Appendix I
Participant Satisfaction with and Use of Prescribed Foods, Selected Food Categories

Chapter 6 of this report provides a detailed discussion of WIC participants' satisfaction with and use of prescribed cheese and breakfast cereal. This appendix provides a parallel discussion of the participants' satisfaction with and use of prescribed milk, eggs, infant cereal, juice, peanut butter, and dried beans/peas. The results are based on responses to the Survey of WIC Participants. See chapter 6 for a discussion of the research approach.

Milk

Four of the six case study States—Connecticut, North Carolina, Oklahoma, and Texas—required WIC participants to purchase the least expensive brand of milk available, and all the States imposed some restrictions on package size or allowable types of milk (see table 3-1 in chapter 3 for a complete description of WIC-approved milk in each State). The four States with least expensive brand policies are treated as the "restrictive" group of States in examining satisfaction with allowed brands and the purchase and consumption of prescribed milk.[1] California, Ohio, and Oklahoma, with a minimum container size of one gallon, form the "restrictive" group in examining participants' satisfaction with allowed package sizes for milk.

All survey respondents were asked whether they were satisfied with brands of food and package sizes allowed for several different food categories, including milk. If the food item was not currently in their food package prescription, they were asked whether they had been satisfied with the item in the past.[2] The top two sections of table I-1 present responses for satisfaction with milk brands and package sizes, respectively. There is very little evidence of dissatisfaction in any of the States. Overall, an average of 89.3 percent of respondents in each State said they were "very satisfied" with the brand(s) of milk they could purchase, and 89.4 percent said they were "very satisfied" with the allowed package size(s) for milk. Fewer than 3 percent of respondents in any State said they were "not satisfied" with either allowed milk brands or package sizes. When the distributions of responses within States with brand or package-size restrictions are compared with those of States without restrictions (the "No restriction" and "Restriction" columns in the table), there are no significant differences in responses. Within these six States, there is no relationship between participant satisfaction and the presence of least expensive brand policies or package-size restrictions.

The "Percent with prescription" panel of table I-1 shows that milk was prescribed for a cross-State average of 94.2 percent of the sampled WIC families.[3] Respondents in the two States without brand restrictions were more likely to have milk prescribed (an average of 96.4 percent) than respondents

---

1 California used to require purchase of the least expensive brand of milk, but dropped the requirement after receiving complaints from vendors and participants that the requirement was confusing.

2 If the food item had never been prescribed, a response of "not applicable" was recorded.

3 Recall that the survey sample does not include families in which the only WIC participant is an infant, so table I-1 overstates the percentage of all WIC families for which milk was prescribed.

Table I-1—Satisfaction with, purchase, and consumption of milk

	Individual States						State groups			
	CA	CT	NC	OH	OK	TX	All States	No restric-tions	Restric-tion	Group differ-ence
						Percent				
Satisfaction with brands[a]										
Very satisfied	86.2	87.4	92.0	90.1	89.1	91.0	89.3	88.1	89.9	
Somewhat satisfied	11.2	10.4	8.0	7.6	10.3	7.8	9.2	9.4	9.1	
Not satisfied	2.6	2.2	0.0	2.3	0.6	1.2	1.5	2.4	1.0	
Sample size (number)	*204*	*227*	*222*	*215*	*202*	*198*	*1,268*	*419*	*849*	
Satisfaction with package sizes[a]										
Very satisfied	86.4	87.8	94.1	90.1	91.2	86.9	89.4	89.6	89.2	
Somewhat satisfied	12.6	9.8	5.9	9.4	7.4	10.3	9.2	8.7	9.8	
Not satisfied	1.0	2.4	0.0	0.6	1.4	2.8	1.4	1.7	1.0	
Sample size (number)	*206*	*225*	*222*	*214*	*203*	*197*	*1,267*	*644*	*623*	
Percent with prescription	95.6	93.4	96.0	97.2	93.3	89.6	94.2	96.4	93.1	–3.3*
Sample size (number)	*178*	*198*	*195*	*191*	*167*	*190*	*1,099*	*369*	*730*	
Amount purchased[a]										
All	92.8	94.0	89.9	88.6	93.3	88.4	91.2	90.7	91.4	0.7
Some	6.4	6.0	9.1	11.4	6.7	11.6	8.6	8.9	8.4	
None	0.7	0.0	1.0	0.0	0.0	0.0	0.3	0.4	0.2	
Sample size (number)	*170*	*183*	*184*	*183*	*154*	*153*	*1,027*	*353*	*674*	
Amount consumed[a]										
All	93.8	81.5	78.8	85.4	81.1	86.1	84.5	89.6	81.9	–7.7**
Some	6.2	18.5	20.4	14.6	17.8	13.9	15.2	10.4	17.6	
None	0.0	0.0	0.8	0.0	1.1	0.0	0.3	0.0	0.5	
Sample size (number)	*168*	*182*	*185*	*183*	*154*	*153*	*1,025*	*351*	*674*	

a A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Connecticut, North Carolina, Oklahoma, and Texas required purchase of least expensive brand of milk. California, Ohio, and Oklahoma had the most restrictive package sizes, requiring purchase of milk in gallon containers.

Source: Survey of WIC Participants.

from the four States with restrictions (93.1 percent), but this statistically significant difference in prescription rates is unrelated to cost-containment efforts. States are not allowed to alter food package prescriptions in an effort to reduce food package costs.[4]

All respondents with prescribed milk were asked whether they purchased "all," "some," or "none" of the milk in the month prior to the interview. As shown in the "Amount purchased" panel of table I-1, a cross-State average of 91.2 percent of respondents said they purchased all of the milk prescribed, 8.6 percent said some, and fewer than 1 percent said none. A chi-squared test on the difference in distributions indicates that the average distribution of responses in the two States without restrictions (California and Ohio) is not significantly different from the average distribution of responses from the four States requiring purchase of the least cost brand of milk. So few participants answered "none," however, that the distribution of responses is nearly binomial ("all" vs. "some"). A significance test was therefore performed for the percentage of respondents who said they purchased all the prescribed milk; the difference between the two groups (0.7 percentage points) is not statistically significant.[5]

All respondents who purchased at least some of the prescribed milk were asked whether the WIC participants in the family drank "all," "some," or "none" of the milk; responses are shown in the bottom panel of table I-1. In the States with least expensive brand restrictions, a cross-State average of 81.9 percent of respondents said they drank all the milk purchased, 17.6 percent said they drank some of the milk, and 0.5 percent said they did not drink any of the milk. (Note that these responses are conditional upon at least some of the prescribed milk being purchased.[6]) The average distribution of responses is not significantly different in the two States without restrictions, but a test of just the percentage saying they drank all the purchased milk shows that respondents in the States with restrictions were 7.7 percentage points less likely to drink all the milk than respondents in States without restrictions, and this difference is statistically significant at the 0.01 level.

Is the significant difference in amount consumed attributable to the least expensive brand policies of Connecticut, North Carolina, Oklahoma, and Texas? Survey respondents who did not buy all the milk prescribed, or did not drink all the milk purchased, were asked why. As displayed in table I-2, the reasons generally are not associated with the State policies on buying the least expensive brand of milk. Thus, the evidence does not support a hypothesis that WIC participants' purchase or consumption of milk was affected by State policies designed to reduce food package costs.

---

4 This policy is described in "Final WIC Policy Memorandum: #97-7," dated May 1997. The memorandum states that, although prescribed quantities may be reduced for sound nutrition reasons, "nutrition tailoring must not be done for cost reasons, although lower costs may be an incidental result" (p. 4).

5 Significance tests were not conducted for differences in the average percentage of respondents saying they purchased "some" or "none" of the prescribed milk. Because such tests would not be independent (of each other or the test on "all"), stricter conditions for evaluating statistical significance would have to be used. The report instead uses the usual criteria for evaluating the statistical significance of differences in the "all" category.

6 If one wanted to know the percentage of respondents who said they drank all the milk that was prescribed, the "all" percentages in the panel on "amount consumed" would need to be multiplied by the "all" percentages in the panel on "amount purchased". In California, for example, 87.0 percent of respondents drank all the milk that was prescribed (that is, 93.8 percent of the 92.8 percent who bought all their prescribed milk).

Table I-2—Reasons for not purchasing or consuming prescribed milk

	All States[a]	No restrictions	Restriction	Group difference
		Percent		
Reasons for not purchasing some or all of prescribed item[b]				
Don't like	6.3	4.6	7.2	2.6
Voucher expired or lost	17.7	6.9	23.2	
Too much	43.3	63.5	33.1	
Can't get to store	14.8	5.0	19.6	
Other	18.0	20.0	16.9	
Sample size (number)	*86*	*29*	*57*	
Reasons for not drinking some or all of prescribed item[b]				
Don't like	16.4	15.4	16.9	1.4
Too much	37.2	26.6	41.5	
Don't normally drink	4.5	9.4	2.1	
Went bad	14.8	29.1	7.6	
Consumed by others	22.1	8.8	28.7	
Other	5.0	8.6	3.2	
Sample size (number)	*148*	*34*	*114*	

a Results presented for the six States in the study. Due to small sample sizes, State-specific results are not reported.

b A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Connecticut, North Carolina, Oklahoma, and Texas required purchase of the least expensive brand of milk. California, Ohio, and Oklahoma had the most restrictive package sizes, requiring gallon containers.

Source: Survey of WIC Participants.

State-specific results are not presented in table I-2 because the sample sizes in individual States are generally too small to support reliable estimates of the distribution of reasons across response categories. Among the six States, however, the two most common reasons given for not buying some or all of the prescribed milk were that the WIC clinic prescribed too much of it (mentioned by a cross-State average of 43.3 percent of the 86 respondents in the group) and that respondents lost their WIC voucher, or it expired, before they could use it (an average of 17.7 percent). A cross-State average of only 6.3 percent said they did not like milk. This response could be related to brand dissatisfaction; the 2.6 percentage-point difference between States with and without least cost brand restrictions, however, is not statistically significant.[7] Overall, the two group distributions of responses in the top panel of table I-2 are not significantly different.

[7] In both table I-2 and later tables examining why participants did not purchase or consume all of their prescribed food items, an argument could be made that reasons other than "don't like" could be related to cost-containment restrictions. For instance, in table I-2, more respondents in the States with restrictions than in those without said they did not

When asked why they did not drink some or all of the purchased milk (the bottom panel of table I-2), a cross-State average of 16.4 percent said they did not like the milk. The 1.4 percentage-point difference between the two groups of States is not significantly different from zero. The most common reasons cited for not drinking purchased milk were that too much was prescribed (a cross-State average of 37.2 percent), and that non-WIC members of the family consumed the milk (an average of 22.1 percent).[8] The group distributions are not significantly different from one another.

Eggs

The six States varied somewhat in the restrictions they imposed on eggs. North Carolina was the only State to allow purchase of brown as well as white eggs, but it allowed only Grade A eggs, whereas the other States were either less restrictive on grade or allowed Grade AA eggs. The States also differed in which size eggs could be purchased, with Ohio being the least restrictive and Connecticut the most. Two States—Connecticut and Oklahoma—required WIC participants to purchase the least expensive brand of eggs available in the store. For examining the effects of cost-containment practices, tables I-3 and I-4 focus on the impacts of imposing least expensive brand provisions on eggs.

An average of 92.4 percent of survey respondents in the six States had eggs included in their WIC prescriptions (table I-3). A cross-State average of 95.5 percent of these respondents said they purchased all the eggs included in their food package, with less than 1 percent saying that they did not purchase any. There is no significant difference in the distribution of amount purchased between States with and without least expensive brand restrictions.

Among those respondents who purchased at least some of their prescribed eggs, an average of 79.0 percent said they ate all they purchased. A cross-State average of 20.5 percent said they ate some of the eggs. The overall average distribution of amount consumed within States without least cost restrictions is not significantly different from the average distribution for the States with restrictions. The 12.5 percentage-point difference in respondents saying they ate **all** of the eggs, however, is significant at the 0.01 level.

---

purchase all their milk because their voucher expired or was lost. If participants did not like the available choices of a particular food item, they could simply have let their vouchers expire (or not tried to get to the store, or let non-WIC family members consume the item, or taken any number of actions). In this situation the study would be underestimating the impact of the restrictions on purchasing behavior. Given that the survey asked for the **main** reason the prescribed item was not bought, however, "don't like" seems a more straightforward measure of reasons related to cost-containment restrictions. That is, if a participant did not buy a prescribed item because she did not like the available choices, it was simpler for her to say she did not like the item than to provide another reason not directly related to preferences.

[8] California officials report that the complaints they receive about "too much" milk involve prescriptions for young toddlers. Mothers say that these children cannot finish the milk before it spoils.

Table I-3—Purchase and consumption of eggs

	Individual States						State groups			
	CA	CT	NC	OH	OK	TX	All States	No restric-tions	Restric-tion	Group differ-ence
						Percent				
Percent with prescription	91.8	94.6	93.4	95.7	90.7	88.1	92.4	92.2	92.6	0.4
Sample size (number)	*178*	*198*	*195*	*191*	*168*	*171*	*1,101*	*735*	*366*	
Amount purchased[a]										
All	98.1	97.6	93.5	96.9	91.2	95.7	95.5	96.0	94.4	
Some	1.8	2.4	6.5	3.1	8.8	1.9	4.1	3.3	5.6	
None		0.0	0.0	0.0	0.0	2.4	0.4	0.6	0.0	
Sample size (number)	*163*	*185*	*183*	*180*	*150*	*151*	*1,012*	*677*	*335*	
Amount consumed[a]										
All	93.3	75.0	75.7	75.9	66.2	87.7	79.0	83.1	70.6	–12.5**
Some	6.7	24.4	22.7	23.8	33.4	12.3	20.5	16.4	28.9	
None	0.0	0.6	1.6	0.4	0.3	0.0	0.5	0.5	0.4	
Sample size (number)	*162*	*184*	*183*	*180*	*151*	*148*	*1,008*	*673*	*335*	

a A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Connecticut and Oklahoma required purchase of the least expensive brand of eggs.

Source: Survey of WIC Participants.

Table I-4 shows that a State average of only 2.1 percent of respondents said they did not buy some or all of the prescribed eggs because they did not like eggs; the 3.1 percentage-point difference between the States with and without restrictions is not statistically significant. As displayed in the bottom panel of table I-4, the main reason given for not eating some or all of the eggs was that too many eggs were purchased. There is no significant difference in either the overall average distributions of reasons given or in the percentage of respondents saying they did not eat the eggs because they did not like them. Thus, there is no evidence that least expensive brand restrictions had an impact on the purchase or consumption of eggs.

Table I-4—Reasons for not purchasing or consuming prescribed eggs

	All States[a]	No restrictions	Restriction	Group difference
		Percent		
Reasons for not purchasing some or all of prescribed item[b]				
Don't like	2.1	3.1	0.0	–3.1
Other	97.9	95.9	100.0	
Sample size (number)	*45*	*29*	*16*	
Reasons for not consuming some or all of prescribed item[b]				
Don't like	11.3	12.0	9.8	–2.3
Too much	41.9	46.7	32.2	
Don't normally eat	21.4	24.3	15.7	
Consumed by others	19.6	10.7	37.5	
Other	5.8	6.2	4.9	
Sample size (number)	*204*	*116*	*88*	

a Results presented for the six States in the study. Due to small sample sizes, State-specific results are not reported.

b A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Connecticut and Oklahoma required purchase of the least expensive brand of eggs.

Source: Survey of WIC Participants.

Infant Cereal

The six States did not vary in the types of infant cereal (that is, rice, oatmeal, barley, and mixed) that could be purchased with the infant's WIC voucher or check, although North Carolina and Ohio were the only two States to allow purchase of high-protein infant cereal. The States did vary in which brands of infant cereal could be purchased. California, Connecticut, and Texas had negotiated manufacturer rebates with Gerber, so Gerber was the only brand that could be purchased with WIC food

instruments in those three States. North Carolina and Ohio allowed all three of the major infant cereal brands: Beechnut, Gerber, and Heinz. Oklahoma allowed only Gerber and Heinz.

The variation in brand policy had little impact on respondents' reports of facing binding constraints on food type or brand. Only three sampled respondents in the six States indicated a binding constraint on infant cereal—a cross-State average of only 0.5 percent (table 6-2 in chapter 6). Two of these respondents, both from Connecticut, preferred the Beechnut brand. The third respondent, the only one from Texas who faced a binding constraint, preferred Heinz.

Table I-5 shows the distribution of respondents' satisfaction with allowed brands of infant cereal. The average distribution for the three States with the most restrictive policy on brands (California, Connecticut, and Texas) is not statistically different from the average distribution for the remaining three States. Overall, a cross-State average of 79.4 percent of respondents said they were very satisfied with the allowed brands; only 5.8 percent said they were not satisfied.

The only variation in packaging restrictions for infant cereal was the allowance of only 8-ounce boxes or of both 8- and 16-ounce boxes. The 8-ounce restriction was not really binding because participants could always buy two 8-ounce boxes rather than one 16-ounce box. For this reason no groups are defined in the second panel of table I-5, and no significance tests on group differences were conducted. Overall, a State average of 84.8 percent of respondents said they were very satisfied with allowed package sizes of infant cereal.

Among sampled WIC families with a participating infant, a cross-State average of 68.2 percent had cereal in their infant's prescription (the "Percent with prescription" panel of table I-5).[9] For those with prescribed infant cereal, a cross-State average of 89.1 percent purchased all of the prescribed cereal, with another 5.7 percent buying some. The remaining 5.1 percent did not purchase any of the prescribed cereal. The presence of brand restrictions had no statistically significant relationship with the amount purchased. With regard to consumption (bottom panel), there was no significant difference in the average distributions of amount consumed between States with and without brand restrictions. If one focuses just on the percentage who said their infants ate all of the purchased cereal, however, infants in the restricted-brand States were significantly more likely (at the 0.01 level) to eat all of their cereal than infants in the other States. This finding runs counter to the hypothesis that food-item restrictions might reduce consumption levels.

[9] According to program regulations (246.10(c)2), infant cereal is part of food package 2, for infants 4 to 12 months, so not all infants are eligible for infant cereal. Furthermore, a local WIC clinic would have discretion to exclude infant cereal from a prescription on an individual basis if an infant was not developmentally ready for it.

Table I-5—Satisfaction with, purchase, and consumption of infant cereal

	Individual States						State groups			
	CA	CT	NC	OH	OK	TX	All States	No restric-tions	Restric-tion	Group differ-ence
						Percent				
Satisfaction with brands[a]										
Very satisfied	80.5	75.6	76.8	76.9	83.2	83.5	79.4	79.0	79.9	
Somewhat satisfied	12.3	16.2	14.1	19.5	13.8	12.9	14.8	15.8	13.8	
Not satisfied	7.2	8.2	9.1	3.6	2.9	3.5	5.8	5.2	6.3	
Sample size (number)	*57*	*71*	*48*	*66*	*64*	*72*	*378*	*178*	*200*	
Satisfaction with package sizes										
Very satisfied	84.6	77.3	93.6	86.0	83.4	83.7	84.8			
Somewhat satisfied	13.6	13.8	6.4	9.1	15.0	14.6	12.1			
Not satisfied	1.7	9.0	0.0	4.9	1.6	1.7	3.2			
Sample size (number)	*57*	*71*	*48*	*66*	*64*	*72*	*383*			
Percent with prescription	74.1	74.2	62.5	61.8	59.1	77.4	68.2	61.1	75.3	14.1
Sample size (number)	*63*	*68*	*54*	*73*	*62*	*71*	*391*	*189*	*202*	
Amount purchased[a]										
All	94.4	90.4	87.7	77.6	87.6	97.0	89.1	84.3	94.0	
Some	0.0	7.2	9.2	11.8	3.2	3.0	5.7	8.1	3.4	
None	5.6	2.5	3.0	10.6	9.2	0.0	5.1	7.6	2.7	
Sample size (number)	*45*	*55*	*30*	*41*	*37*	*54*	*262*	*108*	*154*	
Amount consumed[a]										
All	79.0	88.1	65.0	42.9	45.0	74.7	65.8	51.0	80.6	29.6**
Some	21.0	11.5	32.3	55.5	51.2	24.6	32.7	46.3	19.0	
None	0.0	0.4	2.7	1.6	3.8	0.7	1.5	2.7	0.4	
Sample size (number)	*40*	*53*	*29*	*40*	*34*	*54*	*250*	*103*	*147*	

a A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

California, Connecticut, and Texas required purchase of Gerber brand only. Oklahoma required purchase of Gerber or Heinz brands; North Carolina and Oklahoma allowed purchase of Beechnut, Gerber, or Heinz.

Source: Survey of WIC Participants.

Given that most of the sampled families purchased all of the infant cereal prescribed, only 23 respondents were asked why they did not buy some or all of the prescribed cereal. Their responses are shown in table I-6. With a sample this small, it is not possible to test whether the average distributions of responses in States with and without brand restrictions were significantly different. The average percentage of those saying their infant did not like the cereal was higher in States with restrictions (21.0 percent) than in States without (0.0 percent), and the 21.0 percentage-point difference is significant at the 0.05 level. This difference, however, is based on only three participants in California who said their infants did not like Gerber cereal. Furthermore, there were no significant differences between groups in the reasons given for not eating all of the purchased cereal. The most common reason was that there was too much to eat. The evidence, therefore, does not support a finding that brand restrictions reduced the purchase or consumption of infant cereal.

Table I-6—Reasons for not purchasing or consuming prescribed infant cereal

	All States[a]	No restrictions	Restriction	Group difference
		Percent		
Reasons for not purchasing some or all of prescribed item[b]				
Don't like	10.5	0.0	21.0	21.0*
Voucher expired or lost	11.9	0.0	23.9	
Too much	47.7	42.8	52.7	
Other	29.8	57.2	2.4	
Sample size (number)	*23*	*13*	*10*	
Reasons for not consuming some or all of prescribed item[b]				
Don't like	32.7	35.6	29.8	–5.8
Too much	42.0	36.0	48.0	
Don't normally eat	6.4	4.5	8.3	
Other	18.9	24.0	13.9	
Sample size (number)	*94*	*49*	*45*	

a Results presented for the six States in the study. Due to small sample sizes, State-specific results are not reported.

b A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

California, Connecticut, and Texas required purchase of Gerber brand only. Oklahoma required purchase of Gerber or Heinz brands; North Carolina and Oklahoma allowed purchase of Beechnut, Gerber, or Heinz.

Source: Survey of WIC Participants.

Adult Juice

Four States are considered "restrictive" with respect to adult juice. Connecticut and Texas required purchase of least expensive brands for some or all of their approved juices. Oklahoma approved only store brands or private labels for most juice types. California and Texas allowed fewer types than the other States (see table 3-1 in chapter 3).

With respect to packaging, all of the case study States allowed frozen concentrates. North Carolina, Ohio, and Oklahoma also allowed liquid concentrates. Five of the six States limited purchase of shelf-stable juices (bottles and cans) to the 46-ounce size; California, however, allowed only 64-ounce containers. Furthermore, Texas limited shelf-stable juices to 46-ounce cans; plastic bottles were not allowed. Finally, Connecticut was the only State that allowed purchase of refrigerated orange juice (64- or 128-ounce cartons).

California and Texas, at 13.3 and 12.1 percent, respectively, had the highest proportion of survey respondents indicating a binding constraint on juices (table 6-2). Thus, it appears that the limited variety of juices approved in California and the least expensive brand and container size policies in Texas did restrict participant choice. Connecticut, with its least expensive brand policy, ranked third in the percentage of respondents (7.2 percent) facing binding constraints on adult juice. In Oklahoma, however, only 3.1 percent of the survey respondents preferred a federally approved type or brand of juice that was not allowed by the State.

The most common binding constraint was for cranberry juice, mentioned by 24 of the 71 respondents with a binding constraint on juice. [10] In addition, 4 of the 18 respondents in California with a constraint listed grapefruit as a preferred juice. Juice blends and national brands were also common responses, mentioned by 10 and 9 of the 71 respondents, respectively.

Survey respondents' satisfaction with allowed brands is displayed in the top panel of table I-7; a cross-State average of 78.7 percent of respondents said they were "very satisfied" with allowed brands of juice, and 18.8 percent said they were "somewhat satisfied". A chi-squared test indicates that there was not a statistically significant difference in the average distributions of satisfaction level in the States with and without restrictions.

There was also a generally high level of satisfaction with allowed package sizes of juice (second panel of table I-7); a cross-State average of 79.9 percent was very satisfied. It is difficult to identify which package sizes WIC participants would view as most restrictive, because some participants might prefer large containers and others smaller ones. Furthermore, there is not a lot of State-by-State variation in satisfaction with package sizes. For this reason, the States have not been divided into groups to see if the distributions of responses varied by packaging restrictions on juices.

[10] Only North Carolina and Ohio allowed purchase of cranberry juice.

Table I-7—Satisfaction with, purchase, and consumption of juice

	Individual States						State groups			
	CA	CT	NC	OH	OK	TX	All States	No restric-tions	Restric-tion	Group differ-ence
						Percent				
Satisfaction with brands[a]										
Very satisfied	77.3	76.3	76.7	80.6	79.6	83.2	78.7	78.7	79.1	
Somewhat satisfied	22.8	20.1	22.8	18.2	18.3	15.3	18.8	20.5	19.1	
Not satisfied	1.9	5.7	2.5	3.1	4.2	3.6	2.5	2.8	3.8	
Sample size (number)	*207*	*228*	*222*	*214*	*204*	*201*	*1,276*	*436*	*840*	
Satisfaction with package sizes[a]										
Very satisfied	85.8	72.6	81.0	76.9	81.0	82.4	79.9			
Somewhat satisfied	14.2	22.9	17.8	20.8	17.2	16.7	18.3			
Not satisfied	2.0	6.6	3.2	4.4	3.8	2.9	3.8			
Sample size (number)	*198*	*216*	*218*	*212*	*190*	*186*	*1,220*			
Percent with prescription	96.9	97.2	97.6	96.7	96.2	98.9	97.3	97.1	97.3	0.2
Sample size (number)	*178*	*198*	*196*	*190*	*168*	*171*	*1,101*	*386*	*715*	
Amount purchased[b]										
All	99.8	98.7	95.2	93.4	95.0	98.0	96.7	94.3	97.9	3.6*
Some	0.1	1.3	4.8	6.2	5.0	0.5	3.0	5.5	1.8	
None	0.1	0.0	0.0	0.4	0.0	1.5	0.3	0.2	0.4	
Sample size (number)	*174*	*193*	*191*	*181*	*162*	*168*	*1,069*	*372*	*697*	
Amount consumed[a]										
All	96.0	82.4	85.1	82.2	80.0	84.7	85.1	83.7	85.8	2.1
Some	3.9	17.6	14.1	17.4	19.3	14.6	14.5	15.8	13.8	
None	0.1	0.0	0.8	0.3	0.6	0.7	0.4	0.5	0.4	
Sample size (number)	*171*	*193*	*192*	*180*	*161*	*165*	*1,062*	*372*	*690*	

a A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

b A chi-square test on the difference in distribution between States with and without restrictions was statistically significant at the 0.05 level.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Texas required purchase of the least expensive brand of juice and approved a relatively narrow choice of juice types; Connecticut required purchase of least expensive brand when buying orange and grapefruit juice. California approved a relatively narrow choice of juice types, and Oklahoma restricted choice to private label or store brands.

Source: Survey of WIC Participants.

The fourth panel of table I-7 ("Amount consumed") shows that the average percentage of respondents saying they purchased all their prescribed juice was very high: 96.7 percent. The average distributions of amount purchased (all, some, or none) for States with and without restrictions are significantly different at the 0.05 level, as is the difference in the percent of respondents saying they purchased "all" of their prescribed juice. The 3.6 percentage-point difference is not large, however, and the direction of the effect runs counter to a hypothesis that restrictions reduce the amount of a prescribed food item that is purchased.

Respondents in the States with juice restrictions were neither more nor less likely than respondents in the other States to consume the juice they purchased; the two group distributions in the bottom panel of table I-7 are not significantly different.

Of the 46 survey respondents who said they did not buy all the prescribed juice, nobody gave "don't like" as a reason (table I-8). Respondents in States with brand restrictions, however, were significantly more likely than respondents in the other States to say that they did not purchase juice because their food instrument expired or was lost. It is possible that some of this difference in loss/expiration rates arose because respondents in the restricted States, not liking the allowed juices, simply let the instruments expire. This interpretation, however, is inconsistent with the finding that "don't like" was never cited as the main reason for not purchasing juice.

When asked why they did not drink the juice they purchased, a cross-State average of 10.6 percent in each group said that they did not like the juice (bottom panel of table I-8). The two overall distributions of reasons for not drinking the juice are not significantly different from one another.

Given these survey findings, there is no evidence that restrictions on allowable juice brands or types affected overall patterns of purchase or consumption of prescribed juice. Even for the respondents facing a binding constraint, the restrictions did not affect program-related behavior in hypothesized ways. As shown in table I-9, respondents with binding restrictions were more likely, not less, to purchase and drink their prescribed juice.

Table I-8—Reasons for not purchasing or consuming prescribed juice

	All States[a]	No restrictions	Restriction	Group difference
		Percent		
Reasons for not purchasing some or all of prescribed item[b]				
Voucher expired or lost	20.8	6.4	28.0	21.6*
Too much	40.4	49.8	35.8	
Can't get to store	15.6	28.9	9.0	
Other	23.1	15.0	27.2	
Sample size (number)	*46*	*24*	*22*	
Reasons for not drinking some or all of prescribed item[b]				
Don't like	10.6	10.6	10.6	0.0
Too much	48.4	48.4	48.4	
Don't normally eat	4.3	4.9	3.9	
Consumed by others	22.0	16.9	24.5	
Other	14.7	19.2	12.5	
Sample size (number)	*161*	*63*	*98*	

a Results presented for the six States in the study. Due to small sample sizes, State-specific results are not reported.

b A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Texas required purchase of the least expensive brand of juice and approved a relatively narrow choice of juice types; Connecticut approved a relatively narrow choice of juice types, and Oklahoma restricted choice to private-label or store brands.

Source: Survey of WIC Participants.

Table I-9—Binding constraints and participant satisfaction with and use of prescribed juice

	Binding	Not binding
	Percent	
Satisfaction with allowed brands or types		
Very satisfied	78.5	81.9
Somewhat satisfied	17.5	16.1
Not satisfied	4.1	2.0
Sample size (number)	*70*	*995*
Amount purchased		
Very satisfied	99.9	96.5
Somewhat satisfied	0.1	3.1
Not satisfied	0.0	0.4
Sample size (number)	*71*	*998*
Amount consumed		
All	90.7	85.3
Some	9.0	14.3
None	0.3	0.4
Sample size (number)	*71*	*991*

Weighted estimates were obtained with SUDAAN software. Group estimates give equal weight to each State in the group.

Totals may not sum to 100 due to rounding.

Source: Survey of WIC Participants

Peanut Butter

Within the group of six case study States, Connecticut was the only one to require that WIC participants purchase the least expensive brand of peanut butter in the store. Connecticut was also the most restrictive State in terms of which types of peanut butter (e.g., plain, chunky, low sugar, or sodium) could be purchased with the WIC food instrument. Thus, when examining the possible impacts of food-item restrictions on satisfaction with, and purchase and consumption of, peanut butter, the experiences of Connecticut respondents are compared with those in the other five States.

A cross-State average of 64.9 percent of survey respondents had peanut butter prescribed in their food packages in a typical month.[11] Nearly all the prescribed peanut butter was purchased, with no significant difference between Connecticut and the States with no brand restrictions (table I-10). Connecticut respondents also were similar to those in the other States in terms of how much of the purchased peanut butter they (or other WIC members within the family) ate. The two group distributions in the bottom panel of table I-10 are not significantly different. Only a relatively small percentage of respondents, however, said they ate all of the purchased peanut butter—59.3 and 62.1 percent, respectively, in Connecticut and the other States.

[11] In the typical WIC food package, either peanut butter or dried beans/peas, but not both, is prescribed. Often, States will prescribe peanut butter one month and dried beans/peas the next. States may substitute dried beans/peas for peanut butter in participant food packages, but not peanut butter for dried beans/peas.

Table I-10—Purchase and consumption of peanut butter

	Individual States						State groups			
	CA	CT	NC	OH	OK	TX	All States	No restric-tions	Restric-tion	Group differ-ence
						Percent				
Percent with prescription	55.0	66.8	81.9	84.4	70.2	31.4	64.9	64.6	66.8	2.3
Sample size (number)	*178*	*196*	*195*	*190*	*166*	*171*	*1,096*	*900*	*196*	
Amount purchased										
All	97.8	95.4	76.4	97.4	96.4	93.1	92.7	92.2	95.4	3.2
Sample size (number)	*109*	*143*	*158*	*156*	*114*	*61*	*741*	*598*	*143*	
Amount consumed[a]										
All	51.8	59.3	62.0	63.0	57.9	75.5	61.6	62.1	59.3	
Some	45.9	39.2	35.3	34.6	41.6	22.3	36.5	35.9	39.2	
None	2.3	1.4	2.7	2.4	0.4	2.2	1.9	2.0	1.4	
Sample size (number)	*102*	*139*	*126*	*152*	*110*	*57*	*686*	*547*	*139*	

a A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Connecticut required purchase of the least expensive brand of peanut butter.

Source: Survey of WIC Participants.

For the 52 survey respondents who did not buy all their prescribed peanut butter, the primary reason was that they had lost their food instruments or that the instruments had expired (table I-11). This reason is particularly evident in North Carolina, where over two-thirds of those not buying all the prescribed peanut butter said their instruments had expired. A cross-State average of 29.1 percent of survey respondents said they did not buy all the peanut butter because too much was prescribed, whereas an average of 24.6 percent said they did not like peanut butter. Although 38.5 percent of Connecticut respondents who did not buy all the prescribed peanut butter said they did not like it, and though this percentage is substantially higher than the 21.8 percent average in States without brand restrictions, the 16.7 percentage-point difference is not statistically significant given the small sample sizes.[12]

Table I-11—Reasons for not purchasing or consuming prescribed peanut butter

	All States[a]	No restrictions	Restriction	Group difference
		Percent		
Reasons for not purchasing some or all of prescribed item[b]				
Don't like	24.6	21.8	38.5	16.7
Voucher expired or lost	30.5	36.6	0.0	
Too much	29.1	34.9	0.0	
Other	15.8	6.6	61.5	
Sample size (number)	*52*	*48*	*4*	
Reasons for not eating some or all of prescribed item[b]				
Don't like	19.5	19.1	21.4	2.3
Too much	8.3	9.3	3.5	
Don't normally eat	9.1	10.0	4.9	
Consumed by others	46.7	45.4	52.8	
Other	16.4	16.2	17.4	
Sample size (number)	*254*	*199*	*55*	

a Results presented for the six States in the study. Due to small sample sizes, State-specific results are not reported.

b A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Connecticut required purchase of the least expensive brand of peanut butter.

Source: Survey of WIC Participants.

[12] A large percentage of respondents in Ohio (60.3 percent) said they did not purchase all their peanut butter because they did not like it, but this (weighted) percentage is based on a sample of only four people.

The relatively low percentages of respondents saying they ate all of their purchased peanut butter was related to its consumption by non-WIC members of the family; a cross-State average of 46.7 percent gave that as the main reason for not eating all that they purchased (table I-11). Only about 20 percent said they did not like peanut butter, and the 2.3 percentage-point difference in group means is not significant.

Dried Beans/Peas

As was shown in table 3-1 in chapter 3, little variation existed among the six States as to the types of dried beans/peas that could be purchased with a WIC food instrument, nor were there differences in allowable packaging. Oklahoma was the only State in the group, however, to restrict brands; its WIC participants had to buy the least expensive brand of dried beans/peas available in the store.

As shown in table I-12, a cross-State average of 54.7 percent of survey respondents were prescribed dried beans/peas, and a cross-State average of 86.9 percent purchased all of them.[13] There were no significant differences in the average responses between Oklahoma and the other States in these measures. Respondents in Oklahoma, however, were less likely than the cross-State average of respondents in the nonrestrictive States to eat all the dried beans/peas they bought (57.2 vs. 72.0 percent); the 14.8 percentage-point difference is statistically significant at the 0.05 level. The overall distributions of consumption, however, were not significantly different from one another.

The survey evidence is inconclusive as to whether Oklahoma's least expensive brand policy underlay the difference in the percentage of respondents eating all the dried beans/peas they purchased. First, with regard to why respondents did not purchase all their prescribed dried beans/ peas, respondents in Oklahoma were more likely than respondents in the other five States to say they did not like these foods (top panel of table I-13). The large 13.0 percentage-point difference between the two groups (39.6 vs. 26.6 percent) is not statistically significant, however, because the sample sizes are small. Second, respondents in Oklahoma were more likely, by 11.3 percentage points, to say they did not eat all the dried beans/peas they purchased because they did not like them.

Again, this difference is not statistically different from zero. Furthermore, chi-squared tests indicate that the distributions of responses in the restrictive and nonrestrictive States were not different from one another. Thus, although the direction of the impacts suggests that Oklahoma's least expensive brand policy may be related to less consumption of dried beans/peas, the hypothesis is not supported due to lack of statistical significance.

[13] The survey questionnaire did not ask if "some" dried beans/peas were purchased, only if "all" or "none" were.

Table I-12—Purchase and consumption of dried beans/peas

	Individual States						State groups			
	CA	CT	NC	OH	OK	TX	All States	No restric-tions	Restric-tion	Group differ-ence
						Percent				
Percent with prescription	61.6	40.0	78.8	31.0	53.4	63.4	54.7	55.0	53.4	–1.6
Sample size (number)	*178*	*198*	*192*	*189*	*166*	*171*	*1,094*	*928*	*166*	
Amount purchased										
All	91.2	94.4	66.5	84.8	84.8	99.4	86.9	87.3	84.8	–2.4
Sample size (number)	*97*	*56*	*144*	*43*	*89*	*109*	*548*	*459*	*89*	
Amount consumed[a]										
All	92.7	57.9	61.6	60.6	57.2	87.3	69.6	72.0	57.2	–14.8*
Some	7.3	30.0	32.0	33.8	31.5	10.8	24.2	22.8	31.5	
None	0.0	12.1	6.4	5.6	11.4	2.0	6.2	5.2	11.4	
Sample size (number)	*86*	*60*	*85*	*37*	*77*	*108*	*453*	*376*	*77*	

a A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Oklahoma required purchase of the least expensive brand of dried beans/peas.

Source: Survey of WIC Participants.

Table I-13—Reasons for not purchasing or consuming prescribed dried beans/peas

	All States[a]	No restrictions	Restriction	Group difference
		Percent		
Reasons for not purchasing some or all of prescribed item[b]				
Don't like	28.8	26.6	39.6	13.0
Too much	18.1	21.0	3.8	
Other	23.3	17.8	50.5	
Sample size (number)	*95*	*83*	*12*	
Reasons for not eating some or all of prescribed item[b]				
Don't like	30.4	28.5	39.8	11.3
Too much	33.3	34.8	26.0	
Don't normally eat	7.5	8.6	1.8	
Consumed by others	15.4	16.7	8.7	
Other	13.4	11.4	23.8	
Sample size (number)	*121*	*88*	*33*	

a Results presented for the six States in the study. Due to small sample sizes, State-specific results are not reported.

b A chi-square test on the difference in distribution between States with and without restrictions was not statistically significant.

Weighted estimates for States were obtained with SUDAAN software. Group estimates give equal weight to each State in the group. Totals may not sum to 100 due to rounding.

Significant differences in means and proportions between State groups are noted by * (0.05 level), ** (0.01 level).

Oklahoma required purchase of the least expensive brand of dried beans/peas.

Source: Survey of WIC Participants.