

# CCTV Image

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## 4.2 million cameras?

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# Two million cameras in the UK

The number of CCTV cameras in the UK seems to matter a great deal to some people, and yet they have continued to use the outdated and discredited figure of 4.2 million without question. Now, in an attempt to inject more rigorous figures into the debate, we introduce a more reliable number

by DCC Graeme Gerrard, ACPO Lead on CCTV, and Richard Thompson, Cheshire Constabulary

THERE IS NO DOUBT that we have a lot of CCTV cameras in the UK. Indeed, if you pay much notice of the media, we have more cameras per head of population than any other country. If we have more cameras then it follows that we are being ‘watched’ more frequently and if we are being watched more frequently then we have the basis for describing the UK as a ‘Surveillance Society’.

Of course, the components of a ‘surveillance society’ include far more than just CCTV cameras: loyalty cards, communication records, automatic number plate recognition systems (ANPR), coded entry systems, keystroke monitoring of work stations and GPS monitoring of vehicle movements are but a few of the components. However, it is the image of a CCTV camera that is frequently used by the media to illustrate ‘surveillance society’ related stories – even if the surveillance is not image based.

To claim that we have more CCTV cameras than any other country assumes that we not only know how many cameras there are in the UK but also how many there are in every other country – a questionable assertion because, as we shall demonstrate in this article, until now we didn’t even have a reliable estimate of camera numbers in this country.

## 4.2 million...or less!

The most quoted figure for the number of cameras in the UK is that produced by Michael McCahill and Clive Norris in 2003. Their estimate of 4.2 million cameras is widely reported both in the UK and abroad. Indeed, so pervasive has the McCahill and Norris figure become that a search of Google identifies over 2400 references and many journalists, some leading academics and until recently, even senior politicians have used the 4.2 million estimate as if it were incontrovertible fact.

But what does the McCahill and Norris figure relate to? Many of those that use the figure have no idea how it was calculated or what type of cameras were counted. Does the figure include all cameras or just those that cover public space? Does it include cameras on private property that you have no access to? Does it include private domestic cameras? What about speed cameras?

Since the UK was one of the first countries to deploy cameras on the street, some commentators have assumed that the 4.2 million figure relates to public space cameras. It doesn’t, but little wonder then that we get headlines such as, “We are the most spied upon nation in the world.”

The reality is that the McCahill and Norris figure (4,285,000 to be precise) was based on counting the number of cameras along approximately 1.5 kilometres of road in a busy commercial/shopping district. They chose part of Upper Richmond Road and the



entire length of Putney High Street in the London Borough of Wandsworth. They started by counted the number of publicly accessible premises and established the average number of cameras per location, then added the number of open-street CCTV cameras operated by the Borough Council together with an estimate of those operating in public institutions such as transport, hospitals and schools. This figure was then extrapolated across the whole of London (population 7.2 million residents). They estimated that there were at least 500,000 CCTV cameras in London, or one camera for every 14 residents. Extrapolating this figure across the UK (population of 60 million) gave them the 4.285 million – the number that is quoted by so many to this day.

Those of us who do not live in a highly urbanised area may ques-

tion the accuracy of extrapolating the number of cameras found in a busy London commercial/shopping district across the whole of the UK, but this is the figure that has entered public consciousness both here and abroad and is probably the figure by which we are judged to have the most CCTV in the world.

## Constant contact

Another statement frequently quoted by the media, often in conjunction with the 4.2 million figure is that, 'the average Briton is caught on security cameras some 300 times a day'. This figure was produced by Garry Armstrong and Clive Norris in 1999 and is based on the fictional journey of a fictional character as he travels around London on one day.

The character, Thomas Reams, had a busy day indeed, during which he travelled through his housing estate (which has a drugs problem), visited two schools, a hospital maternity wing, his workplace, a number of shops, several car parks, a railway crossing, Heathrow Airport, a football stadium and a red-light district. As well as using his car (during which his speed was monitored by speed cameras), he also used public transport.

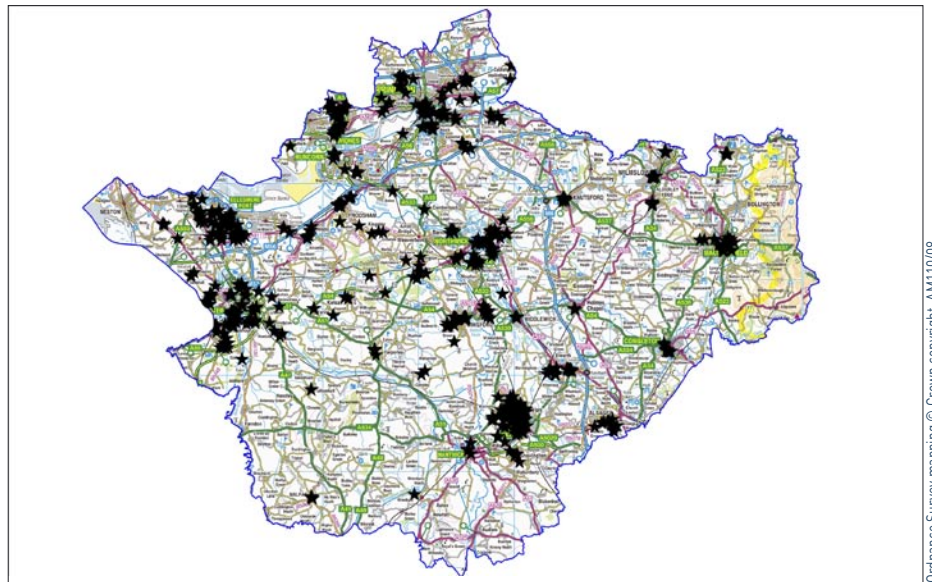
While we have no problem with using fictional journeys to illustrate a point, we would question whether this particular day is typical of those undertaken by the majority of the UK population. In fact, short of being a cab driver who moonlights as a hospital porter and a train driver, it's difficult to see how anyone could clock up this many cameras in a day.

In fairness to Armstrong and Norris, they clearly made the point that this was a fictional construction. Indeed, Norris in his evidence before the House of Lords Select Committee on the Constitution Surveillance and Data Collection Inquiry accepted that the journey had been constructed so that it 'intersected with known CCTV systems' and that the overall figure was a 'guesstimate'.

Nonetheless, it is another statistic that has entered public consciousness and is regularly quoted – as if it were fact – by newspapers, the BBC and even the Surveillance Studies Network Report for the Information Commissioner on the Surveillance Society. If you check the 300 a day figure on Google, you get nearly 1300 references.

## CCTV camera challenge

In the absence of an alternative estimate of the number of cameras in the UK, it is not surprising that the 4.2 million and 300-a-day figures are still being quoted. Developing a more accurate estimate is not easy, particularly as there is no requirement for the owner of a camera to give notification that they have installed one. The only way of establishing the number of cameras in any given area is to visit all the premises and ask the owners how many cameras they



Every camera known to Cheshire Constabulary is logged on a GIS system

mapped onto a computer-based mapping system that is accessible by officers investigating crimes and incidents.

The project has been underway over the past two years and a significant amount of data has been collected. We know for example that 10 per cent of images are retained for less than three days and that 53 per cent still use analogue recording. We also know how many cameras there are, what percentage are internal cameras, what percentage are external and how many (both internal and external) provide images of space to which the public have access.

We have mapped 1410 premises that collectively have 12,333 cameras. Unlike McCahill and Norris, we have not confined our assessment to just publicly accessible premises but have mapped all premises that have cameras. The majority of these cameras (9056) are located inside premises with the remainder (3277) being located outside of the building. From a policing perspective, it is useful for us to know whether these cameras have a view of space (both internal and external) to which you and I could have access.

For example, in the case of a shop, are the cameras covering areas that the public can access or are they covering areas such as the storeroom or warehouse? Likewise, if a camera is externally located, is it watching over private space such as an enclosed yard or does it have a view of the street or space where you will find members of the public? A total of 9766 cameras provided images, either extensively or fleetingly, of space to which the public (in most cases customers) have access.

These figures do not include those cameras operated by our Unitary Authorities that are located on the streets of our communities and monitor our town centres and other public areas. It is these cameras that generate significant debate and interest both here and abroad. All countries use CCTV in retail and commercial premises, some utilising higher concentrations of cameras than in the UK. However, it is our use of cameras to monitor our streets that initially set us apart from many other countries. We say initially because many are now following the UK's lead

and are deploying increasing numbers of cameras to monitor their public areas. Collectively, the four

Unitary Authorities of Cheshire operate 504 cameras, a relatively low figure compared to the number of cameras (12,333) located in and around retail and commercial premises.

The Cheshire mapping project is ongoing and in reality is likely to be a never-ending task unless, of course, Parliament were to intro-

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have. This is exactly what has happened in Cheshire, not because we wanted to know how many cameras there are but to map their location for policing purposes.

The mapping project involves visiting premises and recording details of the location of each camera, image quality, recording format, retention period and field of view. This information is then

duce a requirement for all users of CCTV cameras to give notification as to the number and location of their cameras.

While we cannot be confident that we have located all the cameras (Cheshire covers 946 square miles), we do believe that certain areas have been extensively mapped and there is a high degree of confidence that we have captured all the cameras.

## Extrapolating from the data

To establish a total for the UK, we could adopt the methodology used by McCahill and Norris and extrapolate the Cheshire figure across the whole of the UK. However, we want to ensure that we reflect the differences in camera concentrations that occur between urban and rural areas, something that they failed to do.

National Statistics data indicates that 64 per cent of the UK population resides in urban areas with the rest living in rural areas. We identified which of our local authority wards were urban and rural and then selected the most extensively mapped wards at a ratio that reflects the urban/rural split in the UK population.

Camera concentrations in the urban areas of Cheshire range from 0.6 to 25.4 cameras per 100 population with a mean average of 3.6. Concentrations in rural areas range from 0.3 to 7.7 cameras per 100 population with a mean average of 0.9. An overall average, using a ratio of urban and rural areas that matches the national position, gives us 2.805 cameras per 100 population. On this basis, extrapolating the Cheshire findings across the UK population (60,776,238) gives us a figure of 1,704,238 cameras.

To this figure we need to add the public space CCTV cameras operated by local authorities. The CCTV User Group published figures in January 2009 following a survey of Local Authorities. They identified 29,703 public space cameras in England and Wales. If we extrapolate this figure to give us a UK-wide figure then we end up with 33,443 cameras. Interestingly, extrapolating Cheshire's 504 public space cameras to give a UK figure gives us a figure of 30,631 cameras which is within 10 per cent of the CCTV User Group's estimate.

Combining the premises CCTV with the public space CCTV gives us a figure of 1,737,681 cameras. In the original McCahill and Norris estimate, they added a sum of cameras to account for street CCTV cameras operated by the Borough Council together with an estimate of those operating in public institutions such as transport, hospitals and schools. Cheshire's mapping project captured the public institutions, while the open street cameras were counted by the CCTV User Group. That leaves us with 'transport'. Assessing these numbers is difficult as there are cameras on trains, railway stations and the London Underground, not to mention some in buses.

Here our figures become less precise and we have to rely on the estimates of others. Estimates in London indicate that 2000 cameras watch over London's over-ground railway stations and a further 11,000 operate on the London Underground system. We know that London has a particularly high concentration of cameras covering its transport infrastructure and so extrapolating the London numbers across the UK would give an unrealistically high figure. Nevertheless, by doing so we add a maximum of 115,000 cameras to the UK figure giving a grand total of 1,852,681, far short of the 4,285,000 estimated by McCahill and Norris.

## Myth buster

What of the 300-a-day figure? Well, we tested that as well. Instead of using a mythical character who undertook a journey to all the local CCTV hotspots, we used real people undertaking real journeys. Using the mapping information and their own observations, we listed all the ANPR, traffic light, and speed cameras that they passed, together with those business premises cameras that may



Report authors: Richard Thompson (left) and DCC Graeme Gerrard. Graeme Gerrard is the Deputy Chief Constable of the Cheshire Constabulary and Richard Thompson is the Constabulary's Geographical Information Systems Administrator

have captured a fleeting glance of their vehicle as it passed by. We added the local authority cameras plus those in the various shops and leisure centres that they visited as they went about their normal activities. Finally, we added those cameras at their workplace. The figures ranged from 42 cameras to 101 with the mean average of 68. This is a far cry from the 300 a day that the media regularly use.

The mapping project in Cheshire has provided us with an opportunity to re-assess the number of cameras within the UK. We don't claim that this is a precise figure as it is impossible to count every camera. As with the McCahill and Norris study, we have not captured cameras used in domestic dwellings, nor have we counted all of the speed or ANPR cameras within the UK.

What we have attempted to do is count the same type of surveillance cameras that they counted but with a methodology that we felt would provide a more accurate estimate. No doubt many will question our methodology and argue that we could have done it differently. However, if they are the same people who regularly use the 4.2 million and 300-a-day figures then it would be interesting to know what tests they applied to the McCahill, Armstrong and Norris methods.

## Only half the cameras

Eight years after the 4.2 million figure was first published, we now have research that indicates that the figure is less than half this guesstimate. We also know that unless you make a particular point of visiting as many CCTV hotspot areas as you can, you are unlikely to be captured on CCTV 300 times a day.

If anyone asks us for a figure for the number of CCTV cameras in the UK, we will tell them that the best research we have to date says it is approximately 1.85 million. And the real figure for the number of times the average person is likely to be 'caught' on CCTV in a day is less than 70 – and most of these will be at your workplace or fleeting glimpses by cameras located in shops.

Are we still the most watched nation of earth? Since we have yet to see estimates from other countries it is impossible to say, but hopefully those that claim that we are will now have the opportunity to revise their figures.

• *For more about Cheshire Constabulary's camera mapping scheme, see CCTV Image, Summer 2008, issue 28. Visit [www.cctvimage.com](http://www.cctvimage.com) for back issues.*