Energy Use in Homes

A series of reports on domestic energy use in England

Energy Efficiency

Energy Use in Homes

A series of reports on domestic energy use in England

This is one of a series of three reports on the energy characteristics of the stock as observed by the 2003 English House Condition Survey.

The reports in this series are:

1. Space and Water Heating
2. Thermal Insulation
3. Energy Efficiency

The English House Condition Survey is funded and provided courtesy of Communities and Local Government. More information about this survey can be found at www.communities.gov.uk/ehcs

The 2003 EHCS Energy Analysis has been prepared by BRE with the funding and support of the Sustainable Energy Policy Division of the Department for Environment, Food and Rural Affairs (Defra) through a contract managed by the Energy Saving Trust. This publication is Crown Copyright. For any further information please contact environment@bre.co.uk

SAP Rating 2003

Executive Summary

The Standard Assessment Procedure (SAP) is the Government's recommended system for home energy rating. The SAP energy efficiency rating is based on energy costs for space and water heating within each dwelling, representing a measure of the dwelling's energy efficiency. A scale of 1 to 120 is used for the rating, with a higher rating indicating a better level of energy efficiency.

The average SAP rating for the stock in 2003 is 51.4, with 10% of dwellings having a SAP rating less than 30 and 12% achieving a rating greater than 70.

Physical characteristics of a dwelling can strongly influence SAP score. Dwelling age is a particularly important factor. SAP ratings generally decrease for older dwellings, with a smaller proportion of old stock having SAP ratings greater than 70 than younger stock, and also a larger proportion of older dwellings having ratings less than 30. Type of dwelling also strongly influences SAP rating. Purpose built flats perform particularly well with high levels of stock gaining ratings greater than 70 – over double that of all other dwelling types, however converted flats show the worst SAP scores with 20% having SAP less than 30. Among houses, the number of exposed walls is an important factor, with detached dwellings scoring the lowest average rating, and mid-terraces the best.

Other factors related to the specifications of the dwelling can determine SAP scores, for example, the type of heating system and thermal insulation measures installed. The more effective these measures are, the more likely a higher SAP score can be obtained. Therefore unsurprisingly, dwellings with cavity wall insulation, the thickest of loft insulation and entire dwelling double glazing have higher SAP scores than those with lower levels or none of these insulation measures. Those dwellings with central heating tend to score higher SAP ratings than those without (i.e. with storage heaters and room heaters).

Private rented dwellings achieve particularly low SAP scores, which may be related to the type of heating prevalent, lack of thermal insulation measures and typical older age in this tenure.

Average SAP ratings have increased overall from 2001 to 2003 by 1 point. The percentage of dwellings returning the highest SAP ratings (greater than 70) has risen from 6% in 1996 to 9% in 2001 and 12% in 2003. A decrease is seen in those dwellings with a rating less than 30, from 15% in 1996 to 9% in 2001, steadying at this level to 2003.

2003 SAP Update Report

Summary

- The mean SAP rating has continued to increase from 1991, through 1996 and 2001.
- Physical characteristics such as dwelling type and age have a strong influence on the SAP rating. The SAP rating also varies when comparing household characteristics.
- There is now very little difference between the mean SAP ratings of high and low income households compared to previous English House Condition Surveys.
- A typical high SAP rating is found in an RSL rented, purpose built flat of post 1980's construction. An old, private rented converted flat typically has a rating among the lowest.

Introduction

The Standard Assessment Procedure (SAP) is the Government's recommended system for home energy rating. The SAP energy efficiency rating is based on the energy costs for space and water heating within each dwelling, representing a measure of the dwelling's energy efficiency. This report is based on the 2001 SAP method, which uses a scale of 1 to 120 for the rating, with a higher rating indicating a better level of energy efficiency.

The calculation of the rating uses the estimated annual cost of energy required to achieve a standard temperature regime within the home, and to provide the household with appropriate supplies of hot water. The requirement for energy depends upon the size of the dwelling, so to achieve a measure of energy efficiency the 'energy use per square meter of floor area' is used rather than the total energy requirement.

The average SAP rating for the stock in 2003 is 51.4, with 10% of dwellings having a SAP rating less than 30 and 12% achieving a rating greater than 70. These highest and lowest bands will be used for stock comparison throughout this update report.

Figure 1 compares the SAP distributions of the 1991, 1996, 2001 and 2003 EHCS data. Over a period of time we would hope to see the left tail shrinking and the right tail growing, with the peak moving towards the higher end along with the mean rating. This effect is shown in each survey year, particularly since 1991, reflecting the improvements in domestic energy efficiency. This report will use EHCS data to examine typical SAP ratings categorised by distinct dwelling characteristics, whilst providing a link between household types and the energy efficiency of their dwellings. Finally the report will take a more detailed look at changes in SAP ratings since 1996.

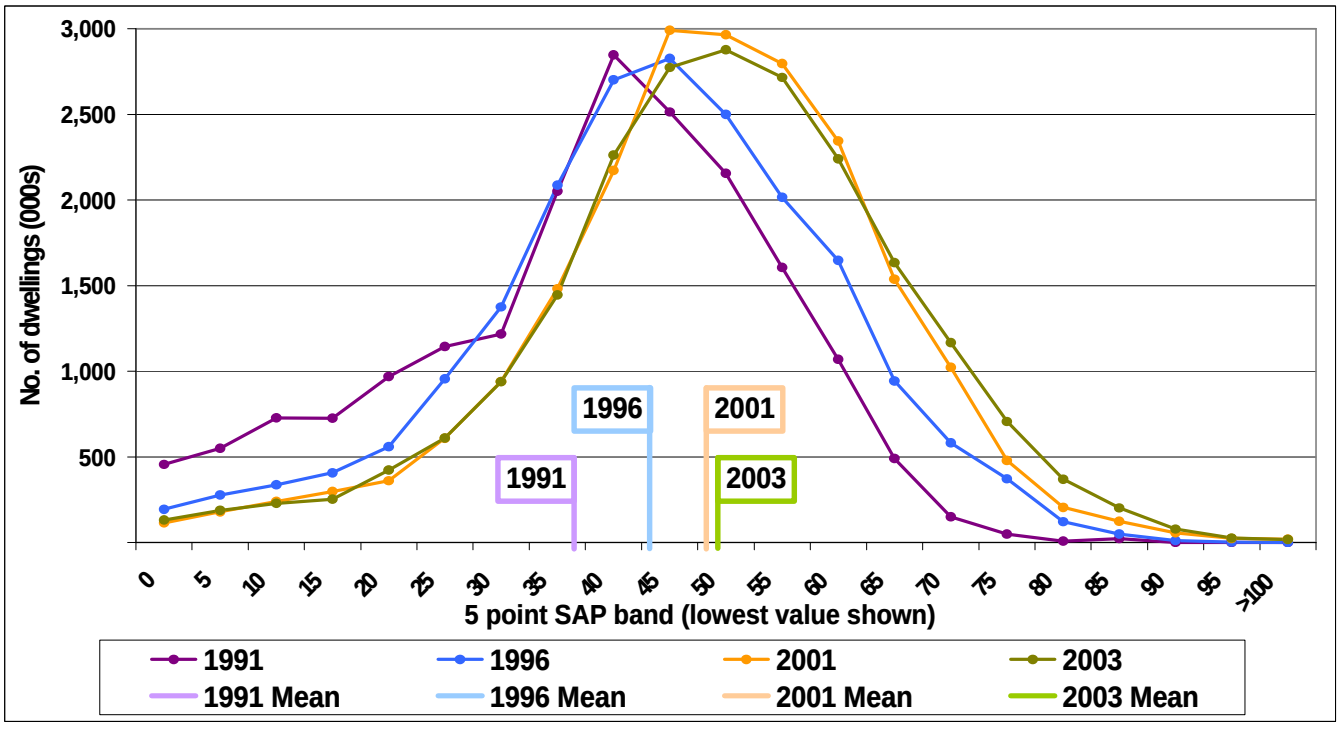

Figure 1: Distribution of 1996, 2001 and 2003 SAP ratings

Dwelling Analysis

Dwelling Type

Examining the stock by dwelling type, as in Figure 2, we see a large difference in SAP ratings between the different categories of flat. Purpose built flats are well above average with a mean SAP rating of 59.5, compared with only 41.5 for converted flats. 20% of converted flats have a SAP rating below 30, whilst only 8% of purpose built flats fall into the lowest category.

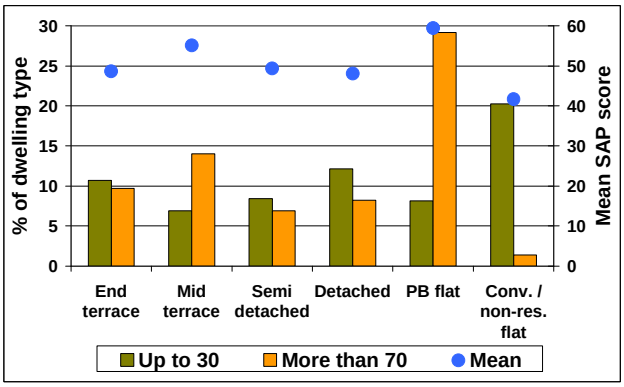

Figure 2: Comparison of highest and lowest SAP ratings by dwelling type

Among houses, only mid terraces, with the lowest exposed wall area, have a SAP rating above average with 55.1. Detached houses have the lowest average with 48.1, which can be attributed to this dwelling type having the largest proportion of exposed external surface area, leading to a greater level of heat loss. The remaining dwelling types, semi-detached and end terraces, have similar mean SAP ratings of around 49 and similar distributions, which might be expected given the similar building envelope shapes of these types.

Dwelling Age

There is a distinct correlation between dwelling age and SAP rating. Homes built before 1919 average 42.4 and 18% of this age group have a SAP rating below 30; however dwellings built since 1980 attain far higher SAP ratings, with an average of 66.2. Only 2% of this category has a SAP rating less than 30, whilst almost 42% achieve a SAP rating greater than 70, as shown in Figure 3.

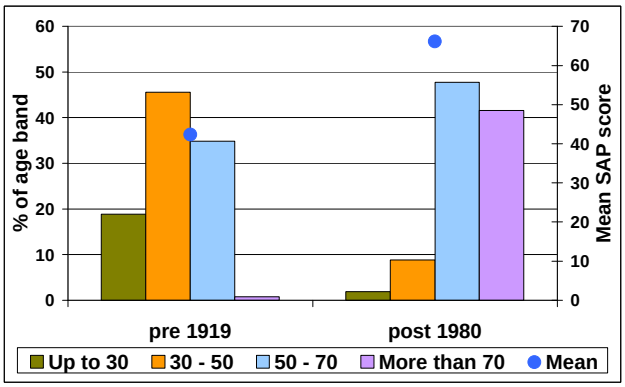

Figure 3: Comparison of SAP distribution within the oldest and newest housing stock

The trend of higher SAP ratings in newer dwellings continues between 1919 and 1980, with mean SAP ratings of 46.5 where the construction date is between 1919 and 1944, 49.7 between 1945 and 1964, 54.1 in the 1965 to 1980 band and a mean of 61.3 for dwellings built in the 1980's.

Government Office Region

Although there are individual differences between each government office region, those with similar energy efficiency related characteristics can be grouped as shown in figure 4. Here, the North consists of the North West, North East and Yorkshire, the Midlands comprises the East and West Midlands and the Eastern region whilst the South East includes London and the South East. The South West has been left due to its individual SAP performance. Two of these areas have a SAP above the national average – the North and the South East, whilst the Midlands is slightly below average, with a slightly higher proportion of SAP ratings below 30.

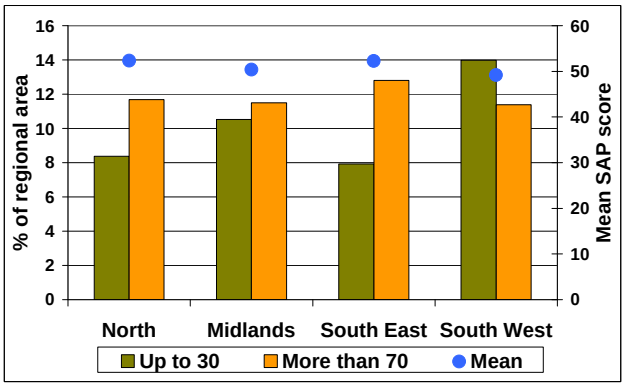

Figure 4: Comparison of highest and lowest SAP ratings by region

The high mean SAP of the North East can be attributed to the necessity for better thermal insulation than the English average due to lower annual temperatures. The high South East regional mean may be due to the high proportion of new housing stock in this region – nearly one

fifth of post 1980's housing can be found in the South East GOR. On the other hand the South West has the lowest mean SAP and the highest proportion of dwellings with a SAP rating of less than 30. This can be attributed to a high proportion of non-centrally heated dwellings, homes off the gas network and a lower than average proportion of cavity walls with insulation.

Floor Area

The size of a dwelling has an impact on the SAP rating, with higher average SAP ratings found in smaller homes. Splitting the stock by total floor area into quintiles, we find that 36% of dwellings that have a SAP rating above 70 are found in the 1st quintile of floor area compared with only 13% occurring in the 5th quintile.

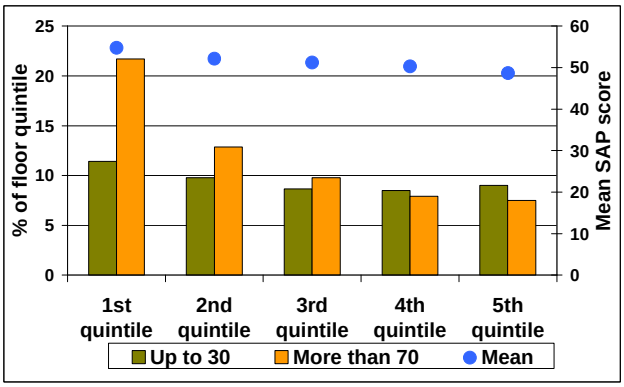

Figure 5: Comparison of highest and lowest SAP ratings by floor area quintile

Applying this trend to the lowest category of SAP ratings we would expect to see less than 20% of the 'SAP less than 30' stock in the 1st quintile of floor area and more than 20% in the 5th quintile, but surprisingly, the reverse is true as shown in Figure 5. The expected pattern seen in the higher SAP bands can be attributed to a high number of energy efficient purpose built flats within the 1st quintile and less energy efficient detached dwellings among the 5th quintile.

The apparent anomaly amongst the lowest SAP ratings is partly due to the fact that much of the smaller stock contains poorer households, who are unlikely to have good energy efficiency measures. In contrast, a high proportion of more affluent households in larger dwellings will be able to apply a wider range of energy efficiency measures which raise the SAP rating above the very lowest band.

Heating Systems

The type of system identified as the primary source of space heating can significantly vary the SAP rating of a dwelling, as demonstrated in the comparison of central and non-central heating in Figure 6. A standard wet radiator central heating system, making up the majority of stock, is associated with a relatively high SAP rating of 53.6, whilst communal systems have the highest average at 72.6.

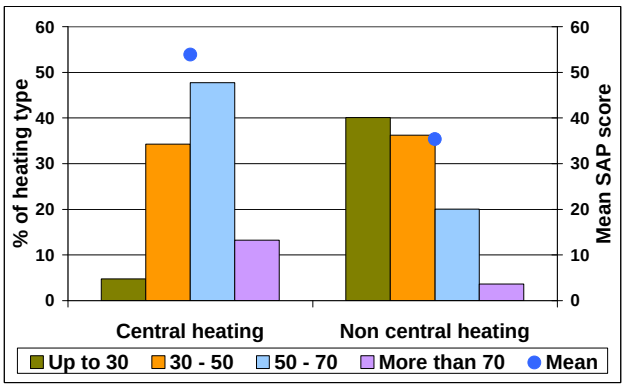

Figure 6: Comparison of SAP distribution by main heating category

Using non-central heating has a large impact, with the average SAP rating falling to 38.7 for dwellings using storage radiators and only 32.2 for those relying on fixed room heaters. This will be further examined when measuring energy efficiency by category of household.

Thermal Insulation

The SAP rating system is strongly dependent on thermal insulation measures within a dwelling, therefore a strong correlation between high SAP ratings and effective insulation measures is expected and this is supported by the 2003 data.

Figure 7 shows that dwellings with insulated walls have the highest average SAP ratings; homes with insulated cavity walls have a SAP rating 61.7 on average, 10 points higher than the overall stock average, whilst solid walled stock averages only 43.7.

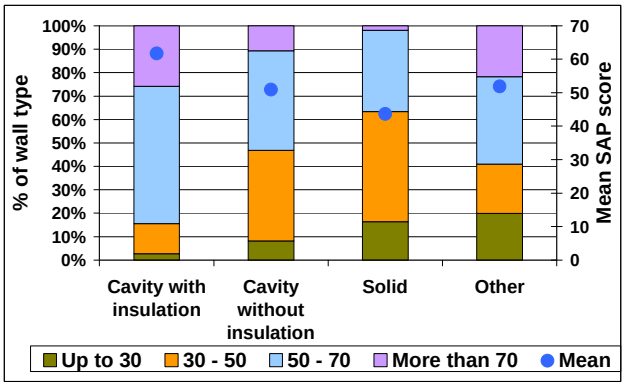

Figure 7: Comparison of SAP distribution by wall type

Those with filled cavities are predominantly newer dwellings with insulation fitted at the time of construction, while solid walls are found more commonly in older stock.

Retrospectively fitting insulation to a solid wall can significantly improve the SAP rating, but is often prohibitively expensive.

Unsurprisingly, there is a general trend of increasing SAP rating with increasing amounts of loft insulation. Dwellings with a loft space but no loft insulation average only 35.8, 28% of these have a SAP rating below 30 and less than 1% have a SAP rating above 70. In contrast, dwellings with insulation of at least 200mm average 55.2 with only 10% in the lowest SAP category and 23% achieving a SAP greater than 70 as shown in Figure 8.

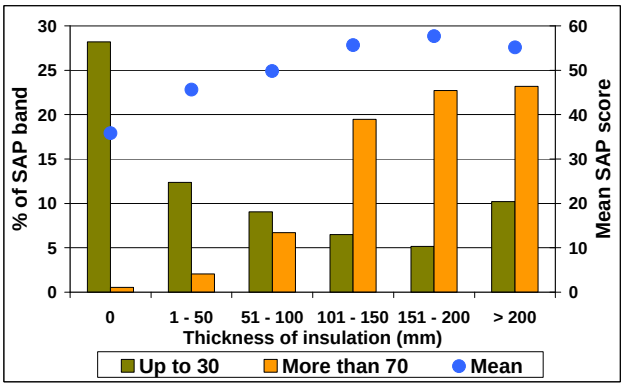

Figure 8: Comparison of highest and lowest SAP ratings by depth of loft insulation, for dwellings with a loft space

The slight decline in mean SAP where insulation levels are above 200mm can be attributed to the retrospective fitting of this very deep insulation in older stock, which fails to achieve a high level of energy efficiency due to other factors.

Another element affecting thermal insulation is the extent of double-glazing used in a dwelling. Stock which uses double-glazing in all windows has an average SAP rating of 55.8, whilst dwellings with little or no double-glazing have a SAP rating of around 45. It should be pointed out that the 11 point difference is only partly due to the extent of double glazing. Other energy efficiency measures are more likely to be found in this stock, which will also contribute to a higher SAP rating. Entirely double-glazed dwellings account for 55% of the stock but comprise over 83% of the 'SAP greater than 70' category.

Household Analysis

Tenure

Private rented dwellings have the lowest average SAP rating of 47.4 with 19% of these homes falling into the 'SAP less than 30' category. This is significantly lower than the most energy efficient tenure, the RSL sector, which averages 61.2 and has only 6.6% of its stock in the lowest SAP band, around one third of the private rented figure. Local authority dwellings reach an average SAP rating of 55, while owner occupied homes, which make up the majority of the stock, approximate the overall stock average at 50.4 as Figures 9 and 10 show.

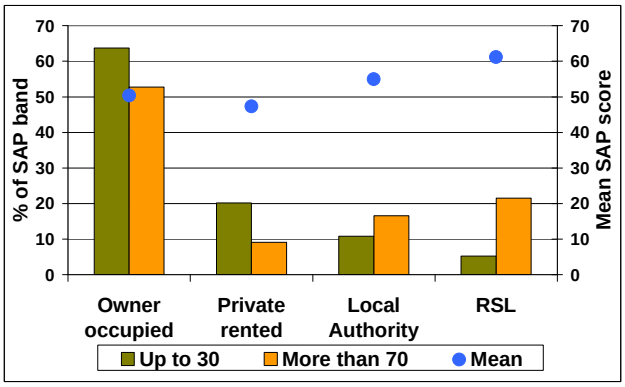

Figure 9: Comparison of highest and lowest SAP ratings by tenure

Comparing the tenure categories to physical features discussed earlier we see that a higher than average proportion of private rented dwellings use non-central heating for their primary space and water heating systems. In particular they rely on electricity as a primary fuel source. This tenure also has the lowest incidence of insulated cavity walls and contains the highest proportion of solid walls as well as having a higher proportion of uninsulated lofts than other tenures. These are all contributory factors to the low energy efficiency performance in this sector.

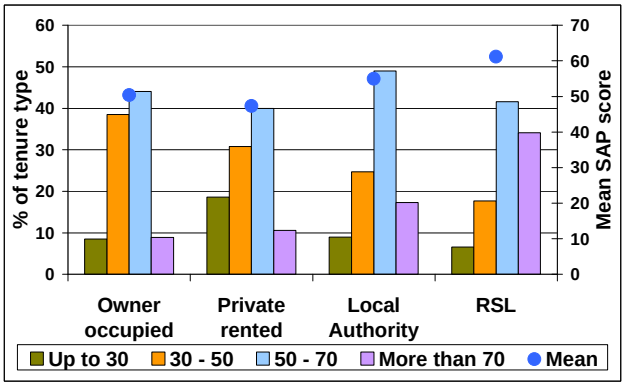

Figure 10: Comparison of SAP distribution by tenure

Figure 11 underlines the influence of tenure on SAP rating with the social sector achieving 24% of dwellings in the highest SAP band compared to 9% in the private sector. The private sector's mean SAP rating is seven points below the social stock.

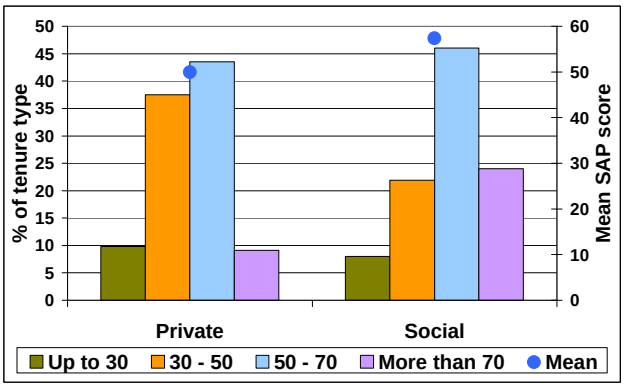

Figure 11: Comparison of SAP distribution by tenure type

Vacant dwellings have lower SAP ratings than occupied stock as shown in Figure 12, a difference of 4 SAP points. Vacancy accounts for 9% of all SAP ratings below 30, despite only comprising 4% of the total stock; however there is also a slightly higher proportion of SAP ratings more than 70 within the vacant stock. This is due to a large number of vacant purpose built flats.

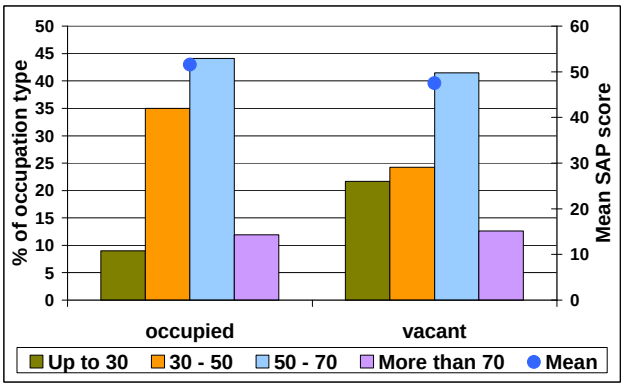

Figure 12: Comparison of SAP distribution by occupation type

Again, we find that a lot of vacant stock is overly reliant on non-central heating and is poorly insulated when compared to occupied dwellings. There is also a significant proportion of private rented stock within the vacant category.

Neighbourhood

Examining the nature of the area or neighbourhood surrounding a dwelling gives an indication of the energy efficiency rating. Dwellings in the city centre[1] or suburban[2] locations achieve above average SAP ratings with 52.5 and 53.3 respectively, whilst village based dwellings average 44.8 and rural[3] stock only 33.4. Although rural dwellings make up only 3% of the housing stock, 13% of these have a SAP rating below 30.

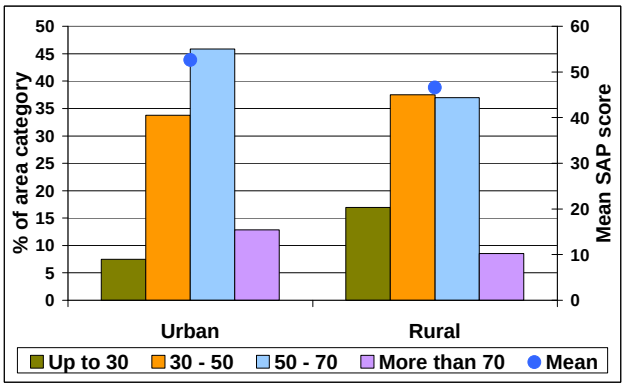

Figure 13: Comparison of SAP distribution by area category

Central heating is predominant in both rural and suburban dwellings; however rural stock relies on oil or solid fuels to a far greater extent than city and suburban homes. They also have a lower incidence of the more efficient combination boilers.

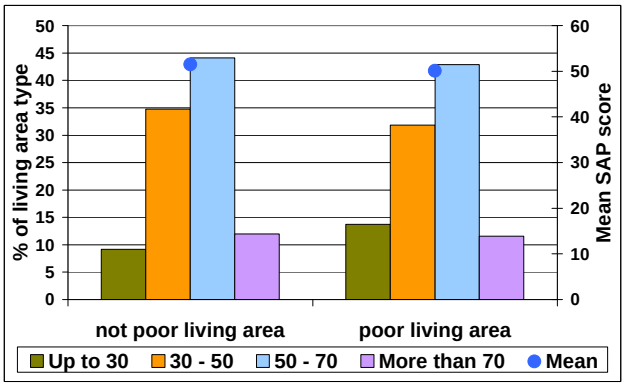

Figure 14: Comparison of SAP distribution by living area type

There is also a very small tendency for lower SAP ratings to occur in poor or run down neighbourhoods, with the proportion of dwellings with a SAP less than 30 higher in poor living areas and those with substantial problems of neglect. Figures 14 and 15 show that there is only a slight difference in the frequency of these low SAP ratings.

[1] The area immediately surrounding the core of large cities.

[2] The outer area of a town or city.

[3] Isolated dwellings, small hamlets.

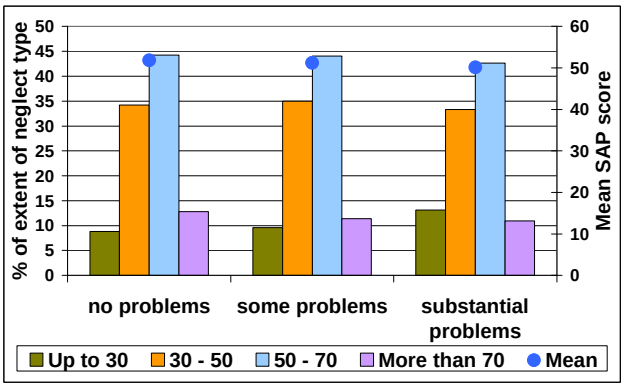

Figure 15: Comparison of SAP distribution by extent of neglect

Household Type

SAP ratings vary according to the type of household, with the highest averages occurring in families with dependent children and either one or both parents; 54.1 and 53.2 respectively. Figure 16 shows how the family category compares with single person households and those containing a number of adults, but no dependent children. Single people have the highest proportion in the 'SAP more than 70' band, reflecting the high incidence of this category residing in purpose built flats.

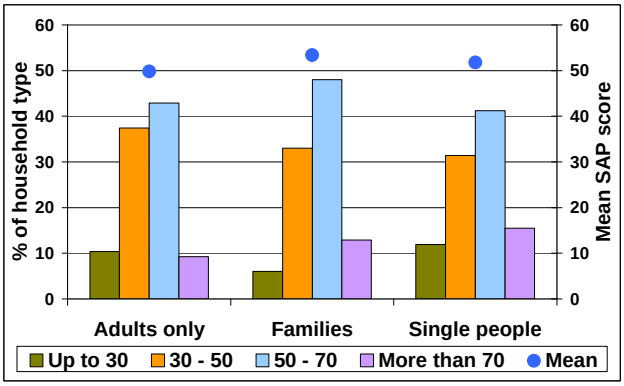

Figure 16: Comparison of SAP distribution by household type

Families are the most likely to use gas central heating systems, as well as the most likely to have a boiler and centrally heat their water – both beneficial energy efficiency measures. Over 20% of single parents with dependent children live in RSL dwellings, which have the highest SAP ratings.

There is a link between householder age and energy efficiency rating, with older households having a lower average SAP than younger households. With the overall average SAP at 51.4, households in which the Household Reference Person (HRP) is 45 or older have an average SAP of 50.2, compared to 53.6 where the HRP is below 45, as shown in Figure 17.

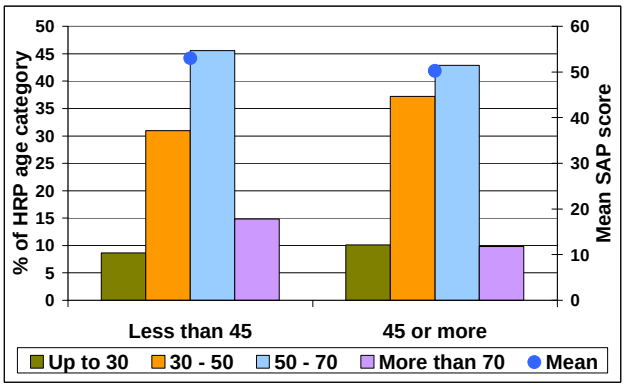

Figure 17: Comparison of SAP distribution by age of household response person

Income

Perhaps surprisingly there is no direct link between average SAP rating and household income; although the lowest average SAP rating of 50.7 is found in the 5th income quintile. The remaining four quintiles have means in a narrow band between 51.5 and 52.

However, examining incomes more closely we find that the lowest SAP band includes a higher proportion of dwellings in the 1st income quintile than the 5th quintile. We might then expect the highest SAP ratings to occur more commonly in the 5th income quintile but this is not the case. In fact, in a similar way to the floor area analysis, the lowest incomes also include more of the '70 and above' SAP ratings than the higher incomes, as shown in Figure 18, i.e. there is a wider spread of SAP ratings.

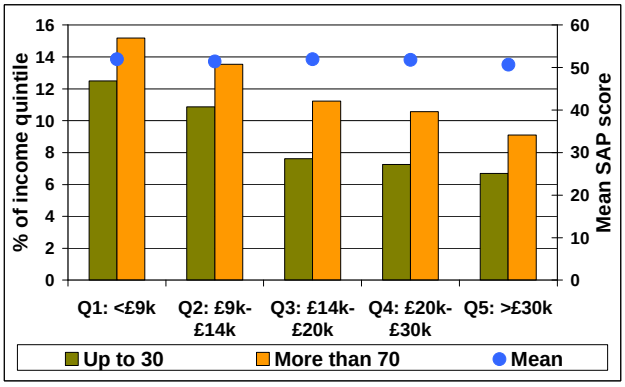

Figure 18: Comparison of highest and lowest SAP ratings by quintile of net household income

This can be explained by considering the types of dwelling that high and low income households typically live in. We find that 38% of detached houses are occupied by households in the 5th income quintile, while 40% of purpose built flats occur in the 1st income quintile. The high income households in large detached dwellings will be able to afford energy efficiency measures, but the size of the dwelling will restrict its ability to attain a very high SAP rating. Conversely the low income households will

benefit from the high average SAP rating achieved by purpose built flats, but the poorest will have dwellings in poor repair, dramatically reducing their energy efficiency and their SAP ratings.

Comparison over time

The average SAP rating of the housing stock has increased by around one SAP point between 2001 and 2003, following an approximate five point increase between 1996 and 2001 and a six point rise between 1991 and 1996. The proportion of dwellings in the highest SAP rating category ('more than 70') has increased from just 1% in 1991, to 6% in 1996 and 12% in 2003, whilst the proportion less than 30 has fallen from 28% in 1991 to 15% in 1996, before steadying at 9% since 2001. These figures are illustrated in Figure 19, (see also Figure 1).

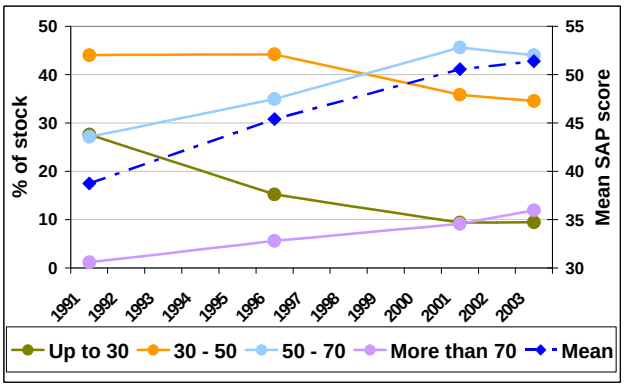

Figure 19: SAP rating trend from 1991 to 2003

Dwelling Type

All categories of dwelling type have seen a steady rise in mean SAP ratings between 1991 and 2003, with the exception of converted flats which only have a slightly higher mean than in 1991, as shown in Figure 23. Purpose built flats show the largest increase, a rise of 21 points, making this the dwelling type with the highest mean in each survey since 1991. In the last two years there have been small decreases in mean SAP in flats and detached houses, but analysis of future EHCS continuous surveys will show how strong these trends are.

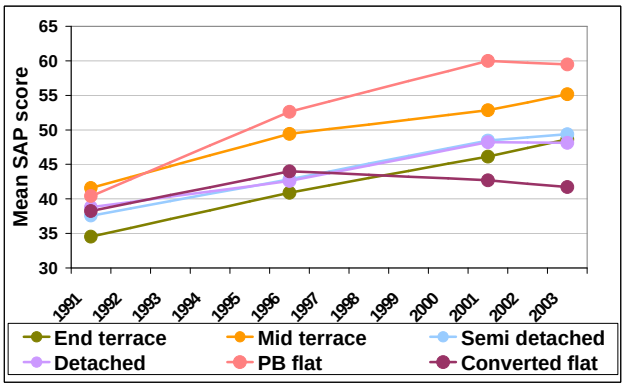

Figure 20: Mean SAP rating trend from 1991 to 2003 by dwelling type

As a result of the rapid rise in mean SAP in purpose built flats, this dwelling type has seen the proportion of homes with a SAP rating above 70 increase from almost zero in 1991 to around 30% in 2003. No other type has a percentage change above 14% in the top band. Converted flats actually have a lower proportion of ratings greater than 70 in 2003 than 1991, although the percentage of converted flats with a rating of less than 30 has decreased over time in line with other dwelling types.

Dwelling Age

The pattern of increasing mean SAP ratings with more recent construction date is reflected throughout the EHCS surveys; with all categories of dwelling age showing a steady increase from survey to survey (Figure 21). Between 1991 and 2003 all categories have risen by between 9 and 12 SAP points, with the largest increase generally occurring in mid-20th century housing. This suggests a slightly higher level of retrospective energy efficiency upgrades in this stock. The proportion of post 1980 dwellings with SAP values greater than 70 has increased steeply from 10% in 1991 to 21% in 1996, 29% in 2001 and 42% in 2003.

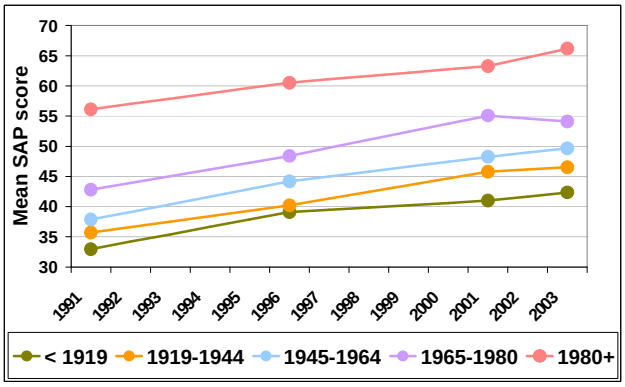

Figure 21: Mean SAP rating trend from 1991 to 2003 by dwelling construction date

This pattern is not surprising as more energy efficiency methods have become standard in newer dwellings, but

the relatively modest increase in SAP rating for pre 1919 stock does not reflect the scope for improvement in these dwellings; we might expect these less energy efficient dwellings to have benefited from a larger range of improving measures. It must be taken into account, however, that retrospectively improving the energy efficiency of this older stock may not be cost effective; for example, 65% of these dwellings have non-cavity walls making any potential insulating upgrade in this age band more expensive.

Government Office Region

Figure 22 shows the increase in mean SAP ratings for each region between the 1996 and 2003 surveys. The figure bands the increases into less than 5 SAP points, 5 to 9 points and more than 9 points.

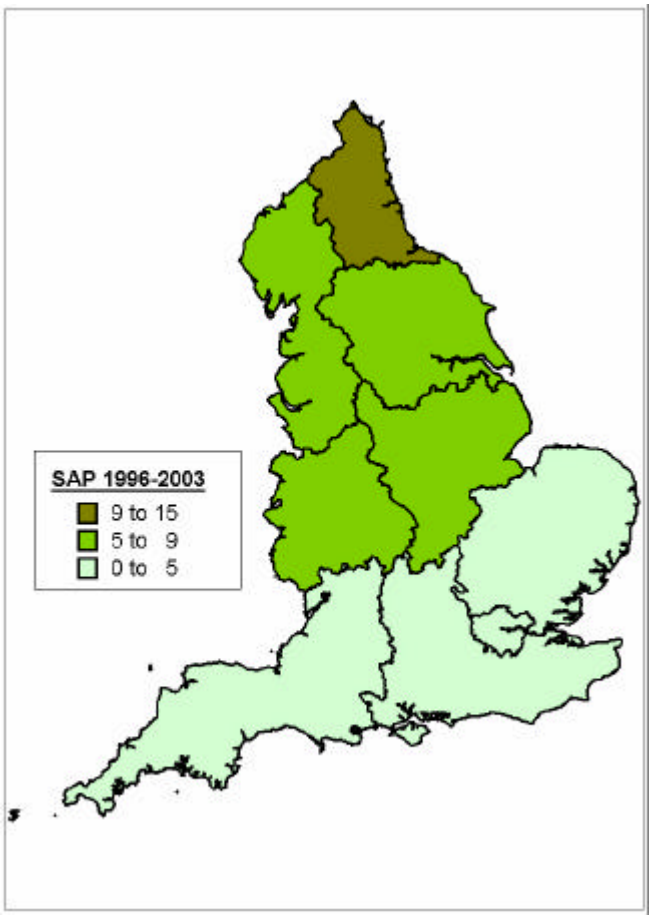

Figure 22: Regional distribution of mean SAP rating changes from 1996 - 2003

The only region to see an increase of more than 9 points is the North East, whilst the southern regions and East Anglia have risen by less than 5 points. This leaves the Midlands, Yorkshire and the North West with increases of between 5 and 9 points. This reflects the demand for better thermal insulation in the north that has been met between 1996 and 2003 and also the wider scope for improvements in energy efficiency that existed in northern regions in 1996. As suggested earlier in figure 4 more emphasis could now be placed on South West dwellings which are falling behind in terms of SAP ratings.

Tenure

All tenures have seen an increase in average SAP rating from 1991 to 2003 (Figure 23). We can clearly see the improvement in energy efficiency in the social sector when compared with owner occupied dwellings. The latter have gone from having the highest mean rating in 1991 to the third highest in 2003. RSL stock, in particular, has seen the largest increase in the proportion of dwellings achieving the highest SAP ratings, with the mean rising by over 21 points, compared with just 9 points in the owner occupied sector. Private rented stock has also made up substantial ground on the privately owned sector, with the greatest decrease in housing with SAP ratings below 30, (from 60% in 1991 to 19% in 2003). The increase in dwellings gaining a SAP rating greater than 70 has been more modest, suggesting further scope for energy efficiency improvements in private rented dwellings.

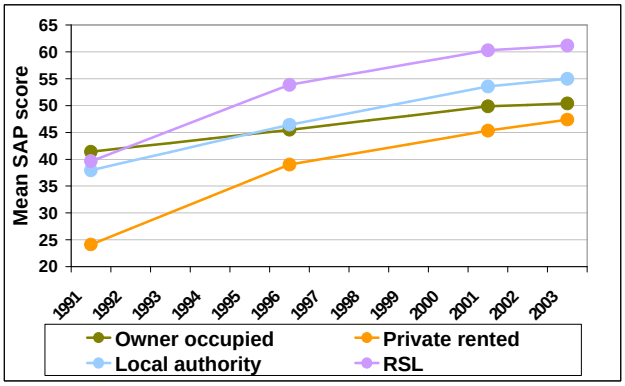

Figure 23: Mean SAP rating trend from 1991 to 2003 by tenure type

The order of the tenures in terms of average SAP rating is unchanged since 1996, with RSL dwellings showing the greatest rise in the proportion of stock with very high SAP ratings; this is likely to be due to the increasing amount of better insulated new build stock that is found in this sector. The overall proportion of RSL housing has risen from 0.6 million in 1991 to 1.6 million in 2003, more than doubling the share of the housing stock within this tenure category.

Household Type

All categories of household have seen an increase in mean SAP ratings between 1991 and 2003. The smallest climb of around 8 points has been by younger couples without children, whilst single people under 60 and those over 60 have seen increases of 15 and 14 points respectively. This reflects the scope for improvement in their dwellings, often privately rented, that existed in 1991.

As has been seen, the age of the household reference person has some relationship to SAP ratings and we see from figure 24 that younger householders have had a slightly greater increase in mean SAP since 1996, with the proportion of those less than 45 years old in the highest SAP band doubling between 1996 and 2003.

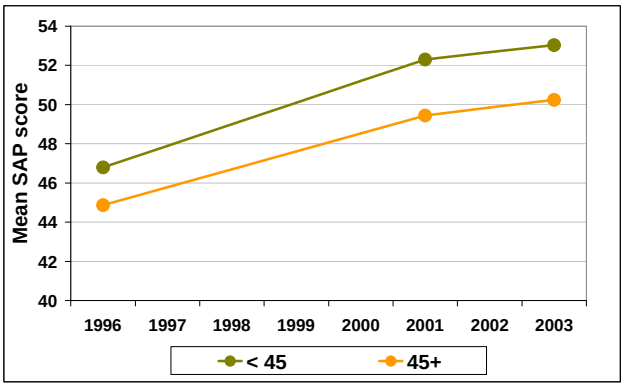

Figure 24: SAP rating trend from 1996 to 2003 by age of household reference person

Income

The difference in mean SAP ratings achieved by those in the highest and lowest income bands has narrowed significantly between 1991 and 2003 as shown in figure 25. The difference between the 1st and 5th quintiles was 9 SAP points in 1991; in 2003 the mean SAP ratings of all income bands were within less then 2 SAP points of each other.

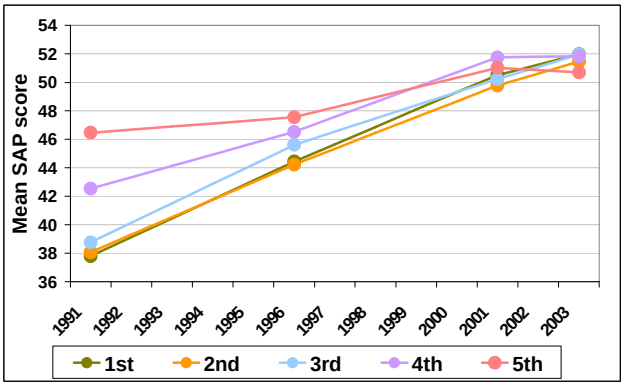

Figure 25: SAP rating trend from 1991 to 2003 by income quintile

As a consequence a higher proportion of households in the 1st income quintile than the highest quintile have moved into the top SAP band since 1991; similarly more in the 1st quintile have moved out of the less than 30 SAP band. This suggests that efforts to target low income households in improving the energy efficiency of their housing since 1991 have been successful. It also reflects the tenures to which each income band belongs, with many low income households now living in the more energy efficient social housing, whilst higher earners are in the private sector – an area which has seen the smallest increase in SAP ratings.

SAP Update Tables 2003

These tables give detailed breakdowns of the banded SAP and mean SAP ratings against key variables, as an appendix to the SAP Update Report 2003.

Index

Table 1.1 Analysis of SAP - total stock

count(000s), (column%)

SAP Band	Dwellings	Sample error: +/-
Up to 30	2,034	
	(9.5)	(1.4)
30 - 50	7,424	
	(34.6)	(1.3)
50 - 70	9,460	
	(44.0)	(1.1)
More than 70	2,566	
	(11.9)	(1.4)
Total	21,484	
	(100.0)	
Mean SAP	**51.4**	

Table 1.2 Analysis of SAP - by dwelling type

count(000s), (row%), (column%)

	Up to 30	Sample error: +/-	30 - 50	Sample error: +/-	50 - 70	Sample error: +/-	More than 70	Sample error: +/-	Total	Sample error: +/-	Mean SAP	Sample error: +/-
End terrace	221		922		724		201		2,067		48.6	0.7
	(10.7)	(4.3)	(44.6)	(3.5)	(35.0)	(3.6)	(9.7)	(4.3)	(100.0)			
	(10.9)	(4.3)	(12.4)	(2.3)	(7.7)	(2.0)	(7.8)	(3.9)	(9.6)	(1.4)		
Mid terrace	306		1,002		2,513		624		4,445		55.2	0.7
	(6.9)	(3.1)	(22.5)	(2.9)	(56.5)	(2.1)	(14.0)	(2.9)	(100.0)			
	(15.1)	(4.3)	(13.5)	(2.4)	(26.6)	(1.9)	(24.3)	(3.6)	(20.7)	(1.3)		
Semi detached	554		2,796		2,783		454		6,586		49.4	0.6
	(8.4)	(2.5)	(42.5)	(2.2)	(42.3)	(2.2)	(6.9)	(2.7)	(100.0)			
	(27.2)	(4.0)	(37.7)	(2.1)	(29.4)	(2.0)	(17.7)	(4.1)	(30.7)	(1.3)		
Detached	554		1,828		1,815		376		4,573		48.1	0.8
	(12.1)	(3.3)	(40.0)	(2.9)	(39.7)	(3.2)	(8.2)	(4.3)	(100.0)			
	(27.3)	(4.5)	(24.6)	(2.6)	(19.2)	(2.5)	(14.6)	(5.5)	(21.3)	(1.6)		
Purpose built flat	252		547		1,389		902		3,089		59.5	0.7
	(8.2)	(3.3)	(17.7)	(3.2)	(45.0)	(2.6)	(29.2)	(2.9)	(100.0)			
	(12.4)	(4.0)	(7.4)	(2.2)	(14.7)	(1.8)	(35.1)	(3.0)	(14.4)	(1.2)		
Converted flat	146		329		237		10		723		41.7	0.6
	(20.2)	(6.7)	(45.6)	(5.9)	(32.8)	(6.3)	(1.4)	(6.4)	(100.0)			
	(7.2)	(4.3)	(4.4)	(2.5)	(2.5)	(2.1)	(0.4)	(3.4)	(3.4)	(1.4)		
Total	2,034		7,424		9,460		2,566		21,484		51.4	
	(9.5)	(1.4)	(34.6)	(1.3)	(44.0)	(1.1)	(11.9)	(1.4)	(100.0)			
	(100.0)		(100.0)		(100.0)		(100.0)		(100.0)			

Table 1.3 Analysis of SAP - by construction date

count(000s), (row%), (column%)

	Up to 30	Sample error: +/-	30 - 50	Sample error: +/-	50 - 70	Sample error: +/-	More than 70	Sample error: +/-	Total	Sample error: +/-	Mean SAP	Sample error: +/-
Pre 1919	855		2,072		1,583		33		4,544		42.4	0.6
	(18.8)	(2.9)	(45.6)	(2.5)	(34.8)	(2.7)	(0.7)	(3.4)	(100.0)			
	(42.0)	(3.7)	(27.9)	(2.2)	(16.7)	(2.1)	(1.3)	(4.5)	(21.1)	(1.4)		
1919 - 1944	386		1,952		1,550		92		3,981		46.5	0.7
	(9.7)	(3.3)	(49.0)	(2.6)	(38.9)	(2.7)	(2.3)	(3.1)	(100.0)			
	(19.0)	(4.4)	(26.3)	(2.3)	(16.4)	(2.1)	(3.6)	(3.9)	(18.5)	(1.4)		
1945 - 1964	419		1,648		2,125		248		4,439		49.7	0.6
	(9.4)	(2.8)	(37.1)	(2.7)	(47.9)	(2.2)	(5.6)	(2.7)	(100.0)			
	(20.6)	(3.9)	(22.2)	(2.3)	(22.5)	(1.9)	(9.7)	(3.5)	(20.7)	(1.3)		
1965 - 1980	303		1,420		2,402		626		4,752		54.1	0.7
	(6.4)	(3.0)	(29.9)	(2.9)	(50.6)	(2.3)	(13.2)	(2.6)	(100.0)			
	(14.9)	(4.3)	(19.1)	(2.5)	(25.4)	(2.0)	(24.4)	(3.3)	(22.1)	(1.3)		
1981 - 1990	53		271		1,140		475		1,940		61.3	0.9
	(2.8)	(5.6)	(14.0)	(4.9)	(58.8)	(3.5)	(24.5)	(3.9)	(100.0)			
	(2.6)	(5.5)	(3.7)	(2.7)	(12.1)	(2.3)	(18.5)	(3.5)	(9.0)	(1.5)		
Post 1990	17		61		659		1,091		1,829		71.3	1.1
	(0.9)	(7.7)	(3.3)	(5.8)	(36.0)	(5.1)	(59.7)	(3.6)	(100.0)			
	(0.8)	(7.3)	(0.8)	(2.9)	(7.0)	(2.7)	(42.5)	(3.6)	(8.5)	(1.6)		
Total	2,034		7,424		9,460		2,566		21,484		51.4	
	(9.5)	(1.4)	(34.6)	(1.3)	(44.0)	(1.1)	(11.9)	(1.4)	(100.0)			
	(100.0)		(100.0)		(100.0)		(100.0)		(100.0)			

Table 1.4 Analysis of SAP - by tenure type

count(000s), (row%), (column%)

	Up to 30	Sample error: +/-	30 - 50	Sample error: +/-	50 - 70	Sample error: +/-	More than 70	Sample error: +/-	Total	Sample error: +/-	Mean SAP	Sample error: +/-
Owner occupied	1,296		5,851		6,700		1,354		15,201		50.4	0.5
	(8.5)	(2.0)	(38.5)	(1.7)	(44.1)	(1.6)	(8.9)	(2.2)	(100.0)			
	(63.7)	(3.4)	(78.8)	(1.4)	(70.8)	(1.5)	(52.8)	(3.9)	(70.8)	(1.0)		
Private rented	410		680		882		233		2,205		47.4	0.6
	(18.6)	(3.6)	(30.8)	(3.3)	(40.0)	(3.2)	(10.6)	(4.2)	(100.0)			
	(20.2)	(3.7)	(9.2)	(2.1)	(9.3)	(1.9)	(9.1)	(3.9)	(10.3)	(1.2)		
Local Authority	221		607		1,204		425		2,457		55.0	0.6
	(9.0)	(3.1)	(24.7)	(2.8)	(49.0)	(2.3)	(17.3)	(3.0)	(100.0)			
	(10.9)	(3.4)	(8.2)	(1.8)	(12.7)	(1.5)	(16.6)	(3.0)	(11.4)	(1.0)		
RSL	106		287		674		553		1,621		61.2	0.7
	(6.6)	(3.8)	(17.7)	(3.5)	(41.6)	(3.0)	(34.1)	(3.3)	(100.0)			
	(5.2)	(3.4)	(3.9)	(1.8)	(7.1)	(1.6)	(21.6)	(2.9)	(7.5)	(1.1)		
Total	2,034		7,424		9,460		2,566		21,484		51.4	
	(9.5)	(1.4)	(34.6)	(1.3)	(44.0)	(1.1)	(11.9)	(1.4)	(100.0)			
	(100.0)		(100.0)		(100.0)		(100.0)		(100.0)			

Table 1.5 Analysis of SAP - by household type

count(000s), (row%), (column%)

	Up to 30	Sample error: +/-	30 - 50	Sample error: +/-	50 - 70	Sample error: +/-	More than 70	Sample error: +/-	Total	Sample error: +/-	Mean SAP	Sample error: +/-
couple under 60	340		1,554		1,734		384		4,012		50.6	0.8
	(8.5)	(3.4)	(38.7)	(3.0)	(43.2)	(2.9)	(9.6)	(3.6)	(100.0)			
	(18.4)	(4.7)	(21.5)	(2.5)	(19.0)	(2.3)	(15.6)	(4.4)	(19.4)	(1.5)		
couple 60 or over	316		1,266		1,358		237		3,178		49.2	0.7
	(9.9)	(3.8)	(39.8)	(3.4)	(42.7)	(3.2)	(7.5)	(3.6)	(100.0)			
	(17.1)	(4.8)	(17.5)	(2.6)	(14.9)	(2.3)	(9.6)	(4.1)	(15.4)	(1.5)		
couple with children	270		1,690		2,401		598		4,959		53.2	0.7
	(5.4)	(3.0)	(34.1)	(2.7)	(48.4)	(2.4)	(12.1)	(3.0)	(100.0)			
	(14.6)	(4.6)	(23.4)	(2.4)	(26.3)	(2.1)	(24.3)	(4.0)	(24.0)	(1.4)		
lone parent with children	121		442		704		236		1,503		54.1	0.6
	(8.0)	(4.6)	(29.4)	(4.2)	(46.9)	(3.5)	(15.7)	(4.2)	(100.0)			
	(6.5)	(4.2)	(6.1)	(2.2)	(7.7)	(1.9)	(9.6)	(3.4)	(7.3)	(1.2)		
large adult household	144		528		629		147		1,447		50.4	0.7
	(9.9)	(5.3)	(36.5)	(4.6)	(43.5)	(4.2)	(10.1)	(5.2)	(100.0)			
	(7.8)	(4.8)	(7.3)	(2.5)	(6.9)	(2.1)	(6.0)	(4.1)	(7.0)	(1.4)		
one person under 60	303		773		1,108		452		2,636		52.6	0.7
	(11.5)	(3.8)	(29.3)	(3.7)	(42.0)	(3.2)	(17.2)	(3.9)	(100.0)			
	(16.3)	(4.4)	(10.7)	(2.5)	(12.2)	(2.2)	(18.4)	(4.0)	(12.8)	(1.4)		
one person 60 or over	359		969		1,179		406		2,914		51.1	0.7
	(12.3)	(3.7)	(33.3)	(3.4)	(40.5)	(2.9)	(13.9)	(3.2)	(100.0)			
	(19.4)	(4.5)	(13.4)	(2.4)	(12.9)	(2.0)	(16.5)	(3.4)	(14.1)	(1.3)		
Total	1,853		7,222		9,113		2,460		20,648		51.4	
	(9.0)	(1.4)	(35.0)	(1.3)	(44.1)	(1.2)	(11.9)	(1.4)	(100.0)			
	(100.0)		(100.0)		(100.0)		(100.0)		(100.0)			

Table 1.6 Analysis of SAP - by quintiles of floor area

count(000s), (row%), (column%)

	Up to 30	Sample error: +/-	30 - 50	Sample error: +/-	50 - 70	Sample error: +/-	More than 70	Sample error: +/-	Total	Sample error: +/-	Mean SAP
1st quintile	490		1,000		1,871		931		4,293		54.8
	(11.4)	(2.9)	(23.3)	(2.7)	(43.6)	(2.3)	(21.7)	(2.7)	(100.0)		
	(24.1)	(3.9)	(13.5)	(2.2)	(19.8)	(1.8)	(36.3)	(3.1)	(20.0)	(1.2)	
2nd quintile	419		1,365		1,955		552		4,292		52.1
	(9.8)	(3.1)	(31.8)	(2.8)	(45.6)	(2.4)	(12.9)	(3.0)	(100.0)		
	(20.6)	(4.2)	(18.4)	(2.3)	(20.7)	(1.9)	(21.5)	(3.7)	(20.0)	(1.3)	
3rd quintile	373		1,532		1,980		421		4,306		51.3
	(8.7)	(3.1)	(35.6)	(2.8)	(46.0)	(2.5)	(9.8)	(3.0)	(100.0)		
	(18.3)	(4.2)	(20.6)	(2.4)	(20.9)	(2.0)	(16.4)	(3.7)	(20.0)	(1.4)	
4th quintile	364		1,644		1,948		339		4,296		50.3
	(8.5)	(3.2)	(38.3)	(2.9)	(45.3)	(2.7)	(7.9)	(3.3)	(100.0)		
	(17.9)	(4.4)	(22.1)	(2.4)	(20.6)	(2.2)	(13.2)	(4.1)	(20.0)	(1.4)	
5th quintile	388		1,883		1,706		322		4,298		48.7
	(9.0)	(3.4)	(43.8)	(2.9)	(39.7)	(3.1)	(7.5)	(4.0)	(100.0)		
	(19.1)	(4.6)	(25.4)	(2.5)	(18.0)	(2.4)	(12.5)	(5.1)	(20.0)	(1.5)	
Total	2,034		7,424		9,460		2,566		21,484		51.4
	(9.5)	(1.4)	(34.6)	(1.3)	(44.0)	(1.1)	(11.9)	(1.4)	(100.0)		
	(100.0)		(100.0)		(100.0)		(100.0)		(100.0)		

Table 1.7 Analysis of SAP - by quintiles of income

count(000s), (row%), (column%)

	Up to 30	Sample error: +/-	30 - 50	Sample error: +/-	50 - 70	Sample error: +/-	More than 70	Sample error: +/-	Total	Sample error: +/-	Mean SAP
1st quintile	511		1,178		1,782		622		4,093		52.0
	(12.5)	(2.9)	(28.8)	(2.6)	(43.5)	(2.2)	(15.2)	(2.6)	(100.0)		
	(27.6)	(4.0)	(16.3)	(2.2)	(19.6)	(1.8)	(25.3)	(3.1)	(19.8)	(1.2)	
2nd quintile	447		1,327		1,787		558		4,119		51.5
	(10.9)	(3.1)	(32.2)	(2.8)	(43.4)	(2.5)	(13.5)	(2.8)	(100.0)		
	(24.2)	(4.3)	(18.4)	(2.3)	(19.6)	(2.0)	(22.7)	(3.5)	(19.9)	(1.3)	
3rd quintile	314		1,492		1,856		464		4,126		52.0
	(7.6)	(3.1)	(36.2)	(2.9)	(45.0)	(2.7)	(11.2)	(3.3)	(100.0)		
	(17.0)	(4.4)	(20.7)	(2.5)	(20.4)	(2.2)	(18.9)	(4.0)	(20.0)	(1.4)	
4th quintile	302		1,510		1,904		439		4,155		51.8
	(7.3)	(3.4)	(36.3)	(3.0)	(45.8)	(2.8)	(10.6)	(3.6)	(100.0)		
	(16.3)	(4.8)	(20.9)	(2.5)	(20.9)	(2.3)	(17.8)	(4.5)	(20.1)	(1.5)	
5th quintile	278		1,715		1,784		378		4,155		50.7
	(6.7)	(3.6)	(41.3)	(3.0)	(42.9)	(3.0)	(9.1)	(4.0)	(100.0)		
	(15.0)	(5.1)	(23.7)	(2.6)	(19.6)	(2.4)	(15.4)	(5.1)	(20.1)	(1.6)	
Total	1,853		7,222		9,113		2,460		20,648		51.4
	(9.0)	(1.4)	(35.0)	(1.3)	(44.1)	(1.2)	(11.9)	(1.4)	(100.0)		
	(100.0)		(100.0)		(100.0)		(100.0)		(100.0)		