Patterns of Water:
Resource Pack

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Results from the ARCC-Water/SPRG UK household water practices survey funded by:

Lancaster University: Dr Will Medd, Dr Martin Pullinger; **University of Manchester:** Dr Alison Browne; **Southampton University:** Dr Ben Anderson.

Introduction

This is a resource pack that we have put together from the cluster analysis results of a survey, and qualitative interviews, conducted across the south and south east of England exploring practices using water in the home and garden. We are happy for you to use this resource pack in policy, business, and teaching however please reference as: **Browne, A.L., Pullinger, M., Medd, W., & Anderson, B. (2013). Patterns of water: Resource pack. Lancaster University, Lancaster, UK.** Contact Dr Alison Browne alison.browne@manchester.ac.uk if you require more information about the project.

Research aims and approach

Our aim was to draw on theories of practice to expand current understandings of the diversity of water use, and common ways in which water using practices are performed. This approach has implications for how water "demand" is understood, managed and modelled.

What do we want to know?

The range of practices in which water is *implicated* and the diversity of performances of household practices. Beyond that that diversity, are there groups with similar ways of "doing" laundry, bathing, gardening? This could be influenced by shared norms and meanings, shared skills and knowledges, available resources and technology, environment, systems of provision. What can we say about performances of these practices, and their sociodemographic and other characteristics?

What is presented in this resource pack?

This set of posters presents some of the results of the research, focusing on the common variants of practices identified using cluster analysis. The quantitative results are complemented by extracts from the interviews conducted with some of the interviewees, using respondents from the same cluster as each poster is about.

Further Reading

PULLINGER, M., Browne, A.L., Medd, W., & Anderson (2013). *Patterns of water: The water related practices of households in southern England and their influence on water consumption and demand management.* Lancaster University, Lancaster UK. Access via https://www.escholar.manchester.ac.uk/uk-ac-man-scw:187780

BROWNE, A.L., Medd., W., & Anderson, B. (2013). Developing novel approaches to tracking domestic water demand under uncertainty - A reflection on the "up scaling" of social science approaches in the United Kingdom. *Water Resources Management, 27* (4), 1013-1035 DOI: 10.1007s11269-012-0117-y
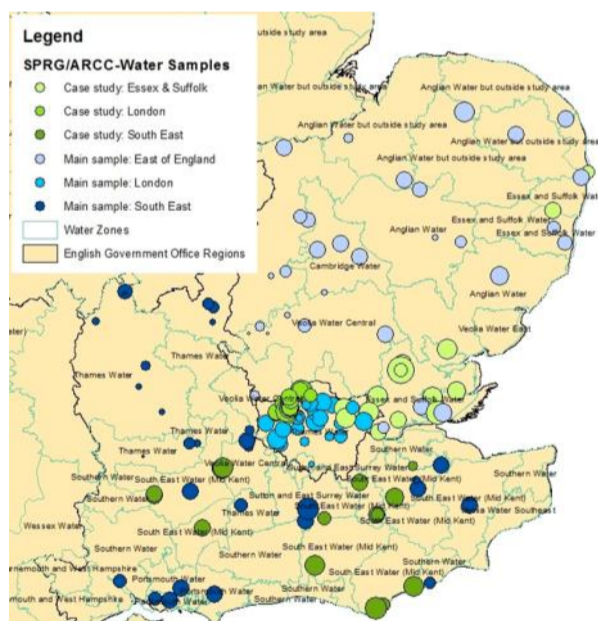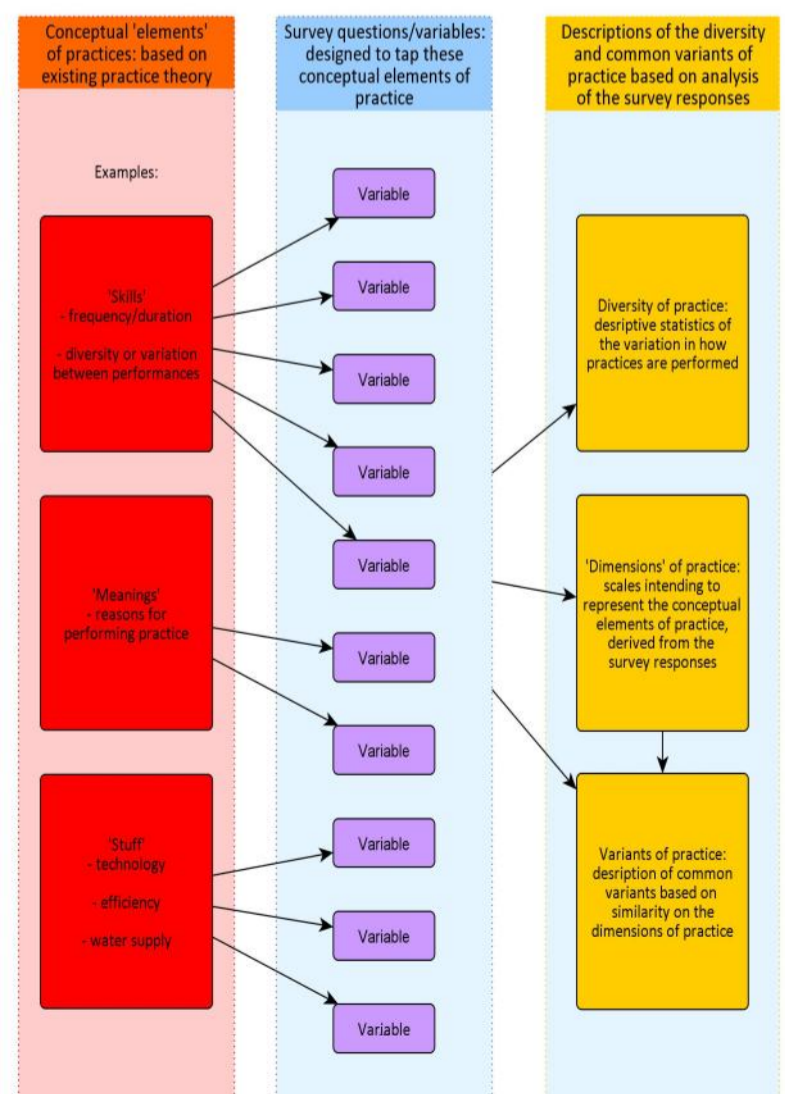
Mixed method design

'Water Practices' survey
- 1802 respondents
- Representative sample: from South East, London and East of England Government Office Regions
- Case studies: (some) Water Company monitoring areas

Qualitative interviews
- 22 interviewees
- Selected from survey respondents

Survey design

The survey contained questions on...

Household audit of water-using 'stuff'

Habits and practices of: Cleaning; Personal hygiene & care; Laundry; Gardening; Cooking & washing up

Plus
- General socio-demographics
- Meter presence
- Estimate of most recent bill if metered
- 'Environmental' habits

From concepts to empirical research...

WASHING CLUSTER ANALYSIS RESULTS:
Summary of Population Level Results

Population as a whole

(Bubble sizes represent percentage of respondents having that value on that dimension)

Meaning of the scales:

| 1	8 or more	4 or more	Always showers	2 or 3
0	1 or fewer	None (never varies)	Always has baths	None
Scale value	Frequency	Complexity	Technology	Outsourcing
	Number of baths and showers per week	Number of factors which affect shower duration or level of filling the	Shower to bath ratio	Number of different places outside the home at which re-
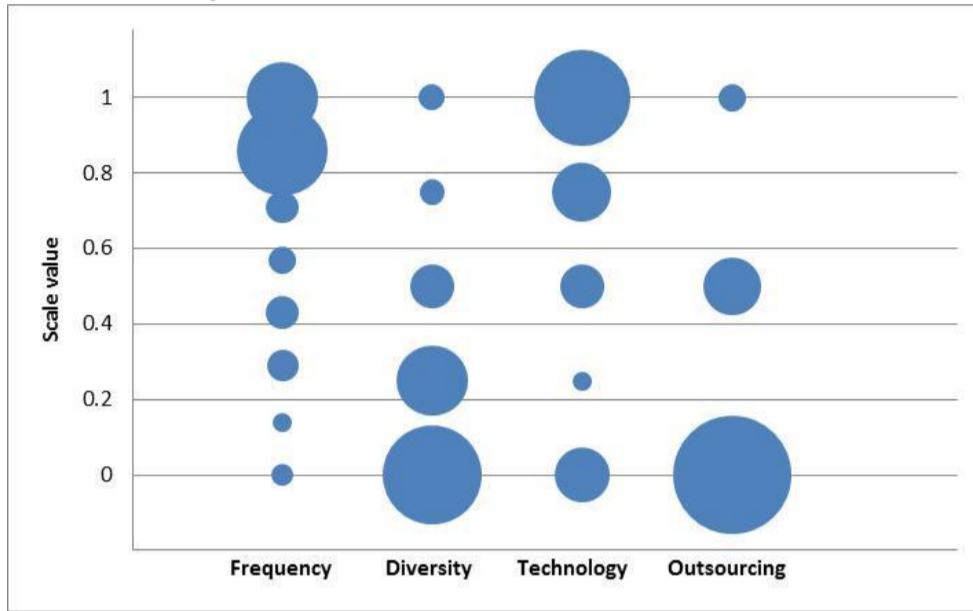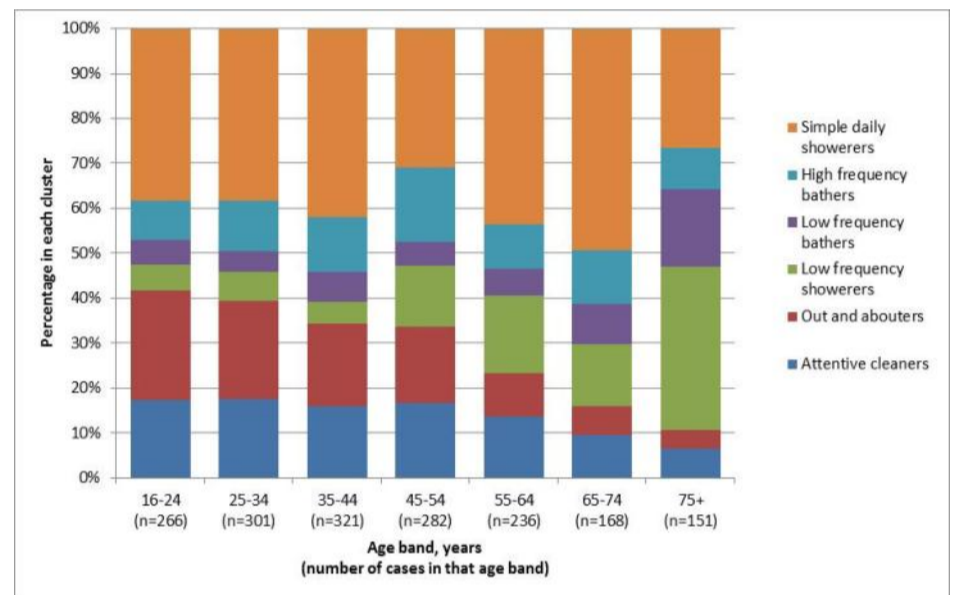
WASHING CLUSTER ANALSYIS RESULTS:

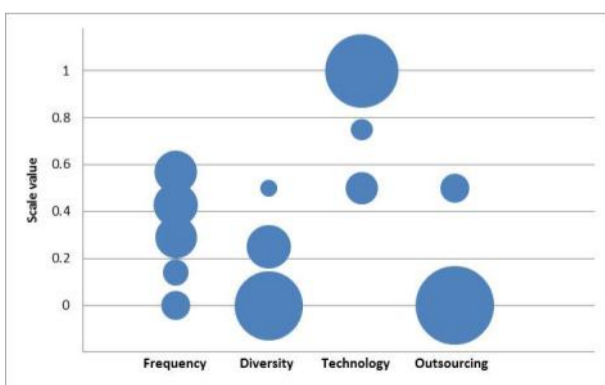## Simple Daily Showering
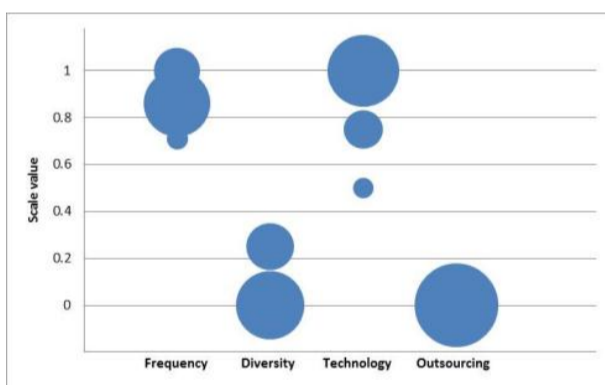
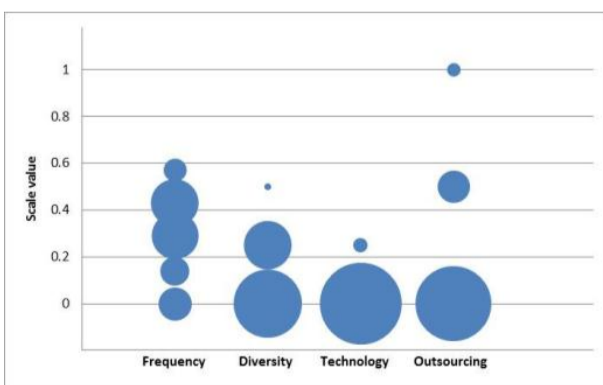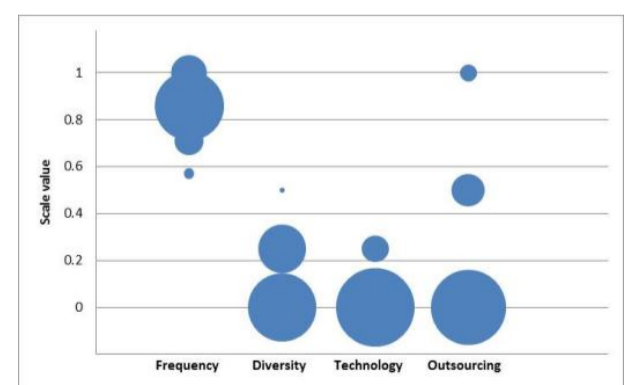## Out and About Washing
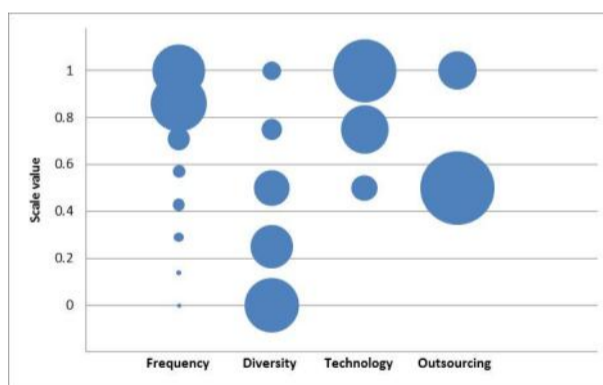
Attentive Cleaning
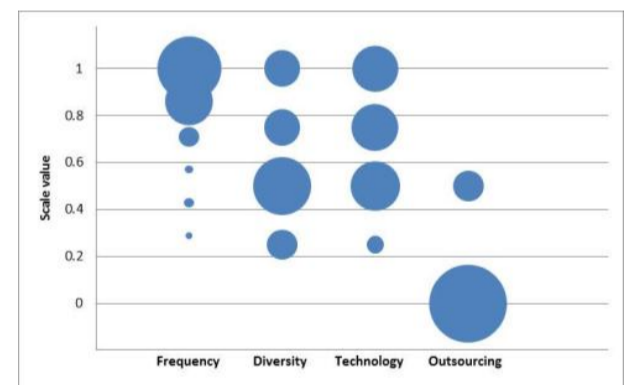
Low Frequency Showering

Low Frequency Bathing

High Frequency Bathing

Washing Clusters:
Simple Daily Showering

Represents: 39% of population (of SE England) (n = 674, of 1747, weighted)

A summary of this cluster: By far the largest cluster Simple Daily Showering is a fairly homogenous variant of practice, much more so than the other clusters. Washing is done frequently, nearly always at least daily, and shower duration or bath level is almost never varied. Showering tends to be the main way of getting clean, although some have baths for as many as half of their weekly washes. Showers and baths are never taken outside of the home. Flannel washes are rarely used (76% never do vs 63% of the rest of the population), and the reasons for showering seem to be the ones more commonly reported (less likely to do with relaxation or comfort), fitting well the fact that this is the mainstream variant of bathing practice. Both men and women are more likely to not shave under their arms, and men also more likely to not shave the head and 'other' parts of the body, although the differences with the rest of the population are quite small. Brushing teeth morning and night is the norm, even more so than for the rest of the population. Although this group represents nearly 40% of the population, one can still see that it differs in some socio-demographic characteristics from the average – members of this group are a bit more likely to be in full time work, and less likely to be unemployed; likely to be more affluent than average, and more likely to own their house outright, whilst being less likely to rent. They are also more likely to be a couple and to be free from long term health problems or disabilities in the household.

Example of a 'Simple Daily Showerers': Matthew and Cheryl are a couple of 55-64. Cheryl is retired and her husband works part time. They live in a beautiful 10 room detached house with a large front and back garden in a small town in rural Essex that they own outright. They shower everyday.

Cheryl: We tend to shower Matthew: We shower all the time, we do have a bath, we've got a bath but it always takes so long to fill it and it always seems to be such a waste of water, you spend too long in it you go all wrinkly! Cheryl: you find yourself more exhausted I think when you've had a bath. I like the water fairly hot, yeah, and I can't sit in a bath that's tepid so I like it fairly hot, and of course it does sap your energy. I find that when you get out you're really – phooar! You feel more refreshed when you've had a shower. We very rarely do a bath, do we, we always shower every day. Matthew: we had baths 15-20 years ago but since we had one put in that's when it all changed over to showering all the time Matthew: Because Cheryl she doesn't like the cold anyway so the door was always closed, the window was always closed and when it started to get cooler she turns the hot tap on again so it was like a steam room. I used to be the same I suppose really. You get out and you're sort of pink and that's the idea really. And you could fall asleep really. Interviewer: It's like deep relaxation. Do you ever take a bath here secretly? Cheryl: sometimes - of you get a bad back or you don't feel well then I think a bath is nice Matthew: but it's very rare, not often Interviewer: so is it a shower a day sort of routine? Cheryl: yes, everyday Interviewer: so do you have a shower in the morning or..? Cheryl: erm, usually at night, in the evening I usually have a shower before we go to bed. Don't we. I mean, if I don't get one that night for some reason that night, going out, then I'll have one the next morning.

About this group's bathing practices:

Based on their scores on the clustering dimensions in the figure (right):

- At least 6 showers/baths per week, but nearly always 7 or more (high frequency scores)***
- Nearly always showers, but occasionally up to half baths (middle to high technology scores)***
- Usually never vary shower length or bath height, but for at most one reason (low complexity scores)***
- Never shower/bathe outside the home (outsourcing score of zero)***

Compared to the rest of the population, we also know that members of this group are:

- More likely in full time work (42.7% vs 35.7%)**
- Less likely unemployed (3.4% vs 5.9%)*

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1%
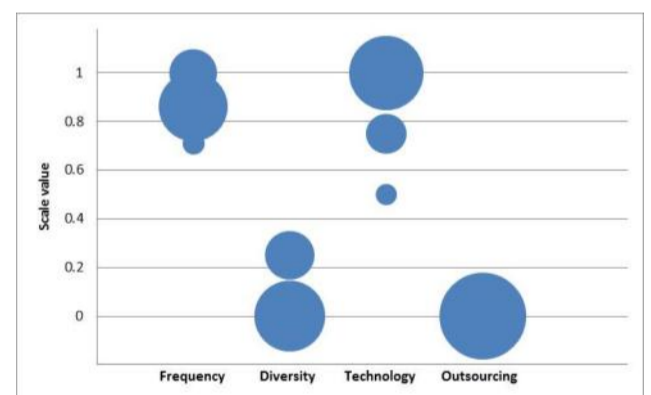
Other characteristics of this group:

Compared to the rest of the population, members of this group are:

- More likely a couple (61.7% vs 56.0%)*
- Likely to be more affluent**
- Less likely to have long term health problems in the household (10.6% vs 14.6%)**
- More likely to own outright; less likely to be renting

Discussion Point :

This group represents the population's standard bathing practice – a daily shower, not varying in duration for any specific reasons, with some baths instead, and always at home – seemingly a simple practice of a quick daily wash to keep clean and fresh. Is this likely to remain the normal variant of bathing in future? In terms of interventions, as they are slightly more likely than average to own power showers, overall water reduction might be substantial if the water-efficiency of power showers could be improved, or shorter shower durations could be effectively encouraged.

Washing Clusters:
Out and About Washing

Represents: 16% of population (of SE England) (n = 281, of 1747, weighted)

A summary of this cluster: Showers and baths are taken at least daily, generally more showers than baths (and often only ever showers). Washing, bathing and showering also tends to occur outside of the home, more than any other group, particularly at the gym, but also at the home of other people and at work. Shower duration and bath height vary for different reasons slightly more than the average, but there is a range of such 'diversity' in the group. The specific reasons for the variation in shower length, which are statistically significantly different than for other clusters of washing is for shaving, the amount of time available, and because it's a day off work. Out and About'ers are more likely to have ordinary and power showers in the home, more likely to have extra flannel or other washes, more likely to have showers for most of the range of reasons asked about, whilst having a bath is more likely to be about relaxation or getting cool when it's hot than for other clusters. Interestingly, showers and baths are often combined, that is, a shower is often taken before or after a bath. In terms of shaving, for men differences with the rest of the population are small, but women in the cluster are markedly more likely than others to shave their legs and underarms, but not using wax. The practice of brushing teeth at the sink with a cup of water is less common in this group. This cluster's members are likely to be substantially younger than average, with relatively few over 55; in full time work and not retired; and more likely than average to be male. They are more likely to want to do more for the environment than they currently do, and more likely to have a mortgage, and less likely to have health problems. They are more likely to be living with at least one other person, usually in a house of three or more. They are less likely than others to have had a water meter fitted themselves if they have one.

Example of 'Out and About Washing': Lewis is a 16-24 year old single male who lives in his parents semi-detached 9 room house (male 55-64, female 45-54) in seaside Essex. He showers 7 times a week, and 'other' washes such as with a flannel 7 times a week and does both of these to 'get clean'. He also showers in the gym and fitness centre.

Interviewer: so showering and stuff like that, you don't push that a couple of days? Lewis: no, only if I'm feeling really lazy, [I: Not even at uni?]. No not even at university to be honest just, no I'm just not up for that. Interviewer: So you have a shower every day, and wash your hair? Lewis: yeah yeah wash my hair Interviewer: so do you have memories of doing things differently when you go on holiday to different countries or other places. Lewis: I've been to places like Italy on school trips and you know you might have left it a few days sort of thing because it is a school trip and you can't be arsed, but apart from that it is routine, apart from camping and places like festivals and things then it is just wipes Interviewer: yeah, I was thinking about that. So how does that feel? So does that bother you when you are there? Lewis: no, 'cause everyone is in the same boat and you have wipes and that so I don't think that it is that much of a big deal. I don't think it is anyway. Interviewer: could you imagine taking that habit out of its context and doing that here? Lewis: no, it would be different because you would obviously smell compared to everyone else, well I would [laughter] Interviewer: when you were at university you were saying there were people [that smelt because they didn't bathe] …. Lewis: yeah, but I couldn't really, nah it's not the done thing to smell, it's not for me, nah.

About this group's bathing practices:

Based on their scores on the clustering dimensions:

- Usually at least 7 showers/baths per week, but a few have fewer (85.8% have 7+) (usually high frequency score)***
- Between about half to all showers as opposed to baths (middle to high technology scores)***
- Diversity in number of reasons for adjusting shower length or bath height, but fewer than rest of population do not vary (43.4% vs 55.6% do not) (range of diversity scores)***
- Much more likely to shower/bathe outside the home in at least one other place (100% vs 8.6% do) (middle to high outsourcing score)***

Compared to the rest of the population, we also know that members of this group are:

- More likely younger (47.1% vs 30.1% are 34 or below; 14.4% vs 35.5% are 55+)***
- More likely male (58.7% vs 47.5%)***
- More likely in full time work (44.5% vs 37.2%)*
- More likely to want to do more for the environment (47.3% vs 32.6% would like to do a bit or a lot more for the environment)

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1%
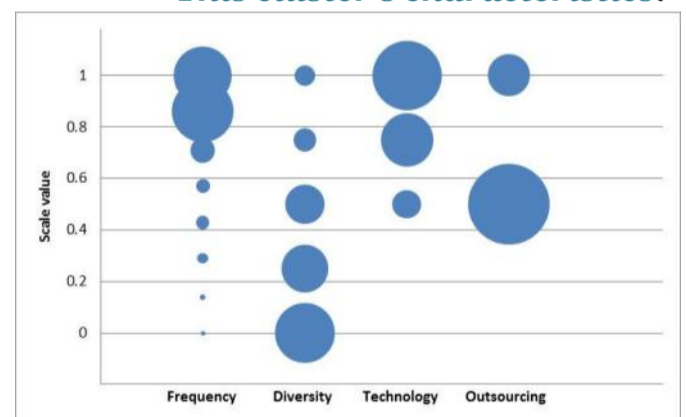
Other characteristics of this group:

Compared to the rest of the population:

- Less likely to be retired (7.8% vs 20.6%)***
- Less likely to be living alone, more likely 3+ (10.0% vs 19.9%; 57.7% vs 50.0%)***
- Less likely to have health problems in the household (9.0% vs 13.9%)*
- More likely to own their home with a mortgage; less likely to own outright (40.8% vs 28.2%; 23.8%

Discussion Point : Overall, the group's practice does not differ markedly from Simple Daily Showering except that this is a picture of a performance of practice that has been captured by the young and active, showering and bathing embedded in the practices of working and sport, going out in the evening, but also the time being taken to pamper with a shower or a bath. All these things tally to increase the number of weekly washes! If active sporty and social lifestyles are on the rise, one might expect this cluster to grow, implying shower facilities at gyms and workplaces might become more used in future; but it might alternatively remain as a variant for younger people, who take on the practice of Simple Daily Showering with age.

A summary of this cluster: Attentive cleaning involves having a shower or a bath usually at least daily, often more, and usually between half and all showers compared to baths. Shower length or bath water level is varied more than other variants of washing practice, with at least one and usually two or more, considerations affecting these things – indeed, across the range of reasons surveyed for why people vary shower length, they are consistently between five and 15 times more likely to respond yes to them. Showers are less likely to be taken outside the home (in at most one other place, but usually none), significantly less at the gym and at work. A variant of practice where there is a high priority on performing personal grooming is backed up by the other aspects of their personal care practices. There is more likely to be a shower unit, a power shower, and two or more baths in the home, than the rest of the population. The things shaping the variance of practice is the most diverse amongst all of the bathing clusters— with most of the reasons surveyed for having a bath or shower cited, from freshening up to waking up to relaxation (although not, interestingly, any more likely to say yes to showering or having a bath for getting clean). Shaving practices vary substantially from the rest of the population too. Men are substantially more likely to shave their body, particularly under arms and legs: the 'metro-sexual' male seems therefore to be clearly in this group! Women meanwhile are substantially more likely to shave all parts of their body, including being slightly more likely to shave their faces and heads. This variant of practice includes a greater than average preference for wet shaving, particularly among women (although men are more likely to do so too!), and often specifically with the water left running. The group is overall likely to be younger than average, and to be female, more likely to have children, especially two or more, and less likely to be retired or with health problems in the household. They are less likely to have a water meter, and for those that do, it is more likely to have been fitted compulsorily.

Example of 'Attentive Cleaning': Christian and Anna are a retired elderly couple (75+), hardly the image of the 'metro' lifestyle described above, but yet partake in Attentive Cleaning with this attentiveness to cleanliness being to weather and lifestyle. They recalled in their interview a time when they lived overseas when they would shower often multiple times a day. Although their practices may have changed on return to England and in retirement, their current practices still hold remnants of this attentiveness—their cleanliness practices shifting with feelings of needing a shower, bath or wash rather than on any schedule.

Christian: I prefer a bath because it helps you when your knees hurt or something and it is quite relaxing, a bath. We use both mmmm... Anna: we manage to get in and out Interviewer: so do you [to Anna] have showers and baths? Anna: mostly baths Interviewer: and would you have one every day? Anna: more or less every other day Christian: occasionally in between, depends what it is you would shower maybe on odd days Anna: If it's hot we have the odd shower more or less ... Christian: if the weather is really hot, we have a shower every morning. When we were in South America and South Africa sometimes we used to have a shower in the morning and in the evening, mind you we didn't have to if we had a pool to have a swim instead, but you would still have a shower Anna: we had a pool in the block of flats and when we were in Rio. Interviewer: so did you find you had a shower in the morning and evening depending on when you went for a swim, but did you have a shower after you had got out of the pool? Christian: yes, because of the chlorine, so basically after being in the pool you shouldn't need a shower, but you still do.

About this group's washing practices:

Based on their scores on the clustering dimensions in the figure (right):

- Usually at least 7 baths or showers per week, mostly even more (59% have 8+), although a small percentage have less, down to 3 per week (usually high frequency scores)***

- A spread of usually between about half to all showers (middle to high technology score)***

- At least 1, usually 2 or more, factors affect shower duration (moderately low to high diversity score)***

- Less likely to shower outside the home (in at most one other place, but usually none) (middle to low outsourcing score)***

Compared to the rest of the population, we also know that members of this group are:

- Likely to be younger (38.8% vs 31.7% are 16-34; 10.2% vs 20.3% are 65+)***

- More likely to be female (58.2% vs 49.0%)**

- More likely to have children (38.1% vs 30.7% do), especially 2+ (24.6% vs 16.2%)***

- More likely a large household (4+) (46.6% vs 29.6% are)***

- Less likely to be retired (8.4% vs 20.3%)***

- Less likely to have a water meter (36.9% vs 47.2% do)***

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

This cluster's characteristics:
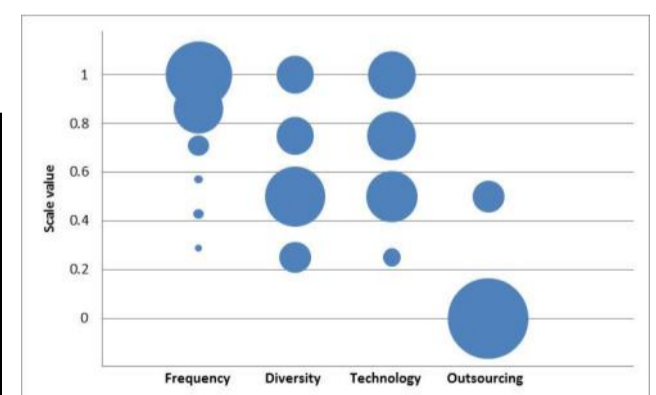
Discussion Point:

The overall picture is of a group which places great importance on personal grooming, and is suggestive of younger people following a modern, metro-sexual lifestyle. The high bathing frequency, and significant proportion of washes which are baths rather than showers, as well as the tendency to wet shaving with water running, suggests there is high water usage for bathing that could be a prime site of intervention. The likely trend-consciousness of this group's members could help with the mechanism for designing and targeting effective interventions. But that also questions the stability of this group – is this variant of high intensity personal care going to be stable over time, or change with new trends?
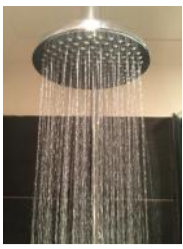
Washing Clusters:
Low Frequency Showering

Represents: 12% of population (of SE England) (n = 211, of 1747, weighted)

A summary of this cluster: This variation of washing practice differs from the largest pattern (Simple Daily Showering) primarily in that washing is conducted less often, about 4 times per week on average, and no more than five times, and is usually or always showers rather than baths (fewer baths are found in homes than the rest of the population – 82% vs 94%). Only zero or one (or rarely two) factors affect shower duration or bath water level, less than average than the rest of the population. Showers are less likely to be taken outside the home (in at most one other place, but usually none), particularly less likely at other people's homes or the gym/swimming pool. Showers are less likely to be used for cleanliness, relaxation or comfort purposes, and other self-care practices are also less likely to be performed (brushing teeth less often and women being less likely to shave). The group is substantially older than average, three quarters being 45 or over, and over a quarter being 75 or over, four times the proportion in the rest of the population. They are more than twice as likely to be retired (38%) and less likely to be in full time work. Related to their being older, they are less likely to have dependent children living with them, and more likely to be living alone or with one other, in a home they own outright. They are also more likely to have long term health problems or disabilities in the household (29% compared to 11% of the rest of the population), and are less likely to wish to do more to help the environment.

Example of 'Low Frequency Showering': Eliza is a 45-54 housewife who lives in an outright owned semi-detached house in northern London with her husband (45-54) and share occasionally with their two university aged daughters. In the survey she said that she showered 2 times a week, and flannel washed 7 times a week. While the shower is used to get clean, because it's quick, after sport, and to cool down, the flannel wash is simply to 'get clean'.

Eliza: I'd say for me personally, I probably have more baths now because my children are grown up so I have more leisure time [laughs] and I consider a bath as a leisure activity whereas having a shower is what you do to get clean. [...] *Interviewer:* So do you have a shower every day? *Eliza:* no, not necessarily. Every couple of days or whatever; it depends what I've been doing. The thing that changes, ah.... well obviously the heat makes a massive amount of difference, because you get really sweaty and things. And to be honest when it is cold you don't particularly feel like having a shower in this house because it is quite a cold house. Ummm and also obviously what you have been doing. We do loads of gardening and you get absolutely filthy when you come out of the garden or if you've been exercising. Occasionally I will get dragged on a cycle ride or go for a long walk; or even to be honest if you have been to London on the tube then you feel really awful when you get home. [...] *Interviewer*: so did you used to work in London or do you still work in London? *Eliza*: I did yes *Interviewer*: when you had that regular commute in, were your habits different such as did you shower more? *Eliza*: my entire lifestyle was different so yes. I probably washed much more because when I was working you have to make yourself look presentable for going to work etc. Now, if I am just spending my day in the garden or going to Sainsburys then I don't really care that much so you don't need to worry about washing your hair!

About this group's washing practices:

Based on their scores on the clustering dimensions in the figure (right):

- No more than 5 baths/showers per week, averaging about 4 (middle to low frequency score)***
- Between half and all are showers as opposed to baths (middle to high technology score)***
- Only 0 or 1 (or rarely 2) factors affect shower duration or bath water level (low to middle complexity score)***
- Less likely to shower outside the home (in at most one other place, but usually none) (middle to low outsourcing score)***

Compared to the rest of the population, we also know that members of this group are:

- More likely aged 45+ (75.8% vs 45.0%), including 75+ (26.6% vs 6.8%)***
- Less likely to be in full time work (25.1% vs 40.2%)***
- Less likely to want to do more for the environment (71.2% vs 64.2% are happy with what they do; 2.9% vs 7.4% would like to do a lot more)**

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

: 1% level; *:
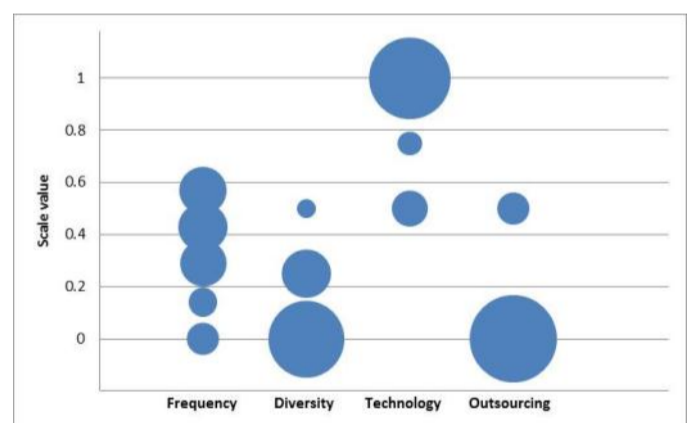
Other characteristics of this group:

Compared to the rest of the population, members of this group are:

- Less likely to have children (79.7% vs 66.7% have none)***
- More likely to be retired (38.2% vs 16.0%)***
- More likely one or two persons households (62.8% vs 47.0%)***
- More likely to have long term health problems in the household (28.6% vs 11.1%)***
- More likely to own their house outright (47.2% vs 30.5%)***

Discussion Point: Depending on the length of their showers, this group represents a probably relatively low level of water use for bathing. However, encouraging others to adopt this variant of bathing practice is perhaps going to be difficult. It would be interesting to see from repeat surveys whether this variant is being carried by the same cohorts over time, or whether it is a way of bathing which people adopt as they get older. In the former case, it is essentially a practice that will be increasingly of the past, replaced by more high frequency, high intensity personal washing and grooming.
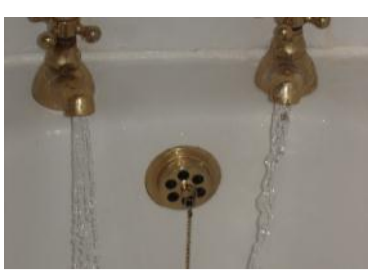
Washing Clusters:
High Frequency Bathing

Represents: 11% of population (of SE England) (n = 200, of 1747, weighted)

A summary of this cluster: Along with Low Frequency Bathing, this variant of practice is characterised by always having baths (although about 10% have occasional showers too). Baths are taken at least six times a week, usually seven times (although a lower frequency of 5 per week is sometimes observed). Few factors affect the height of the bath or shower duration (where showers are taken), and the number of showers taken outside the home is similar to the rest of the population (although less likely to wash at work). Baths are more strongly motivated by cleanliness than for the rest of the population – more likely used for getting clean, and less likely for easing aches and pains or for relaxation. Getting clean or to get ready to go out are often reasons to have a flannel or other wash, although on average this is not done any more than any of the other clusters. Baths are much more likely to be taken instead of showers rather than in addition to or in combination with them (67% vs 19% of the rest of the population), and showers or power showers are substantially less likely to be found in the home. In terms of shaving, both genders are more likely to wet shave without the tap running than others in the population. Conversely, teeth are more likely brushed *with* the tap running than the rest of the population! In terms of socio-demographic characteristics, this group's members are more likely than average to be female, unemployed, less affluent than average, more likely to rent their home, and less likely to own it with a mortgage or outright. They are also less likely to have a water meter in the home.

Vignette of 'High Frequency Bathing': Andy is a 45 year old man who shares a ground floor council rented flat in an outer Essex suburb with his wife and 10 year old daughter. Andy works as a part time labourer, most mornings he usually just splashes his face and then waits until he gets home to have a long soak in the bath (to get clean from the physical work that he does, and sometimes also to ease aches and pains). The house has a shower attachment to the taps in the bath but no stand up shower, so he fills it up just enough to wash, but to the top only sometimes, when he is having a soak. Each of his family members also have a small bath every evening.

About this group's washing practices:

Based on their scores on the clustering dimensions in the figure (right):

- Usually daily bath or shower (68.5%) although sometimes more (18.5%), or 5 or 6*
- Usually always have baths rather than showers (89.5%), or at least usually do***
- Usually do not vary bath height or shower length, or only by one factor***
- No difference to rest of population in terms of how many places outside the home they also bathe

Compared to the rest of the population, we also know that members of this group are:

- More likely to be female (61.5% vs 49.4%)**
- More likely to be unemployed (8.0% vs 4.6%)*
- Likely to be less affluent**
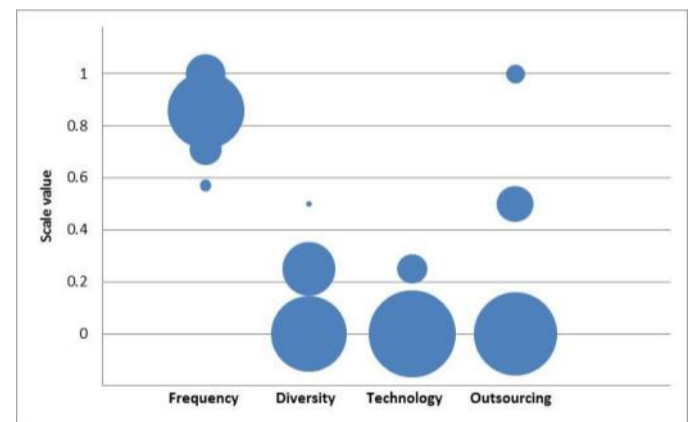- More likely to rent, less likely to own, with a mortgage or outright (47.5% vs 32.0% rent; 49.5% vs 64.3% own)***

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

Reasons for bathing compared to the rest of the population:

| Reasons for...having a bath	
To get clean	More likely (96.5% vs 79.3%)***
When I get back from work	Less likely (7.5% vs 12.9%)*
For relaxation	Less likely (24.5% vs 34.1%)**
To ease aches and pains	Less likely (8.0% vs 15.3%)**
Reasons for...other washing	
To get clean	More likely (82.5% vs 68.9%)*
To get ready to go out	More likely (20.7% vs 11.3%)*

Discussion Point:

This group clearly values being clean, and it seems that in many cases having a bath rather than a shower could have a technology-driven reason (not having a shower in the home), particularly for those who rent and are on a low income, and so perhaps face barriers or restrictions on installing one. This could represent a possible route and action for an intervention, e.g. more strongly targeting rented accommodation with subsidised (non-power) shower installations.

Washing Clusters:

Low Frequency Bathing

Represents: 7% of population (of SE England) (n = 120, of 1747, weighted)
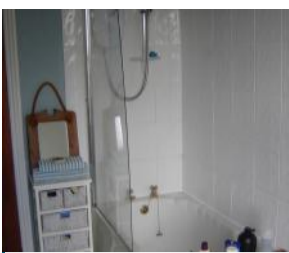
A summary of this cluster: The smallest variant of practice in the data, Low Frequency Bathing is characterised by nearly always a bath (97% never have showers, with remaining 3% only occasionally). Variation of the performance of the practice is low, and washing occurs outside of the home slightly less than the rest of the population, although the full range of outsourcing scores is present. The difference to the other washing clusters is the comparatively low frequency of washing compared to the population as a whole – no more than five baths/showers per week, averaging three or four (although always at least one). This variant of practice includes parsimonious water use, with baths filled substantially less than average whether it be for washing, relaxation or for children, and the tap more likely than average to be turned off when brushing teeth. Baths are more likely taken to get clean, and less likely for other reasons such as to wake up, to get to sleep, to get ready to go out or to relax, although flannel washes are more likely to be used to relax. Men are somewhat less likely to shave their face, and other parts of the body, while women are substantially less likely to shave their legs, underarms and bikini line compared to the rest of the population. Men are generally slightly more likely to wet shave with the water running, women more likely to wet shave without the water running. Teeth are more likely brushed once a day, less likely twice. Showers or power sowers are substantially less likely to be in the home. In terms of socio-demographic characteristics, this group is markedly older than average, over a third being 65+ (compared to 18%), and 22% being 75+ (compared to just 8%). Various other characteristics follow from that: they are less likely to be in full time work, more likely unemployed or in a retired household; more likely single and living alone, or living with at most one other, rather than in a larger household; and more likely to have long term health problems in the household. They are also less likely to want to do more to help the environment, more likely to be renting and less likely to own their home with a mortgage, more likely to be in a slightly smaller than average terraced house or flat rather than detached or semi-detached house, and likely to be less affluent than average.

Example of 'Low Frequency Bathing': Lionel is a 45-54 year old single man who lives on his own in a rented 5 room flat in a suburb of Essex. His property is metered. After a period of unemployment Lionel recently got a full time job working in an office. He dry shaves (electric), and fills his baths near or full to the top for getting clean and relaxation. He never showers or does any other type of washing (e.g., with a flannel).

Lionel: I have a bath every couple of days it's usually Sunday Tuesday and Thursday on the basis that I like to be pleasant to the workforce! [chuckles] But that's about it you know. As I'm living on my own, you know you don't have to shower that often... Interviewer: Have you always had baths? Lionel: yes, I do like the soak. [start talking about a visit to California and if anything in his practices changed] Interviewer: in a place like California did you still have baths? Lionel: yes, yes. No I don't stand that. I was staying with friends over there. No, unless I am forced into it I prefer lying down and thinking about life, the universe and everything, rather than standing there going [washing movement].

About this group's washing practices:

Based on their scores on the clustering dimensions:

- No more than 5 baths/showers per week, averaging 3 or 4, never 0 (middle to low frequency score)***
- Usually always have baths (96.7%), or at least mostly do (low technology scores)***
- Usually do not vary (66.1%), or only by one factor (33.1%), very rarely 2 (0.8%) (usually low complexity scores) NB. This is largely inherent in their being bathers - only 4 of 136 people responded to the variation in shower duration questions.***
- Less likely to shower outside the home (82.5% vs 76.8% do not) (usually low outsourcing score)*

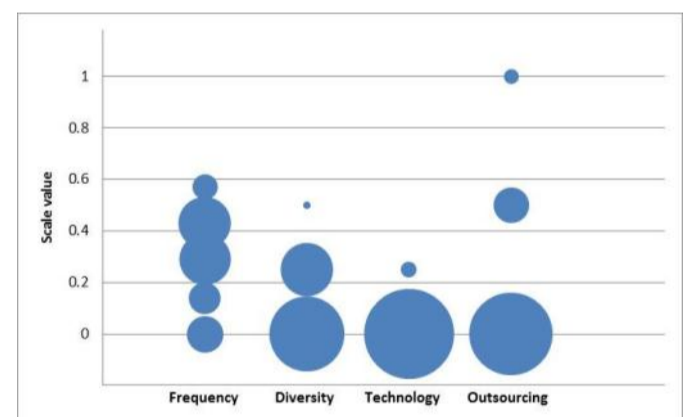## Compared to the rest of the population, we also know that members of this group are:

- More likely aged 65+ (34.2% vs 17.7%), including 75+ (21.7% vs 8.2%)***
- Less likely to be in full time work (23.3% vs 39.4%)*** and more likely to be unemployed (9.2% vs 4.6%)*
- Less likely to want to do more for the environment (75.4% vs 64.4% are happy with what they do at the moment)**

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

This cluster's characteristics:

Other characteristics of this group:

Compared to the rest of the population:

- Less likely to be living with a partner (44.2% vs 59.1%)**
- More likely to be retired (35.0% vs 17.4%)***
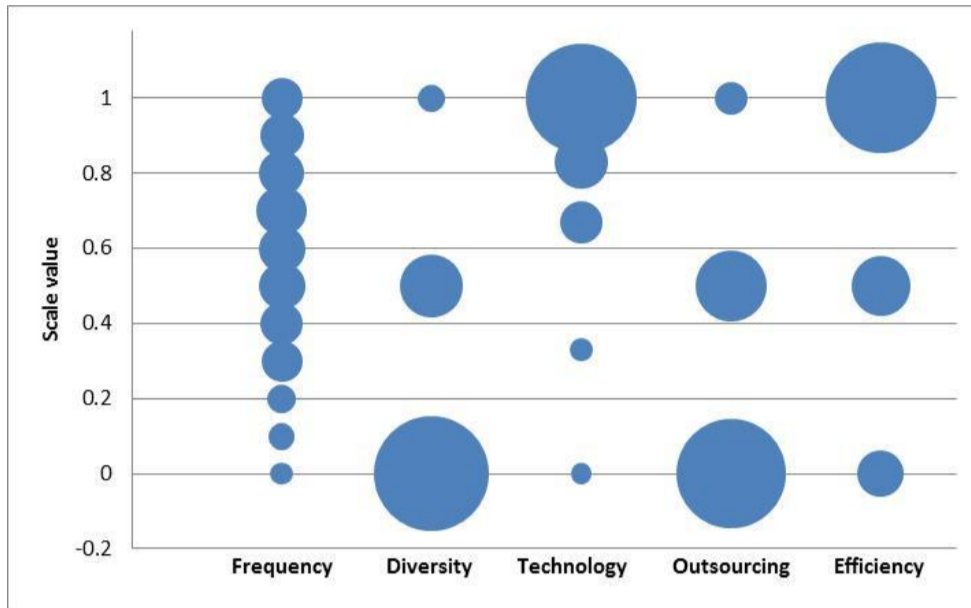- More likely one, or two, person household; less likely more than two (31.7% vs 17.4%; 35.0% vs 30.1%; 33.3%

Discussion Point: Low Frequency Bathing seems to be a relic from another time when getting wet daily was not very common! Unlike the Low Frequency Showering group, baths rather than showers are taken which may be a result of low shower ownership, due to being accommodated in rental or social housing, and lower than average affluence potentially being a barrier to installation. However, as the quotation expresses, it could also be that this group actually prefers baths to showers, being accustomed to them, and resistant to change! Overall this group is likely to be a relatively low water using one for bathing, particularly as they often only fill their baths partway, and the likelihood that this is a variant of bathing practice that is in decline suggests that there is not a strong necessity to target this group with interventions to reduce water use from bathing although how we can channel their routines and habits and encourage other people to adopt them could be an interesting intervention!

LAUNDRY CLUSTER ANALYSIS RESULTS:
## Summary of Population Level Results

Population as a whole

(Bubble sizes represent percentage of respondents having that value on that dimension)

Meaning of the scales:

|					
1	Much more frequently	4 or more	Never hand washes	2 or more	Never (always full)
0	Much less frequently	None (never varies)	3+ times per week	None (never used)	Sometimes through to always run part full
Scale value	Frequency How often they wash clothes and linen relative to others	Complexity Number of settings on washing machine which are varied between washes	Technology How much hand-washing is performed, vs. washing machine use	Outsourcing Number of outsourced services used (dry cleaners, laundrette, etc)	Efficiency How often washing machine run part full

LAUNDRY CLUSTER RESULTS:
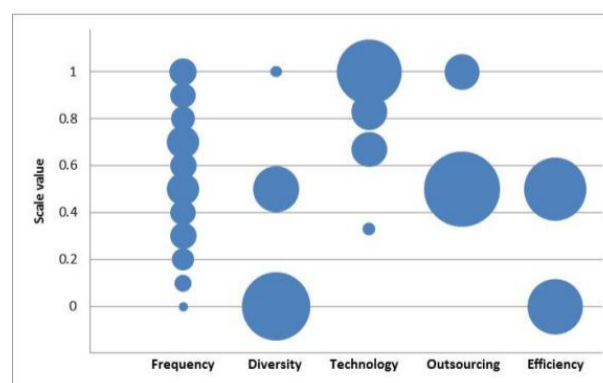
Simple Home Laundry
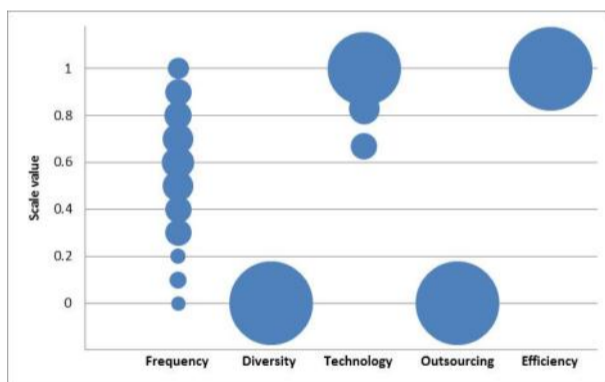
On-Demand Home Laundry
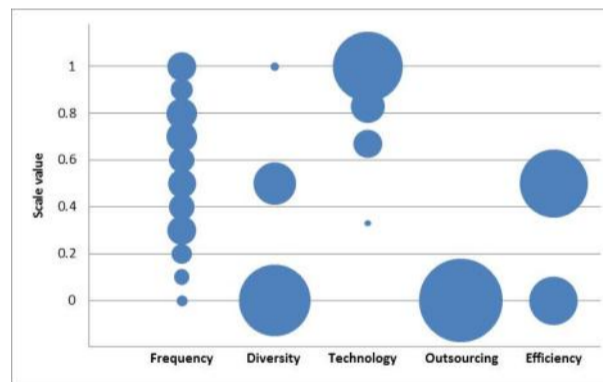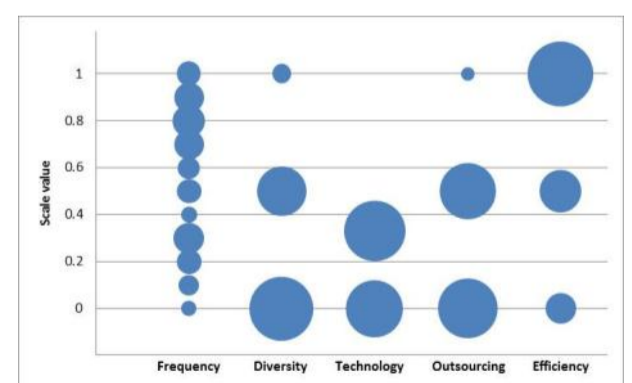

Simple Outsourcing
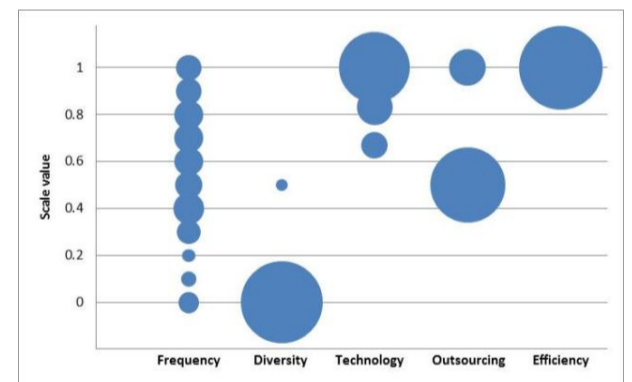
Attentive Clean Laundry
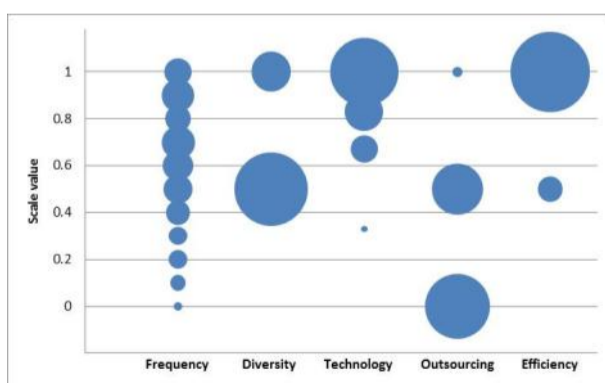
On-Demand Outsourcing

Hand-Washing

Laundry Clusters:
Simple Home Laundry

Represents: 36% of population (of SE England) (n=508, of 1426, weighted)

A summary of this cluster: This is by far the largest group and, in terms of its laundry practices, by far the most homogenous. It thus represents a dominant and consistent variant of laundry practice. Washing machine settings are never changed, rarely if ever are clothes handwashed, outsourced laundry services are never used, and the washing machine is always run full. If hand washing is done it is slightly more likely to be to protect the clothes from damage but less likely hand washed just because the label says so. Clothes are more likely combined across the whole household, but these are mostly only slight trends. In terms of socio-demographic characteristics, this group is slightly younger than average, and slightly more likely to be non-religious. They are more likely to have dependent children living with them, and so more likely to be in a larger household of more than two people. Although on average likely to be less affluent than others, they live in slightly larger than average homes. They are also more likely to have a water meter. Overall the suggestion is of a simple laundering practice, perhaps driven by convenience in time pressured households with plenty of laundry needing to be done. One can imagine many in this group being part of a family, with a large volume of laundry to deal with, so that the machine is run often, full, and without the time to separate out special loads using special machine settings or to hand wash except for a few special garments.

Example of Simple Home Laundry: Jacqueline and Tim are a retired couple between 65-74, living in an 8 room semi-detached metered house that they own outright in a rural town in Essex. Their survey results showed that they only put clothes in the wash when they were dirty, only run the washing machine when full, and do more washing when it's sunny. However, full might mean a half wash with an efficient machine. As Jacqueline reflects:

I suppose, washing wise, if you're asking me how many times, I very rarely do anything by hand. Hardly ever. Interviewer: do you have quite a good washing machine that you can put things on hand wash? Jacqueline: yes, I can, and I can run it cold, which I have to say I do not do. I have tried it, but I don't find it efficient. But I suppose the use of the washing machine....perhaps about 4 times a week, but I might do 2 or 3 of those in one day, so that, you know, do different colours. And I've got a half load wash as well on there as well, so if I'd got a load of coloured clothes and then only a small half load of whites, I'd put that in and I do it, yes, I often do it on the same day. I suppose, yes, 4 times a week at the most....sometimes it might be less than that Interviewer: so don't, you're not very finicky then about changing sheets and all that kind of stuff? Like you say, some people change their bath towels everyday or....Jacqueline: no, no, no, no, I wouldn't dream of doing that. And sheets – I suppose I would change the bed once a fortnight, but that's it. And bath towels – it depends, I suppose, but mostly it's once a week Interviewer: do you find that it is different in winter, do they stay damp? Jacqueline: no they don't because we've got a radiator in the bathroom and everything dries, you know

About this group's laundry practices:

Based on their scores on the clustering dimensions in the figure (right):

- None ever change the settings on their washing machine (low diversity score);
- and hand wash only occasionally, if ever (high technology score);
- They never use outsourced laundry services (low outsourcing score);
- They always run their washing machine full (high efficiency score);
- As with most of the clusters, there is no trend in whether they tend to wear or use clothes and linen for more or fewer times than other people (the full range of frequency scores is present).

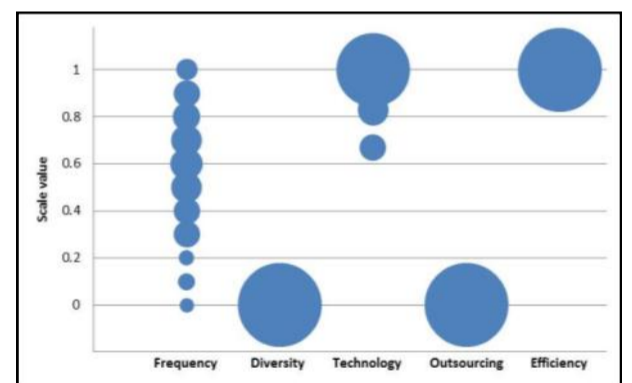## Compared to the rest of the population, we also know that members of this group are:

- Less likely to wash clothes weekday daytimes (15.7% vs 24.3%) ***; less likely "whenever they have the time" (21.3% vs 27.0%)**; less likely overnight to use cheap electricity (1.2% vs 3.3%)*; and more likely when the pile is big enough (25.2% vs 15.9%)***
- They are more likely to handwash to preserve or protect clothes/items from damage (72.1% vs 61.4%)*; but actually less likely to because the label says it should only be hand-washed (28.1% vs 43.9%)***
- In households with more than one person, they are more likely to combine all of their washing together(92.8% vs 85.4%)**

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

Other characteristics of this group:

Compared to the rest of the population, members of this group are:

- Likely to be less affluent*
- More likely to be younger (e.g. 40.8% vs 29.6% are 34 or below)***
- More likely to be non-religious (33.3% vs 27.3%)*
- More likely to have dependent children (36.9% vs 29.8% do)**
- More likely to be part of a larger household (56.9% vs 49.0% have more than two household members)**
- More likely to have more rooms in the home (mean number 6.9 vs 6.7)**

Discussion point:

As the largest cluster, and notably homogenous compared to the others, interventions which effectively change this group's practices could have substantial water saving potential, and could reach many of them without having to be well targeted. Being more likely to have water meters means this group might be more interested in water saving technologies too. As the simple, convenient way to do laundry, this is quite likely to be a variant of laundry practice that remains common and stable for the foreseeable future.

Laundry Clusters:
On-Demand Home Laundry

Represents: 17% of population (of SE England) (n=246, of 1426, weighted)

A summary of this cluster: Like people performing Simple Home Laundry, On-Demand Home Laundry hand washing is never or rarely done, and outsourced services are never used. Settings are mostly never changed on the washing machines, although there is some variation on this "diversity" dimension between members of the cluster. The key difference from Simple Home Laundry, however, is that the washing machine is run part full at least occasionally. This could be to wash particular items "on demand", such as for the next day or a special event, even if there is not enough to put in with them to fill the machine. They are slightly more likely to report doing their washing whenever they have the time, overnight to use cheap electricity, and when there is space to dry it. On average the washing machine is run slightly less frequently per household member than other groups, and washing is slightly less likely to be combined with other household members. Members of this group are a little less likely than the rest of the population to be living with a partner, more likely to be living alone, and slightly more likely to be less affluent, living in a smaller home, and somewhat more likely to be renting, and in a slightly smaller than average flat or tenement, rather than owning outright or with a mortgage, or in a detached or semi-detached house. They are also more likely than average to report being happy with what they currently do to help the environment.

Example of an 'On-Demand Home Launderer': Janet is a 55-64 year old female who lives with her husband George (Male 75+), and her adult daughter Kate (35-44). The family live in a semi-detached metered 9 room property which they own outright in a leafy fairly affluent suburb in Northern London. Janet generally puts clothes in the wash when they smell and/or look dirty, and does the washing whenever she can find the time.

Janet: In terms of laundry I suppose for George and I, I probably do probably on average 2 loads of clothes and bed clothes a week. I only change towels when they look like they need it, I'm afraid, I don't do it regularly. And the same with bed sheets. Interviewer: what is the trigger for that, is it the dirt, the way the fabric feels? Janet: it might be physical dirt, it might be, especially now when we are out in the garden a lot and you go in and wash your hands and the towels start to look grubby and you think it's time to change it, or it might be because they are beginning to smell a bit stale. Bed clothes the same really. I don't change them religiously every week; I got out of that habit many years ago! I think when I started back to work! [laughter] When they begin to look a bit grubby and the pillows begin to look a bit grubby then I will take them off and put them in the wash. It's the same with clothes. I certainly don't take my clothes off and put them in the laundry every day, Kate does, practically every day. But she changes her clothes quite a lot Interviewer: she does her own laundry? Janet: yes, she probably does 2 or 3 loads a week for herself. That's her bedding and her towels and her personal clothing so I guess in all we probably do 5 sometimes 6 loads a week. It can't be that much can it?! Maybe it is. I'm just trying to think how often the machine goes on and it's not that frequently. Mmm, Well, say 5 loads a week Interviewer: does that change in the summer? Janet: It might do, but I couldn't say how much it changes, maybe a little more.

About this group's laundry practices:

Based on their scores on the clustering dimensions in the figure (right):

- Very few ever change the settings on their washing machine (usually low diversity score);
- and hand wash only occasionally, if ever (moderate to high technology score);
- They never use outsourced laundry services (low outsourcing score);
- They all run the washing machine just part full at least occasionally (middle to low efficiency score);
- As with most of the clusters, there is no trend in whether they tend to wear or use clothes and linen for more or fewer times than other people (the full range of frequency scores is present).

Compared to the rest of the population, we also know that members of this group are:

- More likely to wash clothes whenever they have the time (31.7% vs 24.4%)* and overnight to use cheap electiricy (5.3% vs 2.3%)**
- Less likely to combine their clothes to wash with other household members' (78.8% vs 88.7%)***

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

Other characteristics of this group:

Compared to the rest of the population, members of this group are:

- Less likely to say they would like to do more for the environment (e.g. 69.0% vs 64.5% are happy with what they do at the moment; 2.9% vs 7.5% would like to do a lot more)*
- More likely to live alone (24.9% vs 17.3%)**
- Likely to be less affluent*
- Less likely to own their home outright, or with a mortgage; more likely to rent (24.8% vs 33.8%; 17.5% vs 32.2%; 54.1% vs 30.5%)***

Discussion point:

The inefficient use of the washing machine, running it part full at least occasionally, could be one area for possible interventions. But as the interview data shows above there might be complex family and other reasons why the washing machine is run in this way!
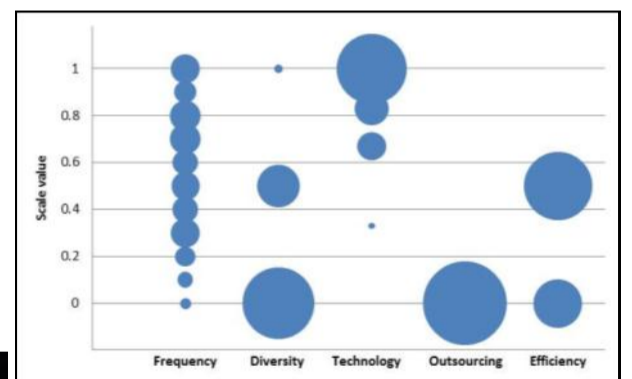
Laundry Clusters:
Simple Outsourcing

Represents: 16% of population (of SE England) (n=223, of 1426, weighted)

A summary of this cluster: Like people who perform Simple Home Laundry, very few members of this group ever change the settings on their washing machine, and hand wash rarely if ever. It was report that the washing machine was never run at anything other than full. The key difference from Simple Home Laundry is that there is use of one or more outsourced laundry services, most notably dry cleaners (which 92% use compared to 21% of the rest of the population) and laundrettes (27% vs 7%). The washing machine is used slightly more frequently per person than average. Less likely than the general population to be unemployed, more likely to be living with a partner, and more likely to be more affluent than average, many in this group may be part of a relatively affluent dual-earner family, with a large volume of laundry to deal with and little time to do so, so that the machine is run often, full, and without the time to separate out special loads using special machine settings. Suits and clothes for special occasions or work could mean dry cleaning services are used more than most, and hand washing is done but only when the label says to.

Example of Simple Outsourcing: Ellen is a retired single lady in the 75+ age group living in a semi-detached 7 room house in suburban London with a compulsory fitted water meter. She tends to change what she is wearing depending on what she's doing in the day, and says that she puts things in the wash 'when they have been worn'. She historically used a laundrette service once a week for most of her laundry, doing only small things at home. She now has a washing machine but still tends to do the laundry based on a 'convenience' characteristic.

Interviewer: do you tend to have that same pattern now? Ellen: no, [laughs] I just throw everything in the washing machine. I do more, I would say, you do don't you. I tend to do more. I just put things in when it is convenient. Interviewer: do you still hand wash? Ellen: no, not really, no Interviewer: have you got a setting on the machine that you can use for delicates? Ellen: yes, it has got a hand wash setting, it always amuses me I'm not quite sure what it does! Interviewer: what is the weekly routine with your washing, do you tend to change bed linens etc. every week? Ellen: no, I only change bed linen, it sounds filthy, once a month. Towels I do about fortnightly. Basically, I mean really once a week I do the main things and then once a month the bed linen comes off and towels I probably do about the same. I change them, but I don't necessarily wash them.

About this group's laundry practices:

Based on their scores on the clustering dimensions in the figure (right):

- Very few ever change the settings on their washing machine (low diversity score);
- and hand wash rarely if ever (usually high technology score);
- They make use of one or more outsourced laundry services (middle to high outsourcing score);
- They never run the washing machine anything other than full (top efficiency score);
- As with most of the clusters, there is no trend in whether they tend to wear or use clothes and linen for more or fewer times than other people (the full range of frequency scores is present).

## Compared to the rest of the population, we also know that members of this group are:

- Particularly more likely to use dry cleaners out of the different outsourced services (91.6% vs 21.4 do%)*** ;
- Less likely to change clothes when they get into the house or before they leave the house (6.3% vs 11.3%)*;
- More likely to wash clothes whenever they have the time (31.8% vs 24.5%)*; and when it's windy (2.2% vs 0.5%)**;
- More likely to hand wash because the label on an item says it should only be handwashed (54.0% vs 38.9%)*

Other characteristics of this group:

Compared to the rest of the population, members of this group are:

- Likely to be more affluent***
- Less likely to be unemployed (1.8% vs 5.4%)*
- More likely to say they would like to do more for the environment (e.g. 59.7% vs 65.9% are happy with what they do at the moment; 14.5% vs 5.8% would like to do a lot more)**
- More likely to be living with a partner (67.6% vs 56.8%)**
- Less likely to have long term health problems or incapacities in the household (9.0% vs 13.7%)*

This cluster's characteristics:
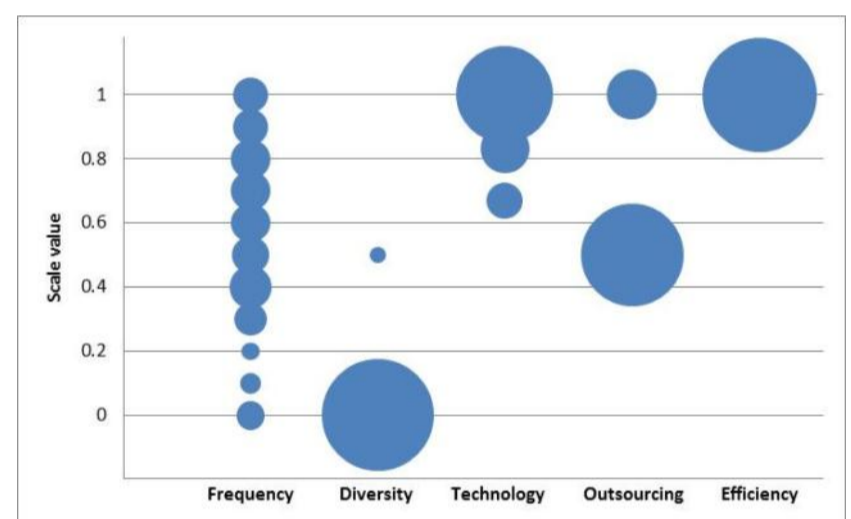
Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

Discussion point:

The use of outsourced services might be one area to focus on for this group – highlighting that personal water use does not only just occur within the home, but often in other spaces.

Laundry Clusters:
Attentive Clean Laundry

Represents: 15% of population (of SE England) (n=219, of 1426, weighted)

A summary of this cluster: More than other groups, with Attentive Clean Laundry the washing machine settings are changed to match what is being washed. This is the only statistically significantly different spread of frequency scores across all of the clusters, tending to be higher on average than the other groups, indicating that they are more likely to wear clothes and use linen for shorter than average periods of time. It is less likely than average that the same clothes will be worn throughout the day, with clothes more likely to be changed on working days, but not on non-working days, or otherwise to suit other activities. This all translates into using the washing machine slightly more often per household member than average too. Hand washing is never done, or just occasionally. Outsourced services may also be used, and sometimes the washing machine is run when it is not full. In terms of socio-demographic characteristics, apart from being slightly more likely to have dependent children, they do not differ from the rest of the population on any other characteristic tested.

Vignette of Attentive Clean Laundry: Lara is a 23 year old single mother, who lives in a rented ground floor flat with a small garden in outer London. She works part time as a sales assistant in a local fashion store. Her son, Jack, is 2 years old, and goes to the local child care centre on the days that Lara works. Due to the pressures to look good at work, Lara needs to change her clothes every day, and when she comes home she changes out of her clothes puts them straight in the wash and changes into her comfy 'around the house clothes' she changes every few days. She gets suit jackets and casual jackets dry-cleaned every month or so, and will put just one or two things in for a hand wash if she has run out of a particular clothing item, it's particularly dirty, or if she needs them for a special occasion.

About this group's laundry practices:

Based on their scores on the clustering dimensions in the figure (right):

- All change at least some of the settings on their washing machine (middle to high diversity score);

- and hand wash only occasionally, if ever (moderate to high technology score);

- They vary in terms of use of outsourced laundry services (low through to occasionally high outsourcing score);

- They mostly run the washing machine always full, but some run it part full occasionally (middle to high efficiency score);

- They wear or use clothes and linen fewer times than other people (higher average frequency scores, although nearly the full range is still present)***
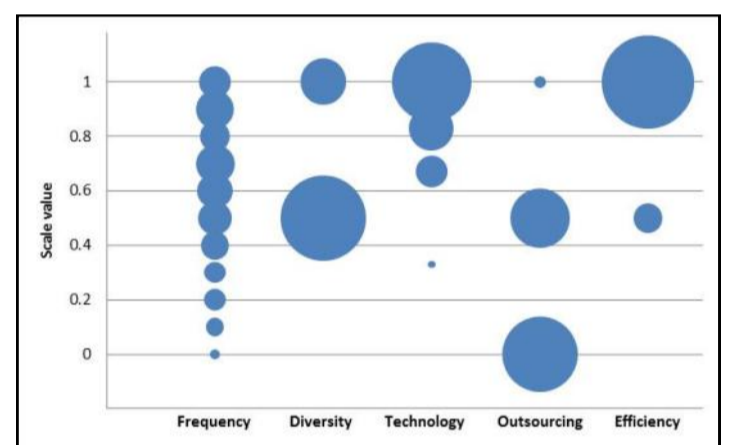
Compared to the rest of the population, we also know that members of this group are:

- Less likely to wear the same clothes through the whole day always (42.0% vs 50.2%)*

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

This cluster's characteristics:

Discussion point:

The higher than average frequency of clothes washing and machine use could be a site for targeting interventions, but again, the full range of frequency scores is present in this group as all the others, so encouraging reduced washing frequency need not be targeted towards this group alone. At the same time, the distinctive focus on changing machine settings suggests members of this group tailor the settings to what is being washed, which could potentially improve the life of clothes and linen, and suggests particular time and care taken with clothes. The fact that the group does not exhibit distinctive sociodemographic characteristics mean identifying and targeting them would be particularly difficult.

Other characteristics of this group:

Compared to the rest of the population, members of this group are:

- More likely to have dependent children (38.1% vs 30.9% do)*

Laundry Clusters:
On-Demand Outsourcing
Represents: 11% of population (of SE England) (n=151, of 1426, weighted)

A summary of this cluster: The key characteristic of On-Demand Outsourcing is exactly that—that at least one outsourced laundry service is used. Washing machines are run part-full at least occasionally. It is more common for people in this group to never change their settings on their washing machine. any in this group never change the settings on their washing machine, although some do change some of them. Aside from the Hand Washing group, this is the only other cluster to hand wash more than average, although still the majority never do, and the rest do so only occasionally. Clothes are slightly less likely to be washed "all the time", or when the pile is big enough, but more likely during the day on weekdays and also at the weekend. Appearances are slightly less important than average as a reason for putting laundry to wash. Members of this group are more likely to be living alone (27% vs 18% do), and more likely in a flat or terrace and less likely in a semi-detached house than others. They are also rather less likely to have a water meter (29% do, vs 47%).

Example of On-Demand Outsourcing: Anne is a single, retired female aged 65-74. She lives by herself in a 5 roomed terraced house in a seaside suburb in Essex. She wears the same clothes throughout the day on all days. She says that she does her washing 'all the time', tends to handwash only when it will protect the fabric, and washes clothes to make them feel fresh. Here is her describing the use of the machine to create that freshness:

Anne: actually washing – clothes – I find that I can just use the quick rinse thing, all you want to do is freshen up your clothes most of the time don't you Interviewer: so you try to do a few things to cut back, in terms of clothes, do you tend to wear the same clothes through the day and then wear them the next day or do you wear them till they feel dirty, what is the trigger that makes you put them in the washing basket? Anne: I smoke, it smells. A couple of days of week I read with the children at my grandchildren's school and I do like to have fresh clothes. I don't think that you smell it on yourself, but other people are aware of it. Weekends I can be quite lazy and wear the same things 2 or 3 days running, I change my underwear. Summer is somewhat different, I suppose in the summer I am more inclined to change my blouse every day, but this time of year I don't Interviewer: do you tend to have enough clothes in your wardrobe to save up a basket load to wash? Ellen: yes [break in conversation to something else] Interviewer: so the washing machine now, do you stick with the one setting or does it vary? Anne: mostly I stick with one setting, I wash on 30 degrees. Today is materials you don't need to wash on a heat Interviewer: do you separate? Anne: I have my colours and my whites. The towels go with the whites. I change the sheets once a fortnight and that is when all the whites go in, other than that it is all normal clothes
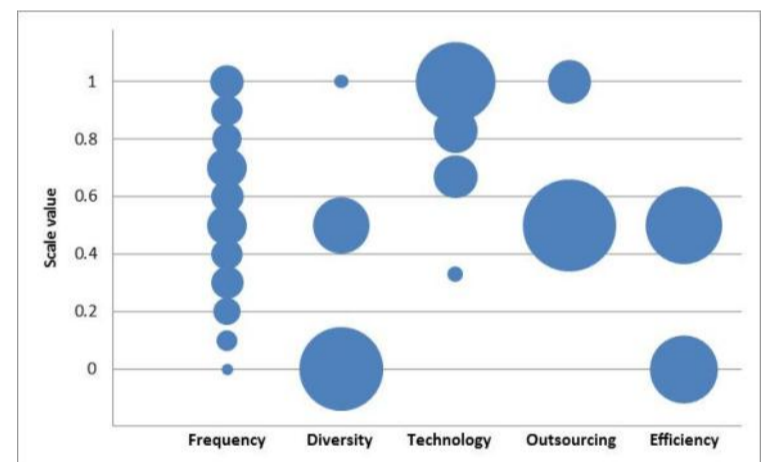
About this group's laundry practices:
- Very few ever change the settings on their washing machine (usually low diversity score);
- and hand wash only occasionally, if ever (usually high technology score);
- They make use of one or more outsourced laundry services (middle to high outsourcing score);
- They all run the washing machine just part full at least occasionally (middle to low efficiency score);
- As with most of the clusters, there is no trend in whether they tend to wear or use clothes and linen for more or fewer times than other people (the full range of frequency scores is present).

Compared to the rest of the population, we also know that members of this group are:
- Less likely to change clothes on working days but not when not working (19.1% vs 27.3%)*
- More likely to wash clothes on weekday daytimes (28.5% vs 21.3%)* and at the weekend (36.2% vs 27.8%)*; less likely "all the time" (7.9% vs 15.6%)* or "when the pile is big enough" (10.6% vs 19.3%)**
- Less likely to put clothes and linen to wash because of their appearance (47.7% vs 56.8%)*
- More likely to use a laundrette (31.1% vs 7.1%)***, dry cleaners (82.1% vs 25.3%)***, and laundry services (door to door pick up and delivery, or drop off and pick up yourself) (4.0% vs 0.7%)***

Other characteristics of this group:
Compared to the rest of the population, members of this group are:
- More likely to live alone (27.0% vs 17.6%)**
- Less likely to live in a semi-detached home; more likely terraced, or flats or tenement (24.3% vs 36.8%; 32.9% vs 28.0%; 19.7% vs 13.4%)*

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

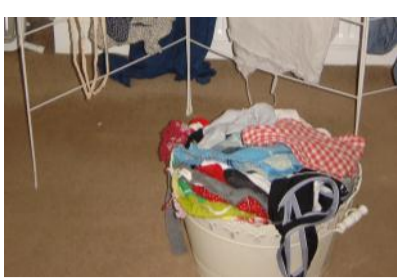*: 5% level; **: 1% level; ***: >0.1% level

Discussion point:

This cluster represents a small group, but one with a potentially inefficient washing machine practice. However, the on-demand aspect of this practice, where the washing machine is used partially full could be due to the fact that they are more likely to be living alone and don't have enough clothes to wait for a large full wash! This could likely be the reason behind the hand wash as well. This group could respond well to technological interventions where there are water efficient small loads on washing machines.
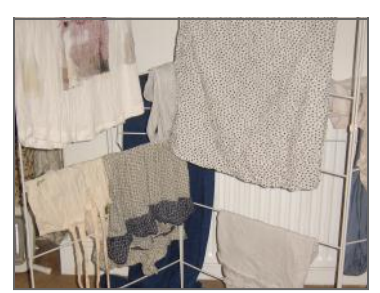
Laundry Clusters:
Hand Washing
Represents: 6% of population (of SE England) (n=79, of 1426, weighted)

A summary of this cluster: The relatively high level of hand washing is the defining feature of this small group. Reflecting this, it is more likely that hand washing is done when the label says to, and because it is more convenient, or because they do not own a washing machine. Even in this group however, hand washing is not necessarily common, with the lower end of the range still represents just two hand washes per week. The group's practice is otherwise quite heterogeneous on the other dimensions, and similar to the rest of the population's. It is less likely on average that they will wear the same clothes throughout the day, more likely that clothes are washed in the evenings or when they run out of clothes, and cleanliness is more likely to be a motivation for putting clothes in the wash. In terms of socio-demographics, members of this group are much less likely to be in full time work (18% are, compared to 39%). They are more likely to have dependent children living with them, and to be in a home with a total of two or more people rather than living alone. They are also much more likely to report wanting to install a water meter if they don't already have one: 24% have plans to, compared to 10% of the rest of the population, although most of this group do not have any clear plans for when they will have them installed.

Vignette of Hand Washing: Leanne and Liam are both 35, and share a detached house in an outer suburb of an Essex town with their three children Mattie (10), Kira (7) and Lucy (3). Leanne is a stay at home mum, and Liam works during the day and plays for the local football team regularly throughout the season. Leanne works one day a weekend in a farm shop to provide some more income for the family. The kids all play a variety of sport, and the young girls both do dancing 2 days a week. Laundry tends to get done during the week and on weekends due to Liam's work clothes often running out, as well as running out of the kids school, and sports, clothes. Leanne tends to hand wash the girls ballet and dancing clothes (to preserve the fabric), her own delicates (underwear, nice tops) and Liam's work and sports clothes also get done by hand when they are particularly grubby. Most other 'general' clothes and linens get thrown in the basket to do at the end of the week or on the weekend.

About this group's laundry practices:
Based on their scores on the clustering dimensions in the figure (right):

- This group varies in how many settings on their washing machine they vary (low through to occasionally high diversity score);
- and hand wash comparatively often (low to moderately low technology score);
- They vary in terms of use of outsourced laundry services (low through to occasionally high outsourcing score);
- They vary in whether and how often they run the washing machine part full (low through to high efficiency score);
- As with most of the clusters, there is no trend in whether they tend to wear or use clothes and linen for more or fewer times than other people (the full range of frequency scores is present).

Compared to the rest of the population, we also know that members of this group are:

- Less likely to wear the same clothes throughout the day always (34.2% vs 49.9%)**
- More likely to wash their clothes weekday evenings (29.1% vs 18.7%)* and when they run out of clothes (7.6% vs 1.3%)***
- More likely to wash clothes for cleanliness reasons (a strongly important factor for 29.1% vs 19.4%)*
- More likely to handwash when the label on an item says it should only be handwashed (53.2% vs 38.4%)*; and because it's quicker and more convenient (17.7% vs 8.5%)*; or because they don't own a washing machine (8.9% vs 1.4%)***
- More likely to wash some (but not all, or no) clothes separately from other household members (17.6% vs 8.5%)**

Other characteristics of this group:
Compared to the rest of the population, members of this group are:
- Less likely to be in full time work (17.9% vs 39.3%)***
- More likely to have dependent children (43.7% vs 31.2%)*

This cluster's characteristics:

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1%
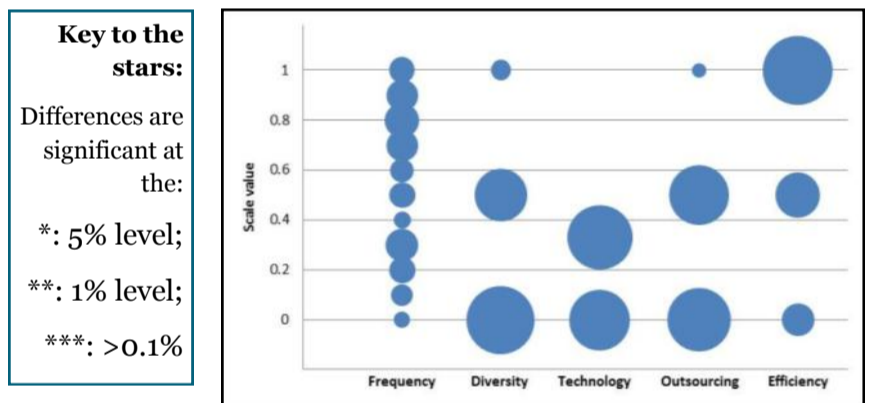
Discussion point:

Although united by the comparatively high frequency of hand washing, there is not obviously much otherwise that would make this a recognisably distinct variant of laundry practices, and it is also a small group. With people who perform this practice much more likely to be in full time work, it could be that having more time available allows this group to hand wash clothes more often when the label says to, and responding more to those cleanliness cues.

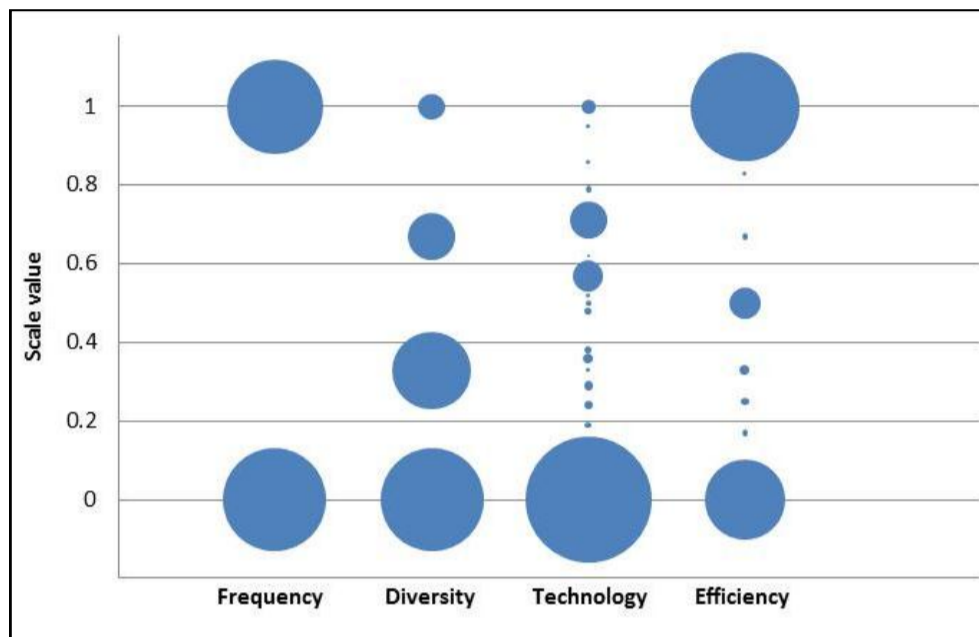# GARDENING CLUSTER ANALYSIS RESULTS:
## Summary of Population Level Results

Population as a whole

(Bubble sizes represent percentage of respondents having that value on that dimension)

Meaning of the scales:

1	Yes	3 or more	Automatic irrigation	All water from water butt/ recycled
½			Hosepipe with trigger	
0	No	None (never varies)	Jug or watering can	All mains water
Scale value:	Frequency	Complexity	Technology	Efficiency
	W h e t h e r they water their o u t d o o r	Number of factors which i n f l u e n c e timing of watering	W a t e r i n g technology approx. rated based on p o t e n t i a l	Efficiency of home mains water use

GARDENING CLUSTER RESULTS:

Casual Gardening
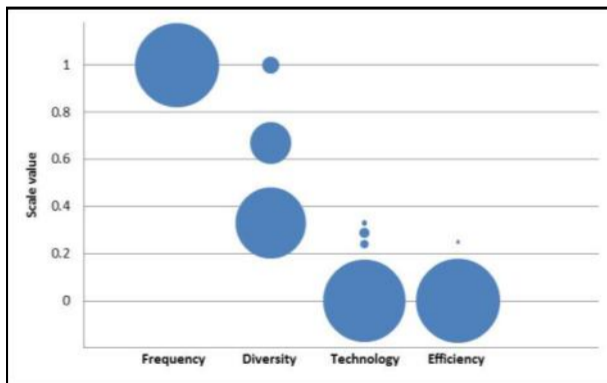
Amateur Enthusiastic Gardening
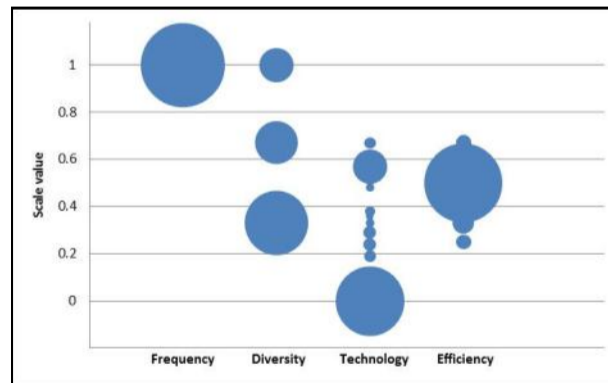
Green Fingered Gardening

High Tech Gardening

Hands Off Gardening

And of course a final group that has nothing to water!

Gardening Clusters:
Casual Gardening

18% of population (of SE England) (n = 320, of 1753, weighted)

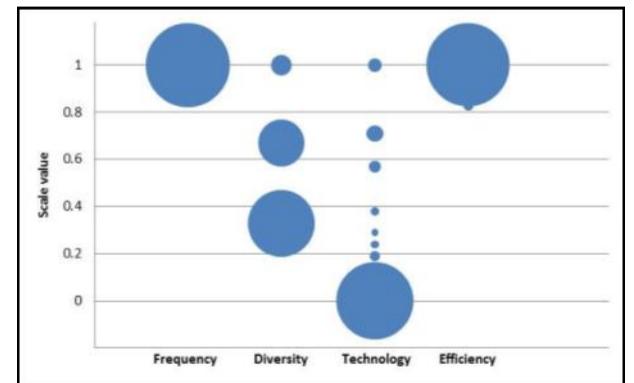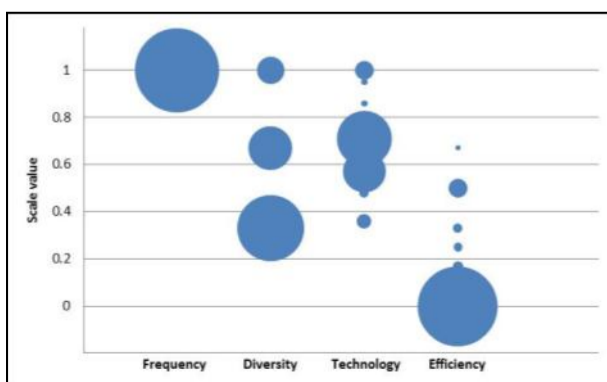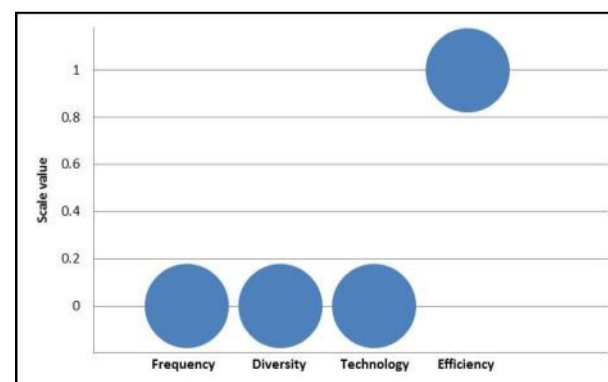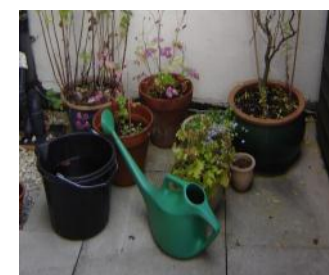**A summary of this cluster:** Casual gardening involves a watering of outdoor areas, and there are a range of criteria that determines when this is done (although on average fewer criteria than others who water their gardens). Low technology solutions are almost exclusively used to water gardens – jugs and watering cans – and the water is always taken from the mains supply. Outdoor space is more likely to be seen as a place for flowers and plants than the rest of the population, but not so for other reasons, and are less likely to see it as a car parking space or to have no clear idea what it is for. People in this cluster are more likely to be slightly older than average, and less likely to be 34 or under, less likely unemployed, and slightly more likely to be retired. They are also more affluent than average, and more likely to own their home, and less likely to be renting. The homes themselves are more likely to be detached or semi-detached houses, less likely flats, and slightly larger than average.

Example of 'Casual Gardening': Lewis is a 16-24 single male, living with his parents in a 9 room terraced house in suburban Essex. He took part in the interview but his parents (male 55-64, female 45-54) answered some of the questions for him particularly when it came to gardening! This household came out as 'time variant' in their watering routines in the questionnaire, saying that they watered on a regular schedule.

Interviewer: in the garden you were saying that you don't plant annuals or do anything? Lewis's Mum: oh yeah we do vegetables... Lewis's Dad: Yeah we do vegetables. Lewis: do you do vegetables? [quizzically] [laughter] Mum: yeah you don't eat them... we do potatoes, green beans, tomatoes, peppers, strawberries, you don't know that we've grown all them. Dad: I can't believe you didn't know. Interviewer: do you have a water butt or do you have to water them regularly, like in summer? Mum: yes we do [have to water them] but we don't have a sprinkler so we aren't that naughty, [laughs] but we have got a hose Interviewer: do you water on a regular schedule or do you tend to do it when things are dry? Dad: when things are dry Interviewer: is that from the plants wilting or the soil looks a bit parched? Dad: In general we get a fair bit of rain down here, even in summer a fair bit of rain, probably every other day, every couple of days, but it's just a quick go like you know what I mean it's mainly for the vegetables and yeah not too much but we do do it with a hose. Interviewer: have you been planting vegetables for quite a while? Is that something that you've always done Dad: Not really. When I say vegetables, most of the garden is grass in it and at the end I have got a strip about that wide by about 12 foot that has the potatoes in and then a few pots what have everything else in; I'm not allowed to dig the garden up like [Mum laughs] so it's just a few pots, sort of so it's not a vast amount. It's just nice to get a bit of fresh veg now again ain't it.

About this group's gardening practices:

Based on their scores on the clustering dimensions :

- Middle to high number of factors affect timing of watering (moderate to high complexity score) (lower than average among waterers)***
- Low technology use (97.2% vs 30.4% use jug or watering can)***
- Uses mains water (low efficiency scores)***

Compared to the rest of the population, we also know that members of this group are:

- Less likely younger (26.4% vs 34.1% are 34 or below)*
- Less likely to be unemployed (1.9% vs 5.7%)**

Other characteristics of this group:

- More likely retired (22.5% vs 17.7%)*
- Likely more affluent *
- More likely to own their home outright, or with a mortgage; less likely to rent (35.6% vs 31.8%; 39.7% vs 28.2%; 22.8% vs 36.1%)***
- More likely to live in a detached, or semi-detached home; less likely a flat (21.9% vs 18.1%; 39.7% vs 34.8%; 6.9% vs 15.5%)**
- More likely to live in a larger home (mean 7.0 vs 6.7 rooms)**
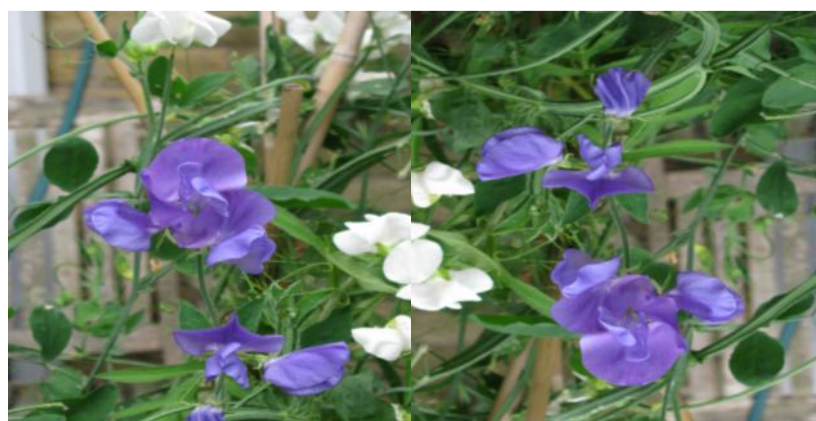
This cluster's characteristics:
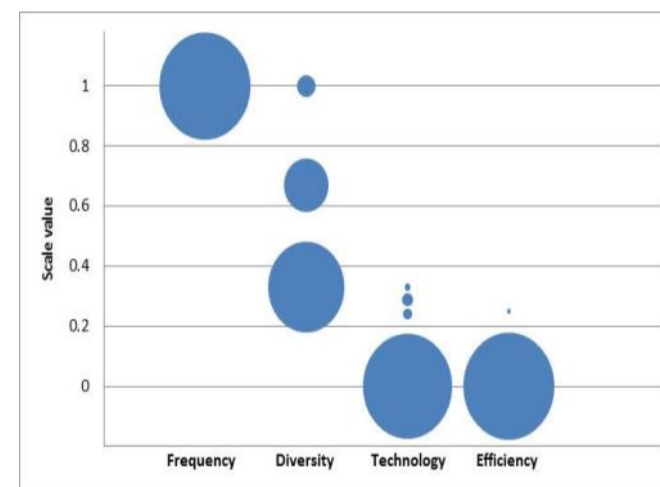
Key to the stars:

Differences are significant at the:

*: 5% level;

Discussion Point :

This variant of practice has captured quite a large share of the population, but whilst the garden is clearly maintained and enjoyed particularly for flowers there is not a strong engagement in the garden space, or large investments in terms of technology. Low tech ways are used to water the garden—jugs and watering cans, and only mains water. Therefore, as this cluster is not using a hosepipe *they will not be affected by any hosepipe ban*! Whilst it is unlikely that they would be able or willing to carry as many litres of water as would come out of a hosepipe, this group (18%) will still be able to water their garden using mains water from taps in the house even when there are restrictions. This highlights a current problem with hosepipe bans and the way they are being used as the main communication and regulatory mechanism in the UK for drought – it does not look at the diversity of ways that people garden, or water it. Given that this group uses solely mains water, and low technology ways of water with buckets or water cans, could this be a group that could be encouraged to install water butts or used water recycled informally from inside the house to water their plants?

Gardening Clusters:

Amateur Enthusiastic Gardening

Represents: 5% of population (of SE England) (n = 81, of 1753, weighted)

A summary of this cluster: Amateur Enthusiastic Gardening is a fairly small cluster of practice with gardens generally watered with low technology – a jug or watering can, as with most of the population, but sprinklers and hose pipes may be used too. Some water is drawn from water butts, but there is not always enough there for watering, so mains supply is occasionally relied upon. There are generally between one and three or more criteria for the timing of watering the garden, averaging slightly more reasons for watering than other clusters. It is characterised by people who are generally enthusiastic garden users, and outdoor space has been adapted to that end; the garden is substantially more likely to be seen as a place to grow fruit and vegetables, and are more likely than any other group to see it as a place for flowers and plants, as an outdoor living area, and as a place for birds and other wildlife. This cluster is more likely to have a patio, decking, a garden pond and other water features than any other group, are quite likely to have water for birds and other animals too (28% vs 12% do), and are more likely to have watering technology – outdoor taps, hosepipes, high pressure hoses and event automatic reticulation systems – again, with the exception of hosepipes, more so than any other group. Leading up to the spring and summer months annuals and bedding plants are more likely to be planted than any other group (42% do vs 17%). In socio-demographic terms, they are substantially older than average (54% are 55 or over, compared to 31% of the rest of the population, while only 11% are 34 or under, compared to 34%), and a third are retired compared to 18% of the rest of the population. They are likely to be a couple living together, without any dependent children living with them. They are also more affluent than average, substantially more likely to own their home and less likely to rent, whilst their homes tend to be somewhat larger than average, more likely detached or semi-detached, and less likely terrace or flats.

Example of an 'Amateur Enthusiast': Janice and Troy are a retired couple (55-64) who live in their semi-detached 5 room house in suburban Essex with a large front and back garden. Their watering routines were classified as 'weather variant' in the survey, watering when things were 'wilted'.

Janice: we do grow our own veggies every year, and all that sort of thing. We get a lot of badgers, it's a badger run, so we get badgers through every night. There's a lot of foxes in the area. Unfortunately we don't get very many hedgehogs, we've probably had two in all the years that I've lived here. We have a bog garden - we've got all plants that like boggy things, like ferns, that sort of things. We get frogs, we end up with a colony of little frogs every year and there are always toads around and I often find one in the greenhouse. Troy: we just tend to leave a section at the end of the garden really wilderness. Janice: We have a big wood pile at the end which is deliberately left to rot, and we've allowed the ivy to cover over it so you've got all the insects and the frogs and the toads can bury there. I deliberately planted an oak tree at the bottom of the garden because those trees provide the best insects in the UK. I've got one big green house and a small greenhouse, plus cloches that go up in springtime. Most of my vegetable I grow from seeds ... we've got a lot of perennials that come up every year, but I do get a lot of annuals as well, particularly the ones for the butterflies and the bees, and so ladybirds and all those sorts of things we encourage, because they eat all your bugs and things We have a big water butt at the end of the greenhouse, we have another one at the end by the shed and what else we did, years ago Sainsbury's were giving away these big plastic carrying/storage box type things [I: that are open at the top?] Yeah but they have lids as well so what we tend to do is fill all those up with water at the beginning of the year as well and try to keep them topped up, the drain goes straight in to fill up these buckets then we can move it and keep filling those up as well. So, and out the front the downpipe comes down rather than it just going into a soak -away Interviewer: Great! So you have got your own unofficial rainwater harvesting system going on in the back garden! Janice: yeah so we try and conserve what we can do where we can do and …. Interviewer: Do you ever…. in the periods of drought that have happened over the past few years have you ever had to use the mains water to keep the veggies going or is it? Janice: We have. I'm not going to say we haven't at all, because that's another reason we have them all, we keep rotating them round to make sure they are filled up.

About this group's gardening practices:

Based on their scores on the clustering dimensions :

- Middle to high number of factors affect timing of watering (moderate to high complexity score) (higher than average among waterers)*

- Moderate to low technology used in watering – usually jugs or watering cans, up to hosepipes (lower than average among waterers)***

- Mix of water butt and mains water (moderate efficiency scores)***

Compared to the rest of the population, we also know that members of this group are:

- More likely older (53.8% vs 31.2% are aged 55+, 11.3% vs 33.8% are 34 or under)***

Other characteristics of this group:

- More likely to have no children(76.8% vs 67.8%)**

- More likely to be a couple (80.5% vs 57.1%)***

- More likely to be retired (32.9% vs 17.9%)***

- Likely more affluent***

- More likely to own outright, or with a mortgage; less likely to rent (47.6% vs 31.8%; 41.5% vs 29.7%; 11.0% vs 34.8%)***

- More likely larger houses (mean 7.3 vs 6.7)**

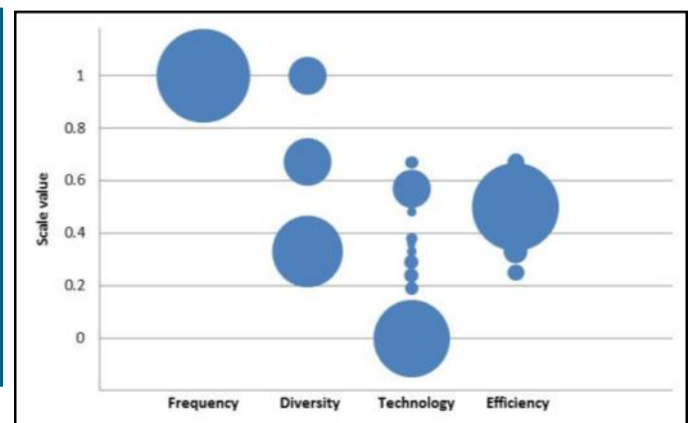### *This cluster's characteristics:*

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

Discussion Point :

This group seems to garden enthusiastically potentially as hobby and pastime. Generally older, and with money to spend they have invested in patios, decking, water features and some watering technology like water butts, and made efforts to collect rainwater as part of that. Is this group then representative of changes across a life course (that is people are likely to move into this cluster as they get older and have more time to do gardening) or does it reflect some kind of generational change that is associated mostly with older groups (that is outdoor spaces are prioritised in this way). It is likely to be a combination of the two – with garden spaces increasingly seen culturally as 'outdoor living rooms' (Chappells, Medd, & Shove, 2011), and an increasing generation of retiring baby boomers who suddenly have time to garden! This group is one that collects rainwater as a general rule of thumb – could they be a group who could be early adopters of larger rainwater harvesting infrastructure or potentially greywater harvesting (formally and informally) to support their garden lives?

Gardening Clusters:
Green Fingered Gardening

6% of population (of SE England) (n = 99, of 1753, weighted)

A summary of this cluster: This variant of gardening practice is 'green fingered' in the environmental sense as its members get their garden water from, usually, a water butt, or else recycled from the home, with a few even having a proper recycling system installed. In 98% of cases Green Fingered Gardening uses no mains water for watering at all. The technology used for distributing the water is usually low, such as jugs or watering cans, but the full range of technologies are present, with a few per cent using hoses and even sprinkler or irrigation systems. The number of criteria for deciding when to water varies between one and three, in line with the rest of the population. More than any other group Green Fingered Gardeners are likely to see outdoor space as a place to grow fruit and vegetables (just over half do, compared to 20% of the rest of the population), and more likely than average to see it as a place for flowers and for wildlife. There is a much stronger likelihood there will be water in the garden for birds and wildlife (over a third do, compared to 12% of the rest of the population), and ponds, other water features, and water toys for children. Annuals are more likely to be planted in spring, but there is no more likelihood that other outdoor preparations are performed then. The group is the oldest of all the clusters on average, with 42% being 65 or over (compared to 18% of the rest of the population), and 40% being retired (compared to 17%), and less likely to have dependent children at home as a result (only 19% do). They are more likely to be female (65% are), and more likely living singly or with their partner (70% vs 57% are couples). They are again more affluent than average, and more likely than any other group to own their home outright (57% do, compared to 31%), which is usually slightly larger than average and more likely a detached or semi-detached home, less likely a flat or terrace. They are more likely to have a water meter (61% compared to 45% do).

Example of a 'Green Fingered Gardener': Jacqueline (J) and Tim (T) are a retired couple between 65-74 who live in a semi-detached home that they own outright. Their gardening routines were classified as 'weather dependent' in the survey watering when plants wilted or the soil looked dry.

Interviewer (I): Are you big gardeners? J: yeah we are, and we've got an allotment as well Interviewer: what do you grow? J: we grow most of our own vegetables at the allotment and the back garden is ah..... we've got a greenhouse Tim: it's really just a playground for badgers and foxes J: yeah it is, unfortunately Interviewer: the allotment or the back garden? J: no, the garden. We have badgers and foxes in there and they do quite a lot of damage I have to say! Interviewer: so even though you'd like it to be a place for flowers....J: well, it looks nice if you were to look at it yeah it looks nice T: it looks alright from a distance but if you walk along to the bottom you see little holes and scratch marks you know and they try to.... J: and we've got four water butts Interviewer: So you don't water the garden by any mains water at all? Do you just rely on the water butts? J: we do yeah T: I think last year, which was a very dry year, we only watered twice using the hose in the whole year and that's... J: but that is mostly to fill up, if the butts are empty by the green house and the two up here then we usually use the hose to fill the butts and then water from there, so we don't use [the hose] it very often T: but that's only just a couple of times last year Interviewer: and is that just like the flowers and the plants rather than the lawn...? J: it's mostly just the pots, never the lawn Interviewer: so the pots that kind of wilt and dry quicker T: and also, I mean we wouldn't bother with sort of little annual plants, but if you buy shrubs for instance and put them in, then obviously you've got to water those otherwise they just die off Interviewer: so is your garden mostly kind of perennials or do you plant the annuals as well? J: I plant the annuals [laughs] T: I would never bother J: I like to see the colour and mostly the annuals are planted in tubs you know so, and I have to say we don't have a huge amount of them. We've got a greenhouse down the garden and we usually keep tomatoes, cucumbers and peppers in there Interviewer: and do you water them with the butts as well? J: Yeah yep. Yes, and of course they take up a reasonable amount of water don't they? T: yeah about 5 gallons every day J: we put them in grow bags T: which I have to say they've got to be watered every day and they dry out a lot quicker than if they were in the ground, but the ground is covered with - ah - concrete slabs so so... J: That's it. And at the allotment during the summer, sort of from March till November, there's use of water. So as part of the allotment fee that includes the use of water. You're not allowed to use a hose pipe, but the water butt and tap is right close to our allotment, so you know, but I have to say that we don't over-water because it's a menace to have to keep going up there T: I think the thing of it is if you look overall, I mean a lot of people go up there and water every day and it's not necessary. Certain things like runner beans do need a water, but a really good water once a week is plenty, whereas a lot of people go up there and they just water, they don't know what they're doing really, they just sort of walk on and water the tops and it only goes that much and all it does is bring the roots back to the surface and that does more damage than good really. J: we're not quite self-sufficient with vegetables, but we are well on the way to that Interviewer: so is that the kind of aim, to be able to produce and....? J: well yes, I mean it's money saving and all of it isn't it, it is the taste and it's convenient.

About this group's gardening practices:
Based on their scores on the clustering dimensions :

- Middle to high number of factors affect timing of watering (no different to average among waterers)
- Usually low technology use in watering (usually low technology score, but full range present) (84.8% vs 53.7% use jug or watering can)***
- Almost always uses water butt or recycled water (high efficiency score, higher than average among waterers)***

Discussion Point :

The oldest group among the clusters, the prominence of growing food and using only rain harvested or recycled water implies a low water footprint for their gardening, and a potentially lower carbon and embodied water food footprint too. Although there seems little need for interventions for this group's watering practice, they also represent a small percentage of the population – is this a variant of gardening that could be adopted by others in future, particularly if initiatives like the Transition or SLOW food movements gain ground, or does the need for time and space restrict its feasibility to mostly affluent retired people An interesting consideration are the implications for biodiversity and food water footprints of this group. Although this group use mostly non-mains water, what if climate changes were so dramatic that they no longer had sufficient access to rainwater and other 'non-mains' water sources to fulfil their 'green fingered' ambitions? Would they be a group likely to adopt new infrastructures such as larger rainwater systems, or greywater systems in order to supplement their water use rather than resorting to mains water. In some ways this group has the most to lose from a changed climatic environment – like Jacqueline and Tim are more likely to see it as a place for growing food. Would they be compelled to sustain this alternative food provisioning lifestyle even if they had to use mains water to sustain this?

This cluster's characteristics:
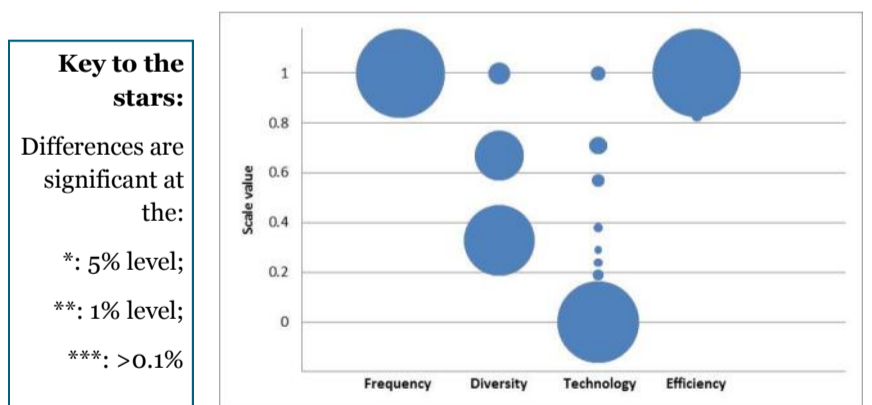
Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1%

Compared to the rest of the population, we also know that members of this group are:

- More likely older (42.1% vs 17.5% are 65+; 9.5% vs 34.1% are 34 or below)***
- More likely female (64.6% vs 49.9%)**
- Less likely in full time work (25.5% vs 39.1%)**
- More likely a retired household (39.8% vs 17.3%)***
- Likely more affluent***
- More likely living in a detached, or semi-detached home; less likely a terrace or flat (33.0% vs 17.9%; 44.0% vs 35.2%; 16.0% vs 29.2%; 6.0% vs 14.4%)***

A summary of this cluster: A large and active set of gardeners perform High Tech Gardening. Watering is usually done with mains water, and with higher than usual technology – mostly hosepipes, but also sprinklers (particularly for the lawn) and irrigation systems, and rarely watering cans or jugs. They use as many as six different criteria to judge when to water, although usually just one or two, and no more than average for those who water from the other clusters. The High Tech Gardening group is more to see the garden for the full range of uses asked about for outdoors spaces, including using it for car parking. They are also more likely to perform all the different spring and summer preparations of the garden asked about (hosing walls, windows, pavements etc), with the exception of washing cushions for outdoor furniture. They are more likely to have the range of different outdoor watering technology asked about, from an outdoor tap to hosepipes and irrigation systems, as well as being more likely to have other water features, including some for wildlife, and even Spa Baths/Jacuzzis (although still only 3.2% have spa baths, compared to 0.5% of the rest of the population). Socio-demographically, this group's members are more likely older, retired, in a couple, and without dependent children living with them. They are likely more affluent than average, and more likely to own their home, which tends to be somewhat larger than average, and more likely detached or semi-detached, less likely terraced or a flat. They are unique among the clusters in having slightly stronger environmental attitudes than average – they are more likely to want to do more than they currently do for the environment (56% vs 67% are happy with what they currently do).

Example of a 'High Tech Enthusiast': Cheryl and Matthew are a couple 55-64 and live in a detached house that they own outright on the outskirts of a small rural town in Essex. They are 'time variant' and say they water on a regular schedule.

Cheryl: Matthew likes the garden. I like to see it looking nice but I do a fair bit, weeding and sweeping and that Interviewer: so is it mostly.... do you grow vegetables and fruit? Matthew: I did, but the garden - to make it worthwhile you need quite a bit, I used to have an allotment, we used to have gardens that have been big enough to put veg in, we tried it here, and I had sort of like what I call a kitchen garden I suppose, but now just herbs and stuff I've grown before it's now become – I've put a sun room on it now, I've paved it over and put a sun room on it. Interviewer: Is it mostly trees and lawn or do you like the kind of colour to look at in summer as well? Cheryl: yes, there's a lot of patio because the house is built up high, so its steps everywhere you go, there's steps down, we've got a garage at the back, steps up to the garage, the lawn is actually sunken. Matthew: We try to make it interesting because you can walk different ways and walk around it; there are little areas that you can go to. But it's mainly lawn, in fact it's lawn on one side and it's lawn on the other side, but that's because of the grandchildren, it's actually artificial. But you wouldn't notice it. Astroturf. In fact, it looks better than my real lawn! Interviewer: Do you water? Matthew: yes, admittedly years ago I used to use sprinklers quite a bit, and we came here and then we had a water meter put in and I admit it made us more conscious about the water we're using and so I actually stopped then using the sprinkler because I knew I was paying for it Interviewer: so have you had to change the type of plants and things that you have used? Matthew: No, because I use a watering can. I grow lots of hanging baskets in the summertime, so I use a watering can for those, but the lawn, um I now have - I pay for a guy to fertilise it for me, it's a slow release fertiliser, it's not expensive, but he comes every 3 months and puts different fertilisers, and that actually compensates for the water and I find that the natural rain is enough. A couple of years it has burnt and dried off, but it does always come back again so we don't worry that much Interviewer: do you have water butts or anything like that? Matthew: I did, I can't think what happened to it, the reason why it, erm ....we had a water butt didn't we, for a long time. Interviewer: so do you hose down outdoor furniture, when you are preparing yourselves for summer etc? Cheryl: yes we do, we have a big glass table and that is all washed and hosed down every spring time Matthew: I mean, sort of being frank, I know it's probably not that much of a water use but it is an annual water use, we are a north [north-west] facing garden and all my patio is natural York stone, And of course with being North facing, every year it gets an algae on it and turns a bit green so I always pressure wash it every year so I spend a couple of hours I suppose with a jet wash doing that.

About this group's gardening practices:

Based on their scores on the clustering dimensions :

- Middle to high number of factors affect timing of watering (moderate to high complexity score) (no different on average to other waterers)

- Moderate to high technology used in watering - hosepipes with triggers and sprinklers, up to automatic irrigation systems (moderate to high technology score) (higher than average among waterers)***

- Almost always uses mains water (90.7% vs 63.9% use all mains water)***

### Compared to the rest of the population, we also know that members of this group are:

- More likely older (46.2% vs 29.7% are 55+; 21.6% vs 34.9% are 34 or below)***

- More likely to want to do more to help the environment (56.0% vs

Other characteristics of this group:

- More likely no children (77.3% vs 66.6%)***

- More likely a couple (70.3% vs 55.9%)***

- More likely retired (22.9% vs 17.8%)*

- Likely more affluent***

- More likely to own their home outright, or with a mortgage; less likely to rent (49.8% vs 29.3%; 36.9% vs 28.9%; 10.8% vs 37.9%)***

- More likely living in a detached, or semi-detached home; less likely a terrace or flat (28.7% vs 17.0%; 47.0% vs 33.7%; 21.9% vs 29.7%; 1.4% vs 16.2%)***

Key to the stars:

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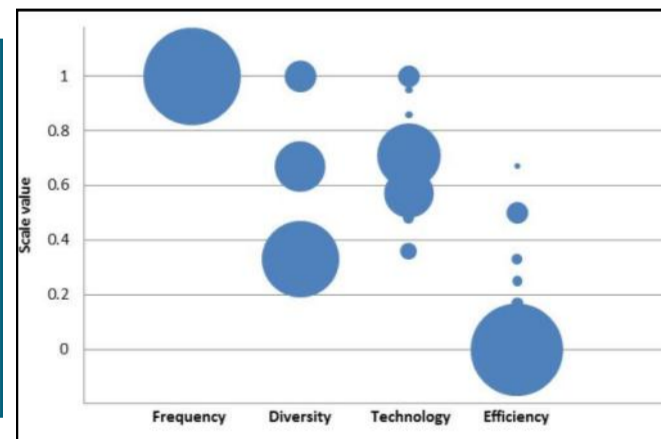
Discussion Point :

As mains water, hosepipe-using gardeners with a propensity to have other water features from water for birds to spas and jacuzzi's people who participate in High Tech Gardening are potentially very high water users. Interestingly this group have slightly stronger environmental attitudes than average – they are more likely to want to do more than they currently do for the environment. This is not surprising if the 'attitude-behaviour' gap is taken into consideration, people who have strong environmental values do not necessarily (and most often don't) act in environmentally friendly ways (eg, Kollmuss & Agyeman, 2002). Their use of water in the garden is potentially significantly higher than many groups. One also has to think of the potential for this group to adopt in a more widespread way automated reticulation and irrigation technologies in the home garden, although this is not necessarily problematic as often these approaches are more water efficient than sprinklers (e.g., drip irrigation). How possible would it be to transition this group from using high mains water consuming technologies to alternative technologies such as bigger rainwater harvesting and recycled water systems? The potential future transitions is significant as this group is larger than average, and consideration needs to be made to the implications of the growth of this group in the future particularly if high tech 'outdoor rooms' become increasingly popular.

Gardening Clusters:
Hands-Off Gardening

18% of population (of SE England) (n = 314, of 1753, weighted)

A summary of this cluster: Among the five clusters which have outdoor space with plants, this is the joint largest group, and notable in that members of this cluster do not actually water their gardens at all! Compared to the population as a whole outdoor space less likely to be seen as an outdoor living area, and more likely as an area 'still being developed', although these are not extremely strong trends. More likely than average the garden is seen as a place for plants and flowers. With it less likely than average that the garden does not have a clear idea of its use, it indicates that this is an area not intensely for recreational purposes, although come springtime the area is more likely than average to be tidied up. There might be for example lawn or plants which don't require watering at any point throughout the year. Among the five clusters that say they have outdoor spaces with plants, this is the only one whose members are not likely to be older or more affluent than average. They are more likely to be single, and more likely to be living in a semi-detached or terraced home, less likely in a detached or a flat. They are also more likely than the rest of the population to be happy with what they currently do to help the environment, and less likely to have a water meter.

Example of a 'Hands Off Gardener': Anna and Christian are a retired couple who are 75+ who live in a semi-detached house that they own outright in the northern suburbs of Greater London. They don't water and wait for rain. They reflected upon the history of gardening at this house.

Interviewer: did you used to work in this garden yourself [before you got the gardener]? Christian: a little bit, yes, not very much because I was always travelling on business. I used to go out in a morning and come back sometimes six or seven days a week. Weekends it always rained, you know this country, except the last few weeks. It used to rain more I have a feeling judging by my garden. So the grass grew and grew and I came home at eleven o'clock on a Monday night so there is not much gardening that you can do Interviewer: so for you what is the garden? Is it something nice to look at and for you to sit in on a nice day or do you tend not to use it very much? Christian: we don't tend to use it very much. We do on occasion I haven't got the patience to sit down. I don't have very much patience to sit down and watch paint dry or whatever the saying is. Anna: we've got 4 apple trees and we're still eating the apples. Christian: again we tend to plant things which need comparatively little water because otherwise – it isn't only for saving, it's a question of otherwise I'd be standing there for two hours a day watering the things. I haven't got the patience to stand there in the garden for hours like some people do. [To Anna]. Your brother-in-law used to grow roses for shows and things like that it'd drive me potty. Interviewer: you haven't watered the garden at all? Christian: very little. I try to water as little as possible, to be honest it's as much laziness as anything else. We've tended in the last few years, because of using the water, we've tended to change things in the garden to things that grow on their own and need very little attention except pruning. There is a limit... I used to plant hundreds of flowers and what not; I tend to do less of that now. If I can get as much from bushes that don't need water, they have deep roots; Interviewer: Are you saying that you get as much colour from them as you would annuals? Christian: No it is a different kind of garden. They don't need watering a lot. It is just a different type of garden [to what it used to be] we don't have many flower beds now.

Compared to the rest of the population, we also know that members of this group are:

- More likely happy with what they do for the environment (75.6% vs 62.9% are)***
- Less likely to be a couple (50.0% vs 59.9%)**
- More likely semi-detached or terraced; less likely flats or detached (43.5% vs 34.0%; 33.7% vs 27.4%; 6.0% vs 15.6%; 15.9% vs 19.4%)***
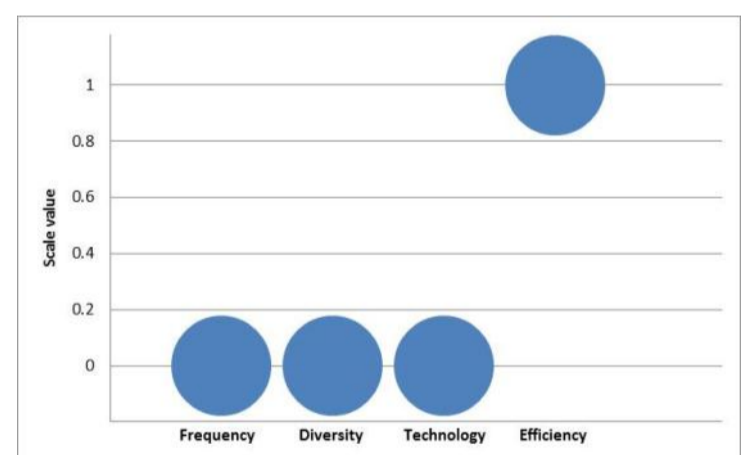- Less likely to have a water meter (39.6% vs 47.0%)*

Key to the stars:

Differences are significant at the:

*: 5% level;

**: 1% level;

***: >0.1% level

This cluster's characteristics:

Discussion Point :

The qualitative interview with Christian and Anna revealed a couple who were never really 'big gardeners' but who as time has passed have possibly become more 'hands off' than they originally were! This dispels certain assumptions that could be made about an increased interest in gardening simply being a function of age and retirement – it is clear that this couple clearly value not having to do anything in the garden, and actively engage with making it fairly self-sufficient (in terms of watering, they do reflect that they have plants they need to prune). Certainly the Hands Off Gardening group's water impact from gardening should be relatively low, if anything at all. However, an interesting set of questions is what would happen to this rather large group of people if the climate changed to a warmer, drier one? How would this type of gardener react if their grass started to burn and go brown, key trees and plants they currently don't water went brown or started dying in the future, or other such changes to the garden in a different climate? Would they do as Anna and Christian have done and actively change the nature of their garden so it doesn't require watering, or would they become some other variation of garden waterers? One would possibly say that it is not that clear cut – surely the diversity of people in this group would indicate that there is potential for some to remain 'hands off' as much as there is potential for others in the group to be recruited into garden watering and more water intensive maintenance. This group is obviously an important one to watch in terms of future trajectories, and also potentially an important group with whom to think about potential interventions.

Gardening Clusters:
Nothing to Water

38% of population (of SE England) (n = 660, of 1753, weighted)

A summary of this cluster: This is by far the largest group in the sample, and comprises those who report not having any outdoor plants or lawn to water. This is in contrast to the hands-off gardeners who do have outdoor plants or lawn but who do not water them. Nevertheless, only a quarter of this group have no outdoor space at all – 67% have a front garden, 56% a back garden, and smaller numbers have other kinds of outdoor space. Presumably they either have only artificial surfaces in their outdoor space, or else plants or trees which they do not consider as needing watering. Unsurprisingly they are much less likely than the rest of the population to have outdoor taps, outdoor watering technology or outdoor water features (with the exception of a slightly higher chance of having a permanent swimming pool, which 0.8% have compared to 0.4% of others). Those that do have outdoor space are far less likely to see it as being for most of the uses asked about (such as for flowers, growing fruit and vegetables or for wildlife), and are much more likely to not have any clear use for it (29% do not compared to 3.4% of the rest of the population). They are also much less likely to engage in most of the outdoor spring preparations asked about, although 41% still tidy up the garden in spring (compared to 63% of the rest of the population). Socio-demographically, this group is more likely younger than average, slightly more likely to be male, and in either full time work or unemployed. They are also both more likely to have children and less likely to be living with a partner. They are more likely to be less affluent than average, renting rather than owning their home, and in a flat or terraced housing rather than a detached or semi-detached house.

Compared to the rest of the population, we also know that members of this group are:

- Less likely to have any outdoor space (25.3% vs 0.6% have none) ***

- More likely to have no clear use for their outdoor space (28.8% vs 3.4% do not)***

- More likely younger (44.6% vs 25.8% are 34 or under; 20.0% vs 39.4% are 55+)***

- More likely male (52.3% vs 47.5%)*

- More likely in full time work (44.2% vs 34.9%)***; or unemployed (8.2% vs 3.1%)***

- More likely to have children (37.1% vs 28.7% do)***

- Less likely to be living with a partner (51.2% vs 62.1% are)***

- Likely to be less affluent***

- Less likely to own their home outright, or with a mortgage; more likely to rent (17.7% vs 41.0%; 22.1% vs 34.9%; 54.5% vs 21.6%)***

- Less likely to live in a detached, or semi-detached house; more likely flats or tenements, or terraced (9.7% vs 24.0%; 23.2% vs 43.0%; 29.2% vs 5.1%; 31.8% vs 26.5%)***

- More likely to live in a smaller than average home (mean number of rooms: 6.1 vs 7.1)***
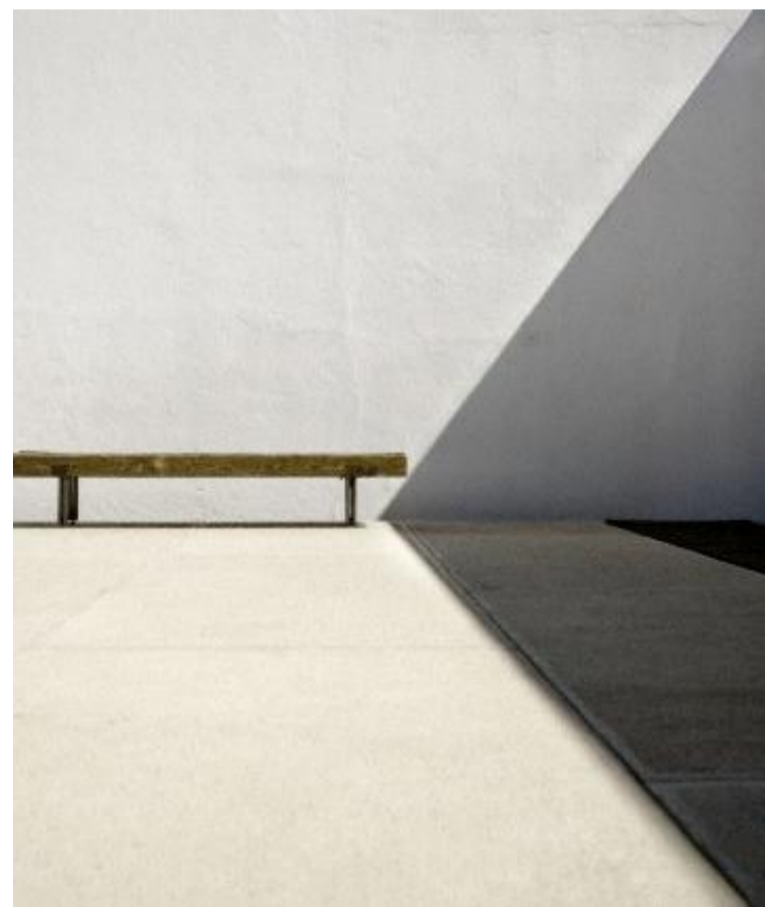
Key to the stars:

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Discussion Point :

From a water consumption perspective, this is clearly a low impact group, and is a variant of gardening that is very common. As housing stock is slow to change, it is likely that a significant proportion of the population in the future will remain in this group even if they do wish to garden, simply because they do not have outdoor space. However, as the majority in this group do have outdoor space, then there is potential for many to become more active gardeners. Equally are these groups that prefer 'fuss free' gardens and could there be an increase in soil sealing in this group? What factors could influence these future trajectories?

This cluster's characteristics: