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Domestic energy consumer types: Review of existing segmentation approaches

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Executive summary

Aims and findings

Drawing on a desk-based review, stakeholder interviews and a stakeholder workshop, this report sets out:

- a review of existing approaches to the segmentation of energy consumers in Great Britain in order to understand the extent to which these are useful in the Scottish context;
- a summary of the views expressed and insights gained regarding potential approaches to a Scottish-specific energy consumer segmentation; and
- a description of the approach adopted to modelling and developing a set of Scottish energy 'consumer types', which are described in an accompanying ClimateXChange report – *Domestic Energy Consumer Types: Segmentation profiles*.

This work will assist Scottish Government in fulfilling its commitment, set out in Scotland's first Energy Strategy[1], to '*work hard to protect consumers from excessive or avoidable costs and promote the benefits of smarter domestic energy applications and systems*'.

A range of actions are set out to deliver this priority, including a commitment to develop a consumer Action Plan '*to take a more detailed look into consumer issues across the energy sector*'. This Action Plan is now being developed and this research and the associated segmentation will help to ensure that it is founded on a comprehensive understanding of the different types of energy consumers in Scotland. The work will allow the impacts of policy and interventions to be modelled across the different segments and across different geographies.

We reviewed eleven consumer segmentation approaches developed by Ofgem, Scottish Government, the Financial Conduct Authority, Smart Energy GB, energy suppliers and

[1] https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/

commercial marketing organisations. We found existing segmentation models of limited relevance to a Scotland- and consumer-focused segmentation for two principal reasons:

- Firstly, because of their primary use for marketing and communications, most segmentation models are attitude and behaviour based. In order to effectively model the impacts of energy policy and interventions, Scottish Government would need to incorporate a wider range of physical and socio-economic characteristics.
- Secondly, the geographic distributional elements of existing segmentations, other than the commercial models, are extremely limited so could not be readily utilised to model impacts across different geographies.

Using the review in segmentation

Our review of existing models helped to inform our approach to a proprietary and bespoke consumer segmentation for the Scottish Government. As well as incorporating energy policy levers, we have used input data that is readily available and regularly updated – this helps to make the segmentation adaptable and affordable.

Having collated and developed the underlying input datasets, a statistical segmentation or clustering technique was employed to segregate Scottish households within the data set and assign each case into a different consumer type. This process ensured that key characteristics regarding households, their energy-related behaviour and the dwellings they inhabit were accounted for in the segmentation.

The results of the segmentation, including eight distinct consumer energy archetypes, are included in a separate ClimateXChange report – *Domestic Energy Consumer Types – Proposed Segmentation*.

The intended outcomes from the research are that Scottish Government and others will be able to more accurately and consistently assess the implications of energy policy and interventions on different types of consumers and allow targeted interventions and support to suit different groups. An initial, direct use will be in a linked project in which the consumer types developed in this project will provide a framework for a distributional impact assessment of forthcoming changes in energy policy and the energy market.

This research is independent and does not necessarily reflect Scottish Government policy.

Please also note that, although this research was published in late 2020, it was finalised in 2019.

Contents

Introduction

Background

Scotland's first Energy Strategy, launched in December 2017, is the principal element of the backdrop to this research. Consumer engagement and protection is one of six priorities underpinning a '2050 Vision' in the strategy for 'a flourishing, competitive local and national energy sector, delivering secure, affordable, clean energy for Scotland's households, communities and businesses'.

In pursuing the priority of consumer engagement and protection, Scottish Government 'will work hard to protect consumers from excessive or avoidable costs and promote the benefits of smarter domestic energy applications and systems'. A range of actions are set out to deliver this priority, including a commitment to develop a consumer Action Plan 'to take a more detailed look into consumer issues across the energy sector'. This Action Plan is now being developed and research is needed to ensure that it is founded on a comprehensive understanding of the different types of energy consumers in Scotland.

Project objectives

Specifically, this project seeks to:

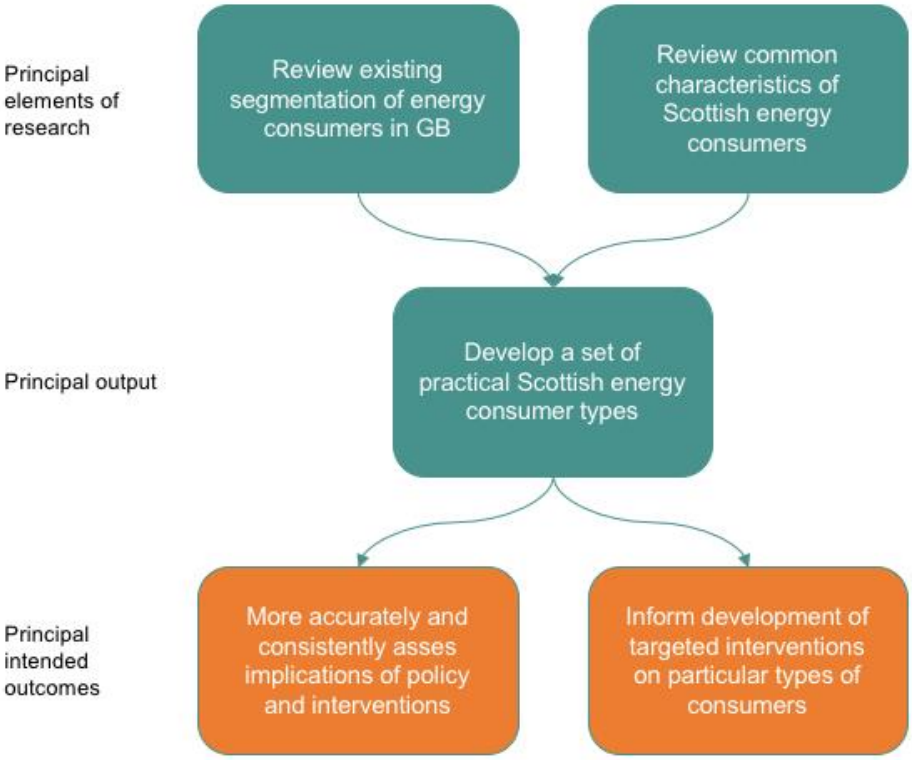
- Review the existing segmentation of energy consumers in Great Britain in order to understand the extent to which these are useful in the Scottish context;
- Better understand the different types of energy consumer in Scotland, what common characteristics groups of consumers may share and what experiences, needs and expectations these groups have in relation to energy; and
- In the light of the findings from 1) and 2), develop a set of practical Scottish 'consumer types'.

These consumer types needed to be genuinely Scottish, i.e. to accurately reflect the unique nature of the Scottish context, taking into account factors such as: levels of rurality and island living; socio-economic factors, including levels of fuel poverty; housing types and their associated implications for energy use; energy sources for home heat and power; levels of engagement in the energy market, including switching of energy provider; and the extent to which consumers produce their own energy.

The intended outcomes from the research are that Scottish Government and others will be able to more accurately and consistently assess the implications of energy policy and interventions on different types of consumers and allow targeted interventions and support to suit different groups. An initial, direct use will be in the linked project exploring changes to the energy landscape in Scotland and the potential impact of these changes on Scotland's consumers. The intention is for the consumer types developed in this project to provide a framework for a distributional impact assessment of forthcoming changes in energy policy and the energy market.

The research is conceptualised in the diagram (Figure 1) below.

Figure 1: Research concept



Method

Desk-top review of existing consumer segmentation

There are a range of consumer segmentation models that have been developed, some of which are specific to energy consumers. The project has involved a systematic review of this segmentation in order to better understand the range of potential approaches and datasets which could be utilised by Scottish Government. A matrix was used to complete the review of each segmentation model. The matrix is included in appendix A. It includes consideration of:

- Model owner and developer;
- Date of original development and most recent iteration;
- Stated frequency of data updates;
- Stated uses for the model;
- Unit of segmentation;
- Summary of structure;
- Characteristics included in the model, data sources for these and availability of geographic data;
- Inclusion of Scotland-specific or Scotland-aligned consumer characteristics; and
- Whether smart meter data is utilised.

Stakeholder interviews

15 phone interviews were undertaken to fill information gaps arising from the desk-top review and to access deeper insights. Interviews were conducted with:

- policy-makers and practitioners to understand how segmentation is useful and how this can be improved with new consumer types;
- industry professionals developing and using existing segmentation, for insight into whether and how segmentation is used commercially, including any updates to and any limitations of the segmentation; and
- those at the consumer-face to capture the nuances of Scottish-specific consumer behaviour.

Representatives from the following organisations were interviewed:

- Scottish Government:
    - Energy Efficient Scotland, Consumer Protection
    - Heat Networks Regulation
    - Low Carbon Economy – Electric Vehicles;
- Warmworks;
- Ofgem;
- Three energy companies;
- One District Network Operator (DNO);

- Financial Conduct Authority;
- Andrew Faulk (independent domestic energy consumer expert);
- Energy Saving Trust;
- Energy Action Scotland;
- Citizens Advice Scotland; and
- Zoe McLeod (Sustainability First, Independent Chair of Consumer Engagement Group for Cadent Gas Ltd and Independent Chair of Customer Challenge Group for South East Water).

Developing distinct consumer types

Findings from the desk review and interviews were fed into the process of segmenting the Scottish population into distinct consumer types. Any relevant segmentation models and associated data sets identified were reviewed for possible inclusion in this study. As part of this review, there were several requirements that needed to be met or considerations that need to be taken into account that fed into the decision making process of selecting a data set, or data sets, upon which the segmentation model will be based, as well as on the specific segmentation model developed.

For instance, there was a need to identify Scotland-specific characteristics and to ensure that a large enough data set was used that could guarantee statistically reliable segments (i.e. segments that were based on a robust number of cases in the data). There was also a desire for the Scottish Government to be able to utilise data in the segmentation that can be regularly and routinely updated without significant ongoing cost or data access issues.

Having developed the dataset, a statistical segmentation or clustering technique was employed to segregate Scottish households within the data set and assign each case into a different consumer type. This process ensured that key characteristics regarding households, their energy-related behaviour and the dwellings they inhabit were accounted for in the segmentation.

The results of the segmentation, including eight distinct consumer energy archetypes, are included in a separate ClimateXChange report – *Domestic Energy Consumer Types – Proposed Segmentation*.

Stakeholder workshop

Prior to producing the final report, we held a workshop with a range of stakeholders from within Scottish Government and ClimateXChange, as well as representatives from Strathclyde and Edinburgh Universities, Imperial College, EST, CAS, Citizens Advice, Energy Action Scotland and Ofgem. The objectives of the workshop were to: a) present the draft findings and allow some discussion; and b) consider how the consumer types developed should be used within the follow-on project, *Changes to the Energy Landscape*. The feedback from the workshop is reflected in this report and in the proposed segmentation set out in the separate report.

This report

This report presents the findings from the desk review, interviews and workshop. A summary of the findings from the review of existing segmentation models is presented in chapter two, with the detailed review included as Appendix B. Chapter three sets out the implications for

policy makers in terms of the development of Scottish-specific energy consumer types. Chapter four draws conclusions from these findings and describes the approach which was adopted for developing the consumer types which are set out in the accompanying report.

This report includes comments and quotes made by stakeholders during the course of the interviews. Some stakeholders requested that their interview responses be reported in a non-attributable fashion, so all of the interview feedback has been anonymised.

Findings

Existing segmentation models: Overview

A summary of our review of existing segmentation models is provided in the table below. The detailed review is included as Appendix B. In addition to those included in the table, we are aware that the Energy Systems Catapult have developed a segmentation model, but we have not been able to secure information on this.

Table 0.1: Summary of review of existing segmentation models

Segmentation model	Summary of review findings
Ofgem household archetypes	• Energy-specific segmentation with twelve archetypes in two categories – non-mains gas households and mains gas households • Incorporates both physical & socio-economic characteristics, primarily relying on Living Costs & Food Survey • Associated model (DIMPSA) allows assessment of distributional impacts • No longer in use, as Ofgem have moved to an attitudinal based model due to their primary interest in engagement in the energy market
Ofgem index of consumer engagement	• Includes four segments based on awareness and level of engagement in the energy market • Drawn from annual household survey • No geographic data • No longer in use as replaced by a more sophisticated segmentation model
Ofgem consumer segmentation 2017	• Incorporates six segments with differing attitudes and motivations related to the energy market, and different levels of engagement in the market • Segmentation is attitude-based but the underlying survey incorporates physical and socio-economic data, including grid connections, method of energy payment, energy spend, presence of smart meter, tenure, income, employment status, age, gender, marital status etc • Based on annual consumer survey commissioned by Ofgem • Survey data is publicly available
Scottish Government Climate Change Behaviours Segmentation	• Segmentation based on broad climate-related attitudes & behaviours • Nine segments, with each one scored against ten climate-related behaviours • Local authority-level data available. • Based on data from 2008-2011. No updates published since 2012

Smart Energy GB	• Contains seven segments with different motivations, values, concerns and drivers seen to be significant in engaging with regard to the rollout of smart meters • Combines survey data, bespoke ACORN segmentation, Census data and TGI attitude segments • Includes basic dwelling type, rural/urban classification • National level data
Energy suppliers	• Segmentations typically developed in conjunction with commercial market research company and commercial data supplier • Segmentations based on survey data, commercial consumer profiling data and energy suppliers' own customer data • One supplier estimated that they were able to assign segments to 70-80% of their customers • Utilised primarily for communications and marketing, but also for identifying and responding appropriately to vulnerable customers and to inform product design • Data and methodological details are commercially sensitive and unavailable
Financial Conduct Authority (FCA)	• Initially developed the Consumer Spotlight segmentation model in 2011/12 • Included ten UK consumer segments based on individual situations, financial characteristics and behaviour • Particular focus on the capabilities and potential vulnerabilities of different groups • Based on large scale survey supplemented with commercial data. No longer in use, partly due to the costs of data and of updating the model
Output Area Classification	• Very broad Census-based segmentation • Multi-layered - 8 supergroups, 15 groups, 24 subgroups. Two of groups are Scotland-specific – 'Scottish countryside' and 'Scottish industrial legacy' • Data Zones level data available for Scotland • Incorporates demographic structure, household composition, housing, socio-economic & employment data
ACORN	• Commercial consumer segmentation model • Multi-layered – 6 categories, 18 groups and 62 types

	• Built from a combination of government and consumer research data • Modelled to address level
MOSAIC Scotland	• Commercial consumer segmentation model with a Scotland-specific version • Multi-layered – 14 groups and 57 types • Built from a combination of government and consumer research data • Modelled to household level
Cameo	• Commercial consumer segmentation model • Multi-layered – effectively 7 different segmentation models (socio-economic/demographic, income, financial, unemployment, property, welfare, workplace), each containing different groups • Built from a combination of government and consumer research data

Implications for policy makers: Developing Scottish-specific energy consumer types

Approach to developing a segmentation model

Those with experience of developing the customer segmentation approaches described in the previous chapter provided the following suggestions regarding a Scottish-specific energy consumer segmentation:

- It is important to be very clear on the objectives of the model before starting to design it and to agree who will use it and how.
- The model should be for a specific purpose and there may be a limit to the breadth of its uses. One interviewee suggested:

  "One shoe doesn't fit all. It won't work for multiple purposes or for considering the impacts of multiple policies." (Interviewee 16)

- The model should have senior level buy-in to ensure that its use and potential benefits are maximised.
- Segments should be determined by the data rather than starting with a fixed idea of the number of segments. Having a small number of segments may be useful in terms of encouraging use, but a multi-layered approach might be of more practical use (e.g. with each high-level segment broken down into two or three sub-categories). An alternative approach might be to have high-level segments, with additional 'lenses' which can be applied to each (e.g. a vulnerability lens).
- It is important to ensure that sample sizes are sufficient for each of the segments to ensure that the model is robust.

In terms of specific potential uses, it was felt that it would be useful to have a set of customer types to inform the Energy Efficiency Scotland programme. This might include vulnerable groups, those in fuel poverty and the self-fund market. These customer types could be useful in informing the development of pathways for different customers and in identifying which customer needs which pathway.

> *"It would be helpful to be able to say to customers who contact us that we have identified a set of customer types and then to ask customers to self-identify (which type they are) so that we can let them know what the options for them are and the associated customer journey. For example, we could offer more hand-holding for a vulnerable customers."* (Interviewee 1).

The challenges of developing a segmentation that can accommodate all of the nuances relating to Scottish consumers and fuel poor consumers were recognised.

> *"Any segmentation will have to make allowances for a multiplicity of things that drive fuel poor circumstances."* (Interviewee 2)

This is explored further in section 3.2.

In terms of data that could inform the segmentation, the following suggestions were made:

- Scottish Government is about to commission work on EV/non EV users – attitudes and behaviours, socio-economic background, rural/urban. However, this won't be available for several months.

- Energy Saving Trust Scotland uses Mosaic Scotland household 'types' which are appended to their CRM system. Their Home Analytics database also provides more information in terms of targeting a home than the Mosaic data. It may be useful to use Home Analytics in combination with other datasets.
- Strathclyde University is undertaking to look at the wider economic distributional effects of energy policy change, e.g. any boost to the economy prompted by policy change and who benefits from that?
- CAS hold data on attitudes to switching.
- Imperial College will soon be publishing freely available data on trust, comprising five archetypes.
- It may be possible for Scottish Government to access data on the distribution of smart meter installations.
- Scottish Government may be able to access data on the private rented sector for future use.
- Highland Fuel Poverty taskforce may have useful data.
- Climate change attitudes could be used as a proxy for those more likely to take action.
- LHEES could be a useful source of data in future

Capturing Scottish-specific characteristics

Stakeholders expressed a range of views about key characteristics which they felt impact on energy need and use and their engagement in the energy market, and which would therefore ideally be included in the segmentation. Rurality, fuel type, meter type, payment method, building type, income, socio-economic factors, engagement in the energy market, lifestyle, individual attitudes and Scottish-specific characteristics were all felt be important.

Stakeholder views on these characteristics are summarised below. It should be noted that the views expressed have not been assessed for their accuracy or robustness.

Income and socio-economic factors

Income was considered to be the most important characteristic by some. Socio-economic factors were also felt to be important, particularly those that may affect the amount of heat a householder needs such as age, household composition and medical condition, including mental health. Others suggested that gender and ethnicity may be important attributes for the archetypes to incorporate.

It was noted that Scottish Government is currently looking at changing the definition of fuel poverty and this may need to be reflected in the segmentation approach.

Rurality

Rurality was considered to be key, and one that is considered important by Scottish politicians, and it was considered important to distinguish between mainland rural and island populations. Key issues relating to rurality include:

- The risk to rural communities if there is significant disruption to the existing infrastructure – it could leave some communities particularly exposed.

- Customers in very rural locations typically pay higher prices for energy because of network charges. For example, it was suggested that in Orkney, electricity costs are higher than elsewhere in Scotland. It was noted that this seems somewhat unfair given that there is a lot of renewable energy development proposed for some of these communities.

  "Most people don't know anything about network charging – but these people are paying a lot more for their network charges than other households." (Interviewee 10)

- Rural households may be disadvantaged in terms of access to electric vehicle charge-points. However, it was noted that all such charge-points are currently under Scottish Government ownership and it is planned they will stay this way until 2022 – partly to ensure the development of sufficient rural charge-points.

- In terms of access to information and advice, rural households are more likely to lack broadband (limiting their access to online advice) and may live many miles away from a town (where there could potentially access face-to-face advice).

  "It could involve two days for one of our advisors to do one home visit in some areas. It's a monumental task." (Interviewee 6)

Others felt that rurality wasn't the critical factor and that the key issues are heating fuel and the type of property which, though linked to rurality (i.e. rural households are more likely to have solid walls and electric heating) are not entirely split by rural/urban households; for example there are solid walled tenements in cities and many electrically-heated homes in tower blocks.

> "*What makes a rural customer on a particular heating type different from a city customer with the same type? I'm sceptical that it's rurality per se."* (Interviewee 11)

Building type

Type of building was another characteristic that was felt to be important and by some this was felt to be more important than rurality. In particular:

- Older buildings typically need more expensive measures to make them energy efficient. For example, it was reported that there are a large number of solid walled properties in Scotland, of which only a small minority are insulated – and that this figure is increasing at a slow pace (Interviewee 5).

  "Scotland's housing stock is different to the rest of GB; we've a high proportion of solid stone, uninsulated and often uninsulatable properties. The fuel poor are very likely to live in them" (Interviewee 6).

- Electric vehicle ownership is more challenging if you are in a flat or in a home without off-street parking.

- One interviewee felt that there is an assumption that tenements are usually very low efficiency, whereas they reported that an old tenement property with gas heating can achieve a higher EPC rating than modern, electrically heated flats.

Although recognised as being an important characteristic, it was also noted that building type is a complex issue. For example, it was reported that Scottish Government has identified more than 200 housing archetypes for Scotland.

Engagement with the energy market

Engagement by households with the energy market was also felt to be an important characteristic, both in terms of impact on vulnerable customers and particular geographic variations.

It was felt that the competitive market doesn't really work for vulnerable customers.

> *"Invariably the losers are those who can't engage – and these are likely to be vulnerable customers."* (Interviewee 2).

Although some questioned this and no statistical evidence was found to support it, some stakeholders felt that customer loyalty was stronger in Scotland than elsewhere in Great Britain, especially for SSE customers (previously known as Scottish Hydro), and particularly in the Highlands and Islands. This is partly linked to the presence of electric heating and DTS (dynamically tele-switched) meters, where it was said that the incumbency rate (i.e. customers who have never switched supplier) is very high. Customers with more complex metering arrangements have more limited tariff options, which may indicate that the issue is as much to do with the characteristics of the property as it is to do with customer loyalty per se.

> *"There are specialist teams at SSE dealing with electric heating; they are the only ones with really good knowledge on this. So households may be advised to stick with them as they are the only ones who understand that customer's metering system. It then appears that they are not engaged in the energy market (as they have never switched) but that's not necessarily the case."* (Interviewee 10)

One interviewee said that people wrongly think that socioeconomic factors are closely related to the level of engagement with the energy market but that this is not the case. Many lower income households (particularly those on prepayment meters) were said to be very engaged with their energy supplier even though they may not have switched.

> *"Sometimes the people most acutely in control of their energy use are the poorest people."* (Interviewee 10)

With potential segmentation in mind, this indicates that socio-economic factors may not provide good proxies for market engagement.

It was suggested that another group that may struggle to engage with the energy market are those that have had SMETS1 meters installed and who are likely to lose their smart meter functionality if they switch supplier.

Digital exclusion was identified as a further key factor in determining engagement with the energy market.

Heating fuel type

Fuel type (both regulated: grid gas or electric - or unregulated: oil, LPG or solid fuel) was considered to be an important characteristic. It was recognised that this is less clear cut than rurality.

> *"You can have gas central heating in a remote community and someone electrically heating in the middle of a city."* (Interviewee 2)

It was considered by some to be more critical in terms of customer experience than rurality'.

> *"Using heating oil will be more of a shared experience than geography".* (Interviewee 5)

In particular:

- Many off-gas houses are large, but the occupants may be low income and therefore in fuel poverty. It is more difficult to find an affordable solution for off gas properties; heat-pumps can offer a good solution, but they can be expensive to run where the cost of electricity is high and are also harder to understand than alternative systems.
- As already noted, those on electric heating are part of the regulated market but their choice may be very limited, particularly for those on certain payment or meter types such as prepayment or DTS (of which there are a considerable number in Scotland). Not all of these are in rural locations – there are many electrically heated flats in cities, particularly tower blocks. However, some of those on DTS meters may currently be on a very cheap deal and therefore it was suggested that lack of choice isn't necessarily a bad thing for them.
- Those on electric heating will be more impacted by a power-cut.
- It was suggested that LPG and oil can act as natural monopolies with very limited competition. There is a significant LPG gas market in the north of Scotland and it was reported that it can be hard to get these customers to switch; they may have had LPG for years and they are more likely to be locked into a contract than those on heating oil. Calor Gas was said to be the biggest supplier in rural Scotland and they have a specially adapted nozzle which complicates switching. Oil is another unregulated fuel and the price of this can vary significantly over time.
- There are five stand-alone gas networks in Scotland where it's possible that consumers are locked in. It was reported that Scottish Government are keen to expand these networks.
- Those on district heating networks may also be tied in to one provider.

Payment method and meter type

Payment and meter type were also highlighted as being significant because of their impact on how much households pay for their energy and also how engaged households are in the energy market. For example:

- Those paying on receipt of bill generally pay the most per unit of energy.
- Those on prepay meters will use energy differently to those on credit meters. They can be the most engaged with the energy market because they are getting direct feedback on their consumption from their energy supplier.
- There is a high proportion of Scottish households on DTS meters or other Time of Use tariffs (e.g. Economy 10) and they have limits (real or perceived) in terms of switching options. There is a higher proportion of such households in rural areas but there are also urban households with these meters. It was also suggested that the DTS signal is due to be switched off in 2020.
- Smart meter access, and related Time-of-Use tariffs, was identified as another key issue; with the suggestion that parts of Scotland won't be able to have a smart meter.

Other issues:

The following factors were also suggested to be important factors in seeking to segment Scottish energy consumers:

- **Households generating their own energy**; it was noted that this comprises a mix of more affluent (in the case of owner occupiers who have chosen to install renewable technologies) and also social housing tenants who have not made an active choice to have these technologies. These two groups will be very different in terms of their attitudes towards renewables.
- **Engagement with community renewables**; it was suggested that this is more likely to be prevalent in affluent communities.
- **Weather and climate** exposure – this is linked to rurality but is particularly an issue in the north west and the islands.
- **Attitudes** were considered to be important, particularly willingness to try new things and also willingness to do a whole house approach.

  "Where are customers willing to look at renewables; that's an important one. How open are they to new technologies?" (Interviewee 1)

  "Willingness to do a whole house approach and get up to an EPC B or C in one fell swoop is particularly important in rural areas where it is difficult/expensive to get contractors to visit." (Interviewee 1)
- **Tenure** is important in terms of what a householder can change in their home.
- **Connectivity and internet use** was another factor that was felt to be growing in significance. *"In a future world, I suspect that connectivity and internet use will be key factors, more so than engagement with the energy market."* (Interviewee 11)
- **Lifestyle** is another important factor that will affect how much energy a household needs to use and what time of day (e.g. peak/off peak) they need to use it.
- **Dependence on public transport** (and associated car ownership) was felt to be another important factor and one that would link to location and socio-economic group. (It was suggested that it might be possible to extract this from the Scottish House Condition Survey.)
- **Electrical vehicle uptake** was considered important because geographically remote communities may be held back by lack of infrastructure.

Suggested 'types'

Some stakeholders consulted put forward suggestions about particularly Scottish energy customer types that they would like to see reflected in the segmentation. This tended to focus on those who are likely to be most vulnerable to forecast changes in domestic energy and the energy market going forward. Many of these suggestions were quite similar but with variations e.g. in terms of whether property size or rurality should be included. They included:

- Rural households with electric heating on a restricted meter who are likely to paying very high energy costs.

  "A rural customer with electric heating on a restricted meter is really disadvantaged." (Interviewee 7)
- Those with electric heating living in rented accommodation.

  "Look at who's excluded, who's paying the most, who has the least choice. It will be those with electric heating generally in rented accommodation." (Interviewee 5)

- An older person, in an older home, in a rural part of Scotland; harder to reach.

  "Take Orkney as an example. Low incomes, high heating demand, high heating costs, ageing population. Orkney is an extreme example of a typical off gas rural household in Scotland. Consuming twice the amount of electricity as an average household. The irony is that the island is exporting power – so should they be paying such a high distribution charge?" (Interviewee 9)

- Lower income households in the north of Scotland living in big properties that are expensive to heat.
- People who may struggle to adapt to changes for a host of reasons such as their property type, their attitudes, their level of digital engagement, including literacy and accessibility.

Potential data sources for segmentation and modelling

In order to ensure the robustness and reliability of the outputs of the project, the data sources used in the modelling needed to fulfil several criteria. They needed to:

- be from surveys recently conducted or have been recently published so as to represent the most up-to-date representation of households and dwellings;
- either have National Statistics status or be provided by reliable sources or organisations;
- represent cost-effective solutions that can be updated by the Scottish government regularly and without incurring significant ongoing costs; and
- include as many of the key Scottish-specific characteristics identified above as being important in an energy-behaviour based segmentation, given the limitations of the data. The majority of the factors identified in section 3.2 were able to be included to some extent. For others, there were proxies or they were related to other characteristics. For example, we didn't specifically factor in 'exposure to weather and climate', but we did take account of rurality and geographical location. For 'Connectivity and internet use' there was insufficient data to use this directly, but other socio-demographic information correlates well with this (e.g. age, income, employment status, rurality). The one obvious omission is whether consumers had a smart meter or not, as this was simply missing/not collected by the surveys utilised.

Taking these factors into consideration, a number of options were explored as part of a scoping exercise to develop a final segmentation methodology. These are described below, including a discussion on some of the advantages and disadvantages of each data source.

Living Costs and Food Survey

The Living Costs and Food (LCF) survey[2] represents all households across Great Britain and is released annually. It was the survey upon which the DIMPSA model and dataset was based on for the creation of energy consumer archetypes for Ofgem (2012-2014) and modelling distributional impacts of energy policies (see Appendix B).

The LCF survey data contains extensive socio-demographic data, including many of the characteristics outlined above. These include socio-economic factors such as household income, household expenditure, household composition (number of adults and children and householder age), employment status, and welfare benefits received. Other fields in the data set include tenure, property type and size (number of bedrooms), and housing costs (rents and mortgages). The main heating fuel can be determined by collating information from several fields and the survey data includes the method of payments used to pay for electricity and gas. It is also possible to derive annual household energy consumption (relating to all household fuels) from actual stated expenditure on household fuels and the method of payment used. Scottish households can be filtered from the survey to create a Scotland-only version of the LCF. For each annual survey, this would be based on approximately 400 cases from the survey. However, a series of annual surveys (e.g. 2013, 2014, 2015/6 and 2016/17) can be combined to create a survey of approximately 1,600 records to be used in the segmentation which would increase statistical reliability when conducting a segmentation process.

[2] Department for Environment, Food and Rural Affairs, Office for National Statistics. (2018). *Living Costs and Food Survey, 2016-2017* [data collection] UK Data Service. SN: 8351, http://doi.org/10.5255/UKDA-SN-8351-1

A disadvantage of using the LCF is the limited geographical information contained in the end user license (EUL) version of the survey, which includes only a rural/urban identifier. It is possible to access additional variables as a part of a special access licence. For example, there are two other variables in the data which include the information shown in Table 0.1. Another disadvantage is that LCF survey does not capture many physical characteristics of households' home beyond property type, heating fuel and method of paying for electricity and gas. For example, there is no information on wall construction or existing levels of insulation on walls, roofs or floors. Such information would allow a more thorough segmentation and a more accurate assessment of impacts of polices, particularly those involving the installation of energy efficiency measures.

The benefit of this approach is that it could include household energy consumption (derived) and thus include an element of energy behaviour. In particular, this is likely to enable a more accurate assessment of the impacts of policies on energy bills than other approaches such as using modelled energy bills (e.g. from SAP calculations or other energy models that exist in other data sets).

In summary, the LCF survey can provide data which would allow specific household characteristics, energy behaviour and some dwelling characteristics to be considered in the segmentation, but Scottish households are represented by a relatively small number of cases and geographical information and physical characteristics of dwellings is limited.

Table 0.1: Additional geographical and rurality variables available in a special access licence of the LCF.

Region	**Scottish Executive Urban Rural Classification**
Highland, Grampian, Tayside Fife Central, Lothian Glasgow Strathclyde ex Glasgow	Large Urban Area Other Urban Area Accessible Small Town Remote Small Town Very Remote Small Town Accessible Rural Remote Rural Very Remote Rural

Scottish Household Survey (SHS)

An alternative option to the LCF is the Scottish Household Survey (SHS)[3] owned by the Scottish Government with research conducted by Ipsos Mori. It contains almost 2,500 data points from interviews conducted with approximately 10,000 households across Scotland. The end user licence (EUL) data sets, available for download from the UK Data Service, include information on property type, household income, long-term health condition/illness, whether people in households are in receipt of certain means tested benefits, indicators of material deprivation and Scottish Index of Multiple Deprivation quintile. It also contains geographical indicators including local authority and rurality. Similarly to the LCF, it identifies the methods of payment used by households for electricity and gas and amounts spent on different fuels, thus allowing for an estimation of household energy consumption and whether energy efficiency measures (including solar PV) have been installed on properties (and how these

[3] Ipsos MORI, Scottish Government. (2018). *Scottish Household Survey, 2016*. [data collection]. UK Data Service. SN: 8333, http://doi.org/10.5255/UKDA-SN-8333-1

were funded). It also includes some attitudes towards engaging in certain activities or purchasing different items, including electric vehicles, and whether and how often households use services such as the internet and public transport. However, for many of these latter fields only a selection of households have been asked these questions in each survey year, and sometimes as few as 10% of respondents. For the remainder of household these fields have missing values.

The main benefits this survey has over the LCF is that if focuses solely on Scottish households, is based on a larger number of (Scottish) household cases, includes a wider range of relevant information and allows geographical identification of where households live (local authority)[4].

The disadvantages are that several fields have a significant number of missing data, and (similarly to the LCF) it does not contain significant information on dwelling characteristics. However, it has recently integrated another Scottish Government survey, the Scottish House Condition Survey (SHCS), which does contain detailed information on the dwellings of some of the households included in the SHS (see below).

Scottish Housing Condition Survey (SHCS)

The Scottish Housing Condition Survey (SHCS)[5] is another Scottish Government survey and is part of a continuous ongoing physical survey of housing in Scotland; it is the only national survey to look at the physical condition of Scotland's dwellings. It is now an integrated component of the Scottish Household Survey (see above). It represents all dwellings in Scotland and includes detailed information on property type, property age, heating systems and ages, fuel types, methods of paying for gas and electricity, modelled annual fuel consumption, fuel poverty status, energy efficiency details and the condition of dwellings (e.g. the presence of mould or damp).

The SHCS is a physical survey conducted on around one third of the homes of households included in the SHS survey (approximately 3,200 -3,400 dwellings, annually). It is possible to match each SHCS record to SHS data, i.e. link detailed information on dwellings with detailed characteristics of the households who inhabit them. However, while the survey is designed and structured so that the households included in the SHCS survey are representative of all households in Scotland, some detail from the SHS can be excluded when only using the matched SHCS – SHS records (as not all SHS fields are collected for all SHS survey respondents – see above).

The most recent SHCS datasets are not publicly available but a special access version of the most recent data can be provided by the Scottish Government for research purposes, under licence. The data can include a unique identifier field that allows SHCS data to be joined to the SHS.

Ofgem Consumer Segmentation

Some of the surveys described above include some data on energy behaviour, or derivable data on energy consumption. However, a further study by Ofgem, the Ofgem Consumer Segmentation 2017, followed a common pattern of several recent segmentation approaches

[4] Note: staff at the Scottish Government responsible for the SHS have specified that a minimum of three years' of survey data would need to be combined into one data set in order to have sufficient records to reliably report statistics at local authority level.
[5] https://www.gov.scot/Topics/Statistics/SHCS

reviewed in the desktop review, and grouped consumers by their attitudes and behaviour towards energy and the energy market.

Interaction with the energy market is likely to be useful information to include when segmenting households into certain energy-related consumer groups. It may also prove useful in the research associated with this study, which will consider the impacts of policies on households. For example, several programmes require pro-active engagement in order access and benefit from policies. Those households who have been identified as the least engaged in the energy market and energy tariff switching are also likely to be some of the least likely to proactive engage in certain energy policies, including bill discounts, additional income and those installing energy efficiency measures.

The Ofgem Consumer Segmentation was conducted in 2017 on a representative sample of approximately 4,000 households. The dataset is available on request from Ofgem. Fields included in the data set cover whether households have a mains gas grid connection, what method of payments are used for gas and electricity, yearly spend on home energy, presence of a smart meter, presence of illness, impairment or disability, income, age, gender, ethnicity, marital status, number of children, tenure and employment status. It also segments households into the following different energy market behaviour types based on their interaction with the energy market: Happy Shoppers, Savvy Searchers, Market Sceptics, Hassle Haters, Anxious Avoiders, and Contented Conformers.

This survey is GB-wide and does not specifically identify Scottish households. It is also not possible to directly link the data with any of the previously mentioned surveys. However, it may be possible to develop a predictive model of energy market interaction using the Ofgem survey. The predictive model could be developed using common or aligned fields in the Ofgem and another survey (e.g. SHS) If statistically reliable, this model could then trained on this external survey (e.g. SHS) to produce a predicted energy market behaviour/interaction field.

Conclusions and potential applications

The relevance of existing segmentation approaches

Scottish Government's intended use for energy consumer segmentation is to better understand the impact of policy and other interventions and to inform the development of targeted interventions, particularly toward those identified as being vulnerable. A model was therefore required which:

1. Captures a broad range of consumer characteristics and contexts, including those which are particularly pertinent to Scottish energy consumers; and
2. Allows for the impacts of policy and interventions to be modelled across the different segments and across different geographies.

The research has generated useful insights into potential approaches to achieve such a model but existing segmentation models are of limited relevance for two principal reasons:

Firstly, because of their primary use for marketing and communications, most segmentation models are attitude and behaviour based. Even in the case of Ofgem, which previously utilised a segmentation model containing physical and socio-economic characteristics, their primary interest in energy market engagement means they have moved to the use of attitudinal model. In order to effectively model the impacts of energy policy and interventions, Scottish Government would need to incorporate a wider range of consumer characteristics and contexts as the impacts will not just be determined by attitudes and behaviours but also by physical and socio-economic characteristics.

Secondly, the geographic distributional elements of existing segmentations are limited to:

- The DIMPSA model associated with Ofgem's household archetypes, which is no longer in use and has not been updated in recent years;
- Various commercial non energy-specific consumer segmentations which are modelled to different geographic levels (ACORN, MOSAIC etc);
- The ONS's Census-based segmentation which is non energy-specific and broad in scope; and
- Other segmentation models which are partly reliant on commercial data, including those developed by energy companies (energy-specific) and those in other sectors (e.g. the FCA's Consumer Spotlight model).

The ideal segmentation model to fully understand the potential impacts of different policy and interventions would incorporate all of the determinants of those impacts, including:

- Attitudinal characteristics;
- Behavioural characteristics:
- Socio-economic characteristics; and
- Physical characteristics (of the property and local environment).

The model would also specifically capture those characteristics which are particularly pertinent to Scottish energy consumers.

However, the review has highlighted the challenges associated with achieving such a model and in particular the need for consideration of:

- Technical feasibility and robustness – it may be possible to join multiple datasets in order to capture a broad range of consumer characteristics but this must be achieved using a defensible methodology which is accurate both in terms of the characterisation of the different segments and in any associated modelling of distributional impacts.
- Complexity – there is a need to capture multiple consumer characteristics and contexts within the model, whilst also retaining a simplicity which will enable the model to be clearly communicated and readily utilised by Scottish Government officers.
- Data availability – there are a range of potential datasets which could be utilised to capture different consumer characteristics but to allow ongoing use of the segmentation, there is a need for reliance on datasets which are regularly updated and readily available.
- Data costs – most current segmentation models rely on bespoke surveys combined with commercial and other data. This can have very significant implications in terms of both initial costs and ongoing costs. Linked to this, a reliance on commercial data providers may mean that the methodological details of the data processing are unknown (and the extent of reliability therefore not fully understood) and any changes in the scope or structure of the data used may have knock-on implications for the architecture of the segmentation model. This could lead to further costs being incurred in revising the segmentation model.
- Assessing distributional impacts – the need for modelling of policy impacts on a geographical basis has significant implications on the datasets which might be utilised since there is a need to attach them to geographic data.

An approach to developing and modelling Scottish energy consumer types

Creating a segmentation data set

The points raised above and the data sources considered in Section 0 were taken into account and used to derive a data set suitable for generating a set of Scottish energy consumer types. The final approach was based on the following surveys:

- Scottish Housing Condition Survey (2014 - 16)
- Scottish Household Survey (2014 - 16)
- Ofgem Consumer Segmentation (2017).

A three-year combined dataset of approximately 8,300 records was generated from SHCS survey data from 2014, 2015 and 2016, including a three-year survey weight field. This was supplemented by joining fields from the SHS for the same survey years; every record in the three-year SHCS survey was matched to a corresponding SHS record. Alongside this, a reliable energy market engagement model was successfully derived using the Ofgem Consumer Segmentation data and then trained on the combined SHCS/SHS data set to add a field that specified whether households had engaged in the energy market in the last 12 months (either by comparing tariffs, switching tariffs or switching energy supplier).

A set of complete fields from this derived dataset were then shortlisted for inclusion in the segmentation approach. This took into account the findings outlined in Section 0 and considered the most significant and important characteristics that should be included when deriving Scottish consumer segments. This information was then cross-referenced with the

data set to ensure that fields containing this information were complete and the data was in a suitable format and structure for inclusion in the segmentation approach.

Segmentation approach

To produce a set of energy consumer archetypes, a hierarchical clustering method was used to separate the households in the SHS/SHCS data set into a distinct set of 'clusters' or archetypes. The clustering was performed in R software using the *hclust* package[6], and using Ward's hierarchical clustering method.[7] This approach was selected as it allows for both categorical and numerical fields to be included in the segmentation and is a method that produces dense clusters of similar sizes (i.e. similar number of households), with fewer outliers. It also allows for different fields to be allocated different weightings to enhance or diminish how significant these are in the clustering.

A guiding principle of the segmentation was to aim to develop between six and eight consumer types. Another key focus was to ensure that across the final consumer types it was possible to identify different vulnerable situations and households in the population, as well as taking account of the key household characteristics, dwelling details, energy-related information and the geography of Scotland. An iterative process was used to deriving a final set of consumer types, including adding in or removing different fields in the SHCS/SHS data set and applying different weightings to these fields in clustering function. The final list of fields used to generate the set of consumer types and the associated weightings applied are provided in Table 0.1 overleaf.

The final set of consumer archetypes are presented in detail in an associated report: *Domestic energy consumer types: Proposed segmentation*.

Table 0.1: Fields and weightings used in the segmentation analysis

Field	Segmentation weighting
Net household income	2.5
Rurality	2.1
EPC band of dwelling	2.0
Long-term health condition or illness in household	2.0
Prepayment meter flag (some missing entries)	2.0
Tenure	2.0
Type of dwelling	2.0
Main heating fuel	1.5
Age of dwelling	1.0
Age of highest earner in household	1.0
Annual energy consumption (BRE)	1.0
Annual fuel costs (BRE)	1.0
Economic status of highest earner in household	1.0
Fuel poverty status of household	1.0
Household working status	1.0

[6] https://stat.ethz.ch/R-manual/R-devel/library/stats/html/hclust.html
[7] https://arxiv.org/pdf/1111.6285.pdf

Main heating system	1.0
Number of adults	1.0
Number of children	1.0
Sex of highest earner in household	1.0
Total floor area of dwelling	1.0
Type of household	1.0
Households struggling to stay warm in winter	0.5
Engagement in the energy market in the last 12 months	0.4

Appendix A: Matrix for desk-top review

Review question	Summary			
Name of segmentation model				
URL				
Model owner				
Model developer (if different)				
Date of original development				
Date of most recent iteration				
Stated frequency of data updates				
Stated uses for the model				
Unit of segmentation				
Summary of structure				
Characteristics included in the model	Data source	Geog data (y/n)	Level of geog data	Data availability
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences				
• Dwelling types				
• On/off gas network				
• Fuel poverty				
• Geographic remoteness				
• Other(s)				
Is smart meter data utilised?				
Sources of information used in this review				

Appendix B: Review of existing segmentation models

Ofgem household archetypes

Ofgem's household archetypes were developed by CSE in 2014 and are modelled using the DIMPSA model. The model enables Ofgem to incorporate analysis of distributional impacts into its policy development and impact assessment process. It is understood, based on an interview with Ofgem's Senior Research and Insight Manager, that the archetypes are no longer in use.

Review question	Summary
Name of segmentation model	Consumer archetypes
URL	https://www.ofgem.gov.uk/sites/default/files/docs/2013/07/beyond-average-consumption.pdf https://www.cse.org.uk/downloads/reports-and-publications/policy/beyond_average_consumption_update_2014.pdf
Model owner	Ofgem
Model developer (if different)	CSE
Date of original development	2012
Date of most recent iteration	2014
Stated frequency of data updates	We understand that the DIMPSA model has not been updated since 2014. In terms of the underlying data: • Living Costs and Food Survey – latest release covers year ending March 2016 • English Housing Survey – latest release is for 2016-17
Stated uses for the model	Incorporating analysis of distributional impacts into its policy development and impact assessment process
Unit of segmentation (persons/consumers/ neighbourhoods etc)	Household
Summary of structure, including number of segments	12 archetypes split by two groups: Non-mains gas households • Low-income electrically heated

	• All other electrically heated • Low-income non-metered-fuel heated • All other non-metered-fuel heated Mains gas households • Low income, out of work single adults in small 1-bed social rented flats (London) • Young working adults in rented flats (London) • Low-income single adults (lone parents or elderly) in social rented homes • Younger working families in medium-sized rented houses • Average mains gas heated households • Wealthy working families in 3-4 bed semis owned with mortgage • Asset-rich empty-nesters in detached houses in less urban areas • Wealthy working families in larger detached houses in less urban areas			
Characteristics included in the model	Data source	Geog data (y/n)	Level of geog data	Data availability
Household composition	Living Costs and Food Survey	Y	Devolved nations and English regions	Via registration with the UK Data Service https://beta.ukdataservice.ac.uk/datacatalogue/series/series?id=2000028#!/access
Tenure				
Age of Household Reference Person				
Category of dwelling				
Electricity consumption				
Disposable income				
Heating fuel				
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	No			
• Dwelling types	Includes category of dwelling (categories not stated)			
• On/off gas network	Includes information on heating fuel			
• Fuel poverty	No, but includes disposable income, electricity and gas consumption and dwelling category			

• Geographic remoteness	No
• Other(s)	
Is smart meter data utilised?	No
Sources of information used in this review	CSE (2012) Beyond average consumption: Development of a framework for assessing impacts of policy proposals on different consumer groups, Final report to Ofgem, https://www.ofgem.gov.uk/sites/default/files/docs/2013/07/beyond-average-consumption.pdf CSE (2014) Beyond average consumption: Development of a framework for assessing impact of policy proposals on different consumer groups, Updated report to Ofgem, https://www.cse.org.uk/downloads/file/beyond_average_consumption_update_2014.pdf

Ofgem Index of Consumer Engagement

This is an 'index of engagement' in the energy market, based on giving consumers scores for their awareness and activity across a number of factors. The data which underpins the survey is drawn from an annual survey.

Review question	Summary
Name of segmentation model	Index of engagement
URL	https://www.ofgem.gov.uk/ofgem-publications/89113/ofgemrmrbaselinefinalpdf-pdf
Model owner	Ofgem
Model developer (if different)	TNS BMRB
Date of original development	July 2014
Date of most recent iteration	Survey due to be repeated annually until 2017 RMR (Retail Market Review). However, 2015 survey conducted by different organisation (Ipsos MORI) and their report doesn't reference the segmentation developed in the TNS BMRB report. Revised segmentation developed based on 2017 survey – see next sub-section.
Stated frequency of data updates	Annual
Stated uses for the model	To better understand energy consumers
Unit of segmentation (persons/consumers/neighbourhoods etc)	Energy customers

<table>
<tr><td>Summary of structure, including number of segments</td><td colspan="4">Produced 4 segments originally:
Unplugged (least engaged)
On stand by
Tuned in
Switched on (most switched on)</td></tr>
<tr><td>Characteristics included in the model</td><td>Data source</td><td>Geographic data</td><td>Level of geographic data</td><td>Data avail-ability</td></tr>
<tr><td>Level of awareness that it is possible to switch to a different supplier, change tariff with existing supplier, change payment method with current supplier</td><td rowspan="8">Survey, face to face, with over 6,000 nationally representative energy consumers in GB.</td><td rowspan="8">2014 report included breakdown of segments at England and Scotland levels.</td><td rowspan="8">Unclear whether further geographic breakdowns of data can be released.</td><td rowspan="8">Unclear</td></tr>
<tr><td>Number that have switched supplier: in last 12 months, 1-5 years ago, not in past 5 years</td></tr>
<tr><td>Number that have changed tariff with existing supplier; in last 12 months, have changed but not in last 12 months, never</td></tr>
<tr><td>Number that compared tariffs,</td></tr>
<tr><td>Number that contacted a current or previous energy supplier for any reason in last 12 months</td></tr>
<tr><td>Number contacting another energy supplier in last 12 months</td></tr>
<tr><td>Amount of detail consumer read of their annual summary/bill/price increase/end of fixed term letter; read no comms, glanced over, or read at least one in detail</td></tr>
<tr><td colspan="5">Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:</td></tr>
<tr><td>• Temperature differences</td><td colspan="4">No</td></tr>
<tr><td>• Dwelling types</td><td colspan="4">No</td></tr>
<tr><td>• On/off gas network</td><td colspan="4">No</td></tr>
<tr><td>• Fuel poverty</td><td colspan="4">No</td></tr>
<tr><td>• Geographic remoteness</td><td colspan="4">No</td></tr>
<tr><td>• Other(s)</td><td colspan="4">Detailed analysis of the survey findings may provide some useful distinctions between Scotland and England in terms of levels of consumer</td></tr>
</table>

	engagement. At the levels of each segment, the distinctions do not appear to be very significant. Includes information on age, social grade, housing tenure, meter type, payment method, annual spend on home energy, whether they are a regular internet user. Link between engagement and internet use: • 62% of unplugged are regular internet users • 93% of switched on are regular internet users
Is smart meter data utilised?	No
Sources of information used in this review	TNS BMRB (2014) Retail Market Review Baseline Survey. Report prepared for Ofgem, https://www.ofgem.gov.uk/ofgem-publications/89113/ofgemrmrbaselinefinalpdf-pdf

Ofgem Consumer Segmentation 2017

In 2017, Ofgem developed a new attitude-based consumer segmentation model based on the annual consumer survey. The segmentation identifies six groups with differing attitudes and motivations related to the energy market, and different levels of engagement in the market. It draws on the more general Consumer Empowerment Segmentation developed by BIS (now BEIS)[8]. Engagement behaviours were not used as inputs into the segmentation: the segmentation was driven only by the attitudes and motivations.

The annual survey does, however, include some questions on the physical properties of the home and the socio-economic characteristics of the household. For example:

- Connection to the mains gas and electricity networks
- Method of payment for gas and electricity
- Yearly spend on home energy
- Presence of a smart meter
- Presence of illness, impairment or disability
- Income
- Age
- Gender
- Ethnicity
- Marital status
- Number of children
- Tenure
- Employment status

8 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/413511/BIS-15-208-consumer-empowerment-survey.pdf

- Social grade

Review question	Summary			
Name of segmentation model	Consumer segmentation			
URL	https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2017			
Model owner	Ofgem			
Model developer (if different)	GfK			
Date of original development	September 2017			
Date of most recent iteration	October 2018			
Stated frequency of data updates	Annual			
Stated uses for the model	To help better understand consumers' underlying barriers to and drivers of engagement.			
Unit of segmentation (persons/consumers/neighbourhoods etc)	Energy consumers			
Summary of structure, including number of segments	Segment name	Segment size % of population	% engaging with energy market in P12M	Segment summary
	Happy Shoppers	20%	63%	They enjoy shopping around in all markets, motivated by finding ways to save money. They are confident, trusting, engaged with the energy market and positive about switching.
	Savvy Searchers	13%	63%	They are highly confident and engaged across all markets, and broadly positive about energy switching. However, they are skeptical about the role of PCWs, often using

				more than one site to compare. Ultimately they are confident they are on the right deal.
	Market Sceptics	14%	40%	They have very low levels of trust in energy companies, and a lack of confidence engaging with the energy market. This contrasts with their relatively high levels of engagement in other markets, and average levels of general confidence and self-efficacy.
	Hassle Haters	20%	33%	They are confident in their ability to engage in the market, and broadly trusting of suppliers. They are deterred, however, by the perceived time, hassle and risks involved. They feel they are on a good deal despite their lack of engagement, but might be tempted by added-value services.
	Anxious Avoiders	13%	28%	They have very low self-efficacy and lack confidence in shopping around generally and specifically in energy: reflected in low levels of engagement across all markets. They are far less likely to spend time researching purchases or finding ways to save money.
	Contented Conformers	20%	22%	They are broadly happy with the status quo, trusting their supplier. They are nervous of change, worried by the risks of switching, unknown suppliers and overwhelmed by choice. They are the least confident engaging with the energy market and least motivated by saving money or added-value services.

Characteristics included in the model	Input variables	Data source	Geographic data	Level of geographic data	Data avail-ability

Factor 1: Market Confidence	Choosing the best energy deal for your household	Annual consumer engagement survey conducted by Ofgem	N	N/A	Detailed data tables published at https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2017
	Comparing the different energy deals available				
	Understanding your energy bill				
	Making a complaint to your energy supplier, if you had a reason to complain				
	How easy or difficult do you believe it is to compare different tariffs for electricity or gas?				
Factor 2: Trust in suppliers	Treat you fairly in their dealings with you				
	Charge you a fair price for your gas				
	Provide clear and helpful information for you				
	How confident are you that you				

	currently have the best deal				
Factor 3: Switching attitudes	Switching is a hassle that I've not got time for				
	Switching energy suppliers takes too long				
	I worry that if I switch things will go wrong				
	It's too hard to work out whether I would save or not if I switched				
Factor 4: Engaged shoppers	I usually continue to search for an item until it reaches my expectations				
	As soon as I see a problem or challenge I start looking for possible solutions				
	When shopping for a major purchase, I don't mind spending several hours looking for it				

	I am able to follow through with things once I've made up my mind to do something				
	Empow10. I always like to look for ways that I can save money, even if it is only a little				
	I always check bank or building society statements when I get them, including online				
Factor 5: PCW attitudes	Price comparison websites are unbiased in the way they display energy deals				
	Price comparison websites make clear how potential savings are calculated				
	Price comparison websites all have the same energy				

	deals on them				
Factor 6: Open to Innovation	I am usually among the first to try a new product when it appears on the market				
	I would be wary of using an energy supplier I have never heard of				
	I would rather stick with a product that I currently buy than try something I'm not sure of				
	As far as I know, most of my family and friends regularly switch their energy supplier				
Factor 7: Added value services	If I was going to change energy supplier, I would look for a supplier who offered me extra rewards				
	I would be happy to				

	pay slightly more for my energy if my supplier offered me better customer service				
Factor 8: Adequate information	When looking for new products and services, I often find the amount of information overwhelming				
	Range of tariffs available				
	I can't possibly know everything before making a decision				
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:					
• Temperature differences	No				
• Dwelling types	No				
• On/off gas network	Yes				
• Fuel poverty	No				
• Geographic remoteness	No				
• Other(s)					
Is smart meter data utilised?	No				

Sources of information used in this review	GfK (2017) Consumer engagement in the energy market 2017: Report on a survey of energy consumers. Research conducted on behalf of Ofgem. https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2017 GfK (2017) Consumer engagement in the energy market 2017: Technical report on a survey of energy consumers. Research conducted on behalf of Ofgem. https://www.ofgem.gov.uk/system/files/docs/2017/09/consumer_engagement_survey_2017_technical_report_0.pdf

Scottish Government Climate Change Behaviours Segmentation Tool

The climate change behaviours segmentation tool appears to have been developed by Scottish Government in 2012. It is intended to enable an understanding of the attitudes and behaviours of people across Scotland in relation to carbon emissions.

Review question	Summary
Name of segmentation model	Climate Change Behaviours Segmentation Tool
URL	https://www.webarchive.org.uk/wayback/archive/20170121042300/http://www.gov.scot/Topics/Environment/climatechange/resource-materials/segmentationtool
Model owner	Scottish Government
Model developer (if different)	Experian
Date of original development	2012
Date of most recent iteration	No updates published since 2012
Stated frequency of data updates	No stated
Stated uses for the model	“The pen portraits give a broad overview of climate change attitudes and behaviours across Scotland. By grouping people into segments we have a much better understanding of which groups may be more receptive to changing certain behaviours and less receptive to others, and which groups have the most potential to change different behaviours. This knowledge will enable us to target communications and messaging in a much more accurate and tailored way. It will also enable better targeting of other interventions to encourage greener behaviours.”

Unit of segmentation (persons/consumers/neighbourhoods etc)	Scottish households			
Summary of structure, including number of segments	Splits the 2.3 million Scottish households into nine segments: 1. Wealthy selectively engaged 2. Busy family recyclers 3. Professionals with green habits 4. Rural with good intentions 5. Modest income, disengaged families 6. Engaged younger city dwellers 7. Renters under pressure 8. Senior waste watchers 9. Struggling singles with other priorities Each segment is scored (using an index of how likely this segment is to have a particular characteristic, compared to the average) against ten behaviours: 1. Installing a more efficient energy system or generating your own energy 2. Keeping the heat in 3. Better heating management 4. Saving electricity 5. Becoming less reliant on the car 6. Driving more efficiently 7. Using alternatives to flying where practical 8. Avoiding food waste 9. Eating a healthy diet high in fruit and vegetables 10. Reducing, reusing and recycling			
Characteristics included in the model	Data source	Geographic data	Level of geographic data	Data avail-ability
Behaviour 1: Installing a more efficient energy system or generating your own energy	SHCS Social Questionnaire 2008-09	Y	Local authority	On request

Behaviour 2: Keeping the heat in	SHCS Social Questionnaire 2008-09	Y	Local authority	On request
Behaviour 3: Better heating management	SHCS Social Questionnaire 2008-09	Y	Local authority	On request
	Energy Saving Trust: Behaviour and Attitude Segmentation Research: March 2011	Unclear – no longer on EST website.	Unclear	Unclear
Behaviour 4: Saving electricity	TNS Climate Change and Greener Behaviour Tracking: Sept 2011	Unclear	Unclear	Unclear
	Energy Saving Trust: Behaviour and Attitude Segmentation Research: March 2011	Unclear – no longer on EST website.	Unclear	Unclear
Behaviour 5: Becoming less reliant on the car	Green Aware: Future Foundation Climate Change Consortium: 2008	Unclear	Unclear	Unclear
	Energy Saving Trust: Behaviour and Attitude Segmentation Research: March 2011	Unclear – no longer on EST website.	Unclear	Unclear
	Scottish Household Survey (Household, Random Adult, Random Child): 2009-2010	Y	Local authority	Y
Behaviour 6: Driving more efficiently	Green Aware: Future Foundation Climate Change Consortium: 2008	Unclear	Unclear	Unclear
	Energy Saving Trust: Behaviour and Attitude Segmentation Research: March 2011	Unclear – no longer on EST website.	Unclear	Unclear
Behaviour 7: Using alternatives to flying where practical	Green Aware: Future Foundation Climate Change Consortium: 2008	Unclear	Unclear	Unclear
Behaviour 8: Avoiding food waste	WRAP Scotland Food Waste: All Food Items: 2008	Y	Local authority	Unclear
	WRAP Household Food Waste Online Questionnaire (GFK): Autumn: 2010 and Spring 2011	Unclear	Unclear	Unclear

Behaviour 9: Eating a healthy diet high in fruit and vegetables	Scottish Health Survey: 2009	Selected variables	Local Authority and Health Board	Y
	Green Aware: Future Foundation Climate Change Consortium: 2008	Unclear	Unclear	Unclear
Behaviour 10: Reducing, reusing and recycling	Scottish Environmental Attitudes and Behaviours Survey: 2008	Unclear	Unclear	Unclear
	TGI: 2011 Q2	Unclear	Unclear	Unclear
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	No			
• Dwelling types	Yes			
• On/off gas network	No but does use 'Difficult to Heat Home' variable from SHCS			
• Fuel poverty	No			
• Geographic remoteness	No			
• Other(s)				
Is smart meter data utilised?	No			
Sources of information used in this review	https://www.webarchive.org.uk/wayback/archive/20170124144359/http://www.gov.scot/Topics/Environment/climatechange/resource-materials/segmentationtool/segmentationmodel			

Smart Energy GB

Smart Energy GB utilise a tool which combines 'a bespoke segmentation of Acorn (demographic) data, census data and TGI attitude segments'.

Review question	Summary
Name of segmentation model	Smart Energy GB segmentation
URL	Not available online (copy provided to CAG following request by SG)
Model owner	Smart Energy GB
Model developer (if different)	Incite carried out the survey
Date of original development	2018

Date of most recent iteration	2018			
Stated frequency of data updates	Doesn't state that data updates are planned; rather there are plans to add 'golden questions' to future research studies in order to be able to allocate research participants to a segment with a high degree of accuracy.			
Stated uses for the model	"With this segmentation, we have our best view yet of the audiences we need to reach and the nuances of their motivations, values, concerns and drivers. Undoubtedly, this will inform our creative briefing process, and there is also great value for us in increasing our understanding of the population from a media targeting perspective by integrating the segmentation into TGI."			
Unit of segmentation (persons/consumers/ neighbourhoods etc)	Consumers			
Summary of structure, including number of segments	7 groups identified: • Follow the crowd • Enough on my plate • Good intentions • On top of it • Best for me • Money worries • Set in my ways			
Characteristics included in the model	Data source	Geog data (y/n)	Level of geog data	Data availability
The survey comprised numerous questions. Unclear which ones were used to generate the segments (many will be used to target the segments, e.g. knowledge of their most watched TV programmes). The following are likely to have been used in developing the segments:	Interviews with 3,000 consumers across GB	Y	By English region, Scotland & Wales	Some of the data is commercial so it is unlikely it could be shared without additional costs being incurred
Attitude to technology (from 'I love new technology….', to 'I am sceptical of new technology…')				
Energy attitudes (many questions such as 'I feel OK about putting my heating on, or				

turning it up, when I am cold at home'; 'I would go out of my way to reduce my energy bill'				
Perception of energy spend				
Switched in past 2 years and reason for this				
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	No			
• Dwelling types	Yes: flat, detached, semi-detached, terraced, maisonette, bungalow, other			
• On/off gas network	No			
• Fuel poverty	No			
• Geographic remoteness	Yes: city, suburb, town, village, rural/countryside			
• Other(s)	Also looked at many factors such as on/offline, meter type, how they feel about their energy bills, tenure, media (2+ hours per day – e.g. TV, social media, radio etc), top 4 hobbies, plus most watched type of TV programme, most read newspapers, most read weekly/fortnightly magazines, physical/non physical conditions (e.g. blind, deaf, mental health condition, mobility impaired etc), lifestyle attitudes (including environment, time/household management)			
Is smart meter data utilised?	No			
Sources of information used in this review	Smart Energy GB (2018) Everything you wanted to know about Smart Energy GB's Segmentation			

Energy suppliers

A number of the energy suppliers are known to use consumer segmentation and, as part of this research, interviews were conducted with two suppliers. They had adopted similar approaches to consumer segmentation and one of them felt that their approach was typical of that taken by most of the larger suppliers who use segmentation. The review below is based on information provided in those interviews. None of the documentation underpinning these approaches is made publicly available.

Review question	Summary
Name of segmentation model	Not known
URL	No public information
Model owner	Energy suppliers

Model developer (if different)	Usually developed in conjunction with commercial market research company and/or commercial data supplier			
Date of original development	The two energy companies contacted had been using segmentation for many years but had also evolved their approach in recent years			
Date of most recent iteration	Both companies had developed new approaches in the last 12-18 months One had a number of segmentation models, each used for a specific purpose, e.g. smart meter rollout.			
Stated frequency of data updates	Survey data may not be regularly updated as it is not expected to change significantly over the short-medium term. Commercial data updates (ACORN, MOSAIC etc) are received regularly. The energy suppliers' own customer data is live and the segmentation is applied to this data on a regular (e.g. monthly) basis			
Stated uses for the model	Helping to tailor communications with customers and potential customers Informing approach with customers in contact centres or via websites, e.g. those from particular segments will require more explanations than others. Feeding into marketing campaigns to allow them to be more targeted. Identifying and responding appropriately to vulnerable customers. Product design			
Unit of segmentation (persons/consumers/ neighbourhoods etc)	Customers			
Summary of structure, including number of segments	Six segments. No further detail available			
Characteristics included in the model	Data source	Geographic data (y/n)	Level of geographic data	Data availability
Primary characteristics are around levels of engagement and interest in energy but these are overlain with customer data, e.g. how much they spend, consumption levels.	Combination of: • Survey data • Commercial segmentation data (e.g. ACORN, Experian)	Y	Households	N

Attitude to switching – (using survey responses, plus our records of switching) Attitudes to taking additional products - boiler cover, tel/broadband etc. Attitudes towards brands - do they look for household names that they trust? Extent to which they would try alternatives Levels of digital engagement - levels of influence of online info and social media Attitudes towards their home - a place for fun/relaxation or just a roof over the head.	• Customer data The various sources are blended using 'hook questions' in the survey to allow the commercial data to be applied. The segments are applied to customer databases using algorithms on a regular basis. One company indicated that they hold enough data to be able to apply the segmentation to c70% of their customers.			
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	N			
• Dwelling types	N			
• On/off gas network	N			
• Fuel poverty	N			
• Geographic remoteness	N			
• Other(s)				
Is smart meter data utilised?	N			
Sources of information used in this review	Telephone interviews			

Financial Conduct Authority (FCA)

In 2011/12 the FCA developed a segmentation model called Consumer Spotlight which included ten UK consumer segments based on individual situations, financial characteristics and behaviour. It had a particular focus on the capabilities and potential vulnerabilities of different groups.

Consumer Spotlight is no longer in use. Changes in component parts of the model's architecture meant that significant investment was necessary in order to keep it up to date. Given that the model was not being used widely by the FCA, it was decided not to retain the model.

Review question	Summary			
Name of segmentation model	Consumer Spotlight			
URL	N/A			
Model owner	FCA			
Model developer (if different)	Experian, in conjunction with the FCA			
Date of original development	Not known			
Date of most recent iteration	No longer in use			
Stated frequency of data updates	Not known			
Stated uses for the model	Regional and local profiling, to inform communications and engagement activities			
Unit of segmentation (persons/consumers/neighbourhoods etc)	Individual			
Summary of structure, including number of segments	Ten segments: • Retired with resources • Retired on a budget • Affluent and ambitious • Mature and savvy • Living for now • Supporting and striving • Starting out • Hard pressed • Stretched but resourceful • Busy achievers			
Characteristics included in the model	Data source	Geographic data (y/n)	Level of geographic data	Data availability

Includes: • Financial Strategy Segments • Full suite of demographic characteristics and lifestyle attributes including: ○ Individuals, e.g. age, gender, marital status, personal income ○ Families, e.g. household composition, length of residency, presence and age of children, family lifestage ○ Property, e.g. tenure, residence type, property value ○ Financial status, e.g. household income, employment status, financial stress, affluence, liquid/non-liquid assets	Large scale in-home personal interview survey Supplemented with commercial data from Experian Pixel model developed to ascribe segments to every named individual in the UK	Yes	Individual	No
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	N			
• Dwelling types	Y			
• On/off gas network	N			
• Fuel poverty	N			
• Geographic remoteness	N			
• Other(s)				
Is smart meter data utilised?	N			
Sources of information used in this review	FCA (2018) Consumer Spotlight & Insight, Presentation prepared for CAG by Leslie Sopp, Chief of Market Research, Consumer Strategy and Policy, FCA			

	The Futures Company, TNS, Experian (2013) FSA Consumer Segmentation 2013 Technical Report.

Output Area Classification

This is a free and open segmentation model based on the 2011 Census. It classifies 41 census variables into a three-tier classification of 7, 21, and 52 groups.

Review question	Summary
Name of segmentation model	2011 residential-based area classifications
URL	https://www.ons.gov.uk/methodology/geography/geographicalproducts/areaclassifications/2011areaclassifications
Model owner	Office for National Statistics
Model developer (if different)	Office for National Statistics
Date of original development	Unclear
Date of most recent iteration	No iteration
Stated frequency of data updates	With the Census i.e. 10 yearly
Stated uses for the model	No stated uses
Unit of segmentation (persons/consumers/ neighbourhoods etc)	Areas: Output Areas, Data Zones, LA areas, Health areas
Summary of structure, including number of segments	8 supergroups. None are specific to Scotland. These are: • Affluent England • Business, education and heritage centres • Countryside living • Ethnically diverse metropolitan living • London cosmopolitan • Services and industrial legacy • Town and country living • Urban settlements 15 groups, two of which are specific to Scotland: • Supergroup 3 Countryside living – 3c Scottish countryside • Supergroup 6 Services and Industrial Legacy: 6b – Scottish industrial legacy

	24 subgroups (these include the 2 groups listed above, neither of which has subgroups)			
Characteristics included in the model	Data source	Geog data (y/n)	Level of geog data	Data availability
With the 2011 area classifications, the clusters are split into five main census dimensions: Demographic structure Household composition Housing Socio-economic character Employment	2011 Census	Y	The 2011 area classifications cover Output Areas, Super Output Areas (Data Zones in Scotland), local authority districts and health areas	Local authority districts: The data forming the 2011 Area Classification for Local Authorities are available in four files: 2011 Census data (XLS, 1.1MB) Cluster membership (XLS, 229KB) Corresponding local authorities (XLS, 487KB) Distance from centroids (XLS, 138KB) Super Output Areas: The data forming the 2011 Area Classification for Super Output Areas are available in two files: 2011 Census data (53.4Mb ZIP) Cluster membership (XLS, 14.2 Mb) Output Areas: Access to the data forming the 2011 area classification for output areas 2011 OAC Clusters and Names Excel (10.6 Mb ZIP) 2011 OAC Clusters and Names csv (1.1 Mb ZIP)
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	No			
• Dwelling types	Yes – detached, semi-detached, terrace, flat, caravan/mobile			
• On/off gas network	No			
• Fuel poverty	No			
• Geographic remoteness	No (some of the segments refer to geographic location but it is unclear which Census variables are utilised)			

• Other(s)	Tenure, overcrowding, education, vehicle ownership, ethnicity, employment,
Is smart meter data utilised?	No
Sources of information used in this review	https://www.ons.gov.uk/methodology/geography/geographicalproducts/areaclassifications/2011areaclassifications

ACORN

CACI produce a segmentation of residential neighbourhoods, which segments all 1.9 million UK postcodes into 6 categories, 18 groups and 62 types.

Review question	Summary
Name of segmentation model	Acorn: the consumer classification
URL	https://acorn.caci.co.uk/downloads/Acorn-User-guide.pdf
Model owner	CACI
Model developer (if different)	CACI
Date of original development	Unknown
Date of most recent iteration	Not clear
Stated frequency of data updates	States that they take advantage of new data as soon as it becomes available
Stated uses for the model	Acorn helps you to analyse and understand consumers in order to increase engagement with your customers and to deliver successful strategies across all channels.
Unit of segmentation (persons/consumers/neighbourhoods etc)	Households, postcodes and neighbourhoods
Summary of structure, including number of segments	6 categories, 18 groups and 62 types. • Affluent achievers • Rising prosperity • Comfortable communities

	• Financially stretched • Urban adversity • Not private households			
Characteristics included in the model	Data source	Geographic data (y/n)	Level of geographic data	Data availability
Acorn is built from a combination of government data and consumer research data. CACI's Acorn Technical guide https://acorn.caci.co.uk/downloads/Acorn-Technical-document.pdf Multiple characteristics are included (e.g. Wealth, Type of home, Location of home) with multiple data sources informing each characteristic.	The Land Registry – England & Wales Registers of Scotland	Y	Address level	Freely available
	Housing for Older People (CACI owned)	Y	Address level	CACI owned
	Private Rental Information (CACI owned)	Y	Address level	CACI owned
	National Register of Social Housing for England and Wales	Y	Address level	Openly available dataset but not updated since 2011
	High-Rise Buildings	Y	As per Census	From 2001 Census; not asked in 2011 Census
	High Value Farms	Y	Address level	CACI owned
	Data Sources Giving Age of Individuals	Y	Unclear	Unclear
	Ethnicity	Y	Address level	Uses a UCL model; possibly CACI owned
	DWP Benefits Data	Y	Small area	Open data
	Population Density Indicator	Y	Postcode level	Unclear
	The Census	Y	Census output area	Yes
	Lifestyle Surveys	Y	Unclear	CACI owned

	Student Accommodation	Y	Unclear	CACI owned
	Travellers' Sites	Y	Postcode level	CACI owned
	Other Communal Populations	Y	Postcode level	CACI owned
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	No			
• Dwelling types	Yes (e.g. type 42 – Struggling young families in post-war terraces, type 47 – Pensioners and singles in social rented flats)			
• On/off gas network	Yes (e.g. type 22 – Larger families in rural areas 'most will heat their homes with oil or coal rather than electricity or gas)			
• Fuel poverty	Not mentioned in any of the types			
• Geographic remoteness	Yes. Population density is included. E.g. Group 5 – Countryside communities, group 22 – larger families in rural areas			
• Other(s)				
Is smart meter data utilised?	No			
Sources of information used in this review	CACI (date unknown) The Acorn User Guide, https://acorn.caci.co.uk/downloads/Acorn-User-guide.pdf			

MOSAIC Scotland

Experian produce a segmentation of people which classifies the Scottish population into 14 main socio-economic groups and, within this, 57 different types.

Review question	Summary
Name of segmentation model	Mosaic Scotland
URL	https://www.experian.co.uk/assets/marketing-services/brochures/mosaic-brochure-scotland.pdf
Model owner	Experian
Model developer (if different)	
Date of original development	Unknown
Date of most recent iteration	Regular updated
Stated frequency of data updates	Not stated but appears to be very regular

Stated uses for the model	Actionable consumer insight			
Unit of segmentation (persons/consumers/ neighbourhoods etc)	Scottish households			
Summary of structure, including number of segments	14 groups, 57 types: A. City prosperity B. Prestige positions C. Country living D. Rural reality (e.g. includes D14 – Outlying seniors – pensioners living in inexpensive housing in out of the way locations) E. Senior security F. Suburban stability G. Domestic success H. Aspiring homemakers I. Family basics J. Transient renters K. Municipal challenge L. Vintage value M. Modest traditions N. Rental hubs			
Characteristics included in the model	Data source	Geog data (y/n)	Level of geog data	Data availability
'Mosaic synthesizes over 850 million pieces of information to create an easy to understand segmentation that allocates 49 million individuals and 26 million households into one of 15 Groups and 66 detailed Types.' to build a pin-sharp picture of the latest UK consumer and social trends.	Doesn't specify: just states that more than 450 data variables are used from a combination of Experian proprietary, public and trusted third party sources - including research findings and behavioural data -	Y	Unclear	Source data - mix of open source and Experian owned data. Mosaic – available for a fee.
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:	All tailored to Scotland			
• Temperature differences	Unclear (don't think so)			
• Dwelling types	Yes			

• On/off gas network	Unclear but probably
• Fuel poverty	Unclear but unlikely
• Geographic remoteness	Yes
• Other(s)	
Is smart meter data utilised?	Unclear
Sources of information used in this review	https://www.experian.co.uk/marketing-services/products/mosaic-uk.html https://www.experian.co.uk/marketing-services/products/mosaic/mosaic-in-detail.html

Cameo

This is a segmentation of consumers built at postcode, household and individual level. It segments the British market into 68 distinct neighbourhood types and 10 key marketing segments. See https://www.cameodynamic.com/

Review question	Summary
Name of segmentation model	Cameo
URL	https://www.cameodynamic.com/why-cameo/
Model owner	TransUnion
Model developer (if different)	TransUnion
Date of original development	Unknown
Date of most recent iteration	Continually updated
Stated frequency of data updates	Refers to being continually updated
Stated uses for the model	Customer profiling
Unit of segmentation (persons/consumers/neighbourhoods etc)	Offers 7 different UK local area segmentations: • CAMEO UK - A postcode classification for assessing the socio-economic and geo-demographic characteristics of UK neighbourhoods • CAMEO Income - A postcode based classification system for assessing levels of affluence through household income • CAMEO Financial - A postcode classification system for assessing credit risk through County Court Judgments, Bankruptcies and IVAs • CAMEO Unemployment - A 20 group post sector based classification for assessing levels of

	economic hardship and poverty through unemployment levels • CAMEO Property - A postcode classification for assessing wealth and the cost of living through property prices and council tax bands • CAMEO Welfare - A postcode classification for assessing neighbourhood deprivation • CAMEO Workplace - A powerful tool for retailers to profile weekday 9-5 populations to optimise promotion strategies based on the work day populations.			
Summary of structure, including number of segments	See above			
Characteristics included in the model	Data source	Geog data (y/n)	Level of geog data	Data availability
No information publicly available	CAMEO is built from multiple data sets sourced from government open data and proprietary data.	Yes	Unclear	Can register for a free trial https://www.cameodynamic.com/try-cameo/ You can license MVPLUS GIS for CAMEO appending and profiling as well as geographical analysis, mapping, modelling and planning.
Inclusion of Scotland-specific or Scotland-aligned consumer characteristics:				
• Temperature differences	No information provided			
• Dwelling types	No information provided			
• On/off gas network	No information provided			
• Fuel poverty	No information provided			
• Geographic remoteness	No information provided			
• Other(s)	No information provided			
Is smart meter data utilised?	Not stated but don't think so			
Sources of information used in this review	https://www.cameodynamic.com/what-we-offer/			