Energy Use in Homes 2005

A series of reports on domestic energy use in England

Thermal Insulation

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This is one of a series of three reports on the energy characteristics of the stock as observed by the 2005 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

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Energy Use in Homes 2005: Thermal Insulation

Executive Summary

69% of the housing stock (15.0 million dwellings) have predominantly cavity walls. There are 6 million dwellings with cavity wall insulation; this represents 40% of cavity walled stock.

Of all dwellings with a loft space, 28% have loft insulation of depths less than 100mm, 30% have 150mm or more and 4% have no loft insulation.

Approximately 87% (18.8 million) of dwellings have at least one double glazing window. 58% of stock have the entire dwelling double glazed, whilst 23% have none or less than half of the windows double glazed.

The extent of thermal insulation measures in a property depends greatly on the type and age of the dwelling. Generally, the older the dwelling, the poorer the thermal insulation measures. Levels of cavity wall insulation, double glazing and the thickest loft insulation all increase as building age decreases. Converted flats generally have the lowest levels of thermal insulation when looking at building type, whilst detached dwellings have the highest levels, which may be attributed to the generally older age of converted flat stock compared to younger detached dwellings.

Private rented properties have the poorest thermal insulation measures when looking at all tenures. They have the lowest levels of full double glazing (42%), lowest levels of loft insulation (only 20% having 150mm or more of insulation), and the lowest levels of cavity wall insulation (29% of those dwellings with cavity walls).

Thermal insulation measures in dwellings have increased dramatically from 1991 to 2005. Entire household double glazing has increased from 26% in 1996 to 58% in 2005. Loft insulation of 150mm or more for the entire stock has increased from 25% in 2003 to 30% in 2005. Cavity wall insulation (in predominantly cavity walled dwellings) has increased from 11% in 1991 to 40% in 2005.

2005 Thermal Insulation Update Report

Summary

1. Thermal insulation measures in dwellings have continued to increase into 2005, particularly ownership of cavity wall insulation and double glazing.

2. Private rented dwellings still show the worst thermal insulation characteristics on average, with Registered Social Landlords (RSL) the best. There is considerable remaining potential for thermal insulation improvement among converted flats and terraced houses.

3. A key determinant of thermal insulation performance is the age of a dwelling, with tighter Building Regulations driving improvements in more recently built stock.

Introduction

4. This update report provides details of thermal insulation measures as monitored by the 2005 English House Condition Survey (EHCS). The report is split into sections analysing the incidence and quality of domestic insulation measures against both dwelling and household characteristics. Each section will also examine how these proportions have changed over time.

5. Since 2002 the EHCS has been in a continuous format, providing annual data which is then analysed in two-year datasets. This report presents temporal analysis based on the continuous survey and will also look at data from previous surveys conducted in 1991, 1996 and 2001[1].

Wall Type and Insulation

6. This first section examines the external wall construction of the English housing stock and in particular the frequency of insulation found in dwellings which are predominantly cavity walled[2]. Cavity wall insulation (CWI) refers to the presence of an insulating layer in the internal cavity of an external wall, built with two or more leaves. This has become standard in new build homes since 1980, often as a moulded insulation board. When fitted retrospectively it describes the process of injecting an insulating material (usually fibres, beads or foam) in between the inner and outer leaves of masonry that make up an external cavity wall.

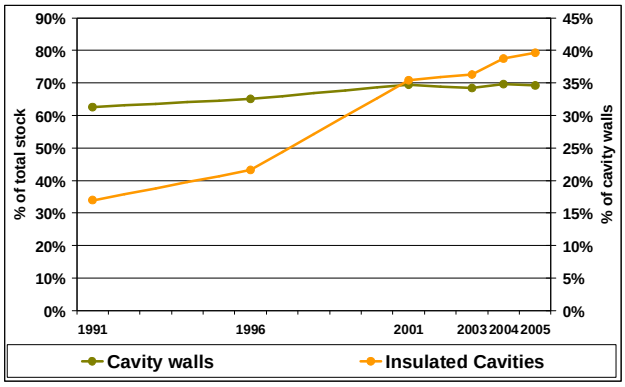

Figure 1: Timeline of the proportion of cavity walled stock, and the proportion of these which contain insulation

7. In 2005 around 15.1 million dwellings have predominantly cavity walls, which represent 69% of the 21.8 million dwellings in England. This has increased from 12.3 million (63%) in 1991, with an additional 0.4 million dwellings since 2003, as shown in Figure 1. Of the cavity walled stock[3] just below 6 million are also insulated, representing 40% of these dwellings, shown on the right hand axis of Figure 1. This frequency has risen from 2.1 million in 1991 (20% of all cavities), which includes 0.6 million more filled cavities since 2003, incorporating new build stock.

Dwelling Type

8. Cavity walls are more predominant in newer dwellings with 98% of post-1990 stock being cavity walled compared with only 14% of pre-1919 homes (Figure 2). Likewise, of those cavity walled dwellings built post-1990, 60% are insulated whilst just 10% of pre-1919 homes have CWI. The relatively high proportion of 40% containing insulation in 1945 – 1964 dwellings suggests that a large amount of retrospective installation has been applied to this stock; something that cannot occur with the predominantly solid-walled pre-1919 stock. This strong correlation between dwelling age and external wall characteristics will inform the patterns seen when other dwelling and household characteristics are explored.

[1] The way in which EHCS data collection has evolved means that timeline analysis cannot always begin in 1991.

[2] Predominant wall type is defined as the wall type which makes up greater than or equal to 50% of the external wall area.

[3] All proportions given for CWI will refer only to cavity walled stock.

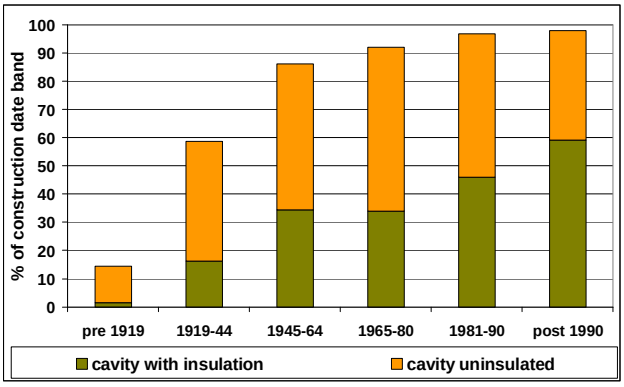

Figure 2: Comparison of cavity wall and CWI, as a proportion of total stock, by construction date

9. The dwelling types most likely to consist of predominantly cavity walls are bungalows and detached houses, with 87% and 81% respectively, with low-rise[4] purpose built flats also well above average with 80%, as in Figure 3. These three categories are also those most likely to date from 1965 or later, when cavity wall construction was standard. High-rise flats are also typically built more recently, but their structure makes cavity walls impractical, with a higher proportion of these using concrete panels than other dwelling types.

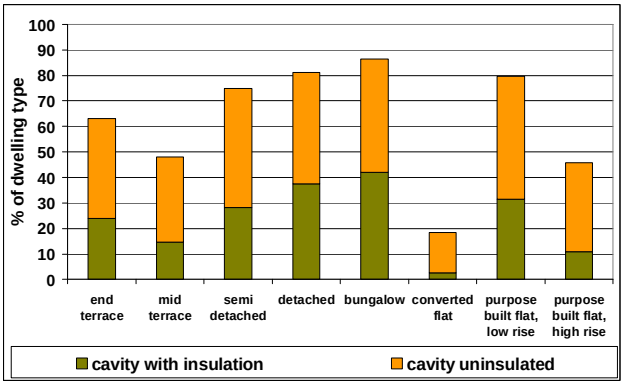

Figure 3: Comparison of cavity wall and CWI, as a proportion of total stock, by dwelling type

10. A similar pattern, also in Figure 3, is shown when comparing CWI incidence and dwelling type, with bungalows, detached houses and low-rise purpose built flats having respective proportions of 49%, 46% and 39%. We also find that end-terraces are more likely to be cavity walled and contain CWI than mid-terraces. This is a consequence of longer rows of terraced houses (and therefore a greater number of mid-terraces) being more typical in older stock, with its high proportion of solid walls. The categories with the lowest incidence of cavity walls are the converted and non-residential[5] flats, with a combined proportion of 19%. With some 84% of these built pre-1919, converted flats are by far the oldest dwelling category, hence the proportion of solid walled stock.

11. The analysis shows relatively little correlation between dwelling size and wall construction. We have already seen high proportions of cavities and CWI in low-rise purpose built flats and bungalows – at the smaller end of the floor area scale, and in detached (and semi-detached to an extent) – at the larger end, giving a constant picture across the range of dwelling sizes.

Dwelling Location

12. By far the lowest proportion of cavity-walled stock is found in London, (Figure 4), with 41% compared with a range in the other regions from 66% (East Midlands) to 83% (North East). Over 58% of the dwellings in the capital were built pre-1944, compared with a national proportion of 39%. Although flats are most commonly found in London, a sizeable proportion of these are older converted flats, whilst the predominantly cavity-walled bungalows and detached houses make up the rarest housing types here. Outside London, the Midlands have lower than average incidence of cavity walls, but the East Midlands has the highest percentage of CWI with 50% of all cavity-walled dwellings. This is consistent with the 12% of dwellings here of post-1990 construction: more than any other region.

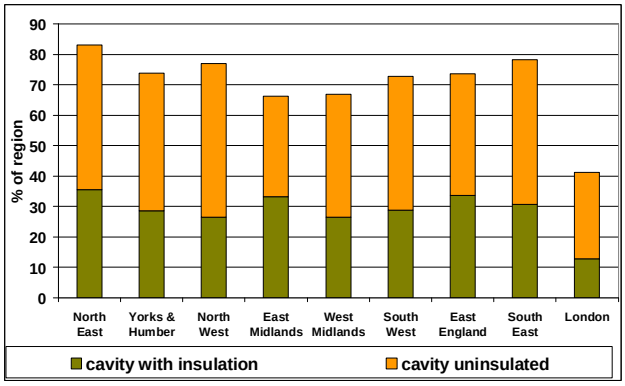

Figure 4: Comparison of cavity wall and CWI, as a proportion of total stock, by region

13. The solid-walled bias seen in London applies to city centre or urban dwellings[6] in general when examining the type of neighbourhood surrounding a dwelling. This category has only 48% with predominantly cavity walls, compared with 78% in suburban[7] areas and

[4] Fewer than 6 storeys in the building.
[5] A building converted into flat plus commercial premises.
[6] The core or area around the core of large towns and cities.
[7] The outer area of towns or cities, often large planned housing estates.

70% in rural[8] locations, (Figure 5). There is a similar pattern for CWI, in which 44% of rural homes with cavity walls also have insulation, followed by 40% of suburban areas and 32% of urban dwellings. There is a clear link between the older stock found in cities and solid walls, whilst the more recently built suburban estates are more likely to be cavity-walled. Using data from the EHCS market value survey, we find that cavity walled dwellings have an average market value around £25k lower than those with non-cavity walls. This has significantly more to do with city centre housing prices than any thermal properties of the dwelling itself.

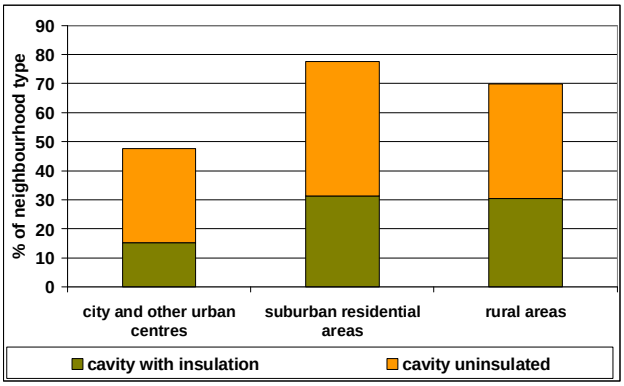

Figure 5: Comparison of cavity wall and CWI, as a proportion of total stock, by neighbourhood type

Tenure

14. There is a greater tendency for occupied homes to be of cavity construction and contain CWI than vacant dwellings. Of the 0.5 million vacancies, 60% have cavity walls, with 30% of these being insulated, (Figure 6); whilst 70% of the occupied stock have cavity walls, 40% of which is insulated. The tendency for vacant stock to be older gives some explanation of these differences.

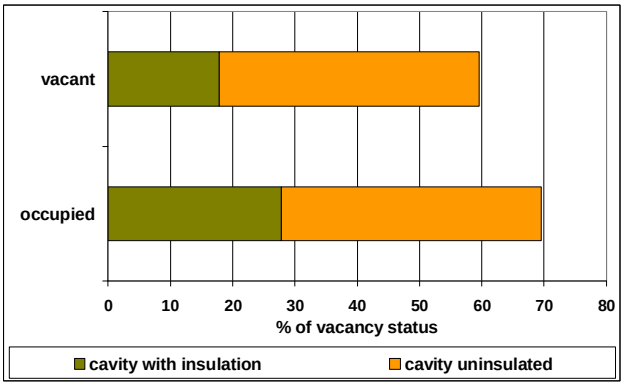

Figure 6: Comparison of cavity wall and CWI, as a proportion of total stock, by vacancy status

[8] Traditional villages and their immediate suburban surroundings or isolated dwellings.

15. The social sector shows higher proportions of stock with both cavity walls and CWI, as shown in Figure 7. Of the four tenures it is the private rented stock, with 42% built pre-1919, which falls behind the others in terms of CWI, whilst the 32% of RSL housing built since 1980, along with its high percentage of low-rise flats, put this tenure ahead in its proportion of cavity walled homes. Private rented dwellings are more likely to be converted flats than other tenures, whilst detached houses and bungalows, with the most energy efficient wall construction, are sparse in this sector.

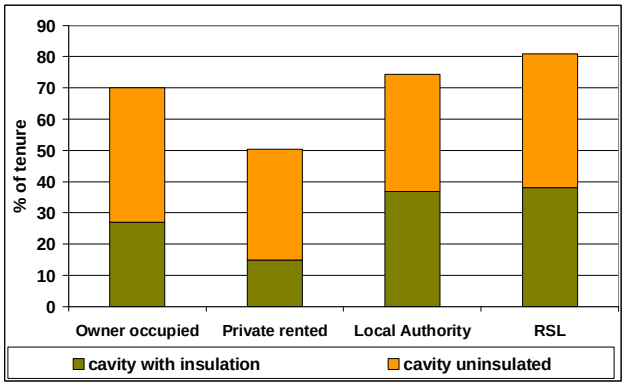

Figure 7: Comparison of cavity wall and CWI, as a proportion of total stock, by tenure

Household Type

16. There is a higher tendency for households containing an older household reference person[9] (HRP), to live in dwellings with cavity walls and CWI, (Figure 8). Households comprising of an elderly couple or single person aged over 60, have cavity wall proportions of 76% and 74% and CWI proportions of 46% and 43% respectively; the only household group which shows figures that are significantly above average. Further analysis shows that these groups are the least likely to occupy pre-1919 homes, but also the least likely to live in post-1990 dwellings. These households are most commonly found in dwellings built between 1945 and 1980, which still have a high cavity wall percentage of 89%.

[9] The HRP is the person in whose name the dwelling is owned or rented. Where there are joint householders the person with the highest income and then highest age is the HRP.

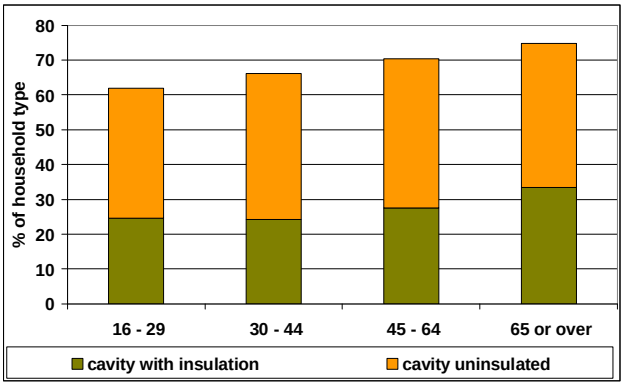

Figure 8: Comparison of cavity wall and CWI, as a proportion of total stock, by age of household reference person

17. Households with an HRP of less than 30 years old have the lowest proportion of cavity walls, partly explained by over 30% of this group living in pre-1919 dwellings. The fact that they are also the most likely to live in post-1990 homes (15% compared to 10% of all households) provides some explanation for the 40% of households in this category with CWI – more than those households whose HRP is between 30 and 65.

18. The tendency for a household to occupy a cavity-walled dwelling is slightly below average if its income is amongst the highest or lowest fifth of incomes. We find that those in the highest income quintile are the most likely to live in pre-1919 houses, whilst the lowest income households are unlikely to live in detached houses, characterised by more energy efficient walls.

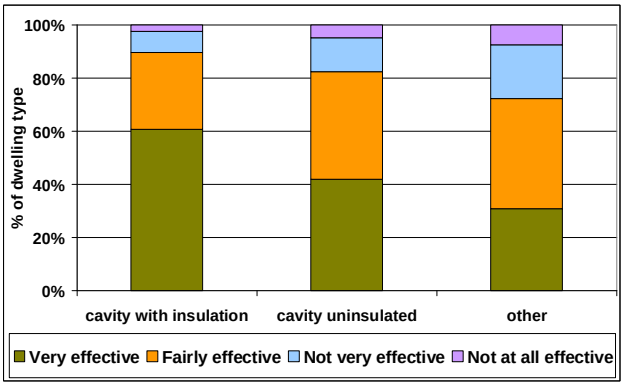

Figure 9: Comparison of wall structure by household satisfaction rating for insulation

19. Using data from the EHCS interview survey, a householders' perception of the effectiveness of their insulation can also be measured. We find a strong correlation in which 50% of householders in cavity walled dwellings said their insulation was "very effective", whilst only 30% of non-cavity wall occupiers gave the same response (Figure 9). The outcome is similar when comparing responses from those with CWI and those with unfilled cavities, although the difference in percentage is somewhat narrower.

Loft Insulation

20. In 2005, around 1.5 million homes (7% of the stock) are lower or mid-floor flats with dwellings above them, and therefore these have no need for ceiling or roof insulation. The analysis of loft insulation incidence and depth in this section will only apply to the remaining stock, which will include dwellings with flat roofs and inaccessible loft spaces for which the insulation information has been modelled.

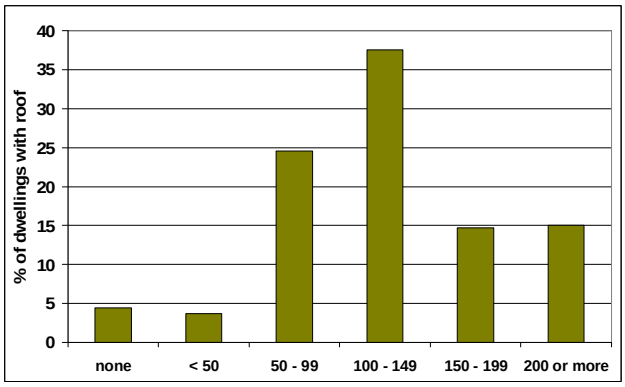

Figure 10: Proportions of loft insulation thicknesses

21. Of the remaining 93% of dwellings, 0.85 million (4%) have no insulation present, (Figure 10), whilst a further 28% have less than 100mm. 38% have between 100mm and 150mm, with the remaining 30% having 150mm or greater. Current building regulations require in excess of 150mm for existing dwellings and over 200mm for new build housing, suggesting that some 70% of dwellings require some form of insulation top-up. A depth of 270mm is now widely recommended to minimise heat losses, suggesting that the insulation in the vast majority of dwellings is currently insufficient.

22. Due to the way in which loft data has been collected by the EHCS, a comparable timeline of loft insulation depth is not possible for all surveys used elsewhere in these reports. However, we can see that the proportion of lofts with no insulation is unchanged since 2003, whilst the amount that is 150mm or more has risen from 25% in 2003, to 27% in 2004 and 30% in 2005, as shown in Figure 11.

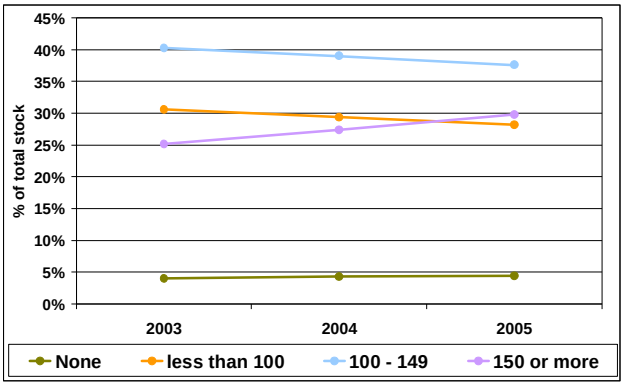

Figure 11: Timeline of loft insulation bands since 2003

23. Although most insulation is of the familiar mineral wool or fibre glass matting, some other materials can be found in a minority of homes such as vermiculite beads (1%), rigid foam board (1%), (more regularly used as under floor insulation), and high performance quilting (<1%) which can achieve equivalent energy efficiency performances as mineral wool at a reduced thickness.

Dwelling Type

24. As with wall structure, the age of a dwelling is often indicative of the existence and level of loft insulation, indicated by Figure 12. We find that 11% of pre-1919 homes have uninsulated lofts and 23% have 150mm or more. This compares with less than 1% of post-1980 dwellings being uninsulated and 48% having 150mm or more, with over half of these being at least 200mm. This is a consequence of the tightening of building regulations since 1980.

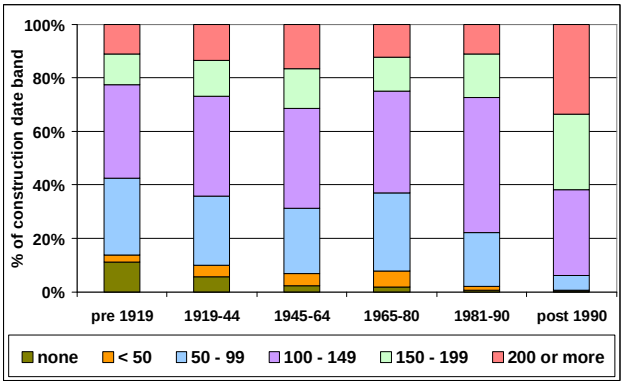

Figure 12: Comparison of loft insulation bands by construction date

25. The dwelling types most likely to have the deepest loft insulation are again bungalows and detached houses with 36% and 33% having 150mm or more, with below average quantities without any insulation, (Figure 13). As shown in paragraph 9, these dwelling types include a high proportion of newer stock. Older terraced houses and converted flats are the most likely to be uninsulated, whilst purpose built flats have the highest percentage of insulation between 100mm and 150mm.

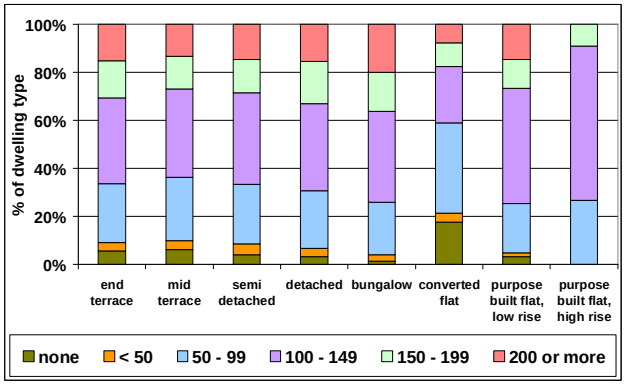

Figure 13: Comparison of loft insulation bands by dwelling type

Dwelling Location

26. The thickest average loft insulation is found in the North East, with 42% being at least 150mm deep, as shown in Figure 14. London and the South East have around 20% at this level, with the remaining regions having between 31% and 35%. The age of the London stock (paragraph 12) accounts for both this low percentage and the above average 7% of this region that has no insulation. This difference in statistics from the North East and South East can be partly attributed to the typical temperatures in these regions and the greater need for good thermal performance in the north.

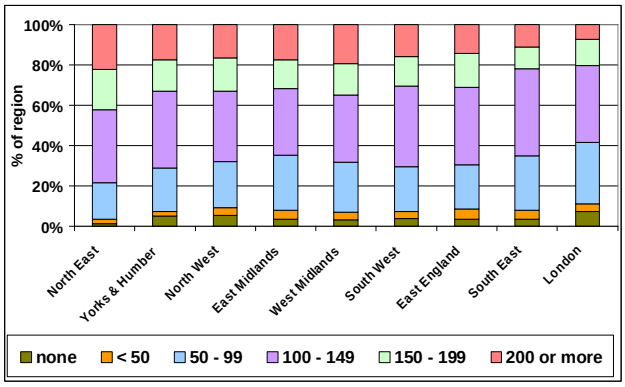

Figure 14: Comparison of loft insulation bands by region

27. The older city centre and urban stock is the most likely to be without loft insulation and has the smallest proportion of 150mm or more, whilst the levels in suburban and rural areas are roughly equal, (Figure 15). As with cavity wall insulation (paragraph 13), the highest valued properties, being typically in city centres, are those with little or no loft insulation.

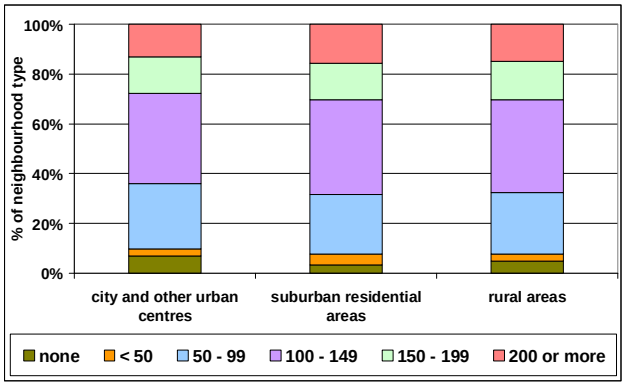

Figure 15: Comparison of loft insulation bands by neighbourhood type

Tenure

28. Occupied stock again outperforms vacant dwellings with the proportion of empty dwellings without insulation being more than twice that of occupied homes. The tendency for vacant stock to be in the private rented sector, itself containing a high proportion of the oldest stock, places a low expectation of insulation measures on this tenure. We find that only 20% of private rented homes have at least 150mm, compared to the total stock proportion of 30%, with 8% of private rented dwellings being uninsulated, (Figure 16). The owner occupied tenure shows higher levels of loft insulation suggesting that insulation is more likely to be 'topped up' by a home owner than by a private landlord.

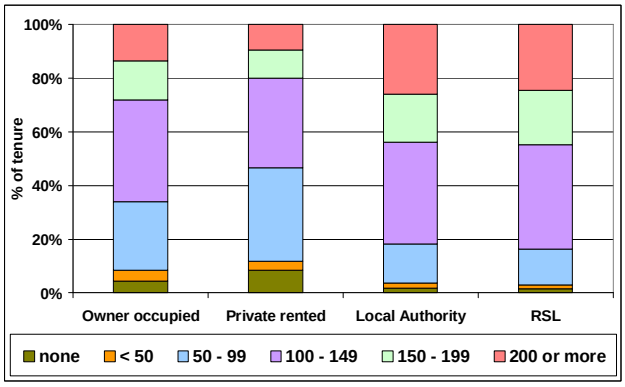

Figure 16: Comparison of loft insulation bands by tenure

29. The social sector has loft insulation levels far in excess of the private sector, with only 2% having no insulation and 44% having 150mm or more. The quantity of newer housing in these social tenures is a powerful factor, along with the stronger requirements to meet certain levels of thermal comfort, that do not apply to private rented dwellings.

Household Type

30. The largest proportion of households without loft insulation is found in the group of single people aged under 60, (Figure 17). This is the household category that is most likely to live in the oldest dwellings. The inverse is true for single pensioners and lone parent families who have the highest proportion of thicker loft insulation and are the most likely to live in social sector housing. Couples with and without dependent children are the most likely to have some insulation regardless of depth and are also the most predominant in the owner occupied sector.

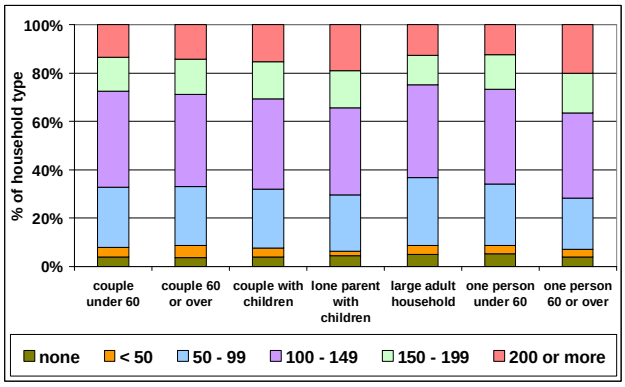

Figure 17: Comparison of loft insulation bands by household group

31. Households with lower incomes are slightly more likely to have thicker insulation, with their predominance in the social tenures a contributory factor. However, these households also have more uninsulated lofts, due to the greater dwelling ages of private sector, low income households. The proportion of householders giving their insulation measures "very effective" ratings increases with each band of greater loft insulation depth, from 19% of those with none, 36% of those with 50mm to 100mm and 59% for those with 200mm or more, (Figure 18).

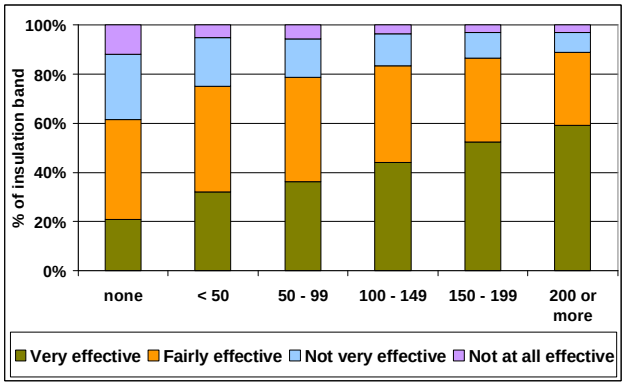

Figure 18: Comparison of loft insulation bands by household satisfaction rating for insulation

Double Glazing

32. One of the more popular home improvement methods for several decades, and an apparent early example of householders being pro-active in looking after the energy efficiency of their dwelling, was the installation of double glazed windows. However, the popularity was inconsistent with the true cost effectiveness of the measure relating to thermal performance, with sound insulation more of a consideration. Further developments such as triple glazing are now becoming more common in new housing, plus refinements including low emissivity coatings, (reducing heat loss through the glass), and argon filled gaps between the glass layers, (reducing convection within the void). Driven by changes in building regulations, this minor revolution in domestic energy efficiency has left other, more cost effective forms of insulation lagging behind in terms of remaining potential.

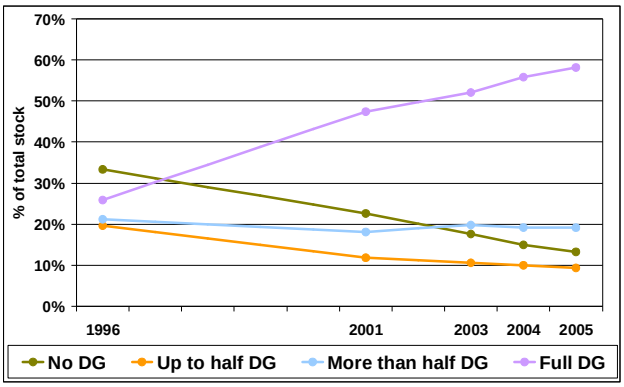

Figure 19: Timeline of double glazing proportions

33. Due to the method of data collection in 1991 there is no direct comparison with later years, but in 1996 we find that one third of dwellings had no double glazing, with 20% having up to half double glazed, as seen above in Figure 19. A further 21% had the majority of windows double glazed and 26% had full double glazing. In 2005 these proportions have changed significantly, with 13% fully single glazed, less than 10% up to half double glazed and 58% fully double glazed.

Dwelling Type

34. There is a strong correlation between dwelling age and glazing type, as demonstrated in Figure 20, with identifiable time periods corresponding to certain building practices. The pre-1919 category contains nearly half of all fully single glazed dwellings and it is here that we find many homes in which it is not practical to upgrade to double glazing, due to circumstances such as planning regulations in conservation areas or dwellings with listed status. Only one third of dwellings in this age category have full double glazing.

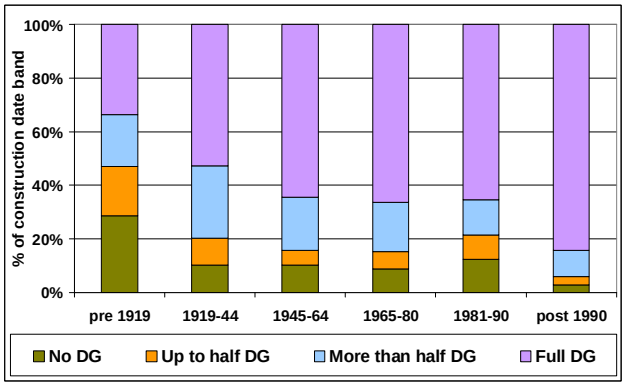

Figure 20: Comparison of double glazing proportions by construction date

35. For dwellings built between 1919 and 1990 the proportion with no double glazing is around 10%, and we see the proportion of full double glazing rise to around two-thirds between 1965 and 1990. Double glazed units were becoming standard towards the end of this period, accompanied by a large amount of retro-fitting for both heat and sound insulation. It is perhaps surprising that the newest stock, built since 1990, has 3% with no double glazing, but it also has 84% with full double glazing.

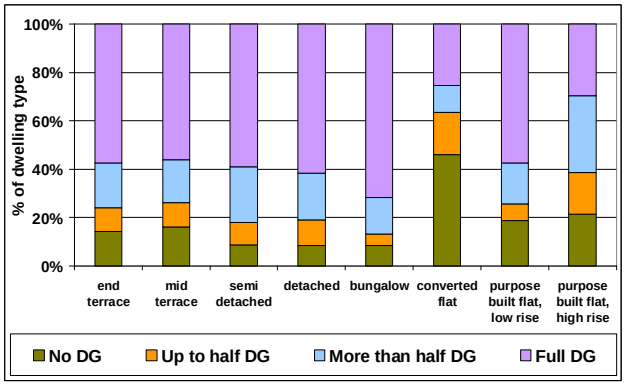

Figure 21: Comparison of double glazing proportions by dwelling type

36. Flats are typically less likely to have double glazing than houses, with 46% of the older converted flats, 19% of purpose built flats and 11% of houses having none, with terraces having slightly lower standards than other house types, (Figure 21). Just 25% of converted flats have full double glazing, compared with 72% of bungalows, which have the most post-1945 dwellings. Although purpose built flats tend to fall into a similar construction period, the extent of double glazing is not as great, partly due to the proportion of this stock in the private rented and local authority tenures, which will be shown to have less double glazing than owner occupiers.

37. Smaller dwellings, such as flats and terraced houses, are the most likely to have no double glazing, although there is no distinct pattern of full double glazing with dwelling size.

Dwelling Location

38. The region most likely to contain single glazed homes is London, in which 23% have no double glazing and 47% have full double glazing, as shown in Figure 22. The age of this regions' stock is a clear contributor to this (paragraph 12). Perhaps surprisingly, the North East, with 18% fully single glazed comes next, despite having a high proportion of many other energy efficiency measures. Although the stock here is not as old as in London, it does not have a high proportion of the newer dwellings in which double glazing is standard. All other regions have around 11% with no double glazing and 58% to 62% with full double glazing.

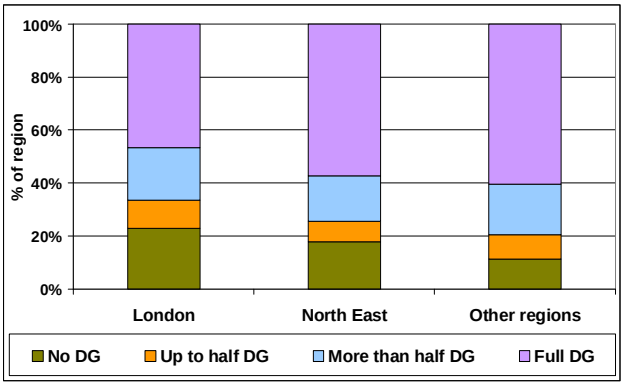

Figure 22: Comparison of double glazing proportions by region (isolating London and the North East)

39. The greater age of city centre and urban dwellings, along with the proportion of flats found here, gives these locations a high percentage with no double glazing (21%) and lower than average amounts with full double glazing (48%), shown in Figure 23. In newer suburban areas the respective proportions are 10% and 62%. Rural neighbourhoods are not far behind in numbers of fully double glazed stock (59%), with higher proportions of detached houses and bungalows here a contributory factor. Once again dwellings with higher market values are found more frequently among those with low amounts of double glazing – those most likely to be older, city centre properties.

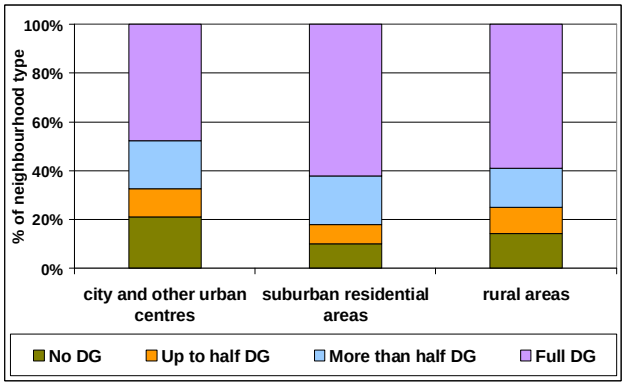

Figure 23: Comparison of double glazing proportions by neighbourhood type

Tenure

40. The proportion of vacant stock without any double glazing is around twice that of occupied homes, (Figure 24), 24% against 13%, whilst only 45% have full double glazing, compared with 59% in occupied dwellings. Age is once again a contributory factor; vacant stock is more likely to be pre-1919. The paucity of vacant owner occupied stock is also a consideration; an owner would be more likely to retrospectively fit double glazing than a private landlord.

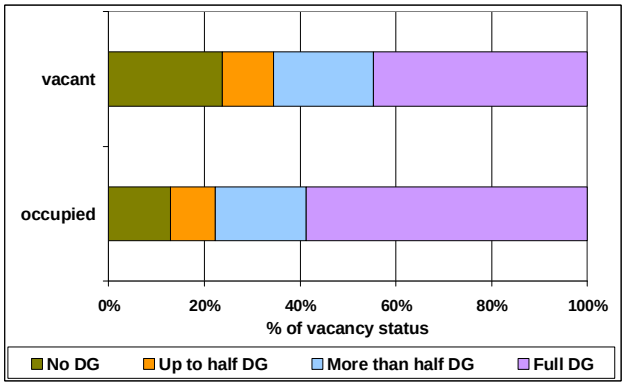

Figure 24: Comparison of double glazing proportions by vacancy status

41. It is in the private rented sector where the lowest levels of double glazing are found, (Figure 25). 28% of dwellings in this group have no double glazing and 42% are fully double glazed. As with vacant stock, age reduces the chance of the dwelling originally having double glazing and the nature of the tenure precludes its subsequent installation. This is a rare situation where owner occupiers are ahead of the social sector, particularly local authority stock, in terms of energy efficiency. We see 10% of private owners having no double glazing compared with 19% of social rented homes, whilst both sectors have around 60% fully double glazed. The high proportion of social sector flats is one factor, however the levels

of retrospectively fitted energy efficient windows among home owners is also key.

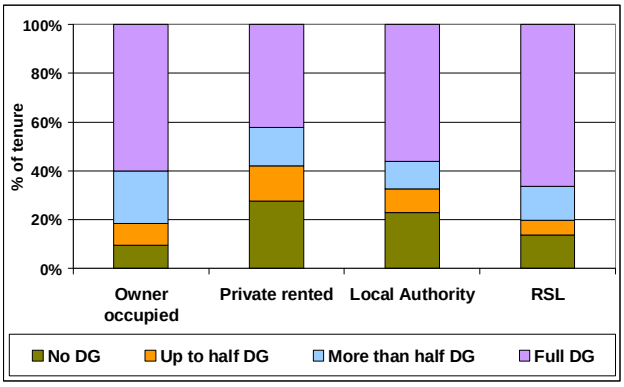

Figure 25: Comparison of double glazing proportions by tenure

Household Type

42. The highest levels of double glazing ownership are among couples with and without dependent children, as shown in Figure 26. These are more likely to be owner occupiers in detached or semi-detached houses than other household categories. Single people under 60 years old have the lowest amount, with 20% of this group having none and 54% having full double glazing. These are the most likely to live in pre-1919 homes, often converted flats and also private rented purpose built flats, all typical of high heat loss windows.

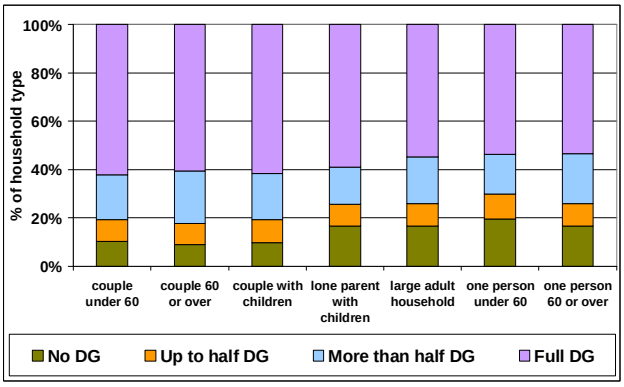

Figure 26: Comparison of double glazing proportions by household group

43. The ability to afford to install double glazed windows, or to buy a house containing them, appears to have an impact, with lower income households more likely to have no double glazing than those with higher incomes. When comparing incomes in five equal groups it is actually the fourth highest group that has the highest levels of double glazing, (Figure 27). This may be because the highest income group is more likely to live in older, more valuable properties in which upgrading from single glazing may not always be feasible.

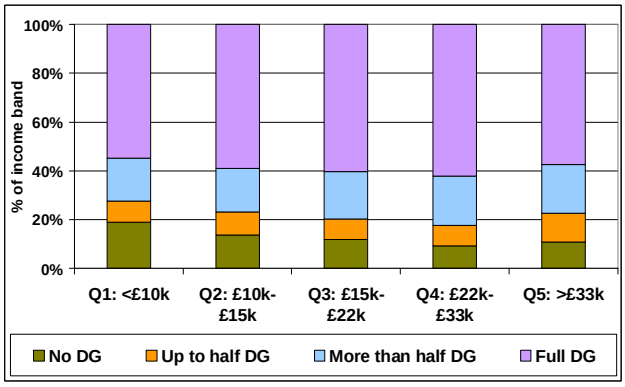

Figure 27: Comparison of double glazing proportions by household income

44. Comparing the perceived effectiveness of a dwellings insulation measures with the glazing type gives the strongest correlation of all the thermal insulation measures under examination. This is shown in Figure 28 with the proportion of "very effective" rating given to fully double glazed dwellings far higher than for those with none. However, the small percentage of "Not at all effective" ratings within the highest double glazing category suggests deficiencies in other areas of thermal insulation.

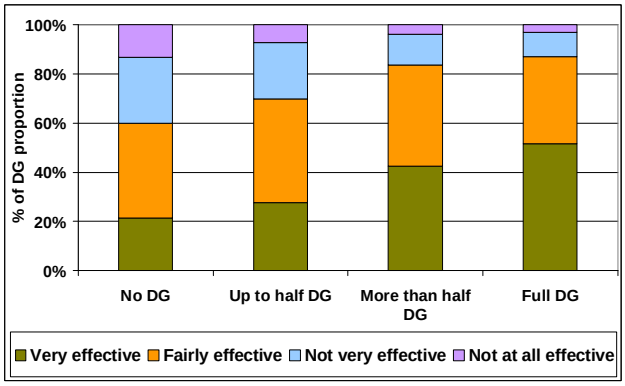

Figure 28: Comparison of double glazing proportions by household satisfaction rating for insulation

Hot Water Tank Insulation

45. Domestic water heating and storage is discussed in more detail in the Space and Water Heating Report; here we consider the measures taken to prevent heat losses from the hot water storage tank. This section focuses on the 14.4 million (66%) of dwellings with operational hot water tanks, which excludes those with combination boilers, or instantaneous water heating and supply systems. This overall quantity has fallen by around 0.75 million since 2003 due to

the uptake of combination, particularly condensing-combination, boilers.

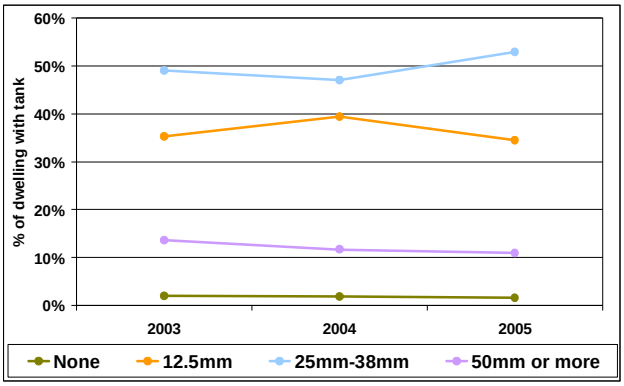

Figure 29: Timeline of hot water tank insulation bands

46. In 2005, around 1.5% of these tanks were uninsulated, a small reduction from 2% in 2003, (Figure 29). The efficiency of these systems would benefit greatly from any form of added insulation. Of those tanks with insulation, 66% are made from factory bonded foam insulation and 33% are loose insulated jackets, (Figure 30). The proportion of tanks with the thinnest insulation of 12.5mm has fallen slightly to a level of 35%, whilst the percentage with 25mm or 38mm has increased from 49% in 2003 to 53% in 2005. The proportion of cylinders with 50mm or more have fallen from 13% to 11%.

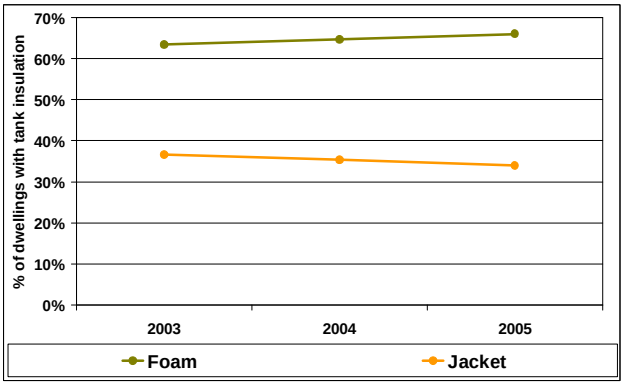

Figure 30: Timeline of hot water tank insulating materials

47. These figures, although not indicating any dramatic changes, do suggest a move towards a standard thickness of factory moulded insulation of 25mm or 38mm, replacing poorly insulated cylinders or tanks with thicker, but less well insulating, loose jackets, which had previously been added to uninsulated tanks. Indeed, comparing thickness against material we find that half of the 50mm or more examples are jackets compared with only 28% of 25mm – 38mm insulation, as shown in Figure 31. This trend may become clearer as the timeline is extended in the future, when we would also expect thicker factory made foam insulation to become more prevalent on replacement cylinders. The option to reduce the tank heat loss by adding a jacket to an existing thinner layer of foam insulation is also open to householders and landlords.

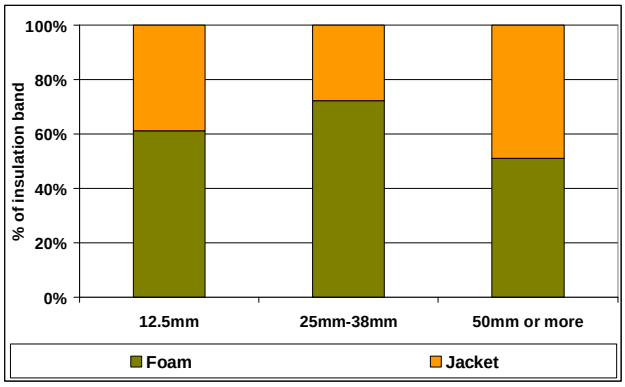

Figure 31: Comparison of hot water tank insulating material by thickness of insulation

Dwelling Type

48. There is some correlation between cylinder insulation and dwelling age, (Figure 32). There are very few uninsulated cylinders in post-1980's housing, and a below average proportion of 12.5mm. These dwellings also have higher percentages of 25mm – 38mm insulation, of which the majority are made from factory moulded foam (86%). Pre-1919 dwellings have the highest proportion of uninsulated tanks; 38% of all uninsulated tanks are in this age band. Those with insulation use lower quantities of foam coating (61%) and more loose jackets (39%) than more recently built dwellings.

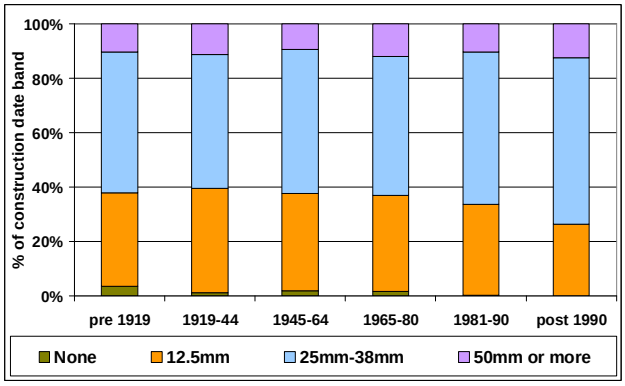

Figure 32: Comparison of hot water tank insulation thickness by construction date

49. Correspondingly, The older dwelling types such as converted flats and terraced housing are the most likely to contain uninsulated tanks, with purpose built flats having the highest proportion of thicker insulation and, along with detached homes, the highest percentage of foam coating where insulation exists.

Dwelling Location

50. There is a general pattern of Southern and Eastern regions having lower numbers of uninsulated cylinders, around 1% of hot water tanks, compared with 2% in the North and Midlands. There is also a tendency for more factory foam insulation in the South and East with 74% using foam compared with 57% in other regions, (Figure 33). The higher amount of new housing in the South East is a contributory factor to these figures, along with the above average quantity of purpose built flats.

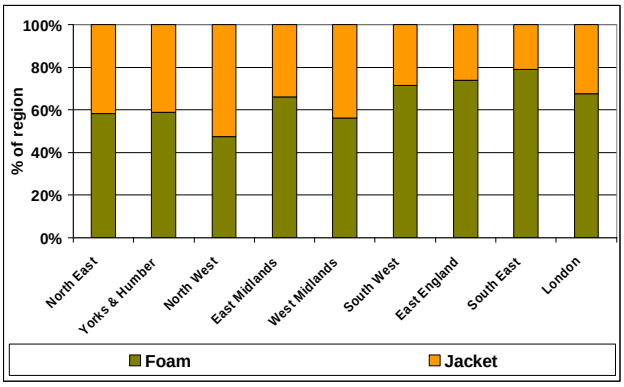

Figure 33: Comparison of hot water tank insulating material by region

Tenure

51. In keeping with all other thermal insulation measures, vacant dwellings have a larger proportion of uninsulated cylinders as well as a higher percentage of thick jackets rather than more efficient foam. Private rented dwellings follow a similar pattern, whilst the better insulated cylinders, with factory moulded insulation to depths of 50mm or more are found in a higher proportion of the social sector, particularly RSL stock, than the private sector, (Figure 34).

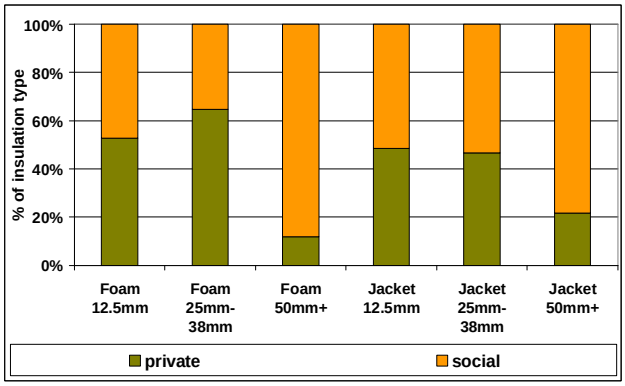

Figure 34: Comparison of combined tank insulation details by tenure sector

Household Type

52. Household categories who are more likely to have hot water tanks with no insulation or poor insulating material include single people, (who often live in older homes), and those with low incomes. Households using uninsulated hot water cylinders also have more of a tendency to rate their overall satisfaction with their thermal insulation as ineffective, although clearly other measures have a more immediate impact on their attitudes.

Conclusions and Future Issues

53. We have seen continued increases in the uptake of thermal insulation measures such as cavity wall insulation, double glazing and greater depths of loft insulation. As more data become available from the continuous survey a consistent time series for these measures along with hot water cylinder insulation can be produced.

54. We are reaching the point at which improvements, although driven by Building Regulations in new build stock will be harder to achieve through refurbishments to particular ages and types dwelling, such as Hard to Treat stock. However, there is still considerable potential in the number of unfilled cavity walls and lofts insulated well below the recommended levels, and it is this potential which future update reports will focus on.

Thermal Insulation Update Tables 2005

These tables give detailed breakdowns of the three main housing insulation groups (double glazing, cavity wall insulation and loft insulation) against key variables, as an appendix to the Thermal Insulation Update Report 2005.

Index

Table 1.1 Double glazing - Proportion of dwelling double glazed

	count (000s), (column%)
Double glazing present?	Dwellings
No double glazing	2,900
	(13.3)
Less than half	2,039
	(9.4)
More than half	4,160
	(19.1)
Entire house	12,682
	(58.2)
Total	21,781
	(100.0)

Table 1.2 Double glazing - Proportion of dwelling double glazed by dwelling type

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

	No double glazing	Less than half	More than half	Entire house	Total
end terrace	305	207	390	1,216	2,118
	(14.4)	(9.8)	(18.4)	(57.4)	(100.0)
	(10.5)	(10.1)	(9.4)	(9.6)	(9.7)
mid terrace	670	429	732	2,350	4,181
	(16.0)	(10.3)	(17.5)	(56.2)	(100.0)
	(23.1)	(21.1)	(17.6)	(18.5)	(19.2)
semi detached	516	542	1,353	3,486	5,897
	(8.8)	(9.2)	(23.0)	(59.1)	(100.0)
	(17.8)	(26.6)	(32.5)	(27.5)	(27.1)
detached	317	399	724	2,314	3,754
	(8.5)	(10.6)	(19.3)	(61.6)	(100.0)
	(10.9)	(19.5)	(17.4)	(18.2)	(17.2)
bungalow	170	97	307	1,452	2,026
	(8.4)	(4.8)	(15.2)	(71.7)	(100.0)
	(5.9)	(4.8)	(7.4)	(11.4)	(9.3)
converted flat	330	125	80	181	716
	(46.0)	(17.5)	(11.2)	(25.3)	(100.0)
	(11.4)	(6.1)	(1.9)	(1.4)	(3.3)
purpose built flat, low rise	526	187	475	1,593	2,780
	(18.9)	(6.7)	(17.1)	(57.3)	(100.0)
	(18.1)	(9.2)	(11.4)	(12.6)	(12.8)
purpose built flat, high rise	66	53	98	91	308
	(21.5)	(17.2)	(31.8)	(29.5)	(100.0)
	(2.3)	(2.6)	(2.4)	(0.7)	(1.4)
Total	2,900	2,039	4,160	12,682	21,781
	(13.3)	(9.4)	(19.1)	(58.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 1.3 Double glazing - Proportion of dwelling double glazed by dwelling age

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

	No double glazing	Less than half	More than half	Entire house	Total
pre 1919	1,351	870	913	1,597	4,731
	(28.6)	(18.4)	(19.3)	(33.8)	(100.0)
	(46.6)	(42.6)	(21.9)	(12.6)	(21.7)
1919 - 1944	388	380	1,033	2,006	3,808
	(10.2)	(10.0)	(27.1)	(52.7)	(100.0)
	(13.4)	(18.6)	(24.8)	(15.8)	(17.5)
1945 - 1964	437	232	850	2,761	4,279
	(10.2)	(5.4)	(19.9)	(64.5)	(100.0)
	(15.1)	(11.4)	(20.4)	(21.8)	(19.6)
1965 - 1980	427	317	907	3,277	4,928
	(8.7)	(6.4)	(18.4)	(66.5)	(100.0)
	(14.7)	(15.6)	(21.8)	(25.8)	(22.6)
1981 - 1990	236	175	251	1,253	1,915
	(12.3)	(9.1)	(13.1)	(65.4)	(100.0)
	(8.1)	(8.6)	(6.0)	(9.9)	(8.8)
post 1990	60	65	206	1,787	2,119
	(2.9)	(3.1)	(9.7)	(84.3)	(100.0)
	(2.1)	(3.2)	(5.0)	(14.1)	(9.7)
Total	2,900	2,039	4,160	12,682	21,781
	(13.3)	(9.4)	(19.1)	(58.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 1.4 Double glazing - Proportion of dwelling double glazed by floor area

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

	No double glazing	Less than half	More than half	Entire house	Total
Quintile 1: < 63m^2	813	453	677	2,411	4,354
	(18.7)	(10.4)	(15.5)	(55.4)	(100.0)
	(28.0)	(22.2)	(16.3)	(19.0)	(20.0)
Quintile 2: 63m² - 78m²	582	378	719	2,675	4,355
	(13.4)	(8.7)	(16.5)	(61.4)	(100.0)
	(20.1)	(18.6)	(17.3)	(21.1)	(20.0)
Quintile 3: 78m² - 91m²	526	299	864	2,665	4,354
	(12.1)	(6.9)	(19.8)	(61.2)	(100.0)
	(18.1)	(14.7)	(20.8)	(21.0)	(20.0)
Quintile 4: 91m² - 118m²	458	381	959	2,565	4,363
	(10.5)	(8.7)	(22.0)	(58.8)	(100.0)
	(15.8)	(18.7)	(23.1)	(20.2)	(20.0)
Quintile 5: > 118m²	521	527	941	2,366	4,356
	(12.0)	(12.1)	(21.6)	(54.3)	(100.0)
	(18.0)	(25.9)	(22.6)	(18.7)	(20.0)
Total	2,900	2,039	4,160	12,682	21,781
	(13.3)	(9.4)	(19.1)	(58.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 1.5 Double glazing - Proportion of dwelling double glazed by dwelling tenure

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

	No double glazing	Less than half	More than half	Entire house	Total
Owner occupied	1,470	1,371	3,273	9,218	15,331
	(9.6)	(8.9)	(21.3)	(60.1)	(100.0)
	(50.7)	(67.2)	(78.7)	(72.7)	(70.4)
Private rented	683	356	388	1,041	2,467
	(27.7)	(14.4)	(15.7)	(42.2)	(100.0)
	(23.5)	(17.5)	(9.3)	(8.2)	(11.3)
Local Authority	497	207	245	1,217	2,166
	(22.9)	(9.6)	(11.3)	(56.2)	(100.0)
	(17.1)	(10.2)	(5.9)	(9.6)	(9.9)
RSL	251	106	255	1,205	1,817
	(13.8)	(5.8)	(14.0)	(66.3)	(100.0)
	(8.7)	(5.2)	(6.1)	(9.5)	(8.3)
Total	2,900	2,039	4,160	12,682	21,781
	(13.3)	(9.4)	(19.1)	(58.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 1.6 Double glazing - Proportion of dwelling double glazed by household composition

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

	No double glazing	Less than half	More than half	Entire house	Total
couple under 60	406	356	731	2,454	3,948
	(10.3)	(9.0)	(18.5)	(62.2)	(100.0)
	(15.0)	(18.3)	(18.3)	(19.9)	(18.8)
couple 60 or over	320	299	762	2,119	3,501
	(9.1)	(8.6)	(21.8)	(60.5)	(100.0)
	(11.8)	(15.4)	(19.1)	(17.2)	(16.7)
couple with children	493	492	961	3,113	5,059
	(9.7)	(9.7)	(19.0)	(61.5)	(100.0)
	(18.2)	(25.2)	(24.1)	(25.3)	(24.1)
lone parent with children	256	139	233	905	1,532
	(16.7)	(9.0)	(15.2)	(59.1)	(100.0)
	(9.5)	(7.1)	(5.8)	(7.3)	(7.3)
large adult household	238	132	276	783	1,429
	(16.6)	(9.3)	(19.3)	(54.8)	(100.0)
	(8.8)	(6.8)	(6.9)	(6.4)	(6.8)
one person under 60	491	257	408	1,341	2,497
	(19.7)	(10.3)	(16.4)	(53.7)	(100.0)
	(18.2)	(13.2)	(10.2)	(10.9)	(11.9)
one person 60 or over	501	276	617	1,599	2,992
	(16.7)	(9.2)	(20.6)	(53.4)	(100.0)
	(18.5)	(14.1)	(15.5)	(13.0)	(14.3)
Total	2,704	1,951	3,988	12,313	20,957
	(12.9)	(9.3)	(19.0)	(58.8)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 1.7 Double glazing - Proportion of dwelling double glazed by age of HRP

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

	No double glazing	Less than half	More than half	Entire house	Total
16 - 29	292	167	281	1,037	1,777
	(16.4)	(9.4)	(15.8)	(58.4)	(100.0)
	(10.8)	(8.6)	(7.0)	(8.4)	(8.5)
30 - 44	831	597	1,112	3,758	6,298
	(13.2)	(9.5)	(17.6)	(59.7)	(100.0)
	(30.7)	(30.6)	(27.9)	(30.5)	(30.1)
45 - 64	869	694	1,442	4,446	7,452
	(11.7)	(9.3)	(19.4)	(59.7)	(100.0)
	(32.1)	(35.6)	(36.2)	(36.1)	(35.6)
65 or over	712	492	1,153	3,073	5,431
	(13.1)	(9.1)	(21.2)	(56.6)	(100.0)
	(26.3)	(25.2)	(28.9)	(25.0)	(25.9)
Total	2,704	1,951	3,988	12,313	20,957
	(12.9)	(9.3)	(19.0)	(58.8)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 1.8 Double glazing - Proportion of dwelling double glazed by household income

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

	No double glazing	Less than half	More than half	Entire house	Total
Quintile 1: < £9k	796	357	736	2,296	4,185
	(19.0)	(8.5)	(17.6)	(54.9)	(100.0)
	(29.4)	(18.3)	(18.5)	(18.6)	(20.0)
Quintile 2: £9k - £15k	579	390	745	2,476	4,190
	(13.8)	(9.3)	(17.8)	(59.1)	(100.0)
	(21.4)	(20.0)	(18.7)	(20.1)	(20.0)
Quintile 3: £15k - £22k	493	353	816	2,527	4,190
	(11.8)	(8.4)	(19.5)	(60.3)	(100.0)
	(18.2)	(18.1)	(20.5)	(20.5)	(20.0)
Quintile 4: £22k - £33k	384	355	850	2,597	4,186
	(9.2)	(8.5)	(20.3)	(62.0)	(100.0)
	(14.2)	(18.2)	(21.3)	(21.1)	(20.0)
Quintile 5: > £33k	452	496	841	2,417	4,206
	(10.7)	(11.8)	(20.0)	(57.5)	(100.0)
	(16.7)	(25.4)	(21.1)	(19.6)	(20.1)
Total	2,704	1,951	3,988	12,313	20,957
	(12.9)	(9.3)	(19.0)	(58.8)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 2.1 Loft insulation - Thickness of loft insulation

	count(000s), (column%)
Loft insulation thickness	Dwellings
None	857
	(4.4)
less than 50mm	711
	(3.7)
50 up to 99mm	4,764
	(24.5)
100 up to 149mm	7,295
	(37.6)
150 up to 199mm	2,859
	(14.7)
200mm or more	2,919
	(15.0)
Total	19,406
	(100.0)

(of all dwellings with loft space)

Table 2.2 Loft insulation - Thickness of loft insulation by dwelling type

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

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
end terrace	119	75	519	757	325	324	2,118
	(5.6)	(3.5)	(24.5)	(35.7)	(15.3)	(15.3)	(100.0)
	(13.9)	(10.6)	(10.9)	(10.4)	(11.4)	(11.1)	(10.9)
mid terrace	265	154	1,102	1,536	560	564	4,181
	(6.3)	(3.7)	(26.3)	(36.7)	(13.4)	(13.5)	(100.0)
	(31.0)	(21.6)	(23.1)	(21.1)	(19.6)	(19.3)	(21.5)
semi detached	233	267	1,468	2,247	820	862	5,897
	(4.0)	(4.5)	(24.9)	(38.1)	(13.9)	(14.6)	(100.0)
	(27.2)	(37.5)	(30.8)	(30.8)	(28.7)	(29.5)	(30.4)
detached	128	130	890	1,365	661	581	3,754
	(3.4)	(3.5)	(23.7)	(36.4)	(17.6)	(15.5)	(100.0)
	(14.9)	(18.2)	(18.7)	(18.7)	(23.1)	(19.9)	(19.3)
bungalow	25	59	440	767	329	405	2,026
	(1.3)	(2.9)	(21.7)	(37.8)	(16.3)	(20.0)	(100.0)
	(3.0)	(8.3)	(9.2)	(10.5)	(11.5)	(13.9)	(10.4)
converted flat	50	10	106	66	28	22	281
	(17.6)	(3.7)	(37.6)	(23.3)	(9.9)	(7.8)	(100.0)
	(5.8)	(1.5)	(2.2)	(0.9)	(1.0)	(0.7)	(1.4)
purpose built flat, low rise	37	16	230	534	133	162	1,111
	(3.3)	(1.5)	(20.7)	(48.0)	(12.0)	(14.6)	(100.0)
	(4.3)	(2.3)	(4.8)	(7.3)	(4.7)	(5.6)	(5.7)
purpose built flat, high rise			10	24	3		38
	(0.0)	(0.0)	(26.8)	(64.0)	(9.2)	(0.0)	(100.0)
	(0.0)	(0.0)	(0.2)	(0.3)	(0.1)	(0.0)	(0.2)
Total	857	711	4,764	7,295	2,859	2,919	19,406
	(4.4)	(3.7)	(24.5)	(37.6)	(14.7)	(15.0)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 2.3 Loft insulation - Thickness of loft insulation by dwelling age

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

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
pre 1919	468	115	1,216	1,473	485	468	4,225
	(11.1)	(2.7)	(28.8)	(34.9)	(11.5)	(11.1)	(100.0)
	(54.6)	(16.2)	(25.5)	(20.2)	(17.0)	(16.0)	(21.8)
1919 - 1944	207	154	943	1,357	488	493	3,642
	(5.7)	(4.2)	(25.9)	(37.3)	(13.4)	(13.5)	(100.0)
	(24.1)	(21.7)	(19.8)	(18.6)	(17.1)	(16.9)	(18.8)
1945 - 1964	91	167	940	1,441	571	637	3,846
	(2.4)	(4.3)	(24.4)	(37.5)	(14.8)	(16.6)	(100.0)
	(10.6)	(23.5)	(19.7)	(19.7)	(20.0)	(21.8)	(19.8)
1965 - 1980	75	249	1,235	1,610	530	518	4,217
	(1.8)	(5.9)	(29.3)	(38.2)	(12.6)	(12.3)	(100.0)
	(8.7)	(35.1)	(25.9)	(22.1)	(18.5)	(17.7)	(21.7)
1981 - 1990	9	23	325	818	263	179	1,617
	(0.6)	(1.4)	(20.1)	(50.6)	(16.3)	(11.1)	(100.0)
	(1.1)	(3.2)	(6.8)	(11.2)	(9.2)	(6.1)	(8.3)
post 1990	8	3	104	597	523	624	1,859
	(0.4)	(0.1)	(5.6)	(32.1)	(28.1)	(33.6)	(100.0)
	(1.0)	(0.4)	(2.2)	(8.2)	(18.3)	(21.4)	(9.6)
Total	857	711	4,764	7,295	2,859	2,919	19,406
	(4.4)	(3.7)	(24.5)	(37.6)	(14.7)	(15.0)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 2.4 Loft insulation - Thickness of loft insulation by floor area

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

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
Quintile 1: < 63m²	117	64	641	1,141	438	488	2,888
	(4.1)	(2.2)	(22.2)	(39.5)	(15.2)	(16.9)	(100.0)
	(13.6)	(8.9)	(13.5)	(15.6)	(15.3)	(16.7)	(14.9)
Quintile 2: 63m² - 78m²	184	113	938	1,408	569	616	3,827
	(4.8)	(2.9)	(24.5)	(36.8)	(14.9)	(16.1)	(100.0)
	(21.4)	(15.8)	(19.7)	(19.3)	(19.9)	(21.1)	(19.7)
Quintile 3: 78m² - 91m²	161	191	1,060	1,539	578	628	4,158
	(3.9)	(4.6)	(25.5)	(37.0)	(13.9)	(15.1)	(100.0)
	(18.8)	(26.9)	(22.2)	(21.1)	(20.2)	(21.5)	(21.4)
Quintile 4: 91m² - 118m²	181	198	1,054	1,611	633	554	4,230
	(4.3)	(4.7)	(24.9)	(38.1)	(15.0)	(13.1)	(100.0)
	(21.1)	(27.8)	(22.1)	(22.1)	(22.1)	(19.0)	(21.8)
Quintile 5: > 118m²	214	147	1,071	1,596	642	633	4,303
	(5.0)	(3.4)	(24.9)	(37.1)	(14.9)	(14.7)	(100.0)
	(25.0)	(20.6)	(22.5)	(21.9)	(22.5)	(21.7)	(22.2)
Total	857	711	4,764	7,295	2,859	2,919	19,406
	(4.4)	(3.7)	(24.5)	(37.6)	(14.7)	(15.0)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 2.5 Loft insulation - Thickness of loft insulation by dwelling tenure

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
Owner occupied	646	597	3,695	5,542	2,112	1,998	14,589
	(4.4)	(4.1)	(25.3)	(38.0)	(14.5)	(13.7)	(100.0)
	(75.3)	(83.9)	(77.6)	(76.0)	(73.9)	(68.5)	(75.2)
Private rented	161	68	667	643	202	185	1,927
	(8.4)	(3.5)	(34.6)	(33.4)	(10.5)	(9.6)	(100.0)
	(18.8)	(9.5)	(14.0)	(8.8)	(7.1)	(6.3)	(9.9)
Local Authority	28	29	223	584	274	403	1,541
	(1.8)	(1.9)	(14.5)	(37.9)	(17.8)	(26.1)	(100.0)
	(3.3)	(4.0)	(4.7)	(8.0)	(9.6)	(13.8)	(7.9)
RSL	22	18	179	526	272	333	1,349
	(1.6)	(1.3)	(13.3)	(39.0)	(20.1)	(24.7)	(100.0)
	(2.5)	(2.5)	(3.8)	(7.2)	(9.5)	(11.4)	(7.0)
Total	857	711	4,764	7,295	2,859	2,919	19,406
	(4.4)	(3.7)	(24.5)	(37.6)	(14.7)	(15.0)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 2.6 Loft insulation - Thickness of loft insulation by household composition

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

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
couple under 60	149	143	907	1,447	511	496	3,654
	(4.1)	(3.9)	(24.8)	(39.6)	(14.0)	(13.6)	(100.0)
	(18.8)	(20.8)	(19.9)	(20.4)	(18.5)	(17.4)	(19.5)
couple 60 or over	127	159	813	1,261	486	472	3,319
	(3.8)	(4.8)	(24.5)	(38.0)	(14.7)	(14.2)	(100.0)
	(16.1)	(23.1)	(17.8)	(17.8)	(17.6)	(16.5)	(17.7)
couple with children	196	171	1,192	1,818	745	746	4,868
	(4.0)	(3.5)	(24.5)	(37.3)	(15.3)	(15.3)	(100.0)
	(24.7)	(24.9)	(26.1)	(25.6)	(26.9)	(26.1)	(26.0)
lone parent with children	59	26	314	485	205	258	1,347
	(4.4)	(1.9)	(23.3)	(36.0)	(15.2)	(19.2)	(100.0)
	(7.5)	(3.8)	(6.9)	(6.8)	(7.4)	(9.0)	(7.2)
large adult household	63	48	355	486	154	161	1,267
	(5.0)	(3.8)	(28.0)	(38.3)	(12.2)	(12.7)	(100.0)
	(8.0)	(7.0)	(7.8)	(6.9)	(5.6)	(5.7)	(6.8)
one person under 60	100	66	480	744	269	234	1,894
	(5.3)	(3.5)	(25.3)	(39.3)	(14.2)	(12.4)	(100.0)
	(12.6)	(9.6)	(10.5)	(10.5)	(9.7)	(8.2)	(10.1)
one person 60 or over	98	75	507	847	395	487	2,409
	(4.1)	(3.1)	(21.1)	(35.2)	(16.4)	(20.2)	(100.0)
	(12.4)	(10.9)	(11.1)	(12.0)	(14.3)	(17.1)	(12.8)
Total	793	690	4,568	7,087	2,765	2,856	18,758
	(4.2)	(3.7)	(24.4)	(37.8)	(14.7)	(15.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 2.7 Loft insulation - Thickness of loft insulation by age of HRP

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
16 - 29	56	47	397	543	165	190	1,397
	(4.0)	(3.4)	(28.4)	(38.9)	(11.8)	(13.6)	(100.0)
	(7.1)	(6.8)	(8.7)	(7.7)	(6.0)	(6.6)	(7.4)
30 - 44	249	177	1,399	2,133	837	917	5,709
	(4.4)	(3.1)	(24.5)	(37.4)	(14.7)	(16.1)	(100.0)
	(31.3)	(25.6)	(30.6)	(30.1)	(30.3)	(32.1)	(30.4)
45 - 64	269	279	1,702	2,664	1,044	940	6,897
	(3.9)	(4.0)	(24.7)	(38.6)	(15.1)	(13.6)	(100.0)
	(33.9)	(40.4)	(37.3)	(37.6)	(37.8)	(32.9)	(36.8)
65 or over	219	188	1,071	1,747	719	810	4,754
	(4.6)	(3.9)	(22.5)	(36.8)	(15.1)	(17.0)	(100.0)
	(27.7)	(27.2)	(23.4)	(24.7)	(26.0)	(28.4)	(25.3)
Total	793	690	4,568	7,087	2,765	2,856	18,758
	(4.2)	(3.7)	(24.4)	(37.8)	(14.7)	(15.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 2.8 Loft insulation - Thickness of loft insulation by household income

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

	None	< 50	50 - 99	100 - 149	150 - 199	200 +	Total
Quintile 1: < £9k	170	94	717	1,220	516	633	3,350
	(5.1)	(2.8)	(21.4)	(36.4)	(15.4)	(18.9)	(100.0)
	(21.4)	(13.7)	(15.7)	(17.2)	(18.7)	(22.2)	(17.9)
Quintile 2: £9k - £15k	161	135	809	1,329	581	602	3,618
	(4.5)	(3.7)	(22.4)	(36.7)	(16.1)	(16.6)	(100.0)
	(20.3)	(19.6)	(17.7)	(18.8)	(21.0)	(21.1)	(19.3)
Quintile 3: £15k - £22k	161	157	998	1,489	546	498	3,849
	(4.2)	(4.1)	(25.9)	(38.7)	(14.2)	(12.9)	(100.0)
	(20.3)	(22.7)	(21.8)	(21.0)	(19.8)	(17.4)	(20.5)
Quintile 4: £22k - £33k	144	158	1,019	1,563	531	536	3,950
	(3.6)	(4.0)	(25.8)	(39.6)	(13.4)	(13.6)	(100.0)
	(18.1)	(22.9)	(22.3)	(22.0)	(19.2)	(18.8)	(21.1)
Quintile 5: > £33k	157	145	1,025	1,486	590	587	3,991
	(3.9)	(3.6)	(25.7)	(37.2)	(14.8)	(14.7)	(100.0)
	(19.8)	(21.1)	(22.4)	(21.0)	(21.3)	(20.6)	(21.3)
Total	793	690	4,568	7,087	2,765	2,856	18,758
	(4.2)	(3.7)	(24.4)	(37.8)	(14.7)	(15.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

(of all dwellings with loft space)

Table 3.1 Cavity wall insulation - Proportion of cavity wall dwellings with cavity wall insulation

count(000s), (column%)

Cavity wall insulation present?	Dwellings
Cavity with insulation	5,974
	(39.7)
Cavity uninsulated	9,093
	(60.3)
Total	15,067
	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.2 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by dwelling type

	Cavity wall insulation?		count(000s), (row%), (column%)
	Yes	No	Total
end terrace	507	828	1,335
	(38.0)	(62.0)	(100.0)
	(8.5)	(9.1)	(8.9)
mid terrace	613	1,400	2,013
	(30.4)	(69.6)	(100.0)
	(10.3)	(15.4)	(13.4)
semi detached	1,667	2,757	4,423
	(37.7)	(62.3)	(100.0)
	(27.9)	(30.3)	(29.4)
detached	1,411	1,641	3,051
	(46.2)	(53.8)	(100.0)
	(23.6)	(18.0)	(20.3)
bungalow	852	901	1,753
	(48.6)	(51.4)	(100.0)
	(14.3)	(9.9)	(11.6)
converted flat	19	113	133
	(14.4)	(85.6)	(100.0)
	(0.3)	(1.2)	(0.9)
purpose built flat, low rise	872	1,346	2,218
	(39.3)	(60.7)	(100.0)
	(14.6)	(14.8)	(14.7)
purpose built flat, high rise	34	107	141
	(23.9)	(76.1)	(100.0)
	(0.6)	(1.2)	(0.9)
Total	5,974	9,093	15,067
	(39.7)	(60.3)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.3 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by dwelling age

Cavity wall insulation?			count(000s), (row%), (column%)
	Yes	No	Total
pre 1919	69	612	681
	(10.1)	(89.9)	(100.0)
	(1.2)	(6.7)	(4.5)
1919 - 1944	622	1,617	2,239
	(27.8)	(72.2)	(100.0)
	(10.4)	(17.8)	(14.9)
1945 - 1964	1,470	2,217	3,687
	(39.9)	(60.1)	(100.0)
	(24.6)	(24.4)	(24.5)
1965 - 1980	1,678	2,854	4,532
	(37.0)	(63.0)	(100.0)
	(28.1)	(31.4)	(30.1)
1981 - 1990	880	974	1,854
	(47.5)	(52.5)	(100.0)
	(14.7)	(10.7)	(12.3)
post 1990	1,254	820	2,075
	(60.5)	(39.5)	(100.0)
	(21.0)	(9.0)	(13.8)
Total	5,974	9,093	15,067
	(39.7)	(60.3)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.4 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by floor area

	Cavity wall insulation?		count(000s), (row%), (column%)
	Yes	No	Total
Quintile 1: < 63m²	1,311	1,796	3,108
	(42.2)	(57.8)	(100.0)
	(22.0)	(19.8)	(20.6)
Quintile 2: 63m² - 78m²	1,075	1,883	2,958
	(36.3)	(63.7)	(100.0)
	(18.0)	(20.7)	(19.6)
Quintile 3: 78m² - 91m²	1,169	1,877	3,045
	(38.4)	(61.6)	(100.0)
	(19.6)	(20.6)	(20.2)
Quintile 4: 91m² - 118m²	1,180	1,828	3,008
	(39.2)	(60.8)	(100.0)
	(19.8)	(20.1)	(20.0)
Quintile 5: > 118m²	1,239	1,709	2,948
	(42.0)	(58.0)	(100.0)
	(20.7)	(18.8)	(19.6)
Total	5,974	9,093	15,067
	(39.7)	(60.3)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.5 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by tenure

Cavity wall insulation?			count(000s), (row%), (column%)
	Yes	No	Total
Owner occupied	4,121	6,621	10,742
	(38.4)	(61.6)	(100.0)
	(69.0)	(72.8)	(71.3)
Private rented	365	878	1,243
	(29.4)	(70.6)	(100.0)
	(6.1)	(9.7)	(8.3)
Local Authority	797	815	1,612
	(49.5)	(50.5)	(100.0)
	(13.3)	(9.0)	(10.7)
RSL	690	780	1,470
	(47.0)	(53.0)	(100.0)
	(11.6)	(8.6)	(9.8)
Total	5,974	9,093	15,067
	(39.7)	(60.3)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.6 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by household composition

Cavity wall insulation?	count(000s), (row%), (column%)		
	Yes	No	Total
couple under 60	985	1,677	2,662
	(37.0)	(63.0)	(100.0)
	(16.9)	(19.2)	(18.3)
couple 60 or over	1,223	1,453	2,676
	(45.7)	(54.3)	(100.0)
	(21.0)	(16.6)	(18.4)
couple with children	1,327	2,172	3,499
	(37.9)	(62.1)	(100.0)
	(22.8)	(24.8)	(24.0)
lone parent with children	416	620	1,036
	(40.1)	(59.9)	(100.0)
	(7.1)	(7.1)	(7.1)
large adult household	352	552	904
	(39.0)	(61.0)	(100.0)
	(6.0)	(6.3)	(6.2)
one person under 60	583	1,002	1,585
	(36.8)	(63.2)	(100.0)
	(10.0)	(11.5)	(10.9)
one person 60 or over	942	1,273	2,215
	(42.5)	(57.5)	(100.0)
	(16.2)	(14.5)	(15.2)
Total	5,828	8,748	14,576
	(40.0)	(60.0)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.7 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by age of HRP

Cavity wall insulation?			count(000s), (row%), (column%)
	Yes	No	Total
16 - 29	437	664	1,101
	(39.7)	(60.3)	(100.0)
	(7.5)	(7.6)	(7.6)
30 - 44	1,526	2,643	4,169
	(36.6)	(63.4)	(100.0)
	(26.2)	(30.2)	(28.6)
45 - 64	2,054	3,188	5,242
	(39.2)	(60.8)	(100.0)
	(35.2)	(36.4)	(36.0)
65 or over	1,811	2,253	4,064
	(44.6)	(55.4)	(100.0)
	(31.1)	(25.8)	(27.9)
Total	5,828	8,748	14,576
	(40.0)	(60.0)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)

Table 3.8 Cavity wall insulation - Proportion of dwellings with cavity wall insulation by household income

	Cavity wall insulation?		count(000s), (row%), (column%)
	Yes	No	Total
Quintile 1: < £9k	1,223	1,653	2,877
	(42.5)	(57.5)	(100.0)
	(21.0)	(18.9)	(19.7)
Quintile 2: £9k - £15k	1,237	1,710	2,947
	(42.0)	(58.0)	(100.0)
	(21.2)	(19.5)	(20.2)
Quintile 3: £15k - £22k	1,197	1,772	2,969
	(40.3)	(59.7)	(100.0)
	(20.5)	(20.3)	(20.4)
Quintile 4: £22k - £33k	1,073	1,910	2,983
	(36.0)	(64.0)	(100.0)
	(18.4)	(21.8)	(20.5)
Quintile 5: > £33k	1,097	1,703	2,800
	(39.2)	(60.8)	(100.0)
	(18.8)	(19.5)	(19.2)
Total	5,828	8,748	14,576
	(40.0)	(60.0)	(100.0)
	(100.0)	(100.0)	(100.0)

(of dwellings with predominantly cavity wall construction)