WR1204
Household Waste Prevention Evidence Review:
L3 m3-8 (T) – Consumer Segmentation

A report for Defra's

Waste and Resources Evidence Programme

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Resource Recovery Forum

The Social Marketing Practice™

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L3 m3-8 (T) Consumer segmentation

This paper summarises, in the context of household waste prevention, the types of segmentation models and typologies that have been identified as part of this evidence-based review. The main topics covered are:

- Key findings
- Segmentation models and typologies
- Barriers to progressing segmentations for household waste prevention
- Opportunities for progressing segmentations for household waste prevention
- Researchers' recommendations
- References of detailed reviews

Modules providing further insight or detail in relation to consumer segmentation are listed below:

L1 m1 Executive Report	L2 m3 Consumers – engaging – Chapter 1.3	L3 m3/1 (D) Extent to which waste prevention behaviours are practised L3 m3/2 (D) Motivations and barriers L3 m3/4 (T) Attitudes & behaviour – food waste L3 m3/5 (T) Attitudes & behaviour – home composting L3 m3/6 (T) Attitudes & behaviour – reuse L3 m3/7 (T) Attitudes & Behaviour – everyday actions around the home

(D) denotes a briefing paper providing more background detail; (T) indicates a short focused topic briefing

1.1 Evidence reviewed

A broad selection of evidence sources were reviewed to understand if and how segmentation techniques and typologies had been used to understand and group households to target for waste prevention. This included a review of academic literature, three Defra WREP projects - Tucker & Douglas, 2006a, WR0112, Dorset County Council et al, 2008b, WR0116 and GAP, 2008, WR0114, and other Defra commissioned work, e.g. a framework for pro-environmental behaviours, 2008. The extent of the literature is UK based. There were no examples of international experience in this field.

The research can be broadly summarised as follows:

- ***Segmentation models*** based on surveys and statistical cluster analysis to identify groups of people with similar values, attitudes or waste prevention behaviours, including the role of Defra's pro-environmental behaviour framework.

- ***Segmentation typologies*** which classify groups (or clusters) of people. These have been derived from numerous attitudinal and behavioural surveys and are presented to understand the role of typology in targeting and influencing household waste prevention behaviour according to the following criteria:

    - Demographics, e.g. age, gender, household size / tenure etc;
    - Behavioural elements, i.e. food, home composting, reuse, junk mail, and carrier bags;
    - Psychographic elements, i.e. values, attitudes and motivations.

1.2 Topline summary of findings

Waste prevention consists of not one but many diverse behaviours which, though related, are only weakly so (Tucker & Douglas, 2006b, WR0112). This makes the potential for segmenting waste prevention behaviour a challenging process, i.e. different behaviours require different actions by individuals and householders.

Overall, very little segmentation has been undertaken to design and develop models that specifically target household waste prevention or the different waste prevention behaviours such as food waste, home composting, reuse, etc. However, the review did identify two models (Tucker & Douglas, 2006a, WR0112 and Barr, 2007). Tucker & Douglas, 2006b, WR0112 base their model on 'behavioural class', i.e. private reuse, minimising new buy, valorisation of unwanted goods, point of purchase decisions, and use of long-life products. Whilst Barr's model is based on clustering similar pro-environmental behaviours, e.g. 'belonging' to a particular cluster is dependent upon a high or low level of recycling, home composting or reuse behaviour. It is not clear whether these models have been tested or whether waste prevention interventions or campaigns have been designed to support them.

In terms of the segmentation criteria outlined in Table 1, it appears that typologies (derived from attitudinal and behaviour surveys), have focused to a greater degree on the demographic and behavioural elements. However, there are gaps on the use of some behavioural elements, i.e. peoples' wider activities and interests. The use of psychographic elements (also referred to in Table 1) is rare, and has only been identified in the area of 're-use' were consideration was given to values, feelings, influence of friends, and the ability to perform the behaviour, alongside contextual factors.

Attitudes have been found to be a poor predictor of individual waste prevention behaviours. Other circumstances besides attitudes to waste prevention behaviour are likely, e.g. existing pro-environmental behaviours (Tucker & Douglas, 2006b, WR0112).

Demographics have also been found to be a poor predictor of waste prevention behaviour (Tucker & Douglas, 2006a, WR0112; Barr, 2007; Darnton & Sharp, 2008). Although a number of differences in waste prevention behaviours between socio-economic groups, for example, have been identified by researchers, many of them conclude that these differences, though significant, are very small. Socio-demographic elements have been found to only explain 5% of behavioural variation. No demographic differences were found in Tucker & Douglas, 2006b, WR0112 cluster analysis. More broadly other studies, where geo-demographic tools have been used to distinguish, for example, between different recycling behaviours, car travel choices, and water use behaviours, concur with these findings (Darnton & Sharp).

Whilst demographic typologies (including geographic and socio-economic elements) have been found to be poor predictors of waste prevention behaviour, their use should not be ignored as such typologies provide value, e.g. in terms of understanding family lifestage, age, gender, social status etc. However, correlation to behavioural or psychographic typologies is likely to be weak.

Using segmentations based on demographics for selecting and matching 'control and pilot' areas of local populations was found to be challenging and problematic (Dorset County Council et al, 2008a, WR0116 and Changeworks, 2008). In both cases the proprietary tool, ACORN, was used. It was concluded that the use of such tools to fulfil this purpose was inappropriate due to the significant time and resource required to access and analyse the level of detail required.

1.3 Key findings

Segmentation – the context

Segmentation can be described as a process of sub-dividing people into more manageable and clearly differentiated groups. Segmentation is used extensively in both commercial and social marketing to identify groups of people with similar needs or characteristics who are likely to exhibit similar behaviours. The process involves:

- Gaining deep insight into the target audience through both quantitative and qualitative research;
- Using expert insight by consulting with stakeholders;
- Designing a model using, for example, 'cluster analysis' techniques to group people with similar 'attributes'; and
- Designing scenarios for interventions, messages and tools that are subsequently tested and refined.

A multi-method approach is often used whereby the model can be derived from statistically robust data and / or derived from a creative and intuitive analytical process.

"Segmentation is as much of an art as a science"

Mori et al 2008:8

Segmentation can help policy makers design and support the implementation of 'behaviour goals' (as defined by Defra's Pro-Environmental Framework), and help local authorities and practitioners maximise the targeting effectiveness of waste prevention interventions and campaigns. In particular, segmented approaches can help to ensure that resources (staff and budget) are properly identified, managed and focused.

The most common criteria used to classify segmentations are provided in Table 1.

Typology	Elements	Possible Inputs (variables)
Geographic / demographic/ socio-economic	Based on who and where people are and level of income / affluence	Postcode, street, area, region Urban vs rural Age Gender House type / ownership Household composition Family lifestage Education Working status Income Social class
Behavioural	Based on what people do and where and when they do it and perceptions of what they might do	***Behaviour and usage:*** Frequency / extent of use Persistency (loyalty) Place Time Occasion Convenience

		Activities & Interests: Community interests Lifestyle (e.g. activities, interests, leisure, hobbies What money spent on
		Media consumption: Where most info comes from Internet usage What media engaged TV, radio, press Access to media Access to local information
Psychographic (values, attitudes and motivations)	Based on how (and why) people think and feel the way they do	Needs, desires, benefits, barriers, motivations
		Beliefs: Beliefs, values, aspirations Attitude to life, work, family and friends
		Influencers: Who do and don't listen to Who respect Who delivers Role models Community influencers

Table 1 Segmentation criteria

Segmentation – models and typologies

Whilst a range of segmentation models are available commercially, the most notable being ACORN and Mosaic[1], it is common for models to be developed from scratch, i.e. for a specific purpose by researchers, practitioners or policy makers. Such models, commonly known as 'hybrid' models contain a mix of variables blending, for example, behavioural and psychographic elements. The whole process can include linking demographic elements to other data to generate 'hybrid' segments. The more recently developed Pro-Environmental Behaviour Framework by Defra[2] is a good example of using a mix of variables including psychographic (such as ecological world view) and a combination of pro-environmental behaviours (including some waste prevention behaviours). The benefit of a hybrid model to a user is that all the variables relevant to the behaviour in question have been gathered together in one place. For example, the Defra segmentation model has allowed the identification of particular audience groups (who represent combinations of attitudes and pro-environmental behaviours) to be prioritised.

Two studies, undertaken by Tucker & Douglas, 2006b, WR0112 and Barr 2007, provide insight to developing segmentations for household waste prevention. These models were based on surveys and statistical cluster analysis to identify typologies with similar behaviours. They are based on a 'hybrid' approach which blends all three segmentation criteria – 'demographic' (including geographic and socio-economic elements), 'behavioural' and 'psychographic' elements.

[1] ACORN (A Classification for Residential Neighbourhoods) is owned by CACI and is the original commercial geodemographic tool. Mosaic is owned by Experian and is possibly considered the most high profile geodemographic tool commercially available. Such tools are traditionally associated with marketing applications, e.g. direct marketing campaigns using post code databases and proprietary survey data.
[2] A framework for pro-environmental behaviours, Defra, January 2008

Tucker & Douglas, 2006b, WR0112 - The cluster analysis undertaken by Tucker & Douglas, 2006b, WR0112 suggests that targeting waste prevention might be best carried out at a 'behavioural class level' rather than at the level of specific behaviours because these are influenced by a number of specific external pressures and factors, i.e.:

- Private reuse
- Minimising new buy
- Valorisation of unwanted goods
- Point of purchase decisions
- Use of long-life products

The behavioural class structure has three behavioural clusters. These are grouped together on the basis of the intensity of their behaviours:

- A small cluster (alpha)
    - Relatively strong behaviours
    - Strong attitudes, including an emotional response to the acceptance of personal responsibility and higher self-efficacy
    - A tendency towards the value of openness to change, and less of a liking for gadgets
- An intermediate cluster (beta)
    - Strong behaviours on valorisation of unwanted goods and minimisation of new buy, moderate levels of reuse, and relatively weak purchase behaviours (i.e. choosing lower waste products)
    - Strong attitudes
    - The most socially motivated and the busiest cluster
- A relatively large cluster (gamma)
    - Engaging modestly or weakly across all behaviours
    - Weak attitudes
    - Least socially-oriented and most fond of gadgets

Although different waste prevention behaviours were found to be correlated, Tucker & Douglas, 2006b, WR0112 found that, in some cases, respondents' behaviours appeared completely random and unrelated to attitudes (or demographics). However, the best predictions were achieved for the 'alpha' group (at over 60%).

Barr 2007 identified four clusters of people with similar pro-environmental behaviours, i.e. committed environmentalists, mainstream environmentalists, occasional environmentalists, and non-environmentalists. The descriptions below illustrate the general characteristics of the segments:

- 'Committed environmentalists' (< quarter of the sample - 294 individuals)
    - Keen recyclers, gave frequently to charity, virtually all composted (with over 60% 'always' doing so), usually reused paper and glass (with virtually all doing so at least 'sometimes')
    - Less committed to buying recycled (with 40% doing this 'usually' or 'always')
- 'Mainstream environmentalists' (412 individuals)
    - Recycled and donated to charity with almost the same frequency as 'committed environmentalists', and approximately the same number bought recycled
    - Marginally fewer reused items
    - Much less likely to compost (with 2/3 in this segment never composting and less than 5% always doing so)

- 'Occasional environmentalists' (505 individuals)
    - Lower levels of recycling, low levels of composting, and significantly reduced levels of reuse (with well under 20% 'always' reusing glass and paper)
- 'Non-environmentalists' (43 individuals)
    - Predominantly said they 'never' or 'rarely' take any of the listed actions

Pro-environmental segmentation models

Defra's pro-environmental behaviour framework focuses on mitigating high impact carbon behaviours including waste prevention behaviours, e.g. waste less food and re-use. The Defra framework is not based on geodemographic or socio-economic variables (although they are available) but, as outlined above, is based on a blend of behavioural and psychographic variables. In other words the emphasis is not to identify where certain groupings of the general public are most likely to be found geographically but on the basis of their pro-environment behaviour and lifestyle.

In terms of attitudes towards waste prevention, the segments demonstrate the following characteristics:

- Positive Greens (Segment 1)
    - You do everything you possibly can, but would like to do more (are currently the most environmentally active in the home).
- Waste Watchers (Segment 2)
    - Making full use of things is important (are greener than most in their everyday behaviours in the home).
- Concerned Consumers (Segment 3)
    - Do more than a lot of people and would like to do more (this group has taken small steps to being environmentally friendly in the home).
- Sideline Supporters (Segment 4)
    - Don't think much about it, but would like to do a bit more (behaviours are not translated into the home for this group).
- Cautious Participants (Segment 5)
    - Would do more if knew others were (are above average supporters of recycling).
- Stalled Starters (Segment 6)
    - Do what they can, but there are more important things in their lives (have more positive attitudes to recycling).
- Honestly Disengaged (Segment 7)
    - Never give reducing the amount of rubbish they throw away a second thought (are the least waste focused, being least likely to recycle, avoid waste, or re-use).

The following insights were derived from the literature in relation to the Defra framework:

- Those who were considered to 'waste less food' in relation to the Defra segments are (CML Research, 2008):

    - Positive Greens are most likely to waste less food.
    - Waste Watchers show a high degree of interest in food waste, although this is related to money saving not pro-environmental concerns.
    - Concerned Consumers focus on the 'quality' food although this is aspirational, however, they are less likely to understand the link between food and climate change.
    - Sideline Supporters regard food waste as a 'win-win' on both environmental and economic grounds.

  - Cautious Participants are less likely to understand the link between food and climate change.

- Defra's sustainable clothing study found that those selling clothes (largely through car boot sales and eBay) were more likely to be from its Sideline Supporters, Cautious Participants and Stalled Starters.

- GAP, 2008, WR0114 identified opportunities for categorising EcoTeams according to the Defra framework. They suggest that most EcoTeam respondents would fall into either the 'Positive Greens', 'Waste Watchers', and 'Concerned Consumers' segments. In particular, they suggest that the EcoTeam-based approach would be effective in encouraging Cautious Participants in segment 5. This segment is thought to benefit the most from this type of approach to fit pro-environmental changes within their lifestyles. It is also thought that EcoTeams would be largely unattractive to the least willing and able segments – Stalled Starters and Honestly Disengaged.

The potential for predicting waste prevention (or pro-environmental) behaviour using proprietary demographic tools such as ACORN or Mosaic was examined as part of Dorset County Council et al, 2008a, WR0116. Based on evidence undertaken by Darnton & Sharp, 2006, the review identified that there were drawbacks to investigating correlations between the segmentation characteristics and waste prevention behaviour. This was because such tools provide broad generalisations based on a local area or neighbourhood using post code data – rather than characteristics at the individual level.

New versions of both tools have recently been developed – 'greenacorn' developed by CACI which includes Defra's Survey of Public Attitudes and Behaviours Toward the Environment, 2007 and Defra's pro-environmental segmentation model; and Experian's 'GreenAware' which includes the Stockholm Environment Institute model of environmental pressures. It is not clear whether the Experian tool includes Defra's segmentation. Both tools are designed to give a picture of every UK household's carbon footprint, environmental behaviour and attitudes.

A detailed review of pro-environmental segmentation models can be found at Darnton & Sharp, 2006.

Segmentation typologies

Segmentation typologies provide a classification of groups (or clusters) of people. The evidence reviewed, identified a number of typologies with the following criteria:

- Demographics, e.g. age, gender, household size / tenure etc;
- Behavioural elements, i.e. food, home composting, reuse, junk mail, and carrier bags;
- Psychographic elements, i.e. values, attitudes and motivations.

The criteria have been derived from numerous attitudinal and behavioural surveys conducted by researchers and practitioners. These are detailed below.

Demographic Typologies

Generalised demographic typologies can be derived from the literature, i.e. those groups of people most likely to be involved in waste prevention are:

- Older people (Tucker and Douglas, 2006a, WR0112 and Tonglet et al., 2004);
- Women would appear to be more likely than men to reduce waste (although the correlations were found to be weak) (Tucker and Douglas, 2006a and Barr 2007);
- Households with no children (Tucker and Douglas, 2006a, WR0112 and Tonglet et al., 2004);

- Large and small households are most likely to reject over-packaged goods, compared to medium-sized households, but least likely to donate to charity (Tucker and Douglas, 2006b, WR0112);
- Detached households are more likely to donate to charity, hire rather than buy, reuse clothing as rags and use rechargeable batteries (Tucker and Douglas, 2006b, WR0112);
- Tenants, in lower income groups, are more likely to buy cheaper, second hand items, and buy from charity shops (AEA et al, 2008, WR0116);
- More generally, the evidence suggests that those in higher social grades are more likely to engage in home composting, food waste prevention, and some donation / passing on for reuse; those in lower social grades are more likely to engage in buying second hand, as well some selling for reuse.

In general, the evidence suggests that the groups of people least likely to be involved in waste prevention are:

- Families with children (Tucker and Douglas, 2006b, WR0112);
- Young adults (Tucker and Douglas, 2006b, WR0112);
- Those in unskilled employment (Tonglet et al, 2004);
- Terraced and semi-detached households are less likely to donate to charity, hire rather than buy, reuse clothing as rags and use rechargeable batteries (Tucker and Douglas, 2006b, WR0112).

Waste Prevention Behaviour Typologies

A number of typologies have been identified that were focused on specific waste prevention behaviours, i.e. food, home composting, reuse, junk mail, and carrier bags. The 'top line' insights derived from the literature are:

- **Food** – The evidence in this area has focused on the groups of people who waste the most food (WRAP, The Food We Waste, 2008). In summary these are:
    - Larger households and those with children;
    - Single person households (on a per capita basis);
    - Young people (on a per capita basis);
    - Older people who were found to waste as much 'avoidable' food as younger people (on a per capita basis).

- **Home composting** – The groups of people most likely to home compost are:
    - Older, or later family stage (Gray & Toleman, 2006; Tucker and Douglas, 2006a, WR0112);
    - An owner-occupier (Gray & Toleman, 2006; Tucker and Douglas, 2006a, WR0112);
    - Living in a multi-occupancy home (Tucker and Douglas, 2006a, WR0112);
    - Living in a detached or semi-detached house (Tucker and Douglas, 2006a, WR0112);
    - Have a large garden, interest in gardening or frequent gardening activity (Tucker and Douglas, 2006a, WR0112 and Parfitt, 2006); and
    - Are in one of the higher (more affluent) social grades, i.e. ABC1 (Gray & Toleman, 2006).

  In an attempt to broaden the current groups, attitudes towards home composting have been researched by WRAP (2007a). Potential typologies could be derived from the following responses:
    - Good for the environment (40% of respondents);
    - Good way of getting rid of waste (20% of respondents);
    - Reduced waste to landfill (11% of responses).

- **Re-use** – There is some agreement in the literature that donation on the one hand, and purchase/receipt of goods on the other, is not done by the same person and follows a fairly predictable pattern:

    - Although there are no significant differences in social class donations are more likely from middle class households, women are more likely to share and swap between friends and family, and social class DE are most likely to sell at car boot sales.
    - Purchase is more likely from lower income households, men are more likely than women to buy from commercial second-hand stores.

  Work from a cultural studies perspective suggests that the nature of the purchaser and their motivation may be context dependent in relation to the type of reuse outlet involved. More affluent consumers, for example, may seek out retro, vintage or car boot sales for reasons that include fun, an anti-consumerist ethic, or expression of self-identity (Watson, 2008).

  LCRN (2008) developed, through a qualitative process, a typology containing four segments:

    - ***Traditional*** - referrals of people on an income related benefit
    - ***Thrifty*** - elderly, students, and people unwilling to declare benefit status
    - ***Green*** - people who prefer to reuse rather than buy new
    - ***Fashion*** - people looking for something retro, funky, kitsch and quirky

  The user typology of new reuse channels – Freecycle and eBay – is biased towards middle class and professional households (ACS, 2006). From the limited (and not necessarily generalisable studies) eBay seems to have a younger typology than Freecycle.

- **Junk mail** - There is little information in the literature about who prevents junk mail. Tucker and Douglas (2006a, WR0112) note that households in social class AB receive considerably more junk mail than the average household.

- **Carrier bags** – The groups of people most likely to reuse carrier bags are:

    - Women than men (Andrew Irving Associates, 2005; Watson, 2008).
    - Those in older age groups (Andrew Irving Associates, 2005; Tucker & Douglas, 2006b, WR0112). Although bag reuse is more common among the middle-aged because they make more routine and planned shopping trips (Watson, 2008).
    - Retired people (Tucker and Douglas, 2006b, WR0112).
    - Smaller households (Tucker and Douglas 2006b, WR0112)

Psychographic Typologies

This is the area where that has been the least focus other than in the Tucker and Douglas 2006b, WR0112 and Barr 2007 segmentation models which are hybrids. However, some psychographic elements have been identified as predictors of re-use behaviour:

- Environmental values, knowledge and concern (Watson, 2008);
- Ecocentric values, convenience, effort, feeling that the action is worthwhile, a sense of satisfaction (Barr, 2007);
- Ability to perform the behaviour, contextual factors (Tonglet et al., 2004); and
- Influence of friends (Tucker & Douglas, 2006b, WR0112).

Other Typologies

Typologies in relation to pro-environmental attitudes and behaviour – It appears that individuals who are concerned about 'environmental issues' are frequently reported to be more interested or engaged in waste prevention. For example Tonglet et al. (2004) and Tucker & Douglas (2006a, WR0112) note in their literature reviews that this trend is often observed. Waste Watch (2007a) note that many of those who were attracted to their waste prevention initiative tended to already have an interest in environmental issues. Research also suggests that whilst members of environmental groups are more likely to practice environmental consumerism in general, it appears that waste prevention is still low on their list of priorities (Tucker and Douglas, 2006b, WR0112).

Typologies in relation to recycling behaviour – In terms of whether recyclers are more or less likely than non-recyclers to undertake waste prevention behaviours, the evidence is mixed. In brief, it shows that:

- Those who were keen recyclers before taking part, tended to be more interested and enthusiastic to carry out as many waste reduction activities as possible, while those who had less 'green' or busier lifestyles were inclined to choose waste prevention behaviours they considered achievable (Waste Watch, 2007a, WR0105);
- Respondents who claimed to recycle frequently were more likely to minimise their waste than those who recycled infrequently or never (Obara, 2005);
- People engaged in bring recycling (as opposed to kerbside recycling) and home composting were more likely to also engage in waste prevention (Tucker & Douglas, 2006b, WR0112)

In contrast, however:

- People who were carrying out waste minimisation behaviours were more likely to feel that they did not need to recycle (because they considered "others" to be doing enough) (Tonglet et al., 2004);

Regional typologies – it appears that there are some regional variations between specific waste prevention behaviours. The evidence is slim but has found that:

- Re-use activities in Hampshire were more pronounced than in East Ayrshire (Tucker and Douglas, 2006b, WR0112);
- North of England (30%) and Scotland (28%) would be embarrassed to admit to buying second hand than the South East England (13%) (Watson, 2008); and
- Buying 'bags for life' is least common in the North East of England (26%), compared to Greater London (38%) and Wales (41%) (Watson, 2008).

1.4 Barriers to progressing segmentation for household waste prevention

The main barriers to progressing segmentation for household waste prevention are:

- Waste prevention is not one but many behaviours. This makes the process of segmentation more challenging. Use of behavioural typologies goes some way, but more needs to be done to develop a rounded people picture. Researchers, therefore, need to include psychographic typologies in their surveys.

- There is little evidence on the use of psychographic typologies whereas the evidence, outlined in Section 1.6 below and in L2 m3, points towards understanding peoples' values is necessary for targeting and engaging people in waste prevention.
- There is no evidence to suggest that the two segmentation models outlined above (Tucker & Douglas, 2006b, WR0112 and Barr 2007) have been tested to see if they work, nor whether interventions, campaigns or key messages has been designed to support the delivery of the models.
- The development and use of segmentations is relatively weak with little experience shown.
- Predicting behaviour is complex. For example, people's consumption behaviours can fluctuate, and often vary depending on the product domain (e.g. one person can be environmentally conscious on food purchases but not when it comes to holidays). Therefore, people cannot be 'neatly' divided into categories of "environmentally conscious" and "environmentally less responsible" consumers (OVAM, 2008).

1.5 Opportunities for progressing segmentation

The main opportunities for progressing segmentation for household waste prevention are:

- It is not clear from the evidence whether a segmentation model for waste prevention or for specific waste prevention behaviours is indeed a key requirement. Other than the two examples cited, there has been no call for such a model. However, one could argue that in order to achieve waste reduction targets and effectively engage the public in doing so, a suitable model should be developed. For example, Tonglet et al, 2004 observed that many waste prevention projects may have failed because they were insufficiently grounded in theory and that this could easily be rebutted by the proposition that too many theories of behaviour change fail because they are insufficiently grounded in what actually happens (see also L3 m5/1 (T)). On what basis a model should be derived is unclear, i.e. consumption, environmentalism, waste prevention (specific behaviours), broader values. Indeed, should there be such an undertaking it would require substantial resource and evaluation of the model's intended purpose and construct. Development would need to include intervention and campaign scenarios that are then tested in each segment.
- The existing Defra segmentation model may provide a useful starting point as this already contains a number of waste prevention typologies, as may the new proprietary 'green' models by ACORN and Mosaic (assuming the issue over demographics can be resolved).
- There may be an opportunity to 'pool' together existing local authority survey data on waste prevention and examine the potential to construct the basis of a segmentation model, into which future survey data could be imported.
- Even without a segmentation model, users need to build a richer 'people' picture on waste prevention more generally and on specific behaviours. A series of research questions and guidance will be needed on the use of a wider range of behavioural and psychographic typologies.
- To support the above, guidance will be needed on evaluating survey results so that users can get the best out of their survey results, i.e. the use of cluster analysis or cross tabulations can help users build a better people picture and targeting profile for waste prevention.

1.6 Researchers' recommendations

The recommendations are not specific to segmentation models, but the following can be drawn from the evidence review as follows:

- Further exploration is needed on the use of proprietary tools for the use of matching populations, e.g. to determine their suitability, identify whether there are alternative mapping techniques, and identify the best criteria upon which populations can be accurately mapped (Dorset County Council et al, 2008a).

- The natural 'groupings' of waste prevention behaviours (e.g. re-use, point of purchase) may present the best points for interventions. Uncertainty over people's responses to behaviour-specific interventions could be reduced through increasingly product-specific promotions - but this level of understanding needs more research, and is in the area of manufacturers and retailers more than campaigners (Tucker & Paisley, 2007a, WR0112).

- In terms of reuse, the focus needs to be on the ABC1 groups to encourage them to donate and buy more second hand. There is potential to address the segment who never reuse via charity shops or furniture reuse organisations, as well as those who only donate or only buy, encouraging more people to 'close the reuse loop' (ACS, 2006).

- Future studies should measure intentions, attitudes to, and beliefs about specific waste prevention behaviours. Waste prevention promotion should focus on the younger age groups (as they are less engaged currently), emphasising that waste prevention does not need to be inconvenient and time-consuming, and providing information on how to shop, repair and reuse to reduce waste (Tonglet et al, 2004).

- There are opportunities in the way that fewer young people and males reduce their waste, and those with recycling collections are less willing to reduce than those without (Barr 2007).

The evidence recommended who to target on household waste prevention (via the following typologies):

- Based on their research (The Food We Waste, 2008), WRAP is targeting two main groups that it wants to think differently about food - 'busy families' and 'couples / empty nesters'. Their common characteristics are:

    - They are not very interested in health or organic foods
    - They find managing money difficult
    - They are not 'foodies', but spend a lot on food
    - They lack time to cook and prepare

- Other targeting recommendations derived from the literature are:

    - The baby boomer generation (42-62 year-olds) because they are due to retire in the near future and will therefore have more time to devote to environmental concerns (OVAM, 2008);
    - Middle-aged, single people because these are set to be the fastest growing type of household, are expected to have relatively high disposable incomes, and may have high waste-generating lifestyles (Brook Lyndhurst, 2007, WR0104);
    - Young people and males because they currently do little to reduce their waste, and those who accept the need to help the environment and who currently do little other than recycle (Barr, 2007).

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Basis of this report

The material in this paper is derived from a large scale evidence review of household waste prevention conducted by Brook Lyndhurst, the Social Marketing Practice and the Resource Recovery Forum for Defra's Waste and Resources Evidence Programme.