

**Prospects for Affordable Warmth – Brenda Boardman**

Summary

Studies of winter mortality in the UK have shown that, since 1970, 30-6000 people have died each winter due to the inability of the occupants to keep their homes warm. Building Regulations and Environmental Health Standards have done little to address the issue, not even requiring a heating system. A requirement for insulation was only introduced in 1974. As a result the majority of the UK housing stock is difficult and expensive to heat. Low-income families are affected the most because they are more likely to rely on electricity alone for heating and power, which is both expensive and inefficient, and least likely to have insulation installed. Gas central heating is the most efficient method of heating homes. The capital cost of installing gas central heating and insulation is too high for low income families so they cannot afford to maintain adequate temperatures in their homes; they suffer from “fuel poverty”. The Government could assist but the grant aid and assistance is inadequate to meet the demand and in some instances has been misdirected. The estimated cost of providing adequate warmth in 6.6 million low-income homes would be an average of £2500 per house (£16.5 billion). The conclusion reached is that there is no prospect for an alleviation of fuel poverty as the Government’s proposed measures amount to 1/40 of this figure. This will continue to result in excess deaths in winter of the poorest people in the UK.

The paper fits with the Thermal Comfort section of unit A2, although from a different perspective. In A2 lectures the main focus was efficiencies required to reduce CO<sub>2</sub> emissions to avoid future Climate change, where the issue in this paper is the more immediate one of the “avoidable” deaths of many thousands of people each winter in the UK. It explores the relationship between thermal comfort, health and domestic economics. This builds on the theoretical and design considerations with an application to a real world issue.

The case is built as the paper progresses from the problem of cold homes causing health issues, through possible solutions – more efficient heating and greater use of insulation, to the need for Government financial assistance and changes in the Building Regulations. The paper is logically laid out and easy to follow. The arguments are generally backed up by cited data. There is some deviation from the direct argument when Boardman discusses that UK homes are cold even when central heating is installed.

The link between socio-economic grouping and excess winter deaths (EWD) is taken from the work of Curwen which studied the increase in death through respiratory diseases during the winter months. Most EWDs are from respiratory disease<sup>1</sup>. He also found that the deaths were spread across all age groups. The emphasis from the current Government initiatives such as “Warm Front” is focussed very much on the elderly who are more vulnerable to cold than younger people. This extra vulnerability is taken as read in the paper with no substantiating data.

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<sup>1</sup> “ it is very unusual for the cold to kill people directly. In the main these deaths are from respiratory or cardio-vascular ailments. Overall deaths are from heart attacks, strokes, bronchial and other conditions, and may often occur several days after exposure to the cold.” [Age Concern 2006]

There is no reason given as to why pensioners are lagging 10 years behind non-pensioners in the acquisition of central heating, which given the vulnerability of the elderly highlighted in the paper would be a valuable investigation.<sup>2</sup>

The relationship between central heating ownership and reduction in EWDs is taken from US based [Samakamoto-Momiyama 1997]. It is assumed that this applies directly to the UK. Rau [2007] finds other correlations which could account for differences in seasonal mortality. Given the differences found between mortalities in England and Scandinavia [Rau 2007, MPI 2007] this application to the UK may be erroneous. There is also no attempt to make adjustment for differences in housing density, construction materials, and occupancy patterns in the two societies. However the reason given for the beneficial effects of central heating, of easier operation when compared to individual fires, is a logical and valid one for supporting the efficacy of central heating in addressing the issue.

There appears an implicit assumption that the housing stock in the UK is of uniform construction. With modern “Barratt boxes” this may be a reasonable assumption, but the differences between, for instance, Scottish stone build and English half timbered, timber framed buildings, or Georgian/Victorian brick build is not investigated. There is no discussion of the role of thermal mass as a parameter in heat characteristics of buildings.

There is no discussion into why UK houses are still colder than the recommended WHO guidelines even when central heating is installed. The situation is compared to France where homes with individual fires were warm. Why there is this seeming contradiction of one of the central arguments in the paper is not analysed.

The studies of the Government programmes and Recent Legislation have largely been superseded by updates to the Building Regulations since 1993 when the paper was written.

The main arenas of action so far have been where there has been control of the housing stock – e.g. social housing. It is only when someone is forced to live in unfit conditions by someone else that action can be taken. Where the discomfort is under the persons own control it is difficult to force them to take action. With the increase in home ownership due to the selling of council housing stock into private ownership the problem of control and influence from central government schemes will increase.<sup>3</sup>

There is no investigation of the difference between “income” poverty and “spending” poverty. [JRF 2006] It is assumed that where there is high income there is money to pay for warmth. This does not take into account the high levels of personal debt and the effect of mortgage repayments upon the disposable income of the middle socio-economic groups, who could therefore suffer from “fuel poverty” as well.

## Conclusion

Ownership of Gas Central heating has increased since 1996 (appendix A), the number of people classed as “fuel poor” has been reduced (Appendix B), and the average

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<sup>2</sup> “The likelihood of living in owner occupied accommodation, of being above the bedroom standard and of having central heating have all increased since 1980, a change which has been apparent among all households, not just those containing an elderly person” [Bridgwood, 2003]

<sup>3</sup> This is being addressed by the Housing Health and Safety Rating System under the Housing Act 2004 giving statutory authorities enforcement powers on private residences [Defra 2004, A4.14]

internal temperature in UK homes has increased (Appendix C). However in the winter of 2004/2005 there were around 31,600 Excess Winter Deaths [ONS 2005].

This would suggest that fuel poverty is not the only reason for the Excess Winter Deaths in the UK and that there is a core of deaths which cannot be eliminated by additional advice, expenditure, or redirection of Grant Aid. Further research is therefore required.

With increasing energy prices now being experienced, affordability of heating will become increasingly relevant.

The concentration of effort on reduction in greenhouse emissions and the energy efficiency of buildings appears to be concentrated more on the specification of new housing stock. There is a need to bring the older housing stock up to standard. John Prescott in his Pathfinder house demolition program sought to address this by demolishing the old stock and rebuilding as opposed to upgrading the stock. If, as the paper suggests, the cost of upgrading would have been on average £2500 at 1999 levels this looks a particularly non-cost effective way of solving the problem.

If the Government, by grants and incentives, cannot even get people to insulate their own homes to obtain the immediately perceivable benefit of reducing the cost of keeping themselves comfortably warm there is little chance of the public being convinced to do something more esoteric such as reducing their energy demands to cut CO<sub>2</sub> emissions to reduce climate change in the future.

## References

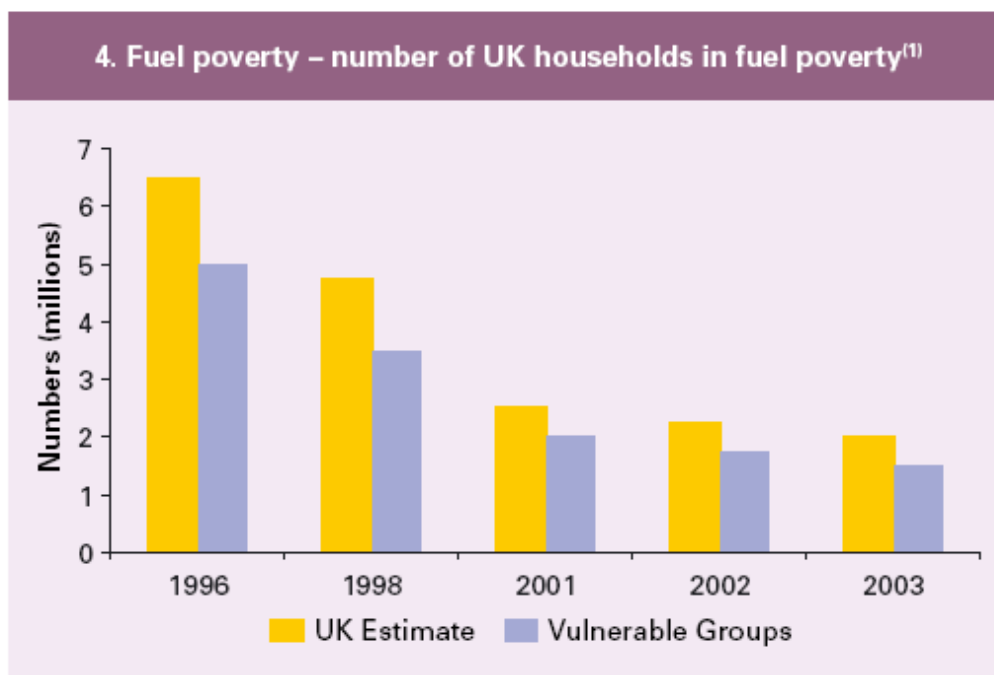
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Samakamoto-Momiyama 1997	Seasonality in Human Mortality, Samakamoto-Momiyama 1997. University of Tokyo Press, Tokyo

## Appendix A

TABLE 3.14: OWNERSHIP OF CENTRAL HEATING BY TYPE IN GREAT BRITAIN 1970 TO 2003

								Thousands
	Solid fuel	Electric storage	Other electric	Oil	Gas	Other	Total	All housing stock
1970	1,615	1,094	436	460	1,856	167	5,628	17,987
1971	1,543	1,280	510	555	2,201	184	6,271	18,221
1972	1,483	1,417	564	649	2,563	189	6,867	18,426
1973	1,434	1,577	640	685	3,109	225	7,669	18,603
1974	1,461	1,733	703	688	3,747	295	8,628	18,784
1975	1,394	1,869	803	676	4,213	360	9,315	18,988
1976	1,407	1,739	747	647	5,003	345	9,888	19,215
1977	1,398	1,626	698	671	5,704	357	10,454	19,451
1978	1,073	1,665	715	666	6,160	354	10,633	19,651
1979	1,052	1,457	626	615	7,113	328	11,192	19,827
1980	1,134	1,395	599	478	7,655	255	11,517	20,010
1981	1,209	1,219	580	488	8,102	252	11,851	20,176
1982	1,303	1,065	570	505	8,677	253	12,374	20,327
1983	1,457	947	584	545	9,644	265	13,443	20,525
1984	1,273	1,319	708	552	9,977	199	14,029	20,768
1985	1,521	1,313	632	528	10,422	363	14,778	21,017
1986	1,523	1,154	466	490	11,414	291	15,337	21,252
1987	1,499	1,267	404	565	11,871	375	15,981	21,486
1988	1,515	1,384	474	600	12,050	372	16,396	21,711
1989	1,284	1,513	545	535	12,821	392	17,089	21,928
1990	1,277	1,641	454	557	13,223	421	17,573	22,140
1991	1,262	1,802	413	620	13,790	421	18,309	22,391
1992	1,047	1,881	420	569	14,419	391	18,727	22,595
1993	982	1,991	376	659	14,850	371	19,229	22,821
1994	890	1,910	468	626	15,490	397	19,782	23,076
1995	786	1,994	395	721	15,870	507	20,274	23,316
1996	840	2,113	390	915	15,608	572	20,438	23,492
1997	896	2,249	400	932	15,803	510	20,791	23,694
1998	740	2,105	256	780	16,932	481	21,294	23,896
1999	721	2,172	465	842	16,862	456	21,517	24,120
2000	668	2,140	436	841	17,198	435	21,718	24,375
2001	659	1,924	423	935	17,396	461	21,798	24,170
2002	706	1,630	859	1,064	17,551	362	22,171	24,365
2003	550	1,258	810	922	18,824	264	22,628	24,595

Source: Building Research Establishment



Source: Various<sup>2</sup>

Numbers in Fuel Poverty in England <sup>3</sup>	Total number of households (millions)					Number of vulnerable households (millions) <sup>4</sup>				
	1996	1998	2001	2002	2003	1996	1998	2001	2002	2003
Including HB/ISMI	5.1	3.4 <sup>5</sup>	1.7	1.4 <sup>5</sup>	1.2	4.0	2.8 <sup>5</sup>	1.4	1.2 <sup>5</sup>	1.0
Excluding HB/ISMI	5.5	4.0 <sup>5</sup>	2.3	2.0 <sup>5</sup>	1.5	4.3	3.2 <sup>5</sup>	1.9	1.6 <sup>5</sup>	1.2

(1) The chart above shows the incidence of fuel poverty in the UK when Housing Benefit and Interest for Mortgage relief payments (HB/ISMI) are included as household income. Previous figures have been revised as a result of methodological improvements.

(2) Sources: English House Condition Survey, Scottish House Condition Survey, Welsh House Condition Survey, Northern Ireland Family Expenditure Survey.

(3) The tables show the incidence of fuel poverty on the two commonly used definitions of fuel poverty, when HB/ISMI are included as income and when they are excluded from income.

(4) Vulnerable households are households that contain children, elderly people, or those with disabilities or long-term illness.

(5) Based on estimated modelled data

The number of households in fuel poverty has been reducing since 1996, as has the number of vulnerable fuel poor. In broad terms it is estimated that the number of fuel poor households in the UK has fallen from about 6½ million in 1996 to about 2 million in 2003. The number of vulnerable fuel poor is estimated to have fallen from about 5 million to about 1½ million in the same period.

Source – UK Energy Brief 2005 (DTI)

## Appendix C

TABLE 3.16: INTERNAL AND EXTERNAL TEMPERATURES

	Internal			Degree celsius
	temperatures:			External
	Centrally heated homes	Non-centrally heated homes	Average	temperature
1970	13.8	11.3	12.1	5.8
1971	14.5	12.0	12.9	6.7
1972	14.3	11.8	12.7	6.4
1973	14.1	11.6	12.7	6.1
1974	14.8	12.3	13.4	6.7
1975	14.3	11.8	13.0	6.4
1976	13.6	11.1	12.4	5.8
1977	14.6	12.1	13.5	6.6
1978	14.7	12.2	13.6	6.4
1979	13.9	11.4	12.8	5.1
1980	14.4	11.9	13.4	5.8
1981	13.9	11.4	12.8	5.1
1982	14.6	12.1	13.6	5.8
1983	14.9	12.4	14.1	6.2
1984	14.4	11.9	13.6	5.8
1985	14.0	11.5	13.3	4.8
1986	14.8	12.3	14.1	5.2
1987	14.4	11.9	13.8	4.9
1988	15.5	13.0	14.9	6.2
1989	15.8	13.3	15.2	6.9
1990	16.7	14.2	16.2	7.6
1991	15.9	13.4	15.4	6.0
1992	16.0	13.5	15.5	6.1
1993	16.2	13.7	15.8	6.1
1994	16.9	14.4	16.5	7.2
1995	16.4	13.9	16.1	6.9
1996	17.1	14.6	16.8	5.7
1997	17.4	14.9	17.1	7.3
1998	17.9	15.4	17.6	7.5
1999	17.5	15.0	17.3	7.2
2000	17.9	15.4	17.6	7.1
2001	18.1	15.6	17.9	6.6
2002	19.3	16.8	19.0	7.7
2003	18.4	15.9	18.2	6.7

Source: Building Research Establishment