Time to Change? A study of how parents and carers use disposable and reusable nappies

Project Record P1-481/PR

ENVIRONMENT AGENCY

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Professor Mike Depledge   Head of Science

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1 Background

The Environment Agency commissioned a life-cycle assessment (LCA) to compare the environmental impacts of using reusable (washable) and disposable nappies. One of the first stages of that study was a review of previous work. This showed that certain factors – such as the age at which children stop wearing nappies, the number they use each day *etc* – would be key to the final results.

The available information was either anecdotal or partial, but objective, independent information was required. We therefore commissioned surveys of how consumers use nappies. This report presents results from 2002-2003.

We commissioned the Office of National Statistics to ask questions in their Omnibus Survey about the use of reusable and disposable nappies. The questions addressed issues such as the types of nappies used, the average number of nappy changes per day and the age at which children stop using nappies. A total of 8,000 households were interviewed in four phases between June 2002 and February 2003. Only households with a child that was in nappies or that had worn nappies in the recent past (defined as having a child under 10 years old) were interviewed. Only 2,101 of the households had a child under 10, and only 73 of those used or had used reusable nappies. The number using reusable nappies was too small a sample size for all the statistical analysis required, so we commissioned a second survey specifically of parents that use reusable nappies. This second survey would establish the types of reusable nappies being used, how they were being used and laundered and what other products were being used with the nappies, *e.g.* wraps, booster pads, liners, detergents, etc. TEST Research (part of the MORI Group of research companies) conducted face to face interviews (March – April 2003) with parents or guardians of children under 36 months who were using or had used washable cloth (reusable) nappies. In total, 183 parents/guardians were interviewed face to face within randomly selected constituencies across Britain. Of the 183 respondents, 135 had a child under the age of 36 months currently using reusable nappies. The remaining 48 had used reusable nappies on their child in the recent past. The fieldwork was conducted between 10 March 2003 and 4 April 2003.

This report presents the analysis of the results from these two surveys. Most of this report relates to reusable nappies, because for consumers the disposable system is much simpler – buy, use, and dispose. The overwhelming majority of disposable nappies are also very similar, and the survey did not distinguish between brands. By contrast, reusables fall into four distinct types: all-in-one, shaped, prefold and flat terry. Of the four different types, the terry and prefold are the most similar, and data for these were studied in more detail to provide information for the LCA. Consumer behaviour is also of more interest in relation to reusables because how the consumer launders nappies is important to the LCA study.

2 Nappies

2.1 Nappy users

2.1.1 Omnibus survey

The 2,101 usable records from the Omnibus survey covered children from newborn babies up to the age of nine years 11 months. As Table 2.1 shows, just under half of these (1,028) related to children under five, and 523 of these children were still in nappies.

Table 2.1 Nappies users

Stage of nappy wearing	Frequency	Per cent
Still in nappies	523	24.9%
Recently out of nappies	505	24.0%
Child aged between 5 and 10	1073	51.1%
Total	2101	100.0%

Source: Omnibus survey

Of the 2,101 responses, 2,023 used disposable nappies (see Table 2.2), 73 used reusables (see Table 2.3), and five did not answer the question.

Table 2.2 Nappy users –disposable

Stage of nappy wearing	Frequency	Percent
Still in nappies	509	25.2%
Recently out of nappies	493	24.4%
Child aged between 5 and 10	1021	50.5%
Total	2023	100.0%

Source: Omnibus survey

Table 2.3 Nappy users - reusable

Stage of nappy wearing	Frequency	Percent
Still in nappies	14	19.2%
Recently out of nappies	11	15.1%
Child aged between 5 and 10	48	65.8%
Total	73	100.0%

Source: Omnibus survey

2.1.2 TEST survey

There were 183 usable records from the TEST dataset relating to children using reusable nappies up to the age of 36 months. The responses were broken down as follows:

Table 2.4 Nappy users

Stage of nappy wearing	Frequency	Percent
Still in nappies	135	73.8%
Recently out of nappies	48	26.2%
Total	183	100.0%

Source: TEST survey

Of the 183 respondents, 135 related to children still wearing nappies, and 48 related to children who had used reusable nappies in the past. Twelve of the 183 respondents used a nappy laundry service (seven per cent of reusable users). These 12 records were excluded from the analysis because the wording of certain questions about how they used such a service was ambiguous. Eight of these 12 records were for children still in nappies. This therefore left a sample of 127 records (= 135 - 8) where the child was still in nappies. All the results presented in this report from the TEST dataset are based on the responses for those (127) records. This is consistent with the analysis of data of disposable nappies from the OMNIBUS survey.

2.2 Responses with children still in nappies

In the sections of the two surveys dealing with children 'still in nappies', responses were included from both those who currently had a child in nappies and from those who had recently had a child in nappies. The breakdown of the sample by stage of nappy wearing was as shown in Tables 2.1 – 2.4.

Disposable users were classed as people using only or mainly disposables. Reusable users were people using only or mainly washable cloth nappies. Tables 2.2 and 2.3 show how recently the children in the sample population were using nappies.

2.3 Type of nappy used

This question was asked to establish the type of nappy mainly used. It allows the relative market shares of disposable and reusable nappies to be calculated. A very small proportion used reusable nappies.

Table 2.5 Market share

Type of nappy used	Frequency	Percent
Disposable only	1973	94.1%
Reusable only	31	1.5%
Both – mainly disposable	50	2.4%
Both – mainly reusable	42	2.0%
Total	2096	100.0%

Source: Omnibus survey

Based on the figures shown above for type of nappy used, the market share of reusables was calculated at six per cent. This figure is based on counting as a reusable user anyone using reusable nappies in some way, in other words, the total of 'reusables only', 'both – mainly reusables' and 'both – mainly disposables'.

The market share was also separately calculated for those children aged up to three years, and those children aged three years and over.

Table 2.6.1 Market share – children aged under three years

Type of nappy used	Frequency	Percent
Disposable only	658	96.3%
Reusable only	7	1.0%
Both - mainly disposable	8	1.2%
Both - mainly reusable	10	1.5%
Total	683	100.0%

Source: Omnibus survey

Table 2.6.2 Market share – children aged three years and over

Type of nappy used	Frequency	Percent
Disposable only	1315	93.0%
Reusable only	24	1.7%
Both - mainly disposable	42	3.0%
Both - mainly reusable	32	2.3%
Total	1413	100.0%

Source: Omnibus survey

A figure of four per cent was obtained for those respondents with children under three years old, and a figure of seven per cent for those respondents with children aged three years or over.

The difference between the market share for children under three years old (3.7 per cent) and those three years old and over (6.9 per cent) is statistically highly significant (P<0.01).

2.4 Type of reusable nappy used

This question established the type of reusable nappy mainly used. It allowed us to consider the data more effectively by producing more detailed studies by nappy type later.

Overall, 122 Omnibus records gave an answer to type of reusable nappy mainly used.

Table 2.7 Type of reusable nappy

	Frequency	Percent
All in one reusable nappies – home laundered	16	13.1%
Shaped reusable nappies with wrap – commercially laundered	4	3.3%
Shaped reusable nappies with wrap - home laundered	25	20.5%
Flat terry reusable nappies – commercially laundered	8	6.6%
Flat terry reusable nappies – home laundered	69	56.6%
Total	122	100.0%

Source: Omnibus survey

Based on these responses, 10 per cent of reusable users paid a nappy service to launder their nappies.

All 127 people taking part in the TEST survey gave an answer to type of reusable nappy mainly used.

Table 2.8 Type of reusable nappy

	Frequency	Percent
All in one washable cloth nappy	15	11.8%
Shaped sized/fitted washable cloth nappy	24	18.9%
Shaped one size washable cloth nappy	25	19.7%
Prefold washable cloth nappy	29	22.8%
Flat terry washable cloth nappy	32	25.2%
Other	2	1.6%
Total	127	100.0%

Source: TEST survey

The categories in Table 2.8 differ from those in the Omnibus Survey (in Table 2.7). First, the Omnibus survey did not have a separate category for prefold nappies. Therefore the figure for terry nappies may include responses from those using prefolds. Second, the question about whether nappies were laundered at home or in a commercial laundry was asked separately in the TEST survey. Only eight people were using a laundry service. Six of these eight responses used prefold nappies.

Both the Omnibus and TEST surveys showed that more people bought flat terry nappies than they did any other nappy type. We therefore analysed a number of survey questions in more detail to see how terry users specifically had answered questions.

2.5 Why reusable nappies are used

Everyone answered this question. Respondents were allowed to choose more than one answer.

Table 2.9 Reusable nappies – why are they used

n=127[1]	Frequency
Cheaper/more economical	86
More environmentally friendly	106
Contains less chemicals	39
Recommendation from a friend/family	2
I was given them by someone else who had finished with them	4
Other	6
Total responses	243

Source: TEST survey

No one reported using reusable nappies for better performance or comfort. Reasons associated with the environment (including using fewer chemicals) accounted for 60 per cent of responses. Thirty-five per cent of responses related to cost.

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[1] n=127 means 127 people responded to this question

2.6   Use of disposable nappies

Of the 126 people who answered this question, 88 per cent said that they had used disposable nappies instead of reusable nappies at times, while 12 per cent said that they never had.

One hundred and eleven people responded to the question about when they used disposable nappies rather than reusable ones. Respondents were allowed to choose more than one answer for this question.

2.10 Reusable nappies – when disposable nappies are used

n=111	Frequency
During night time	56
When I am busy e.g. too much to do	13
When I am on holiday/away from home	74
When the child is at nursery/with a child minder	16
Other	12
Total responses	171

Source: TEST survey

The use of disposables at night and on holiday accounts for 76 per cent of the responses given.

2.7   Age that a child stops using nappies

How long children wear nappies is important for two reasons. First, the LCA study intended to compare the total nappy usage over a period equivalent to the average nappy-wearing period (daytime use). The survey therefore provided an important check. Second, the length of time children are in nappies has been an area of differing views. It is often claimed that children who use reusable nappies are potty trained sooner than children who use disposables.

Overall, 1,578 records related to children no longer wearing nappies, but only 1,553 of the respondents answered this question. For those recently out of nappies, the average age out of nappies was calculated as 26.46 months $\pm$ 0.55 (95% CI[2]).

Figure 2.1 shows the distribution of the responses to the Omnibus survey for the age when children stopped using nappies during the day. These are for responses only for children recently out of nappies.

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[2] 95% CI, the 95% confidence interval, means that there is 95% confidence that the true age out of nappies lies between 25.91 months (26.46 – 0.55) and 27.01 months (26.46 + 0.55). The confidence interval is calculated as the mean $\pm$ t x SD/√n, where n is the number in the sample, SD is the standard deviation, and t is a factor related to the confidence level required and the number in the sample (t = 1.98 for 95% confidence and n = 120).

The standard deviation (SD) is a statistical measure of the degree of scatter shown by a set of data around its mean value. The larger the standard deviation, the more variable the data.

Figure 2.1
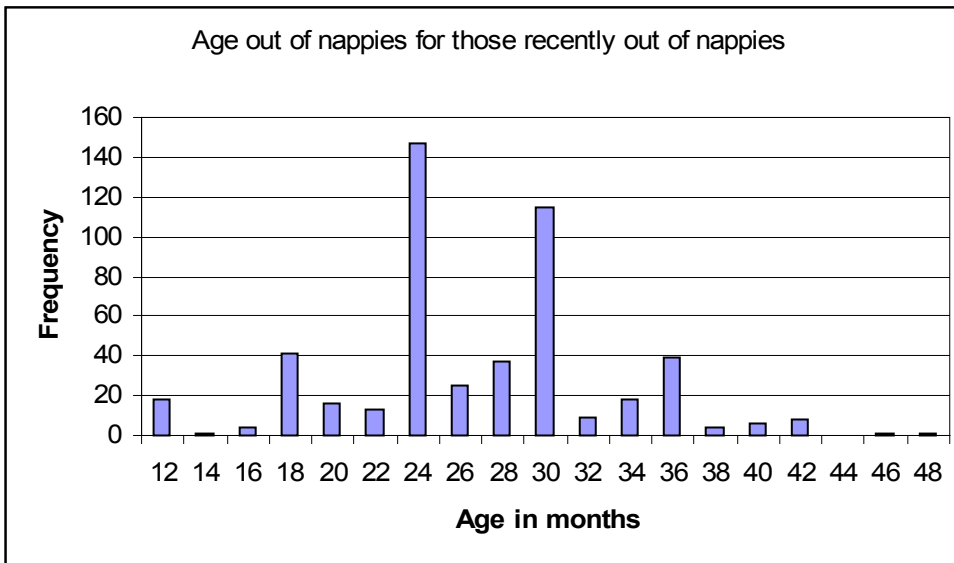
Source: Omnibus survey

The average age was calculated for a number of different groups to see if there was a difference between respondents with children recently out of nappies and those with children out of nappies some time ago, and also whether there was a difference in the type of nappy being used.

From Table 2.11, it appears that the type of nappy used is not a factor in determining how long children use nappies. The data show that the average age out of nappies is around two years and two months for both disposable and reusable nappies, whether out of nappies recently or some time ago.

Table 2.11 Average age out of nappies (months)

	Frequency	Mean	SD
ALL			
Recently out of nappies	503	26.46	6.28
Out of nappies some time ago	1048	26.05	7.66
All respondents	1551	26.18	7.24
DISPOSABLE			
Recently out of nappies	492	26.39	6.26
Out of nappies some time ago	1001	26.06	7.67
All disposables	1493	26.17	7.23
REUSABLE			
Recently out of nappies	11	29.64	6.73
Out of nappies some time ago	47	25.68	7.54
All reusables	58	26.43	7.50

Source: Omnibus survey

The age out of nappies for all reusable users (mean 26.43) was compared with the age out of nappies for all disposable users (mean 26.17). There is no statistically significant difference between these means (at the $P<0.05$ level).

The age out of nappies for reusable users recently out of nappies (mean 29.64) was compared with the age out of nappies for reusable users out of nappies some time age (mean 25.68). Although a mean difference of almost four months may seem substantial, the 29.64 mean is based on only 11 samples, and as a consequence the difference is not statistically significant (at the $P<0.05$ level).

These data on age out of nappies were used to calculate what percentages of children were still wearing nappies in each six-month timeband. This calculation was based on all records where an answer had been given to both the age out of nappies and the current age of the child. Table 2.12 shows the number of records reporting age out of nappies for each timeband, allowing a calculation to be made of how many children were therefore still in nappies. Table 2.13 displays the resulting percentages for children wearing and not wearing nappies based on these data.

Table 2.12 Disposable nappies

Age of child	Frequency out of nappies at this age	Frequency still in nappies at this age	% still in nappies
up to 6 months	0	1451	100.0%
6 to 12 months	62	1389	95.7%
12 to 18 months	188	1201	82.8%
18 to 24 months	540	661	45.6%
24 to 30 months	406	255	17.6%
30 to 36 months	185	70	4.8%
36 to 42 months	44	26	1.8%
42 to 48 months	20	6	0.4%
48 to 54 months	4	2	0.1%
54 to 60 months	1	1	0.1%
60 to 66 months	0	1	0.1%
66 to 72 months	1	0	0.0%
Total	1451	-	-

Source: Omnibus survey

Table 2.13 Disposable nappies

Age of child	Children wearing nappies	Children not wearing nappies
up to 6 months	100.0%	0.0%
6 to 12 months	95.7%	4.3%
12 to 18 months	82.8%	17.2%
18 to 24 months	45.6%	54.4%
24 to 30 months	17.6%	82.4%
30 to 36 months	4.8%	95.2%
36 to 42 months	1.8%	98.2%
42 to 48 months	0.4%	99.6%
48 to 54 months	0.1%	99.9%
54 to 60 months	0.1%	99.9%
60 to 66 months	0.1%	99.9%
66 to 72 months	0.0%	100.0%

Source: Omnibus survey

Though there were fewer samples for reusable users, the exercise was repeated to compare results. Data from the TEST survey could not be used for these calculations, as the relevant question was not worded to obtain a clear answer.[3] Therefore data from Omnibus were used. As there were only 23 respondents, the figures should be interpreted very cautiously. This analysis produced almost identical patterns of use (see Figure 2.2). Therefore, Table 2.13 for disposable users was applied throughout the LCA study. Table 2.13 shows that after 30 months of age, 95 per cent of all children surveyed were out of nappies.

2.14 Reusable nappies

Age of child	Frequency out of nappies at this age	Frequency still in nappies at this age	% still in nappies
up to 6 months	0	23	100.0%
6 to 12 months	1	22	95.7%
12 to 18 months	3	19	82.6%
18 to 24 months	10	9	39.1%
24 to 30 months	5	4	17.4%
30 to 36 months	3	1	4.3%
36 to 42 months	1	0	0.0%
42 to 48 months	0	0	0.0%
48 to 54 months	0	0	0.0%
54 to 60 months	0	0	0.0%
60 to 66 months	0	0	0.0%
66 to 72 months	0	0	0.0%
Total	23	-	-

Source: Omnibus survey

2.15 Reusable nappies

Age of child	Children wearing nappies	Children not wearing nappies
up to 6 months	100.0%	0.0%
6 to 12 months	95.7%	4.3%
12 to 18 months	82.6%	17.4%
18 to 24 months	39.1%	60.9%
24 to 30 months	17.4%	82.6%
30 to 36 months	4.3%	95.7%
36 to 42 months	0.0%	100.0%
42 to 48 months	0.0%	100.0%
48 to 54 months	0.0%	100.0%
54 to 60 months	0.0%	100.0%
60 to 66 months	0.0%	100.0%
66 to 72 months	0.0%	100.0%

Source: Omnibus survey

[3] See note in ANNEX F under Modification for nappy analysis for further details

Figure 2.2
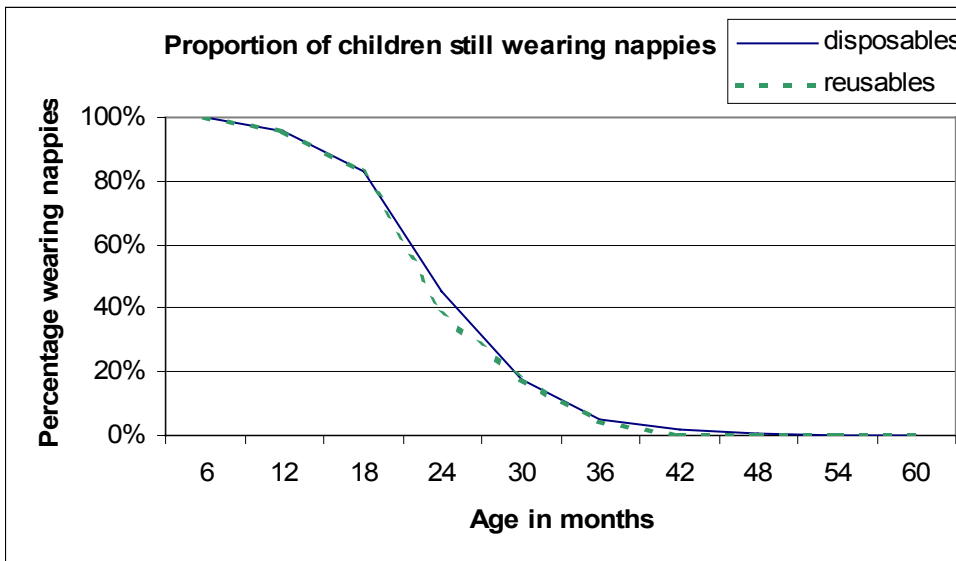
Source: Omnibus survey

2.8 Number of nappy changes per day

The number of nappies used each day is a major factor in determining the impact of the different nappy systems.

2.8.1 Analysis of survey responses

Of the 2,101 Omnibus records, there were 521 responses to this question – 14 from reusable users and 507 from disposable users. All those who answered had children under five years old that were still in nappies. For disposable users, the average number of changes per day was 5.51 ± 0.17 (95% CI). For reusable users the average number of changes per day was 6.57 ± 1.70 (95% CI).

For reusable users, the data from Omnibus were consistently considered insufficient due to the small number of responses, so results were produced from the TEST survey where there was a greater response rate. There were 122 responses to this question, with the number of changes ranging from one to 20. The average number of changes per day was 6.10 ± 0.47 (95% CI). The difference, between this and 6.57, the Omnibus mean for reusables, is not statistically significant (P<0.05).

The responses averaged above relate only to children still wearing nappies, whatever their age. These estimates take no account of the variation in the number of changes per day with the age of the child.

2.8.2 Analysis by age bands

To calculate the number of nappies used by an 'average' child, the changes per day were grouped by age band, and multiplied by the percentage of children still in nappies, calculated earlier and the number of days in the age band. This gave the total number of nappies used in each age band, which when summed provide an estimate of the total number of nappies used over the lifetime that the child is in nappies. This was then

divided by the total time in nappies (assumed to be 30 months for consistency) to obtain the number of nappies used per day over the lifetime that the 'average' child is in nappies. The result was 4.05 changes per day. Table 2.16 outlines the calculations.

Table 2.16 Disposable nappies – those still in nappies

Age band	Frequency	mean	SD	Changes per day	% still in nappies	Days in age band	Nappies used in age band
up to 6 months	90	6.98	2.15	6.98	100.0%	182.625	1274
6 to 12 months	168	5.66	1.64	5.66	95.7%	182.625	990
12 to 18 months	48	5.75	1.80	5.75	82.8%	182.625	869
18 to 24 months	120	4.95	1.49	4.95	45.6%	182.625	412
24 to 30 months	39	4.85	1.41	4.85	17.6%	182.625	156
30 to 36 months	20	3.70	1.66		4.8%		0
36 to 42 months	6	2.50	1.22		1.8%		0
42 to 48 months	7	4.00	1.29		0.4%		0
48 to 54 months	0	0	0		0.1%		0
54 to 60 months	2	2.50	2.12		0.1%		0
60 to 66 months					0.1%		0
66 to 72 months					0.0%		0
Nappies used over lifetime that child is in nappies, assuming age out of nappies is 30 months							3700
Number of days in 30 months							913.125
							4.05
Nappies per day used during daytime over period that child is in nappies							

Source: Omnibus survey

This analysis does not take account of night-time use. To estimate this, a similar methodology to Table 2.16 was applied, assuming that one nappy was being used overnight. The percentage out of nappies was multiplied through to give the number of nappies being used over the 30 months and then divided by the total number of days in the time period. This result is shown in Table 2.17. This figure was added to the first analysis in Table 2.16 to obtain an estimate of 4.4 changes per day, covering children both still in and out of nappies over their first 30 months.

Table 2.17 Disposable nappies – those out of nappies

Age band	Frequency	mean	SD	Changes per day	% out of nappies	Days in age band	Nappies used in age band
up to 6 months				1.00	0.0%	182.625	0
6 to 12 months				1.00	4.3%	182.625	8
12 to 18 months				1.00	17.2%	182.625	31
18 to 24 months				1.00	54.4%	182.625	99
24 to 30 months				1.00	82.4%	182.625	151
30 to 36 months					95.2%		0
36 to 42 months					98.2%		0
42 to 48 months					99.6%		0
48 to 54 months					99.9%		0
54 to 60 months					99.9%		0
60 to 66 months					99.9%		0
66 to 72 months					100.0%		0
Nappies used over lifetime that child is in nappies, assuming age out of nappies is 30 months							289
Number of days in 30 months							913.125
							0.32
Nappies per day used at night over period that child is in nappies							

Source: Omnibus survey

The same analysis is repeated in Tables 2.18 and 2.19 for reusable nappies.

Table 2.18 Reusable nappies – those still in nappies

Age band	Frequency	mean	SD	Changes per day	% still in nappies	Days in age band	Nappies used in age band
up to 6 months	25	7.80	2.77	7.80	100.0%	182.625	1424
6 to 12 months	32	5.84	2.96	5.84	95.7%	182.625	1021
12 to 18 months	24	6.04	2.26	6.04	82.6%	182.625	911
18 to 24 months	18	5.61	1.58	5.61	39.1%	182.625	401
24 to 30 months	13	6.00	2.35	6.00	17.4%	182.625	191
30 to 36 months	10	4.00	1.89		4.3%		0
36 to 42 months					0.0%		0
42 to 48 months					0.0%		0
48 to 54 months					0.0%		0
54 to 60 months					0.0%		0
60 to 66 months					0.0%		0
66 to 72 months					0.0%		0

Nappies used over lifetime that child is in nappies, assuming age out of nappies is 30 months	3948
Number of days in 30 months	913.125
	4.32

Nappies per day used during day over period that child is in nappies

Source: TEST and Omnibus surveys

Table 2.19 Reusable nappies – those out of nappies

Age band	Frequency	mean	SD	Changes per day	% out of nappies	Days in age band	Nappies used in age band
up to 6 months				1.00	0.0%	182.625	0
6 to 12 months				1.00	4.3%	182.625	8
12 to 18 months				1.00	17.4%	182.625	32
18 to 24 months				1.00	60.9%	182.625	111
24 to 30 months				1.00	82.6%	182.625	151
30 to 36 months					95.7%		0
36 to 42 months					100.0%		0
42 to 48 months					100.0%		0
48 to 54 months					100.0%		0
54 to 60 months					100.0%		0
60 to 66 months					100.0%		0
66 to 72 months					100.0%		0

Nappies used over lifetime that child is in nappies, assuming age out of nappies is 30 months	302

Nappies used in 30 months	302
Number of days in 30 months	913.125
	0.33

Nappies per day used at night over period that child is in nappies

This gives a figure of 4.7 for the average number of reusable nappies used per day over a child's first 30 months.

The analysis above demonstrates as expected that the number of changes per day falls as the child gets older. (Due to lower sample numbers, though, this pattern is not such a clear step change for reusables, see changes per day in Table 2.18).

2.8.3 Analysis cross check using sales data

For disposable nappies, we obtained annual nappy sales data from the Absorbent Hygiene Product Manufacturers Association (AHPMA). The number of disposable nappies sold in 2001 was 2.47 billion, which implies a figure of 6.77 million nappies sold per day. As a check on the previous calculation, an estimate of changes per day was calculated, based on this daily sales figure divided by how many children are using disposable nappies at any one time. The number of children who were aged up to 30 months at the end of 2001 was estimated using ONS population data. The ONS live birth figures were adjusted for infant mortality to estimate the total number of children aged between 0 and 30 months at December 2001. Table 2.20 shows the result.

As infant mortality rates are given as one figure for children up to one year old, the mortality adjustment was offset in Table 2.20. For example, to obtain the figure of 170.9 thousand births between Jan-Mar 1999 the infant mortality figure for March 2000 of 0.97 thousand was subtracted from the ONS live birth figure of 171.9 thousand for Jan-Mar 1999.

Table 2.20 ONS live births adjusted for mortality

		thousands live births	*thousands* infant mortality	*thousands* surviving children
1999	March	171.9		**170.9**
	June	177.0		**176.1**
	September	180.3		**179.3**
	December	170.9		**170.0**
2000	March	168.2	0.97	**167.2**
	June	169.2	0.94	**168.3**
	September	173.8	0.96	**172.9**
	December	167.8	0.93	**166.9**
2001	March	164.9	0.98	**164.0**
	June	167.0	0.86	**166.1**
	September	171.7	0.90	**170.9**
	December	165.6	0.93	**164.7**
2002	March		0.89	
	June		0.86	
	September		0.83	
	December		0.92	
	Surviving children born July 1999 to December 2001	1690.3		
	Children aged up to 30 months old at end December 2001	**1,690,340**		

Source: ONS population data

The figure of 1,690,340 is for all children up to the age of 30 months old. Not all of these children will be using disposable nappies, though. Applying the market share figure calculated earlier (four per cent for reusables, hence 96 per cent for disposables), a figure of 1,628,474 for the number of children using disposable nappies at any one time was obtained.

Dividing the total sales figure by 1,628,474, the number of disposable nappies sold per child per day is 4.16, which is the estimated number of changes per day for disposable nappies. This figure compares with the 4.4 calculated using the survey data previously.

2.9   Number of reusable nappy changes per day with a bowel movement

One hundred and seventeen people provided information on the number of changes a day that contained a bowel movement. The number ranged from one to eight per day with an average of 2.3 ± 0.27 (95% CI).

When asked how bowel movements were disposed of from the nappy, 125 responses were given. Respondents were allowed to choose more than one answer for this question. Overall, 107 people said that they flushed them down the toilet, 16 disposed of them with household waste and 15 gave the answer 'other' which was unspecified.

For those respondents using terry nappies, 27 said they flushed them down the toilet, six disposed of them with household waste and one gave the answer 'other', which was unspecified. Ignoring the 'other' response gives a proportion of 81 per cent flushing and 19 per cent disposing with the household waste.

2.10   Number of nappies owned and in use

The responses from the 123 people who gave the number of nappies they currently owned and were using ranged from five to 100. The average owned was 23 nappies.

Table 2.21 shows the responses grouped by age. Table 2.22 gives similar data but only for those using terry nappies.

Table 2.21 All reusable nappies – number of nappies owned

Age of child	Frequency	Mean	SD
up to 6 months	26	23.0	14.8
6 to 12 months	32	21.9	17.4
12 to 18 months	24	25.0	19.5
18 to 24 months	18	25.3	14.4
24 to 30 months	13	22.0	14.7
30 to 36 months	10	21.5	19.7
Total	123	23.2	16.6

Source: TEST survey

Table 2.22 Terry nappies – number of nappies owned

Age of child	Frequency	Mean	SD
up to 6 months	4	20.8	10.4
6 to 12 months	9	28.1	15.1
12 to 18 months	10	35.6	26.1
18 to 24 months	2	47.5	17.7
24 to 30 months	4	23.5	8.4
30 to 36 months	2	43.5	44.5
Total	31	31.2	20.5

Source: TEST survey

The survey data presented here did not satisfactorily answer how many reusable nappies parents bought for their child as it only examined current use, not how many nappies a person bought in total. The terry nappy data showed that the number of nappies in use increased until the child was aged 24 months, which suggests that parents buy more nappies as the child gets older.

2.11   More than one nappy used at a time

All 127 respondents answered the question about using two nappies at once. Five per cent said they used more than one nappy at a time always, 18 per cent sometimes did, but 77 per cent never doubled up.

Table 2.23 shows this information broken down into more detail for terry nappy users. Overall, 31 per cent of terry users doubled up at least some of the time.

Table 2.23 Terry nappies – whether more than one nappy is used at a time

Age of child	Frequency	Yes, always	Yes, sometimes	Never
up to 6 months	4	0.0%	0.0%	100.0%
6 to 12 months	9	11.1%	33.3%	55.6%
12 to 18 months	10	10.0%	20.0%	70.0%
18 to 24 months	2	0.0%	50.0%	50.0%
24 to 30 months	5	0.0%	40.0%	60.0%
30 to 36 months	2	0.0%	0.0%	100.0%
Total	32	6.3%	25.0%	68.8%

Source: TEST survey

2.12   Nappy washing behaviour

All 127 records provided details of how reusable nappies were washed. Respondents were allowed to choose more than one answer for this question, but the 127 respondents provided a total of just 129 answers showing that only a minority used more than one method. One hundred and eighteen people washed nappies at home in the washing machine, nine washed nappies at home by hand and two people took them to the launderette.

Those people machine-washing nappies were asked a few more questions about washing details. These questions were not asked in relation to hand-washing because there was no way from the survey methodology of estimating temperatures or water quantities.

2.12.1 Machine-washing nappies separately

One hundred and nineteen people answered the question about whether they washed their nappies separately. Table 2.24 shows the results for all nappy types, and Table 2.25 gives more detail for those using only terry nappies.

Table 2.24 All reusable nappies – how often nappies are washed separately

	Frequency	Percent
All the time	61	51.3%
Most of the time	23	19.3%
Sometimes	20	16.8%
Very rarely	2	1.7%
Never	13	10.9%
Total	119	100%

Source: TEST survey

Table 2.25 Terry nappies – how often nappies are washed separately

	Frequency	Percent
All the time	19	63.3%
Most of the time	4	13.3%
Sometimes	5	16.7%
Very rarely	0	0.0%
Never	2	6.7%
Total	30	100%

Source: TEST survey

For all types and for terry nappies alone, the most common way to wash is separately, in a machine.

A number of questions in the TEST survey followed the same format as the one in Tables 2.24 and 2.25. For these questions, answers have been collated to produce one overall percentage figure, assuming the following weighting for each response:

All the time	100%
Most of the time	75%
Sometimes	35%
Very rarely	10%
Never	0%

Using the weighting described above for the frequencies given, the overall proportion of users who washed terry nappies separately was estimated at 79 per cent.[4]

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[4] (63.3%×1)+(13.3%×0.75)+(16.7%×0.35)+(0.0%×0.10)+(6.7%×0)=79%

2.12.2 Number of nappies in a load

When asked how many nappies make up a load, 101 responses were given, ranging from five to 28. The average number of nappies making up a load was 11.8 ± 0.99 (95% CI).

Washing about 12 nappies at a time is consistent with the data on changing about six nappies a day.

2.12.3 Washing temperature for nappies

The number of people providing the temperature at which they wash their nappies was 117. Table 2.26 shows the responses related to all reusable nappy types, and Table 2.27 shows the responses for those using only terry nappies.

Table 2.26 All reusable nappies – washing temperature in washing machine

	Frequency	Percent
90/95˚C	24	20.5%
80˚C	1	0.9%
70˚C	2	1.7%
60˚C	64	54.7%
50˚C	6	5.1%
40˚C	20	17.1%
Total	117	100%

Source: TEST survey

Table 2.27 Terry nappies – washing temperature in washing machine

	Frequency	Percent
90/95˚C	9	32.1%
80˚C	0	0.0%
70˚C	2	7.1%
60˚C	10	35.7%
50˚C	2	7.1%
40˚C	5	17.9%
Total	28	100%

Source: TEST survey

Most people machine-wash reusable nappies at 60˚C. The difference, between the terry proportion (10/28 = 0.357) and the non-terry proportion (54/89 = 0.607) produces a P-value of 0.02, so the difference is statistically significant (P<0.05).

The results seem to reflect the washing temperatures more commonly available on machines (40˚C, 60˚C and 90/95˚C). They may also reflect a desire to boil-wash nappies or to use a hot cotton wash. Together, these account for two thirds of responses.

2.12.4 Nappy washing agents

The 117 people above also provided information about the type of washing agent that they use for machine-washing nappies. Respondents were allowed to choose more than one answer for this question.

Table 2.28 Reusable nappies – type of washing agent

n=117 all n=30 terry	All reusables - frequency	terry - frequency
Biological	5	3
Non-biological	84	23
Eco biological	9	2
Eco non-biological	26	4
Other	1	0
Total responses	125	32

Source: TEST survey

Table 2.29 Reusable nappies – type of washing agent

n=117 all n=30 terry	All reusables - frequency	terry - frequency
Powder	83	23
Tablet	17	5
Liquid	25	4
Liquidabs	2	2
Other	1	0
Total responses	128	34

Source: TEST survey

The majority of people were using non-biological powder. This pattern was reflected among the terry nappy users.

2.12.5 Use of fabric softener

Tables 2.30 and 2.31 show that almost a quarter of reusable users put fabric softener in with the nappy wash, even though it reduces the absorbency of reusable nappies.

Table 2.30 Reusable nappies – use of fabric softener

	Frequency	Percent
Yes, always	22	18.5%
Yes, sometimes	5	4.2%
Never	92	77.3%
Total	119	100%

Source: TEST survey

Use of fabric softener is even more common among terry nappy users. The difference between terry and non-terry responses is highly statistically significant (P<0.001).

Table 2.31 Terry nappies – use of fabric softener

	Frequency	Percent
Yes, always	14	46.7%
Yes, sometimes	2	6.7%
Never	14	46.7%
Total	30	100%

Source: TEST survey

Collating the terry nappy answers to produce one overall figure based on the weightings given in 2.21.2 it was estimated that 49 per cent[5] of terry nappy users used fabric softener.

2.12.6 Soaking or pre-treating

In total 126 people responded to the question about whether they soaked or pre-treated nappies before washing them.

Table 2.32 Reusable nappies – how often nappies are soaked or pre-treated

	Frequency	Percent
All the time	79	62.7%
Most of the time	11	8.7%
Sometimes	6	4.8%
Very rarely	6	4.8%
Never	24	19.0%
Total	126	100%

Source: TEST survey

Table 2.33 Terry nappies – how often nappies are soaked or pre-treated

	Frequency	Percent
All the time	21	65.6%
Most of the time	5	15.6%
Sometimes	2	6.3%
Very rarely	1	3.1%
Never	3	9.4%
Total	32	100%

Source: TEST survey

Using the weightings described in 2.12.1, it was estimated that soaking and pre-treating was used 80 per cent[6] of the time by terry nappy users.

Of the 126 people above, 102 also responded to how they soaked or pre-treated nappies. Respondents were allowed to choose more than one answer for this question.

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[5] $(46.7\% \times 1)+(6.7\% \times 0.35)+(46.7\% \times 0)=49\%$
[6] $(65.6\% \times 1)+(15.6\% \times 0.75)+(6.3\% \times 0.35)+(3.1\% \times 0.10)+(9.4\% \times 0)=80\%$

Table 2.34 Reusable nappies – how nappies are soaked or pre-treated

n=102 all n=29 terry	All reusables – frequency	terry - frequency
In water only	13	1
In soap/detergent	11	4
In household bleach	4	2
In ecobleach	1	0
In domestic borax	1	1
In a sanitiser	33	15
In an eco sanitiser	28	7
In tea tree oil	22	2
In sodium bicarbonate	3	0
Other	6	2
Total responses	122	34

Source: TEST survey

These responses show differences in behaviour between terry users and other reusable users. Some 41 per cent of responses for all nappy types were for an eco-sanitiser or tea tree oil, while the most common answer, 44 per cent, for terry users was a sanitising solution.

2.13 Nappy drying behaviour

Everyone answered the question about drying nappies. Respondents were allowed to choose more than one answer for this question. They had to think about what they did in both the summer and winter.

Table 2.35 Reusable nappies – how nappies are dried

n=127 all n=32 terry	All reusables – frequency	terry - frequency
Spin	22	5
Tumble dry	73	14
Air dry indoors on clothes line	59	14
Air dry outdoors on clothes line	93	26
Dry in airing cupboard	10	0
Dry on radiators	26	9
Dry elsewhere in house	6	2
Dry elsewhere outside	7	3
Other	1	0
Total responses	297	73

Source: TEST survey

It was very difficult to draw any firm conclusions from this multiple response question. To gain more detail, the responses from the 73 people who tumble dried nappies were analysed to find out the other methods they were using. Table 2.36 shows the result.

Table 2.36 Reusable nappies – how else nappies are dried if tumble dried

n=73	All reusables – frequency
Spin	10
Air dry indoors on clothes line	23
Air dry outdoors on clothes line	47
Dry in airing cupboard	8
Dry on radiators	9
Dry elsewhere in house	0
Dry elsewhere outside	2
Other	1
Total responses	100

Source: TEST survey

Sixty-four per cent (47 out of 73) of people air dry outdoors as well as tumble dry, which suggests that the weather dictates their choice of method, though there was no way of knowing when one method was chosen in preference to another.

The survey examined only the various drying options. It did not focus on the reasons for, and frequency of, using each method. So the survey data presented here do not satisfactorily answer questions about how often people tumble-dried and how often they dried using other methods.

2.13.1 Ironing

Parents were also asked whether they ironed nappies after washing and drying them. Everyone responded.

Table 2.37 All reusable nappies – are nappies ironed

	Frequency	Percent
Yes, always	7	5.5%
Yes, sometimes	5	3.9%
Never	115	90.6%
Total	127	100%

Source: TEST survey

Table 2.38 Terry nappies – are nappies ironed

	Frequency	Percent
Yes, always	2	6.3%
Yes, sometimes	3	9.4%
Never	27	84.4%
Total	32	100%

Source: TEST survey

Collating the terry nappy answers by weighting as before, (see 2.21.2), to estimate one overall figure, it was estimated that 10 per cent[7] of terry nappy users iron nappies.

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[7] $(6.3\% \times 1) + (9.4\% \times 0.35) + (84.4\% \times 0) = 9.5\%$

2.14　End of life of nappies

Everyone answered the question about what they do with the nappies when their child no longer needs them. Respondents were allowed to choose more than one answer for this question.

Table 2.39 All reusable nappies – what happens when nappies are no longer needed

n=127 all n=32 terry	All reusables – frequency	terry - frequency
I keep them in case I have another child	70	15
I give them away	35	9
I dispose of them with other household waste	6	1
I dispose of them separately from household waste	3	1
I sell them	12	1
I use them for household tasks	12	6
I use them for hand towels	3	1
Put in cloths bank/recycle	1	0
Other	4	2
Total responses	146	36

Source: TEST survey

Hardly anyone disposed of or put their nappies out for recycling after their child was potty-trained. Forty-seven per cent of terry users and 55 per cent of all reusable users keep nappies in case they have another child.

2.15　Nappies used previously on another child

126 people answered the question about whether they had used their nappies previously on another child. Of these, 21 per cent said that they had used them all before, 19 per cent said that some of them had been used before, but 60 per cent had not used any of them previously on another child.

3 Over-pants (including waterproof pants)

3.1 Users of over-pants

Respondents were asked when using reusable nappies, how often, if at all, they used waterproof or over-pants, which includes any pants that are worn over the nappy itself but not those that are clothes. The responses for all users of reusables are shown in Table 3.1 and those for terry nappy users are shown in Table 3.2.

Table 3.1 All reusable nappies – how often waterproof or over-pants are used

	Frequency	Percent
All the time	100	78.7%
Most of the time	11	8.7%
Sometimes	4	3.1%
Very rarely	1	0.8%
Never	11	8.7%
Total	127	100%

Source: TEST survey

Table 3.2 Terry nappies – how often waterproof or over-pants are used

	Frequency	Percent
All the time	28	87.5%
Most of the time	3	9.4%
Sometimes	0	0.0%
Very rarely	0	0.0%
Never	1	3.1%
Total	32	100%

Source: TEST survey

After collating these figures as before, 95 per cent[8] of terry nappy users used waterproof or over-pants.

3.2 Type of over-pant used

The question about the types of over-pants used was answered by 116 people. (The 127 respondents overall minus the 11 people who said that they never used over-pants). Respondents were allowed to choose more than one answer for this question.

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[8] $(87.5\% \times 1)+(9.4\% \times 0.75)+(0.0\% \times 0.35)+(0.0\% \times 0.10)+(3.1\% \times 0)=94.5\%$

Table 3.3 Reusable nappies – type of waterproof or over-pant used

n=116 all n=32 terry	All reusables - frequency	terry - frequency
Cotton/cotton mix	32	6
Wool	9	2
Fleece	5	1
Nylon	15	4
Polyester	44	7
PVC	22	16
Other	6	0
Don't know looks like plastic	15	7
Total	148	43

Source: TEST survey

Fifty per cent of terry nappy users are using PVC pants.

3.3 Number of over-pants owned and in use

In total, 113 people provided information on the number of waterproof or over-pants they currently owned and were using. Numbers ranged from two to 30. The overall average owned was seven wraps/pants.

Table 3.4 shows the responses grouped by age. Table 3.5 gives similar data for those using only terry nappies.

Table 3.4 All reusable nappies – number of waterproof or over-pants owned

Age of child	Frequency	Mean	SD
up to 6 months	23	7.3	4.8
6 to 12 months	29	7.1	4.7
12 to 18 months	24	8.0	6.7
18 to 24 months	16	6.3	3.4
24 to 30 months	11	6.3	3.1
30 to 36 months	10	6.2	6.8
Total	113	7.1	5.1

Source: TEST survey

Table 3.5 Terry nappies – number of waterproof or over-pants owned

Age of child	Frequency	Mean	SD
Up to 6 months	4	9.8	8.0
6 to 12 months	9	9.3	3.5
12 to 18 months	10	10.3	8.4
18 to 24 months	2	8.5	2.1
24 to 30 months	4	6.5	3.0
30 to 36 months	2	14.0	15.6
Total	31	9.6	6.5

Source: TEST survey

The data show that terry nappy users in our sample own more waterproof or over-pants than people using other types of nappy. The difference between terry and non-terry responses is highly statistically significant at P<0.001.

3.4 Over-pants used previously on another child

One hundred and sixteen people said that they had previously used these same waterproof pants or over-pants on another child. Of these, 13 per cent said that they'd used them all before, 15 per cent said that some of them had been used before. But seventy-two per cent of respondents had not used any of them on another child previously.

3.5 How long over-pants last

In total, 103 people replied to a question about how long each pair of waterproof or over-pants lasts before it is replaced. They were asked to think of replacements made when they had worn out due to use rather than when their child had grown out of them. The results are shown in Tables 3.6 and 3.7.

Table 3.6 All reusable nappies – how long waterproof or over-pants last

	Frequency	Percent
Less than one week	0	0.0%
One week to a month	5	4.9%
Over one to six months	17	16.5%
Over six to twelve months	11	10.7%
Over one year to two years	5	4.9%
Over two years to three years	2	1.9%
Never replace them	63	61.2%
Total	103	100%

Source: TEST survey

Table 3.7 Terry nappies – how long waterproof or over-pants last

	Frequency	Percent
Less than one week	0	0.0%
One week to a month	4	13.8%
Over one to six months	7	24.1%
Over six to twelve months	4	13.8%
Over one year to two years	0	0.0%
Over two years to three years	0	0.0%
Never replace them	14	48.3%
Total	29	100%

Source: TEST survey

Due to the way this question was asked in timebands, it is not possible to calculate an overall average life for waterproof or over-pants. The results show that 48 per cent of terry nappy users never replaced over-pants due to wearing out. There is, though, no statistical difference between the responses for terry and non-terry users.

3.6 Over-pant washing behaviour

The question about how waterproof or over-pants are washed was answered by 115 people. Respondents were allowed to choose more than one answer for this question.

Table 3.8 Reusable nappies – how waterproof or over-pants washed

N=115 all N=30 terry	All reusables - frequency	Terry – frequency
In the washing machine with other laundry	77	17
In the washing machine on their own	17	6
Hand wash with water only	10	7
Hand wash with soap/detergent	21	4
Hand wash with other washing product	1	0
Other	4	1
Total responses	130	35

Source: TEST survey

More than half of terry nappy users (57 per cent) machine-washed over-pants in a mixed load, a proportion similar to that for all users (67 per cent).

3.6.1 Washing temperature for over-pants

Those people using a washing machine were asked to give details about washing temperature. The 92 people who responded were allowed to choose more than one answer for this question.

Table 3.9 Reusable nappies – washing temperature in washing machine

n=92 all n=23 terry n=11 PVC	All reusables – frequency	terry - frequency	PVC - frequency
90/95˚C	4	2	0
80˚C	0	0	0
70˚C	1	1	0
60˚C	31	8	2
50˚C	6	1	0
40˚C	47	10	7
30˚C	3	1	1
Cold rinse	1	1	1
Total	93	24	11

Source: TEST survey

The most frequent washing temperature for all these cuts of the data was 40°C.

3.6.2 Washing frequency

Everyone using waterproof or over-pants was asked how often, on average, they washed them. One hundred and thirteen people provided details.

Table 3.10 All reusable nappies – frequency of washing waterproof or over-pants

	Frequency	Percent
Every use	27	23.9%
Every other use	14	12.4%
Every 2-3 uses	32	28.3%
Every 4-5 uses	26	23.0%
Every 6-10 uses	12	10.6%
Less often	1	0.9%
Never	1	0.9%
Total	113	100%

Source: TEST survey

Table 3.11 Terry nappies – frequency of washing waterproof or over-pants

	Frequency	Percent
Every use	9	30.0%
Every other use	4	13.3%
Every 2-3 uses	9	30.0%
Every 4-5 uses	4	13.3%
Every 6-10 uses	3	10.0%
Less often	0	0.0%
Never	1	3.3%
Total	30	100%

Source: TEST survey

As in previous questions, terry-nappy answers were collated to produce one overall figure for the percentage or over-pant uses followed by washing. This was achieved by assuming the following frequency weighting for each response:

Every use	100%
Every other use	50%
Every 2-3 uses	33%
Every 4-5 uses	20%
Every 6-10 uses	10%
Less often	0%
Never	0%

Overall, 50 per cent[9] of over-pant uses are followed by washing. In other words, the average number of uses between washes is two.

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[9] $(30.0\% \times 1)+(13.3\% \times 0.5)+(30.0\% \times 0.33)+(13.3\% \times 0.20)+(10\% \times 0.1)+(3.3\% \times 0)=50.2\%$

3.7   Over-pants drying behaviour

Everyone using waterproof or over-pants answered this question about drying. Respondents were allowed to choose more than one answer for this question. They had to think about what they did in both the summer and winter.

Table 3.12 Reusable nappies – how waterproof or over-pants are dried

n=116 all n=32 terry	All reusables - frequency	terry - frequency
Spin	10	1
Tumble dry	19	3
Air dry indoors on clothes line	63	14
Air dry outdoors on clothes line	73	20
Dry in airing cupboard	11	3
Dry on radiators	20	8
Dry elsewhere in house	11	3
Dry elsewhere outside	7	2
Other	1	0
Total responses	215	54

Source: TEST survey

Even though it is difficult to draw any firm conclusions about people's preferred option from a multi-response question, the data above strongly suggest that air-drying is the most popular method for drying waterproof or over-pants.

4 Absorbent booster pads

4.1 Users of absorbent booster pads

Respondents were asked when using reusable nappies, how often, if at all, they used absorbent booster pads. The responses for all users of reusables are shown in Table 4.1 and those for terry nappy users are shown in Table 4.2.

Table 4.1 All reusable nappies – how often absorbent booster pads are used

	Frequency	Percent
All the time	25	20.0%
Most of the time	11	8.8%
Sometimes	31	24.8%
Very rarely	5	4.0%
Never	53	42.4%
Total	125	100%

Source: TEST survey

Table 4.2 Terry nappies – how often absorbent booster pads are used

	Frequency	Percent
All the time	4	12.5%
Most of the time	3	9.4%
Sometimes	5	15.6%
Very rarely	3	9.4%
Never	17	53.1%
Total	32	100%

Source: TEST survey

The answers were once again collated to produce one overall figure of 26 per cent[10] of terry nappy users using absorbent booster pads.

4.2 Type of absorbent booster pad

Overall, 70 people gave details of the types of absorbent booster pad used.

Table 4.3 All reusable nappies – type of absorbent booster pad used

	Frequency	Percent
Disposable	6	8.6%
Re-usable	60	85.7%
Both	4	5.7%
Total	70	100%

Source: TEST survey

---

[10] $(12.5\% \times 1)+(9.4\% \times 0.75)+(15.6\% \times 0.35)+(9.4\% \times 0.10)+(53.1\% \times 0)=25.9\%$

Table 4.4 Terry nappies – type of absorbent booster pad used

	Frequency	Percent
Disposable	4	26.7%
Re-usable	9	60.0%
Both	2	13.3%
Total	15	100%

Source: TEST survey

Reusable absorbent booster pads were the most popular among those surveyed. They are actually more popular among non-terry users as the difference is highly statistically significant (P<0.001).

4.3   Number of absorbent booster pads owned and in use

People using reusable absorbent booster pads were also asked to think about how many they currently owned and were using. Numbers ranged from one to 30 for the 64 responses given. The overall average number of absorbent booster pads owned was 10 ± 1.68 (95%).

Table 4.5 All reusable nappies – number of absorbent booster pads owned

Age of child	Frequency	Mean	SD
up to 6 months	12	8.3	5.2
6 to 12 months	18	9.4	5.3
12 to 18 months	14	9.1	7.4
18 to 24 months	8	12.5	7.9
24 to 30 months	4	19.0	9.6
30 to 36 months	8	10.0	6.7
Total	64	10.2	6.8

Source: TEST survey

Table 4.6 Terry nappies – number of absorbent booster pads owned

Age of child	Frequency	Mean	SD
up to 6 months	2	9.0	1.4
6 to 12 months	3	8.0	3.5
12 to 18 months	3	10.0	2.0
18 to 24 months	1	10.0	0
24 to 30 months	0	0	0
30 to 36 months	2	5.5	6.4
Total	11	8.5	3.2

Source: TEST survey

5 Nappy liners

5.1 Users of nappy liners

Respondents were asked when using reusable nappies, how often, if at all, they used nappy liners. The responses for all users of reusables are shown in Table 5.1 and those for terry nappy users are shown in Table 5.2.

Table 5.1 All reusable nappies – how often nappy liners are used

	Frequency	Percent
All the time	87	69.6%
Most of the time	11	8.8%
Sometimes	9	7.2%
Very rarely	4	3.2%
Never	14	11.2%
Total	125	100%

Source: TEST survey

Table 5.2 Terry nappies – how often nappy liners are used

	Frequency	Percent
All the time	24	75.0%
Most of the time	3	9.4%
Sometimes	3	9.4%
Very rarely	2	6.3%
Never	0	0.0%
Total	32	100%

Source: TEST survey

The answers were once again collated to produce one overall figure of 86 per cent[11] of terry nappy users using nappy liners.

5.2 Type of nappy liner

In total 111 people gave details of the types of nappy liner used. Respondents were allowed to choose more than one answer for this question.

---

[11] $(75.0\% \times 1)+(9.4\% \times 0.75)+(9.4\% \times 0.35)+(6.3\% \times 0.10)+(0.0\% \times 0)=85.9\%$

Table 5.3 Reusable nappies – type of nappy liner used

n=111 all n=32 terry	All reusables – frequency	terry - frequency
Disposable flushable	85	16
Disposable non-flushable	19	14
Reusable fleece	15	3
Reusable nylon	4	2
Reusable polyester	4	0
Other	7	2
Total	134	37

Source: TEST survey

Fifty per cent of terry nappy users use disposable flushable liners (16/32) and 44 per cent use disposable non-flushable liners (14/32). Reusable liners are not so commonly used.

5.3   Number of nappy liners used in 24 hours

People using nappy liners were asked to think about how many they used in a day. Numbers ranged from one to 24 for the 108 responses given. The overall average number of nappy liners used per day was 5.9 ± 0.51(95% CI).

Table 5.4 All reusable nappies – number of nappy liners used in 24 hours

Age of child	Frequency	Mean	SD
up to 6 months	21	6.7	1.7
6 to 12 months	31	5.5	2.0
12 to 18 months	20	6.6	4.5
18 to 24 months	16	5.3	1.9
24 to 30 months	13	5.8	2.7
30 to 36 months	7	4.3	1.7
Total	108	5.9	2.7

Source: TEST survey

Table 5.5 Terry nappies – number of nappy liners used in 24 hours

Age of child	Frequency	Mean	SD
up to 6 months	4	5.8	2.6
6 to 12 months	9	5.9	2.5
12 to 18 months	10	7.2	6.3
18 to 24 months	2	4.5	0.7
24 to 30 months	5	6.4	1.1
30 to 36 months	2	2.5	2.1
Total	32	6.1	3.9

Source: TEST survey

Referring back to section 2.8, this data on the number of liners used per day supports the data that people change nappies about six times a day. This suggests that those using liners use one per nappy change.

6 Conclusions

- The **market share** for reusable nappies was calculated at four per cent for those respondents with children under three years old. This figure takes a 'reusable user' to be anyone who uses washable nappies some or all of the time.

- Overall, four per cent of respondents to the Omnibus survey used both reusables and disposables. This **mixed usage** was something that was not anticipated before carrying out the surveys. For those answering the TEST survey, 88 per cent said that they had used disposable nappies instead of reusable nappies at times.

- Both the Omnibus and TEST surveys showed that more people bought terry nappies than any other **reusable nappy type**.

- Reasons associated with the environment (including using fewer chemicals) accounted for 60 per cent of responses to **why reusable nappies are used**. Thirty-five per cent of responses related to cost.

- For disposable users, the **average number of changes per day** was estimated as 4.4. This figure compares with the 4.16 calculated using disposable sales data.

- The **average number of changes per day** for reusable nappies was 4.7.

- There is no statistically significant difference between the **average age out of nappies** for disposable and reusable nappies. The average age out of nappies is around two years and two months.

- The overall proportion of users who washed terry nappies separately was estimated at 79 per cent. The average number of nappies making up a load was 12, and more than a third of people machine-washed terry nappies at 60°c.

- The majority of people use non-biological washing powder. Forty-nine per cent of terry nappy users used fabric softener, and soaking and pre-treating was used 80 per cent of the time for terry nappies.

- It was very difficult to draw any firm conclusions for **nappy drying behaviour**, as the question did not focus on the reasoning and frequency of using each drying method.

- Ten per cent of terry nappy users **iron** nappies.

- Overall, 31 per cent of terry users used **more than one nappy at once** at least some of the time.

- Twenty-six per cent of terry nappy users use **absorbent booster pads**. Reusable ones were the most popular.

- Eighty-six per cent of terry nappy users use **nappy liners**. Disposable liners were the most commonly used. On average six nappy liners are used per day.

7 Recommendations for further work

7.1 Questionnaire design

It would now be possible to prioritise the questions used to reduce the overall length of the questionnaire and the complexity of some of the responses.

From the survey results, it is apparent that a percentage of respondents used both reusables and disposables, something that was not anticipated. On reflection, it would have helped to carry out a pilot study first and then to review the questionnaire based on initial responses.

The question relating to drying nappies did not work effectively. To obtain the information required, this question needs to be less complex. There was also no clear way of knowing from the responses whether people who answered 'spin' meant that they were using an extra spin cycle or whether they were just thinking about spinning at the end of a normal machine washing cycle. Improved wording on drying behaviour is needed for any future studies, including splitting responses for summer and winter behaviour.

The TEST survey asked, "In total, how many washable cloth nappies do you own that are currently in use for this child?" This question was not best phrased to obtain the information on how many nappies were owned in total over the child's lifetime in nappies, or in other words, what was the total number of reusable nappies purchased for that child.

Further work could be carried out to determine the total nappy supply parents purchase when using reusable nappies for their child, and it would also be interesting to look at by type of reusable nappy.

7.2 Sample size of nappy types

Most users in the surveys were using terry nappies. This enabled some sub-analysis to be carried out of terry nappy usage, but the sample numbers for other reusable nappy types were too small to do any similar analysis. Any diversity that might exist in the use of nappies by type could therefore not be studied fully.

Though both surveys included responses from reusable users, the analysis that could be carried out in relation to them was limited by the number of people surveyed and specifically by the number of responses to each question. The precision of and the confidence levels associated with the estimates also depend on the sample size and the variability of the responses given by those being sampled.

A larger sample with a higher number of responses to key questions would have made a more in-depth analysis possible. Further work to increase the sample sizes of reusable nappy users would be very valuable. The number of responses was restricted by the market share of reusables being less than 10 per cent. Finding current or recent users of reusable nappies was severely restricted by this combined with time and budget constraints.

These surveys were used to estimate the market share of reusable nappies based on user responses from the sample. Repeating the survey regularly would allow any changes in market share, for example, due to new nappy types, to be estimated.

Annex A: Omnibus questionnaire

Module 316 Disposable/Reusable Nappies for the Environment Agency

ASK IF: QRelResp.Parent1 = Yes

M316_Intro

The next set of questions is about the types of nappies you use (have used in the past) for your child(ren).

(1)   PRESS <1> TO CONTINUE

ASK IF: QRelResp.Parent1 = Yes

M316_1

ASK OR RECORD

 May I just check, how many children aged under 10 in the household are you the parent/guardian of?

0..10

Next set of questions asked as an array

ASK IF: QRelResp.Parent1 = Yes

M316_2

ASK OR RECORD

 How old is your (youngest/next youngest) child?

 INTERVIEWER: RECORD IN YEARS AND MONTHS TO NEAREST WHOLE MONTH.
 3 YEARS 8 MONTHS SHOULD BE CODED AS 03.08

0.00..9.11

ASK IF: QRelResp.Parent1 = Yes
    AND: M316_2 < 5

M316_3

May I just check, are you still using nappies on your child during the day?

 DO NOT INCLUDE TRAINING PANTS/PULL-UPS

(1)   Yes
(2)   No
(3)   Don't know

M316_4

At what age did your (this) child stop using nappies during the day?

INTERVIEWER: RECORD IN YEARS AND MONTHS TO NEAREST WHOLE MONTH.
3 YEARS 8 MONTHS SHOULD BE CODED 03.08.

PULL-UPS/TRAINING PANTS ARE NOT INCLUDED AS NAPPIES

AN ESTIMATE IS ACCEPTABLE

0.00..4.11

M316_5

Thinking back to the time when your child was still in nappies, did/do you use disposable nappies, reusable nappies or both disposable and reusable nappies?

INTERVIEWER: DO NOT INCLUDE PULL-UPS

(1)   Disposable only
(2)   Reusable only
(3)   Both disposable and reusable
(4)   Don't know/ Can't remember

M316_6M

SHOWCARD C316_6M

What type or types of reusable nappy did/do you use? Please use this card as a guide.

CODE ALL THAT APPLY

SET [6] OF
(1)   All in one reusable nappies - home laundered
(2)   Shaped reusable nappies with wrap - commercially laundered
(3)   Shaped reusable nappies with wrap - home laundered
(4)   Flat terry reusable nappies - commercially laundered
(5)   Flat terry reusable nappies - home laundered
(6)   Other (please specify)

Spec1

INTERVIEWER: RECORD OTHER TYPE OF NAPPY USED

STRING[255]

M316_7

SHOWCARD C316_6M

 What type of nappy did/do you mainly use?

(1)   All in one reusable nappies - home laundered
(2)   Shaped reusable nappies with wrap - commercially laundered
(3)   Shaped reusable nappies with wrap - home laundered
(4)   Flat terry reusable nappies - commercially laundered
(5)   Flat terry reusable nappies - home laundered
(6)   Other (please specify)

Spec2

INTERVIEWER: RECORD OTHER TYPE OF NAPPY MAINLY USED

STRING[255]

M316_8

What type of nappy did/do you mainly use? Disposable or reusable?

(1)   Disposable
(2)   Reusable

M316_9

On average, how many nappy changes does your child need, in a 24 hour period?

1..97

DVM316

DV to show type of nappy mainly used

(1)   Disposable
(2)   Reusable

Annex B: TEST questionnaire

TEST/J1410 (MORI/JN19023)
(1-4)

Serial No............
OUO (5-8)

Project Nappy (Final 5 Mar 2003)

Name..

Address ....

....

....

Postcode...

Telephone(home)...

(work)...

Sampling point name:
    write in

Sampling point number:

    (10) (11)

Sex   (12)
    Male 1
    Female 2

Age   (13)
    under16 not eligible
    18-24... 1
    25-34... 2
    35-44... 3
    45-50... 4
    Over 50 5

Occupation of Chief Income Earner
    (WRITE IN)
    Position/rank/grade

    ....
    Industry

    ....
    Qual/degrees/apprents.

    ....
    No of staff responsible for

    ....

Class (CODE)   (14)

    AB 1
    C1 2
    C2 3
    DE 4

Currently on maternity leave?

                                   (15)
    Yes... 1
    No 2

Work Status   (16)
    Working full time (30+ h/wk).........1
    Working part time (8-29h/wk) 2
    Not working 3

Interviewer Declaration

I confirm that I have conducted this interview face-to face with the above named person at the location marked on this page and that I asked all relevant questions fully, and recorded the answers in full conformance with the survey specifications and in accordance with the MRS code of conduct.

Interviewer signature:

....

Length of interview [ ][ ]minutes   **2003**
                  (17) (18)

Interviewer name:

....

Interviewer No : [ ][ ][ ][ ]/[ ]

          (19) (20) (21) (22)   (23)

Date of interview ....[ ][ ][ ][ ]
                       (24)(25)(26)(27)

Time of start of Interview....[ ][ ][ ][ ]
  (24hr   clock)   hrs   mins

Good morning/afternoon. My name is ..... and I'm working on behalf of Test Research, part of the MORI research organisation. We are conducting a survey amongst people with children in this area, would you be willing to help?

Recruitment Questionnaire

A.   Are you a parent or guardian of any children aged under 36 months?

                                                          (29)
         Yes ....1 GO TO B
         No...2 **THANK AND CLOSE**

B. How many children aged under 36 months do you have in your household who *currently* use washable cloth nappies?

(30)

One ....1 GO TO G
Two 2
Three 3
Four 4
Five or more...5 GO TO D
None...6 GO TO C

C How many children aged under 36 months do you have in your household who have used washable cloth nappies *in the past*?

(31)

One ....1 GO TO G
Two 2
Three 3
Four 4
Five or more..5 GO TO D
None...6 THANK AND CLOSE

GO TO D IF RESPONDENT SAYS TWO OR MORE CHILDREN AT B OR C

D

YOU SAID YOU HAVE MORE THAN ONE CHILD WHO CURRENTLY USES / HAS EVER USED (READ OUT AS APPROPRIATE) WASHABLE CLOTH NAPPIES. PLEASE <u>ONLY</u> THINK ABOUT THE <u>YOUNGEST CHILD</u> WHO IS CURRENTLY USING / HAS EVER USED THESE NAPPIES WHEN ANSWERING ALL THE FOLLOWING QUESTIONS.

CAN I JUST CHECK, IS THIS CHILD ONE OF TWINS, TRIPLETS, QUADRUPLETS OR FROM A LARGER GROUP?

(32)

Yes ....1 READ OUT E BELOW
No...2 GO TO G

E

WHEN ANSWERING ALL THE FOLLOWING QUESTIONS, PLEASE THINK ABOUT THE <u>YOUNGEST CHILD ONLY</u>, BY THAT I MEAN THE CHILD WHO WAS DELIVERED LAST.

NOW GO TO F

ASK F IF CHILD IS A TWIN, TRIPLET, QUADRUPLET OR FROM A LARGER GROUP ('YES' AT D) OTHERS GO TO G

F. **Is this child a twin, triplet, quadruplet or from a larger group?**

(33)

Twin	1
Triplet	2
Quadruplet	3
Larger group	4
Not from a multiple birth	5

ASK ALL

G. **What is the sex of your youngest child who currently uses / has ever used READ OUT AS APPROPRIATE washable cloth nappies?**

(34)

Male	1
Female	2

H. **And what is the age of this child in months?**

(35)

0 to 5 months	1
6 to 11 months	2
12 to 17 months	3
18 to 23 months	4
24 to 29 months	5
30 to 35 months	6
36 months or above	7

GO TO MAIN INTERVIEW (1-6)

THANK AND CLOSE (7)

Type and usage of washable cloth nappies

INTERVIEWER READ OUT: I AM NOW GOING TO ASK YOU SOME QUESTIONS ABOUT THE TYPES OF WASHABLE CLOTH NAPPIES YOU USE / USED ON YOUR CHILD

IF MORE THAN ONE CHILD IN HOUSEHOLD <u>ALSO</u> SAY: PLEASE THINK ABOUT YOUR YOUNGEST CHILD WHO USES / USED THESE NAPPIES WHEN ANSWERING

Q 1. SHOWCARD A   What type or types of washable cloth nappy have / did you <u>regularly</u> used / use on this child? CODE ALL THAT APPLY

(36)

All in one washable cloth nappy	1
Shaped sized/ fitted washable cloth nappy	2
Shaped one size washable cloth nappy	3
Prefold washable cloth nappy	4
Flat terry washable cloth nappy	5
Other (write in)	
....	6

IF MORE THAN ONE MENTIONED AT Q1 GO TO Q2, OTHERWISE GO TO Q3

Q 2.   **SHOWCARD A And what one of these do / did you <u>most often</u> use? SINGLE CODE ONLY**

(37)

All in one washable cloth nappy 1

Shaped sized/ fitted washable cloth nappy 2

Shaped one size washable cloth nappy 3

Prefold washable cloth nappy...4

Flat terry washable cloth nappy 5

Other (write in) ....

....6

ASK ALL

Q.3.   **Can you tell me why you use / used washable cloth nappies? CODE ALL REASONS MENTIONED. DO NOT PROMPT**

(38)

Cheaper / more economical..1

More comfortable to wear 2

Better performance/absorbency...3

More environmentally friendly 4

Contains less chemicals..5

Less likely to cause nappy rash 6

They are nice to use / a nice product.................................7

Recommendation from a friend / family..............................8

Recommendation from a medical practitioner....................9

I was given a sample to try..0

(39)

I was given them by someone else who had

finished with them 1

Other (Please write in)..

....2

IMPORTANT INTERVIEWER NOTE!

IF RESPONDENT DOES <u>NOT</u> CURRENTLY USE WASHABLE CLOTH NAPPIES BUT USED THEM IN THE <u>PAST</u> (QC CODES 1-5) READ OUT THE FOLLOWING:

'I m now going to ask you some questions about your usage of washable cloth nappies. As this child no longer wears washable cloth nappies please think of the last six months when your child was wearing them <u>both during the day and at night</u> when answering the following questions'.

IF USED WASHABLE CLOTH NAPPIES <u>IN THE PAST</u> QC (CODES 1-5) ASK Q4A OTHERS GO TO Q5

4a.   **At what age did this child last wear washable cloth nappies <u>both during the day and at night</u>?**

(40)

0 to 5 months 1

6 to 11 months 2

12 to 17 months 3

18 to 23 months 4

24 to 29 months 5

30 to 36 months 6

IF CURRENTLY USE WASHABLE CLOTH NAPPIES QB (CODED 1-5) ASK Q4B OTHERS GO TO Q5

4b. **Is your child currently wearing washable cloth nappies all the time?**
IF NO SAY: Does your child only wear them during the night or only during the day?

(41)
Yes 1
No, only at night 2
No, only during the day 3
Varies 4

ASK ALL

Q.5 **IF CURRENTLY USE In total, how many washable cloth nappies do you own that are currently in use for this child?**

IF USED IN PAST: In total, how many washable cloth nappies did you own in the last six months when this child was wearing nappies both during the day and at night?

WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
IF DON'T KNOW CODE XXX

(42) (43) (44)
☐ ☐ ☐

Q6 **Have / had these washable cloth nappies been used previously on an other child?**
IF YES: SAY 'Is that all or some of them'?

(45)
Yes, all of them 1
Yes, some of them 2
No 3

Q 7. **On average, how many times do / did you change your child's washable cloth nappy over a 24 hour period?**

IF USED IN PAST SAY: 'Please think of the last six months when your child was wearing these nappies both during the day and at night '.

IF RESPONDENT SAYS IT VARIES, PLEASE ASK THEM FOR THE AVERAGE

WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
IF DON'T KNOW CODE XXX

(46) (47) (48)
☐ ☐ ☐

Q.8. **On average, over a 24 hour period, how many times when you change / changed a nappy has / did your child had / have a bowel movement?**

IF USED IN PAST SAY: 'Again, please think of the last six months when your child was wearing these nappies both during the day and at night '.

WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
IF DON'T KNOW CODE XXX

(49) (50) (51)
☐ ☐ ☐

Q.9. **How do / did you dispose of these contents (bowel movements) from the nappy?**

(52)

I dispose of them via the waste/ waste bin / dustbin . 1

I flush them down the toilet.. 2

Other (write in) 3

Q.10. **Do / did you ever double up nappies, by that I mean use more than one nappy at a time? IF YES: SAY Is that always or sometimes?**

(53)

Yes, always... 1

Yes, sometimes 2

Never... 3

Q 11. **Do / did you ever use disposable nappies _instead of_ washable cloth nappies for your child?**

(54)

Yes 1   GO TO Q12

No 2   GO TO Q13

Q.12. **On what occasions would you use disposable nappies rather than washable cloth nappies for this child? DO NOT PROMPT**

(55)

During night time... 1

When I am busy e.g. too much to do 2

When I am on holiday/ away from home 3

When the child is at nursery/ with a child minder 4

Other (write in) ....

.... 5

Questions about usage and type of waterproof / over pants and booster pads

INTERVIEWER READ OUT: I AM NOW GOING TO ASK YOU SOME QUESTIONS ABOUT WATERPROOF PANTS, OVERPANTS AND BOOSTER PADS.

IF MORE THAN ONE CHILD IN THE HOUSEHOLD SAY: AGAIN THINKING ABOUT YOUR YOUNGEST CHILD WHO USES / USED THESE NAPPIES WHEN ANSWERING

ASK ALL

Q.13. SHOWCARD B   When using washable cloth nappies, how often, if at all, do / did you use waterproof or over pants? This includes any pants that are worn over the nappy itself but not those that are clothes.

(56)

All the time 1

Most of the time 2

Sometimes.. 3

Very rarely.. 4 GO TO Q14

Never... 5

Don't know .... 6 GO TO Q18a

Q.14. SHOWCARD C Which type or types of waterproof or over pants do / did you use? CODE ALL
THAT APPLY

(57)
Cotton/cotton mix.. 1
Wool 2
Fleece 3
Nylon 4
Polyester 5
PVC 6
Other (write in) ....
.... 7
Don't know, looks like plastic..................................... 8
Don't know 9

**Q.15. IF CURRENTLY USE: In total, how many waterproof or over pants do you own that are
currently in use for this child?**

**IF USED IN PAST: In total, how many waterproof or over pants did you have in use in the
last six months when your child was wearing nappies <u>both during the day and at night</u>?**

WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
IF DON'T KNOW CODE XXX

(58) (59) (60)
☐ ☐ ☐

**Q.16. Have / had these waterproof or over pants been used previously on another child?
IF YES: SAY 'Is that all or some of them'?**

(61)
Yes, all of them 1
Yes, some of them... 2
No... 3

**Q 17   How long does / did each pair of waterproof or over pants last before it is / was replaced?
Please think of replacements made when they have worn out due to use rather than when
your child has / had grown out of them.**

(62)
Less than one week.. 1
One week to a month 2
Over one to six months 3
Over six to twelve months 4
Over one year to two years 5
Over two years to three years 6
Never replace them 7
Don't know 8

**INTERVIEWER READ OUT: I AM NOW GOING TO ASK YOU A FEW QUESTIONS ABOUT
ABSORBENT BOOSTER PADS AND NAPPY LINERS**

ASK ALL

Q.18a. SHOWCARD B Which of the following best describes, how often, if at all, you use / used absorbent booster pads with the washable cloth nappies?

                                                               (63)

All the time 1
Most of the time 2
Sometimes 3
Very rarely .... 4 GO TO Q18b
Never 5
Don't know .... 6 GO TO Q20

Q.18b. Are / were the absorbent booster pads that you use / used disposable, re-usable or both?

                                                                (64)

Disposable .... 1 GO TO Q20
Re-usable .... 2 GO TO Q19
Both .... 3 GO TO Q19
Don't know .... 4 GO TO Q20

Q.19. **IF CURRENTLY USE: Thinking of the re-usable absorbent booster pads that you use. How many of these pads do you own that are currently in use?**

IF USED IN PAST: Thinking of the re-usable absorbent booster pads that you used in the last six months when your child was wearing nappies <u>both during the day and at night</u>? How many of these pads did you have in use?

     WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
     IF DON'T KNOW CODE XXX

                        (65) (66) (67)

                        ☐   ☐   ☐

ASK ALL

Q.20. **SHOWCARD B** Which of the following best describes, how often, if at all, you use / used nappy liners with the washable cloth nappies?

                                                               (68)

All the time 1
Most of the time 2
Sometimes 3
Very rarely .... 4 GO TO Q21
Never 5
Don't know .... 6 GO TO Q23

Q.21. SHOWCARD D And what type or types of nappy liners do / did you use?   CODE ALL THAT APPLY

(69)

Disposable flushable 1
Disposable non flushable 2
Reusable fleece 3
Reusable nylon 4
Reusable polyester 5
Other (write in). ....
.... 6
Don't know. 7

Q.22.   On average how many nappy liners do / did you use in a 24 hour period?

WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
IF DON'T KNOW CODE XXX

(70) (71) (72)

☐ ☐ ☐

Washing nappies and waterproof / overpants

INTERVIEWER READ OUT: I AM NOW GOING TO ASK YOU A FEW QUESTIONS ABOUT WASHING YOUR NAPPIES AND WATERPROOF OR OVERPANTS

ASK ALL

Q.23.   SHOWCARD E   Which of the following best describe how you wash / washed the cloth nappies? CODE ALL THAT APPLY

(73)

I wash nappies at home in the washing machine...... 1
I take them to the launderette .... 2 GO TO Q 24
I wash nappies at home by hand .... 3 GO TO Q 29
A nappy laundry service takes them away 4
Other (write in) ....
.... 5GO TO Q 33

ASK Q24 IF NAPPIES WASHED IN WASHING MACHINE OR TAKEN TO LAUNDERETTE (Q23 CODES 1 OR 2) IF WASHED BY HAND (Q23 CODE 3) GO TO Q29 OTHERS GO TO Q33

Q.24.   SHOWCARD B Do / did you wash nappies separately from other laundry in the washing machine?

(74)

All the time 1
Most of the time 2
Sometimes 3
Very rarely .... 4 GO TO Q25
Never... 5
Don't know .... 6 GO TO Q26

ASK Q25 IF NAPPIES EVER WASHED SEPARATELY (Q24 CODES 1-4) OTHERS GO TO Q26

Q.25. **When you wash / washed nappies separately from other laundry, on average, how many nappies would make up a load?**

WRITE IN NUMBER. USE LEADING ZEROS. IF UNSURE ASK TO ESTIMATE
IF DON'T KNOW CODE XXX

(75) (76) (77)
☐ ☐ ☐

NOW GO TO Q26

Q.26. **At what wash temperature do / did you normally wash nappies in the washing machine?**
SINGLE CODE PREFERRED

(78)
$90/95^O$ 1
80° 2
70° 3
60° 4
50° 5
40° 6
$3O^O$ 7
Cold rinse 8
Don't know 9

CARD 2

Q.27. **SHOWCARD F Which of these type of washing agent do / did you use for washing the nappies in the washing machine? CODE ALL THAT APPLY**

(7)
POWDER
Biological powder 1
Non biological powder 2
Eco biological powder 3
Eco non biological powder 4

TABLET
Biological tablet... 5
Non biological tablet 6
Eco non biological tablet 7
Eco biological tablet.. 8

(8)
LIQUID
Biological liquid 1
Non biological liquid.. 2
Eco biological liquid 3
Eco non biological liquid.. 4

LIQUIDABS/ LIQUIDSACHETS/ LIQUID CAPSULES
Biological 5
Non biological 6
Eco biological 7
Eco non biological 8

(9)
OTHER
Soap flakes eg LUX... 1
Eco ball .... Other (Write in) 3

CARD 2

Q.28. **Do / did you add fabric softener to the nappy wash in the washing machine?**
IF YES: SAY Is that always or sometimes?

(10)

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     A Study of how parents and carers use disposable and reusable nappies

Yes, always... 1
Yes, sometimes 2
Never.. 3

ASK ALL WHO WASH / WASHED NAPPIES AT HOME IN THE WASHING MACHINE / BY HAND OR AT THE LAUNDERETTE Q 23 (CODES 1 OR 2 OR 3) OTHERS GO TO Q33

Q.29. **SHOWCARD B   Before you wash / washed the nappies do you soak or pre-treat them?**
                                                                  (11)
All the time 1
Most of the time 2
Sometimes 3
Very rarely.. 4 GO TO Q30
Never.. 5
Don't know .... 6 GO TO Q31

ASK Q30 IF SOAK OR PRE-TREAT NAPPIES (Q29 CODES 1-4) OTHERS GO TO Q31

Q.30. **SHOWCARD G In which of the following ways do/ did you soak or pre-treat them? CODE ALL THAT APPLY**
                                                                  (12)
In water only 1
In soap/detergent..2
In household bleach 3
In ecobleach 4
In domestic borax 5
In a sanitiser eg napisan/ milton etc 6
In an eco sanitiser eg nappy bright/ nappy fresh
/ nappy soak 7
In tea tree oil 8
In sodium bicarbonate/ baking soda 9
Other (write in) ....
.... 0

Q.31. **SHOWCARD H After washing the nappies, how do/ did you dry them? Please think about what you do in both the summer and winter. CODE ALL THAT APPLY**
                                                                  (13)
Spin 1
Tumble dry 2
Air dry indoors on clothes line/ horse 3
Air dry outdoors on clothes line/ horse 4
Dry in airing cupboard 5
Dry on radiators 6
Dry elsewhere in house 7
Dry elsewhere outside 8
Other ....
....9

Q.32. **Do / did you iron your nappies after they've been washed and dried?**
          IF YES: SAY Is that always or sometimes?
                                                                  (14)
Yes, always... 1
Yes, sometimes 2
Never.. 3

ASK Q33-Q36 IF USE / USED WATERPROOF OR OVER PANTS AT Q13 CODES 1-4

INTERVIEWER READ OUT : I WOULD NOW LIKE YOU TO THINK ABOUT WHEN YOU WASH / WASHED THE WATERPROOF OR OVERPANTS

Q.33. **SHOWCARD I How often, on average, do / did you wash these waterproof or over pants?**

(15)

Every use	1
Every other use	2
Every 2-3 uses	3
Every 4-5 uses	4
Every 6-10 uses	5
Less often	6
Never	7
Don't know	8

Q.34. **SHOWCARD J And which of the following best describes how you wash / washed these waterproof or overpants? CODE ALL THAT APPLY**

(16)

In the washing machine with other laundry	1
In the washing machine on their own	2 GO TO Q35
Hand wash with water only	3
Hand wash with soap / detergent	4
Hand wash with other washing product	5
Other (write in)	6 GO TO Q36

…………………………………………………………..

ASK Q35 IF WATERPROOF PANTS WASHED IN WASHING MACHINE (Q34 CODES 1 OR 2). IF WASHED BY HAND OR OTHER GO TO Q36

Q.35 At what wash temperature do / did you wash the waterproof or over pants in the washing machine? SINGLE CODE PREFERRED

(17)

$90/95^O$	1
80°	2
70°	3
60°	4
50°	5
40°	6
$3O^O$	7
Cold rinse	8
Don't know	9

ASK ALL USE / USED WATERPROOF OR OVER PANTS

Q.36. **SHOWCARD H How do / did you dry the waterproof or overpants? Please think about what you do in both the summer and winter. CODE ALL THAT APPLY**

(18)

Spin 1
Tumble dry 2
Air dry indoors on clothes line/ horse 3
Air dry outdoors on clothes line/ horse 4
Dry in airing cupboard 5
Dry on radiators 6
Dry elsewhere in house 7
Dry elsewhere outside 8
Other 9

ASK ALL

Q.37. **Finally, what do/ did you do with the nappies after your child doesn't / didn't need them anymore?**
DO NOT PROMPT

(19)

I keep them in case I have another child 1
I give them away 2
I dispose of them with other household waste 3
I dispose of them separately from household waste . 4
I sell them 5
I use them for household tasks 6
I use them for hand towels 7
Other (Please write in) ....
.... 8

THANK AND CLOSE

Annex C: National Statistics Omnibus Survey

The National Statistics Omnibus is a multi-purpose survey carried out by Social and Vital Statistics Division (formerly the Social Survey Division) on behalf of a range of government departments and other public and non-profit-making bodies. Interviews are carried out in respondents' homes by interviewers who have been trained to carry out a range of ONS surveys. The survey is a fast, effective and reliable way of obtaining information about the general population or about particular groups of people. The survey has a response rate of around 65 per cent in Great Britain, which is higher than other Omnibus surveys, and achieves around 1,850 interviews per month.

The National Statistics Omnibus survey is the only national Omnibus that uses random probability sampling at all stages of sample selection. As probability sampling is used, sampling errors can be calculated which allow the precision of survey results to be assessed. In particular, confidence intervals can be estimated to show whether differences from the previous survey are, or are not, within the bounds of sampling error.

The Omnibus interview is in two parts. The first part consists of a set of core classificatory questions (around 50) about respondents that remains unchanged from survey to survey. The second, larger, part consists of a series of unrelated modules on varying topics that are included in the survey at the request of customers.

The Omnibus sample design

The National Statistics Omnibus covers the whole of Great Britain. It has a multi-stage random sample. At the first stage 100 postal sectors throughout Great Britain are selected from the 'small user' Postcode Address File (PAF). In order to increase the representativeness of the sample, the file is stratified by Government Office Region (GOR), tenure (the proportion of heads of household renting from local authorities) and SEG (proportion of heads of household classed as 1 to 5 or 13) using 1991 Census data. This stratification ensures that the English part of the sample is representative of England and the Welsh part of the sample is representative of Wales and so on. At the second stage 30 addresses are randomly selected within each postal sector. At the final stage one adult aged 16 years or over is selected randomly for interview at each eligible address.

Thus ONS interviewers have no control over who is interviewed - they must interview at the pre-selected address and select one adult for interview according to a pre-set method.

As a random sample survey, the National Statistics Omnibus avoids or is less affected by the problems inherent in quota sampling - those of non-response bias and unmeasurable sampling error. Other Omnibus surveys randomly select areas; however quota sampling is used to select the survey respondents. As long as each interviewer's sample matches the profile (quotas) specified by their management they can select any respondents they wish. Thus the sample is biased towards the respondents who are most easily found when the interviewer is looking and most easily persuaded to take part in the survey.

Furthermore, the sample may not be a good representation at the area level since it is impossible to get up-to-date quotas for the precise area covered by each interviewer.

'Official Statistics should not tolerate any uncontrollable bias in its products. It should carry out sample surveys using probabilistic methods.'[12] Only random probability sampling ensures that the method for selecting respondents is not biased and that the degree of precision can be measured scientifically (through the calculation of sampling errors). This technical rigour together with a higher response rate than any other Omnibus survey will help clients to defend the basis of the survey if critics should question the results. In this respect, the National Statistics Omnibus is unique.

Computer assisted interviewing

Social and Vital Statistics Division (SVS) pioneered the use of Computer Assisted Interviewing (CAI), using Blaise software developed by Statistics Netherlands. Nearly all interviews in households and institutions carried out by SVS use Blaise. The Omnibus survey uses the latest, Windows-based, version of Blaise - Blaise 4.

Over the 10 years of using Blaise vast expertise in programming questionnaires has been built up that fully meet customers' requirements and all interviewers are experienced in conducting interviews using Blaise.

Using Blaise improves data quality as the Blaise program controls the routing through the questionnaire and sets the range of codes allowed at each question. Consistency checks can be programmed into the questionnaire, so that any inconsistencies in the data can be resolved during the interview, by the interviewer and respondent, rather than during a post-fieldwork editing stage.

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[12] *Jean-Claude Deville* – ' A Theory of Quota Surveys', Survey Methodology, December 1991. Vol. 17, No. 2 pp. 163-181. Statistics Canada.

Annex D: TEST Research

A research study conducted among parents or guardians of children under the age of 36 months who currently use or have used washable cloth nappies in the past. The purpose of this study was to contribute to the Environment Agency's ability to establish the usage of washable cloth nappies and other related nappy products, and to carry out a life cycle assessment of reusable and disposable nappies.

Methodology

In total, 183 parents/guardians were interviewed face to face in locations within randomly selected constituencies across Britain. Of the 183 respondents, 135 had a child currently using washable cloth nappies. The remaining 48 had used cloth nappies on their child in the past. (Past users were asked to think about the last six months when their child was using cloth nappies when answering all questions.) Respondents who had more than one child under the age of 36 months in their household were asked to think about the youngest child only when answering all the questions. In the case of twins, triplets etc, respondents were also asked to think of the youngest child in terms of the time they were delivered.

Fieldwork was conducted between 10 March 2003 and 4 April 2003. Due to very low penetration, fieldwork was suspended from 21 March 2003 to 26 March 2003 in order to adopt different methodologies to maximise the number of interviews achieved. Interviewing was subsequently revised to include the following options:

* Recruitment of respondents and conduction of main interview in-street as well as in-home.

* 'Snowballing' – Asking respondents if they know anyone else who currently use/have used cloth nappies on their child.

Annex E: Omnibus - Data issues and corrections

Overall comments on data
This dataset consisted of four separate datafiles collected via the Omnibus survey. They were renamed 1 to 4 as follows:

Omnibus 1   February 2003 data
Omnibus 2   June 2002 data
Omnibus 3   July 2002 data
Omnibus 4   November 2002 data

Two of these datafiles (2 and 3) had detailed codes for regions while the other two just had main regions coded. When combining datafiles the main region was assigned to all records.

The four datafiles had a different number of variables in each one so the four datafiles were amalgamated into one dataset with a consistent number of variables. To obtain this the number of variables were reduced by removing many which were not relevant to the analysis required for this report. There were 40 variables left in the dataset used for this analysis.

Modification for nappy analysis
As much of the information collected as possible was to be used for analysis. Each record was split down to produce a new record for each child in the family under 10 rather than just looking at information for the youngest child. A new serial number was assigned to each new record but the original serial number kept too for reference and mapping back to the same family if required. A new variable recording whether the response was for the youngest child or not was created. No respondent had specified any other type of nappy being used than those given on the questionnaire.

Population of respondents
Though there were around 2,000 records within each omnibus datafile, this reduced dramatically in number when looking at records which had answered questions about nappies. The tables below summarise what data were collected in terms of nappy usage. These tables are based on the responses given to question M316_5 "Thinking back to the time when your child was still in nappies, did/do you use disposable nappies, reusable nappies or both disposable and reusable nappies?"

OMNIBUS 1

n=501 all	Nappy type - disposable	Nappy type - reusable	Nappy type - both-disposable	Nappy type - both-reusable
Total	*479*	*6*	*11*	*4*

Source: Omnibus survey

OMNIBUS 2

n=539 all	Nappy type - disposable	Nappy type - reusable	Nappy type - both-disposable	Nappy type - both-reusable
Total	*499*	*12*	*13*	*12*

Source: Omnibus survey

OMNIBUS 3

n=553 all	Nappy type - disposable	Nappy type - reusable	Nappy type - both-disposable	Nappy type - both-reusable
Total	*517*	*4*	*14*	*17*

Source: Omnibus survey

OMNIBUS 4

n=508 all	Nappy type - disposable	Nappy type - reusable	Nappy type - both-disposable	Nappy type - both-reusable
Total	*478*	*9*	*12*	*9*

Source: Omnibus survey

OVERALL DATASET

n=2101 all	Nappy type - disposable	Nappy type - reusable	Nappy type - both-disposable	Nappy type - both-reusable
Total	*1973*	*31*	*50*	*42*

Source: Omnibus survey

The final dataset contained 2,112 records. Eleven of these records had blank or don't know responses to question M316_5, which explains why the total in the table above is only 2101.

Data issues
Some older children in the same household had an age recorded as being younger than the youngest child. The ages were assumed to be correct but the records given in the wrong order. These records have been kept in.

Some children in the same household were the same age in many families. This meant that either a lot of families with twins/triplets had been identified or the accuracy to which the age of the child was given was not detailed enough to distinguish between different children. This was ignored in the analysis and the records were kept in.

Thirty-three records in the original dataset had the child's age recorded as 0. These records were checked and it was found that a few of these were actually very young babies under a month old. The remaining records were recoded to include the exact age of the child in months that had been written on the survey form.

The age out of nappies was recorded as 0 for some cases too. This did not make sense so again data were queried and amended from the original dataset.

Another issue was that for a few records the age given for coming out of nappies was older than the children were themselves. This again was queried and data corrected as necessary.

Some ages of children were found to be over 10, when queried so some data points were lost in the analysis because of this.

Most of the problems highlighted here were concerned with the age coding of records. Since they were not always coded in months, some seemed rounded to the nearest year, care should be taken when looking at any analysis based on the child's age.

A data cleaning exercise at the start of analysis was also carried out since the coding of some ages was outside the system used where 0.0 to 0.11 was used to code 0 to 11 months. These records were recoded from the original dataset.

Question M316_7 asked about the main type of nappy used, but there were only 10 responses to this question since only 10 people listed more than one type of nappy used in question M316_6M. These two questions were combined to produce a new variable called mainused, which had 122 responses in it. One record was removed where the answer to M316_7 was inconsistent with the answer to M316_6M.

Since some of the requested analysis was to look at both 'reusable only' respondents as well as 'reusable only' and 'both - mainly reusable' respondents there was a need to introduce another new variable. A variable called typenapp was created using M316_5 and DVM316 responses. The codes 1 to 4 are as follows:

1   disposable only
2   reusable only
3   both – mainly disposable
4   both – mainly reusable

Annex F: TEST - Data issues and corrections

Overall comments on data

The dataset was analysed in SPSS. Further information needed to be sought from TEST for the coding of the 'other' category options on the survey form. 'Other' options on the form hadn't been coded as named responses if they had less than 10 per cent of the overall response rate for that question.

Modification for nappy analysis

Due to the way that the survey was conducted, question 1 "What type or types of washable cloth nappy have/did you regularly used/use on this child?" and question 2 "And what one of these do/did you most often use?" needed to be combined to determine the main type of nappy used.

Since question 4b "Is your child currently wearing washable cloth nappies all the time?" IF NO SAY "Does your child only wear them during the night or only during the day?" was not worded sufficiently clearly or unambiguously to give the information sought this has been excluded from the analysis. Due to the one question asking two things, respondents seemed to answer yes in many cases when their answer should have been no. For example, if someone were only using reusable nappies during the day then they would answer "No" to the first prompt and then should say "No, only during the day" to the second prompt. It is thought, though, that errors have occurred because it would have been easy for the same respondent to answer "Yes" to the second prompt by answering "Yes" to the question "Does your child only wear them during the night or only during the day?" where the correct response should have been "No, only during the day."

Therefore it was not possible to estimate the age that a child stops wearing nappies in this analysis.

Population of respondents

Though there were 184 records within this dataset, this is reduced for a number of questions since not everyone answered all questions. Some analysis is therefore done on very small numbers and should be treated with caution. The frequencies in the tables presented should be carefully considered alongside the valid per cent.

This survey only covered reusable nappy users.

Data issues

Some respondents said that they owned no nappies, (question 5 "In total, how many washable cloth nappies do you own that are currently in use for this child?"), but had said that they'd used them previously on other children (question 6 "Have/had these washable cloth nappies been used previously on another child?"). These respondents were using a nappy service (nappy service users (NSUs)= 12). Their responses to questions 5, 6, 15, 25, 26, 27, 28, 29, 30, 31, and 32 were also excluded from the analysis since it cannot be certain how they answered these questions.

Question 7 "On average, how many times do/did you change your child's washable cloth nappy over a 24 hour period?" had one record with 30 changes per day. This was queried with TEST and found to be correct.

Question 8 "On average, over a 24 hour period, how many times when you change/changed a nappy has/did your child had/have a bowel movement?" had one response that needed to be corrected from 22 bowel movements to two due to incorrect data entry from the original form. There was another respondent who answered five here yet only had two nappy changes per day, so this record was excluded from analysis.

Question 12 "On what occasions would you use disposable nappies rather than washable cloth nappies for this child?" had been recoded by TEST from the original questionnaire to add in additional options for the 'other' category based on respondent's answers. For the purposes of the analysis the original options given on the survey form were used .

Question 15 "In total, how many waterproof or over-pants do you own that are currently in use for this child?" had one response from a NSU saying that they owned none but used them all the time in question 13 "When using washable cloth nappies, how often, if at all, do/did you use waterproof or over-pants?" This was excluded from analysis since on checking the form it was discovered that they were hiring them from the nappy service. All NSUs were therefore excluded from this analysis.

Question 19 "Thinking of the re-usable absorbent booster pads that you use. How many of these pads do you own that are currently in use?" had one response saying they owned none but used booster pads sometimes. This was kept in the analysis since on checking the form it was discovered that the answer was indecipherable so it was treated as a non response rather than zero owned and would have no effect on the figures produced.

Question 25 "When you wash/washed nappies separately from other laundry, on average, how many nappies would make up a load?" had one response that was excluded since it said they washed 40 nappies in a load but they'd only said they owned 20. Since this did not stack up, I also excluded the answer of 20 nappies from question 5 "In total, how many washable cloth nappies do you own that are currently in use for this child?" for consistency.