7
0.27	Vitamin B6 (mg)	0.4	166	0.4	158			
91	Folate (mcg)	99	109	98	107			
0.8	Vitamin B12 (mcg)	1.8	225	1.8	222			
	% cals from protein	16		16				
	% cals from carbs	68		70				
	% cals from fat	16		15				

Fewer Vegetable Choices; Fewer Vegetables Eaten

At a time when Americans, especially kids, are not eating enough vegetables and fruits, we should be encouraging more choices, not less.

- Nine out of 10 Americans are not meeting vegetable and fruit consumption recommendations.
- Every major Federal public health nutrition program, from Dietary Guidelines for Americans, the HealthierUS School Challenge to the First Lady's Let's Move!, encourages increased vegetable intake – yet the IOM is suggesting restricting potatoes, potentially taking away the only vegetable kids eat and actually reducing vegetable consumption.

Potatoes – Nutritious, Delicious and Economical

The IOM Report acknowledged that proposed recommendations would increase costs for school districts. However, without a net gain in nutrient quality of school meals, restricting potatoes is not justified.

- Limiting starchy vegetables to 1 cup/week will increase costs by 5.6% with no improvement in, and possible adverse affects on, nutrition quality.
- Non-starchy vegetable alternatives are significantly more expensive than potatoes, costing from 15 percent (for lettuce) to 84 percent more (for carrots).
- The 6-cent reimbursement contained in the recently passed child nutrition legislation is a step in the right direction - however, the 7-cent cost per meal to limit starchy vegetables is not.
- For a school food authority operating on very slim margins, this 5.6% cost increase could have a significant effect in the ability to provide nutritious meals to children. For example, a limit on starchy vegetables would result in increased meal costs of over half a million dollars to DC Public Schools, who served 7.5 million lunches in 2009.

As one of the most cost efficient of the many vegetables offered in the school meal each day, potatoes can help strapped school food service personnel meet tight guidelines on nutrition and cost with an added bonus – kids actually eat potatoes.

- The potato industry supports increasing variety for school meals and does not suggest that potatoes be served every day.
- Let schools decide how to include vegetable diversity in school menus without arbitrarily limiting a vegetable that kids love to eat, is nutritious and cost effective.
- Allowing potatoes without limitations may actually save schools money and offer greater flexibility to buy other vegetables, like broccoli, to serve periodically and introduce other healthy choices into school menus.

At a time when school food service personnel are struggling to make ends meet while providing wholesome and nutritious foods to our kids, the government, public health community and industry should be offering solutions that increase, not remove, key nutrients of concern, like potassium and fiber, from kids' diets.

Appendix

Modeling Exercise Background: Lunch Menus

Week 1 of the IOM Sample Lunch Menus for Elementary School were modified from the IOM recommended limit of 1 cup per week of starchy vegetable offerings to 2.5 cups of starchy vegetables.

- The average daily nutrients provided in the IOM "as offered" menus with 1 cup of starchy vegetables (e.g., 1/2 cup potatoes) per week were compared to modified "as offered" menus with 2.5 cups of starchy vegetables per week (1/2 cup of potatoes were offered 4 days/week)
- To allow for the increase in starchy vegetable choices, amounts from the "other vegetable" subgroup were reduced.
- The analysis assumed that all foods, including vegetables, were consumed.
- The average nutrients provided in the lunch menus were compared to the IOM Nutrient Targets for lunch (32 percent of the daily School Meal Target Median Intake) for elementary school children ages 5-10 years.

Modeling Exercise Background: Breakfast Menus

Week 1 of the IOM Sample Breakfast Menus for Elementary School were modified to offer 1 cup (2 total servings) of potatoes per week, with a potato choice offered on 2 of the 5 days.

- To allow for this addition, one of the daily fruit choices, e.g. 1/2 cup apple juice and 1/2 cup applesauce, was omitted on the 2 days when potatoes were offered. A popular form of breakfast potatoes was used in the menus—baked hash brown patties.
- The average daily nutrients provided in the IOM "as offered" breakfast menu with no vegetables were compared to a modified "as offered" menu with 1 cup of vegetables (potatoes) per week.
- The analysis assumed that all foods in the menus were consumed.
- The average nutrients provided in the breakfast menus were compared to the IOM Nutrient Targets for breakfast (21.5 percent of the daily School Meal Target Median Intake) for elementary school children ages 5-10 years