

Effects of the WIC Food Package Revisions on Food Purchases

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WIC Revisions

➤ To align WIC foods with Dietary Guidelines for Americans and AAP's child feeding guidelines

- Increase whole grain & fiber intake
 - Added whole grain bread/alternates
 - Added fruit and vegetables
- Reduce fat & sugar intake
 - Lower juice and milk allowances
 - Restriction on milk fat content
- Promote breast-feeding



Effects of WIC Revisions

- **Improved access to healthy foods**
 - Gains to participants and community at large
- **Purchase behavior aligned with WIC food package revisions**
- **Increased consumption of recommended foods**
- **Mixed evidence on breast feeding initiation; small increase in duration**
- **Preliminary data of declining obesity rates in low-income young children**

Scope of Research

Assess changes in WIC participants' purchases of foods targeted in the revisions: juice, milk, whole grains, fruits and vegetables

Evaluate the healthfulness of all food purchases of WIC participating households after implementation of the WIC revisions

Loyalty-Card Based Data

- All loyalty card purchases made within chain
 - Tracked over time at a loyalty card (HH) level
- De-identified data
 - No HH info
- Known method of payment
 - WIC, SNAP, other



Study Sample

- **New England grocery store chain**
 - 2 states, over 60 stores
 - Diverse towns and income areas
- **Regular WIC participants pre and post revisions**
 - Jan-Sep 2009 and Jan-Sep 2010
 - Used WIC benefits each quarter
 - N = 2,137 households; ~200,000 purchases
- **About ½ WIC participants also on SNAP**

Categorization of Purchases

Product and size classification at the UPC level:



- 31,932 unique food UPCs purchased
- Size in ounces
- Product nutritional information and ingredient lists from commercial providers (Gladson and IRI)
 - 100% juice, type of milk, whole grains, fruit and vegetables

Categorization of Purchases

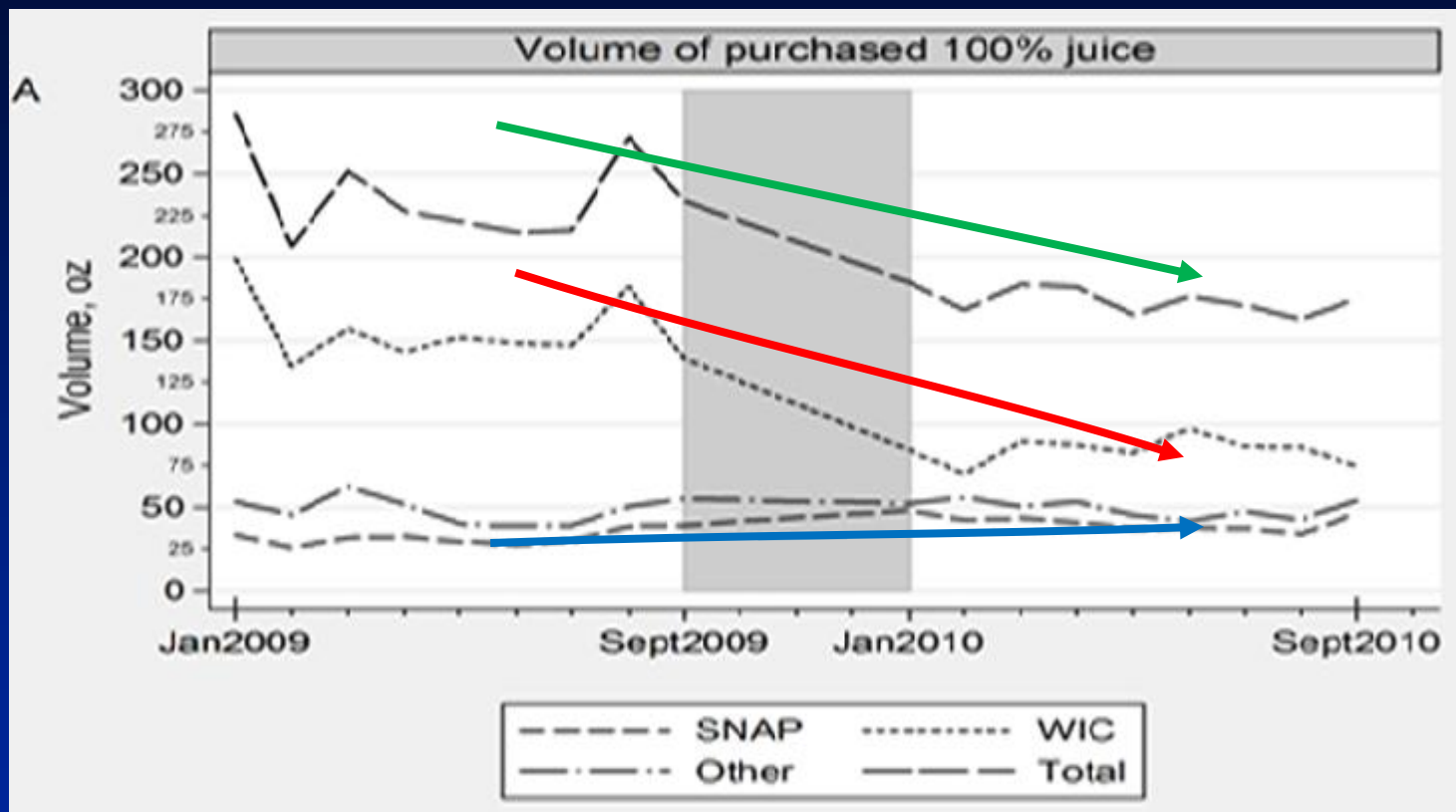
Whole grain categorization:

- UPCs labeled as:
 - 100% Whole Grain
 - Some Whole Grain
 - Refined Grain
 - No Grain in product
- *Food Patterns Equivalents Database Methodology* and a guide for National School Lunch and Breakfast programs used to identify whole v. refined grains

Studies of Targeted Foods

- Outcomes
 - Volume/amount purchased
 - Spending (fruit and vegetables only)
 - Payment analysis
 - Total purchases
 - WIC funds
 - Non-WIC funds
 - GLM model estimation
-

Juice Purchase Changes



Source: Andreyeva et al. *Pediatrics* 2013.

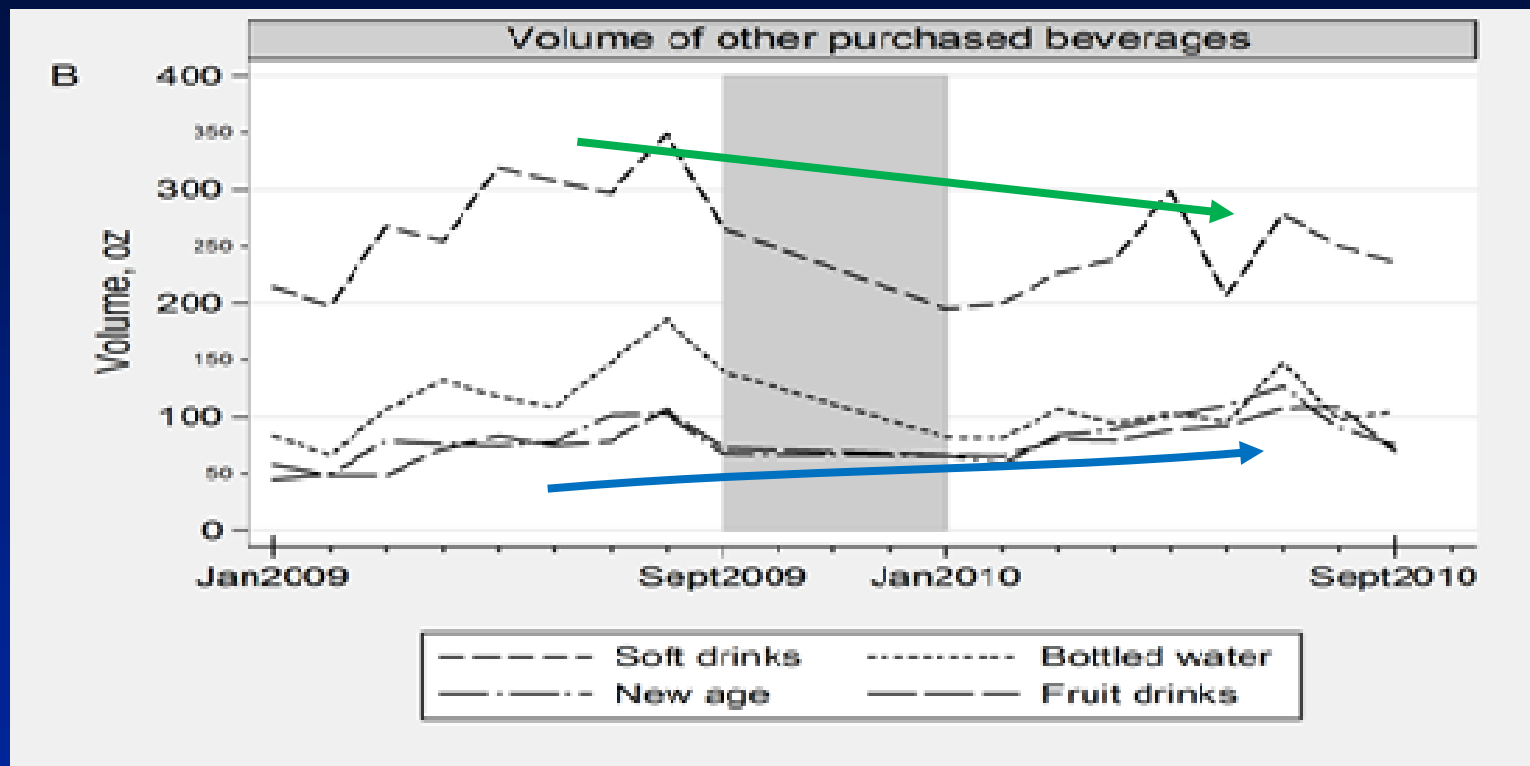
Juice Purchase Changes

- 24% less juice purchased after WIC revisions
- Small compensation to non-WIC juice (1/5th)

100% Juice	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
Total, WIC & non-WIC	-23.5***	238	182
Purchased with WIC benefits	-43.5***	154	87
Purchased with non-WIC funds	13.6***	84	95

Source: Andreyeva et al. *Pediatrics* 2013. *** $p < 0.001$

Other Beverage Purchases



Source: Andreyeva et al. *Pediatrics* 2013.

Other Beverage Purchases

➤ Limited compensation to other beverages

Beverage	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
100% juice	-23.5***	238	182
Fruit drinks	20.9***	73	88
Soft drinks	-12.1***	288	254
New age beverages	21.3***	75	91

Source: Andreyeva et al. *Pediatrics* 2013. *** $p < 0.001$

Milk Study

Significant changes in WIC milk and cheese

- Less milk and cheese
- No whole milk for women, 2-5 yr old children
- Soy-based alternatives
- Same monthly allowances by state

Analyzed products

- Cow's milk of any fat (208 UPCs)
- WIC-eligible cheese (199 UPCs)

Milk: WIC Purchases

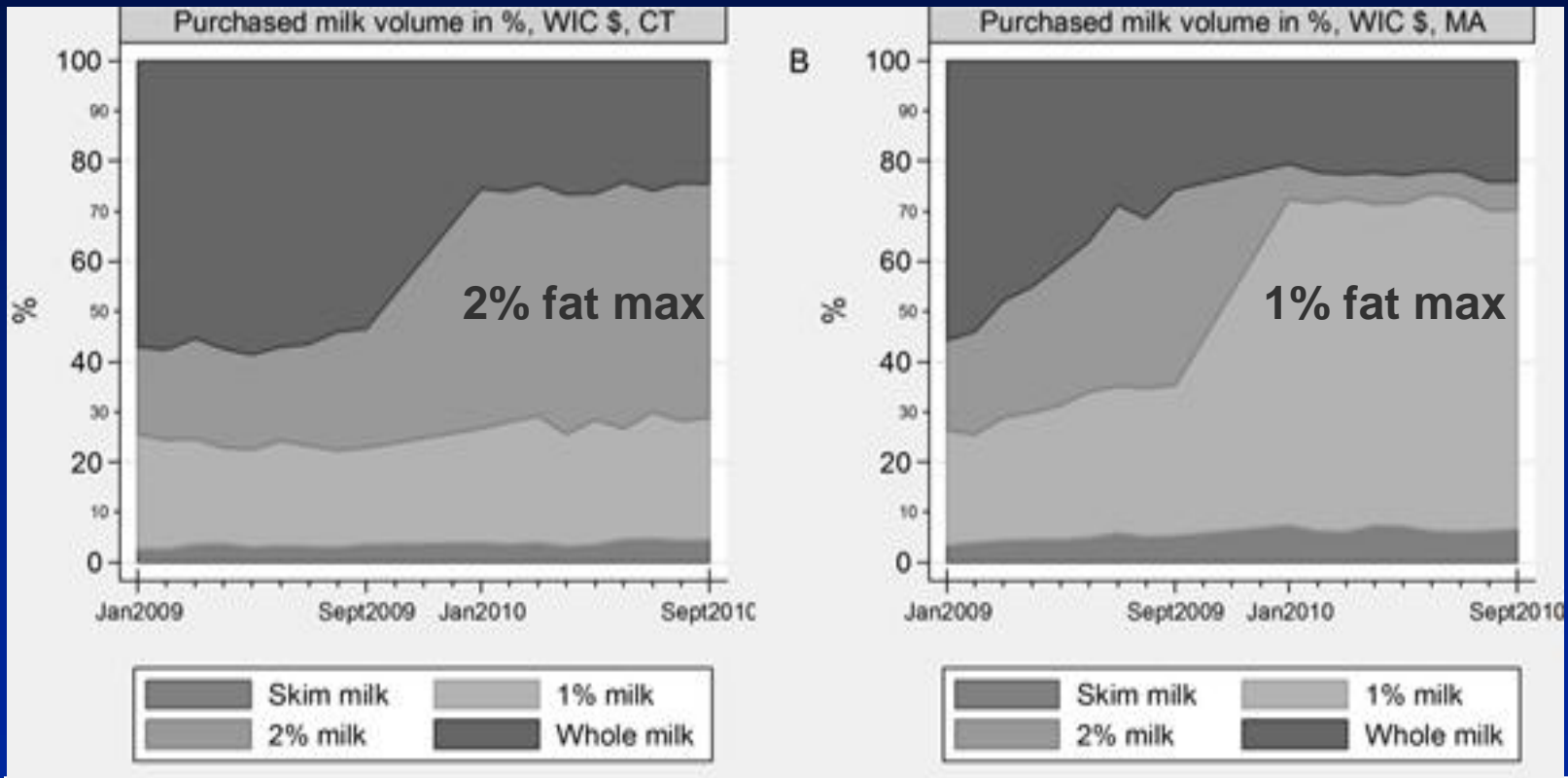
➤ Decline in milk and cheese purchases

	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
Total milk	-19.5***	375	302
Whole milk	-63.2***	205	75
2% milk	72.1***	82	142
1% milk	n.s.	76	72
Skim milk	n.s.	13	14
WIC cheese	-77.2***	14	3

Note: Data for CT. Source: Andreyeva et al. JAND 2013. *** $p < 0.001$

Milk Purchases in CT vs. MA

➤ Milk with highest allowable fat purchased



Source: Andreyeva et al. JAND 2013.

Milk: Non-WIC Purchases

➤ No compensation from non-WIC funds

	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
Total milk	n.s.	126	127
Whole milk	n.s.	73	62
2% milk	n.s.	27	29
1% milk	37.2**	20	28
Skim milk	n.s.	4	6
WIC cheese	17.1***	10	12

Note: Data for CT. Source: Andreyeva et al. JAND 2013. *** $p < 0.001$; ** $p < 0.05$.

Milk: Total Purchases

➤ 1/2 less whole milk purchased, less milk overall

	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
Total milk	-14.2***	503	431
Whole milk	-49.4***	280	142
2% milk	56.2***	110	172
1% milk	n.s.	97	101
Skim milk	n.s.	18	22
WIC cheese	-37.2***	24	15

Note: Data for CT. Source: Andreyeva et al. JAND 2013. ***p<0.001

Whole Grain Study

Analyzed products

➤ Bread (1,130 UPCs)

- 100% whole grain, some whole grain, non-whole grain

➤ Rice (194 UPCs)

- White, brown

➤ Tortillas (58 UPCs)

- Whole wheat, soft corn, non-whole grain

Bread and Rice Purchases

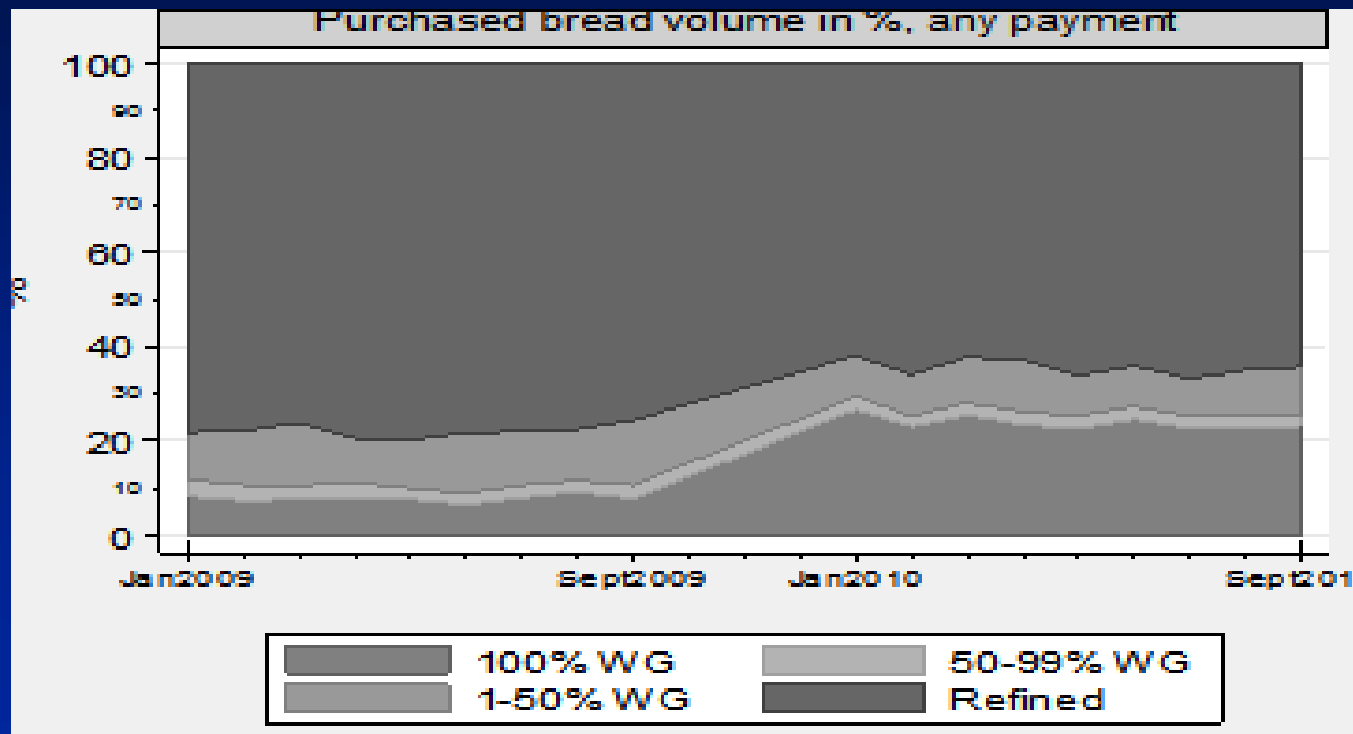
➤ Increased whole grain purchases, all driven by WIC

	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
White bread	-11.5***	60	53
100% whole grain bread	311.9***	6	20
White rice	n.s.	5.5	5.7
Brown rice	837.6***	0.3	2.4

Source: Andreyeva , Luedicke. *Am J Prev Med* 2013. *** $p < 0.001$

Bread Purchases Composition

- Replacing refined grains with whole grains



Source: Andreyeva, Luedicke. *Am J Prev Med* 2013.

Fruit and Vegetable Study

Fruit and vegetables added to WIC food packages

- Fresh, canned, frozen plain fruit & vegetables, except white potatoes
- Cash-value vouchers

Analyzed products

- Fresh vegetables by DGA type (954 UPCs)
- Fresh fruit (701 UPCs)
- Canned, frozen fruit and vegetables

Fruit and Vegetable Purchases

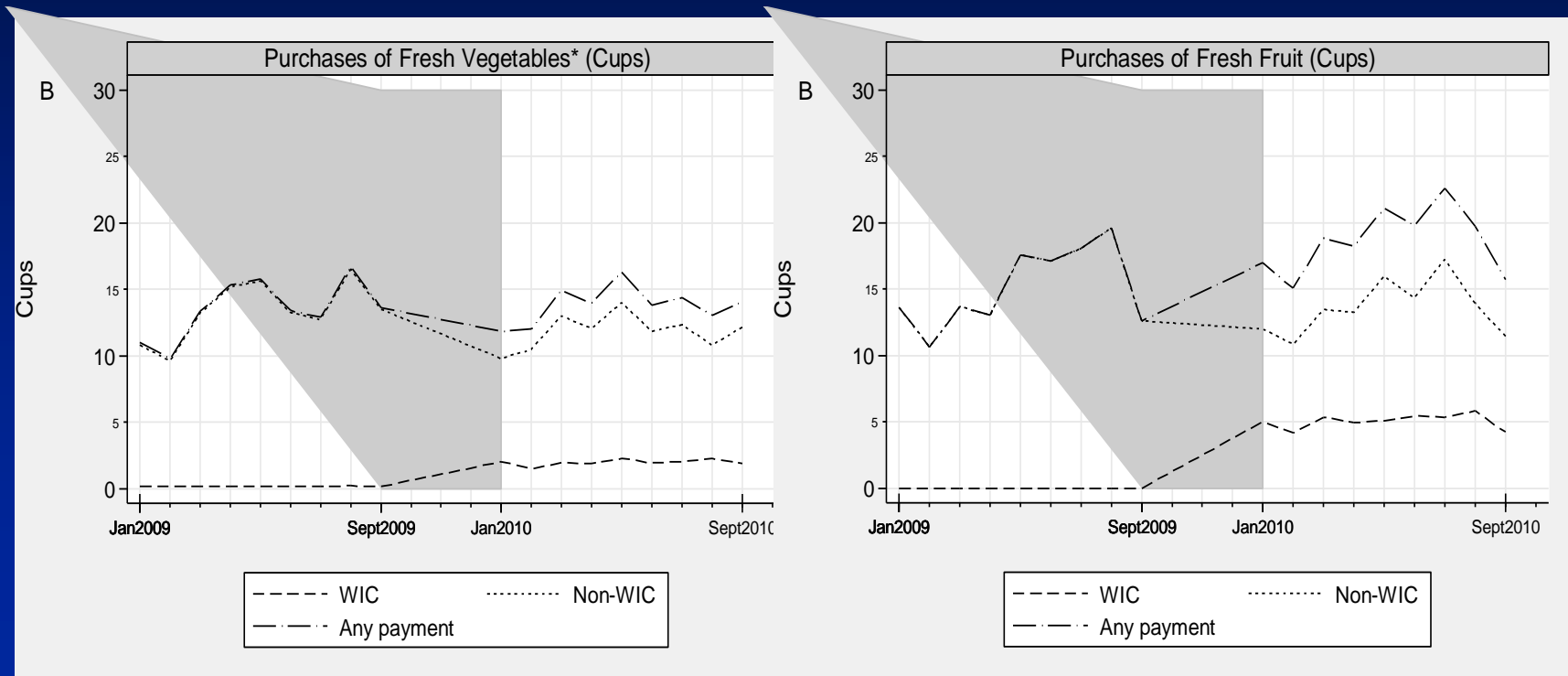
➤ Increase in fruit and vegetable purchases, especially for fresh fruits

	% change	<u>Monthly purchases per household, ounces</u>	
		2009	2010
Vegetables (excluding white potatoes)			
Fresh	17.5***	76	89
Total	8.7***	152	166
Fruit			
Fresh	28.6***	113	147
Total	25.9***	127	160

Source: Andreyeva, Luedicke. *Public Health Nutrition*, 2014. *** $p < 0.001$

Fruit and Vegetable Purchases

- All improvement is due to WIC
- Small substitution (5% loss in non-WIC purchases)



Summary of Findings

- ¼ less juice purchased
 - No compensation with non-WIC funds
 - Little shift to fruit drinks and sodas
- ½ less whole milk purchased
 - Milk with highest allowable fat purchased
 - Total milk reduced
- Increased whole grain purchases
 - Substitution of refined grain bread
 - No changes in non-WIC purchases
- Increased fruit and vegetable purchases
 - Small reduction in non-WIC purchases
 - Little role of WIC in total FV spending (15-25%)

Scope of Research

Evaluate the healthfulness of all food purchases of WIC participating households after implementation of the WIC revisions

Nutritional Categorization

- Each product classified as “Healthy,” “Neutral,” or “Moderation” based on USDA ERS 2012 Study
- Must meet minimum nutritional thresholds to be classified as healthy:

Category	Sodium	Saturated Fat	Added Sugar
Vegetable, Fruit, Dairy & Grains	< 480mg per serving	<= 3g per serving	< 4g per serving
Meat	< 480mg per serving	<= 4g per serving	< 4g per serving
Mixed Dishes	< 600mg per serving	< 5g per serving	< 5g per serving

Nutritional Categorization

Healthy Foods

- Foods below nutritional thresholds
- Snack foods: Below thresholds & contain whole grains
- Beverages: Unsweetened water

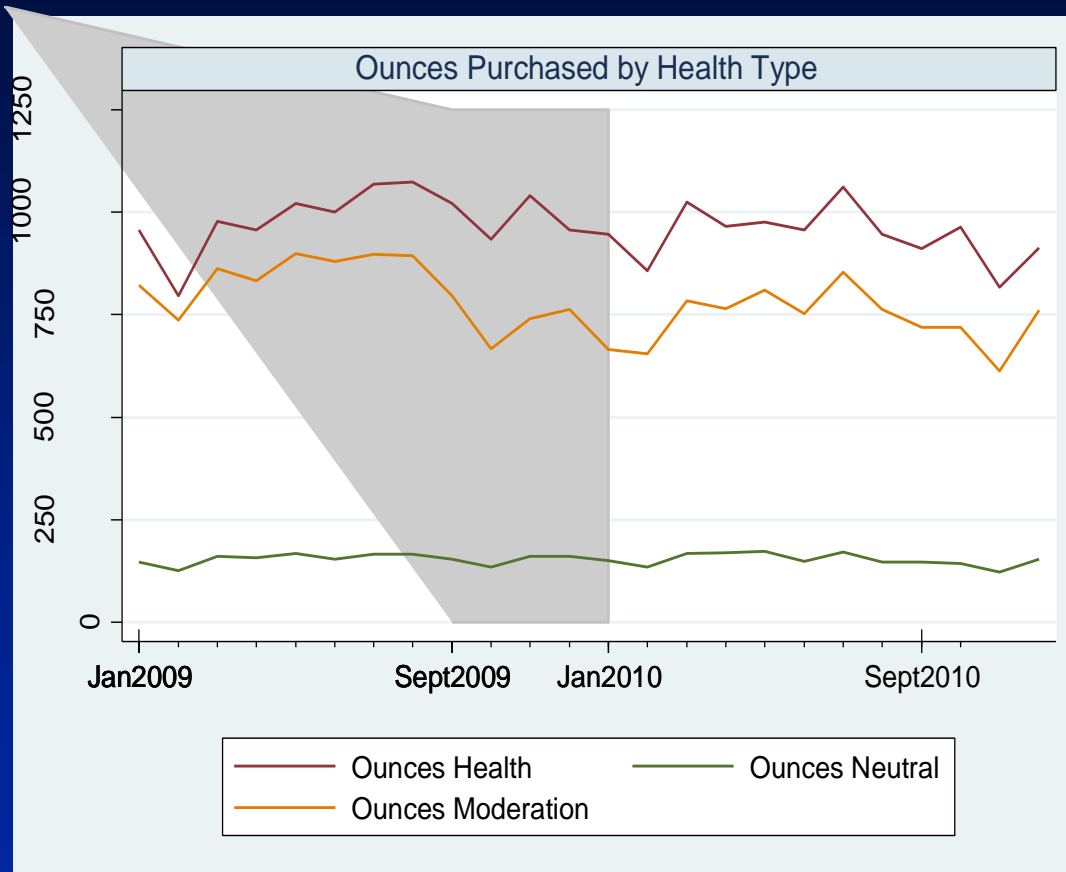
Neutral Foods

- Foods below thresholds, but not meeting minimal serving sizes
- Infant formula and baby foods
- Snack foods: Below thresholds, no whole grains
- Beverages: Diet/low calorie beverages, coffee, tea

Moderation Foods

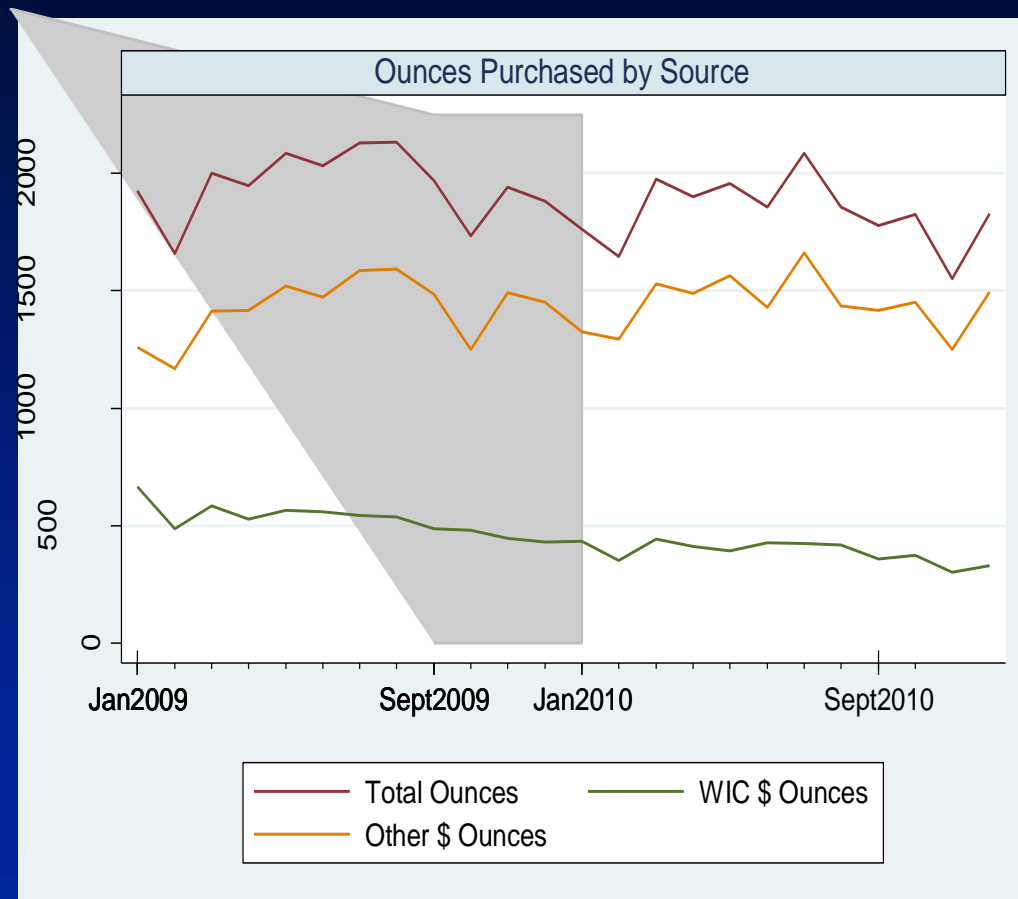
- Foods exceeding nutritional thresholds per serving

Purchases by Nutritional Status

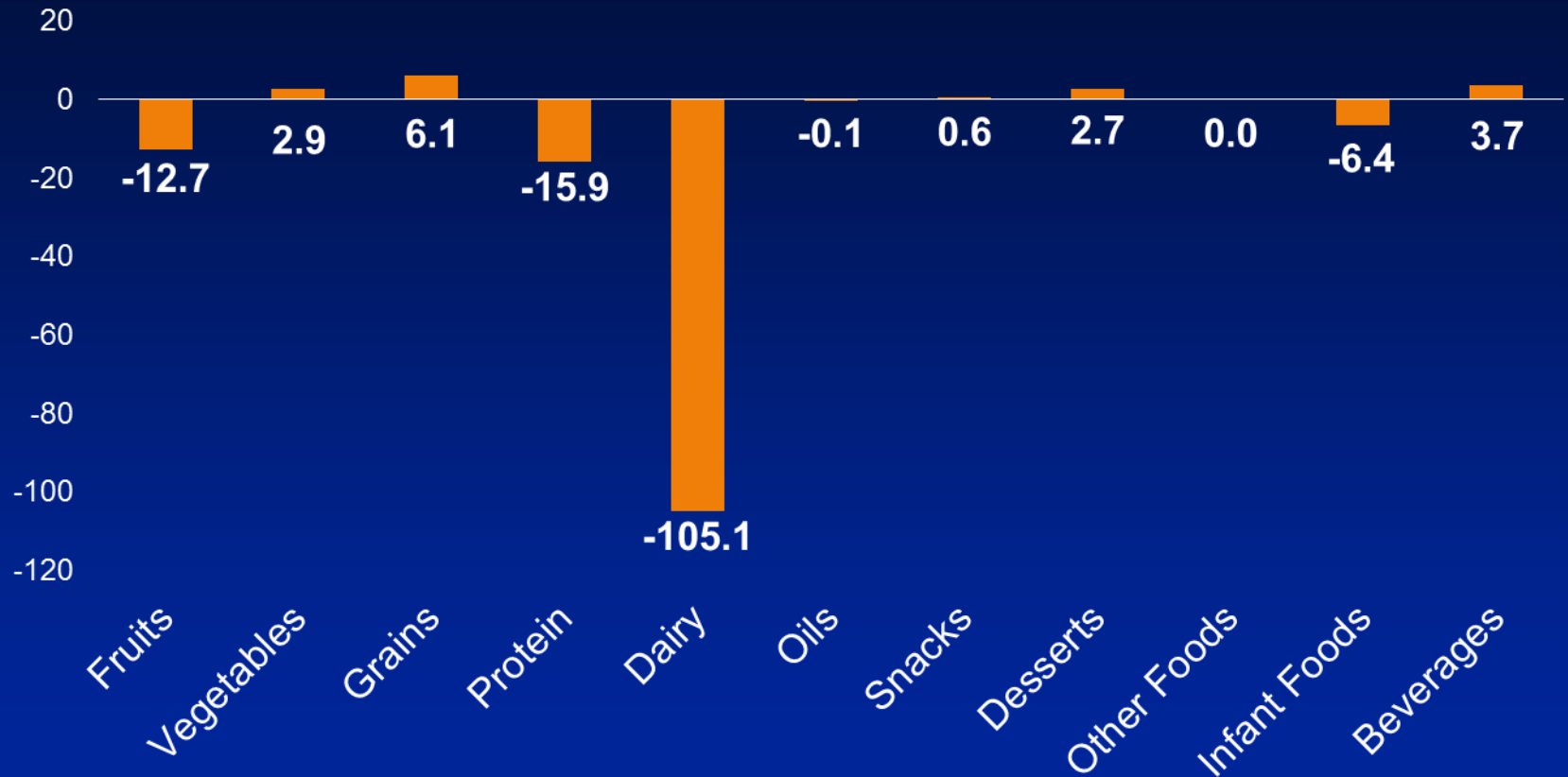


Healthy Ounces make up 50.4% of ounces purchased in pre period and 51.5% of ounces purchased in post period

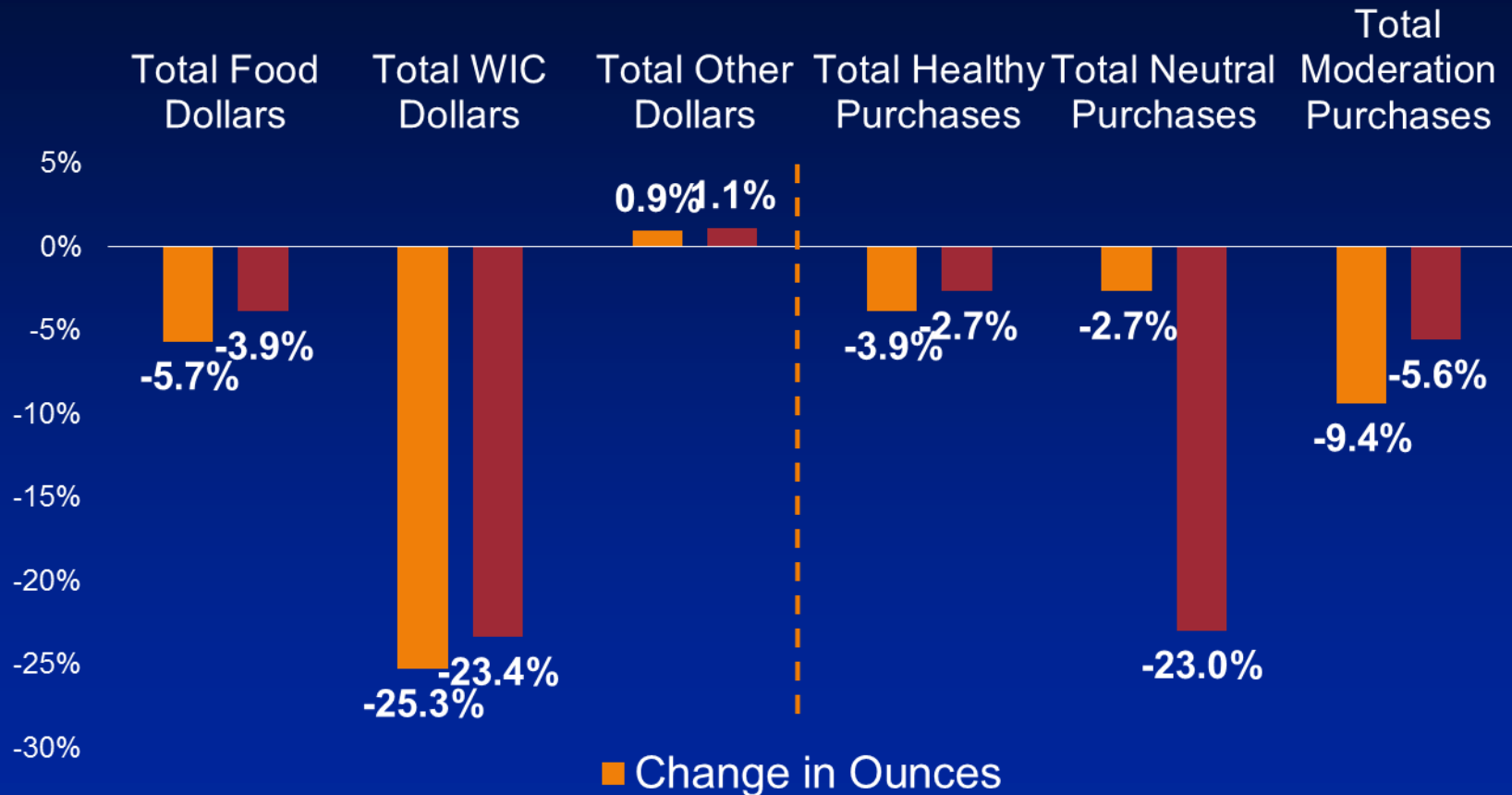
Food Purchases by Payment



Changes in Ounces by Category



Changes in Ounces and Spending



Summary of Findings

- Healthy foods comprise majority of food and beverage purchases
- Overall reduction in food purchases post revisions, driven by WIC purchases
 - Decline in Juice, Milk and Infant formula/foods
- Proportion of healthy foods increased while moderation foods declined post WIC revisions
 - Overall healthfulness of foods purchased improved, driven by WIC food package revisions

Limitations

- Limited geographic scope
- Single grocery store chain, does not represent all food purchases
- No socio-demographic data at household level
- No control group
- Short time period
- Does not capture food intake

Acknowledgements

- **Research funding**
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