

Cost in comparison to other phones

One major negative impact on people is the cost of an iPhone. They are considerably more expensive than other smart phones. For a consumer looking to purchase a 16GB iPhone 4s with 600 minutes and unlimited texts you would be looking to pay a "one off" cost of £99.00 then £36 per month for 18 months.

Task 1 Calculate - Use the information above to calculate the total amount paid for an iPhone 4s over an 18 month contract.

Task 2 Analyse - To put this figure into perspective the Samsung Galaxy S, a competitor to the iPhone can be purchased for much less. Use the information in the comparison website to work out total cost to the consumer for a similar Galaxy S deal over an 18 months period.



* Until 31st December we're offering our existing customers iPhone 4S 16GB for free on a 900 minute 18 or 24 month contract, saving £49.99. Only from O2 shops

Best Samsung i9000 Galaxy S Deals Today

Tariff Name	Monthly Cost	Monthly Minutes	Monthly Texts	Internet Allowance	Handset Price	Offer Details	Buy Online
O2 O2 100 + 500 + 500MB 24 months	£21.50	100 Anytime Any Network	500	500 MB	FREE	Click on See Deal for Details All i9000 Galaxy S Deals on O2 100 + 500 + 500MB (24)	e2save See Deal
O2 O2 600 + Unlimited 24 months	£31.00	600 Anytime Any Network	Unlimited	-	FREE	10 months line rental at £0.99 All i9000 Galaxy S Deals on O2 600 + Unlimited (24)	onesstop See Deal
Orange Panther 15.50 24 months	£15.50	50 Anytime Any Network	Unlimited	250 MB	FREE	12 months FREE line rental All i9000 Galaxy S Deals on Panther 15.50 (24)	e2save See Deal
Orange Canary 15.50 24 months	£15.50	200 Anytime Any Network	Unlimited	-	FREE	12 months FREE line rental All i9000 Galaxy S Deals on Canary 15.50 (24)	e2save See Deal
T-Mobile £30 + Internet 24 months	£30.64	900 Anytime Any Network	500	500 MB	FREE	12 months FREE line rental All i9000 Galaxy S Deals on T-Mobile £30 + Internet (24)	mobiles.co.uk Carphone Warehouse See Deal
T-Mobile £20 + Internet at £15 24 months	£15.32	300 Anytime Any Network	300	500 MB	£29.99	Click on See Deal for Details All i9000 Galaxy S Deals on T-Mobile £20 + Internet at £15 (24)	e2save See Deal
Talk Mobile Smart £18 24 months	£18.00	300 Anytime Any Network	1000	1.00 GB	£49.99	Click on See Deal for Details All i9000 Galaxy S Deals on Talk Mobile Smart £18 (24)	mobiles.co.uk Carphone Warehouse See Deal
3 Mobile Text 500 at £25 24 months	£25.00	500 Anytime Any Network	5000	1.00 GB	FREE	3 months half price line rental All i9000 Galaxy S Deals on Text 500 at £25 (24)	phonebox mobiles.co.uk See Deal
3 Mobile Text 900 at £25 24 months	£25.00	900 Anytime Any Network	5000	1.00 GB	FREE	2 months half price line rental All i9000 Galaxy S Deals on Text 900 at £25 (24)	phonebox mobiles.co.uk See Deal
Vodafone 100 + 500 at £10.50 24 months	£10.50	100 Anytime Any Network	500	-	£159.99	Click on See Deal for Details All i9000 Galaxy S Deals on Voda 100 + 500 at £10.50 (24)	mobiles.co.uk Carphone Warehouse See Deal
Vodafone 100 + 500 + 250MB at £9.00 24 months	£9.00	100 Anytime Any Network	500	250 MB	FREE	15 months half price line rental All i9000 Galaxy S Deals on Voda 100 + 500 + 250MB at £9.00 (24)	onesstop See Deal

Task 3 Create - stick in images of the two phones to create an advertisement that outlines the differences in cost between the two smart phone contracts.



Health issues with iphones

SAR (specific absorption rate) is a measurement of how much electromagnetic radiation is absorbed by body tissue whilst using a mobile phone. The higher the SAR the more radiation is absorbed. An iPhone 3Gs has a SAR rating of 0.79. The highest SAR rating in the US mobile phone market is the Motorola V195s which has a SAR rating of 1.6. The lowest SAR rating in the US is the Sonim XP1 which has a SAR rating of 0.6



Several reports have appeared in the media which have led to mixed messages regarding the possible health impacts of using mobile phones.

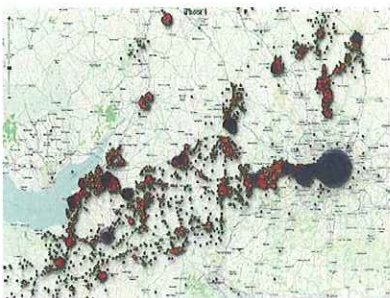
Task 4 Investigate - Read each article in turn and work with a partner to summarise at least 3 main points that the article presents.

Task 5 – synthesise – Working in groups of 4-6, take all the evidence together from your investigation and create a “Public health announcement” which lasts no longer than 30 seconds and outlines the current situation relating to mobile phone use and any potential risk to health.

Task 6 – Reflect - What are the implications of these health risks for consumers of iPhones? Are these discussions and findings relevant for owners of iPhones / other smart phones?

Collection of location based data and privacy

Recently, there was some controversy regarding data collected by the iPhone's operating system. Two software engineers were analysing the operating software to explore how it works when they came across a surprising function. The iPhone was collecting and storing data on everywhere the phone had been for over a year. They published their findings on a blog and showed consumers how to access the file and then present it on Google Maps. Many people did this and the results were quite shocking! People could view maps which showed their movements over the past 12 months. Their phone had essentially been recording their movement.



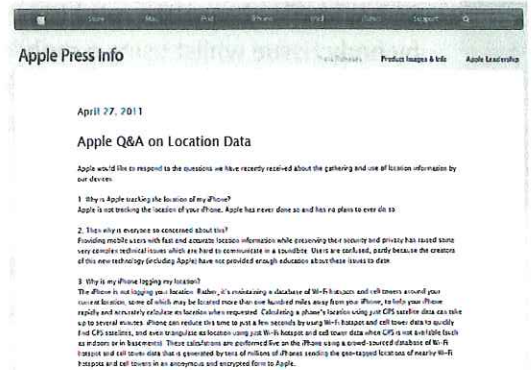
This led to two different reactions in the media. People who were defending the right to privacy said that Apple had no right to record where and when people visit different places. They felt that Apple were invading people's privacy and were suspicious about why Apple would want to build software that not only captures this data but also stores it.

Task 7 – Predict Can you think of any advantages that recording and storing this location based information might have for Apple or other companies that could use this data?

Other groups in the media felt that Apple had simply made a mistake, that their new operating software recorded this information as a result of other functions, that it was never intended to be recorded and that the data was never communicated to Apple directly. In response to the controversy in the media Apple released a statement on their website which they hoped would clarify their position.

Task 8 – Evaluate - What is your opinion on this controversy?

After examining the evidence do you think Apple were caught out doing something they should not have been, or just a simple “bug” in their software. Use evidence from the news reports to support your view.





HEALTH

31 May 2011 Last updated at 17:43

Mobiles 'may cause brain cancer'

By James Gallagher
Health reporter, BBC News

The World Health Organization's cancer research agency says mobile phones are "possibly carcinogenic".

A review of evidence suggests an increased risk of a malignant type of brain cancer cannot be ruled out.

However, any link is not certain - they concluded that it was "not clearly established that it does cause cancer in humans".

A cancer charity said the evidence was too weak to draw strong conclusions from.

A group of 31 experts has been meeting in Lyon, France, to review human evidence coming from epidemiological studies.

They said they looked at all relevant human studies of people using mobile phones and exposure to electromagnetic fields in their workplace.

The WHO's International Agency for Research on Cancer (IARC) can give mobile phones one of five scientific labels: carcinogenic, probably carcinogenic, possibly carcinogenic, not classifiable or probably not carcinogenic.

It concluded that mobiles should be rated as "possibly carcinogenic" because of a possible link with a type of brain cancer - glioma.

Ed Yong, head of health information at Cancer Research UK, said: "The WHO's verdict means that there is some evidence linking mobile phones to cancer but it is too weak to draw strong conclusions from.

"The vast majority of existing studies have not found a link between phones and cancer, and if such a link exists, it is unlikely to be a large one.

"The risk of brain cancer is similar in people who use mobile phones compared to those who don't, and rates of this cancer have not gone up in recent years despite a dramatic rise in phone use during the 1980s.

"However, not enough is known to totally rule out a risk, and there has been very little research on the long-term effects of using phones."

The WHO estimated that there are five billion mobile phone subscriptions globally.

Christopher Wild, director of the IARC, said: "Given the potential consequences for public health of this classification and findings it is important that additional research be conducted into the long term, heavy use of mobile phones.

"Pending the availability of such information, it is important to take pragmatic measures to reduce exposure such as hands free devices or texting."

More Health stories



Rise in child obesity recorded

Obesity has risen slightly in children aged 10 and 11 in England, according to new data.

Elderly care reform funding fears

Health boss warns of ill Scotland



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HEALTH

21 October 2011 Last updated at 02:11

Mobile phone brain cancer link rejected

By Nick Triggle

Health correspondent, BBC News

Further research has been published suggesting there is no link between mobile phones and brain cancer.

The risk mobiles present has been much debated over the past 20 years as use of the phones has soared.

The latest study led by the Institute of Cancer Epidemiology in Denmark looked at more than 350,000 people with mobile phones over an 18-year period.

Researchers concluded users were at no greater risk than anyone else of developing brain cancer.

The findings, published on the British Medical Journal website, come after a series of studies have come to similar conclusions.

'Reassuring'

But there has also been some research casting doubt on mobile phone safety, prompting the World Health Organization to warn that they could still be carcinogenic.

In doing so, the WHO put mobile phones in the same category as coffee, meaning a link could not be ruled out but could not be proved either.

The Department of Health continue to advise that anyone under the age of 16 should use mobile phones only for essential purposes and keep all calls short.

The Danish study, which built on previous research that has already been published by carrying out a longer follow-up, found there was no significant difference in rates of brain or central nervous system cancers among those who had mobiles and those that did not.

Of the 358,403 mobile phone owners looked at, 356 gliomas (a type of brain cancer) and 846 cancers of the central nervous system were seen - both in line with incidence rates among those who did not own a mobile.

Even among those who had had mobiles the longest - 13 years or more - the risk was no higher, the researchers concluded.

But they still said mobile phone use warranted continued follow up to ensure cancers were not developing over the longer term, and to see what the effect was in children.

Hazel Nunn, head of evidence and health information at Cancer Research UK, said: "These results are the strongest evidence yet that using a mobile phone does not seem to increase the risk of cancers of the brain or central nervous system in adults."

Prof Anders Ahlborn, from Sweden's Karolinska Institute, praised the way the study was conducted, adding the findings were "reassuring".

Prof David Spiegelhalter, an expert specialising in the understanding of risk who is based at the University of Cambridge, said: "The mobile phone records only go up to 1995 and so the comparison is mainly between early and late adopters, but the lack of

any effect on brain tumours is still very important evidence."

And Prof Malcolm Sperrin, director of medical physics at Royal Berkshire Hospital, said: "The findings clearly reveal that there is no additional overall risk of developing a cancer in the brain although there does seem to be some minor, and not statistically significant, variations in the type of cancer."

But the researchers themselves do accept there were some limitations to the study, including the exclusion of "corporate subscriptions", thereby excluding people who used their phones for business purposes, who could be among the heaviest users.

More Health stories



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Are mobile phones safe for children?

By David Reid
Reporter, BBC Click

While many experts say there is no link between mobile phone use and cancer in adults there is still widespread uncertainty about the risks children face.

Research into health and mobile phones has been beset with difficulties. Mobiles have been in use for a relatively short time and yet cancers can take decades to develop.

However most scientists seem to agree about one thing - that if mobiles are hazardous, children may be more vulnerable than the rest of us to their possible ill-effects.

"If the penetration of the electromagnetic waves goes for four centimetres into the brain, four centimetres into the adult brain is just the temporal lobe," says Dr Annie Sasco of the Institute of Public Health, Epidemiology and Development in Bordeaux.

"There are not too many important functions in the temporal lobe - but in a child the more central brain structures are going to be exposed.

"In addition kids have a skull which is thinner, less protective, they have a higher content of water in the brain, so there are many reasons that they absorb more of the same radiation," she adds.

'Possibly carcinogenic'

European research just published in America's Journal of the National Cancer Institute has concluded children who use mobile phones are at no greater risk of developing brain cancer than those who don't.

But critics say the research is too short-term and the data it used is out of date.

The International Agency for Research on Cancer (IARC) has recently reclassified mobile phones. The UN agency has fallen short of saying that mobile phones are definitely hazardous, instead they have re-classified mobile phones as possibly carcinogenic.

The re-classification was the result of a meeting held at the headquarters in Lyon of the world's leading scientists in the field.

They reviewed experimental data from animal research and also the longest running research project into the use of mobile phones by brain cancer sufferers.

"The strongest evidence really comes from the studies of cancer in humans and there was some evidence that there may be an association between the use of mobile cell-phones and certain types of brain cancer," says Dr Kurt Straif of the IARC.

The GSMA, the industry body representing the interests of the mobile industry followed up the IARC's findings by saying: "The IARC classification suggests that a hazard is possible but not likely."

And while the GSMA acknowledged that some mobile phone users may be concerned it said that present safety standards remain valid, and that there was need for further research.

Safety advice

Some scientists believe the IARC's classification of a "possible" link between cancer and mobile phone use is not strong enough.

" We think we face a new emerging health risk and that we shouldn't wait 30 to 40 years to see the results "
Elizabeth Ruffinengo Women in Europe for a Common Future

"I think mobile phones are a risk for brain tumours and we have already quite substantial epidemiological evidence showing that people who use cell-phones for more than 10 years have about a doubling in their risk of glioma, which is a brain tumour, quite often fatal," says Dr Annie Sasco.

Certainly for parents, giving children mobiles helps to keep tabs on them when they are out and about in a world full of hazards. But if the hazard is the phone itself, then we would be wise to take precautions.

"From the review of the exposure determinants we can clearly say that it is mostly the use of cell-phones for voice calls, particularly when the phone is close to the brain or to the ear - so you could for example recommend a hands-free kit for voice calls," said Dr Straif.

"There is also some evidence that exposure in children may be up to two-fold higher because of the different biology and other factors that influence exposure, therefore it may be prudent to restrict it further to kids and take these pragmatic measures more seriously," he added.

Text rather than talk, hands-free sets, use a land-line when there is one to hand - the sort of advice that some would like to see governments and health authorities passing on to consumers in the light of the IARC's new classification for mobile phones.

Elizabeth Ruffinengo, from Women in Europe for a Common Future, believes that as mobile phones represent a possible carcinogen there should be some safety recommendations.

"We have heard scientists saying that children are more at risk when it comes to exposure to mobile phones, so what we want is recommendations following the new IARC's classifications and so far we have not seen any.

We think we face a new emerging health risk and that we shouldn't wait 30 to 40 years to see the results."

So after 20 or so years with mobiles, many experts say there is nothing to worry about, the UN says there might be a problem, and others believe there definitely is an issue.

It is up to the individual to decide whether to dismiss the warnings or take minor precautions to ensure those thought most vulnerable do not blame us if the most dire predictions do turn out to be correct.

Story from BBC NEWS:

http://news.bbc.co.uk/go/pr/fr/-/1/hi/programmes/click_online/9554782.stm

Published: 2011/08/05 23:35:39 GMT

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BBC NEWS

MAGAZINE

23 June 2011 Last updated at 11:15

Go Figure: Do we understand 'risk' of mobile phone use?

COMMENTS (179)



By Michael Blastland

GO FIGURE - Seeing stats in a different way

What should we make of recent news reports speculating about whether mobile phones cause cancer? It's all about how we deal with uncertainty, says Michael Blastland in his regular column.

How risky is it if you don't know the risks?

Daft question? Possibly. But perhaps it helps define who we are. Here is an exercise which invites you to a little self-diagnosis of your attitudes towards risk.

Mobile phones may cause brain cancer. "Shock warning!" said one newspaper when it reported this last week. "Shock U-turn" said another. Others seemed more sanguine.

Why the difference? Because all were reacting in their own way to ignorance. As [this BBC report](#) and others, [like the Guardian's Ben Goldacre](#), pointed out, we simply don't know how risky mobile phone are.

So the word "may", as in the BBC headline "may cause cancer", is everything. Is it scary? Or reassuring? What if we turned it round and said "may not cause cancer"?

Risk often isn't about hard numbers - often there are no hard numbers - it's about how we react to uncertainty, given how the uncertainty is presented to us.

The graphic below is based on an illustration famously used by Prof John Adams, a writer about risk, for the cover of a book - called Risk, naturally.

As this graphic suggests, what we know is negligible. The rest, as Prof Adams puts it, is darkness.

The data he cited - about five million known chemicals (the whole area of the graphic), 7,000 tested for carcinogenicity (the yellow rectangle), 30 known to cause cancer in humans (the tiny orange area at the top left) - is a little old now. But his argument stands. Scroll down.

So does the darkness - the huge grey area - say to you "worry"? Or does it say "relax"? The less conclusive the science, the more our personal biases and presumptions - filters, Adams calls them - come into play. These are optimism, pessimism, trust or mistrust of authority, desire for personal control, and so on.

These are what often define riskiness for us. And so by helping to reveal them, our attitude to risk helps tell us who we are.

The International Agency for Research on Cancer (IARC) puts risks in one of five categories - carcinogenic, probably carcinogenic, possibly carcinogenic, not classifiable or probably not carcinogenic.

Mobile phones are "possibly" and so also, logically, "possibly not". That classification has not changed, despite recent news reports. Didn't know before, don't know now.

Scary headlines based on nothing new are nothing new, if you see what I mean. But newspapers won't be alone in taking the view that "don't know = grounds for fear", believing an "admission" of uncertainty makes the world more dangerous.

It's worth pointing out too that the IARC classification is not about how big a risk is, simply about how strong the evidence is that there is a risk, whether big or small.

We'd probably have an idea by now if any risk attached to mobile phones was big (unless the damage waits for old age). We haven't found it despite looking pretty hard.

Brain cancer is rare, about 10 cases in every 100,000 people. Let's say heavy mobile phone use doubles that risk over 20 years. Not true, so far as we know, but let's run with it. That would mean that among 100,000 heavy phone users, the number of brain cancers would rise from 10 in 100,000 to 20 in 100,000.

Does that reassure you? Or by failing to rule out a risk of unknown size, has it simply raised your suspicions?

It would be a surprise if any evidence here persuaded anyone out of a view they already held, and in any case it's not meant as a recommendation.

Arguments about risk are seldom settled by evidence - partly because the evidence can be fiendishly hard to detect or agree. What's left is how we feel in the dark.

Your comments (179)

Comments

Sign in or register to comment and rate comments.

All posts are reactively-moderated and must obey the house rules.

Editors' Picks All Comments (179)

39.Megan

23RD JUNE 2011 - 13:17

+10

Everything has a risk. Sometimes you can quantify that risk to a rough percentage... but even something classified as a 'high risk' still leaves a chance, often a considerable one, of the adverse event NOT happening. Get a set of percentage dice and have a play - it's quite illuminating if probability theory is not something you're familiar with :)

22.lizb47

23RD JUNE 2011 - 12:48

+2

I think that if mobile phones do increase the risk of cancer, it must be a very small increase or it would be showing in the statistics by now. However, I am part of an international study of whether long-term use might increase the risk. It will probably not be conclusive, but sadly, it will not stop people worrying. Why not worry more about known risks? - smoking, alcohol, the No. 9 bus?

11.Grey Animal

23RD JUNE 2011 - 12:16

+2

Arguments about risk can only be settled by evidence. Anything else is speculation and conjecture, at best. The only question is whether we're content to run our lives on speculation and conjecture, rather than on facts.



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iPhone keeps record of everywhere you go

Privacy fears raised as researchers reveal file on iPhone that stores location coordinates and timestamps of owner's movements

Charles Arthur

guardian.co.uk, Wednesday 20 April 2011 14.06 BST

[A larger](#) | [smaller](#)



Apple's iPhone saves every detail of your movements to a file on the device. Photograph: Linda Nyland for the Guardian

Security researchers have discovered that Apple's iPhone keeps track of where you go – and saves every detail of it to a secret file on the device which is then copied to the owner's computer when the two are synchronised.

The file contains the latitude and longitude of the phone's recorded coordinates along with a timestamp, meaning that anyone who stole the phone or the computer could discover details about the owner's movements using a simple program.

For some phones, there could be almost a year's worth of data stored, as the recording of data seems to have started with Apple's iOS 4 update to the phone's operating system, released in June 2010.

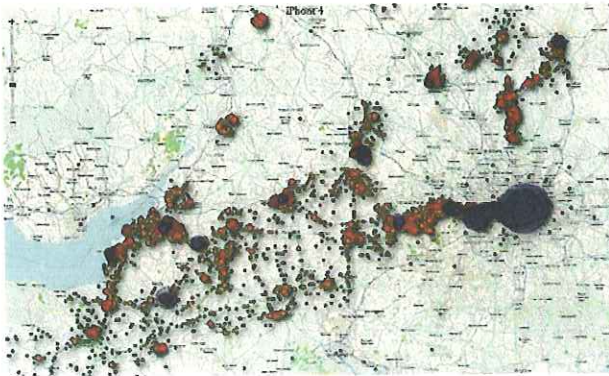
"Apple has made it possible for almost anybody – a jealous spouse, a private detective – with access to your phone or computer to get detailed information about where you've been," said Pete Warden, one of the researchers.

Only the iPhone records the user's location in this way, say Warden and Alasdair Allan, the data scientists who discovered the file and are presenting their findings at the Where 2.0 conference in San Francisco on Wednesday. "Alasdair has looked for similar tracking code in [Google's] Android phones and couldn't find any," said Warden. "We haven't come across any instances of other phone manufacturers doing this."

Simon Davies, director of the pressure group Privacy International, said: "This is a worrying discovery. Location is one of the most sensitive elements in anyone's life – just think where people go in the evening. The existence of that data creates a real threat to privacy. The absence of notice to users or any control option can only stem from an ignorance about privacy at the design stage."

Warden and Allan point out that the file is moved onto new devices when an old one is

replaced: "Apple might have new features in mind that require a history of your location, but that's our speculation. The fact that [the file] is transferred across [to a new iPhone or iPad] when you migrate is evidence that the data-gathering isn't accidental." But they said it does not seem to be transmitted to Apple itself.



Map shows location data collected from an iPhone that had been used in the southwest of England

Although mobile networks already record phones' locations, it is only available to the police and other recognised organisations following a court order under the Regulation of Investigatory Power Act. Standard phones do not record location data.

MPs in 2009 criticised the search engine giant Google for its "Latitude" system, which allowed people to enable their mobile to give out details of their location to trusted contacts. At the time MPs said that Latitude "could substantially endanger user privacy", but Google pointed out that users had to specifically choose to make their data available.

The iPhone system, by contrast, appears to record the data whether or not the user agrees. Apple declined to comment on why the file is created or whether it can be disabled.

Warden and Allan have [set up a web page which answers questions about the file](#), and created a simple downloadable application to let Apple users check for themselves what location data the phone is retaining. The Guardian has confirmed that 3G-enabled devices including the iPad also retain the data and copy it to the owner's computer.

If someone were to steal an iPhone and "jailbreak" it, giving them direct access to the files it contains, they could extract the location database directly. Alternatively, anyone with direct access to a user's computer could run the application and see a visualisation of their movements. Encrypting data on the computer is one way to protect against it, though that still leaves the file on the phone.

Graham Cluley, senior technology consultant at the security company Sophos, said: "If the data isn't required for anything, then it shouldn't store the location. And it doesn't need to keep an archive on your machine of where you've been." He suggested that Apple might be hoping that it would yield data for future mobile advertising targeted by location, although he added: "I tend to subscribe to cockup rather than conspiracy on things like this – I don't think Apple is really trying to monitor where users are."

time	time zone	time zone offset	time zone abbreviation	time zone description	time zone source	time zone type	time zone version	time zone status
113	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
114	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
115	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
116	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
117	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
118	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
119	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
120	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
121	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
122	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
123	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
124	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
125	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
126	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
127	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
128	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
129	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active
130	UTC	00:00	UTC	Coordinated Universal Time	IANA	Standard	1.0	Active

The data inside the file containing the location and time information. This is used to plot the map above

The location file came to light when Warden and Allan were looking for a source of mobile data. "We'd been discussing doing a visualisation of mobile data, and while Alasdair was researching into what was available, he discovered this file. At first we weren't sure how much data was there, but after we dug further and visualised the extracted data, it became clear that there was a scary amount of detail on our

movements," Warden said.

They have blogged about their discovery at [O'Reilly's Radar site](#), noting that "why this data is stored and how Apple intends to use it — or not — are important questions that need to be explored."

The pair of data scientists have collaborated on a number of data visualisations, including a [map of radiation levels in Japan for The Guardian](#). They are developing a [Data Science Toolkit](#) for dealing with location data.

Davies said that the discovery of the file indicated that Apple had failed to take users' privacy seriously.

Apple can legitimately claim that it has permission to collect the data: near the end of the 15,200-word [terms and conditions for its iTunes program](#), used to synchronise with iPhones, iPods and iPads, is an 86-word paragraph about "location-based services".

It says that "Apple and our partners and licensees may collect, use, and share precise location data, including the real-time geographic location of your Apple computer or device. This location data is collected anonymously in a form that does not personally identify you and is used by Apple and our partners and licensees to provide and improve location-based products and services. For example, we may share geographic location with application providers when you opt in to their location services."

Privacy invasions via technology

April 2011: iPhone location

British researchers on Wednesday revealed that iPhones (and 3G-enabled iPads) keep track of where you go, including timestamps, on a file that is backed up on your computer and shifted onto any new iPhone or iPad you get. Apple hasn't said why the file is created or whether the tracking can be prevented.

October 2010: US Transportation Security Agency's X-ray scanners

The "porno scanners" (as they quickly became known) offered a clothes-free vision of people passing through the backscatter machines (whose level of X-ray exposure was also questioned). People who objected to going through those were obliged to go through remarkably intimate examinations — none of which endeared the TSA to air travellers.

April 2010: Google captures Wi-Fi data

In a series of increasingly embarrassed blogposts over the course of April, May and June, Google admitted that while its cars were driving around to capture its (already slightly controversial) Street View pictures of locations around the world, it had also captured Wi-Fi network names — and data from the open ones, potentially including passwords and usernames. The dispute over whether Google should delete the data, and whether it had broken the law in various countries, rumbled on for months.

December 2009: Eric Schmidt

In a speech, Google's then-chief executive Eric Schmidt suggested that: "If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place. If you really need that kind of privacy, the reality is that search engines — including Google — do retain this information for some time and it's important, for example, that we are all subject in the United States to the Patriot Act and it is possible that all that information could be made available to the authorities."

His words provoked an outcry from privacy rights campaigners, who pointed out that privacy is a right, and that it protects every citizen from abuses by those in power.

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April 27, 2011

Apple Q&A on Location Data

Apple would like to respond to the questions we have recently received about the gathering and use of location information by our devices.

1. Why is Apple tracking the location of my iPhone?

Apple is not tracking the location of your iPhone. Apple has never done so and has no plans to ever do so.

2. Then why is everyone so concerned about this?

Providing mobile users with fast and accurate location information while preserving their security and privacy has raised some very complex technical issues which are hard to communicate in a soundbite. Users are confused, partly because the creators of this new technology (including Apple) have not provided enough education about these issues to date.

3. Why is my iPhone logging my location?

The iPhone is not logging your location. Rather, it's maintaining a database of Wi-Fi hotspots and cell towers around your current location, some of which may be located more than one hundred miles away from your iPhone, to help your iPhone rapidly and accurately calculate its location when requested. Calculating a phone's location using just GPS satellite data can take up to several minutes. iPhone can reduce this time to just a few seconds by using Wi-Fi hotspot and cell tower data to quickly find GPS satellites, and even triangulate its location using just Wi-Fi hotspot and cell tower data when GPS is not available (such as indoors or in basements). These calculations are performed live on the iPhone using a crowd-sourced database of Wi-Fi hotspot and cell tower data that is generated by tens of millions of iPhones sending the geo-tagged locations of nearby Wi-Fi hotspots and cell towers in an anonymous and encrypted form to Apple.

4. Is this crowd-sourced database stored on the iPhone?

The entire crowd-sourced database is too big to store on an iPhone, so we download an appropriate subset (cache) onto each iPhone. This cache is protected but not encrypted, and is backed up in iTunes whenever you back up your iPhone. The backup is encrypted or not, depending on the user settings in iTunes. The location data that researchers are seeing on the iPhone is not the past or present location of the iPhone, but rather the locations of Wi-Fi hotspots and cell towers surrounding the iPhone's location, which can be more than one hundred miles away from the iPhone. We plan to cease backing up this cache in a software update coming soon (see Software Update section below).

5. Can Apple locate me based on my geo-tagged Wi-Fi hotspot and cell tower data?

No. This data is sent to Apple in an anonymous and encrypted form. Apple cannot identify the source of this data.

6. People have identified up to a year's worth of location data being stored on the iPhone. Why does my iPhone need so much data in order to assist it in finding my location today?

This data is not the iPhone's location data—it is a subset (cache) of the crowd-sourced Wi-Fi hotspot and cell tower database which is downloaded from Apple into the iPhone to assist the iPhone in rapidly and accurately calculating location. The reason the iPhone stores so much data is a bug we uncovered and plan to fix shortly (see Software Update section below). We don't think the iPhone needs to store more than seven days of this data.

7. When I turn off Location Services, why does my iPhone sometimes continue updating its Wi-Fi and cell tower data from Apple's crowd-sourced database?

It shouldn't. This is a bug, which we plan to fix shortly (see Software Update section below).

8. What other location data is Apple collecting from the iPhone besides crowd-sourced Wi-Fi hotspot and cell tower data?

Apple is now collecting anonymous traffic data to build a crowd-sourced traffic database with the goal of providing iPhone users an improved traffic service in the next couple of years.

9. Does Apple currently provide any data collected from iPhones to third parties?

We provide anonymous crash logs from users that have opted in to third-party developers to help them debug their apps. Our iAds advertising system can use location as a factor in targeting ads. Location is not shared with any third party or ad unless the user explicitly approves giving the current location to the current ad (for example, to request the ad locate the Target store nearest them).

10. Does Apple believe that personal information security and privacy are important?

Yes, we strongly do. For example, iPhone was the first to ask users to give their permission for each and every app that wanted to use location. Apple will continue to be one of the leaders in strengthening personal information security and privacy.

Software Update

Sometime in the next few weeks Apple will release a free iOS software update that:

- reduces the size of the crowd-sourced Wi-Fi hotspot and cell tower database cached on the iPhone,
- ceases backing up this cache, and
- deletes this cache entirely when Location Services is turned off.

In the next major iOS software release the cache will also be encrypted on the iPhone.

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