Second Federal Trade Commission Conference on Marketing and Public Policy

Shrinkflation: Evidence on product downsizing and consumer response[1]

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[1]Researcher's own analyses calculated (or derived) based in part on data from Nielsen Consumer LLC and marketing databases provided through the NielsenIQ Datasets at the Kilts Center for Marketing Data Center at The University of Chicago Booth School of Business. The conclusions drawn from the NielsenIQ data are those of the researcher and do not reflect the views of NielsenIQ. NielsenIQ is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein.

What is shrinkflation? Why is it concerning?

6 oz	**Package size**	**5.3 oz** (−12%)
$1.29	**Item price** (price per product)	$1.29
$0.22	**Unit price** (price per ounce)	**$0.24** (+10%)

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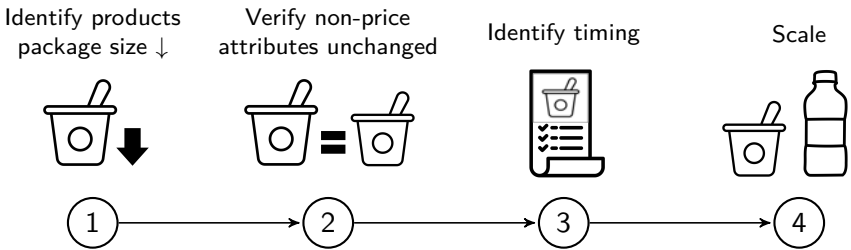
- **Definition**: *shrink* package size (e.g., ounce) without corresponding changes in item price to indirectly *increase* unit price (e.g., price per ounce) → *Shrinkflation*
- **Concern**: potential for consumer deception due to lack of transparency

This paper

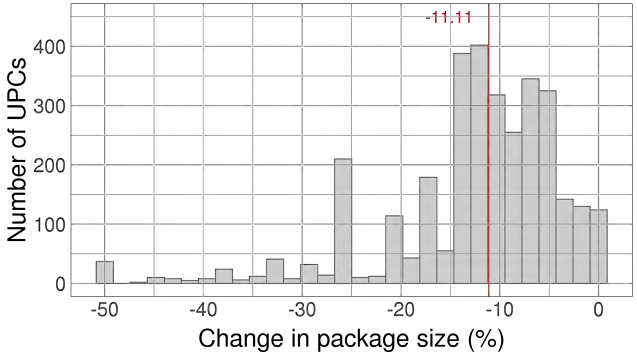
- Systematically document the extent of shrinkflation in CPGs (2006 – 2018)
  - Extensive margin: How widespread?
  - Intensive margin: How large is the magnitude of reduction and price increase?
- Measure and quantify consumer response to shrinkflation

Approach to documenting package size reductions



- **Data**: NielsenIQ (2006 – 2018)
  - Products and timing: products, products extra, household panel
  - Price and quantity sold: store sales
- **Resulting sample**
  - 3,259 products in 10 departments, 56 categories and 310 sub-categories

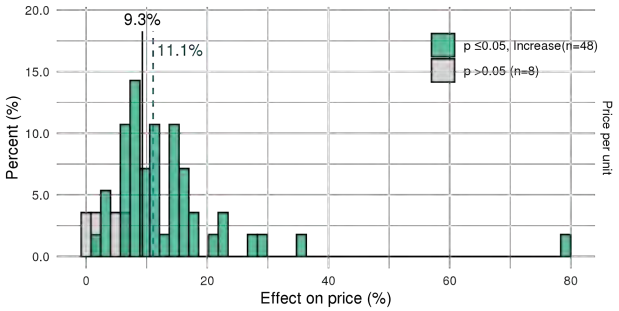
1. Package size: How large and when?



- How large? A non-trivial reduction with an 11% decrease at the median
- When? Throughout the entire sample period from 2006 to 2018

2. Price: Statistically and economically significant increase in unit price

$$\log(p_{jst}) = \alpha \text{ PostChange}_{jst} + \gamma_{js} + \delta_{jt} + \varepsilon_{jst}$$

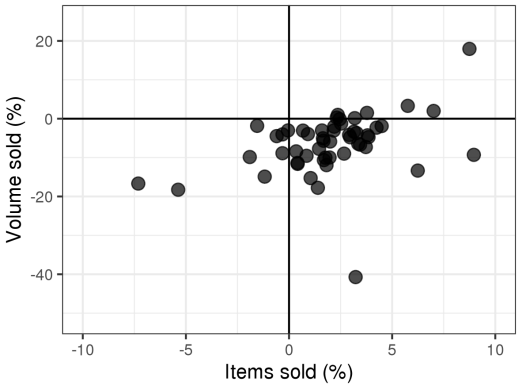


Evidence on shrinkflation: *Increase* in unit prices (+9.3%) after package size *reduction*

- Magnitude significant (average promotion depth: 20%)
- Permanent unit price ↑ package size ↓

How do consumers respond?

$$\log(q_{jst} + 1) = \alpha \, \text{PostChange}_{jst} + \gamma_{js} + \delta_{jt} + \varepsilon_{jst}$$



- **Data:** 1 year pre-and post-change
- **Findings**: Items sold did not change or slightly increased which led to a decrease or no change in volume sold

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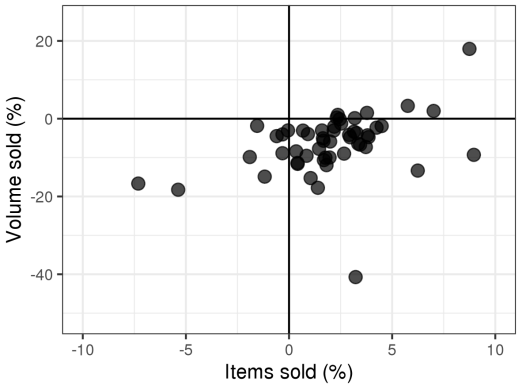
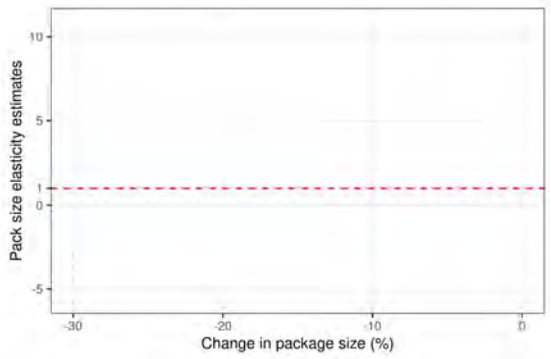


- **Data:** 1 year pre-and post-change
- **Findings**: Items sold did not change or slightly increased which led to a decrease or no change in volume sold
- **Small demand response**
  - Items sold: $+2.1\%$ (0.03 std $\uparrow$)
  - Volume sold: -4.9% (0.08 std $\downarrow$)
- **Package size elasticities centered around 1**

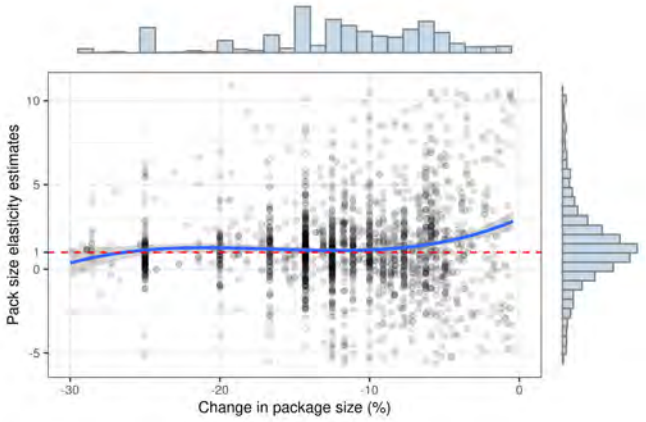
Does the magnitude of the downsize matter?



Expect **downward slope**

Larger the package size change → More likely consumers notice

Does the magnitude of the downsize matter?



Flat

Response does not vary with magnitude of reduction

Does increased transparency generate a greater consumer response?

- **Setting**: State-level mandatory unit pricing policy in the U.S. (10 states total)[2]
  - Compare change in quantities sold in states with and without regulations

[2] Connecticut, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Vermont, and the District of Columbia

Does increased transparency generate a greater consumer response?

- **Setting**: State-level mandatory unit pricing policy in the U.S. (10 states total)[2]
  - Compare change in quantities sold in states with and without regulations
- **Findings**: Small differential effect across regulation regimes
  - Items sold $\downarrow$ 1.5%
  - Volume sold $\downarrow$ 1.2%
- **Implications**: Suggests the disclosure of unit price alone may not be sufficient

[2] Connecticut, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Vermont, and the District of Columbia

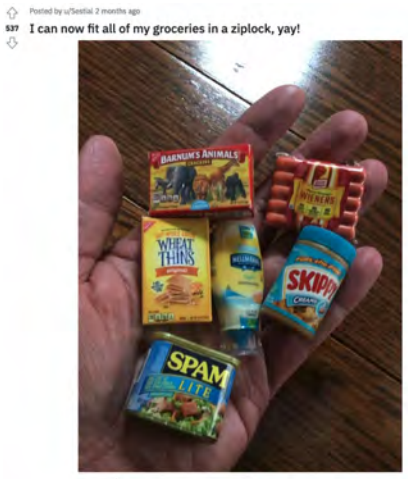
Conclusion

Shrinkflation pervasive across time and categories

- Meaningful reduction in package size
- Statistically and economically significant increase in unit price

Minimal consumer response

- Small demand response to reduction in package size
  - Overall reduction in volume sold
- Implications for policy



Thank you!

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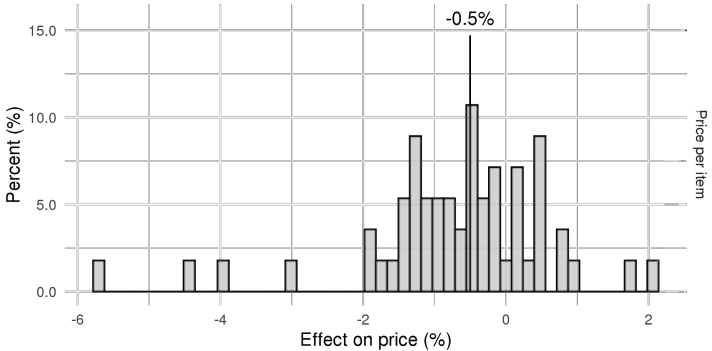
Appendix: Item price reaction to package size reduction

Median category -0.5%



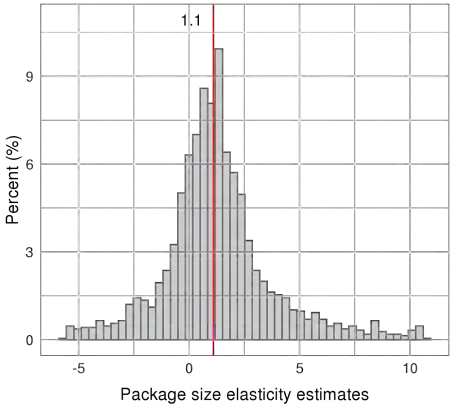
- Range small in magnitude

Appendix: Package size elasticity

Median product 1.1

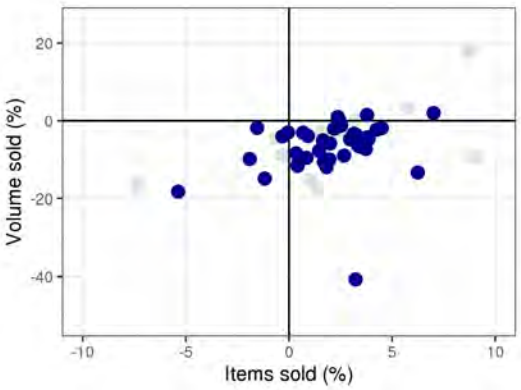
Demand model: For product j in market (retailer-county) k in week t,

$$\underbrace{\log(q_{jkt}+1)}_{\text{Volume sold}} = \alpha_j \underbrace{\log(p_{jkt})}_{\text{Item price}} + \beta_j \underbrace{\log(S_{jkt})}_{\text{Package size}} + \underbrace{\gamma_{jk} + \delta_{jm(k)t}}_{\text{Fixed effects}} + \epsilon_{jkt}$$



- **Package size elasticity centered around one** (Median: 1.1)
- Package size elasticity = 1
  - Suggests that items sold did not change
  - Inelastic to changes in package size
- Statistical significance: 64% do not reject $H_0 : \beta = 1$ at 0.05 level

Appendix: Food and beverage categories



Why important?

- Recommended calorie input of 2,000 to 2,600[3], whereas average American consumes over 3,800 calories/day
- Shrinkflation reduces portion size

Findings

- ↓ Volume purchased for consumption for majority of **food** categories
  - e.g., candy
- Heterogeneity: No sig diff across serving sizes

[3] United States Department of Agriculture & United States Department of Health and Human Services