



Follow-on Milk Analysis July 2009

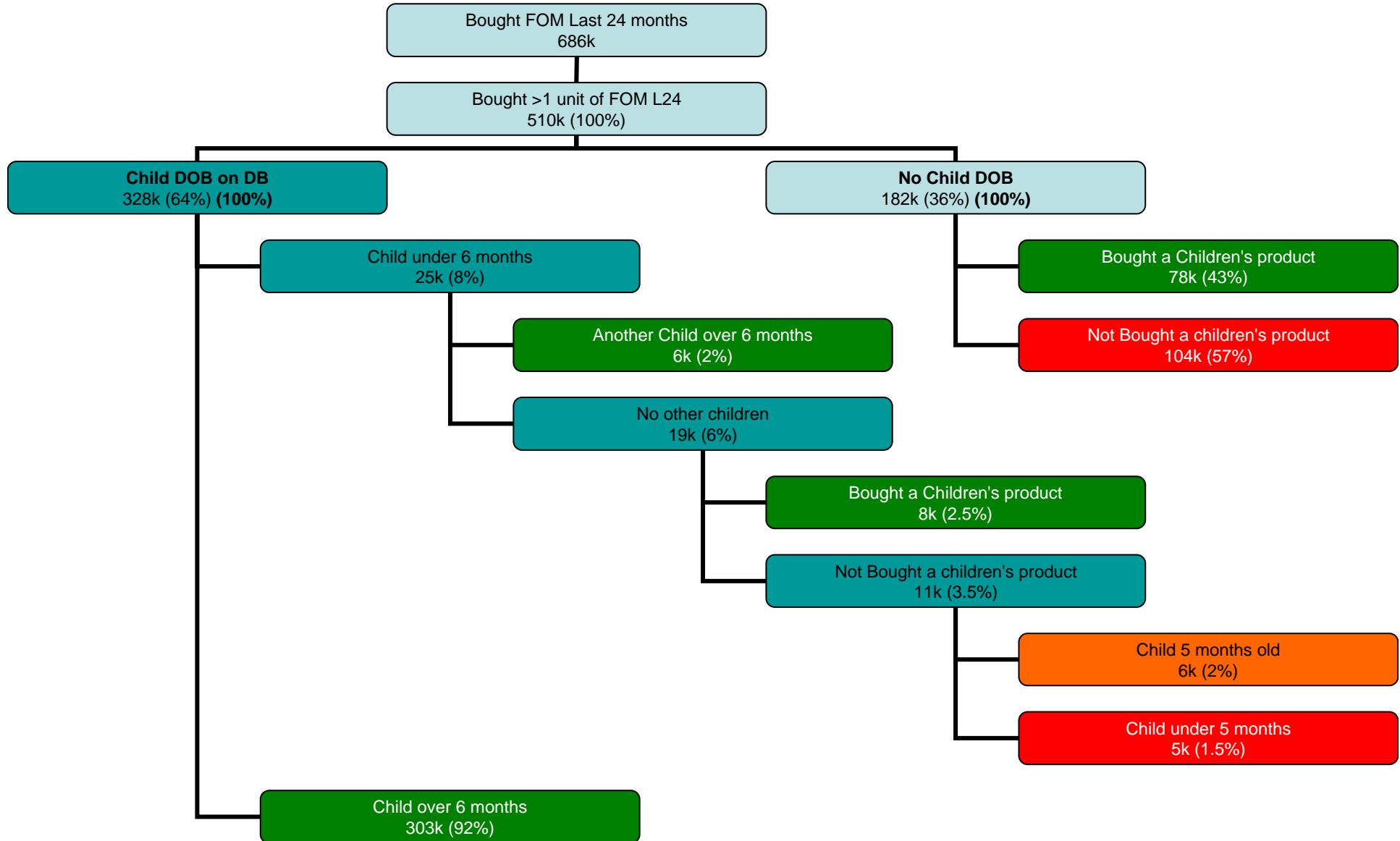
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Executive Summary



- Having examined the Boots Advantage Card information on over half a million customers buying follow-on milk more than once in the two years to June 2009 the instances of customers purchasing follow-on milk when their child is aged under six months appears to be relatively small
- In the minority (8%) of cases where Boots can match a child age to a customer purchasing follow-on milk the child is aged under the recommended **six** months of age, this falls to 3.5% when we look at the presence of other children in the household
- Splitting out the two years worth of data this figure has actually improved from 3.5% in 2007/08 (May07–June08) to 3.2% in 2008/09 (May08–June09)
- A significant proportion of those buying the milk when the child is under **six** months actually do so when the child is **five** months old, this could be advance preparation?
- In 4% of cases where Boots can match a child age to a customer purchasing follow-on milk the child is aged under **five** months of age, this drops to 1.5% when we look at the presence of other children in the household
- Splitting out the two years of data this figure has actually improved from 1.75% in 2007/08 to 1.2% in 2008/09
- There is a second group (182k) of follow-on milk buyers where we don't know the child's age, this represents 36% of all buyers
- Using the top 40 products bought by parents with a child over six months old as a proxy we were able to infer that 57% of the unknowns appear not to have had a child aged over six months when they bought follow-on milk, this figure has fallen from 57.5 in 2007/08 to 56% in 2008/09

Customer Summary Breakdown





Brief & Methodology

Brief from FSA



- To compare purchases of follow-on formula with information held on the age of infants in the household and/or with the purchase of key products that would indicate the age of infants in that household, for example nappies of a particular size.
- The Food Standards Agency primary objective is to understand:
 - Is it possible to identify shoppers buying Follow-on milk (FOM) exclusively for infants under six months of age?
 - To what extent does this occur
- The following brands of Follow-On Milk will be used:
 - SMA, Cow & gate, Heinz Nurture, HIPP and Milupa (Aptamil)
 - For full list of items see appendix 2

Boots Methodology



- Select Boots Advantage card transactions containing any of the selected brands of follow-on milk (FOM) from the last twenty-four months (to 21/6/09)
- Remove customers making just one purchase as these could be anomalies, people buying for someone else or a child unknown to Boots etc (176k customers)
- Select Advantage card customers with children's dates of birth (DOB) specifically those with children under five years of age (from Parenting Club database)
- Boots Parenting Club is available from pregnancy to the child's second birthday, when customers register they supply the child's date of birth or their due date
- Merge the two datasets in order to calculate child age at date of purchase subject to rule set e.g.
 - If youngest child not born use next child etc
- Examine first FOM purchase per customer in period & summarise child ages
- Join on additional child data to show presence of other children in household where purchase appears to be for child under six months
- If a significant proportion of buyers have no child information on database create an item list of items bought by known parents of children aged six months or over
- Flag proportion of FOM buyers with unknown child age buying products likely to indicate a child over six months in household



Initial Data Detailed Summary

Initial data suggests not a major problem (where child age is known)



Youngest child Age (Date of 1st FOM Purchase)	Year of Transaction				Grand Total		Annual change (PPT)	
	2007/08		2008/09					
Unborn	2,137	1.18%	759	0.51%	2,896	0.88%	-0.67%	
0-6	1 mth	766	0.42%	397	0.27%	1,163	0.35%	-0.16%
	2 mths	811	0.45%	492	0.33%	1,303	0.40%	-0.12%
	3 mths	991	0.55%	706	0.48%	1,697	0.52%	-0.07%
	4 mths	1,638	0.91%	1,506	1.02%	3,144	0.96%	0.11%
	5 mths	7,249	4.02%	7,611	5.16%	14,860	4.53%	1.14%
6+ mths	166,828	92.47%	136,099	92.23%	302,927	92.36%	-0.24%	
Total with Age	180,420	100%	147,570	100%	327,990	100%		

Total Unknown	103,090		78,608		181,698		
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Grand Total	283,510		226,178		509,688		0.00%
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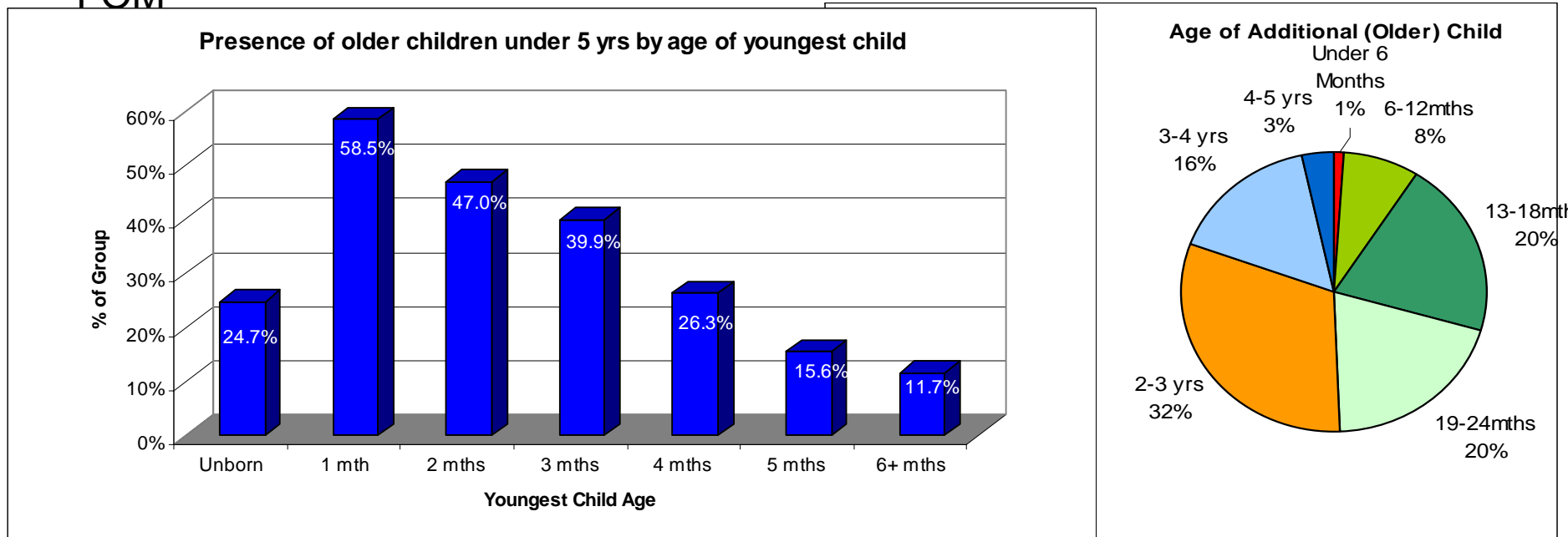
NB Excludes customers making just 1 purchase in 24 months as they are more likely to be anomalies, buying for someone else etc

- We have two groups of customers, those where we have a child age & those where it is unknown
- Based upon the total figures from the last two years where we know the child's age, the majority (92%) of Advantage Card customers buying FOM have first purchased when their youngest child is between six months & five years old (Green boxes)
- 4.5% have bought when their child is five months old, this could be customers buying in preparation for the child reaching six months? (amber box 1)
- Only 3% of customers buying FOM appear to have bought when their youngest child is under five months old (red boxes)
- There is little statistically significant difference between purchases in 2007/08 & 2008/09, other than a slight shift from the proportions of customers buying when the child is five months rather than six months old in 2008/09
- The second group of customers which represents 36% of the total do not have a child registered with Boots Parenting club at the time of purchase & therefore the child's age is unknown (amber box 2)

Overlaying additional child info improves the picture further



- Of the 25k customers (red & amber boxes table 1 page 8) purchasing FOM when their youngest child is under six months old 23% have another older child aged under five years, this does vary by youngest child age (see chart below)
- The majority (99%) of the older children are over six months old (see pie chart)
- With 48% being aged between six & twenty-four months, the recommended age for FOM



- We are still left with 19k customers who appear to be buying for a child under six months, these along with the unknown child age customers will be investigated further by looking into which other products they bought in Boots



Unknown Date of Birth Analysis

Methodology for using items bought to estimate age of child

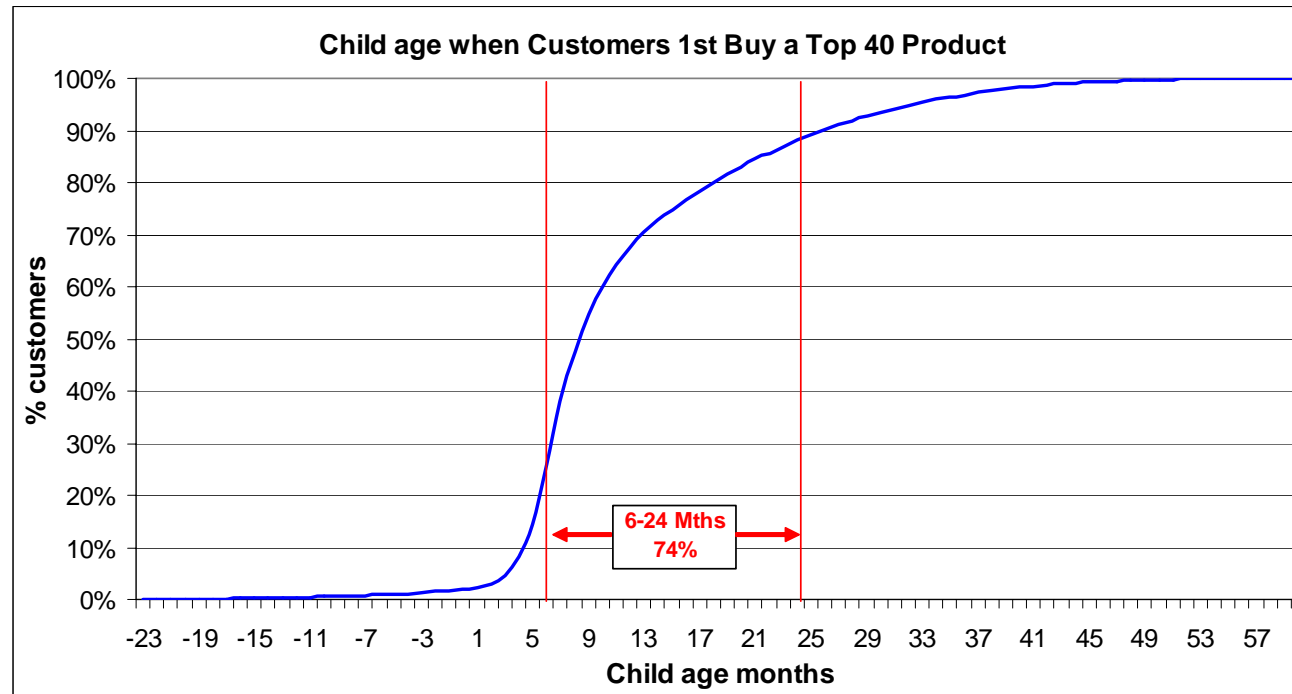


- In order to estimate the age of child by looking at the products bought we selected a group of customers with only one child aged between 18-36 months as of June 09 & examined their Baby category purchases over a twelve month period (when the child would have been aged between 6-35 months)
- The top products in terms of the number of customers buying included generic baby products such as baby wipes & baby bath that are used at all child ages
- After removing these, excluding baby milks and removing products suitable for children under six months we came up with a list of the forty most popular products bought for children over six months old
- The top products included categories such as toddler foods, & disposable nappies
- Using this top forty item list we then looked for purchases of these items by the customers buying FOM but with no child age on the database
- For full list of Top forty items used in analysis see Appendix 2 (Page20)



Validating the item list

Age breakdown (where known) of top 40 products

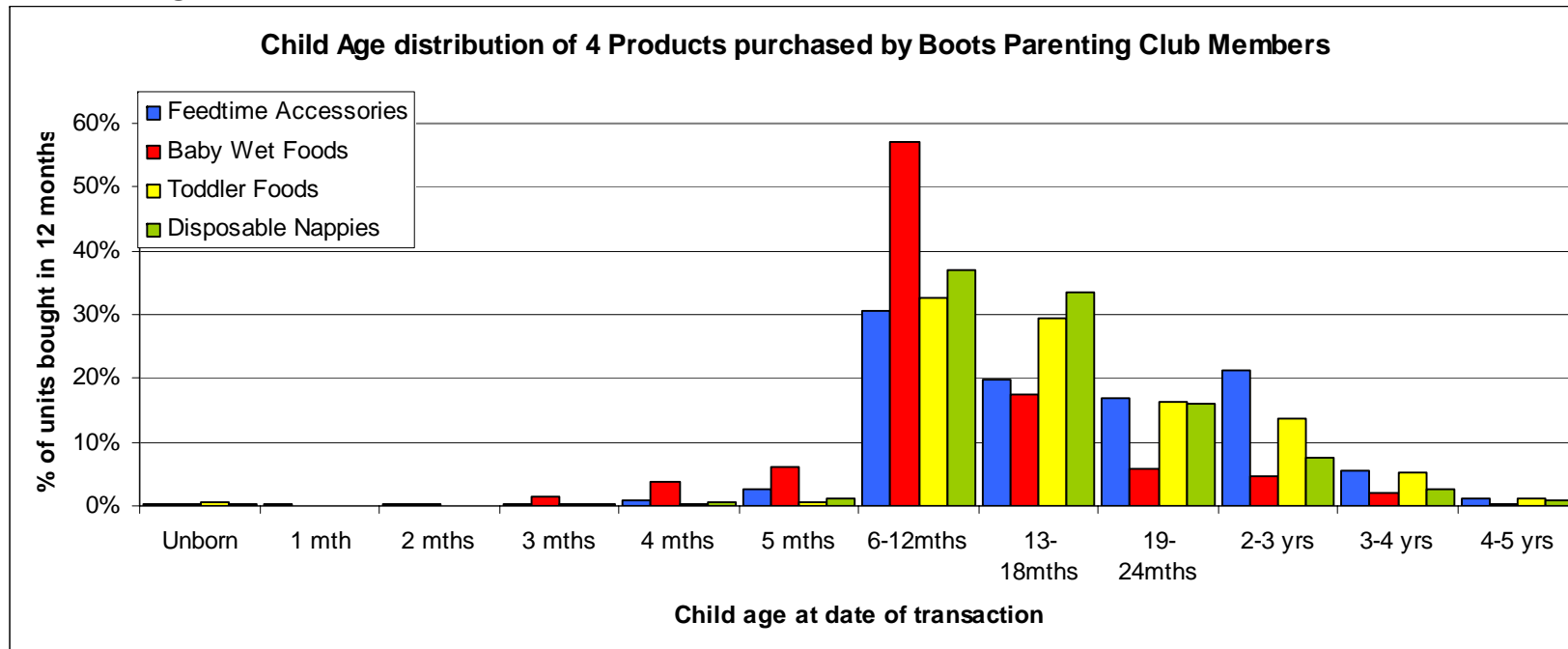


- In order to validate the product list we looked at when the items were bought by customers with a known child age
- The chart shows that in 74% of cases the first time customers with a known child age buy one of the top forty products the child is aged between six & twenty-four months
- This increases to 80% if we extend the earlier band to five months
- This indicates that if a customer purchases one of these products before buying FOM or within a month or two after first buying FOM then we can be confident of the presence of a child over six months old in the household

Age distribution of sample of top 40 products



- Having taken the sales of four of the top forty products over a twelve month period (May08-June09), one from each of the main product groups (Toddler Foods, Disposable Nappies, Feedtime Accessories & Baby Wet Foods) by Parenting Club members we can further validate the item list by looking at the child ages at the date of purchase.
- Although there are some sales before the child reaches six months, particularly for baby wet foods 88% of units are still bought after the child reaches six months of age, this figure increases to 95%(feedtime), 98% (toddler foods), 97% (nappies)



Actual items used in analysis can be found in appendix 2 (blue items)

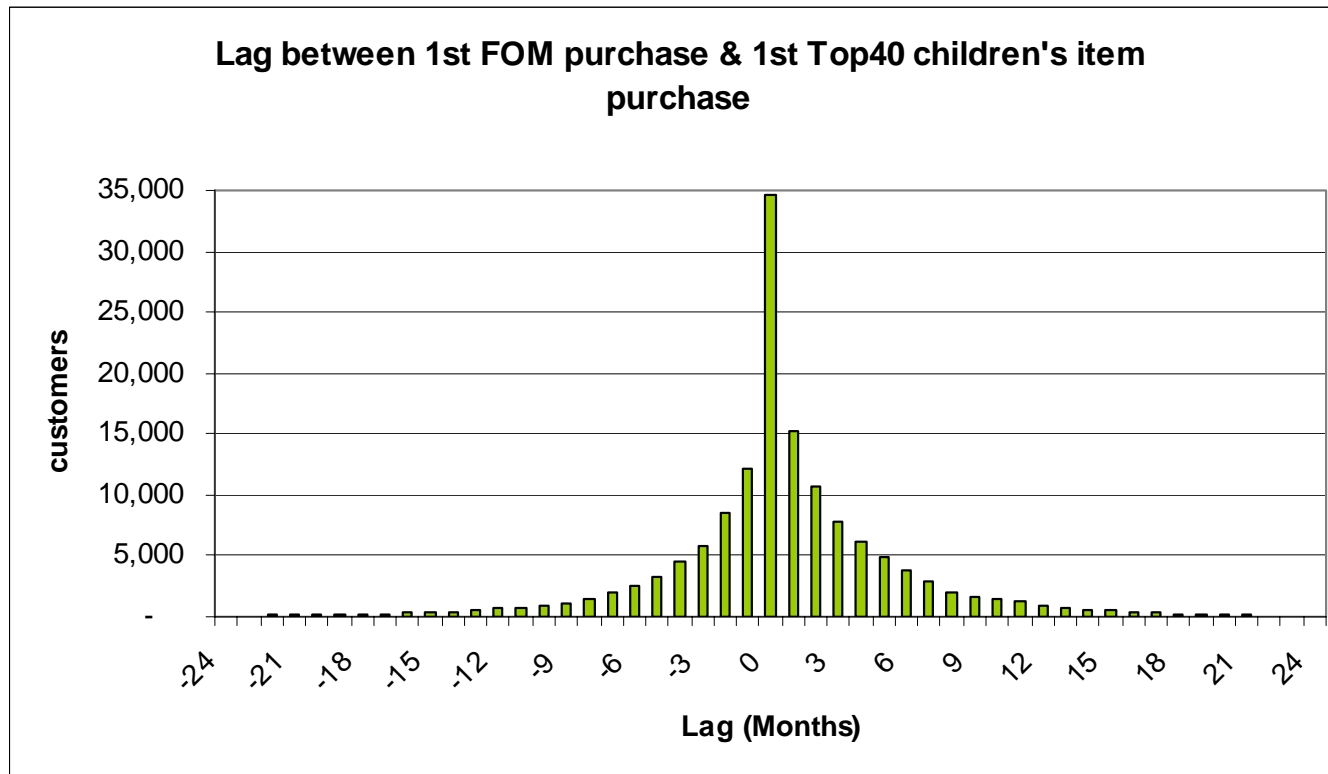


Applying the list to FOM buyers with unknown child ages

How many of the unknown group have bought top 40 products?



- Looking at the first purchase of one of the top forty products compared to the first purchase of FOM we can see a clear correlation, with 57% of purchases being within two months of each other
- Purchases to the left of 0 indicate that a top forty product was bought before FOM with those to the right of 0 being bought after
- 60% of customers purchased FOM between six months after or one month before buying a top forty product so we can safely assume they had a child over six months when they bought the FOM
- Outliers could be caused by customers buying for another child not registered on Boots database, buying for someone else etc.





Summary & Conclusions

Summary & Conclusions



- As shown on the summary chart on page three where we have a child's date of birth, 3.5% of customers buying FOM in the two years to June 2009 appear to have first bought FOM when their child was under **six** months of age & they didn't appear to have another child in the household who could be using it
- This equates to 11k customers who we know had a child under six months old when they bought their first FOM product (red & amber boxes)
- 1.5% of customers appear to have first bought FOM when their child was under **five** months of age & they didn't appear to have another child in the household who could be using it
- This equates to 5k customers who we know had a child under five months old when they bought their first FOM product (red box)
- In our second group of customers where we have an unknown child age, 57% haven't bought any products in Boots to indicate they had a child over six months of age within seven months of buying FOM (either six months before or one month after) although 43% did
- Amongst our sample group of 510k Boots Advantage card holders buying FOM more than once, in particular those who are members of the Boots Parenting Club the instances of customers purchasing follow on milk when their child is aged under six months appears to be relatively small



Appendix

Appendix 1



Youngest child Age (Date of 1st FOM Purchase)		2007/08 Grand Total		Presence of other children under 5		No Other Children under 5	Bought kids product (-6 to +1)	No confirmed other children	% of Original Total
Unborn		2,137	0.75%	512	24.0%	1,625	58	1,567	1.5%
0-6	1 mth	766	0.27%	480	62.7%	286	68	218	0.2%
	2 mths	811	0.29%	424	52.3%	387	105	282	0.3%
	3 mths	991	0.35%	425	42.9%	566	178	388	0.4%
	4 mths	1,638	0.58%	459	28.0%	1,179	467	712	0.7%
	5 mths	7,249	2.56%	1,122	15.5%	6,127	3,187	2,940	2.9%
6+ mths		166,828	58.84%	16,389	9.8%				
Unknown		103,090	36.36%		0.0%	103,090	43,794	59,296	57.5%
Grand Total		283,510	100%	19,811		113,260	47,857	65,403	63.4%

Youngest child Age (Date of 1st FOM Purchase)		2008/09 Grand Total		Presence of other children under 5		No Other Children under 5	Bought kids product (-6 to +1)	No confirmed other children	% of Original Total
Unborn		759	0.34%	203	26.7%	556	42	514	0.5%
0-6	1 mth	397	0.18%	200	50.4%	197	54	143	0.1%
	2 mths	492	0.22%	188	38.2%	304	76	228	0.2%
	3 mths	706	0.31%	252	35.7%	454	139	315	0.3%
	4 mths	1,506	0.67%	369	24.5%	1,137	478	659	0.6%
	5 mths	7,611	3.37%	1,196	15.7%	6,415	3,517	2,898	2.8%
6+ mths		136,099	60.17%	18,912	13.9%				
Unknown		78,608	34.75%		0.0%	78,608	34,482	44,126	42.8%
Grand Total		226,178	100%	21,320		87,671	38,788	48,883	47.4%

Appendix 2



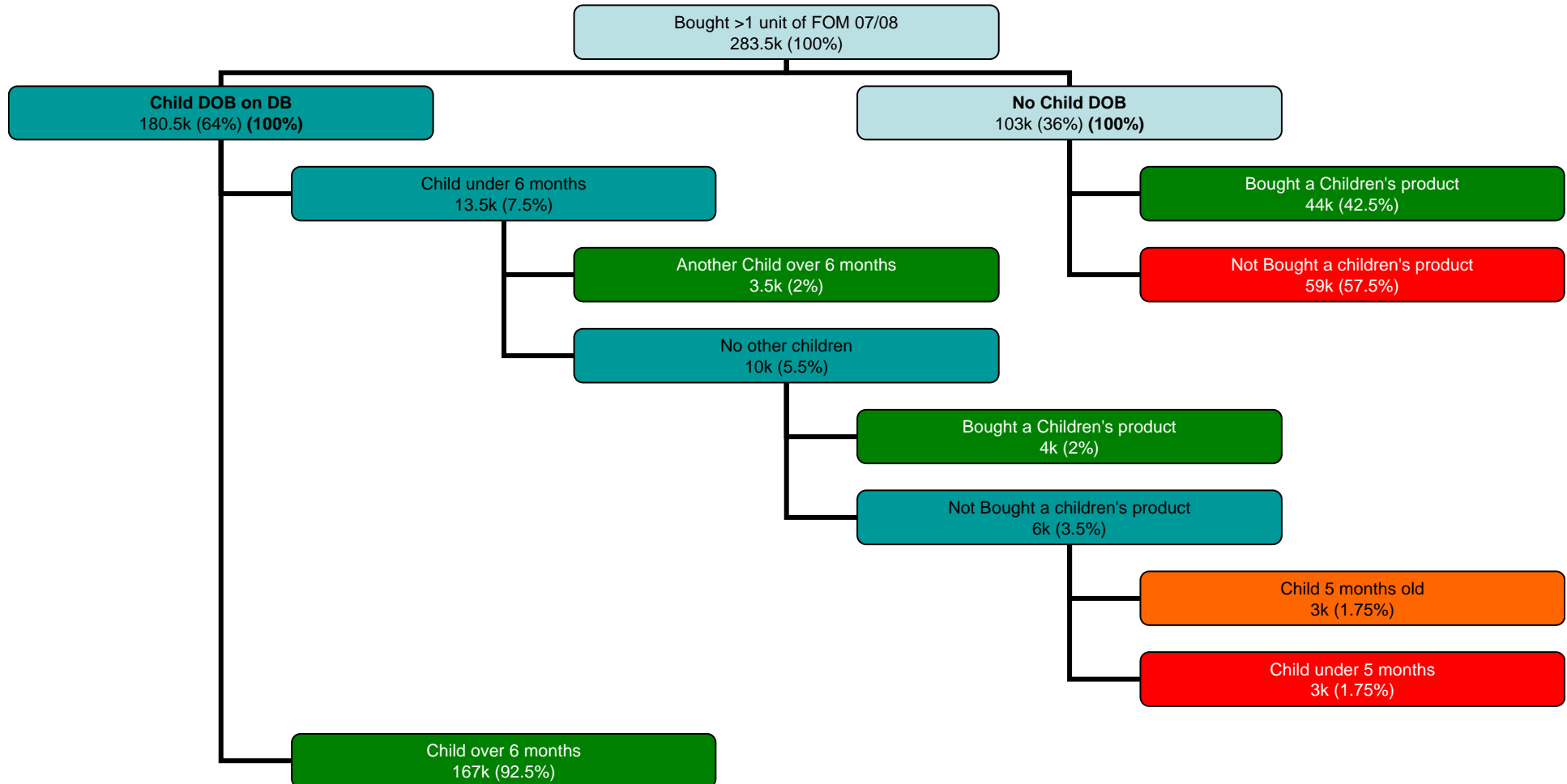
Top 40 Items bought for children over 6 months

item_Desc	Product_group
ORGANIX CARROT STIX	TODDLER FOODS
ORGANIX SWEETCORN RINGS	TODDLER FOODS
ORGANIX CURLY PUFFS CHS	TODDLER FOODS
ORGX CRUNCHY STICKS	TODDLER FOODS
PAMP ACT FIT MAXI+ EP 48	DISPOSABLE NAPPIES
ORGANIX CURLY PUFFS TOM	TODDLER FOODS
HZ ORG BISCOTTI	TODDLER FOODS
PAMP ACT FIT JNR EP 46	DISPOSABLE NAPPIES
ORGANIX NOUGHTS & CROSS	TODDLER FOODS
ORGANIX CRUNCHY TOM 20G	TODDLER FOODS
PAMP BABY DRY JNR EP 50	DISPOSABLE NAPPIES
AVENT SILICONE STHR 6M+	FEEDTIME ACCESSORIES
ORGX RASP APP CER BAR MP	TODDLER FOODS
PAMPERS BABY DRY JUNIOR30	DISPOSABLE NAPPIES
PAMP ACT FIT MAXI EP 50	DISPOSABLE NAPPIES
HZ FCP FRUIT MEDLEY	BABY WET FOODS
BTS ORG APPLE RICE CAKES	TODDLER FOODS
ORGX GINGER MEN BISCUITS	TODDLER FOODS
PAMP BABY DRY MAXI +EP54	DISPOSABLE NAPPIES
PAMPERS BABY DRY MAXI+32	DISPOSABLE NAPPIES
C&G BB SPAGHETTI BOL	BABY WET FOODS
AK ORG MINI SHELLS PASTA	CHILLED BABY FOODS
AVT SILICONE SOOTHER 6M+	FEEDTIME ACCESSORIES
HZ FCP BANANA	BABY WET FOODS
ORGANIX RAISIN MINI BOX	TODDLER FOODS
PAMP BABY DRY JNR+ EP 46	DISPOSABLE NAPPIES
PAMP ACT FIT JNR CP 26	DISPOSABLE NAPPIES
PAMP BABY DRY MAXI EP 58	DISPOSABLE NAPPIES
HIPP PASTA BAM VEG LASAG	BABY WET FOODS
PAMP ACT FIT MAXI+ CP 27	DISPOSABLE NAPPIES
HZ FCP AP&MANGO	BABY WET FOODS
BTS BBY ORG CK S/C	CHILLED BABY FOODS
HIP SPAG TOM/MOZ 190G	BABY WET FOODS
HIPP VEG/PASTA&CHCKN190G	BABY WET FOODS
HIPP PASTA ITALIENNE	BABY WET FOODS
HIP VEG&CHKN RISOTO 190G	BABY WET FOODS
HZ CHOC BISCOTTI	TODDLER FOODS
HZ ORG GNGRBRD BISCOTTI	TODDLER FOODS
BOOTS DRY BABY JUNIOR CP	DISPOSABLE NAPPIES
PAMP ACT FIT JNR+ EP 44	DISPOSABLE NAPPIES

Follow-on milk Item codes used in analysis

item code	item description
4898648	APTAMIL GRW-UP MILK PWDR
3704335	C&G COMFORT FOM 900G
3475905	C&G FO MILK 6MNTH+ 200ML
1096362	C&G FO MILK 6MNTH+ 500ML
3704262	C&G FOLLOW ON MILK 900G
5482305	C&G GD NGHT FOLLOWON MLK
5482291	C&G GROWING UP MLK 900G
2822091	C&G GUP MILK 200ML
2823381	C&G GUP MILK 4 X 500ML
4348508	HEINZ NURTURE G/UP MILK
5482283	HIPP ORG FOLLOW ON MILK
5482275	HIPP ORG GD NGHT MLK DRK
4816617	HIPP ORGANIC FOLLOW ON
2053837	HZ NTURE250 F/ONRTD 3
2059754	HZ NTURE900 F/ON 3
3704300	MILUPA APTAMIL FO 900G
4020626	MILUPA FORWARD RTF 200ML
2823306	MILUPA GROWING UP MILK
2822563	MILUPA GUP MILK 200ML
3245306	SMA PROGRESS 250ML RTF
2812746	SMA PROGRESS 900GM

Appendix 3 Customer Breakdown Summary 2007/08



Appendix 4 Customer Breakdown Summary 2008/09

