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# Determinants of Water Connection Type and Ownership of Water-Using Appliances in Ireland

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*Abstract*: Domestic water demand is influenced both by the number of households and their characteristics, in particular the extent to which they employ water-using appliances. This paper focuses on domestic ownership of water-using appliances in Ireland, a country where rapid economic and demographic change are putting pressure on water and sewerage infrastructure. Using a large household micro-dataset, we use discrete response logistic models to examine the determinants of the water and sewage mains connection status of Irish homes, identify the characteristics of households that are associated with having larger or smaller numbers of appliances, and investigate what types of households own particular combinations of appliances.

*Key words*: Water usage, Ireland, appliance ownership, water supply

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# Determinants of Water Connection Type and Ownership of Water-Using Appliances in Ireland

## 1. Introduction

Water demand from the household sector is influenced both by the number of households and their characteristics, in particular the extent to which they employ water-using appliances. This paper focuses on domestic ownership of water-using appliances in Ireland, a country where rapid economic and demographic change are putting pressure on water and sewerage infrastructure. Using a large household micro-dataset, we examine the determinants of the water and sewage mains connection status of Irish homes, identify the characteristics of households that are associated with having larger or smaller numbers of appliances, and investigate what types of households own particular combinations of appliances.

Determinants of residential water use have been studied in many parts of the world, including Phoenix (Wentz and Gober, forthcoming); Melbourne (Aitken *et al.*, 1991); Masvingo (Dube and van der Zwaag, 2003); Honolulu (Malla and Gopalakrishnan, 1997); Bangkok (Babel *et al.*, 2003) and Adelaide (Troy and Holloway, 2004; Dandy *et al.*, 1997). These studies generally concur on many of the factors that affect domestic demand for water, namely the existence and scale of water charges, house size, income, the number, type and frequency of use of water-using appliances, age of household members, the presence of a swimming pool and large gardens, and in one study at least, the usage patterns of one's neighbours (see Aitken *et al.*, 1991).

In general, larger, more affluent households with children tend to use more water, although the presence of a swimming pool and large watered garden can outweigh other factors (Wentz and Gober, forthcoming).

Analyses of the determinants of water and sewage mains connectivity are rare. Tunis, (McPhail, 1994), Cairo (Hoehn and Krieger, 2000) and Halle (Haug, 2004) have been the subjects of studies aiming to understand the costs, benefits and efficiencies of mains connectivity and improvements made to this utility. In the process of determining this, the authors of these studies deduced that location, population density and certain social indicators could have an impact on the quality, if not the existence, of a mains connection. To our knowledge, no similar analyses have been conducted in Ireland.

Unlike the locations for the above analyses, water is free for domestic households in Ireland. Scott notes of this that 'as for most goods or services treated in this manner, the predictable outcome is under-funding, over-use of the resource, disincentives to the use of efficient technology, losses of water in distribution systems, and environmental degradation' (1999, 2). Scott has written widely in relation to the lack of water metering and pricing in Ireland, and policy changes that could be made to counteract the associated negative symptoms of this situation (see Scott, 1999; Scott and Lawlor, 1994, 1997; Scott and Morgenroth, 2006; Lawlor et al, 2007). In another study, Camp, Dresser and McKee (2004) estimate total water demand by sector and county, but do not analyse the drivers of differences in water use.

To our knowledge, these remain the only published analyses of the determinants of residential water demand in Ireland.

The most comprehensive effort to investigate the relationships between household and dwelling characteristics in Ireland is the National Survey of Housing Quality, 2001-2002 (NSHQ; Watson and Williams, 2003). The survey 'obtained detailed information from a representative sample of over 40,000 householders on characteristics and problems of the dwelling, and on the household members' (ibid, v). As such, it provides a snapshot of a household's appliances and mains connectivity status. [1] However, Watson and Williams (2003) only provide descriptive statistics. Here, we econometrically analyse the data from the NSHQ.

By conducting regression analysis on the data behind the NSHQ, it is possible to determine what factors are likely to influence the mains connectivity and appliance ownership status of households in Ireland.

We find that households with higher incomes and more expensive homes are more likely to have mains connections. They are also likely to own more water-using appliances, but not necessarily use more water, as these factors have a negative relationship on the likelihood that a dwelling will have a bath and no shower. The longer a household has been resident at the same address, the less likely it is to have

[1] The NSHQ has so far been a once-off survey, commissioned by the Department of the Environment, Heritage and Local Government (DEHLG) and conducted by the Economic and Social Research Institute. As such, conducting any time-series analysis on the data was impossible.

both water and sewage mains connections, but it is likely to own more water-using appliances. Location, house age and dwelling type are unsurprisingly significant in determining whether a dwelling has mains connections, with older, rural, detached homes less likely to be on the public water and sewage systems. With regard to household make-up, those with children are more likely to have many water-using appliances, particularly when compared to all-adult and single-person households. Finally, there is mixed evidence with regard to social status, as professionals and skilled workers are more likely to have more water-using appliances than semi-skilled and unskilled workers, whereas there is no discernible pattern for whether social status has an effect on the likelihood of mains connections.

The remainder of this paper will proceed as follows. The next section outlines the theoretical model being analysed. Section three analyses data from the NSHQ, and compares these data with those available elsewhere in the world. Section four presents the results from econometric analysis that has been conducted on data from the NSHQ. Finally, the concluding section will draw inference from each of the preceding sections.

## 2. Models

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In order to investigate the determinants of a dwelling's water system status a binary dummy was created to represent whether it had a mains connection or not. As such, a model was required that could allow for a binomially distributed response (either 'house has a mains connection' or 'house has no mains connection'). A logit model was chosen. See Wooldridge (2002) for a description of the logit model, and other discrete response models such as the multinomial and ordered logit models, mentioned below.

Using binomial response logit models is a tested method of analysis in relation to water demand, use and supply. For example, Larson and Gnedenko (1999) conducted an analysis of methods used by residents of Moscow in order to avoid water-borne diseases. The authors constructed a binomial dependent variable from survey data in order 'to investigate how choices of avoidance measure (i.e. methods of avoiding the public mains such as bottled or filtered water) are related to respondents' opinions of their water quality and service and other socioeconomic characteristics'. Elsewhere, Vossler *et al.* (1998) use a similar model to look at the decision of households to accept or reject water metering over flat-rate charges.

In order to analyse those factors that affect the total number of appliances owned by each household, an ordered logit model was used. Outcomes were limited to whole numbers between zero and three, inclusive, indicating the total number of water-using appliances in each household.

Ordered logit models have been applied to the study of water demand and supply, having been employed in the study by Larson and Gnedenko (1999), mentioned above.

As well as counting the number of appliances that are present in each household, it is interesting to note that ownership of these appliances tends to be grouped into clusters, as can be seen in Table 4. To deduce the factors that determine which households own which appliances each household was designated to a cluster based on the appliances it owns. As there is no ostensible rank in which these clusters could be ordered, a multinomial logit model was chosen.[2]

Again, multinomial logit models have previously been used in the study of water and economics. Liao and Chang (2002) use this model type to investigate the space-heating and water-heating energy demands of the aged in the US, while Ahmad *et al.* (2005) apply a multinomial logit to value pollutant-free drinking water in Bangladesh.

The next session will detail the NSHQ data employed in this analysis.

## 3. Data

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The Economic and Social Research Institute, Dublin was commissioned by the Irish Department of Environment, Heritage and Local Government (DEHLG) to carry out the Irish National Survey of Housing Quality (NSHQ) in 2001-2002. The survey gathered information from a sample of over 40,000 householders on characteristics and problems of the dwelling, and on household members. The resultant micro data were made available to the authors of this paper for the purpose of studying patterns of water supply and demand.

[2] Although categories of the dependent variable might be represented by the codes 1,2,3… they are not ordered in the sense 1<2<3<… as these codes merely represent categories such as 'has a dishwasher', 'has a power-shower', and so on. It is this unordered categorical property of the dependent variable that distinguishes the multinomial logit from the ordered logit model.

With regard to connectivity, the NSHQ asked respondents about their sewage and water supply; specifically, what type of system they were connected to. In both instances, connection to the public mains was the most common response. A binary variable was created for both sewage and water consisting of 'public mains connection' and a grouping of all other options.[3]

With regard to appliance ownership, the NSHQ does not allow for an explanation of total water usage by households – such a project would require more extensive data on details of appliances, analysis of their 'water efficiency', and the frequency with which they are used – but does allow for an inspection of the quantity of water-using appliances present. It asks about the presence of dishwashers, washing machines / washer-dryers, the presence of a bath (but no shower), and power-showers in the home.[4] As the last two of these are mutually exclusive, the maximum number of appliances that any one dwelling can have is four (i.e. there are five categories, as a home can also have none of the above appliances). As such, a variable for 'total number of appliances' was created, with a maximum value of three. It must be noted that the methods of accounting for appliance ownership that are employed in this paper in effect only count the *presence* of certain appliances. Just because a household has a dishwasher does not necessarily mean that they use it.

The final dependent variable was constructed in order to deduce the factors that determine which households own which appliances. A variable was created that assigned each household to a cluster based on the appliances it owns. However, some observations in the NSHQ data had very unusual combinations of appliances. For the purposes of the 'clusters' multinomial logit regression, a small number of these were dropped in order to make the number of clusters manageable, and to omit a large body of insignificant results.[5]

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[3] For sewage connection, respondents were asked which system they were connected to, the options being 'public mains sewer', 'private septic tank/other private system', 'group scheme (septic tank or other)', 'piped disposal (no treatment)', 'none' or 'don't know'. For water supply, respondents were asked which system they were connected to, the options being 'public mains', 'well', 'group scheme', 'rainwater tank', 'other source' or 'none'.

[4] The NSHQ also asks about the presence, but not the quantity, of sinks, wash-hand basins and toilets. Each of these appliances were present in nearly every home, and as such were omitted from the analysis.

[5] Out of 39991 observations, 135 (around 0.3%) had very rare combinations of appliances, such as 'no dishwasher, no washing machine, and a power-shower' (106 observations), 'a dishwasher and no other appliances' (15 observations), 'a dishwasher and power-shower, but no washing machine' (7 observations), and 'a dishwasher, a bath-but-no-shower and no other appliances'.

Each of the dependent variables described above was employed in regressions against explanatory variables that are detailed in Table 1 and Table 2.[6]

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## 4. Results

This section presents the results of the three regressions run on the NSHQ data, a logit model for the mains connectivity status of a dwelling, an ordered logit for the total number of appliances present in a dwelling, and a multinomial logit model for analysing clusters of appliances. When a result is presented as a percentage it indicates the change in the odds of a unit-change of the dependent variable.

### *Mains connectivity*

As explained in the last section, logit regressions were run against the variables detailed in Table 1, with outcomes being dichotomous, either ‘mains connection’ or ‘no mains connection’. Table 5 and Table 6 show the results of these regressions.

Summarising the results shown in Table 5 and Table 6, the following factors are likely to have a positive effect on the odds of having a mains connection:

**House value:** The more expensive a dwelling is, the more likely it is to have mains connections. A rise of IR£100,000 (€127,000) in the value of a home increases the odds of either a sewage or water mains connection by a factor of 1.1 (or vice versa: it may well be that the presence of mains connections increase the house value).

**Household income:** Household income is highly correlated with house value (see Table 3), so it is not surprising that a higher income also means that a dwelling is more likely to have a sewage mains connection (a rise of £100 in weekly income increases the odds of having a mains sewage connection by a factor of 0.03). However, for water mains this result is not significant, even at the 10% level.

**Tenure type:** The baseline scenario for this category is ‘own outright’, and all other types are more likely to have mains connections (though ‘rent free’ is not significant), particularly those renting in the private sector.

**Dwelling type:** The baseline scenario for this category is ‘detached’ and all other categories are more likely to have mains connections (though ‘caravan’ is not significant). Terraced houses are the most likely to have mains connections (the odds

[6] Unfortunately, there were only a limited number of observations for the total floor space of the dwelling and for the length of ownership by the household currently living in the dwelling, so these were omitted from this analysis.

of having a mains connection are 78 times greater in a terraced house than in a detached house). This partly reflects the fact that terraces are usually in (sub)urban locations.

**Household age:** All variables are significant in this category at the 1% level. The baseline scenario is 'built before 1900', and all other variables are more likely to have mains connections. However, it is not necessarily the case that more recently built dwellings are more likely to have mains connections, as is evident from Figure 1.

[Figure 1 about here]

However, some variables have a negative effect on the likelihood of having a mains connection, and are outlined below.

**Years at address:** The longer a household has been resident at a dwelling, the less likely it is to have either a water or sewage mains connection. Indeed, for every year a household has been resident at a dwelling the odds of having a sewage (water) mains connection falls by a factor of 0.02 (0.01). Note that we control for the age of house and the age of the survey respondent.

**Location:** One of the most statistically significant outcomes from this analysis is that rural dwellings are less likely to have mains connections than urban ones, though the differences between Dublin and other urban areas are less significant. The odds of a home in a rural location having a mains sewage (water) connection fall by around 95% (90%) when compared with Dublin

**Social status:** The baseline scenario for this category is 'high professional', and all other categories are less likely to have mains connections. Social status appears to be more significant in relation to having a water mains connection than a sewage mains connection, as only two variables from six are significant even at the 10% level for the latter. However, it is not necessarily the case that those of a higher social status are more likely to have mains connections, as is evident from Figure 2.

[Figure 2 about here]

**Household type:** The baseline scenario for this category is ‘one adult under 65 years old’. All but one of the other variables have negative coefficients, indicating that they are less likely – than the baseline scenario – to have mains connections. However, only one variable is significant for both water and sewage mains connections, ‘couple with children’; the odds of a household of this make-up having a mains sewage (water) connection is 30% (27%) less than the baseline scenario.

### *Number of appliances*

An ordered logit was run with outcomes being limited to whole numbers between zero and three, inclusive, indicating the total number of water-using appliances in each household. Table 7 shows the results from this regression, and the results are summarised below.

As can be seen from Table 7, nearly all of the tested variables have a high level of significance in the ordered logit model, which ranks each dwelling by the total number of appliances. The results shown in Table 7 indicate that the following factors have a positive influence on owning more appliances:

**House value:** In general, the more valuable a dwelling, the more appliances one can expect. This is also the case for **household income**, where an extra £100 a week improves the odds of having an extra appliance by 3%.

**Social Status:** In general, the higher a household’s social status, the more appliances it has. This is perhaps best illustrated in Figure 3.

[Figure 3 about here]

**House age:** Although not all of the variables are significant in this category, more recently-built dwellings are more likely to have more appliances, particularly those built since 1997; residing in a house from this period improves the odds of having another appliance by 43%

**Household type:** Compared to the baseline, ‘one person under 65’, all other groups are likely to have more appliances, particularly households with children, the odds for whom of having an extra appliance are over 100% higher than the baseline.

The following factors have a negative effect on owning many appliances:

**Years at address:** The longer a household has been resident at a dwelling, the fewer appliances one might expect it to own. For every year a household is resident at a dwelling the odds of it being in a higher category are diminished by a factor of 0.01, if all other variables are kept the same.

**Dwelling type:** Compared to the baseline, 'detached house', all other dwelling types are less likely to have as many appliances, particularly – and not unexpectedly – caravans. Living in a caravan diminishes the odds of being in a higher category by 85%.

Finally, the following factors can have either a positive or negative effect on owning lots of appliances, depending on which dummies apply to each household:

**Mains connection:** Although having a water mains connection appears to diminish the likelihood that a household will have more appliances, having a sewage connection would appear to increase this likelihood. This seems counter-intuitive, and the result may be affected by the high level of correlation between these two variables (see Table 3). For example, it appears that having a sewage mains connection increases the odds of being in a higher category (having one more appliance) by 19%, if all other variables are kept the same.

**Respondent age:** Respondents in the 'forty to sixty-four' group are likely to have more appliances than those in the baseline 'under forty' group, yet those in the 'sixty-five and older' group have fewer appliances than the baseline scenario.

**Location:** Not all variables in this category are significant, and there is no discernible distinction between urban and rural, or between Dublin and the other regions.

**Tenure type:** Compared to the baseline scenario of 'own outright', those who are purchasing their home are more likely to have more water-using appliances (having this form of tenure improves the odds of having an extra appliance by 9%). However, households of all other tenure types generally have fewer appliances, particularly private renters. This variable (private renters) is strongly correlated with apartment dwellings (see Table 3), where there are often restrictions on using dishwashers and washer-dryers.

### ***Cluster analysis***

In order to explore possible complementarities across groups of appliances, each household was designated to a ‘cluster’ based on the type of appliances it owns. There were four appliances available for consideration: Dishwasher, washing machine / washer-dryer, ‘bath-no-shower’ and power-shower. The baseline scenario is “0-0-0-0”, signifying a household without any of the above appliances. Thus, if a household belongs to the cluster “1-0-1-0”, it has a dishwasher and a bath, but no washing machine or shower. The clusters of appliances involved in this analysis are outlined in Table 4.

The results presented in Table 8, for clusters of appliances, are summarised below.
The following variables and categories were significant in relation to all the clusters:
**Mains Connection:** Having a mains sewage or water connection increases the likelihood of having any (combination of) appliance(s).

**Years at address:** For nearly all clusters, the longer a household has been resident at a dwelling, the less likely it is to have no appliances at all, or just a bath.

**House value:** The effect of house value is particularly strong. In general, the more valuable a dwelling, the more likely it is to have more appliances than just a bath. It is thus unsurprising that **Household Income** has a similar effect, given the high level of correlation between these variables (see Table 3).

**Respondent age:** The baseline scenario in this category is ‘under 40’. Compared to this age group, other respondents are less likely to have no water using appliances.

**Location:** Households in rural locations are less likely to have no appliances. This effect is consistent across all other clusters.

**Tenure type:** Compared to those who own their homes outright, those who are purchasing and those who rent privately are more likely to own appliances. However, those in local authority housing, living rent-free and renting from a voluntary organisation are more likely not to own any appliances.

**Dwelling type:** Detached houses are least likely to have no appliances whatsoever.

**House age:** The effect of house age is consistently strong across all clusters. More recently built homes are more likely to contain water-using appliances, particularly those built since 1997.

**Household type:** Households with children are much more likely to own more appliances than just a bath. Indeed, in many of the clusters, households with children are more likely to own dishwashers, power-showers and washer-dryers than other household types.

## Discussion and Conclusion

In this paper we focus on two questions relevant to domestic water use and water resource management in Ireland. Firstly, we investigate what factors are influential in determining whether a dwelling is connected to the public water and sewage mains. Secondly, we examine what distinguishes households that own particular clusters of water-using appliances, and related to this, what are the characteristics of homes and households that have comparatively few/many such appliances. Using regression methods that allow for a limited response dependent variable (logit, ordered logit, multinomial logit), independent variables related to both household and dwelling characteristics are included.

We find that households with higher incomes and more expensive homes are more likely to have mains connections. Indeed, a rise of £100 in weekly income increases the odds of having a mains sewage connection by a factor of 0.03. They are also likely to own more water-using appliances, but not necessarily use more water, as these factors have a negative relationship with the likelihood that a dwelling will have a bath and no shower. The longer a household has been resident at the same address, the less likely it is to have both water and sewage mains connections, but it is likely to own more water-using appliances. For every year a household has been resident at a dwelling the odds of having a sewage (water) mains connection falls by a factor of 0.02 (0.01), but the odds of it having an extra appliance are diminished by a factor of 0.01, if all other variables are kept the same. Location, house age and dwelling type are unsurprisingly significant in determining whether a dwelling has mains connections, with older, rural, detached homes less likely to be on the public water and sewage systems. With regard to household make-up, those with children are more likely to have many water-using appliances, particularly when compared to all-adult and single-person households. Finally, there is mixed evidence with regard to social status, as professionals and skilled workers are more likely to have more water-using appliances than semi-skilled and unskilled workers, whereas there is no discernible pattern for whether social status has an effect on the likelihood of mains connections.

Given the limited nature of the data available, basing policy recommendations on these analyses might be imprudent. However, aside from the findings outlined above, the results that have been gleaned from this study have highlighted two important points in relation to water resource management in Ireland.

Firstly, there is relatively little of data in relation to water usage and trends in Ireland. The NSHQ has proved to be a useful tool in relation to conducting this analysis, but without time series and/or panel data, conducting a thorough analysis of the effect of changes in household and housing characteristics is probably impossible.

Secondly, Ireland is a country in an extraordinary state of flux, experiencing a rapidly growing population, changing living patterns, and unprecedented prosperity. The effects that these changes may have on water supply and demand are difficult to determine based on this analysis alone, but further research into the interaction of water usage, water supply and changing household and housing trends may prove fruitful in relation to forecasting Ireland's future demands in this area.

Finally, the rich source of data that is the NSHQ may be useful in further studies in this area, particularly in relation to energy usage and the existence of energy-saving features in Irish homes.

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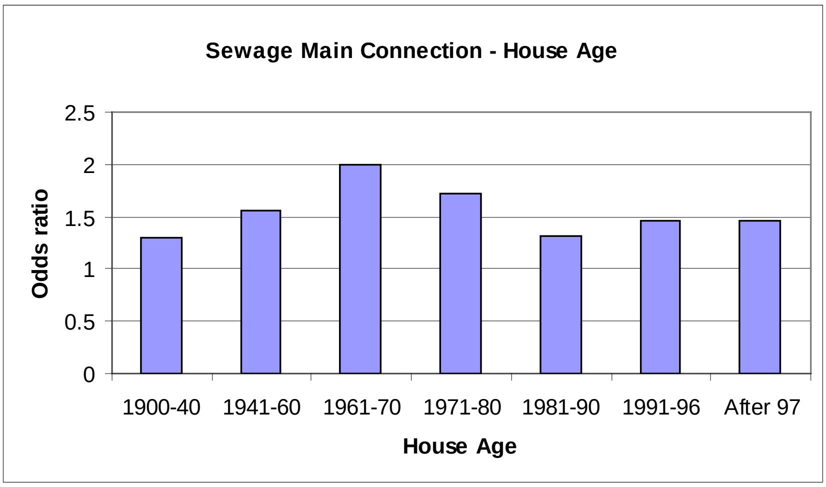
## Figures



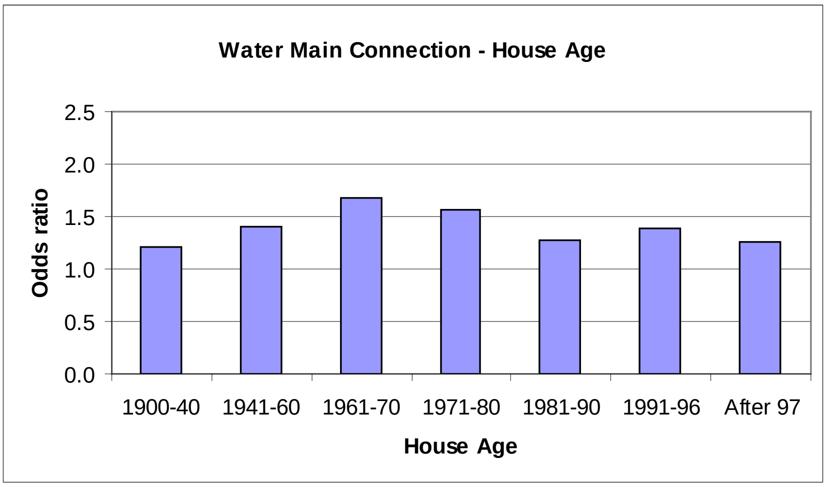




**Figure 1 – Odds ratios of house age for sewage and water mains connection in relation to 'pre-1900'. Note that the trend does not continue upwards, as might be expected.**

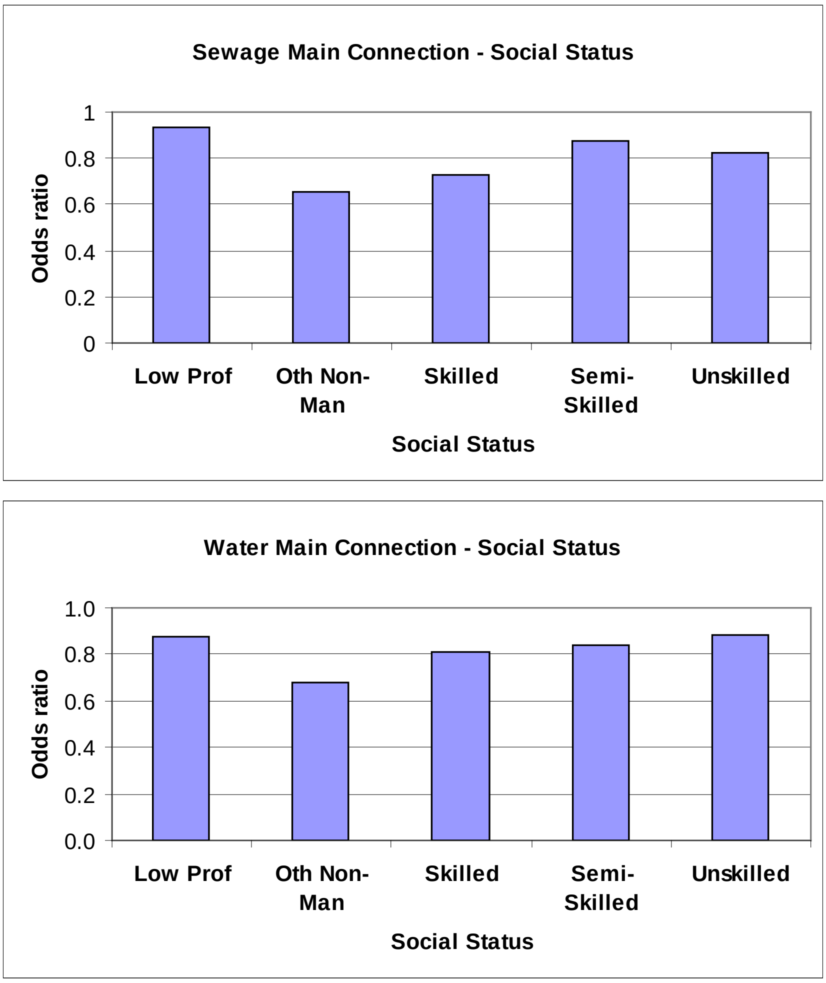



**Figure 2 – Odds ratios of social status for total number of appliances in relation to 'high professional'.**

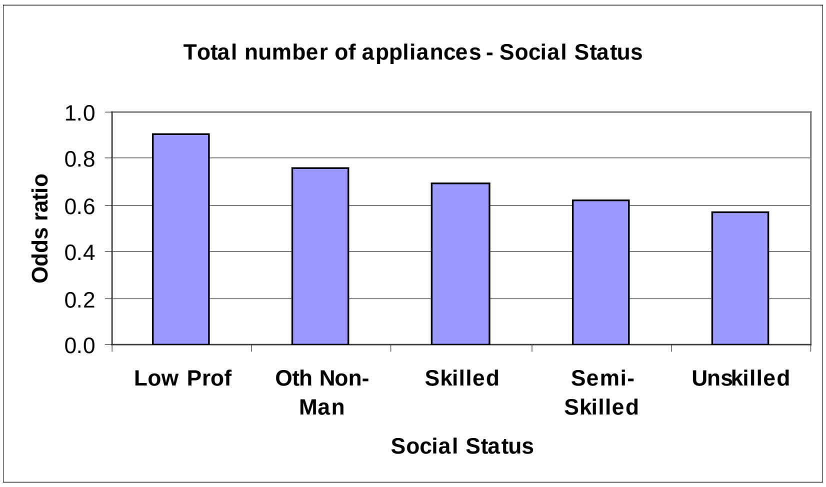



**Figure 3 – Odds ratios of social status for total number of appliances in relation to 'high professional'.**

## Tables

| | |
|---|---|
| Sewagetype | Whether a dwelling has a mains sewage connection |
| watertype | Whether a dwelling has a mains water connection |
| yrshere | The number of years a household has been resident at the dwelling |
| hvalue | Estimate of the dwelling's value |
| HHincome | Declared income of the respondent |
| age40_64<br>age65plus | Dummy: householder is between 40 and 64 years old, inclusive (omitted category is 'less than 40')<br>Dummy: householder is over 65 years old, inclusive (omitted category is 'less than 40') |
| locBMWurban<br>locothurban<br>locruralBMW<br>locothrural | Dummy: location is in an urban part of the border-midlands-west region (omitted category is 'Dublin')<br>Dummy: location is urban but not in Dublin or BMW (omitted category is 'Dublin')<br>Dummy: location is rural and in BMW (omitted category is 'Dublin')<br>Dummy: location is rural but not in Dublin or BMW (omitted category is 'Dublin') |
| tenurePurch<br>tenureLocalA<br>tenurePrRent<br>tenureVolOrg<br>tenureRentFr | Dummy: home is being purchased (i.e. mortgage) (omitted category is 'own outright')<br>Dummy: home is rented from a local authority (omitted category is 'own outright')<br>Dummy: home is rented from a private landlord (omitted category is 'own outright')<br>Dummy: home is rented from a voluntary organisation (omitted category is 'own outright')<br>Dummy: home is lived in rent-free (omitted category is 'own outright') |
| socLowProf<br>socOthNonMan<br>socSkill<br>socSemiSkill<br>socUnskill<br>socUnknown | Dummy: social status is 'low professional' (omitted category is 'professional')<br>Dummy: social status is 'other non-manual' (omitted category is 'professional')<br>Dummy: social status is 'skilled' (omitted category is 'professional')<br>Dummy: social status is 'semi-skilled' (omitted category is 'professional')<br>Dummy: social status is 'unskilled' (omitted category is 'professional')<br>Dummy: social status is 'unknown' (omitted category is 'professional') |
| DwellSemiD<br>DwellTerrace<br>DwellPurpApt<br>DwellHousApt<br>DwellCaravan | Dummy: dwelling is semi-detached (omitted category is 'detached')<br>Dummy: dwelling is terraced (omitted category is 'detached')<br>Dummy: dwelling is a purpose-built apartment (omitted category is 'detached')<br>Dummy: dwelling is an apartment in a converted house (omitted category is 'detached')<br>Dummy: dwelling is a caravan (omitted category is 'detached') |
| HAge1900_40<br>HAge1941_60<br>HAge1961_70<br>HAge1971_80<br>HAge1981_90<br>HAge1991_96<br>HAgeAfter97 | Dummy: dwelling was originally built between 1900 and 1940 (omitted category is 'pre-1900')<br>Dummy: dwelling was originally built between 1941 and 1960 (omitted category is 'pre-1900')<br>Dummy: dwelling was originally built between 1961 and 1970 (omitted category is 'pre-1900')<br>Dummy: dwelling was originally built between 1971 and 1980 (omitted category is 'pre-1900')<br>Dummy: dwelling was originally built between 1981 and 1990 (omitted category is 'pre-1900')<br>Dummy: dwelling was originally built between 1991 and 1996 (omitted category is 'pre-1900')<br>Dummy: dwelling was originally built between after 1997 (omitted category is 'pre-1900') |
| HH1over65<br>HHCoupleKids<br>HHOthKids<br>HHParAduKids<br>HHOthAdUn65<br>HHOthAdOv65 | Dummy: Household consists of 1 person, aged 65 or older (omitted category is '1 person under 65')<br>Dummy: Household consists of a couple with child(ren) (omitted category is '1 person under 65')<br>Dummy: Household consists of adult(s) (not a couple) with child(ren) (omitted category is '1 person under 65')<br>Dummy: Household consists of parents living with adult child(ren) (omitted category is '1 person under 65')<br>Dummy: Household consists of all-adults, under 65 (omitted category is '1 person under 65')<br>Dummy: Household consists of all-adults, over 65 (omitted category is '1 person under 65') |

**Table 1 - Independent variables for regression analysis**

| Variable | Mains sewage connection logit observations = 35552 | | Mains water connection logit observations = 35552 | | Number of appliances ordered logit observations = 35437 | | Clusters of appliances multinomial logit observations = 35065 | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| **sewagetype** | **0.5790** | **0.4937** | | | 0.5792 | 0.4937 | 0.5791 | 0.4937 |
| **watertype** | | | **0.7429** | **0.4370** | 0.7431 | 0.4369 | 0.7434 | 0.4368 |
| **totwateruse** | | | | | **1.8621** | **0.7321** | | |
| **watercluster** | | | | | | | **4.9317** | **1.6714** |
| **yrshere** | 23.2773 | 17.5331 | 23.2773 | 17.5331 | 23.2693 | 17.5180 | 23.2555 | 17.4882 |
| **hvalue** | 144840.1 | 116616.9 | 144840.1 | 116616.9 | 144929.5 | 116600.4 | 145148.5 | 116769.9 |
| **HHincome** | 546.6482 | 340.3705 | 546.6482 | 340.3705 | 546.9394 | 340.4615 | 548.1699 | 340.6644 |
| **age40_64** | 0.5575 | 0.4967 | 0.5575 | 0.4967 | 0.5576 | 0.4967 | 0.5589 | 0.4965 |
| **age65plus** | 0.2850 | 0.4514 | 0.2850 | 0.4514 | 0.2849 | 0.4514 | 0.2838 | 0.4509 |
| **locBMWurban** | 0.0918 | 0.2888 | 0.0918 | 0.2888 | 0.0915 | 0.2883 | 0.0905 | 0.2868 |
| **locothurban** | 0.1959 | 0.3969 | 0.1959 | 0.3969 | 0.1961 | 0.3970 | 0.1965 | 0.3974 |
| **locruralBMW** | 0.3010 | 0.4587 | 0.3010 | 0.4587 | 0.3009 | 0.4586 | 0.3007 | 0.4586 |
| **locothrural** | 0.2447 | 0.4299 | 0.2447 | 0.4299 | 0.2445 | 0.4298 | 0.2448 | 0.4300 |
| **tenurePurch** | 0.3529 | 0.4779 | 0.3529 | 0.4779 | 0.3529 | 0.4779 | 0.3539 | 0.4782 |
| **tenureLocalA** | 0.0505 | 0.2190 | 0.0505 | 0.2190 | 0.0505 | 0.2189 | 0.0501 | 0.2182 |
| **tenurePrRent** | 0.0283 | 0.1658 | 0.0283 | 0.1658 | 0.0282 | 0.1657 | 0.0277 | 0.1643 |
| **tenureVolOrg** | 0.0015 | 0.0382 | 0.0015 | 0.0382 | 0.0015 | 0.0383 | 0.0014 | 0.0370 |
| **tenureRentFr** | 0.0058 | 0.0761 | 0.0058 | 0.0761 | 0.0058 | 0.0762 | 0.0057 | 0.0755 |
| **socLowProf** | 0.1681 | 0.3740 | 0.1681 | 0.3740 | 0.1681 | 0.3739 | 0.1679 | 0.3738 |
| **socOthNonMan** | 0.1712 | 0.3767 | 0.1712 | 0.3767 | 0.1714 | 0.3768 | 0.1717 | 0.3771 |
| **socSkill** | 0.1682 | 0.3740 | 0.1682 | 0.3740 | 0.1682 | 0.3740 | 0.1687 | 0.3745 |
| **socSemiSkill** | 0.1075 | 0.3097 | 0.1075 | 0.3097 | 0.1075 | 0.3097 | 0.1075 | 0.3097 |
| **socUnskill** | 0.0872 | 0.2821 | 0.0872 | 0.2821 | 0.0872 | 0.2821 | 0.0868 | 0.2816 |
| **socUnknown** | 0.1948 | 0.3960 | 0.1948 | 0.3960 | 0.1945 | 0.3959 | 0.1939 | 0.3953 |
| **DwellSemiD** | 0.2391 | 0.4266 | 0.2391 | 0.4266 | 0.2392 | 0.4266 | 0.2394 | 0.4267 |
| **DwellTerrace** | 0.1897 | 0.3921 | 0.1897 | 0.3921 | 0.1897 | 0.3921 | 0.1895 | 0.3919 |
| **DwellPurpApt** | 0.0066 | 0.0809 | 0.0066 | 0.0809 | 0.0066 | 0.0808 | 0.0063 | 0.0793 |
| **DwellHousApt** | 0.0032 | 0.0563 | 0.0032 | 0.0563 | 0.0032 | 0.0564 | 0.0031 | 0.0557 |
| **DwellCaravan** | 0.0021 | 0.0453 | 0.0021 | 0.0453 | 0.0020 | 0.0450 | 0.0021 | 0.0453 |
| **HAge1900_40** | 0.1200 | 0.3249 | 0.1200 | 0.3249 | 0.1198 | 0.3248 | 0.1191 | 0.3239 |
| **HAge1941_60** | 0.1282 | 0.3343 | 0.1282 | 0.3343 | 0.1281 | 0.3342 | 0.1283 | 0.3344 |
| **HAge1961_70** | 0.1166 | 0.3209 | 0.1166 | 0.3209 | 0.1167 | 0.3211 | 0.1170 | 0.3214 |
| **HAge1971_80** | 0.2367 | 0.4251 | 0.2367 | 0.4251 | 0.2367 | 0.4251 | 0.2375 | 0.4256 |
| **HAge1981_90** | 0.1500 | 0.3571 | 0.1500 | 0.3571 | 0.1502 | 0.3572 | 0.1503 | 0.3574 |
| **HAge1991_96** | 0.0750 | 0.2634 | 0.0750 | 0.2634 | 0.0750 | 0.2634 | 0.0751 | 0.2635 |
| **HAgeAfter97** | 0.0605 | 0.2384 | 0.0605 | 0.2384 | 0.0604 | 0.2383 | 0.0602 | 0.2379 |
| **HH1over65** | 0.0603 | 0.2380 | 0.0603 | 0.2380 | 0.0602 | 0.2378 | 0.0591 | 0.2359 |
| **HHCoupleKids** | 0.3608 | 0.4802 | 0.3608 | 0.4802 | 0.3612 | 0.4803 | 0.3628 | 0.4808 |
| **HHOthKids** | 0.0399 | 0.1958 | 0.0399 | 0.1958 | 0.0400 | 0.1959 | 0.0398 | 0.1955 |
| **HHParAduKids** | 0.2674 | 0.4426 | 0.2674 | 0.4426 | 0.2672 | 0.4425 | 0.2677 | 0.4428 |
| **HHOthAdUn65** | 0.1306 | 0.3369 | 0.1306 | 0.3369 | 0.1306 | 0.3369 | 0.1305 | 0.3369 |
| **HHOthAdOv65** | 0.0939 | 0.2917 | 0.0939 | 0.2917 | 0.0938 | 0.2915 | 0.0938 | 0.2916 |

**Table 2 - Descriptive statistics for variables used in regressions. The dependent variable for each regression is shown in bold**

| | sewagetype | watertype | yrshere | hvalue | HHincome | age40_64 | age65plus | locBMWurban | locothurban | locruralBMW | locothrural | tenurePurch | tenureLocalA | tenurePrRent | tenureVolOrg | tenureRentFr | socLowProf | socOthNonMan | socSkill |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sewagetype | 1.000 | | | | | | | | | | | | | | | | | | |
| watertype | 0.646 | 1.000 | | | | | | | | | | | | | | | | | |
| yrshere | -0.213 | -0.173 | 1.000 | | | | | | | | | | | | | | | | |
| hvalue | 0.133 | 0.116 | -0.123 | 1.000 | | | | | | | | | | | | | | | |
| HHincome | 0.084 | 0.073 | -0.218 | 0.334 | 1.000 | | | | | | | | | | | | | | |
| age40_64 | -0.001 | 0.020 | -0.097 | 0.067 | 0.178 | 1.000 | | | | | | | | | | | | | |
| age65plus | -0.096 | -0.084 | 0.450 | -0.066 | -0.279 | -0.696 | 1.000 | | | | | | | | | | | | |
| locBMWurban | 0.241 | 0.166 | -0.082 | -0.015 | -0.008 | -0.015 | -0.029 | 1.000 | | | | | | | | | | | |
| locothurban | 0.378 | 0.270 | -0.094 | -0.030 | 0.028 | -0.005 | -0.047 | -0.159 | 1.000 | | | | | | | | | | |
| locruralBMW | -0.478 | -0.347 | 0.128 | -0.172 | -0.124 | -0.017 | 0.076 | -0.212 | -0.316 | 1.000 | | | | | | | | | |
| locothrural | -0.323 | -0.215 | 0.078 | -0.071 | -0.031 | 0.013 | 0.028 | -0.184 | -0.274 | -0.366 | 1.000 | | | | | | | | |
| tenurePurch | 0.107 | 0.089 | -0.350 | 0.106 | 0.261 | 0.114 | -0.305 | 0.014 | 0.030 | -0.079 | -0.059 | 1.000 | | | | | | | |
| tenureLocalA | 0.174 | 0.117 | -0.124 | -0.132 | -0.189 | 0.009 | -0.055 | 0.019 | 0.073 | -0.075 | -0.059 | -0.197 | 1.000 | | | | | | |
| tenurePrRent | 0.128 | 0.087 | -0.228 | -0.016 | 0.019 | -0.121 | -0.107 | 0.118 | 0.068 | -0.075 | -0.071 | -0.148 | -0.059 | 1.000 | | | | | |
| tenureVolOrg | 0.034 | 0.022 | -0.034 | -0.014 | -0.027 | -0.019 | -0.003 | 0.020 | 0.013 | -0.010 | -0.006 | -0.032 | -0.013 | -0.010 | 1.000 | | | | |
| tenureRentFr | -0.010 | -0.011 | -0.026 | 0.000 | -0.024 | -0.033 | 0.017 | -0.003 | -0.013 | 0.004 | 0.014 | -0.062 | -0.025 | -0.019 | -0.004 | 1.000 | | | |
| socLowProf | -0.008 | 0.004 | -0.053 | 0.098 | 0.143 | 0.042 | -0.062 | 0.005 | -0.011 | 0.002 | 0.009 | 0.037 | -0.083 | 0.003 | -0.010 | -0.004 | 1.000 | | |
| socOthNonMan | -0.084 | -0.073 | 0.039 | -0.010 | 0.001 | 0.004 | -0.003 | -0.011 | -0.037 | 0.044 | 0.010 | -0.004 | -0.061 | -0.016 | -0.007 | -0.016 | -0.199 | 1.000 | |
| socSkill | -0.021 | -0.007 | -0.023 | -0.056 | -0.026 | 0.076 | -0.094 | -0.032 | 0.007 | 0.025 | 0.001 | 0.045 | -0.016 | -0.035 | 0.007 | -0.019 | -0.195 | -0.200 | 1.000 |
| socSemiSkill | 0.039 | 0.026 | -0.010 | -0.086 | -0.092 | 0.020 | -0.050 | 0.017 | 0.032 | 0.003 | -0.019 | 0.014 | 0.048 | 0.000 | 0.010 | 0.000 | -0.154 | -0.158 | -0.155 |
| socUnskill | 0.029 | 0.026 | 0.029 | -0.110 | -0.142 | 0.037 | -0.013 | -0.008 | 0.011 | 0.002 | 0.014 | -0.037 | 0.146 | -0.020 | -0.001 | 0.002 | -0.138 | -0.142 | -0.138 |
| DwellSemiD | 0.409 | 0.279 | -0.138 | 0.063 | 0.115 | 0.000 | -0.081 | 0.101 | 0.159 | -0.237 | -0.156 | 0.121 | -0.011 | 0.057 | 0.007 | -0.013 | 0.013 | -0.010 | -0.006 |
| DwellTerrace | 0.403 | 0.274 | 0.023 | -0.106 | -0.152 | -0.011 | -0.001 | 0.065 | 0.195 | -0.226 | -0.159 | -0.033 | 0.271 | 0.019 | 0.007 | -0.019 | -0.086 | -0.071 | 0.025 |
| DwellPurpApt | 0.079 | 0.050 | -0.089 | -0.002 | -0.033 | -0.053 | -0.011 | 0.034 | 0.013 | -0.052 | -0.046 | -0.050 | 0.114 | 0.154 | 0.065 | 0.051 | -0.009 | -0.008 | -0.026 |
| DwellHousApt | 0.051 | 0.036 | -0.061 | 0.013 | -0.028 | -0.039 | -0.022 | 0.031 | 0.022 | -0.019 | -0.023 | -0.046 | -0.008 | 0.242 | 0.040 | 0.031 | 0.011 | -0.006 | -0.011 |
| DwellCaravan | -0.020 | -0.021 | -0.040 | -0.035 | -0.027 | -0.024 | 0.000 | -0.001 | -0.017 | 0.012 | 0.005 | -0.018 | 0.036 | -0.003 | -0.003 | 0.026 | 0.002 | -0.009 | -0.002 |
| HAge1900_40 | -0.079 | -0.068 | 0.246 | -0.051 | -0.088 | -0.063 | 0.122 | -0.029 | -0.022 | 0.070 | 0.017 | -0.136 | -0.069 | 0.012 | 0.002 | 0.005 | -0.026 | 0.001 | -0.006 |
| HAge1941_60 | 0.071 | 0.048 | 0.172 | -0.024 | -0.093 | -0.077 | 0.140 | -0.010 | 0.023 | -0.036 | -0.058 | -0.075 | -0.007 | -0.034 | -0.016 | -0.006 | -0.050 | -0.009 | -0.014 |
| HAge1961_70 | 0.099 | 0.077 | 0.069 | 0.019 | -0.010 | 0.003 | 0.053 | 0.030 | 0.063 | -0.072 | -0.058 | -0.059 | 0.005 | -0.032 | -0.011 | -0.006 | -0.003 | 0.000 | -0.002 |
| HAge1971_80 | 0.041 | 0.049 | -0.065 | 0.001 | 0.072 | 0.182 | -0.118 | 0.005 | 0.001 | -0.035 | 0.000 | 0.022 | 0.036 | -0.043 | -0.016 | -0.018 | 0.008 | -0.009 | 0.039 |
| HAge1981_90 | -0.015 | -0.003 | -0.221 | 0.009 | 0.053 | 0.109 | -0.134 | 0.020 | -0.012 | 0.009 | 0.000 | 0.140 | 0.061 | 0.003 | -0.005 | -0.013 | 0.009 | 0.006 | 0.014 |
| HAge1991_96 | 0.034 | 0.030 | -0.263 | 0.039 | 0.085 | -0.063 | -0.111 | 0.040 | 0.019 | -0.024 | -0.016 | 0.158 | 0.026 | 0.052 | 0.050 | -0.007 | 0.018 | -0.006 | -0.005 |
| HAgeAfter97 | 0.002 | 0.001 | -0.290 | 0.026 | 0.067 | -0.102 | -0.112 | 0.021 | 0.009 | 0.020 | -0.001 | 0.147 | 0.035 | 0.058 | 0.018 | 0.012 | 0.018 | -0.002 | 0.000 |
| HH1over65 | -0.005 | -0.017 | 0.213 | -0.068 | -0.260 | -0.285 | 0.410 | 0.000 | -0.012 | 0.029 | 0.000 | -0.164 | 0.008 | -0.037 | 0.024 | 0.032 | -0.028 | -0.009 | -0.066 |
| HHCoupleKids | -0.040 | -0.026 | -0.290 | 0.050 | 0.217 | 0.184 | -0.341 | -0.034 | -0.012 | 0.021 | 0.015 | 0.326 | 0.001 | -0.064 | -0.006 | -0.028 | 0.017 | -0.005 | 0.085 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHOthKids | 0.093 | 0.064 | -0.115 | -0.052 | -0.108 | 0.002 | -0.105 | 0.028 | 0.036 | -0.049 | -0.040 | -0.029 | 0.242 | 0.069 | 0.018 | -0.005 | -0.027 | -0.004 | -0.069 |
| HHParAduKids | -0.039 | -0.030 | 0.208 | 0.021 | 0.083 | 0.081 | 0.115 | -0.027 | -0.018 | 0.007 | 0.020 | -0.115 | -0.058 | -0.102 | -0.020 | -0.025 | -0.019 | 0.006 | -0.013 |
| HHOthAdUn65 | 0.053 | 0.043 | -0.115 | 0.018 | 0.069 | 0.082 | -0.228 | 0.057 | 0.028 | -0.044 | -0.020 | -0.003 | -0.048 | 0.198 | -0.002 | 0.011 | 0.025 | -0.014 | 0.004 |
| HHOthAdOv65 | -0.024 | -0.012 | 0.230 | -0.012 | -0.170 | -0.349 | 0.502 | -0.003 | -0.012 | 0.025 | 0.003 | -0.171 | -0.048 | -0.054 | -0.007 | 0.007 | -0.004 | 0.020 | -0.001 |

**Table 3 - Correlation table of independent variables – continued on next page**

| | socSemiSkill | socUnskill | DwellSemiD | DwellTerrace | DwellPurpApt | DwellHousApt | DwellCaravan | HAge1900_40 | HAge1941_60 | HAge1961_70 | HAge1971_80 | HAge1981_90 | HAge1991_96 | HAgeAfter97 | HH1over65 | HHCoupleKids | HHOthKids | HHParAduKids | HHOthAdUn65 | HHOthAdOv65 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sewagetype | | | | | | | | | | | | | | | | | | | | |
| watertype | | | | | | | | | | | | | | | | | | | | |
| yrshere | | | | | | | | | | | | | | | | | | | | |
| hvalue | | | | | | | | | | | | | | | | | | | | |
| HHincome | | | | | | | | | | | | | | | | | | | | |
| age40_64 | | | | | | | | | | | | | | | | | | | | |
| age65plus | | | | | | | | | | | | | | | | | | | | |
| locBMWurban | | | | | | | | | | | | | | | | | | | | |
| locothurban | | | | | | | | | | | | | | | | | | | | |
| locruralBMW | | | | | | | | | | | | | | | | | | | | |
| locothrural | | | | | | | | | | | | | | | | | | | | |
| tenurePurch | | | | | | | | | | | | | | | | | | | | |
| tenureLocalA | | | | | | | | | | | | | | | | | | | | |
| tenurePrRent | | | | | | | | | | | | | | | | | | | | |
| tenureVolOrg | | | | | | | | | | | | | | | | | | | | |
| tenureRentFr | | | | | | | | | | | | | | | | | | | | |
| socLowProf | | | | | | | | | | | | | | | | | | | | |
| socOthNonMan | | | | | | | | | | | | | | | | | | | | |
| socSkill | | | | | | | | | | | | | | | | | | | | |
| socSemiSkill | 1.000 | | | | | | | | | | | | | | | | | | | |
| socUnskill | -0.110 | 1.000 | | | | | | | | | | | | | | | | | | |
| DwellSemiD | -0.001 | -0.023 | 1.000 | | | | | | | | | | | | | | | | | |
| DwellTerrace | 0.082 | 0.112 | -0.276 | 1.000 | | | | | | | | | | | | | | | | |
| DwellPurpApt | 0.005 | 0.012 | -0.058 | -0.053 | 1.000 | | | | | | | | | | | | | | | |
| DwellHousApt | 0.019 | 0.006 | -0.042 | -0.039 | -0.008 | 1.000 | | | | | | | | | | | | | | |
| DwellCaravan | 0.000 | 0.011 | -0.030 | -0.028 | -0.006 | -0.004 | 1.000 | | | | | | | | | | | | | |
| HAge1900_40 | 0.002 | 0.018 | -0.086 | 0.042 | -0.023 | 0.033 | -0.001 | 1.000 | | | | | | | | | | | | |
| HAge1941_60 | 0.029 | 0.034 | -0.016 | 0.155 | -0.012 | -0.019 | -0.013 | -0.143 | 1.000 | | | | | | | | | | | |
| HAge1961_70 | -0.010 | -0.003 | 0.089 | 0.019 | 0.000 | -0.014 | -0.011 | -0.133 | -0.139 | 1.000 | | | | | | | | | | |
| HAge1971_80 | 0.002 | 0.001 | 0.063 | -0.029 | -0.026 | -0.034 | -0.012 | -0.204 | -0.212 | -0.198 | 1.000 | | | | | | | | | |
| HAge1981_90 | -0.004 | 0.003 | 0.004 | -0.056 | 0.003 | -0.024 | 0.014 | -0.155 | -0.161 | -0.151 | -0.230 | 1.000 | | | | | | | | |
| HAge1991_96 | 0.004 | -0.025 | 0.057 | -0.087 | 0.053 | -0.005 | 0.017 | -0.106 | -0.110 | -0.103 | -0.157 | -0.120 | 1.000 | | | | | | | |
| HAgeAfter97 | 0.002 | -0.016 | 0.024 | -0.083 | 0.063 | -0.005 | 0.039 | -0.095 | -0.099 | -0.092 | -0.141 | -0.107 | -0.073 | 1.000 | | | | | | |
| HH1over65 | -0.007 | 0.031 | -0.031 | 0.038 | 0.047 | 0.010 | 0.029 | 0.067 | 0.075 | -0.010 | -0.074 | -0.054 | -0.041 | -0.045 | 1.000 | | | | | |
| HHCoupleKids | 0.011 | -0.016 | 0.016 | -0.058 | -0.057 | -0.040 | -0.013 | -0.094 | -0.067 | -0.089 | 0.022 | 0.141 | 0.117 | 0.097 | -0.191 | 1.000 | | | | |
| HHOthKids | 0.046 | 0.041 | 0.018 | 0.113 | 0.044 | 0.019 | 0.003 | -0.023 | -0.017 | -0.005 | 0.010 | 0.048 | 0.016 | 0.006 | -0.057 | -0.163 | 1.000 | | | |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHParAduKids | -0.022 | -0.019 | -0.018 | -0.009 | -0.046 | -0.033 | -0.024 | 0.014 | 0.015 | 0.080 | 0.089 | -0.077 | -0.104 | -0.109 | -0.155 | -0.440 | -0.132 | 1.000 | | |
| HHOthAdUn65 | -0.015 | -0.018 | 0.035 | -0.008 | 0.051 | 0.028 | 0.009 | -0.002 | -0.028 | -0.001 | -0.011 | -0.020 | 0.033 | 0.078 | -0.102 | -0.290 | -0.087 | -0.235 | 1.000 | |
| HHOthAdOv65 | -0.008 | -0.003 | -0.026 | -0.017 | -0.020 | -0.015 | -0.002 | 0.068 | 0.060 | 0.051 | -0.066 | -0.069 | -0.059 | -0.056 | -0.082 | -0.234 | -0.070 | -0.190 | -0.125 | 1.000 |

| Cluster | Frequency | Share |
|---|---|---|
| 0000 - no appliances | 703 | 0.018 |
| 0010 - bath and no other appliances | 629 | 0.016 |
| 0100 - washing machine / washer-dryer and no other appliances | 11,540 | 0.290 |
| 0101 - washing machine / washer-dryer and power-shower, but no other appliances | 4,078 | 0.102 |
| 0110 - washing machine / washer/dryer and bath, but no dishwasher or shower | 4,058 | 0.102 |
| 1100 - dishwasher and washing machine / washer-dryer, but no power-shower | 11,290 | 0.283 |
| 1101 - dishwasher, washing machine / washer-dryer and power-shower | 6,617 | 0.166 |
| 1110 - dishwasher, washing machine / washer-dryer and bath, but no shower | 941 | 0.024 |
| **Total** | **39856** | **1** |

**Table 4 - Total numbers of households in each cluster. There is no cluster '1111' as it is impossible to have both a powershower and a bath-but-no-shower, by definition.**

Number of obs = 35552
LR chi2(38) = 30013.48
Prob > chi2 = 0.0000
Log likelihood = -9189.9579
Pseudo R2 = 0.6202

| sewagetype | Coef. | Std. Err. | z | P>\|z\| | |
|---|---|---|---|---|---|
| yrshere | -0.0203998 | 0.0016524 | -12.35 | 0.000 | *** |
| hvalue | 7.29E-07 | 1.89E-07 | 3.85 | 0.000 | *** |
| HHincome | 0.0003076 | 0.0000698 | 4.4 | 0.000 | *** |
| age40_64 | 0.0126319 | 0.0650831 | 0.19 | 0.846 | |
| age65plus | -0.0498331 | 0.0928233 | -0.54 | 0.591 | |
| locBMWurban | 0.1567873 | 0.121115 | 1.29 | 0.195 | |
| locothurban | 0.4159274 | 0.1130728 | 3.68 | 0.000 | *** |
| locruralBMW | -3.326204 | 0.0968413 | -34.35 | 0.000 | *** |
| locothrural | -3.052485 | 0.0956059 | -31.93 | 0.000 | *** |
| tenurePurch | 0.1214805 | 0.0489716 | 2.48 | 0.013 | ** |
| tenureLocalA | 0.5728984 | 0.1251049 | 4.58 | 0.000 | *** |
| tenurePrRent | 0.823214 | 0.1696198 | 4.85 | 0.000 | *** |
| tenureVolOrg | 3.338313 | 1.090037 | 3.06 | 0.002 | *** |
| tenureRentFr | 0.0479949 | 0.2282505 | 0.21 | 0.833 | |
| socLowProf | -0.068939 | 0.0748035 | -0.92 | 0.357 | |
| socOthNonMan | -0.4260836 | 0.0785924 | -5.42 | 0.000 | *** |
| socSkill | -0.3180352 | 0.0792738 | -4.01 | 0.000 | *** |
| socSemiSkill | -0.136237 | 0.0883147 | -1.54 | 0.123 | |
| socUnskill | -0.1951729 | 0.0953927 | -2.05 | 0.041 | ** |
| socUnknown | -0.237759 | 0.0804276 | -2.96 | 0.003 | *** |
| DwellSemiD | 3.248688 | 0.0617552 | 52.61 | 0.000 | *** |
| DwellTerrace | 4.357746 | 0.0973278 | 44.77 | 0.000 | *** |
| DwellPurpApt | 2.675036 | 0.418862 | 6.39 | 0.000 | *** |
| DwellHousApt | 3.111169 | 0.3903806 | 7.97 | 0.000 | *** |
| DwellCaravan | 0.1676082 | 0.3238189 | 0.52 | 0.605 | |
| HAge1900_40 | 0.2581328 | 0.0829043 | 3.11 | 0.002 | *** |
| HAge1941_60 | 0.4431776 | 0.0858002 | 5.17 | 0.000 | *** |
| HAge1961_70 | 0.690374 | 0.087104 | 7.93 | 0.000 | *** |
| HAge1971_80 | 0.5402288 | 0.0747491 | 7.23 | 0.000 | *** |
| HAge1981_90 | 0.2762201 | 0.0831906 | 3.32 | 0.001 | *** |
| HAge1991_96 | 0.3765083 | 0.1000074 | 3.76 | 0.000 | *** |
| HAgeAfter97 | 0.3801712 | 0.1047977 | 3.63 | 0.000 | *** |
| HH1over65 | 0.4369658 | 0.1401013 | 3.12 | 0.002 | *** |
| HHCoupleKids | -0.3662052 | 0.1042747 | -3.51 | 0.000 | *** |
| HHOthKids | -0.1645764 | 0.15001 | -1.1 | 0.273 | |
| HHParAduKids | -0.1291133 | 0.1080271 | -1.2 | 0.232 | |
| HHOthAdUn65 | -0.0862907 | 0.1110579 | -0.78 | 0.437 | |
| HHOthAdOv65 | 0.3760204 | 0.1317768 | 2.85 | 0.004 | *** |
| _cons | 1.491965 | 0.182561 | 8.17 | 0.000 | *** |

**Table 5 - Regression results for type of sewage system in home, 'mains' or 'not mains'; *=significant at the 10% level; **=significant at the 5% level; ***=significant at the 1% level**

**Number of obs = 35552**
**LR chi2(38) = 14148.66**
**Prob > chi2 = 0.0000**
**Log likelihood = -13188.867**
**Pseudo R2 = 0.3491**

| sewagetype | Coef. | Std. Err. | z | P>\|z\| | |
|---|---|---|---|---|---|
| yrshere | -0.0088195 | 0.0011565 | -7.63 | 0.000 | *** |
| hvalue | 1.10E-06 | 2.00E-07 | 5.49 | 0.000 | *** |
| HHincome | 0.000086 | 0.0000567 | 1.52 | 0.129 | |
| age40_64 | 0.1358336 | 0.0534181 | 2.54 | 0.011 | ** |
| age65plus | 0.0700955 | 0.0721573 | 0.97 | 0.331 | |
| locBMWurban | 0.0384435 | 0.1502799 | 0.26 | 0.798 | |
| locothurban | 0.5581305 | 0.146898 | 3.8 | 0.000 | *** |
| locruralBMW | -2.482766 | 0.1129744 | -21.98 | 0.000 | *** |
| locothrural | -2.315788 | 0.112309 | -20.62 | 0.000 | *** |
| tenurePurch | 0.112619 | 0.0392656 | 2.87 | 0.004 | *** |
| tenureLocalA | 0.3725873 | 0.1127208 | 3.31 | 0.001 | *** |
| tenurePrRent | 0.6308708 | 0.1634594 | 3.86 | 0.000 | *** |
| tenureVolOrg | 2.014145 | 1.047127 | 1.92 | 0.054 | * |
| tenureRentFr | -0.0741808 | 0.1889587 | -0.39 | 0.695 | |
| socLowProf | -0.133301 | 0.0656951 | -2.03 | 0.042 | ** |
| socOthNonMan | -0.387121 | 0.0661985 | -5.85 | 0.000 | *** |
| socSkill | -0.2107969 | 0.0675179 | -3.12 | 0.002 | *** |
| socSemiSkill | -0.1776155 | 0.0748466 | -2.37 | 0.018 | ** |
| socUnskill | -0.12308 | 0.0795202 | -1.55 | 0.122 | |
| socUnknown | -0.2668361 | 0.0685645 | -3.89 | 0.000 | *** |
| DwellSemiD | 2.009088 | 0.0671268 | 29.93 | 0.000 | *** |
| DwellTerrace | 2.809411 | 0.1017189 | 27.62 | 0.000 | *** |
| DwellPurpApt | 1.459693 | 0.4053598 | 3.6 | 0.000 | *** |
| DwellHousApt | 1.721526 | 0.4147707 | 4.15 | 0.000 | *** |
| DwellCaravan | 0.1217364 | 0.2909703 | 0.42 | 0.676 | |
| HAge1900_40 | 0.193177 | 0.0563485 | 3.43 | 0.001 | *** |
| HAge1941_60 | 0.3333584 | 0.06188 | 5.39 | 0.000 | *** |
| HAge1961_70 | 0.5144952 | 0.0661887 | 7.77 | 0.000 | *** |
| HAge1971_80 | 0.4472731 | 0.0539354 | 8.29 | 0.000 | *** |
| HAge1981_90 | 0.2396165 | 0.0608086 | 3.94 | 0.000 | *** |
| HAge1991_96 | 0.3266845 | 0.0780575 | 4.19 | 0.000 | *** |
| HAgeAfter97 | 0.2319629 | 0.0817613 | 2.84 | 0.005 | *** |
| HH1over65 | 0.0204562 | 0.107197 | 0.19 | 0.849 | |
| HHCoupleKids | -0.3165567 | 0.0817362 | -3.87 | 0.000 | *** |
| HHOthKids | -0.1617154 | 0.1220851 | -1.32 | 0.185 | |
| HHParAduKids | -0.185965 | 0.0845639 | -2.2 | 0.028 | ** |
| HHOthAdUn65 | -0.1241845 | 0.0878526 | -1.41 | 0.157 | |
| HHOthAdOv65 | 0.1186285 | 0.101357 | 1.17 | 0.242 | |
| _cons | 2.317778 | 0.1688935 | 13.72 | 0.000 | *** |

**Table 6 - Regression results for type of water system in home, 'mains' or 'not mains'; *=significant at the 10% level; **=significant at the 5% level; ***=significant at the 1% level**

**Ordered logistic regression**
**Number of obs = 35152**
**LR chi2(40) = 5558.61**
**Prob > chi2 = 0.0000**
**Pseudo R2 = 0.0724**
**Log likelihood = -35591.443**

| **totwateruse** | **Coef.** | **Odds Ratio** | **z** | **P>\|z\|** | | **P(0)** | **P(0 or 1)** | **P(0 or 1 or 2)** |
|---|---|---|---|---|---|---|---|---|
| **sewagetype** | 0.1676076 | 1.1859220 | 4.44 | 0.000 | *** | 2.17% | 45.58% | 90.84% |
| **watertype** | -0.0792824 | 0.9219972 | -2.55 | 0.011 | ** | 2.76% | 51.74% | 92.70% |
| **yrshere** | -0.0065230 | 0.9933252 | -7.55 | 0.000 | *** | 2.58% | 49.93% | 92.19% |
| **hvalue** | 0.0000029 | 1.0000030 | 20.57 | 0.000 | *** | 2.56% | 49.76% | 92.14% |
| **HHincome** | 0.0004485 | 1.0004490 | 11.82 | 0.000 | *** | 2.56% | 49.75% | 92.14% |
| **age40_64** | 0.0802078 | 1.0924220 | 2.37 | 0.018 | ** | 2.37% | 47.76% | 91.54% |
| **age65plus** | -0.1923543 | 0.8334678 | -3.92 | 0.000 | *** | 3.08% | 54.56% | 93.43% |
| **locBMWurban** | -0.0000975 | 1.0133930 | 0.00 | 0.998 | | 2.56% | 49.77% | 92.14% |
| **locothurban** | -0.1111123 | 0.8898187 | -3.04 | 0.002 | *** | 2.85% | 52.54% | 92.91% |
| **locruralBMW** | 0.0406716 | 1.0328500 | 0.92 | 0.357 | | 2.46% | 48.75% | 91.84% |
| **locothrural** | 0.0895718 | 1.0853370 | 2.09 | 0.036 | ** | 2.34% | 47.53% | 91.47% |
| **tenurePurch** | 0.0829137 | 1.0906360 | 3.10 | 0.002 | *** | 2.36% | 47.69% | 91.52% |
| **tenureLocalA** | -0.2605755 | 0.7807625 | -4.93 | 0.000 | *** | 3.30% | 56.24% | 93.83% |
| **tenurePrRent** | -0.9335613 | 0.3995162 | -13.07 | 0.000 | *** | 6.26% | 71.59% | 96.76% |
| **tenureVolOrg** | -0.9780805 | 0.3906988 | -3.31 | 0.001 | *** | 6.53% | 72.48% | 96.89% |
| **tenureRentFr** | -0.5065922 | 0.5961564 | -3.57 | 0.000 | *** | 4.18% | 62.18% | 95.11% |
| **socLowProf** | -0.1042921 | 0.9022207 | -2.52 | 0.012 | ** | 2.83% | 52.37% | 92.86% |
| **socOthNonMan** | -0.2800370 | 0.7572703 | -6.63 | 0.000 | *** | 3.36% | 56.72% | 93.94% |
| **socSkill** | -0.3650312 | 0.6942092 | -8.49 | 0.000 | *** | 3.64% | 58.80% | 94.41% |
| **socSemiSkill** | -0.4894892 | 0.6170763 | -10.27 | 0.000 | *** | 4.11% | 61.77% | 95.03% |
| **socUnskill** | -0.5656294 | 0.5719267 | -11.06 | 0.000 | *** | 4.42% | 63.56% | 95.38% |
| **socUnknown** | -0.3459399 | 0.7068722 | -8.00 | 0.000 | *** | 3.58% | 58.33% | 94.31% |
| **DwellSemiD** | -0.2974159 | 0.7377140 | -8.85 | 0.000 | *** | 3.41% | 57.15% | 94.04% |
| **DwellTerrace** | -0.4583453 | 0.6257524 | -11.70 | 0.000 | *** | 3.99% | 61.04% | 94.88% |
| **DwellPurpApt** | -0.5199946 | 0.6062877 | -3.77 | 0.000 | *** | 4.23% | 62.49% | 95.17% |
| **DwellHousApt** | -0.8810181 | 0.4120404 | -4.29 | 0.000 | *** | 5.96% | 70.51% | 96.59% |
| **DwellCaravan** | -2.4504960 | 0.0852060 | -8.87 | 0.000 | *** | 23.34% | 91.99% | 99.27% |
| **HAge1900_40** | -0.1072198 | 0.8908106 | -2.46 | 0.014 | ** | 2.84% | 52.44% | 92.88% |
| **HAge1941_60** | 0.0363829 | 1.0204060 | 0.84 | 0.403 | | 2.47% | 48.85% | 91.87% |
| **HAge1961_70** | 0.1946339 | 1.1999200 | 4.30 | 0.000 | *** | 2.12% | 44.91% | 90.61% |
| **HAge1971_80** | 0.1347201 | 1.1265350 | 3.31 | 0.001 | *** | 2.24% | 46.40% | 91.11% |
| **HAge1981_90** | 0.0454991 | 1.0309790 | 1.00 | 0.317 | | 2.45% | 48.63% | 91.80% |
| **HAge1991_96** | 0.1559620 | 1.1429140 | 2.84 | 0.005 | *** | 2.20% | 45.87% | 90.93% |
| **HAgeAfter97** | 0.3708767 | 1.4322990 | 6.24 | 0.000 | *** | 1.78% | 40.60% | 89.00% |
| **HH1over65** | 0.0469667 | 1.0632450 | 0.63 | 0.526 | | 2.44% | 48.59% | 91.79% |
| **HHCoupleKids** | 0.9189492 | 2.4972510 | 17.16 | 0.000 | *** | 1.04% | 28.32% | 82.38% |
| **HHOthKids** | 0.8388777 | 2.3113910 | 11.66 | 0.000 | *** | 1.12% | 29.98% | 83.52% |
| **HHParAduKids** | 0.7435405 | 2.0954120 | 13.36 | 0.000 | *** | 1.23% | 32.02% | 84.79% |
| **HHOthAdUn65** | 0.5336241 | 1.7023080 | 9.34 | 0.000 | *** | 1.52% | 36.75% | 87.30% |
| **HHOthAdOv65** | 0.6129174 | 1.8532750 | 8.89 | 0.000 | *** | 1.40% | 34.92% | 86.40% |
| **/cut1** | -3.6397440 | -3.6590180 | | | | | | |
| **/cut2** | -0.0094876 | -0.0311180 | | | | | | |
| **/cut3** | 2.4615380 | 2.4370190 | | | | | | |

**Table 7 – Regression results for total number of water-using appliances in home using an ordered logit; P(0) is the probability of having no appliances in the home, and so on;**

**Similar to the interpretation of coefficients in the logit model, the figures under the column "coef." represent the effect that a one-unit change in that variable would have on the dependent variable. That is, for a given variable, the coefficient (say, X) implies that a one-unit change in that variable results in an X change in the dependent variable. In an ordered logit, confusion often arises because the dependent variable has a limited number of values, each represented by 'cut points' (see the last three rows in this table). In general, positive coefficients imply a higher probability that the household will be observed in a higher category (i.e. have more appliances), and negative coefficients imply a higher probability that the household will be observed in a lower category (i.e. have fewer appliances).**

**Exactly how many appliances one can expect a given household to have is less obvious from a cursory glance at the data. However, one can determine the *probability* that a household belongs above or below a certain cut point. For example, the probability of a household with a mains water connection having zero appliances (below _cut1) is the probability that 0.17 +** $u_j \leq$ **-3.66, or, or, equivalently,** $u_j \leq$ **-3.83 = 0.0217 = 2.17%.**

***=significant at the 10% level; **=significant at the 5% level; ***=significant at the 1% level**

| | 0010 | | 0100 | | 0101 | | 0110 | | 1100 | | 1101 | | 1110 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **watercluster** | **Coef.** | **P>\|z\|** | **Coef.** | **P>\|z\|** | **Coef.** | **P>\|z\|** | **Coef.** | **P>\|z\|** | **Coef.** | **P>\|z\|** | **Coef.** | **P>\|z\|** | **Coef.** | **P>\|z\|** |
| **sewagetype** | 0.6953 | 0.013 ** | 0.8833 | 0.000 *** | 1.1103 | 0.000 *** | 0.9945 | 0.000 *** | 1.0932 | 0.000 *** | 1.1397 | 0.000 *** | 0.8049 | 0.002 *** |
| **watertype** | 0.1241 | 0.489 | 0.4869 | 0.001 *** | 0.3583 | 0.017 ** | 0.2591 | 0.074 * | 0.3872 | 0.008 *** | 0.3007 | 0.042 ** | 0.4598 | 0.007 *** |
| **yrshere** | -0.0035 | 0.382 | -0.0191 | 0.000 *** | -0.0242 | 0.000 *** | -0.0151 | 0.000 *** | -0.0216 | 0.000 *** | -0.0270 | 0.000 *** | -0.0226 | 0.000 *** |
| **hvalue** | 0.0000 | 0.569 | 0.0000 | 0.000 *** | 0.0000 | 0.000 *** | 0.0000 | 0.000 *** | 0.0000 | 0.000 *** | 0.0000 | 0.000 *** | 0.0000 | 0.000 *** |
| **HHincome** | 0.0003 | 0.615 | 0.0030 | 0.000 *** | 0.0029 | 0.000 *** | 0.0021 | 0.000 *** | 0.0037 | 0.000 *** | 0.0038 | 0.000 *** | 0.0032 | 0.000 *** |
| **age40_64** | -0.9826 | 0.019 ** | -1.1363 | 0.002 *** | -1.1550 | 0.002 *** | -1.3557 | 0.000 *** | -0.9535 | 0.010 *** | -0.9217 | 0.013 ** | -1.2792 | 0.001 *** |
| **age65plus** | -0.8140 | 0.153 | -2.2820 | 0.000 *** | -2.4031 | 0.000 *** | -2.2803 | 0.000 *** | -2.5126 | 0.000 *** | -2.6038 | 0.000 *** | -2.5160 | 0.000 *** |
| **locBMWurban** | -0.2770 | 0.552 | -0.1518 | 0.684 | -0.4796 | 0.204 | -0.2433 | 0.522 | 0.0556 | 0.883 | -0.0413 | 0.913 | 0.1010 | 0.805 |
| **locothurban** | -0.0716 | 0.860 | 0.1427 | 0.664 | -0.3622 | 0.275 | -0.1730 | 0.604 | 0.3528 | 0.285 | 0.1266 | 0.703 | 0.0304 | 0.933 |
| **locruralBMW** | -0.2784 | 0.509 | -0.6654 | 0.049 ** | -1.0736 | 0.002 *** | -0.2654 | 0.440 | -0.4013 | 0.240 | -0.5261 | 0.126 | -0.1401 | 0.706 |
| **locothrural** | -0.6325 | 0.132 | -0.9150 | 0.006 *** | -1.1374 | 0.001 *** | -0.5630 | 0.098 * | -0.6194 | 0.067 * | -0.6635 | 0.051 * | -0.4966 | 0.178 |
| **tenurePurch** | 1.2711 | 0.048 ** | 1.8558 | 0.002 *** | 1.9228 | 0.001 *** | 1.7470 | 0.003 *** | 1.9716 | 0.001 *** | 2.0252 | 0.001 *** | 1.9470 | 0.001 *** |
| **tenureLocalA** | 0.3509 | 0.192 | -1.4868 | 0.000 *** | -1.9550 | 0.000 *** | -0.3128 | 0.177 | -2.3499 | 0.000 *** | -2.5471 | 0.000 *** | -0.8308 | 0.004 *** |
| **tenurePrRent** | -0.3461 | 0.360 | -1.6469 | 0.000 *** | -2.0266 | 0.000 *** | -1.9004 | 0.000 *** | -2.7791 | 0.000 *** | -3.0338 | 0.000 *** | -2.9204 | 0.000 *** |
| **tenureVolOrg** | -2.6499 | 0.020 ** | -3.6658 | 0.000 *** | -3.6910 | 0.000 *** | -3.5812 | 0.000 *** | -4.8399 | 0.000 *** | -4.8818 | 0.000 *** | -2.4886 | 0.003 *** |
| **tenureRentFr** | -0.0466 | 0.918 | -1.1562 | 0.003 *** | -1.3259 | 0.002 *** | -1.0874 | 0.008 *** | -1.6496 | 0.000 *** | -1.7845 | 0.000 *** | -0.9087 | 0.094 * |
| **socLowProf** | 1.2282 | 0.052 * | 1.1887 | 0.012 ** | 1.2656 | 0.008 *** | 1.1690 | 0.015 ** | 0.9906 | 0.036 ** | 0.9342 | 0.049 ** | 1.0881 | 0.027 ** |
| **socOthNonMan** | 0.4155 | 0.476 | 0.2870 | 0.492 | 0.2559 | 0.545 | 0.3691 | 0.388 | -0.1089 | 0.795 | -0.2299 | 0.584 | 0.0002 | 1.000 |
| **socSkill** | 0.1994 | 0.734 | -0.0784 | 0.851 | -0.1184 | 0.780 | 0.0180 | 0.967 | -0.5349 | 0.202 | -0.6858 | 0.103 | -0.4949 | 0.264 |
| **socSemiSkill** | 0.2086 | 0.723 | -0.0310 | 0.941 | -0.0489 | 0.909 | 0.1126 | 0.794 | -0.6626 | 0.117 | -0.8842 | 0.038 ** | -0.5257 | 0.245 |
| **socUnskill** | 0.2827 | 0.626 | -0.3494 | 0.401 | -0.4637 | 0.273 | -0.0607 | 0.887 | -1.1546 | 0.006 *** | -1.3135 | 0.002 *** | -0.8114 | 0.072 * |
| **socUnknown** | 0.3604 | 0.528 | 0.0259 | 0.949 | -0.0514 | 0.901 | 0.3088 | 0.459 | -0.4147 | 0.310 | -0.5898 | 0.150 | -0.2724 | 0.529 |
| **DwellSemiD** | -1.0293 | 0.000 *** | -1.0633 | 0.000 *** | -1.1875 | 0.000 *** | -1.0440 | 0.000 *** | -1.4003 | 0.000 *** | -1.5730 | 0.000 *** | -1.5503 | 0.000 *** |
| **DwellTerrace** | -1.3840 | 0.000 *** | -1.3243 | 0.000 *** | -1.3598 | 0.000 *** | -1.4670 | 0.000 *** | -2.0041 | 0.000 *** | -2.0435 | 0.000 *** | -1.8314 | 0.000 *** |
| **DwellPurpApt** | -1.6856 | 0.004 *** | -2.2827 | 0.000 *** | -2.2253 | 0.000 *** | -2.8058 | 0.000 *** | -2.8081 | 0.000 *** | -2.9719 | 0.000 *** | -3.2121 | 0.000 *** |
| **DwellHousApt** | -1.1759 | 0.028 ** | -3.1942 | 0.000 *** | -3.6610 | 0.000 *** | -3.0763 | 0.000 *** | -4.4651 | 0.000 *** | -4.1244 | 0.000 *** | -3.4790 | 0.000 *** |
| **DwellCaravan** | -64.9740 | . | -76.0792 | . | -76.2581 | . | -76.5976 | . | -76.2688 | . | -74.7771 | . | -112.7844 | . |
| **HAge1900_40** | 0.1706 | 0.328 | 0.3156 | 0.016 ** | 0.2769 | 0.058 * | 0.1169 | 0.386 | 0.1337 | 0.335 | 0.0738 | 0.617 | -0.0341 | 0.853 |
| **HAge1941_60** | 0.7674 | 0.000 *** | 0.9117 | 0.000 *** | 1.0142 | 0.000 *** | 0.7737 | 0.000 *** | 0.8013 | 0.000 *** | 0.8222 | 0.000 *** | 0.4796 | 0.026 ** |
| **HAge1961_70** | 1.3834 | 0.000 *** | 1.6353 | 0.000 *** | 1.7205 | 0.000 *** | 1.3284 | 0.000 *** | 1.8224 | 0.000 *** | 1.9155 | 0.000 *** | 1.3751 | 0.000 *** |

**Table 8 – Regression results for clusters of household water-using appliances using a Multinomial logit. The baseline is "0000", representing none of dishwasher, washing machine / washer-dryer, 'bath-no-shower' and power-shower in the home. Eight variables are significant across all clusters (yrshere, hvalue, tenureLocalA, Hage1991_96, HageAfter97 and HHCoupleKids) while one is not significant for any clusters (HH1Over65). ; *=significant at the 10% level; **=significant at the 5% level; ***=significant at the 1% level**

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HAge1971_80** | 1.3731 | 0.000 | *** | 1.5399 | 0.000 | *** | 1.5990 | 0.000 | *** | 1.1710 | 0.000 | *** | 1.7319 | 0.000 | *** | 1.7453 | 0.000 | *** | 1.1608 | 0.000 | *** |
| **HAge1981_90** | 1.7127 | 0.000 | *** | 1.9103 | 0.000 | *** | 1.8693 | 0.000 | *** | 1.4943 | 0.000 | *** | 1.9875 | 0.000 | *** | 1.9787 | 0.000 | *** | 1.3189 | 0.001 | *** |
| **HAge1991_96** | 0.5646 | 0.350 | | 1.5588 | 0.001 | *** | 1.7326 | 0.000 | *** | 0.8907 | 0.069 | * | 1.8180 | 0.000 | *** | 1.8457 | 0.000 | *** | 0.9979 | 0.052 | * |
| **HAgeAfter97** | 2.0870 | 0.027 | ** | 2.9343 | 0.001 | *** | 3.3620 | 0.000 | *** | 2.2173 | 0.012 | ** | 3.3677 | 0.000 | *** | 3.6566 | 0.000 | *** | 2.1987 | 0.014 | ** |
| **HH1over65** | 0.0833 | 0.849 | | 1.1395 | 0.001 | *** | 1.1157 | 0.002 | *** | 1.1180 | 0.001 | *** | 1.1948 | 0.001 | *** | 1.2162 | 0.001 | *** | 1.1863 | 0.009 | *** |
| **HHCoupleKids** | 0.0123 | 0.982 | | 3.2789 | 0.000 | *** | 3.4402 | 0.000 | *** | 3.0937 | 0.000 | *** | 4.4505 | 0.000 | *** | 4.6249 | 0.000 | *** | 4.2453 | 0.000 | *** |
| **HHOthKids** | 0.5007 | 0.429 | | 2.8859 | 0.000 | *** | 2.9359 | 0.000 | *** | 2.9004 | 0.000 | *** | 3.9123 | 0.000 | *** | 3.9732 | 0.000 | *** | 3.8167 | 0.000 | *** |
| **HHParAduKids** | 0.0482 | 0.909 | | 2.6180 | 0.000 | *** | 2.7056 | 0.000 | *** | 2.3592 | 0.000 | *** | 3.3649 | 0.000 | *** | 3.6578 | 0.000 | *** | 3.2465 | 0.000 | *** |
| **HHOthAdUn65** | 0.0012 | 0.997 | | 1.4522 | 0.000 | *** | 1.5502 | 0.000 | *** | 1.2027 | 0.000 | *** | 2.0404 | 0.000 | *** | 2.1517 | 0.000 | *** | 1.9472 | 0.000 | *** |
| **HHOthAdOv65** | -0.0617 | 0.893 | | 2.1274 | 0.000 | *** | 2.1623 | 0.000 | *** | 1.9664 | 0.000 | *** | 2.8062 | 0.000 | *** | 2.9952 | 0.000 | *** | 2.4861 | 0.000 | *** |

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