MINIMISING WATER IMPACT ON THE BUILT ENVIRONMENT
A GLOBAL KNOWLEDGE SHARE
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Water Efficiency Network

OBJECTIVE MONITORING OF UK SHOWERING BEHAVIOUR AND A BEHAVIOURAL INTERVENTION TO REDUCE WATER USE IN THE SHOWER

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The Water Efficiency (WATEF) Network
www.watefnetwork.co.uk

Background

Due to changing showering habits, water use for showering is an increasingly important target for water efficiency measures

Data on showering behaviour is sparse and often based on self-report, a method with considerable drawbacks

There are few behaviour change interventions aimed at reducing water (and energy use) in the shower

Unilever

SEVERN TRENT WATER

ESSEX&SUFFOLK WATER living water

Essex Water a YTL company

mouchel building great relationships

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Research aims

Using sensor technology, refine UK evidence base on shower behaviour and water use

To develop and test a scalable behavioural intervention to reduce water and energy use in the shower

Explore some of the determinants of shower duration and water use

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Measuring showering behaviour

Shower monitor

Multiple sensors *(rumble, acoustic, temperature, real time clock)*

Data processing algorithms to derive time and duration of showers

Flow rate measured separately

Shower diary

Participants fill out immediately after taking shower: initials, date and time of day

Crucial for determining ***who*** was using shower

Shower 1: Date _____ Time _____ Initials _____

Products used in the shower
(number by order used in shower, starting with 1)

__ Shampoo
__ Conditioner
__ Face wash
__ Body wash/shower gel cream/shaver
__ Bar soap
__Skin exfoliator
__Skin moisturizer
__Toothpaste
__Shaving
__Other

On a scale of 1-10, how enjoyable was the shower?
Not enjoyable 1 2 3 4 5 6 7 8 9 10 Very enjoyable

Questionnaires

Demographic and environmental attitudes

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Intervention

Water efficient showerhead

Flow rate 7.6 l/min

Feedback

LED light provides feedback about shower duration: blue to amber: 2 mins/amber to red 5 mins

Giving feedback found to be an effective behaviour change technique

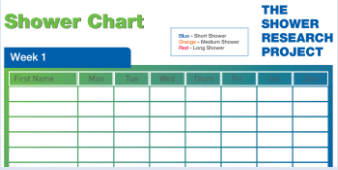
Commitment

Written pledge linked to specific goal.

Social influence

Behaviour is influenced by what other people do and think.

Family members shared their efforts to reduce shower time using bathroom chart.



With thanks to NEOPERL® flow, stop and go®

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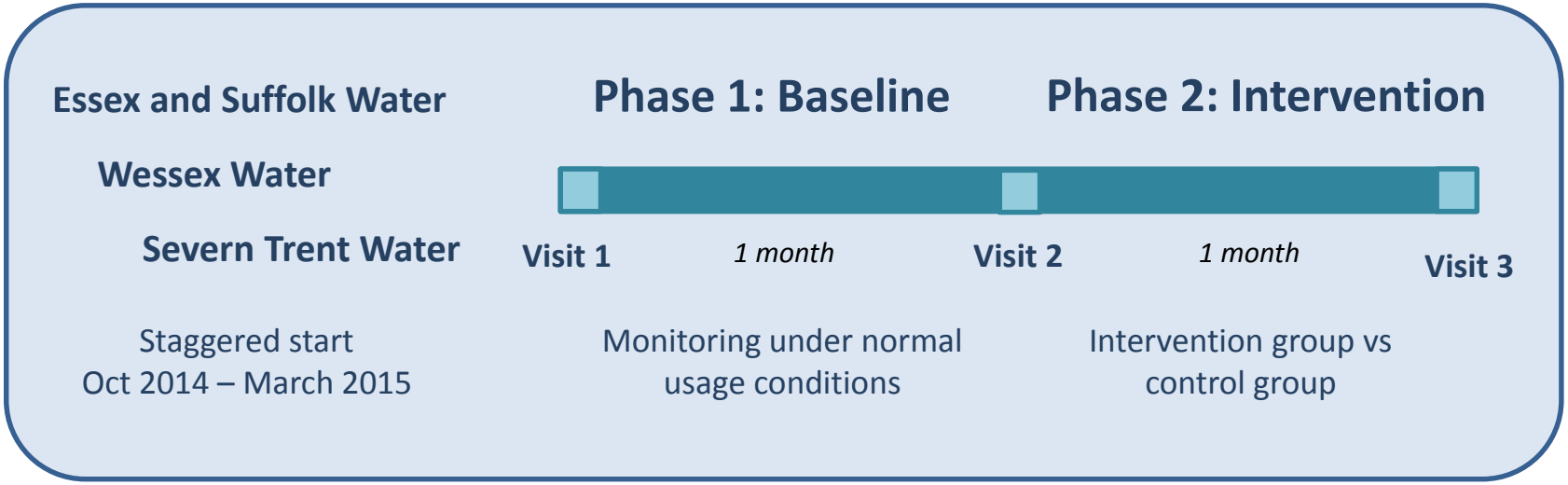
Study design



Intervention phase

Households allocated to either 'Intervention', 'Control', or 'Excluded' groups

'Excluded': electric showers and showers with flow rate > 12l/min *(unsuitable for installing low flow showerhead)*

Households then randomly assigned to either the 'Control' group or the 'Intervention' group

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Participants

Participating households

Representative sample across 5 main ACORN categories
Draw from 3 water company areas
Metered and unmetered properties

ACORN groups

1. Affluent achievers
2. Rising prosperity
3. Comfortable communities
4. Financially stretched
5. Urban adversity

Recruitment

Customer base participating water companies
16,600 invitation letters sent
339 households participated, 647 people in total

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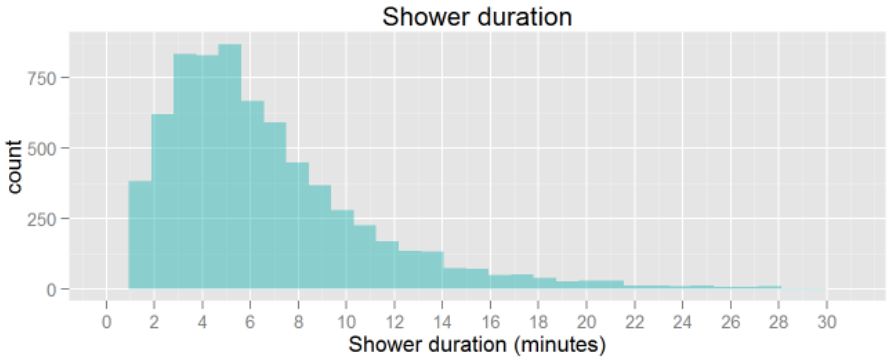
How long do people shower for?

Shower duration

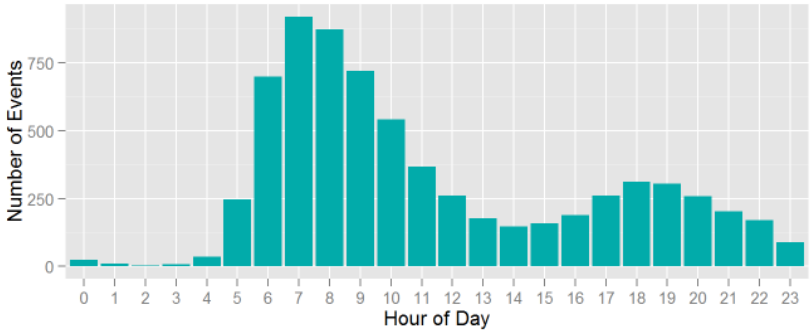


Average shower length = **6 min 37 s**
Median = 5 min 35 s

Frequency

Average frequency = **.4**
showers per person per day

Time of day



6977 events across 295 showers for 276 households

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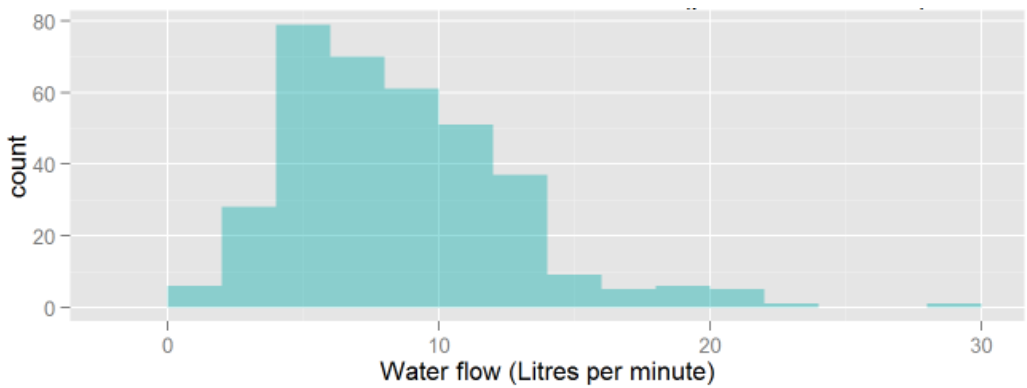
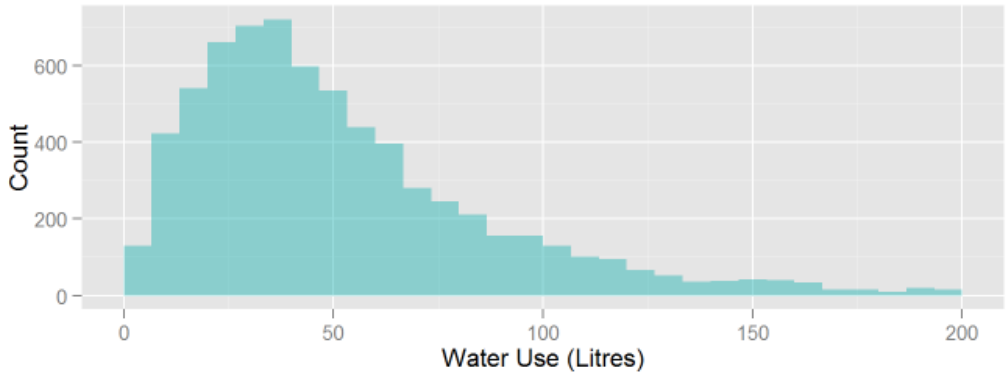
How much water is used?

Flow rate



Average flow rate = **8.51 l/min**
Median = 8l/min

Water use (flow rate x duration



Average water use = **53.65 l**
Median = 43.2 l

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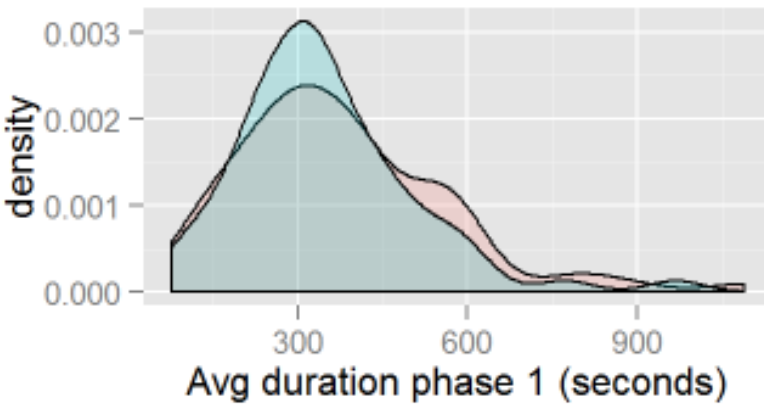
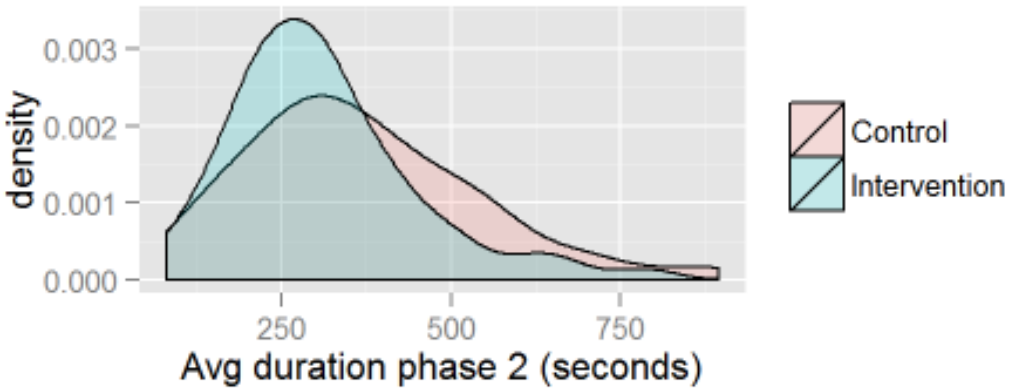
Shorter showers after intervention

Average shower duration

	Phase 1	Phase 2
Control	6 min 42 s	6 min 25 s
Intervention	6 min 20 s	5 min 9 s

Significant reduction in duration in intervention compared to control





Control group: 4689 showering events, 145 users, 73 showers
Intervention group: 3159 showering events, 102 users, 65 showers

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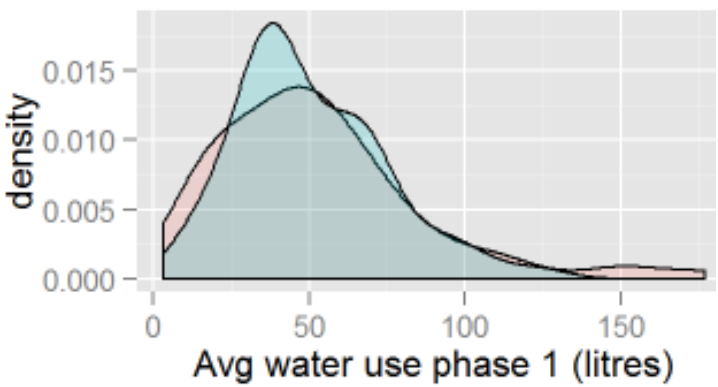
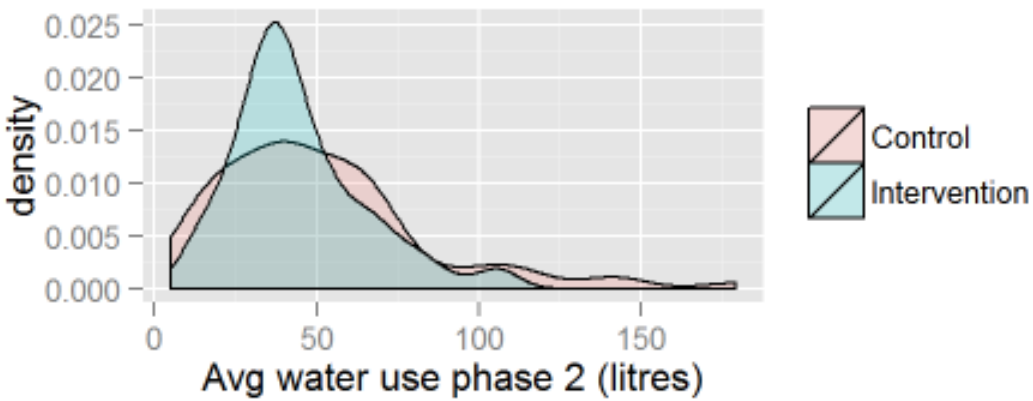
Reduced water use

Average water use (l)

	Phase 1	Phase 2
Control	56.9	53
Intervention	55.1	45.1

Significant reduction in water use in intervention compared to control





Reduction mainly due to shorter showers not so much reduced flow rate

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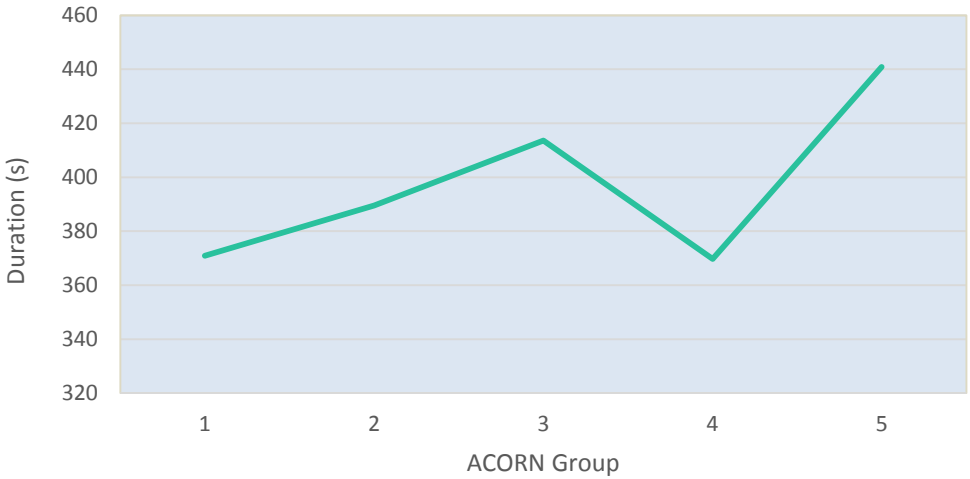
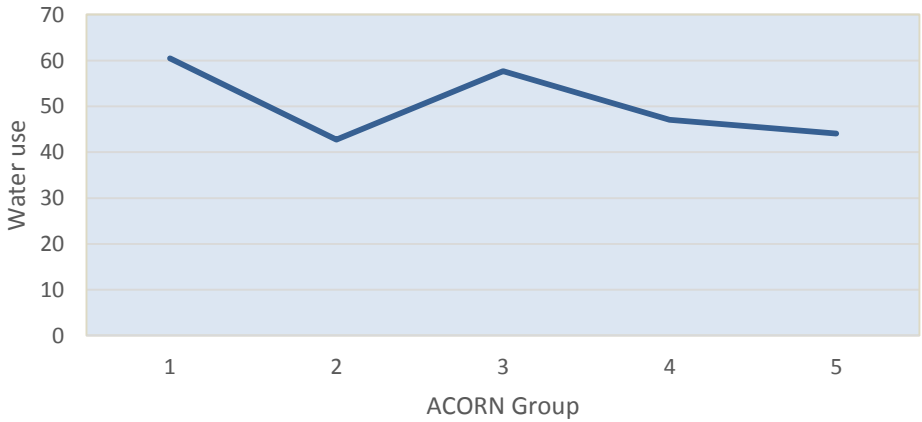
Shower behaviour by ACORN group

Shower duration



Water use



ACORN group
1. Affluent achievers
2. Rising prosperity
3. Comfortable communities
4. Financially stretched
5. Urban adversity

Acorn	Flow rate
1	10.3
2	7.2
3	8.5
4	8.1
5	6.3

Acorn 1 most pumped showers
Acorn 5 most electric

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What households take shorter showers?

Shorter showers and lower water use in metered houses

	Duration	Water use
Unmetered	435	61.3
Metered	371	48.2

Relationship between water metering and specific water-related behaviour

Electric showers are longer but less water is used than for non-electric

	Duration	Water use
Electric	7 min 24 s	40.8 l
Non-electric	6 min 14 s	49.2 l

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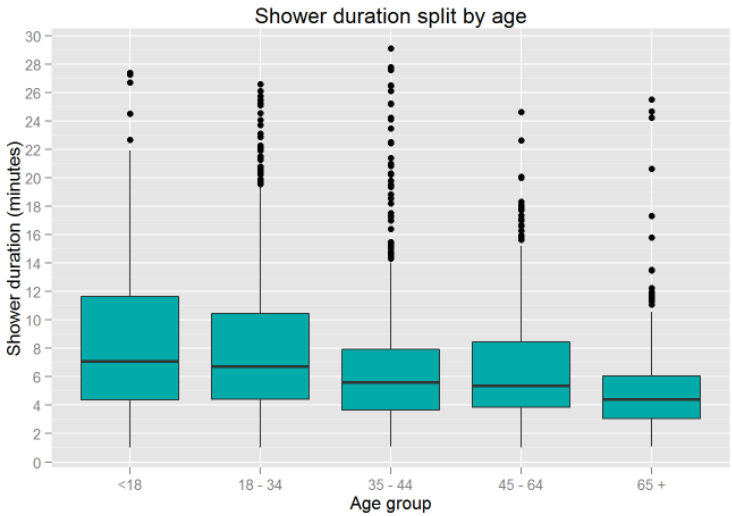
Who takes shorter showers?

Age



Gender

Men: 6 min 53 s (n=190)

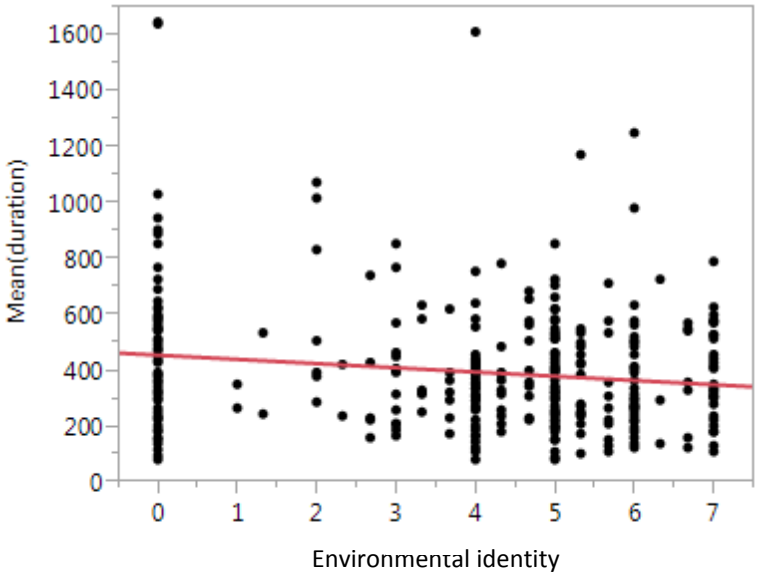
Women: 6 min 38 s women (n=237)

Diary matches for 427 participants, 3592 matched events

Environmental identity

Extent to which you see yourself as a type of person who acts environmentally-friendly

With an increase of 1 in environmental identity, duration decreases by 15s and water use by 1.6l.



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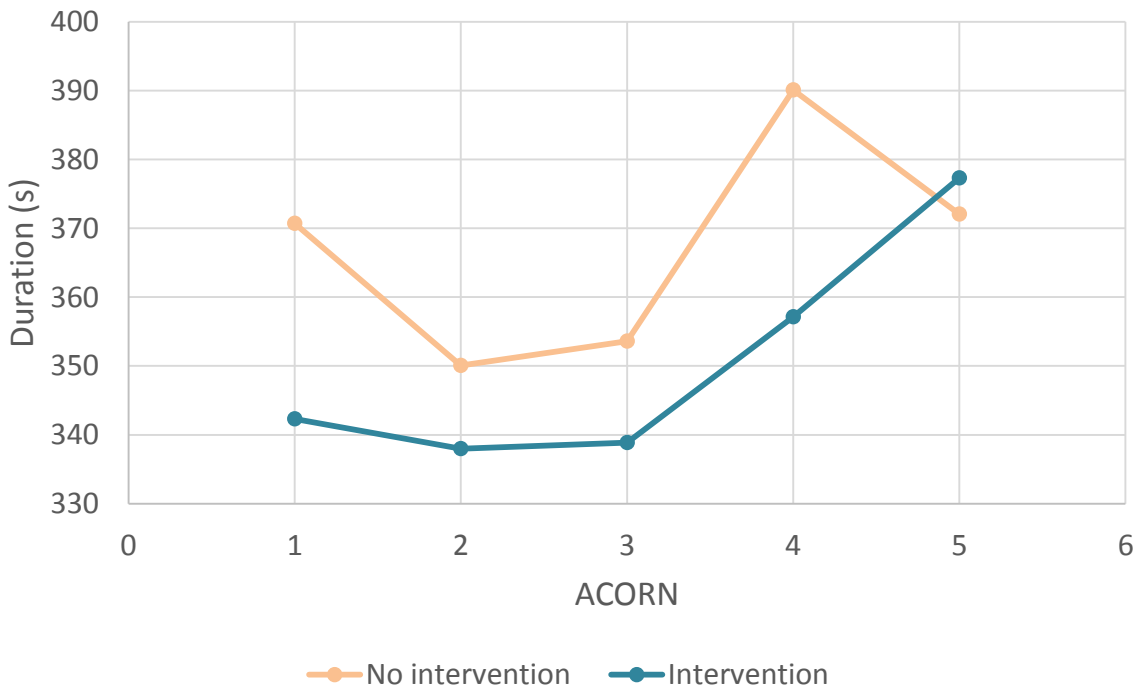
What drives the intervention effect?

Intervention effect is the same across age, gender, environmental identity and ACORN group: no significant interactions



ACORN group
1. Affluent achievers
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3. Comfortable communities
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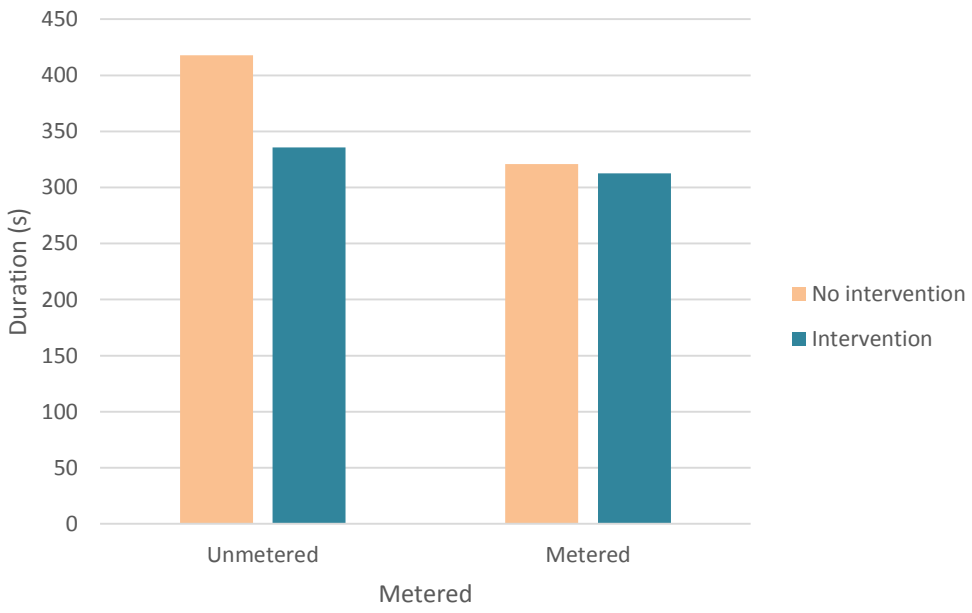
What drives the intervention effect?

Trends but no significant interactions for metered vs unmetered or initial flow rate



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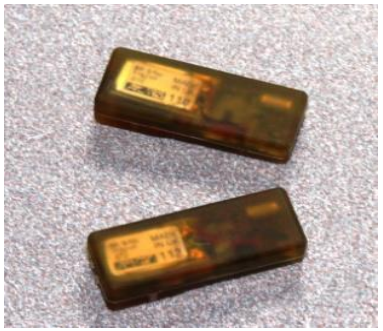
Summary



The use of sensor technology has generated new, reliable data on UK showering behaviour, providing detail on shower duration and water use and insights into some possible drivers of showering behaviour.

An intervention using a combination of feedback, social comparison and commitment resulted in an 18 % reduction in shower duration and water use.

Further research needs to determine what the important elements of the intervention are and what the long term impact is.

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Recommendations

Use of monitoring technology can increase understanding of habitual behaviours and, if feedback is provided, it helps build customer engagement and lead to behaviour change.

Acorn or other demographic variables do not always provide the best lens for understanding habits and targeting water efficiency measures. Behavioural or attitudinal variables can also be useful for segmentation.

Techniques such as commitment and social comparison can help to raise customer awareness, create engagement and instigate change.

Developing ‘behaviourally sensitive’ devices is a promising way forward.

Technology and product design based on behaviour change principles such as feedback and reinforcement can help to steer behaviour.

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