

Estimating concealed family rates with overcrowding using Scottish survey data (2016-2018)

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Introduction

A household contains a concealed family when one or more families in addition to the primary family are present in the dwelling. Such households can indicate a growing pressure on housing need: i.e. the concealed family may need a home of their own where they are also experiencing overcrowding.

Where this is the case these concealed-overcrowded families may be said to be in 'current' housing need. Local Authorities use a count of current housing need to help estimate the number of additional housing units required in their area when added to a count of homelessness (also current housing need) and future housing need (new households). They do this in a Housing Need and Demand Assessment (HNDA).

This analysis estimates the rates of concealed families in Scottish households using Scottish Household Survey¹ (SHS) and Scottish House Condition Survey² (SHCS) data. Using aggregated years, the estimated average national concealed family rate is 1.2% of all households (2016-18). The estimated proportion of Scottish households which are both overcrowded and contain at least one concealed family is 0.1% for the same period.

Other sources of concealed families data include the 2011 Census and, in some cases, Local Authority housing registers.

Methodology Summary

In contrast to the SHS, the English and Welsh, and Scottish Census assign each household a Household Reference Person (HRP), and each family within the household a Family Reference Person (FRP), with the primary family identified by the presence of the HRP. A household with more than one FRP therefore contains a concealed family, and its composition can be determined.

These data, however, are not collected by the SHS, and so this analysis uses an alternative methodology developed previously by Communities Analysis Division to infer the presence of at least one concealed family (but not its composition) from SHS data.

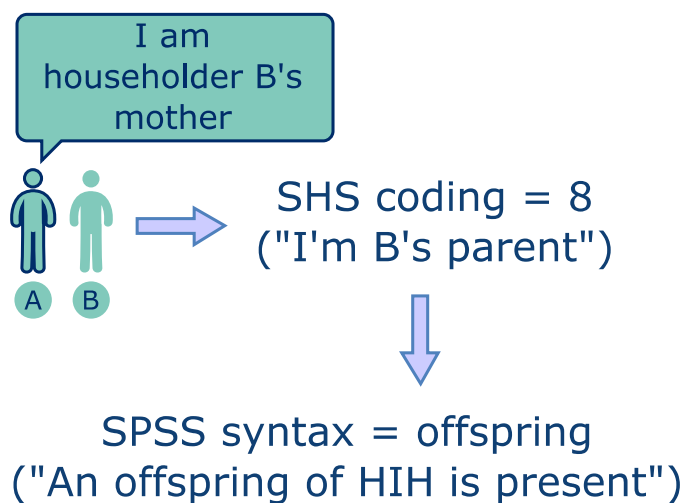
¹ [Scottish Household Survey](#), Scottish Government

² [Scottish House Condition Survey](#), Scottish Government

Table 1: SHS relationship types and broader categories

SHS coding	Label	Broader category SPSS ³ syntax variable
1	Husband or wife	partner
2	Cohabiting partner	
3	Legally recognised civil partner	
4	Son or daughter (including adopted)	parents
5	Step son or step daughter	
6	Foster child	
7	Son-in-law or daughter-in-law	parents
8	Parent (including adopted)	offspring
9	Step parent	
10	Foster parent	
11	Parent-in-law	offspringinlaw
12	Brother or sister (including adopted)	sibling
13	Half brother or sister	
14	Foster brother or sister	
15	Step brother or sister	
16	Brother-in-law or sister-in-law	sibinLaw
17	Grand parent	grandchild
18	Grand child	grandparent
19	Other relative	OtherRel
20	Unrelated	UnRel

Figure 1: Flowchart showing relationship between HIH's response and eventual SPSS coding.



³ SPSS is a programming language used to analyse survey data.

This analysis refers to the ONS definition of a family when testing the presence of a concealed family⁴:

- *a married, same-sex civil partnership, or cohabiting couple, with or without child(ren),*
- *a lone parent with child(ren),*
- *a married, same-sex civil partnership, or cohabiting couple with grandchild(ren) but with no children present from the intervening generation, or*
- *a single grandparent with grandchild(ren) but no children present from the intervening generation.*

Children in couple families need not belong to both members of the couple. For single or couple grandparents with grandchildren present, the children of the grandparent(s) may also be present if they are not parents or grandparents of the youngest generation present.

With respect to concealed families, these will include:

- *young adults living with a partner and/or child/children in the same household as their parents*
- *older couples living with an adult child and their family*
- *unrelated families sharing a household*

With the following example exceptions:

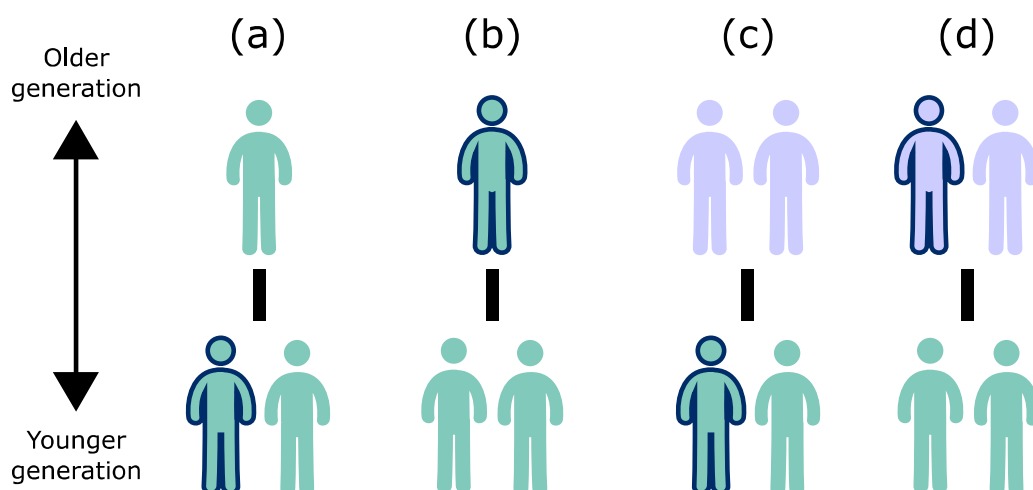
“A single person cannot be a concealed family; therefore one elderly parent living with their adult child and family or an adult child returning to the parental home is not a concealed family; the latter are reported in an ONS analysis on increasing numbers of young adults living with parents.”

As the SHS records what the relationship between each householder is (Table 1), we can count the number of unique relationship types there are from the perspective of the Highest Income Householder (HIH), and referring to the ONS family definition, determine if there is at least one concealed family present⁵. Multiple relationship types can flag the presence of a concealed family, although some care must be taken.

⁴ Concealed families living in multi-family households in England and Wales, Census 2011, [Office for National Statistics](#).

⁵ Note: In this analysis, Houses of Multiple Occupation, identified by unrelated cohabitants, are not counted as concealed families.

Figure 2: Non-Concealed and Concealed Families Diagram



Note: Examples of households containing concealed and non-concealed families, following the ONS family definition. A distinct family has the same fill colour. Solid black lines represent a relationship across generations. HIH represented by a figure with a solid border. Couples are represented by pairs. Households (a) and (b) do not contain a concealed family. Households (c) and (d) do contain concealed families.

Figure 2 illustrates this. For a household containing the HIH, their partner, and the HIH’s single parent (Figure 2a), this would be categorised as a single family unit, with two distinct family types present from the perspective of the HIH (partner and parent). If the household is composed of the HIH, their partner, and both their parents (Figure 2c), this would still contain two unique family types (partner and parent), but according to the ONS family definition, the household contains two distinct family units, and thus, a concealed family.

If the composition of each household remains the same, but we changed which householder was the HIH, we should not expect our final concealed assessments to change, but the number of unique family types might change (Figure 2b and d). For example, for the household in Figure 2d, the HIH has three unique family types (partner, offspring and offspring in law).

This analysis also considers the presence of overcrowded dwellings. The SHCS collects these data, and identifies an overcrowded dwelling where “...*there are insufficient bedrooms to meet the occupants’ requirements under the bedroom standard*”⁶. Therefore, overcrowded dwellings are those which have failed to meet the Bedroom Standard, as defined in the Housing (Overcrowding) Act 2003⁷, which lays out the groups or individuals who require a separate bedroom.

Results

Table 2 shows that in 2016 to 2018, at Scotland level, there were around 59,000 overcrowded household (2.4% (±0.35%) of all households), 31,000 concealed households (1.2% (±0.26%) of all households) of which there were 4,000 concealed and overcrowded households (0.1% (±0.09%) of all households). Whilst concealed

⁶ [Chapter 6: Housing Conditions](#), SHCS Key Findings 2018

⁷ [Housing \(Overcrowding\) Bill \(2003\)](#), Parliament: House of Commons

and overcrowded constitute the smallest proportion of households, they have a more pressing housing need.

Table 2: Three year Scotland average (2016-2018) of overcrowded and concealed family households

Scotland, 2016-2018 average	Count			% of households	Confidence Intervals % of households
	Mid-point	Lower	Upper		
Overcrowded	59,000	51,000	68,000	2.4%	0.35%
Concealed households	31,000	24,000	37,000	1.2%	0.26%
Both overcrowded and concealed	4,000	1,000	6,000	0.1%	0.09%

Note: Counts are rounded to the nearest thousand. Overcrowded are households which have failed the Bedroom Standard.

Caveat. It should be noted the proportion of concealed households (1.2%) is similar to the 2013-15 (1.3%) estimates but lower now than it was in 2011-13 estimates (1.8%). This is in part due to refinements to the methodology which led to fewer households being classified as concealed.

However, the 2016-2018 estimated national concealed family rate of 1.2% is broadly consistent with a similar measure in the 2011 Scottish Census. There, the rate of families identified as concealed was also 1.2%⁸. While this analysis considers the proportion of households which contain at least one concealed family, we might expect the rates to be close. The 2011 English and Welsh Census, in comparison, estimates 1.8% of families are concealed⁹. This higher rate may reflect a slightly different methodology and/or higher than average rates in London and other major English cities.

Table 3 summarises the local authority estimates. Concealed families constitute a small proportion of total families overall (Scottish 2011 Census), which makes them hard to detect in surveys with small local authority sample sizes, such as the SHS and SHCS. Such low sample numbers result in data suppression for quality purposes numbers and prevent a detailed local authority analysis.

These figures are therefore only an indicative guide, and this analysis is likely to hide variation in the rates across local authorities. However, where local estimates have been suppressed, or none were detected using this methodology there are three alternatives:

- Use the 2011 Scotland Census figures.
- Apply the estimated national rate (0.1% of all households) to the total number of households in a local authority to obtain an estimate (but doing so assumes similarity between the local authority and national average).

⁸ Table DC1110SC - Family composition by age of Family Reference Person (FRP), [Scotland's Census](#).

⁹Concealed families living in multi-family households in England and Wales, Census 2011, [Office for National Statistics](#).

- Obtain a count from the local authority housing register where this exists.

Local authorities may wish to consider two or more estimates to see how they compare and then choose the one they believe to be most robust for the purpose of an HNDA.

Table 3: Local authority concealed family estimates (2016-2018, 3 year average)

Local Authority	Total Households	Overcrowded Households (Below Bedroom Standard)	Households with at least one concealed family	Concealed & overcrowded		
				Midpoint	95% Confidence Estimate Limits	
					Lower	Upper
Aberdeen City	107,000	1,700	900	-	-	-
Aberdeenshire	111,000	1,500	1,300	*	*	*
Angus	54,000	600	600	*	*	*
Argyll and Bute	41,000	500	500	-	-	-
Clackmannanshire	24,000	600	200	*	*	*
Dumfries and Galloway	69,000	1,300	800	*	*	*
Dundee City	70,000	1,600	*	*	*	*
East Ayrshire	55,000	1,000	-	-	-	-
East Dunbartonshire	46,000	1,000	600	-	-	-
East Lothian	45,000	800	500	*	*	*
East Renfrewshire	39,000	300	500	-	-	-
City of Edinburgh	234,000	7,900	4,200	-	-	-
Eilean Siar	13,000	200	100	-	-	-
Falkirk	72,000	700	*	-	-	-
Fife	167,000	4,400	2,300	*	*	*
Glasgow City	292,000	11,700	4,500	900	0	2,200
Highland	108,000	1,700	1,900	-	-	-
Inverclyde	38,000	1,200	*	-	-	-
Midlothian	38,000	800	900	-	-	-
Moray	42,000	300	*	-	-	-
North Ayrshire	64,000	1,200	600	-	-	-
North Lanarkshire	151,000	7,400	3,500	800	0	1,900
Orkney Islands	10,000	100	200	100	0	200
Perth and Kinross	68,000	1,100	600	-	-	-
Renfrewshire	85,000	2,000	*	-	-	-
Scottish Borders	54,000	-	*	-	-	-
Shetland Islands	10,000	200	200	-	-	-
South Ayrshire	52,000	-	800	-	-	-
South Lanarkshire	145,000	3,700	1,600	-	-	-
Stirling	39,000	1,700	*	-	-	-
West Dunbartonshire	43,000	1,000	-	-	-	-
West Lothian	77,000	1,100	1,400	-	-	-
Total	2,464,000	59,000	31,000	4,000	1,000	6,000
Proportion of Scotland		2.4%	1.2%	0.1%	0.06%	0.23%

Note: Cells with insufficient sample numbers have been suppressed with “*”. Where no cases were sampled, “-“ is used. Totals rounded to nearest thousand, all other cells to nearest hundred.

Appendix A – Methodology: Code structure

Detection of concealed families is carried out by analysing SHS and SHCS data using SPSS syntax. Actual code is not displayed in this paper and instead a high level description of the code is provided here to help explain how the methodology is applied.

Collecting the HIH and their partner's relationships to householders

The SHS records family relationships between householder A and B, as what A is to B (A is B's parent/sibling, etc – see Figure 1). In this methodology, we are interested in the relationship of the HIH (and their spouse, if appropriate) to the other householders. For example: The SHS records the relationship between the HIH and householder 2 as 'Daughter'. This means the HIH is the daughter of householder 2.

The primary variables of interest are **ha2** – which identifies the householder with the highest income (HIH) - and those following the format **ha3_<x>_<y>**, which record the relationship between householder **x** and householder **y**.

We are only interested in the relationship between the HIH (and their spouse) and other householders. The variables **hihRel1 TO 10** are created and populated specifically with the HIH's relationship to other householders – for example, if **ha2=1**, **hihRel1** would contain the relationship code between the HIH and householder 2 (**ha3_1_2**). This process is repeated for the spouse with the variables **spoRel1 TO 10**. It is from this set of a possible 20 variables the number of relation types in the household are inferred.

Assigning broader relationship types

There are 20 relationship codes (Table 1), but this is more information than we require. We coarse grain by binning these discrete relationship types into 10 broader categories. For example, codes 12-15 are categorised into the broader **siblings** group (brother/sister, foster-brother/sister, etc). Using the **hihRel1 TO 10** variables, we count how many instances of these broader relationship types there are in each household. A word of caution: the relationship direction shifts when we bin these broader relationship types. For example, if **hihRel3=4**, this means the HIH is the son of householder 3. We record this as a **parent** being present in the house.

Counting relationship types

Using the broader "relationship type" categories we know for each household if each relationship type is present or not - in other words, how many unique relationship types are present in the household from the perspective of the HIH. The HIH's spouse/partner's relatives are all treated as HIH relatives (to mitigate instances where, for example, the child of a partner could be erroneously recorded as unrelated to the HIH).

Testing special cases

If a household has one (or no) relationship type, then a concealed family is not present. For four or greater unique relationship types, a concealed family is assumed present.

If a household contains two or three unique family types, there is a possibility a concealed family type is present. We first assume there is a concealed family, and consult special cases where the combination of certain unique relationship types don't qualify the flagging of a concealed family.

For example, consider the situation of two unique family types recorded from the perspective of the HH. If they are **offspring** and **parent**, this does not qualify as two families under the ONS definition, and so the presumed concealed flag is correct. However, if it's strictly an **offspring** and **offspring in law**, this could mean two couples (two offspring and their partners), which does qualify as a concealed family.

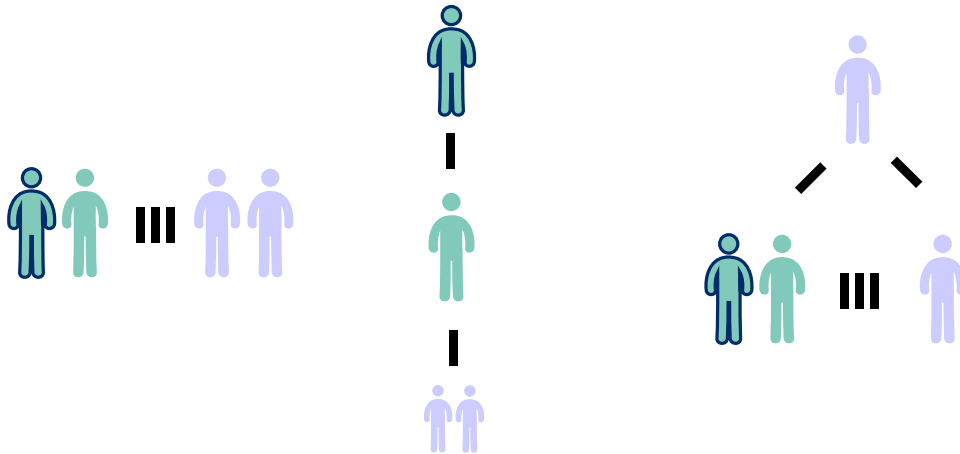
This approach is blind to the age of individual householders, and only refers to the relationship between householders. Thus, we make no distinction between 'dependent' and 'non-dependent' children. This means a couple with an adult child are treated identically as a couple with a young child.

When testing the logic assessing the concealed status of a household, a number of hypothetical households were considered – some of these are summarised in Appendix B.

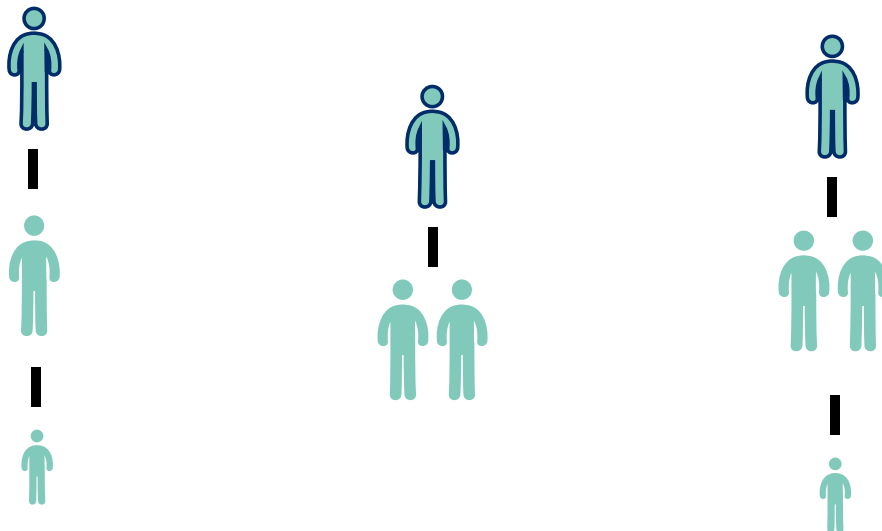
Appendix B: Concealed and not-concealed families examples


Appendix B shows a diagram of different groups of people in different households to illustrate the types of households that are classified as concealed and those that are not. This includes different groupings of people including a couple, siblings, family groupings and the Highest Income Householder.


Concealed family households:




Unconcealed family households:



 = couple

 = siblings

 = family 1 / family2

 = HIH



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