



**How seven out of ten are unable to
guess how tall they are in metric
measures, and why it matters**

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SUMMARY

The numbers:

91% OF BRITISH ADULTS and
84% OF 15-19-YEAR-OLDS
think of basic measurements like their height in feet and inches

71% OF THE BRITISH PUBLIC and
54% OF 15-19-YEAR-OLDS
are unable to guess their own height in metres.

By contrast, only
2% OF THE PUBLIC and
7% OF 15-19-YEAR-OLDS
say they are unable to make the same estimate in feet and inches.

Based on a national survey conducted by Ipsos-RSL in May and June 2003.

The analysis:

Decades of metric education has had little impact on the way people actually think. **Popular culture remains overwhelmingly imperial** as a result of the persistence of the familiar, the unregulated and the unofficial in daily life, and as the result of a continuing American cultural influence. **Officialdom, however, is increasingly metric** and works on the assumption that most people now have the necessary practical understanding, or on the moral or political belief that they really *ought* to have it. **More and more important information is given in metric units only**, from swimming-pool depth signs to the instructions on medicine packaging. Consequently, **accidents will happen**. Members of the public have made and will make more mistakes; and more loss, damage, personal injury – and compensation claims - will result.

The Research

A nationally-representative sample of 997 people aged 15 and over were interviewed by IPSOS-RSL Market Research at locations throughout the UK in May and June 2003. They were asked to estimate their own height, in whichever system of measurements they preferred, and then to say what they thought their height was in the other system.

Reactions to 'Over Their Heads'



“Very important. It could have enormous implications for safety in the workplace.”

RoSPA



“Extremely interesting... We are not aware of any previous work on this specific topic... I am surprised at the proportion of people who preferred feet and inches. I had suspected they might be a larger proportion, but not that large.”

Health and Safety Executive

Why you might imagine that most people are able to 'think metric'

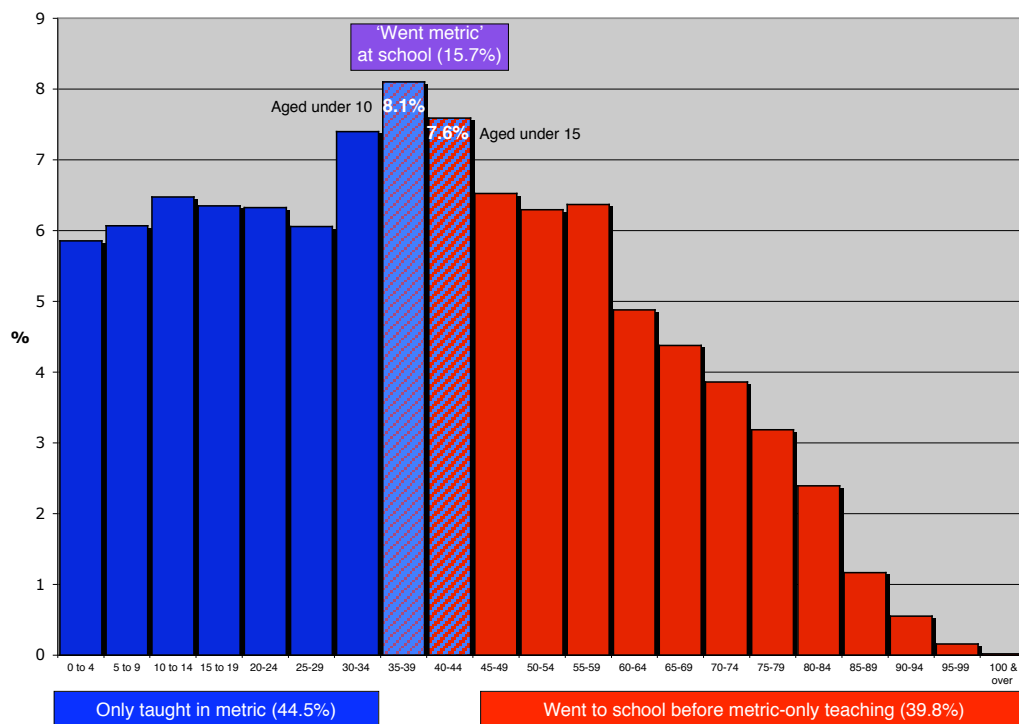
Some people think that most people today, or at least most people under a certain age, understand the metric system and know how to use it for most basic, everyday purposes.

Britain has been 'going metric' for 36 years now... Children in the UK have been taught solely the SI system since 1974. A whole generation and more has grown accustomed to its simplicity, unity and simple learning, as compared to Imperial's complexity, illogicality and anomalousness.

UK Metrication

The main reason people think this is to do with all the years of official metrication policy imposed on schools and elsewhere

In 2003, over half the population are young enough to have been taught it at school. The under-35s (shaded in blue, on the left) have been taught nothing else. The under-45s (shaded purple, centre) spent large parts of their childhoods being taught nothing else.



Most people, by now, have at least some understanding of the basics of metric measures: most probably know, for example, how many centimetres make a metre.

This being the case you might be tempted to think, by now, that people would be comfortable and competent using metric measures for basic everyday purposes.

And conversely, you might also be tempted to think that most people – or at least most people under 45, would be less familiar, and less competent, with the old vernacular feet-and-inches system.

On both of these counts, however, you would be very wrong.

Why you would be wrong

Mr Ollivander touched the lightning scar on Harry's forehead with a long, white finger.
'I'm sorry to say I sold the wand that did it,' he said softly. 'Thirteen and a half inches. Yew. Powerful wand, very powerful, and in the wrong hands ... Well, if I'd known what that wand was going out into the world to do ...'

If life were only school and officialdom, we would all be obliged to think in metric all of the time. However, there is a more to life than 'official' things, and most of us participate in everyday popular culture, which frequently pulls in the opposite direction.



All of the available research, including this study, has shown, time and time again, that the everyday popular culture of the majority – the provincial, the tabloid-readers, the families of modest income, the ‘normal people’ – is significantly more wedded to vernacular ways of measuring things than is the culture of the comparatively small, broadsheet-reading urban-minded class from which the officials and educators responsible for metrication are typically drawn.

The result of this that whatever the official policy may be, huge numbers of people continue to think in the vernacular measures favoured by their everyday popular culture, and have problems with the *internal representation* of the metric measures they learnt at school.

This is to say, they may know perfectly well how many centimetres make a metre, but in their daily lives and inside their heads, their mental language and landscape is measured out in vernacular units, and they are unable to picture in their heads what real-life metric quantities look like.

The only way these people make sense of metric quantities is by translating them as best they can to their non-metric equivalents.

In June 2001, for example, a survey of a thousand adults revealed that for measures of weight, only 29% of the public described themselves as comfortable understanding metric quantities. Slightly more, 32%, said that they had no idea or understanding at all; but the biggest single group, 38% made sense of kilogrammes by translating them in their minds into pounds. (Their conversions, however, when put to the test, proved to be woefully inaccurate).



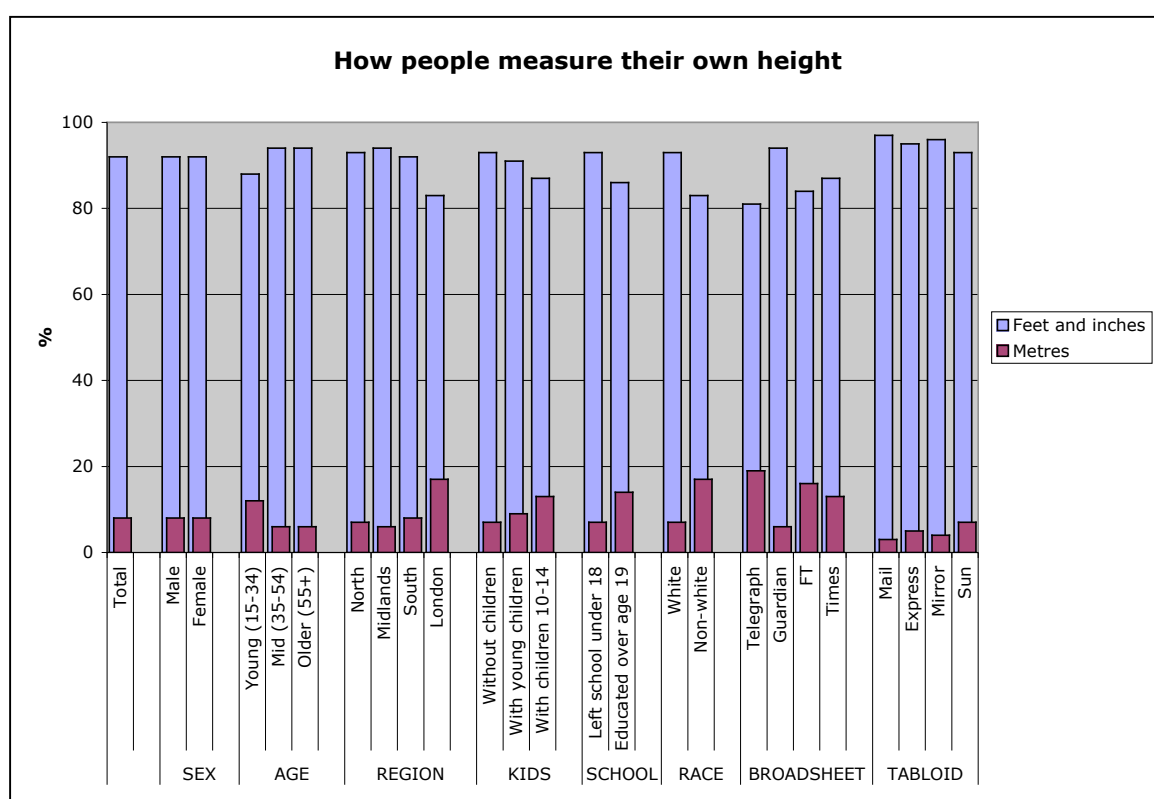
...or should that be *12.87 kilometre*?

The facts – most people think in feet and inches

92% of the UK population, when asked to estimate the height of the one thing they are most familiar with – their own body – give the answer in feet and inches.

Sex makes no difference at all. Age, perhaps surprisingly, makes very little difference indeed. The under-35s are ever-so-slightly more likely to give their answer in metres, and the middle-aged and the old are ever-so slightly less likely to do so; but there is really very little in it. Even teenagers – as will be seen in the next section – have largely failed to get into the habit of ‘thinking metric’.

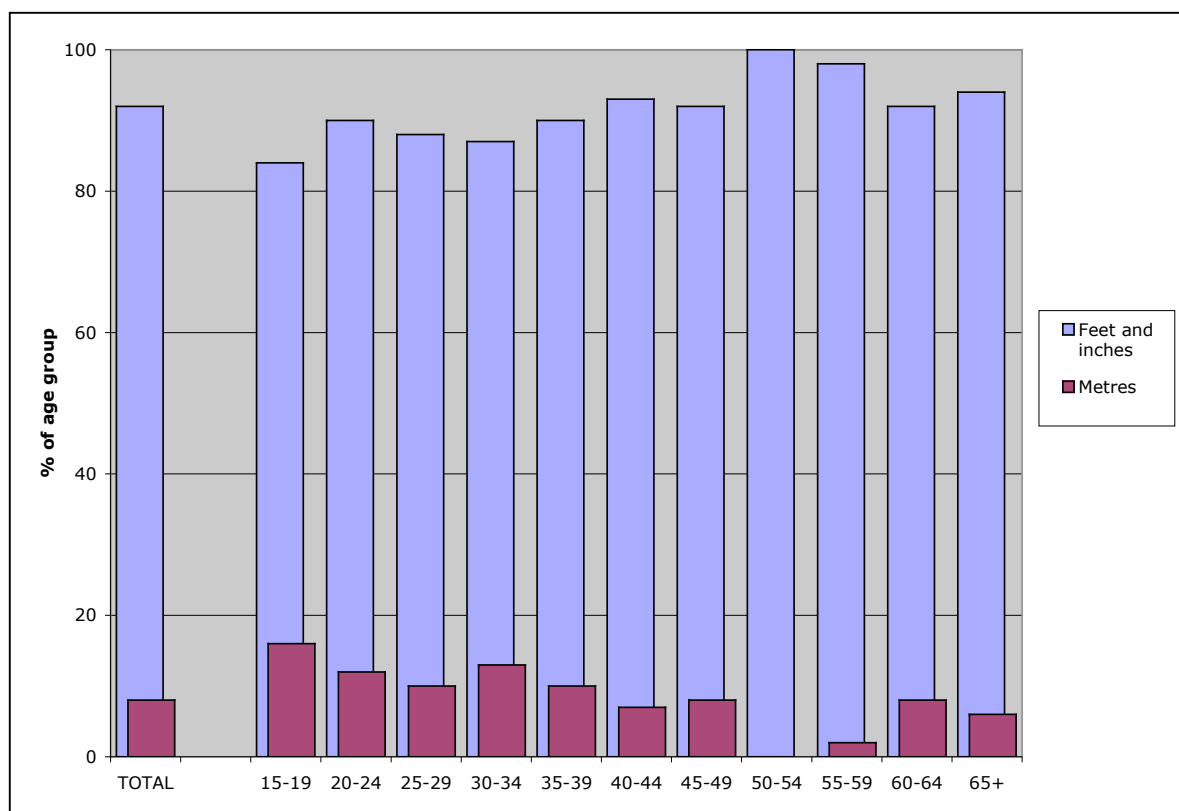
The chart below shows some of the other variables.



Although the overall total for all groups is around nine out of ten,

- Londoners are slightly more likely to use metric than the rest of Britain.
- People who went to university are a touch more metric than those who didn't
- ...as are the parents of young teenagers, but not, particularly, the parents of the under-tens.
- The ethnic minorities use metric more than do native Britons
- Tabloid readers are more likely to use inches than broadsheet readers.
- Within the broadsheets, it appears that Telegraph readers use metric the most and Guardian readers the least. This, however, could be influenced by sub-sample size – broadsheet readers are not a large group, comparatively; and the number of readers of any one named broadsheet in any national sample of a thousand people is not large.

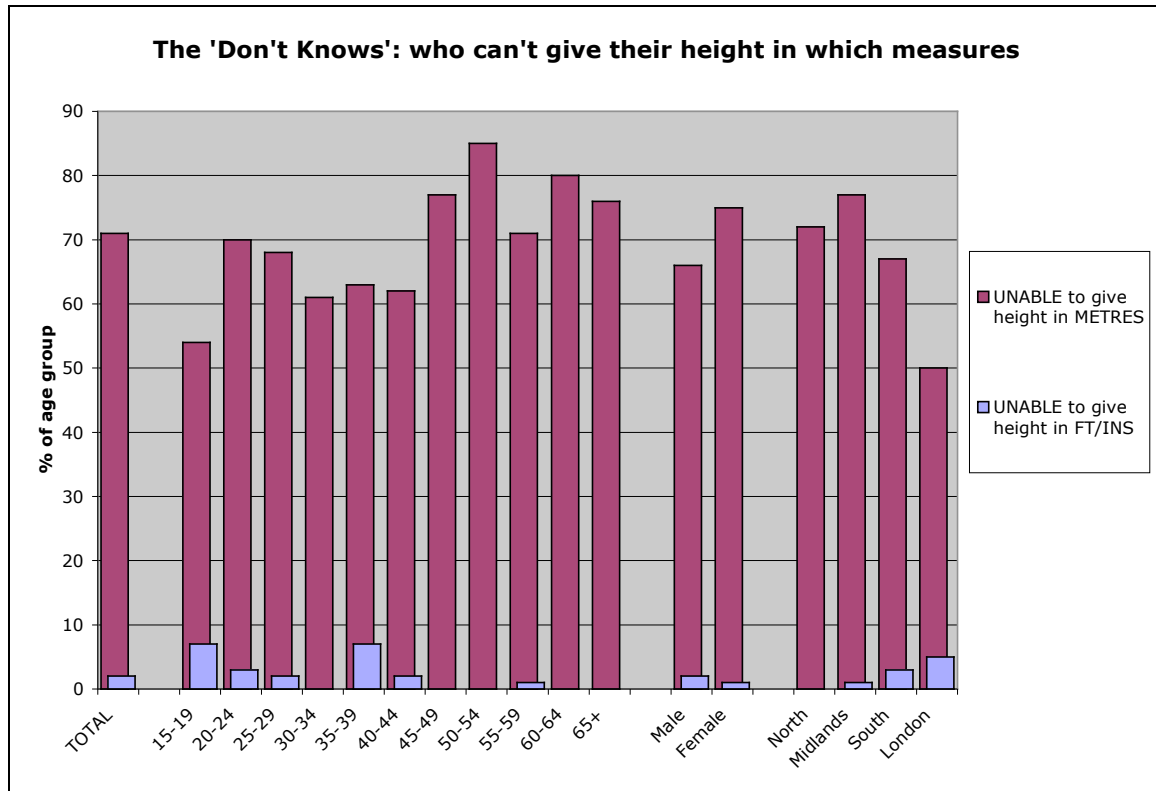
The facts – the preference for feet and inches is strong across all age groups - including teenagers



A substantial majority of every age group – including 84% of 15-19-year-olds – visualise their height in feet and inches.

The facts – most people are unable to estimate their height in metres

71% of the British public – and 54% of 15-19-year-olds - are unable to visualise their height in metres. By contrast, only 2% of the public – and 7% of 15-19-year-olds – say they are unable to make the same estimate in feet and inches.

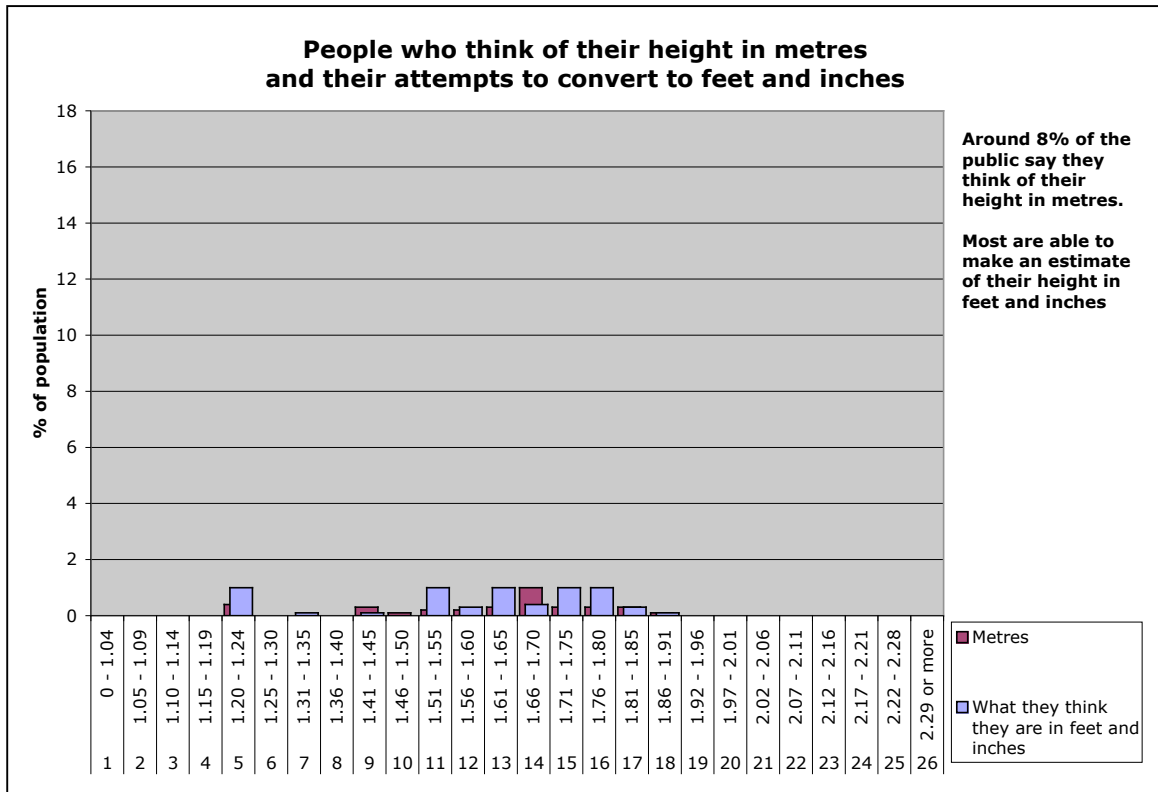


The metric system, for many, is a foreign language. They learn it at school; they are able to apply it, given the right tools (a phrasebook, for languages; a ruler and calculator for measurements); but it seems that they never quite manage to think in it like a native.

Of the minority who do feel competent to hazard a guess at their height in metric, most come up with answers in more or less the right region. A small minority, however – about one or two in every thousand – think they know the answer but get it very wrong indeed, in some cases claiming a metric height the equivalent of over seven and a half feet:



Almost all British metric-thinkers, on the other hand, are also fluent enough in feet and inches to take a fairly accurate guess at their height.



Why people find it so hard to change the way they think

Even leaving aside the continuing effects of a popular culture that stubbornly refuses to follow official policies on metrication, there is another reason why people find it hard to change from visualising things in feet and inches to visualising them in metres.

It is bound up with the physical and psychological processes of cognitive development.

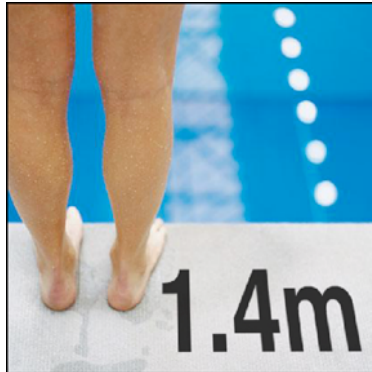
According to cognitive research carried out at Brown University in the USA, and at Oxford University, the acquisition of number and quantity – the way we count and measure things - is fixed at a fairly early age, and takes precedent over language.

The result of this is that people tend to calculate and judge amounts in the way that they learnt at a very young age.

So even people who emigrate and learn a new language still tend to do mathematics in the language of their early childhood, even after many years, and even if the rest of the language is forgotten.

For a significant proportion of people who grew up thinking in feet and inches, metric measures will always be a second, newcomer system, to be translated (generally inaccurately) into the mental representation they are most familiar and comfortable with.

The things officialdom does on the assumption that everyone is competent at metric



The facts are these: instructions in metric only have the potential to confuse or misdirect 71% of the public. Instructions in imperial only have the potential to confuse or misdirect 2% of the public. Instructions in dual measures have the potential to confuse or misdirect no-one at all.

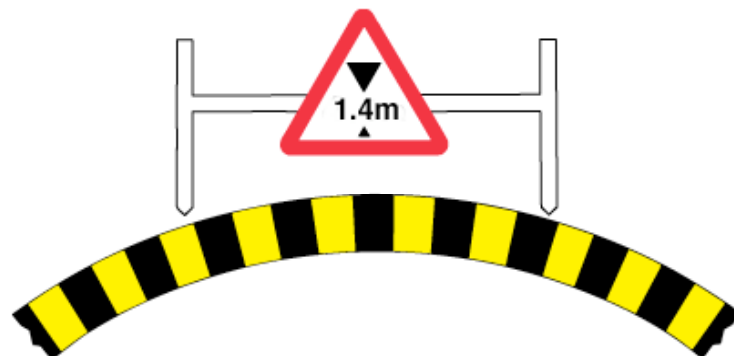
More and more official information, however, is given these days in metric only.

Because of this, 'vernacular measures' information is increasingly missing from car-park height restriction signs, from directions printed on the sides of medicine-packets, from signs at theme-parks that tell parents how tall their children have to be to go on the rides, and from the depth markings at your local swimming-pool that tell you which areas are shallow enough to paddle in without getting out of your depth, or deep enough to dive in without breaking your neck.

The assumption is that you will understand; or that if you don't, then you damn well ought to; and that if you miss out in any way or suffer any mishap because you don't understand, then it's your own stupid fault.



The things that happen when the public, ready or not, have to live with the consequences



When people are given important information in a form they aren't fully competent with, some people make mistakes.

Some of these mistakes result in loss, damage or injury.

In 2001, for example, Mr Adam Doggett, a 36-year-old tube driver from Essex, drove his Suzuki jeep under a bridge marked with a metric height sign.

Or rather, he tried to drive through: what happened, in fact, was that the car jammed itself hard against the concrete roof of the bridge and became stuck fast. He extricated himself, eventually, by letting all of his tyres down flat; but not before wrecking the roof of his car.



Mr Doggett was educated in metric all the way through primary and secondary school. He understood the basic principles of metric measurements. His problem, however, was with *internal representation*.

"If I had known," said Mr. Doggett, "That the bridge was less than five feet in height, I wouldn't have used it. I know my car's around five feet high. The figures *1.4m* meant absolutely nothing to me".

He took legal advice and claimed compensation from Broxbourne Borough Council. They should have shown the height in feet and inches, he said.

The council disagreed. It was his own fault, they said. However, after a protracted wrangle, they were obliged to pay up.

The people behind this report



Ipsos-RSL Founded in 1946, Ipsos-RSL is one of the longest-established social research institutes in the UK. Over the years its parent group, Ipsos, has expanded to become one of the largest research agencies in the world.

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Metric Martyrs Defence Fund The Metric Martyrs Defence Fund was set up to protect traders who have been prosecuted under the Metrication Regulations. Funded by donations from the British public, the aim of its campaign is to preserve freedom of choice.

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The Author *Over Their Heads* was written by Warwick Cairns. A director of Britain's leading advertising agency, he is the author of numerous reports and articles on popular culture. He has also, since 1997, commissioned and analysed a series of national opinion polls on the subject of people's understanding of weights and measures, all of which are collected and summarised, together with

all the other publicly-available data, in the report *The Weight of Public Opinion*, available from the British Weights and Measures Association. He may be contacted by telephone on 07711 873740.