

# Consumption of Staple Foods in Malawi

May, 2010



PROJECT HEALTHY CHILDREN

## Overview

The Fortification Rapid Assessment Tool (FRAT) survey was carried out to gather information about the availability and consumption of centrally-processed foods in Malawi.

- The survey took place in conjunction with the October 2009 Malawi Micronutrient Deficiency Study, led by the Office of the President and Cabinet (OPC) and the Department of Home Economics and Human Nutrition at Bunda College of Agriculture, and supported by UNICEF
- Foods investigated included: centrally processed wheat flour, maize flour, sugar, and cooking oil
- Data was collected on adult men (20-55), women of reproductive age (15-49) and children 6-59 months of age.
- Systematic sampling was used to select a sub-sample of the nation-wide sampling frame developed for the micronutrient deficiency study:
  - Men were interviewed in the 9th, 11th, and 13th household in each cluster
  - Women were interviewed in the 3rd, 5th, and 7th household in each cluster
  - Children under five were interviewed in the 2nd, 4th, and 6th household in each cluster
- Data was entered by the Malawi National Statistics Office and standardized portion measurements and ingredient lists were developed by the Bunda College of Agriculture
- The survey included three strata: Central, Northern, and Southern Malawi. Sample weights based on population and response rate were calculated and used to derive national figures
- Response rates for some questions were extremely low; caution should be used in drawing conclusions from these results, which may not be truly representative

## Weighting Calculation

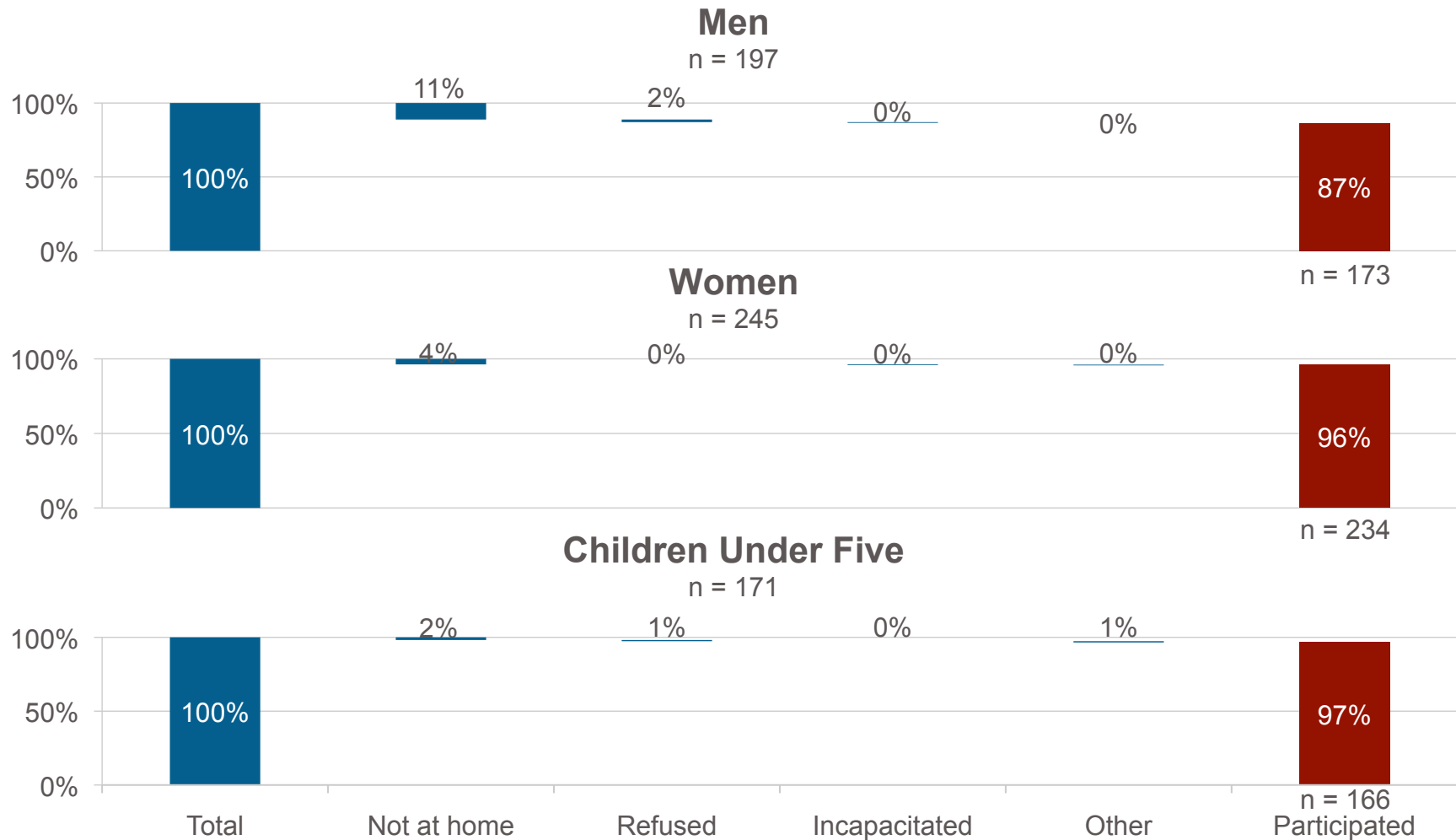
Regional sample weights, based on fraction of total interviews and regional population, allow accurate calculation of national averages.

$$\text{Sample Weight} = \frac{\text{Regional Population}}{\text{National Population}} \times \frac{\text{Total Surveys}}{\text{Surveys In Region}} \times \frac{\text{Surveys In Region}}{\text{Surveys Completed In Region}}$$

Individual	Central	Northern	Southern
Men	1.27	0.35	2.2
Women	1.35	0.4	1.31
Children Under Five	1.42	0.33	1.45

## Participation

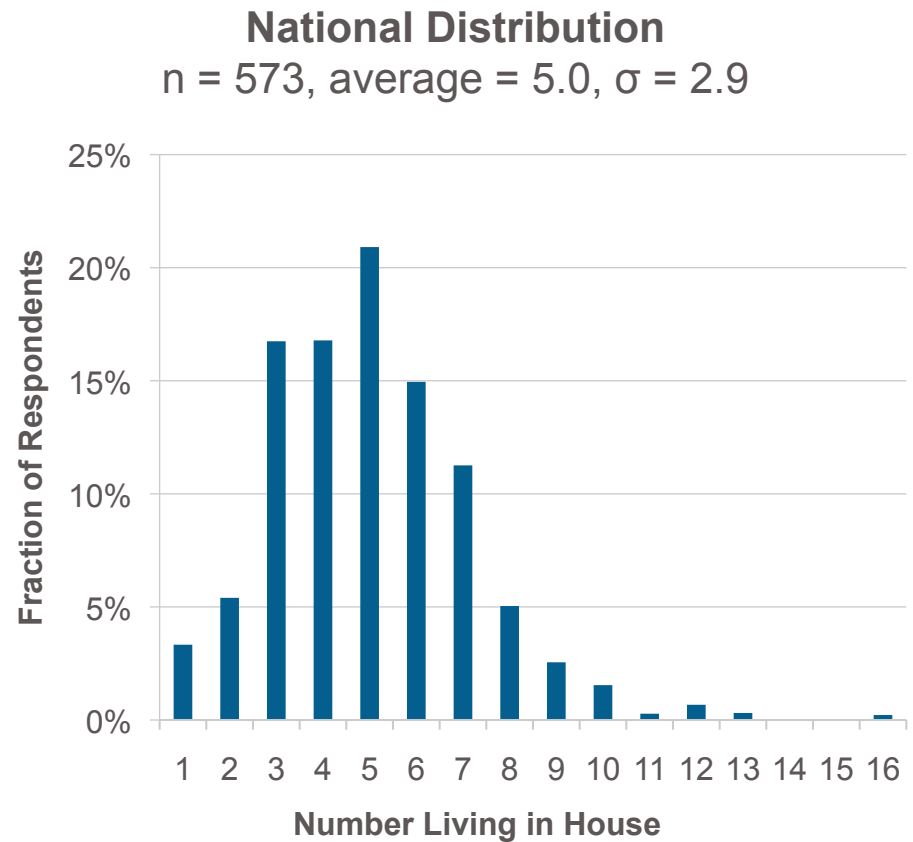
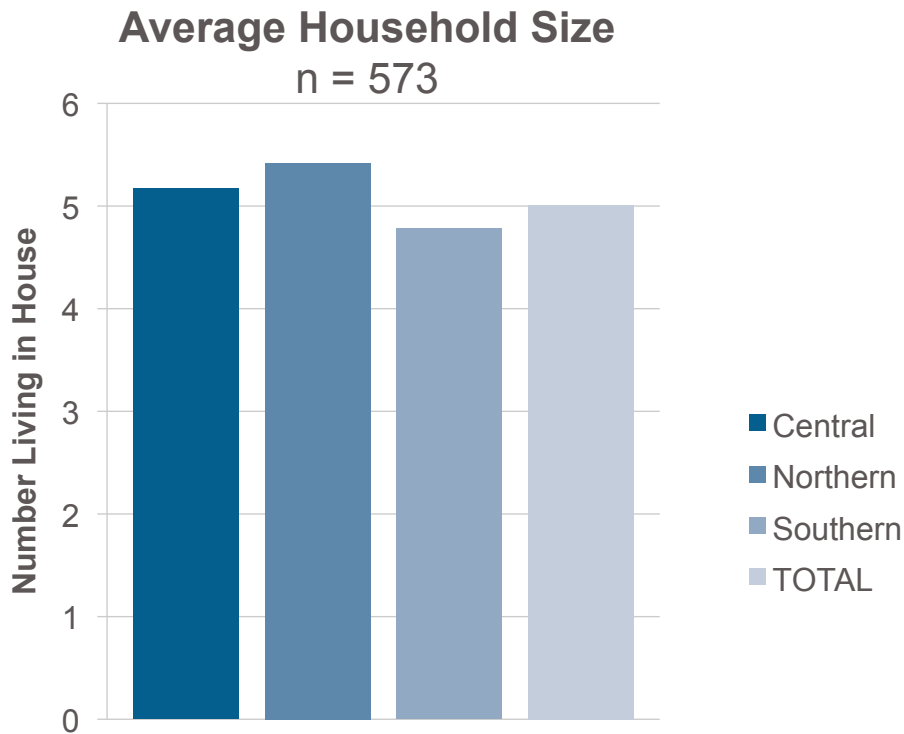
In some cases, the proper individual was not at home when the survey team visited. Since participation was voluntary, in other cases they elected not to take part.



# Demographics

## Demographics: Household Size

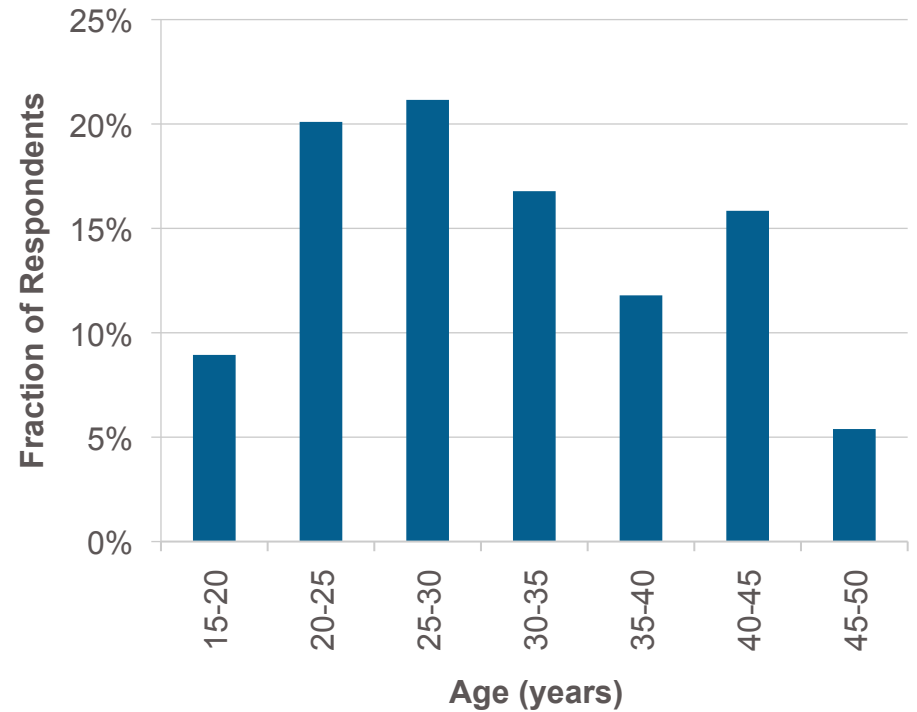
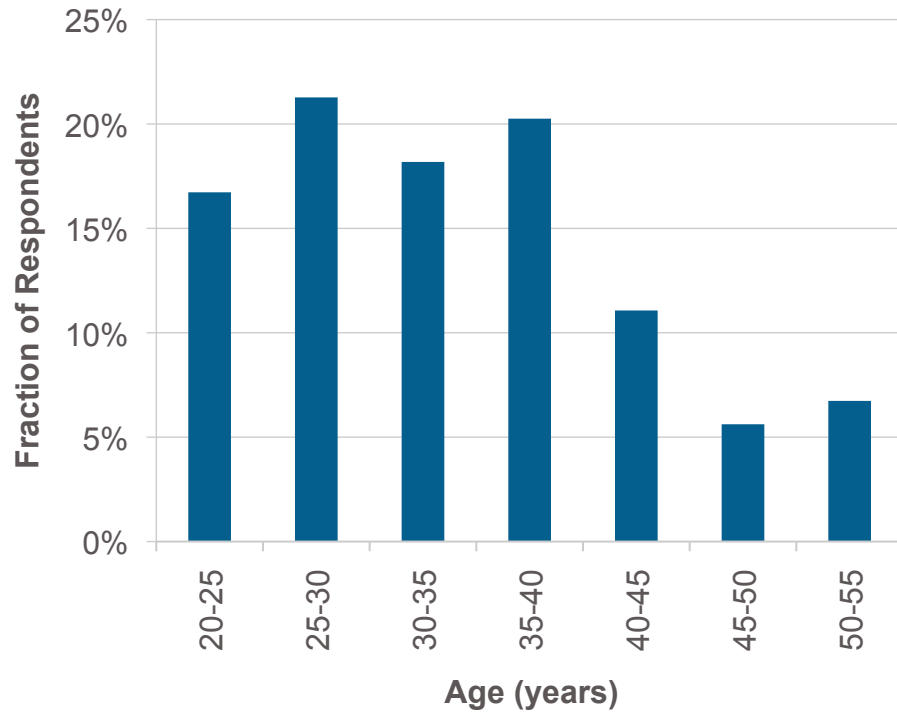
As part of the broader micronutrient survey, basic data (gender, age) was collected on each member of FRAT respondents' households.



# Demographics: Age Distribution of Adult FRAT Respondents

**National Distribution: Men Age**  
n = 173, average = 33.2,  $\sigma = 8.8$

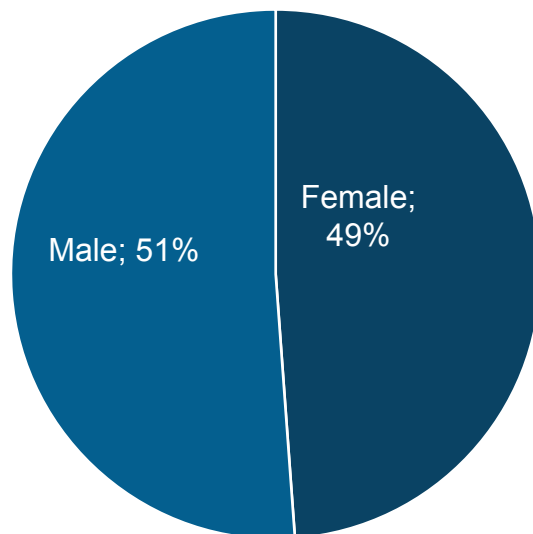
**National Distribution: Women Age**  
n = 234, average = 30.6,  $\sigma = 8.6$



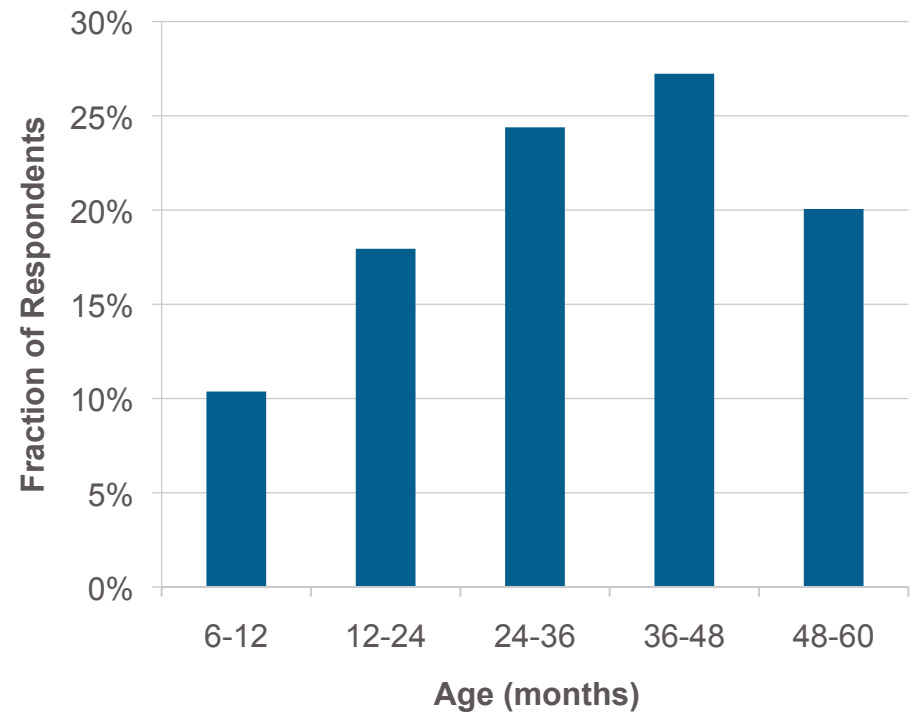
## Demographics: Gender and Age of FRAT Respondents Under Five

As expected, gender was distributed evenly among the random sample of children chosen for the FRAT.

**Gender**  
n = 166



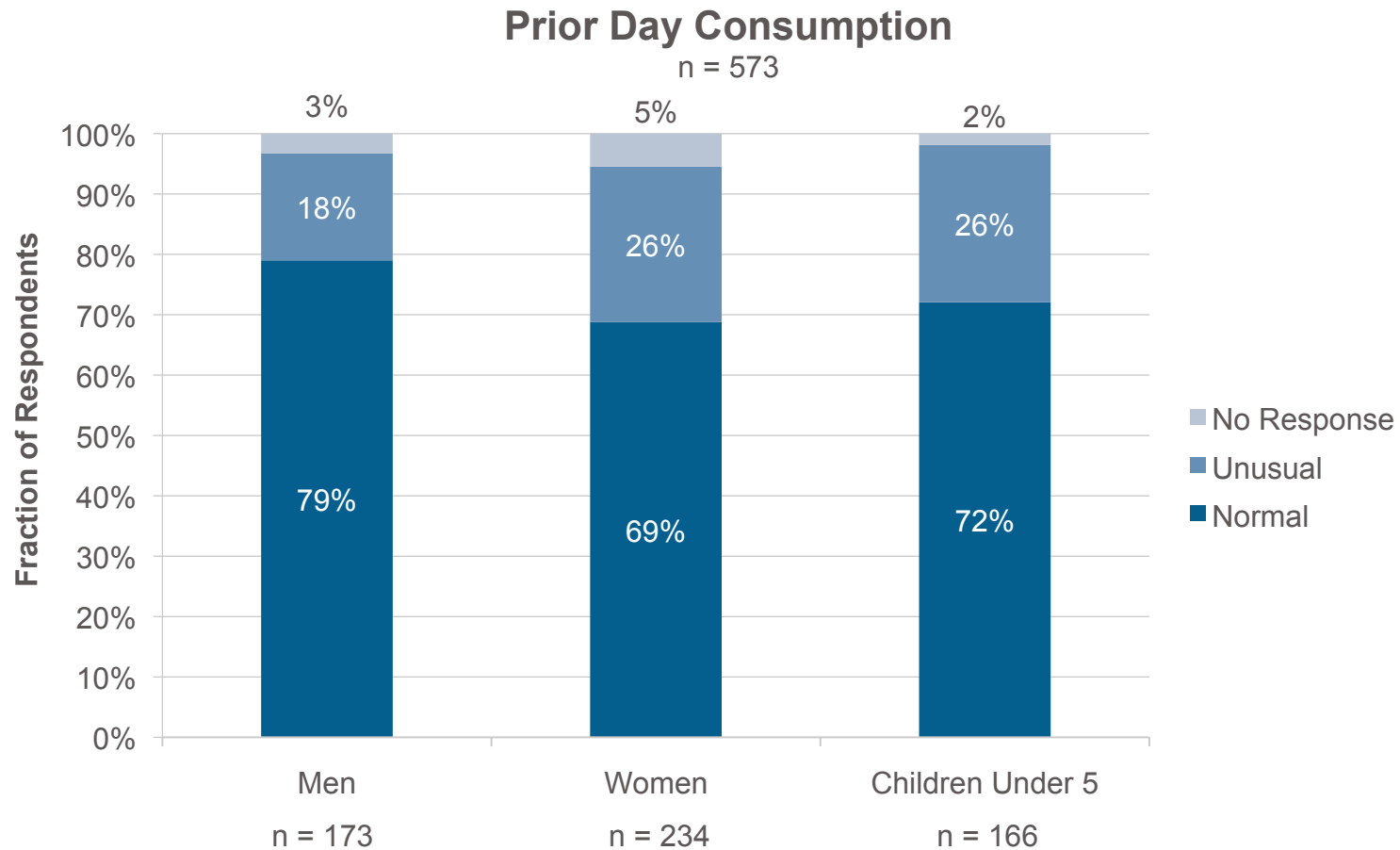
**National Distribution: Child Age**  
n = 166, average = 32.6,  $\sigma = 14.6$





## Demographics: Respondent Evaluation of Prior Day

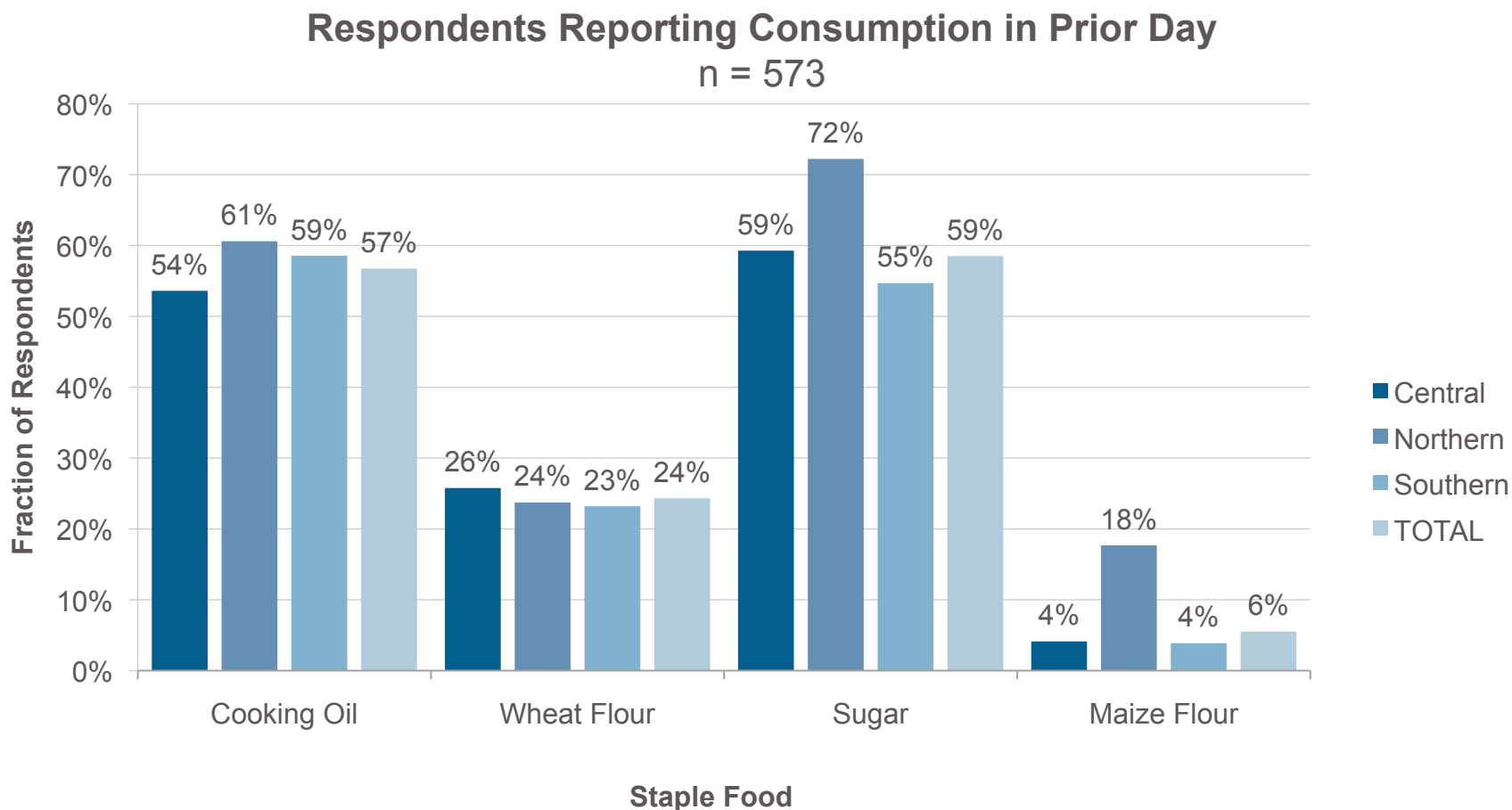
Although respondents were asked to evaluate whether consumption the day prior to their interview had been “unusual in any way” affirmative responses were not excluded from the analysis. Responses are shown here to inform a qualitative assessment of the data set.



Coverage

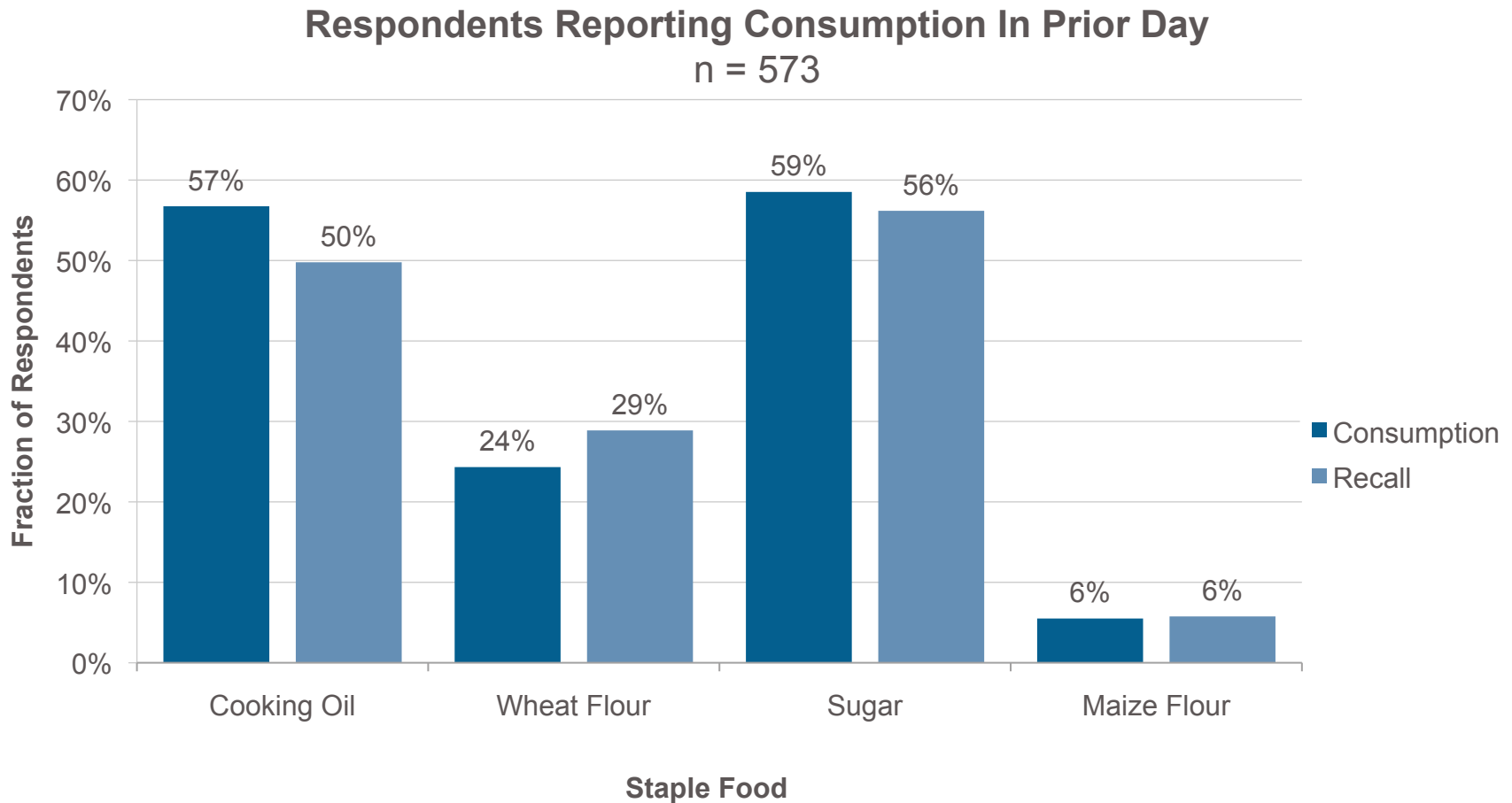
## Coverage

These figures are an aggregate of responses from men, women, and children. Questionnaires referred specifically to centrally processed staples, which likely explains the small number of respondents reporting consumption of maize flour.



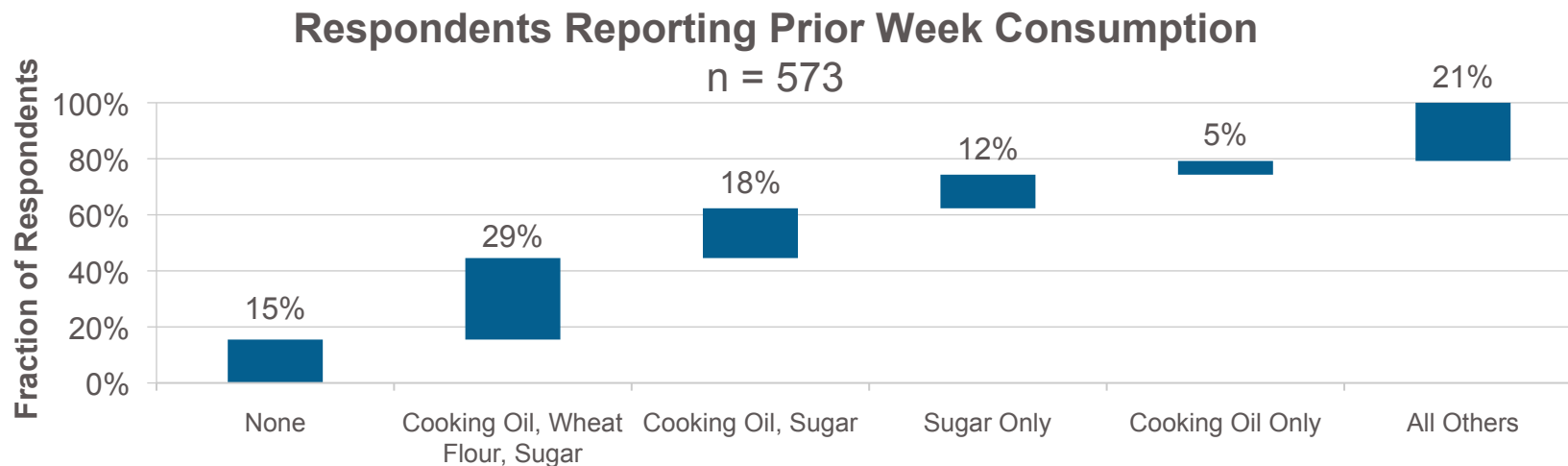
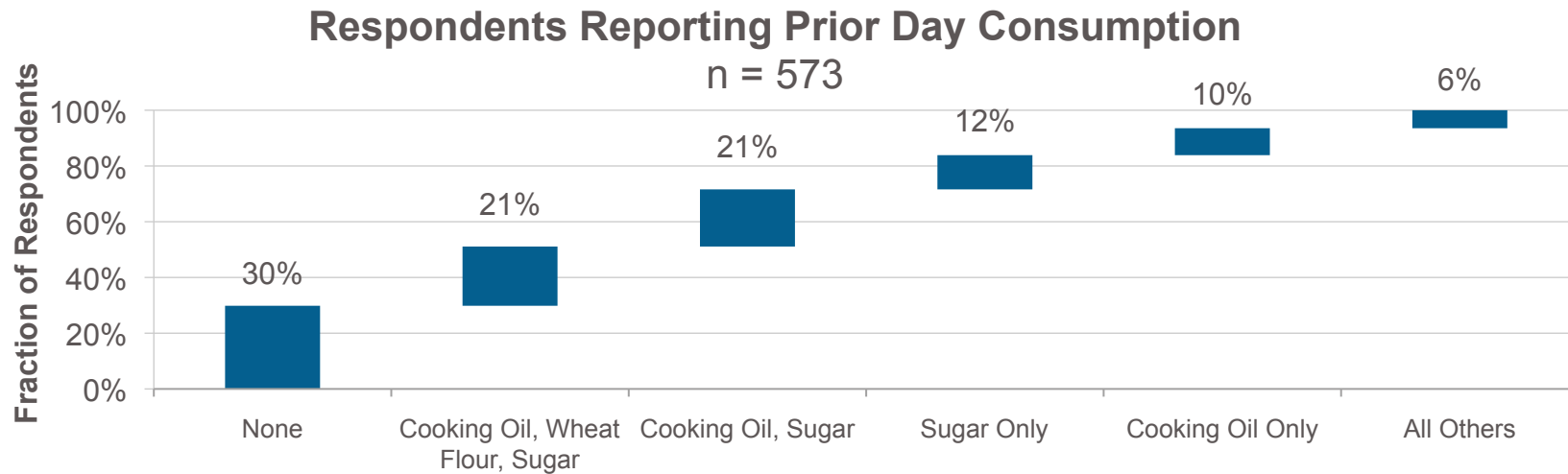
## Coverage: General Recall vs. Reported Consumption

Although respondents were asked whether they had consumed each staple the prior day, this general recall is less accurate than looking at the ingredients contained in the foods each reported consuming the prior day. The latter approach has been used to assess coverage.



## Coverage: Combinations

A significant fraction of respondents reported consumption of none of the four target staples the prior day, however 85% of respondent households report consuming some combination of the four target staples during the prior week.

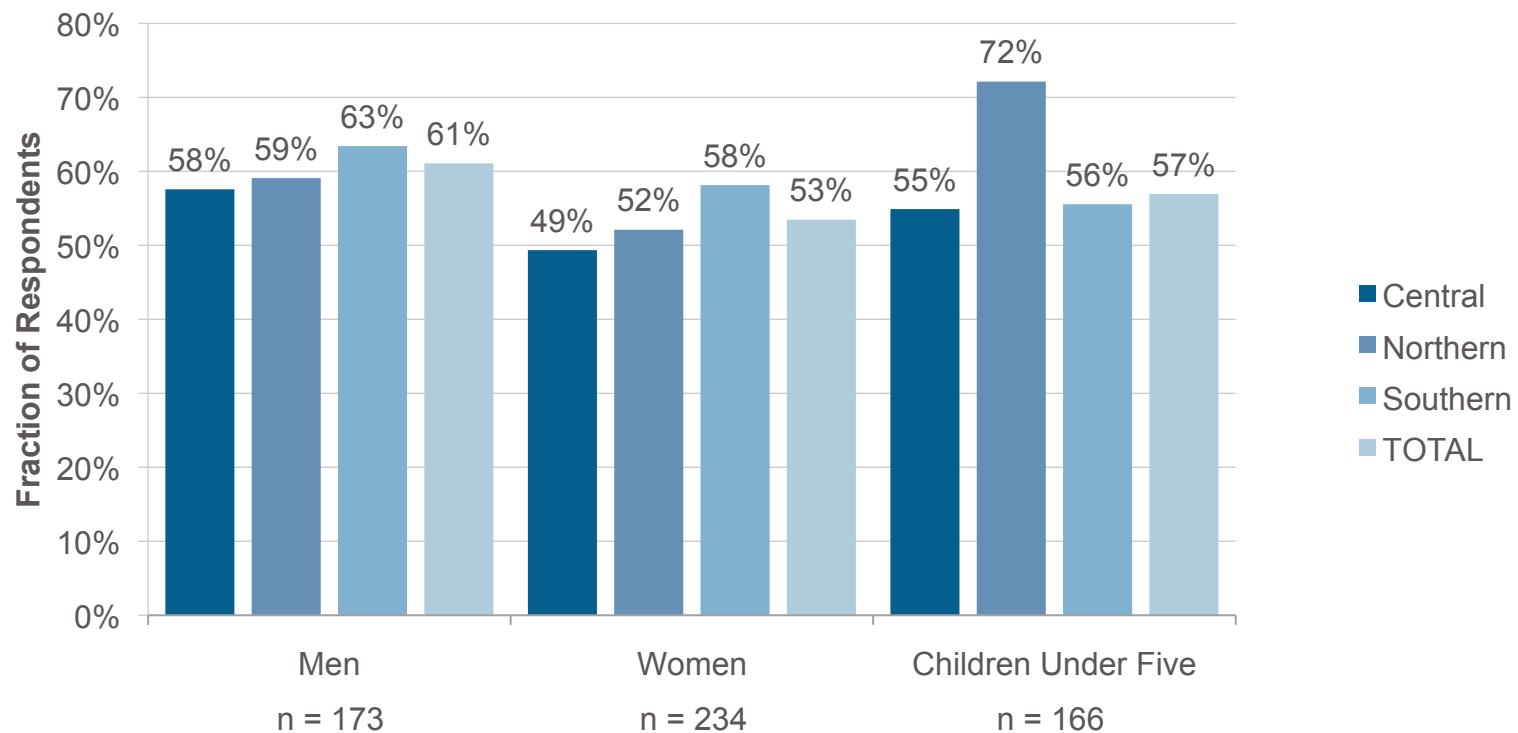


Cooking Oil

## Cooking Oil: Coverage

Coverage is relatively high across all regions and fairly constant among different respondent groups.

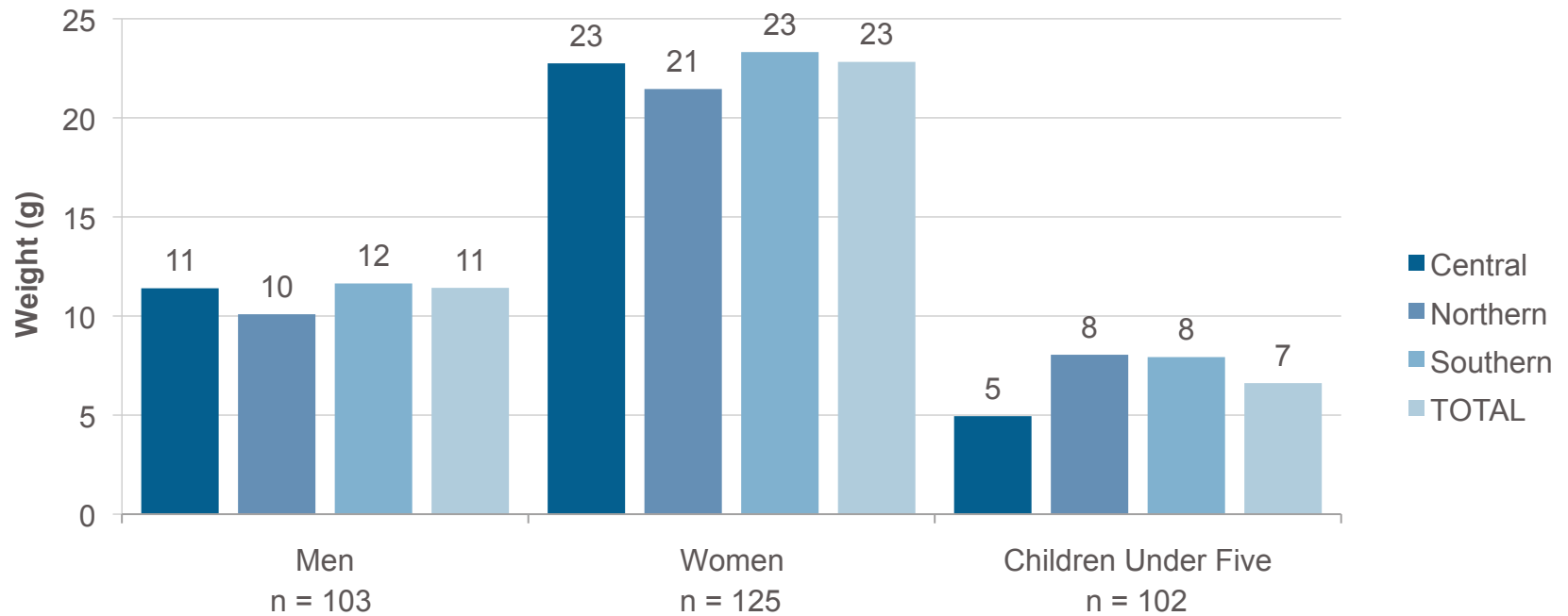
### Respondents Reporting Consumption In Prior Day



## Cooking Oil: Reported Consumption

Because cooking oil is used in recipes, individual consumption was approximated by asking respondents the total oil used in the recipe, then dividing by the number of individuals fed.

### Average Amount Consumed In Prior Day

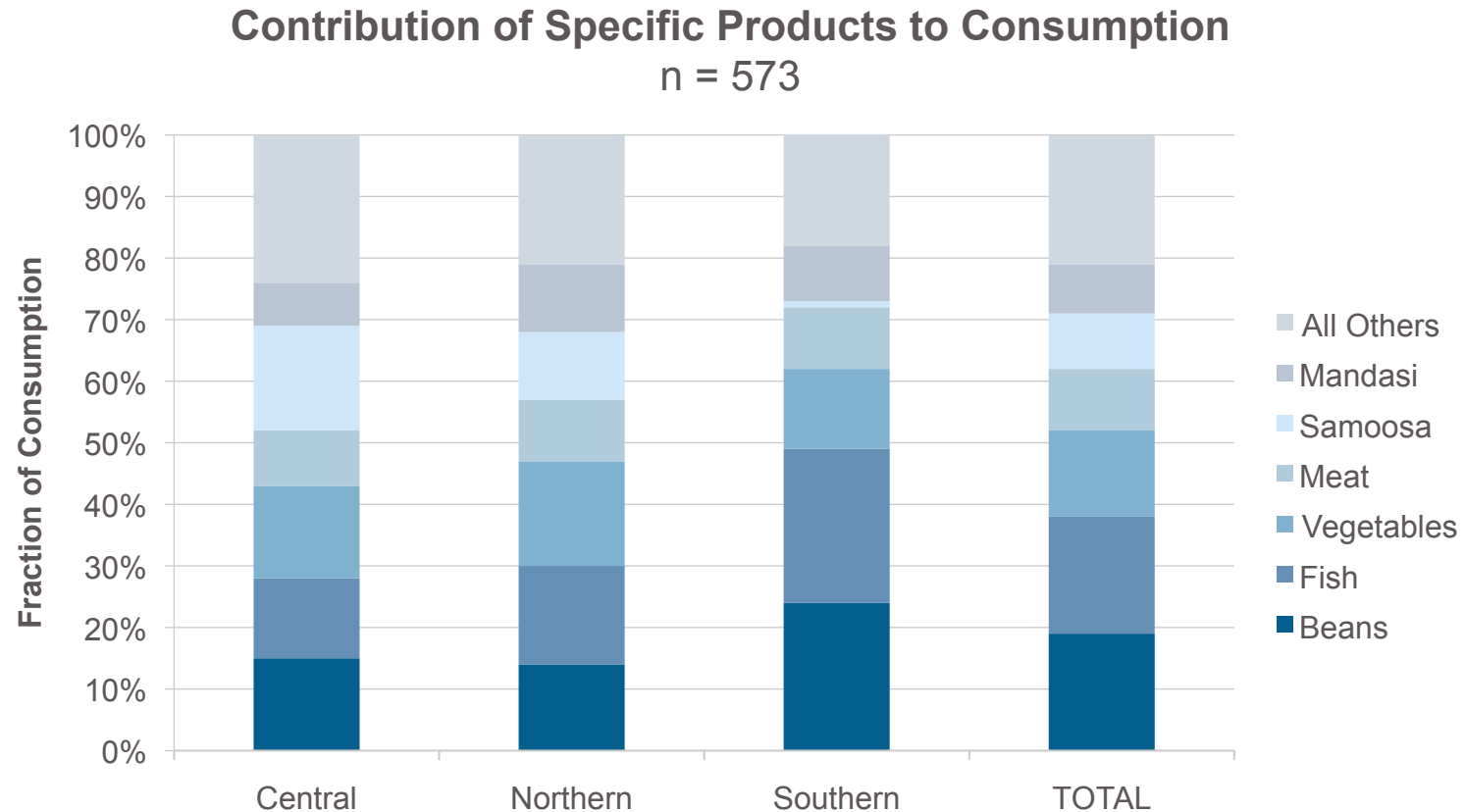


Distribution of Amount Consumed In Prior Day												
	Men				Women				Children Under Five			
Percentile	5%	10%	90%	95%	5%	10%	90%	95%	5%	10%	90%	95%
Weight (g)	2	2	28	37	5	7	41	49	1	2	16	19



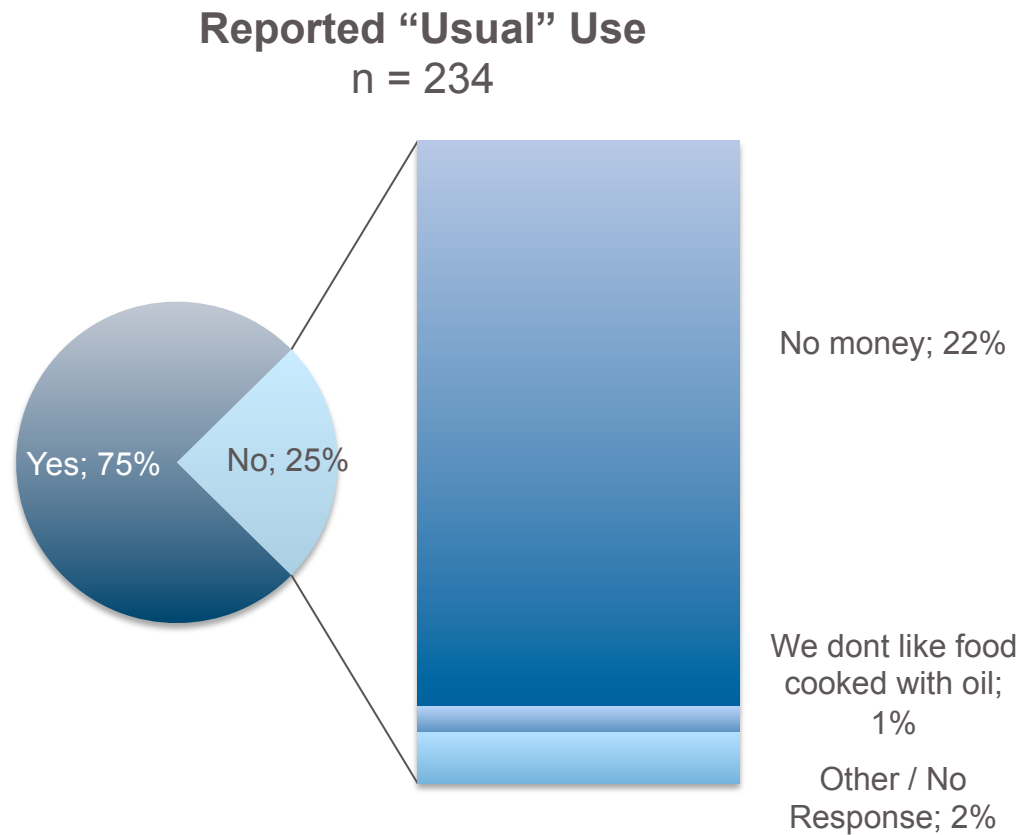
## Cooking Oil: Contribution of Specific Products

Six types of food are responsible for approximately 80% of household oil consumption. Fraction of consumption is based on total amount of cooking oil consumption reported by survey respondents in each region.



## Cooking Oil: Household Consumption Patterns

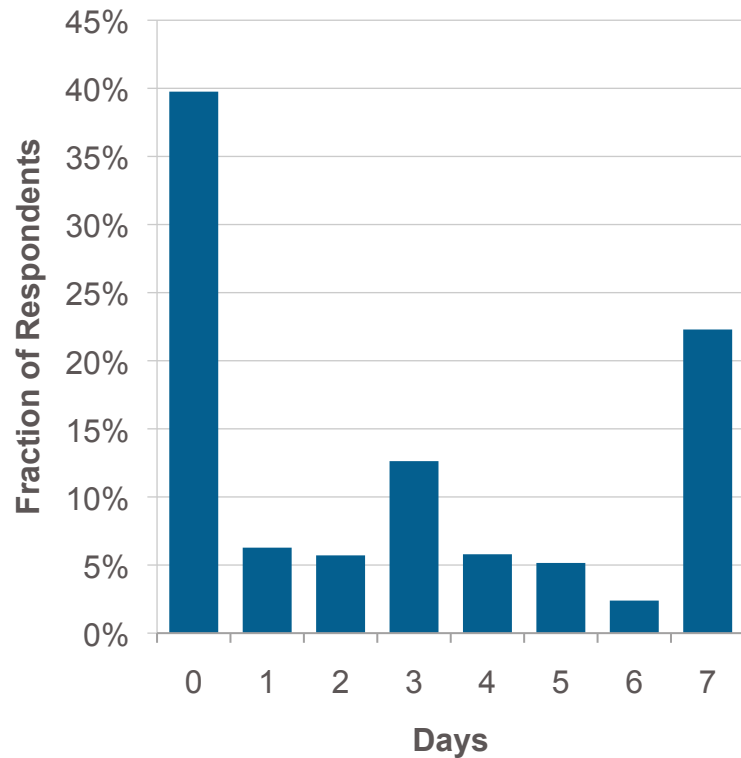
Lack of funds was by far the most frequently cited reason for not consuming cooking oil.



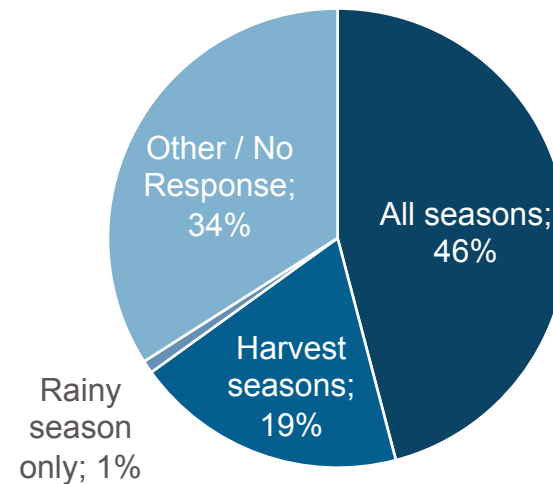
## Cooking Oil: Household Consumption Patterns Continued

Data on weekly and seasonal consumption was gathered for all survey respondents, allowing a household-level calculation.

### Reported Days Used Past Week n = 573



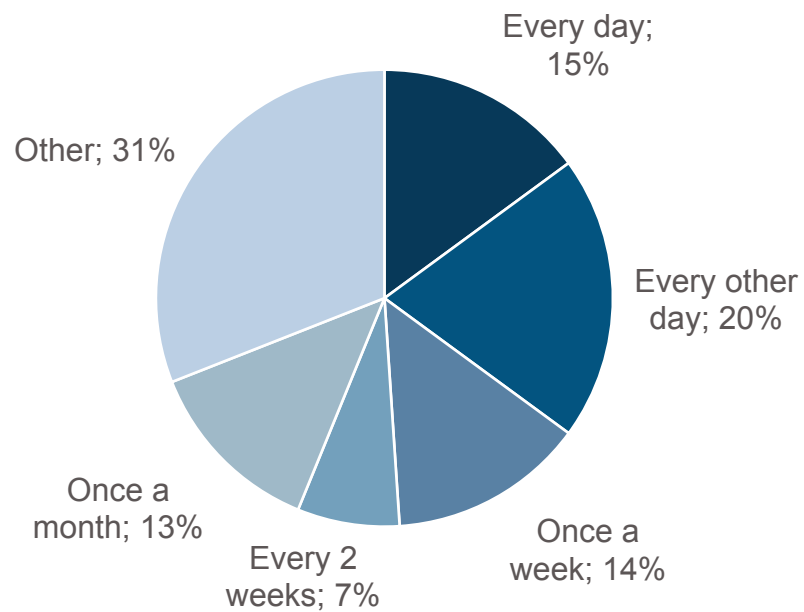
### Reported Seasons Used n = 573



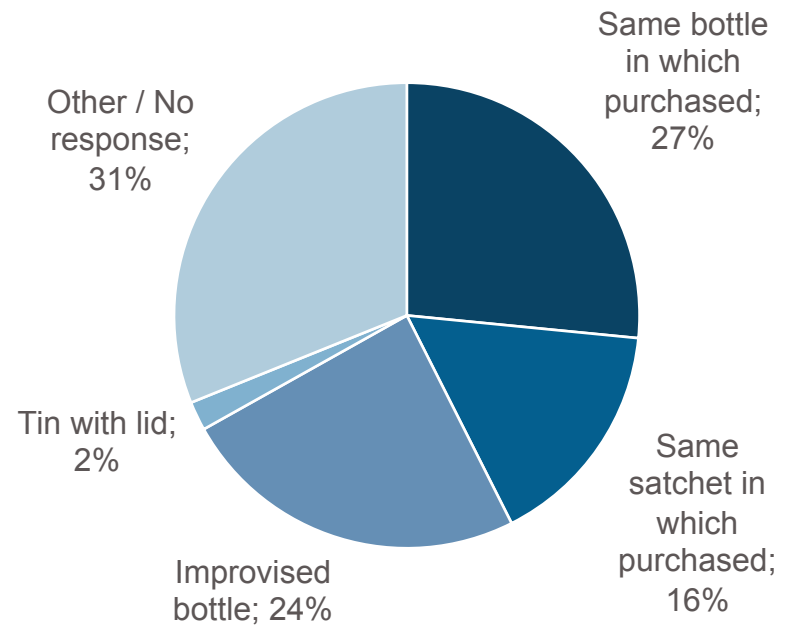
## Cooking Oil: Purchase and Storage Patterns

Only women were queried regarding purchase and storage patterns.

**Purchase Frequency**  
n = 234

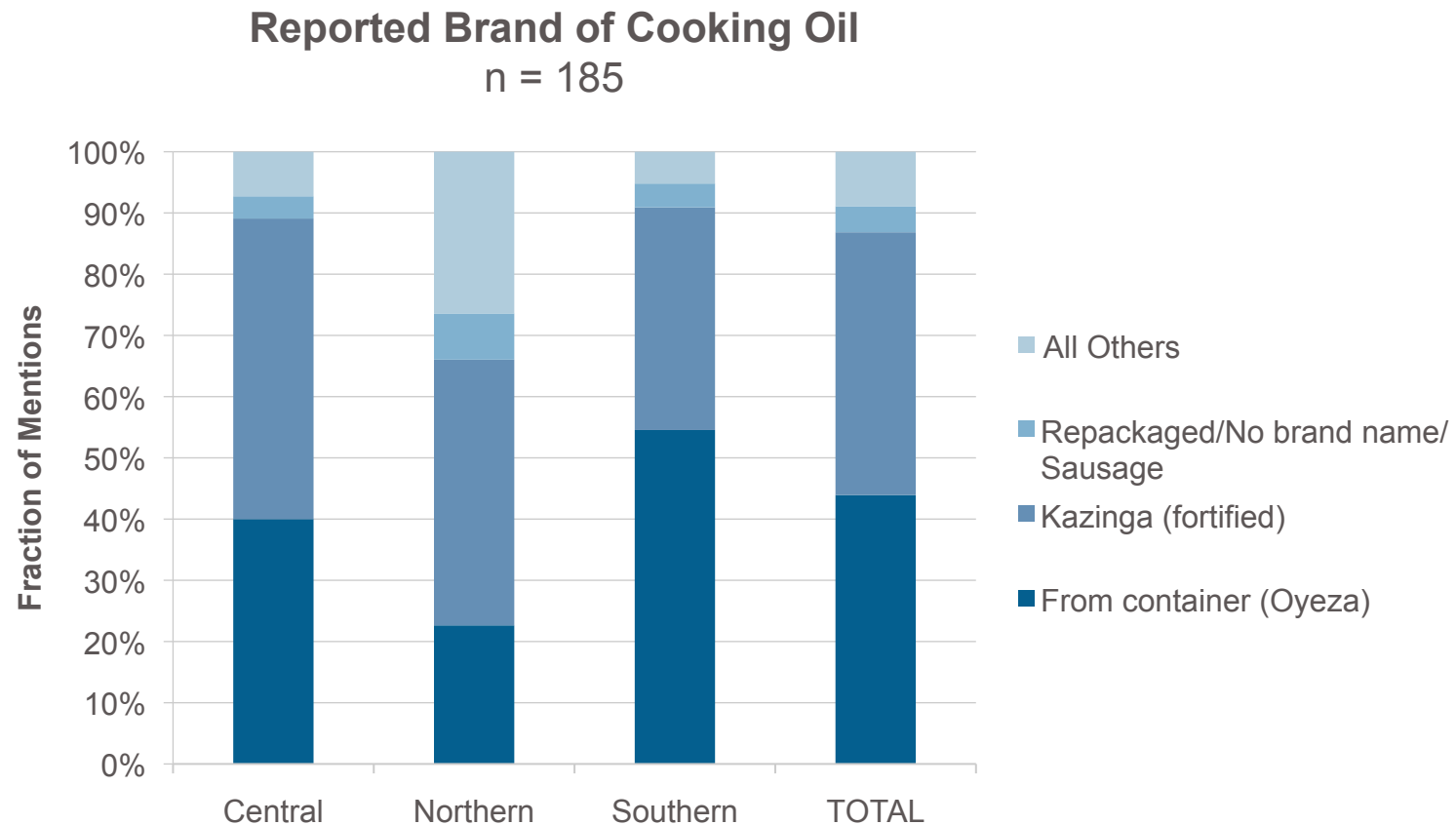


**Storage**  
n = 234



## Cooking Oil: Brand Popularity

Women were also asked to list the brands of cooking oil used in their households. Frequency of mention provides a rough proxy for brand popularity.

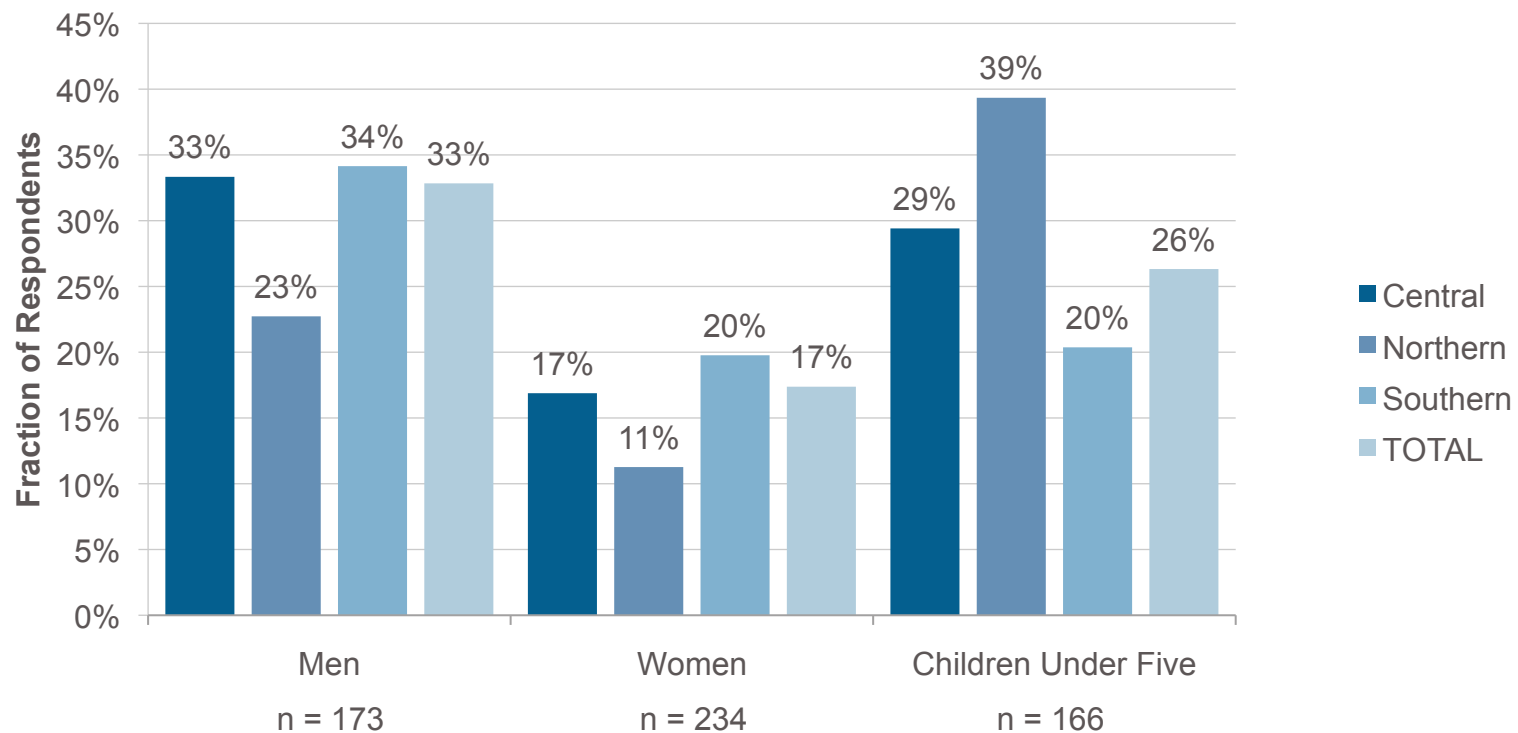


Wheat Flour

## Wheat Flour: Coverage

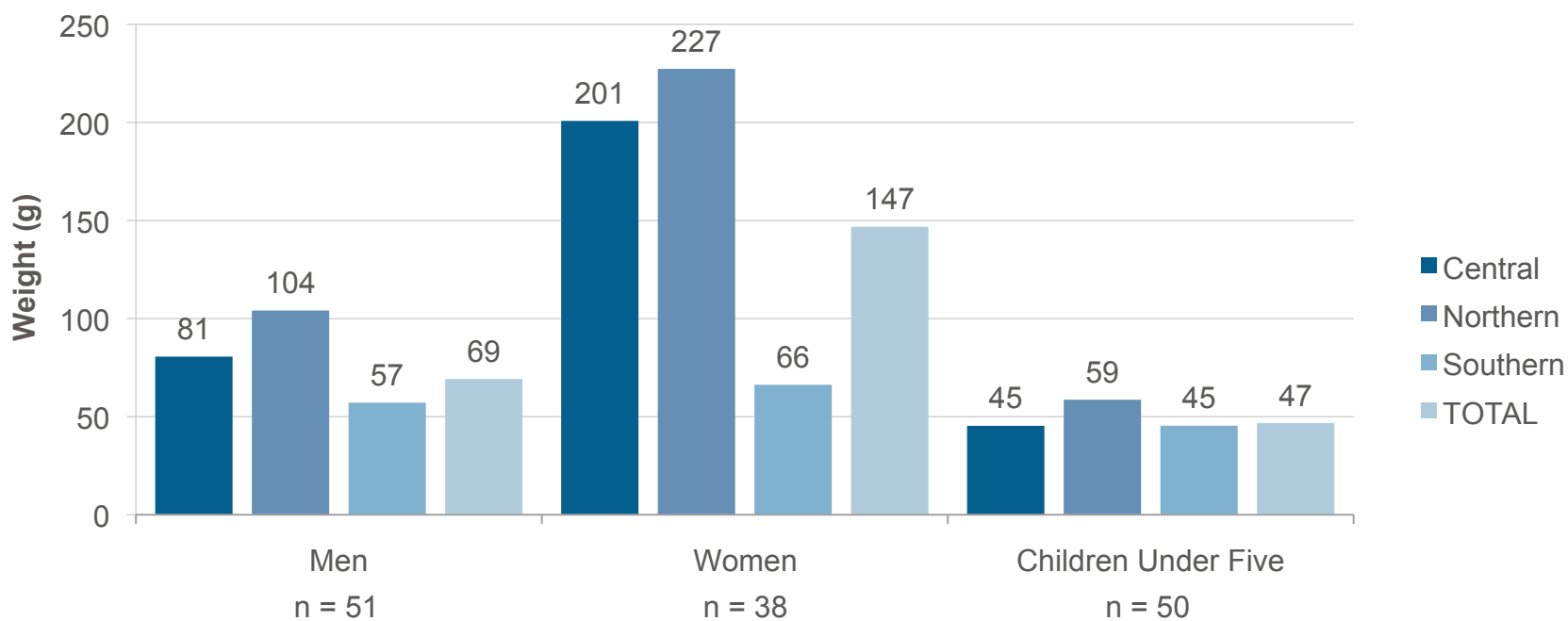
Consumption of wheat flour is not as wide spread as that of some other staples and is generally more common among men than women and children.

### Respondents Reporting Consumption In Prior Day



# Wheat Flour: Reported Consumption

## Average Amount Consumed In Prior Day



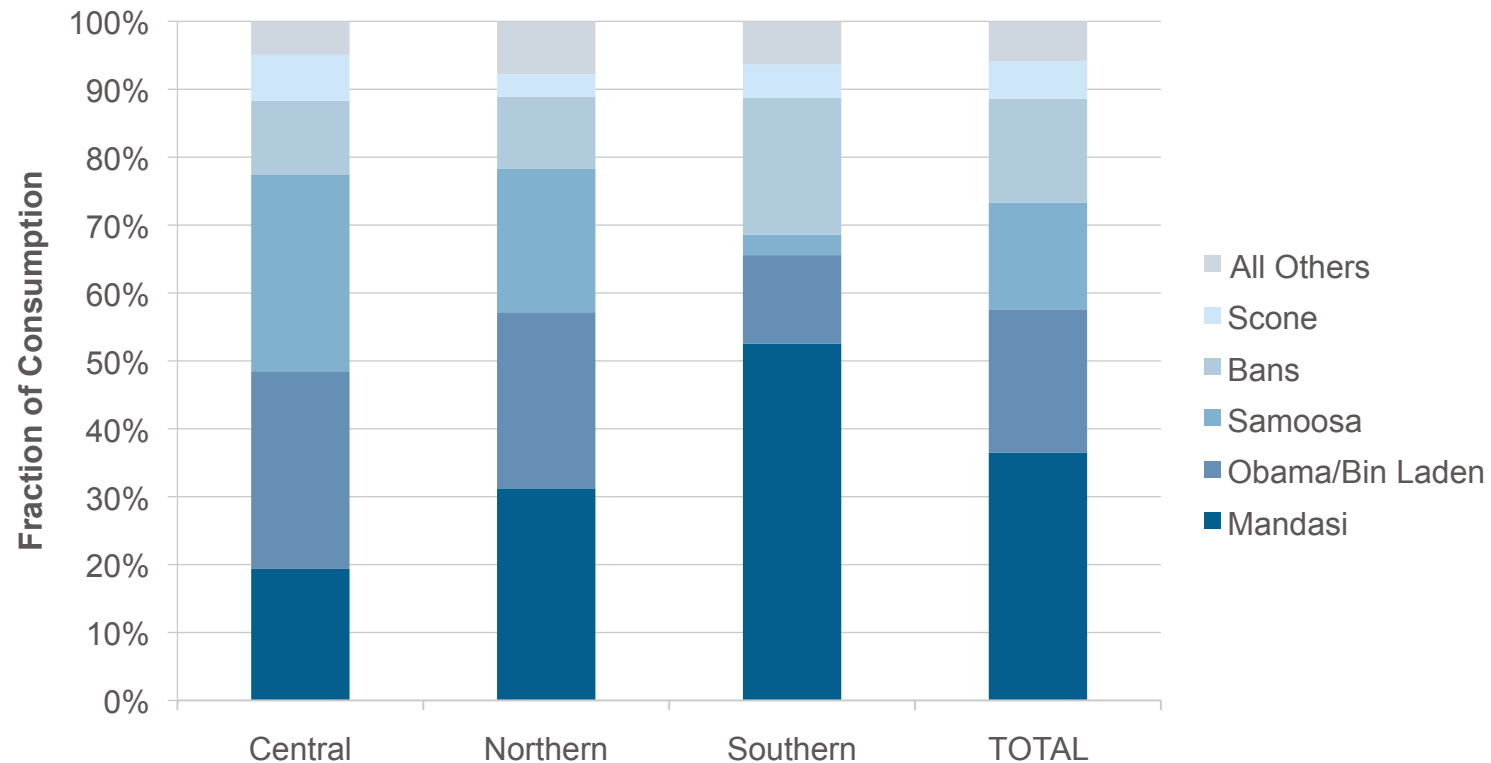
Distribution of Amount Consumed In Prior Day												
	Men				Women				Children Under Five			
Percentile	5%	10%	90%	95%	5%	10%	90%	95%	5%	10%	90%	95%
Weight (g)	12	12	136	142	25	25	220	294	10	20	75	99



## Wheat Flour: Contribution of Specific Products

Fraction of consumption is based on total amount of wheat flour consumption reported by survey respondents in each region. Only three foods account for roughly 70% of consumption.

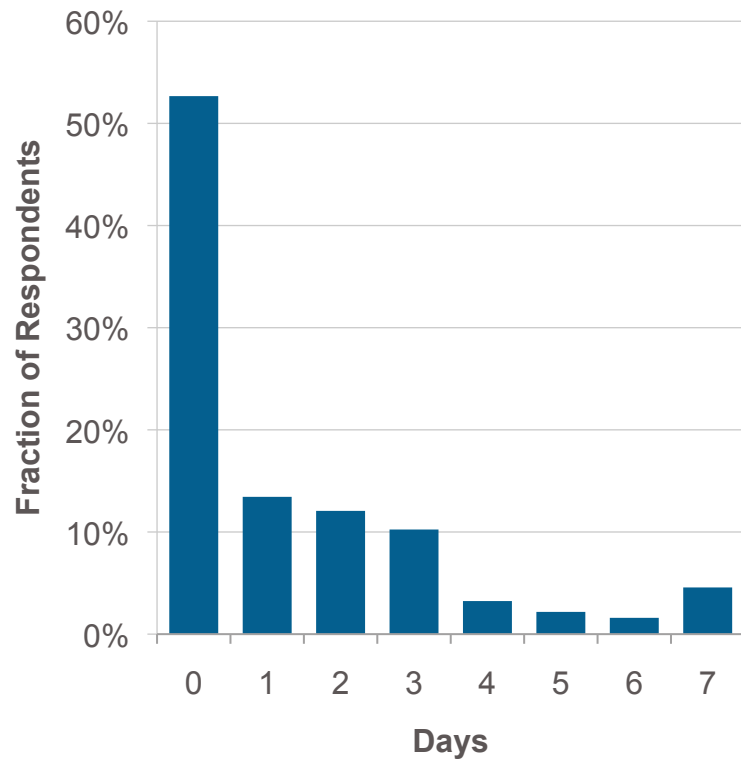
### Contribution of Specific Products to Consumption



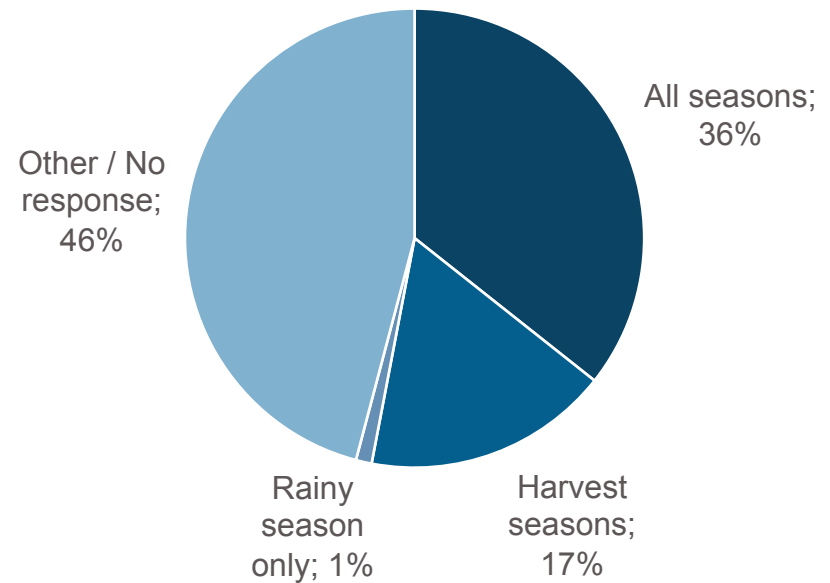
## Wheat Flour: Household Consumption Patterns

Data on weekly and seasonal consumption was gathered for all survey respondents, allowing a household-level calculation.

### Reported Days Used Past Week n = 573



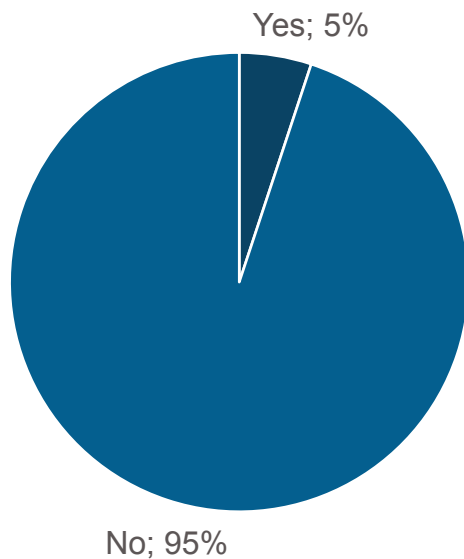
### Reported Seasons Used n = 573



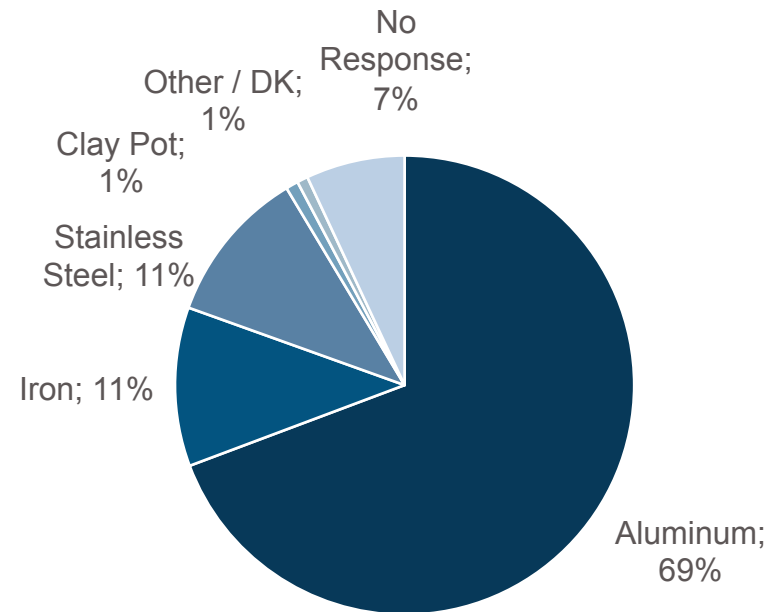
## Wheat Flour: Presence In Home, Type of Cooking Pot

Only women were queried about wheat flour presence in home and type of cooking pot used.

**Presence in Home**  
n = 234



**Type of Cooking Pot Used**  
n = 234

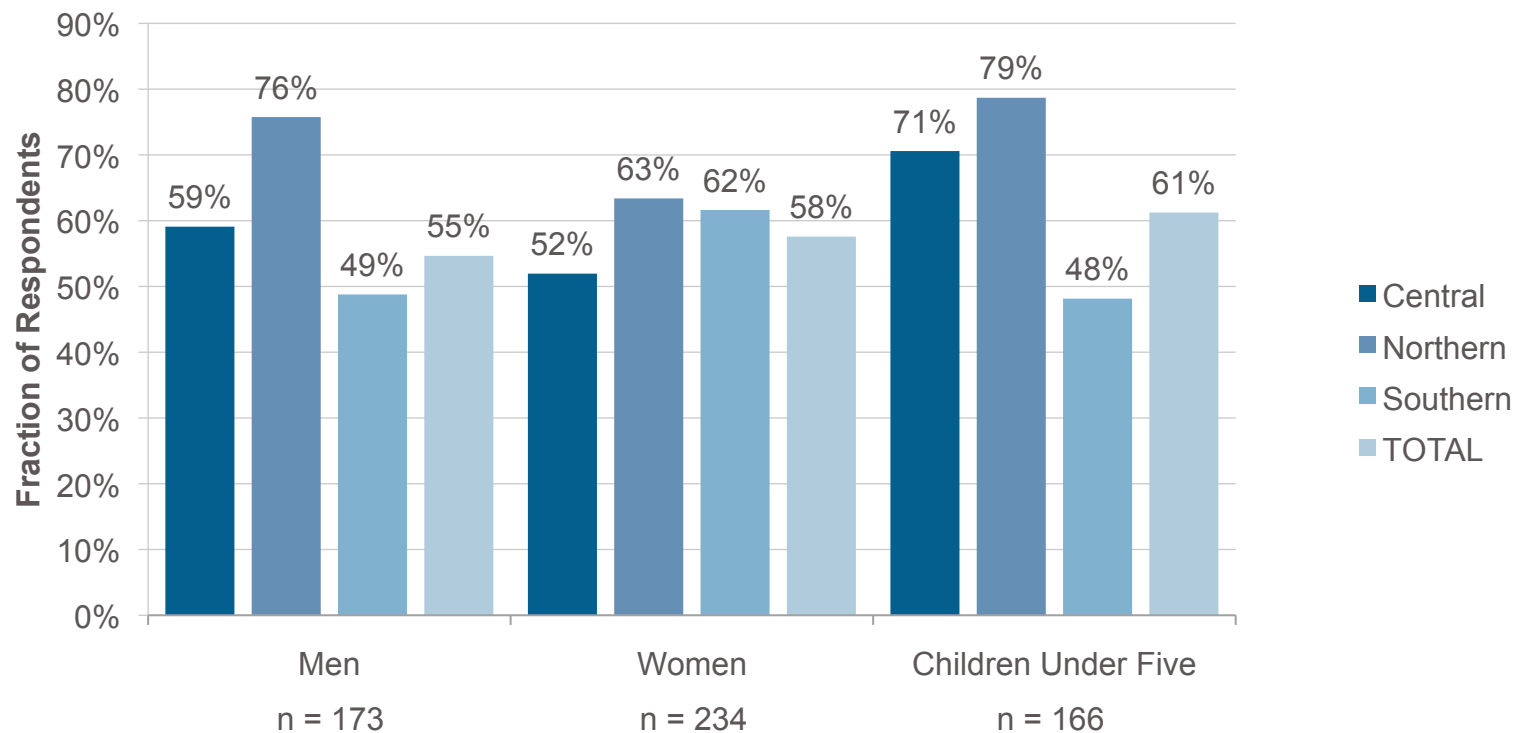


Sugar

## Sugar: Coverage

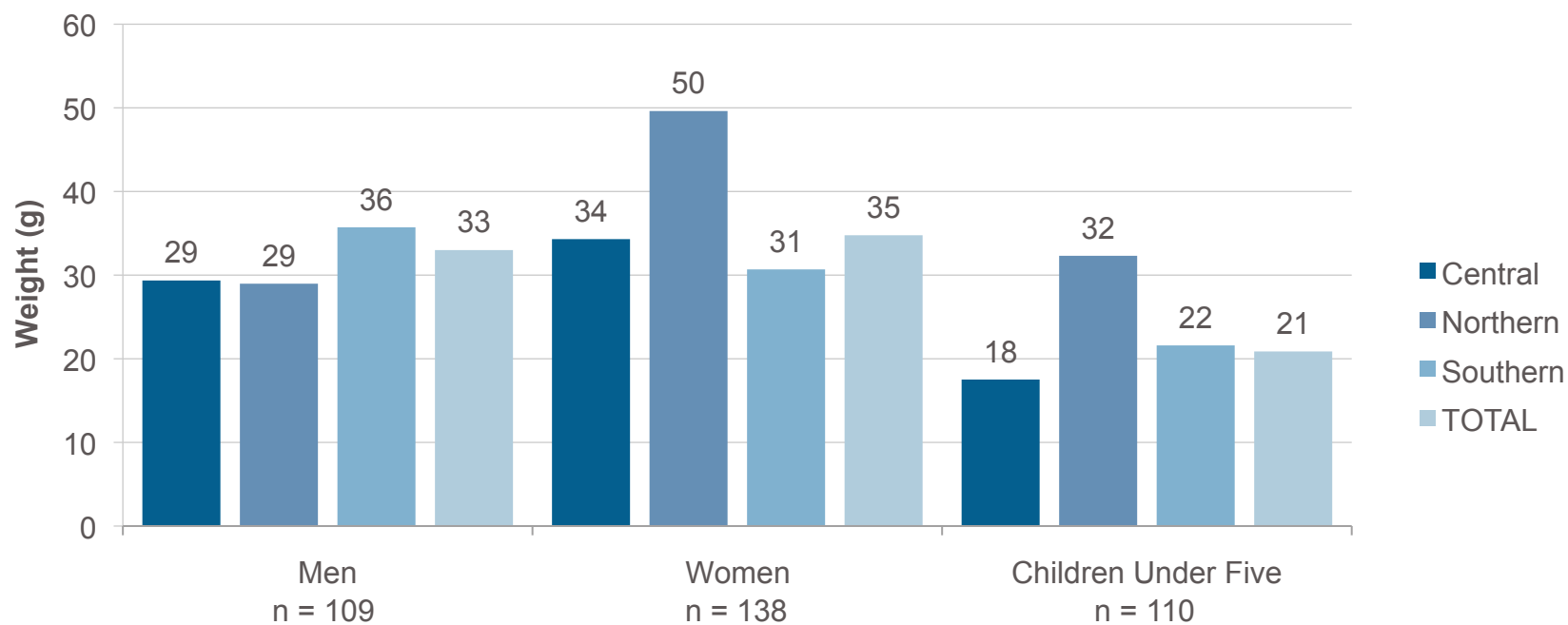
Consumption of sugar is slightly more widespread in the Northern region, but common throughout the country.

### Respondents Reporting Consumption In Prior Day



# Sugar: Reported Consumption

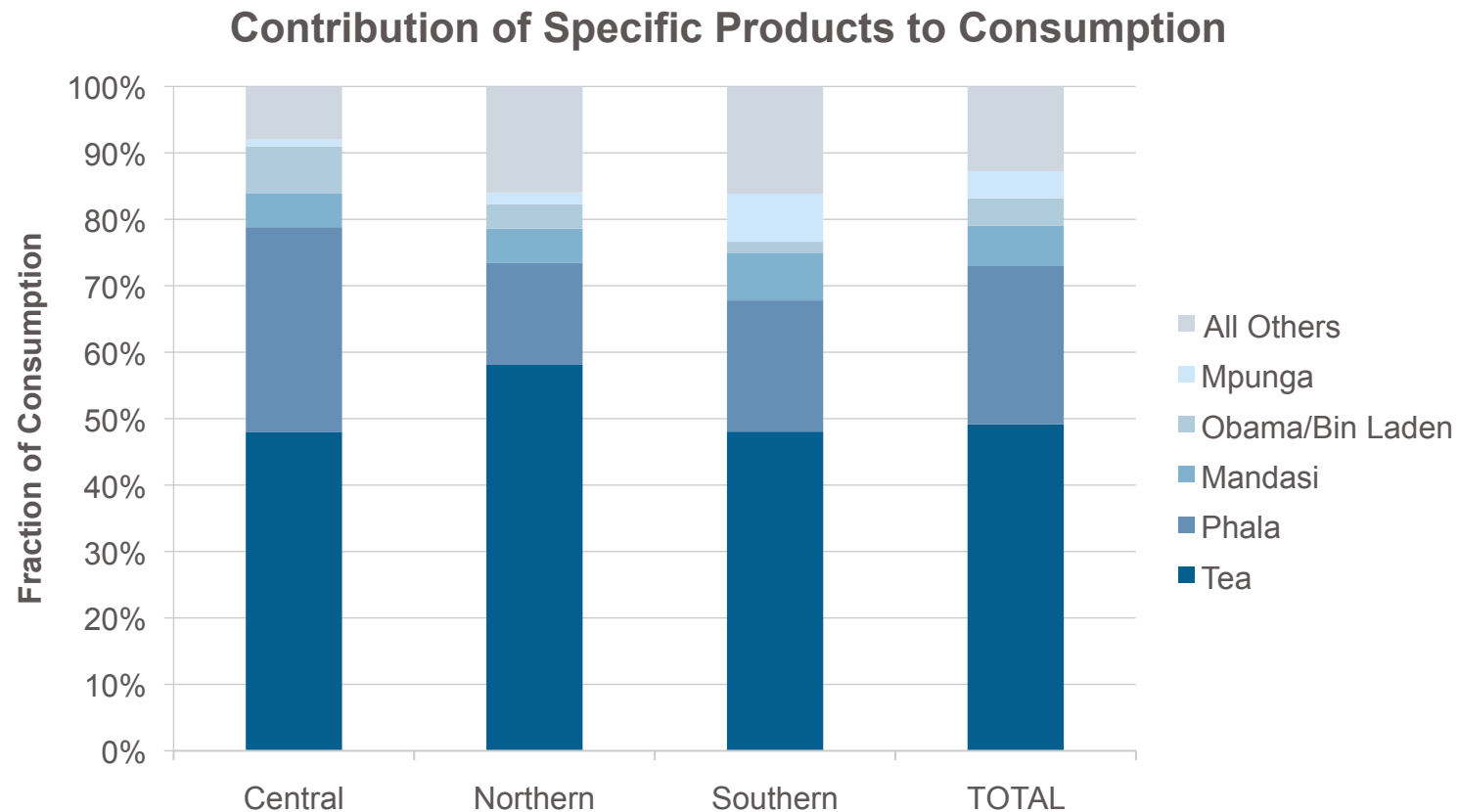
## Average Amount Consumed In Prior Day



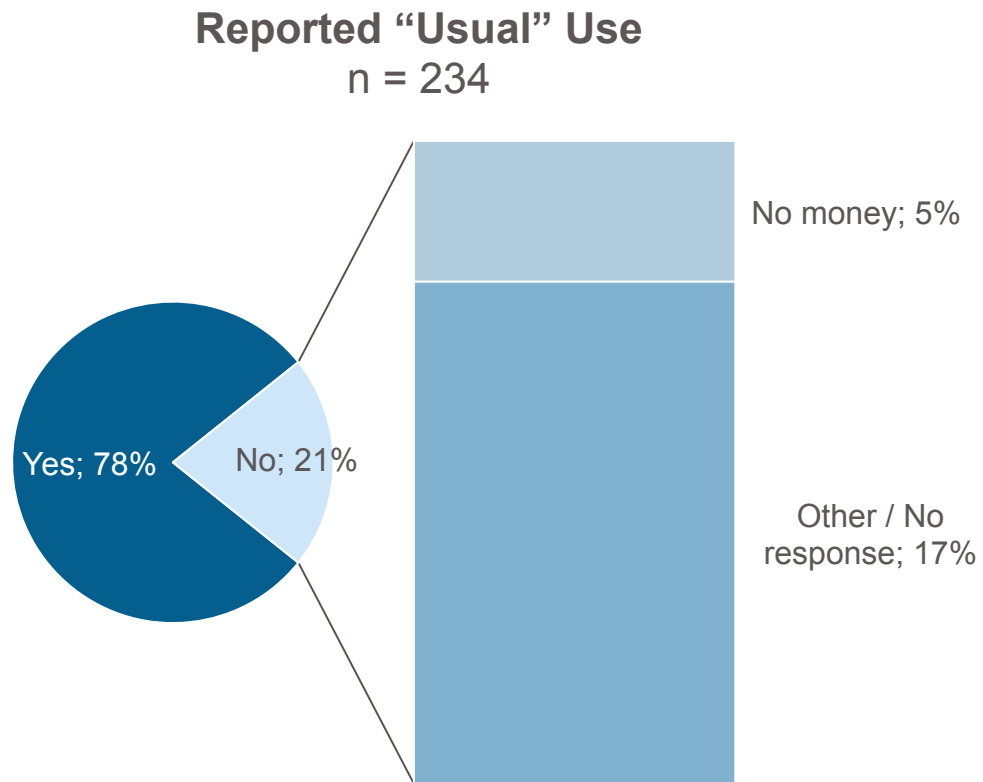
Distribution of Amount Consumed In Prior Day												
	Men				Women				Children Under Five			
Percentile	5%	10%	90%	95%	5%	10%	90%	95%	5%	10%	90%	95%
Weight (g)	11	12	66	73	10	12	67	88	6	6	35	43

## Sugar: Contribution of Specific Products

Tea is by far the largest single source of sugar consumption. Fraction of consumption is based on total amount of sugar consumption reported by survey respondents in each region.



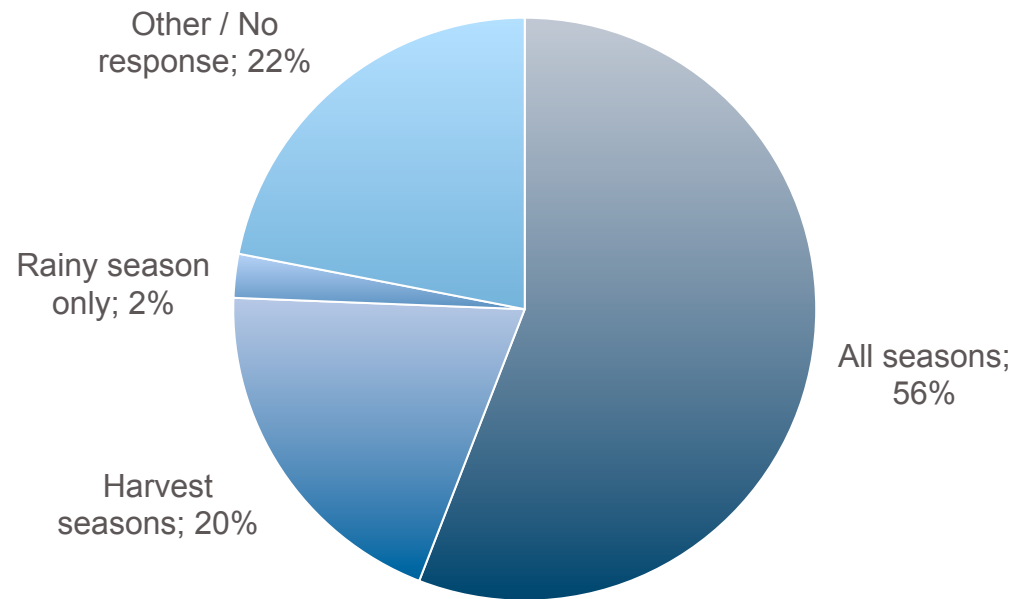
## Sugar: Household Consumption Patterns





## Sugar: Household Consumption Patterns Continued

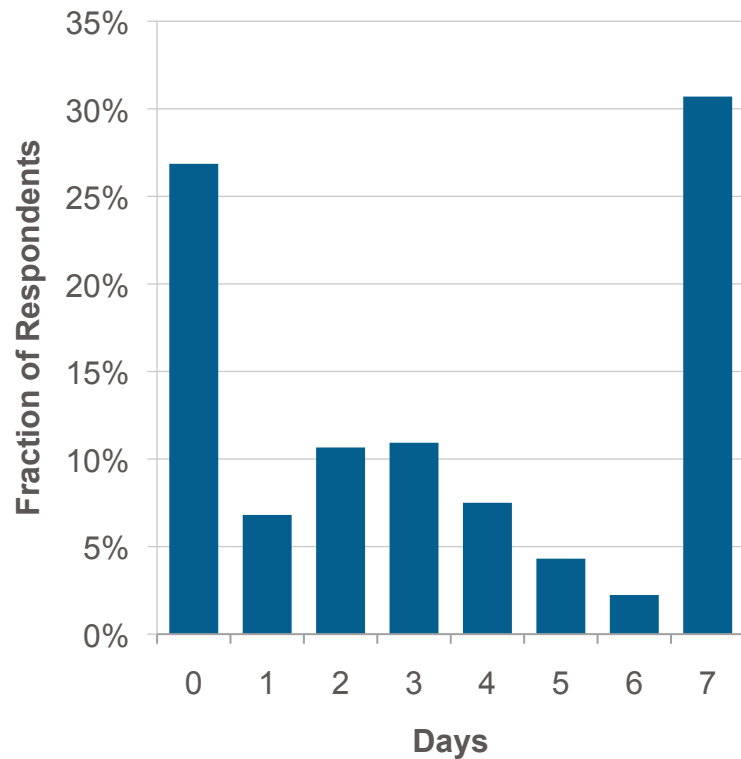
**Reported Seasons Sugar “Usually In House”**  
n = 234



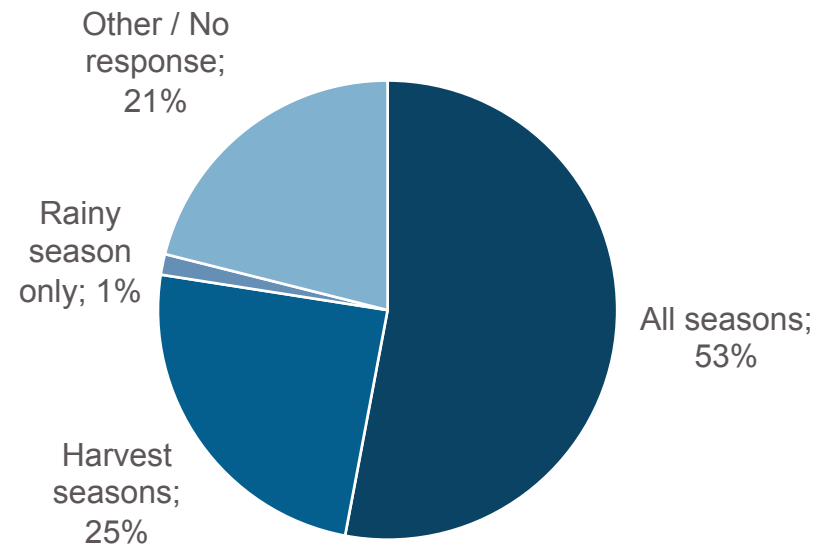
## Sugar: Household Consumption Patterns

Data on weekly and seasonal consumption was gathered for all survey respondents, allowing a household-level calculation.

### Reported Days Used Past Week n = 573



### Reported Seasons Used n = 573

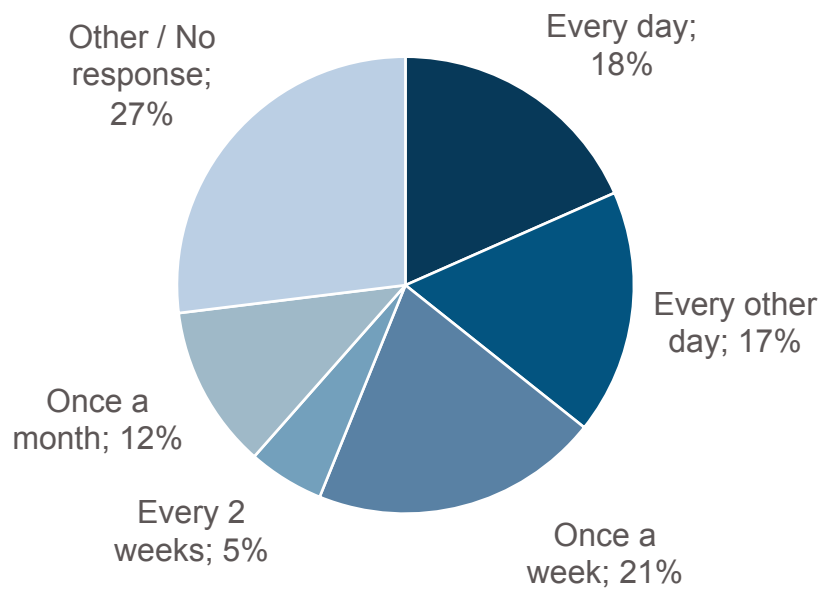


# Sugar: Purchase and Storage Patterns

Only women were queried about purchase and storage patterns.

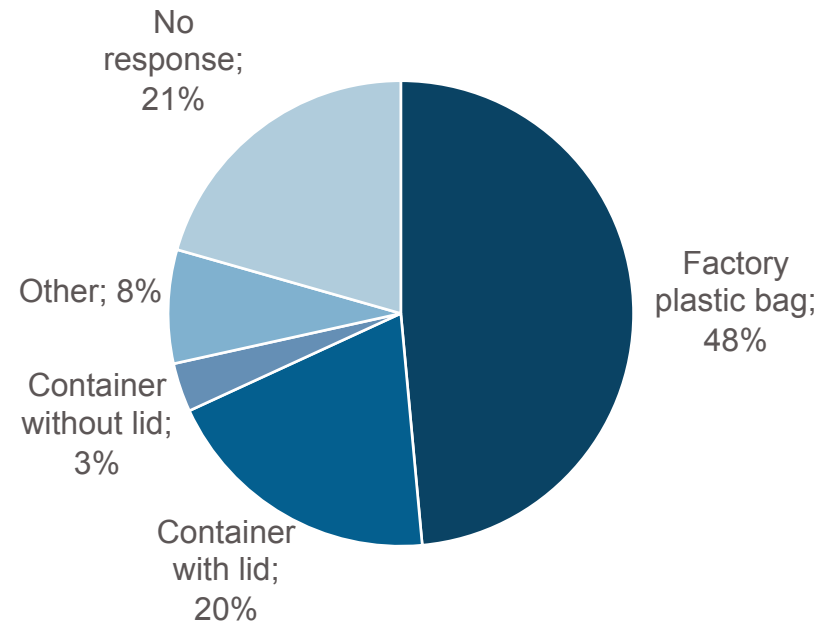
### Purchase Frequency

n = 234



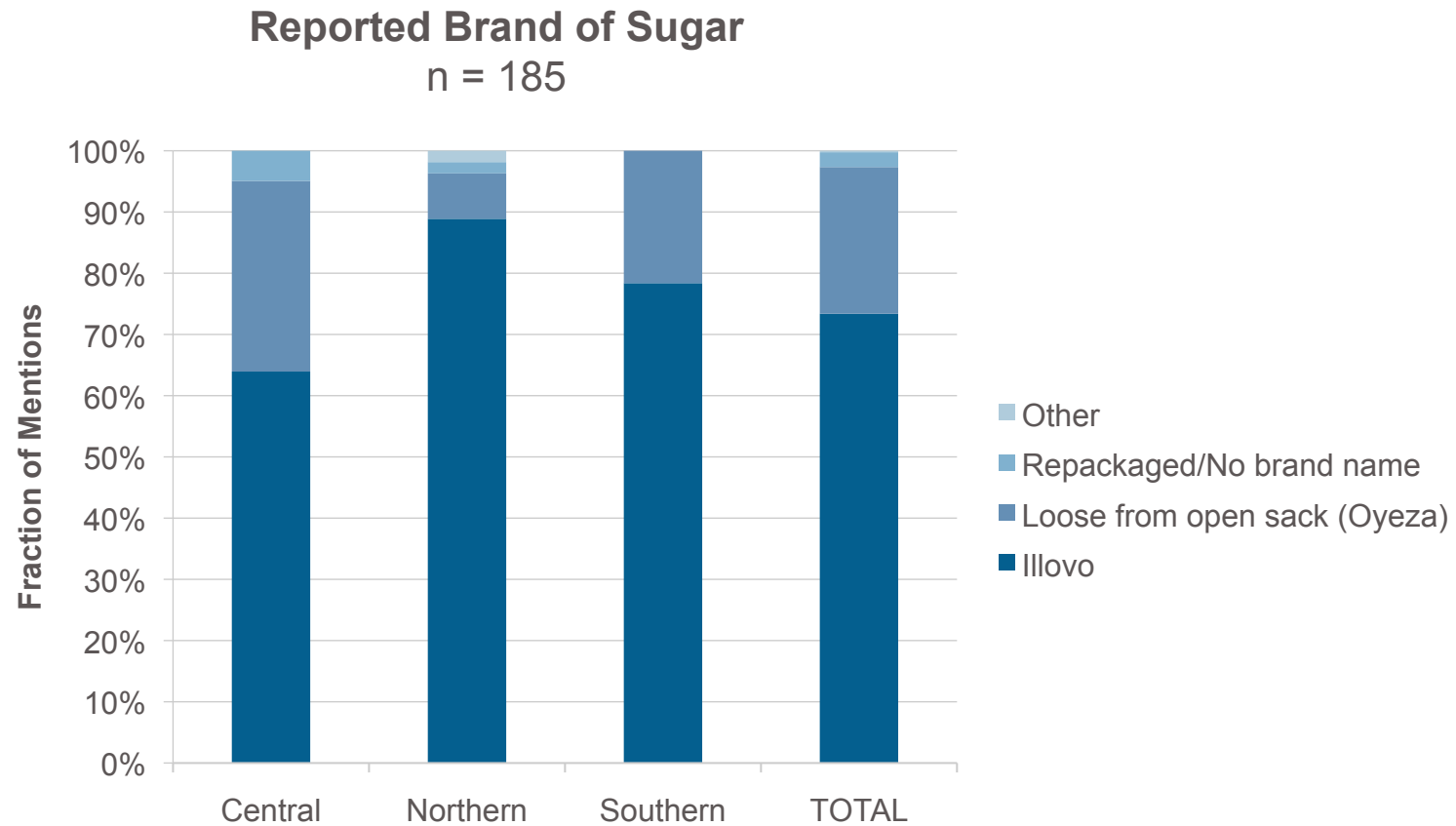
### Storage

n = 234



## Sugar: Brand Popularity

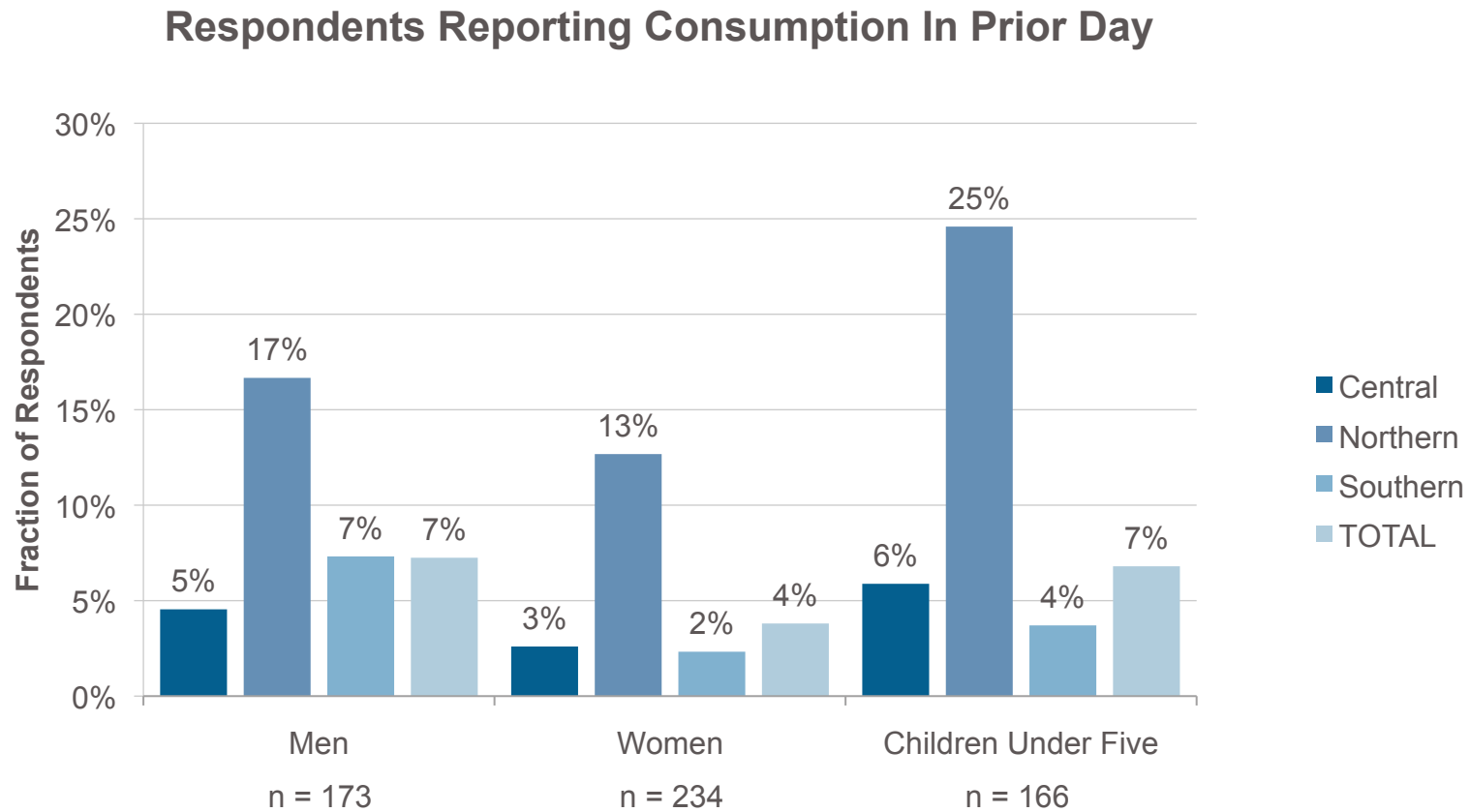
Women were also asked to list the brands of sugar used in their households. Frequency of mention provides a rough proxy for brand popularity.



Maize Flour

## Maize Flour: Coverage

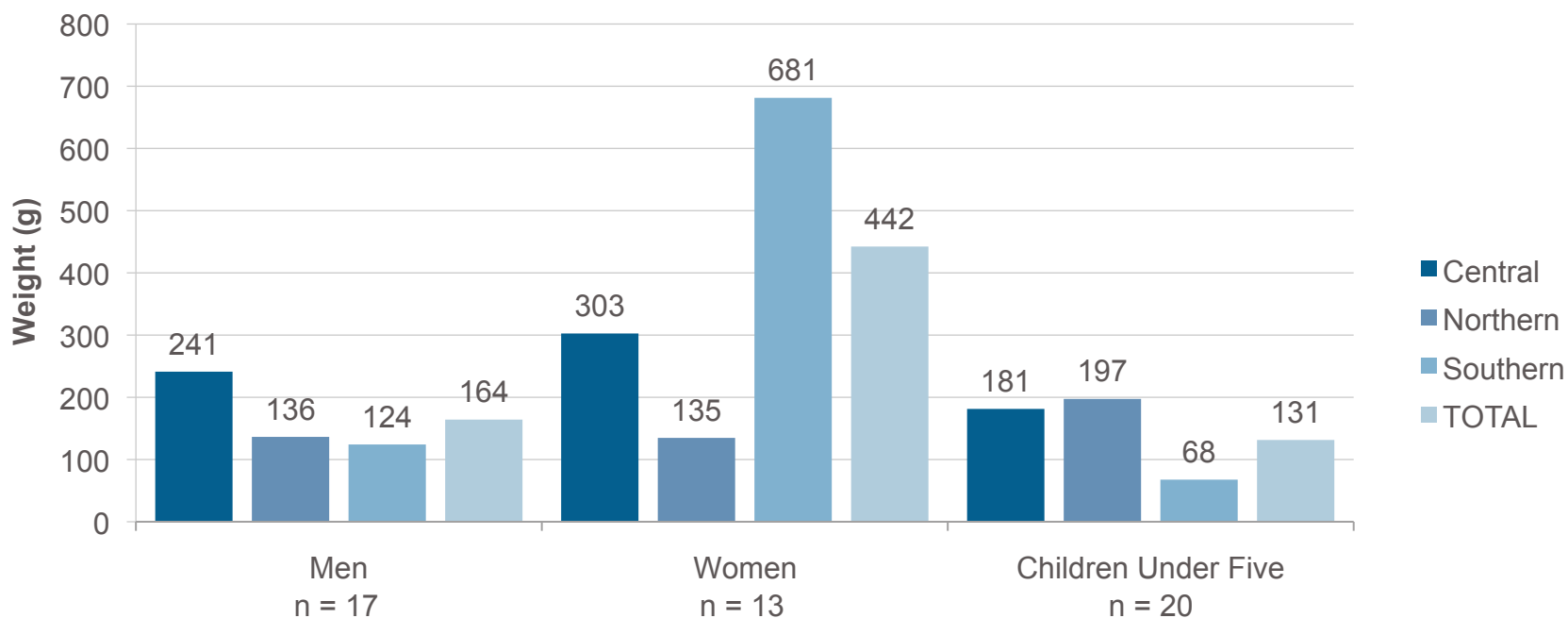
Consumption of centrally process maize flour appears to be slightly more common in the Northern region, but is not widespread.



## Maize Flour: Reported Consumption

With such a limited number of responses data on quantity should be regarded as directional only.

### Average Amount Consumed In Prior Day

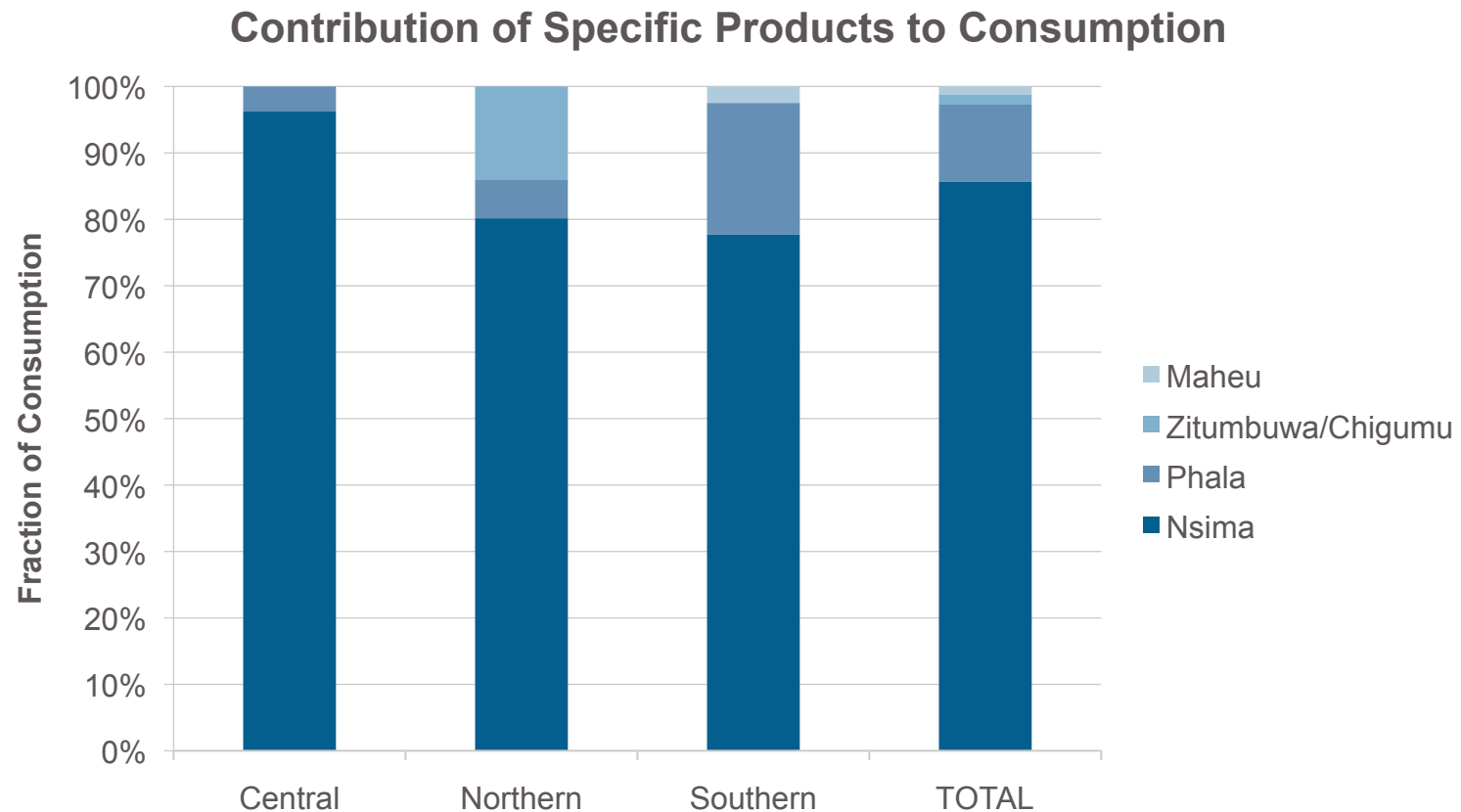


### Distribution of Amount Consumed In Prior Day

Percentile	Men				Women				Children Under Five			
	5%	10%	90%	95%	5%	10%	90%	95%	5%	10%	90%	95%
Weight (g)	46	46	409	409	111	111	383	383	43	43	307	307

## Maize Flour: Contribution of Specific Products

Fraction of consumption is based on total amount of maize flour consumption reported by survey respondents in each region.

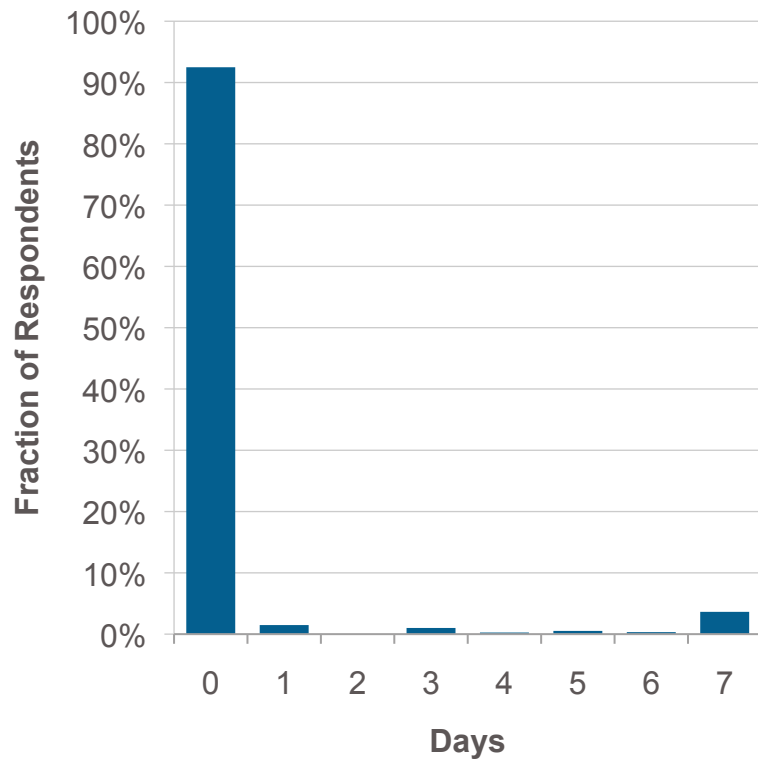




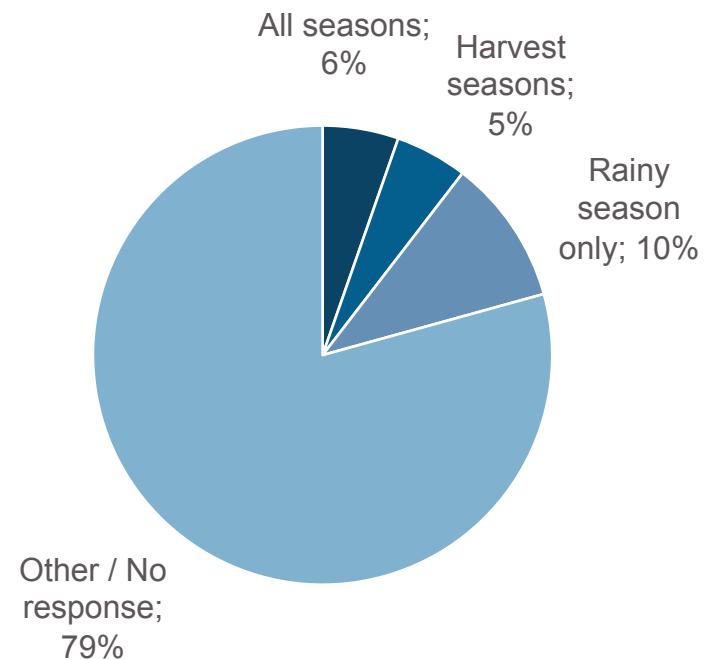
## Maize Flour: Household Consumption Patterns

Data on weekly and seasonal consumption was gathered for all survey respondents, allowing a household-level calculation.

### Reported Days Used Past Week n = 573



### Reported Seasons Used n = 573

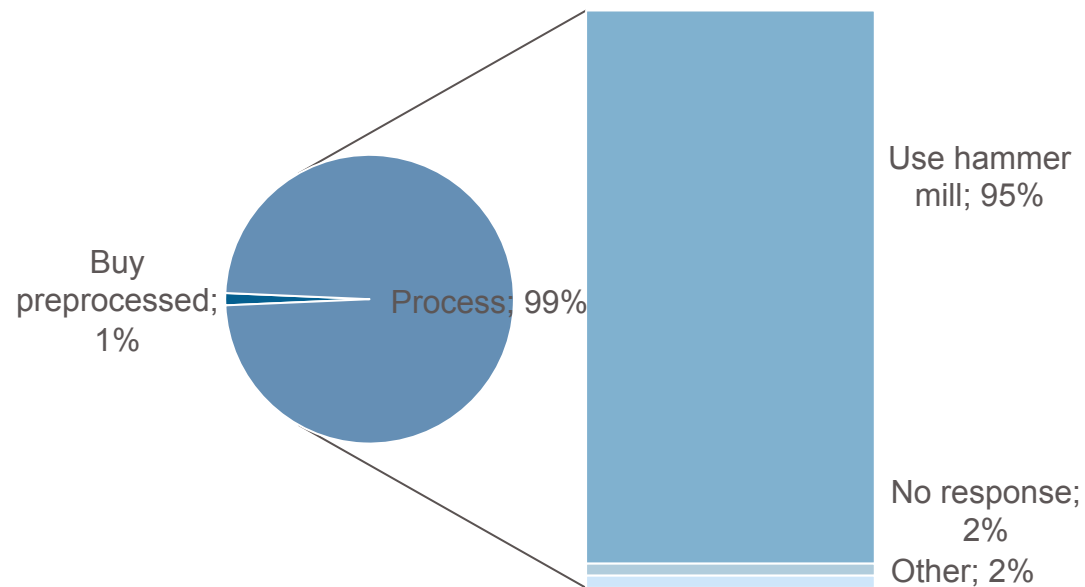


## Maize Flour: Processing Patterns

Although interviewers asked about brand preference for preprocessed maize flour, the extremely small number of responses (5) prevent drawing significant conclusions about relative popularity. Only women were queried about maize processing patterns.

### Reported Maize Processing

n = 234



# Comparison to Prior Study

## Comparison to Prior Study: Overview

The FRAT survey of 2009 was similar to that of 2001: both gathered nationally representative data on men, women, and preschool children to assess the availability and consumption patterns of centrally-processed staple foods. Key differences between the two surveys are highlighted below.

### 2001 FRAT

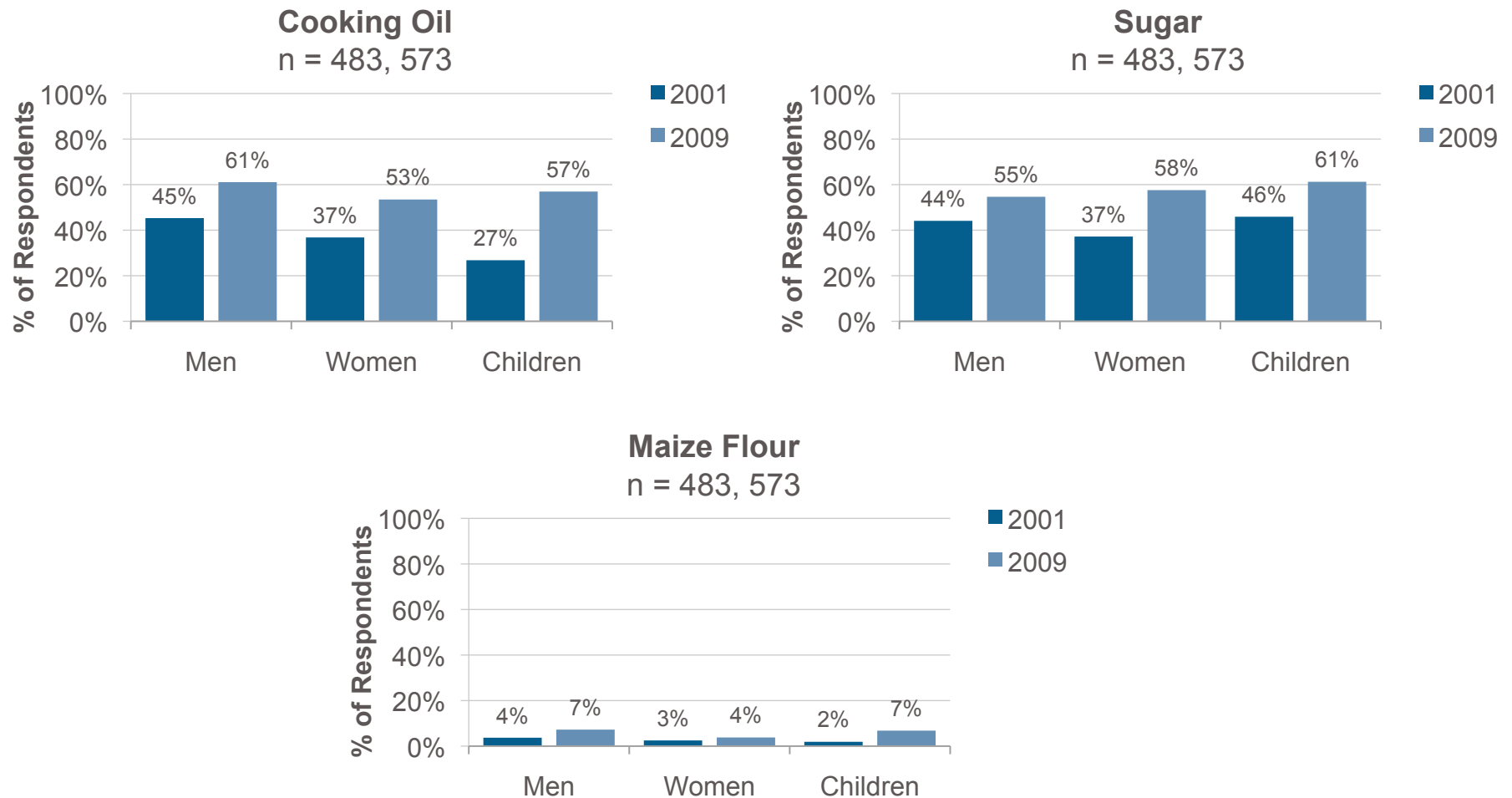
- Focused on cooking oil, sugar, maize flour
- Collected data for preschool children 6-36 months, women of reproductive age (15-45), and men 20-55
- Surveyed 161 men, 165 women, and 157 children, for a total of 483 responses
- Of those surveyed, 64% of men, 60% of women, and 51% of children reported typical intake the previous day

### 2009 FRAT

- Included wheat flour in addition to cooking oil, sugar, and maize flour
- Collected data for a broader range of preschool children (6-59 months) in addition to women of reproductive age (15-45) and men 20-55
- Surveyed 173 men, 234 women, and 166 children, for a total of 573 responses
- Of those surveyed, 79% of men, 69% of women, and 72% of children reported typical intake the previous day

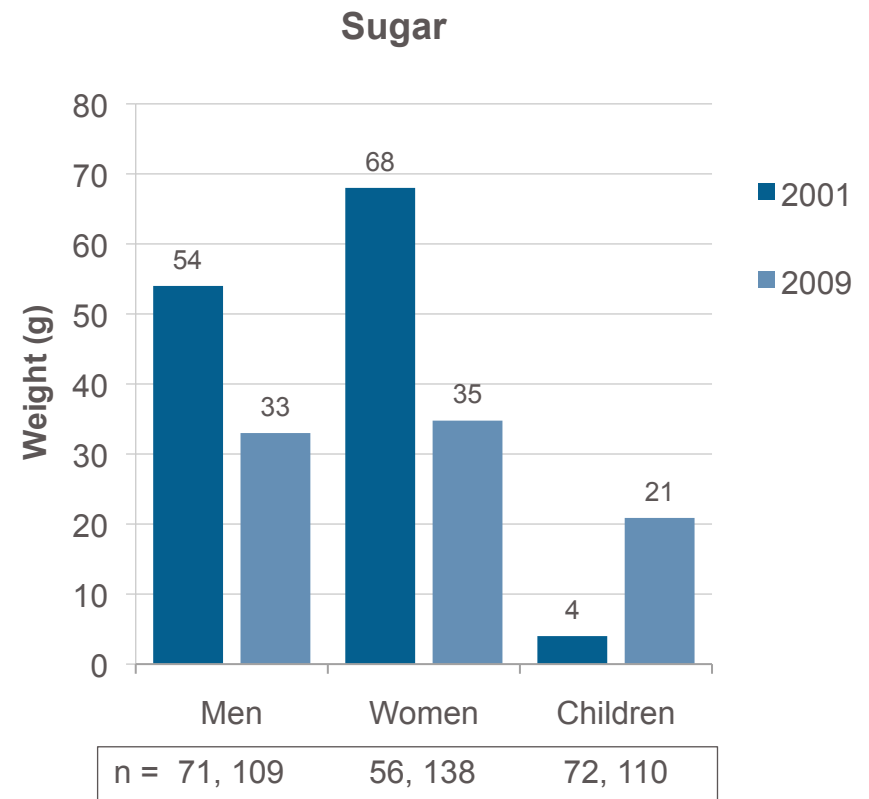
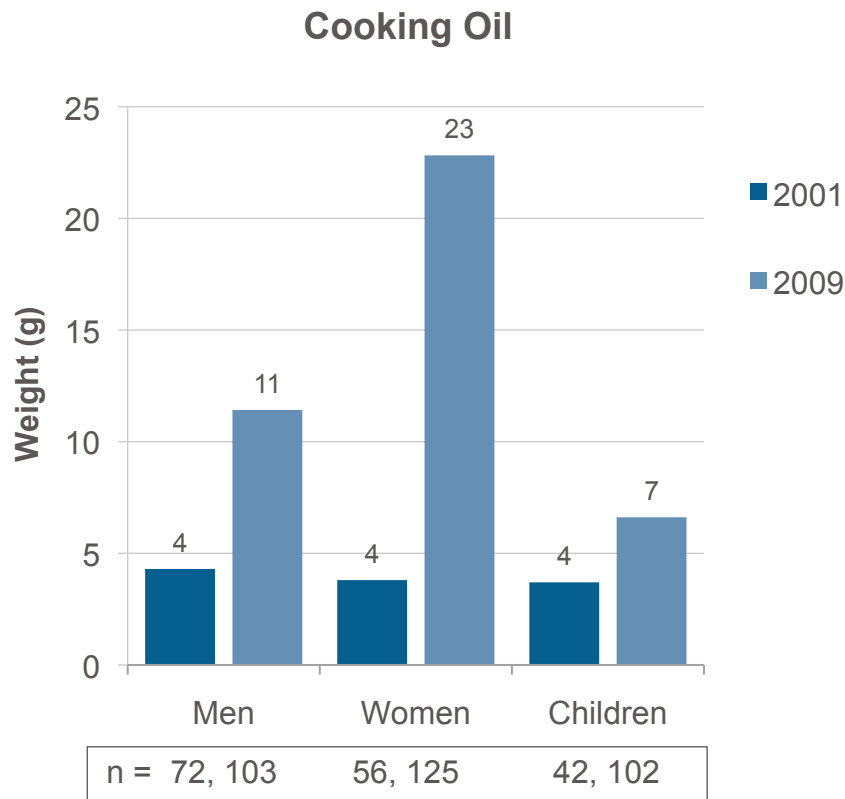
## Comparison to Prior Study: Coverage

The percent of the population consuming centrally processed oil, sugar, and maize flour has increased across all groups all surveyed groups since 2001.



## Comparison to Prior Study: Average Consumption

While cooking oil consumption has increased, sugar consumption among adults appears to have decreased. The different age range in children likely accounts for at least some of the difference observed in those responses.



Annex

## Summary Statistics: 2009 FRAT

In addition to average consumption, national distributions were calculated for consumption of each staple.

		Cooking Oil	Wheat Flour	Sugar	Maize Flour
<b>Men</b>	n	103	51	109	17
	avg	11	69	33	164
	5%	2	12	11	46
	10%	2	12	12	46
	90%	28	136	66	409
	95%	37	142	73	409
<b>Women</b>	n	125	38	138	13
	avg	23	147	35	442
	5%	5	25	10	111
	10%	7	25	12	111
	90%	41	220	67	383
	95%	49	294	88	383
<b>Children Under Five</b>	n	102	50	110	20
	avg	7	47	21	131
	5%	1	10	6	43
	10%	2	20	6	43
	90%	16	75	35	307
	95%	19	99	43	307