Analysis of mid-market on-line computer dating websites in the UK.

A study of Encounters and Telegraph Dating websites, operated by Times Newspapers and Telegraph group newspapers in the UK.

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Comments would be welcome, especially from people who have used internet dating sites. Do you broadly agree with the conclusions of this study? Please send a link to this paper to any of your contacts who might be interested.

If you work for a magazine or newspaper – please consider if you might be interested in publishing an article based on this study.

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Introduction:

There has been an explosion in availability and use of on-line dating in the UK during the last decade. However, there have been few in depth studies of its effectiveness for different age groups.

This paper analyses the realised effectiveness of two 'mid- market' computer dating sites in the UK and primarily for the age range 40 to 60. Data has been extracted on geographical distribution of profiles, likely response rates and other factors. It is shown that many existing dating sites are probably only viable for people living in the most densely populated areas of the UK.

The analysis resulted from a five year intermittent study of a few websites, primarily Encounters (operated by Times newspapers) and Kindred Spirits (now called Telegraph Dating). Some additional statistics and interpretation are included as a result of study of a few other sites. The websites are:

www.dating.telegraph.co.uk and www.encountersdating.co.uk

During this period, two questions kept nagging the author. A couple of friends had 'found each other' via a dating website. Other friends had found various sites 'useless' and had given up using them. There are similar warnings on the internet. How could such a range of experiences be explained and quantified?

The key questions seemed to be as follows:

> For any given type, sex and age of person, and in a given locality, assuming that none of the existing profiles met all expectations, how then to calculate the likelihood of highly suitable 'matches' within all the new members joining any given website within a given time period?

> Also, what chance would there be of one or more of these new members proving suitable as a long partner, assuming that this was desired?

The methodology adopted here involves estimating population distributions and bias factors for socioeconomic areas, and applying various 'filters' for basic match parameters such as age, wealth, location, etc.

There may be easier methods of answering both these and related questions. Readers are invited to produce their own calculation methodologies - and to assess whether they produce similar conclusions.

All data that are available only to subscribers (paying members) were collected utilising the 'free' 3 day or 7 day trials offered from time to time by several websites. Spread over five years, these 'free' periods enabled hundreds of paying subscribers to be contacted, utilising several profiles generated by the author.

Amongst the 'secondary' conclusions there is the suggestion that overall there has been an increase in the number of members registered over a period of almost two years (which does not necessarily equate to an increase in the number of active users) but that for country areas, where the sites are virtually useless, there has been a decrease – and maybe a marked decrease in the number of active users.

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Synopsis.

The realised effectiveness of two 'mid- market' online computer dating sites in the UK has been analysed. Data has been extracted on geographical distribution of profiles, likely response rates and other factors. It is suggested that many existing dating sites are probably only viable for people living in the most densely populated areas of the UK.

It is argued that the industry is inefficient in delivering a service to some types of subscribers owing in part to profiles being spread across a wide range of often unconnected websites and with any one site having typically less than 1% market penetration. It is shown that whilst dating websites may claim to have 80,000 to 90,000 members, the number that are both active and able to contact other members may be less than 10% of the headline figures.

Some of the problems experienced by users are outlined. New charging structures such as 'pay-as-you-go' are proposed which, together with use of simplified but equally effective matching models, should enable a more cost efficient service to be delivered to a much increased number of users. It is argued that present day sites are characterised by dishonest presentation of data, restrictive fee structures and models for matching people to one another that are both overly complex and largely useless.

Despite the dating industry turning over hundreds of millions of pounds per year in the UK, it is estimated that it may give only a 1:10,000 chance of a lasting relationship between any two subscribers. Furthermore, because of the low rate at which new subscribers join these sites, it is estimated that the chances of a new member being a successful 'match' in terms of a long term relationship can be absurdly small – maybe once every decade in rural areas.

There is a serious mismatch between some of the results presented here and some of the upbeat predictions and statistics used by the industry itself. Possible reasons for this are outlined.

Despite being an 'internet only' industry that might be thought to be at the mercy of online forums and censure, online dating seems to have developed almost unchallenged into a billion dollar worldwide enterprise based in part on false promises allied to misrepresentation of the size of the genuine online singles market.

As currently structured, much the industry seems centred upon charging a small number of paying users a substantial amount of money to view what are predominantly 'dead' and/or duplicated profiles.

Most of the data presented here, together with quotes from dating website terms and conditions, was obtained during 2011 and 2012. A little data derives from 2007 to 2010.

It is argued that the whole sector could also ultimately become more profitable because of the much larger number of people who might become subscribing (paying) users, once effectiveness had become both proven and widely recognised and costs to users substantially reduced.

It is suggested that the core methodology presented here be extended and used with a larger number of data sets in order more reliably to assess the effectiveness of many other dating websites and thereby, the entire industry.

It is also suggested that a parallel study could be undertaken of the 'upmarket' introduction agencies who offer interviews and a personal date selection service. Similarly, the newer 'social networking' sites such as Zoosk who use 'apps' and link to facebook and smart phone technology could be investigated.

Historical perspective.

My interest in dating websites started 10 or more years ago when I was first learning about the internet. Various estimates at the time gave upwards of 50% of web traffic as sex related. This was mainly pornography (porn) and to a smaller extent dating. Amongst the other early 'popular' uses were the linked activities of tracing ancestry and finding out about other people – neighbourhood snooping, searching for criminals living locally, etc and especially in the USA where so much data is freely available. Finding out about other people seems to be a powerful human instinct.

Conventional UK 'High Street' businesses were slower than the sex industry to utilise the potential of the internet: it was 5 to 10 years before most had a substantial website that including online purchasing. As of 2012, internet shopping in the UK was still growing strongly year on year . These new business models have one factor in common with the long established Argos model, where lower business rates (a type of property tax in the UK) and much lower losses via 'shoplifting' (theft) have been

factors in their success. Other changes have been a dramatic fall in use of letter post but a rise in parcel deliveries, both by Royal Mail and courier services – the latter benefitting from comparison or 'supersites' to aid user friendliness.

Internet banking is also nowadays almost universal and is fast displacing 'over the counter' services for bill payment and money transfers. In the early days of the internet only the new wave of internet banks (such as Egg) had much of a presence. Large established banks were again slower to react. In terms of market share, some upstart banks such as Egg effectively vanished almost as fast as they came to prominence.

In contrast, the internet 'sex' market was both quick to develop and has probably been saturated for years. Dating is nowadays dominated by several large companies including Meetic and Whitelabeldating who provide the platforms for anyone to start their own niche online dating business. The ready availability of these platforms is one reason why there are so many dating sites. An article published in 2004 suggested the industry already had an annual turnover of tens of millions of pounds in the UK:

http://www.independent.co.uk/money/spend-save/the-price-of-finding-mr-right-6170544.html

Statistics for Meetic are given on Wikipedia

http://en.wikipedia.org/wiki/Meetic

and its battle for market share with rival match.com is summarized here:

http://news.bbc.co.uk/1/hi/business/6291688.stm

As well as the many sites using one of the 'standard' hosting platforms, there are also many independent and 'niche' players such as the 'sugar daddy' sites. These were originally centred on the USA but nowadays there are dozens of them. Porn continues to be huge market but nowadays being centred apparently as much on video streaming services to smart phones (many used by children) as to home PCs – and with even sites such as thehun.net being dominated by commercial traffic – whereas a decade ago it was apparently mainly amateur photographs and webcam content.

The huge expansion of internet dating has apparently deflected interest from straightforward porn sites – leading (it has been claimed) to reduced profits for leading pornographers. As with internet dating however, revenue per site may have fallen simply because of the number of new sites entering an already saturated market.

A key development of the internet in the last decade has been the enormous increase in the power and user friendliness of search engines such as Google. It is now possible to home in on any aspect of even an obscure subject – and Google will probably know what you want even before you have finished typing in the search terms.

In contrast, dating websites seem stuck in the digital dark ages. People who are determined to use on-line dating may have no option but to spend literally days, weeks or years searching dozens of unconnected sites for someone with whom they can 'click'. Even to contact one person they may need a subscription costing tens or hundreds of pounds.

UK dating sites: reality or wishful thinking?

In the UK there are a dozen or more 'major' dating sites the best known of which are maybe Dateline (which started in business about 40 years ago) and match.com and other, similar sites centred more on the 'young adult' market. There are several catering for more mature and 'respectable' clients. Of these, Encounters and Kindred Spirits, run via The Times and The Telegraph newspapers are two of the best known with Sarah Beeny's mysinglefriend.com having a novel approach (and quite a young client base). It is (of course) quite easy using a few disposable email addresses to represent oneself on the mysinglefriend.com site and with no 'friend' being involved. Little on the internet should ever be taken at face value, especially if it is in any way connected with pornography or dating websites!

Encounters and Telegraph Dating are linked sites comprising often the same people with many profiles copied directly one to the other. The Classic FM site also has some profiles in common – although people who created (for example) a profile on Classic FM sometimes have no idea it appears elsewhere. However, the website owners probably don't mind if you pay twice or even three times via multiple subscriptions.

The headline text on the Encounters website reads as follows:

"It's FREE to create your profile and start searching among our 82,000 profiles today.

We value your safety, so we check all profiles and photos to ensure they're genuine. By using Encounters Dating online you can relax and enjoy getting to know people in a safe and secure environment.

Encounters members are intelligent, classy, educated, happy and humorous. If you think it's about time you met someone special, create your free profile now."

There is one false statement in the above, and one misleading one. Much internet advertising was not until recently under the remit of the Advertising Standards Authority. However as of March 2011 advertisers' own marketing messages on their own websites were included within a much expanded ASA brief.

The false statement is that all profiles are checked to ensure they are genuine. There is no checking, either of names, dates of birth, photos, or anything else until you subscribe, when of course they are pleased to confirm only your credit card details. This remains the case even when a free 'trial' subscription of a few days is offered: this enables contact to be made with others subscribers and maybe utilising a wholly fictitious profile. Every statement in the profiles can be false, and the only check on photos is that they are of an acceptable content and quality, not that they are either of the person who placed the profile or contemporary. I have created profiles of women (purely for research purposes) and utilising photos downloaded via Google Images or Facebook – there are thousands to choose from, ranging from slim would-be glamour models to the morbidly obese. The 'terms and conditions' of the website contains this statement:

The Company does not verify the accuracy or truth of any information published by Members. Be careful in dealing with other Members.

Some sites do not even require a credit card for payment – in case you don't want the details to appear on a joint statement. Instead, you can pay via mobile phone. Dateline has a curious approach to false details – you cannot change your selected date of birth (age) as many times as you wish

online – but you can phone Customer Services who will be pleased to do it for you (no questions asked!).

The linked Telegraph website makes similar claims:

> "Search over 90,000 profiles. Safe and secure - all dating profiles and photos are checked."

In reality the only checks made are that your profile divulges neither your contact details nor your subscription status. It is confirmed in the 'terms and conditions' that profiles may appear on more than one site:

> "Member profiles from this site may also be visible (where applicable) on other network sites operated by the Company (Telecom Express Ltd.). This substantially increases the reach of your profile and the chances of finding a successful match."

Whilst computer use is generally associated with younger people, it has been claimed that the prime users of internet dating sites are over 55 years old – which may reflect the less ready availability of casual liaisons in this age group. This assertion is not supported for the sites studied here, where most profiles include a claimed age between 40 and 60. There are more men than women in both the 18 to 30 and 70 to 100 range. In the 45 to 55 range however there may be typically three times as many women as men.

The entire industry appears to be characterised by gross exaggeration as to number of users, as opposed to the undoubtedly large number of people who have created accounts (often for free), dabbled for a while and left (either disappointed or mated up for a while), often without even bothering to delete their profile(s).

The true size of the gene pool.

The misleading item of information on the Encounters home page is that there are 82,000 profiles on their website – with the implication that you have this much choice – maybe 40,000 men and a similar number of women. In reality the ratio of men to women on this site seems to be around 30/70 (about twice as many women as men, at least in some areas of the UK and in some age ranges) and the number of active members is far lower – and for two reasons. First, half to two thirds of the profiles are

'obsolete' with the people who created them not having logged on for many months or years. Second, many of the 'active' profiles on Encounters are not subscribers – so even if you choose to contact them, they will not be able to reply.

A preponderance of 'dead' profiles is a factor on many if not most dating websites. In some centred on the youth market, over 80% of profiles appear to be 'dead', these having perhaps been created maybe 'for a laugh' and often via smart-phone and then forgotten about almost the next day. Most of these sites do of course claim a huge number of attractive members – all of whom are longing to meet you.

An additional problem is that many of the profiles do not have photos – so unless the person lives locally and/or has a particularly interesting profile, the chances are that they will be effectively excluded. This is particularly true for profiles of women – because many men judge so much by appearances, at least as an initial filter. Another factor is the number of completely false profiles, posted by 'cam girls' – who apparently try to lure people into paying for webcam footage, or by organised criminals (so called scammers) who target rich and lonely people. After striking up a friendship, a request for money is made, with some wealthy (and presumably lonely) women losing large sums. The fraction of fake profiles generated by scammers has been claimed to be quite high on some websites but seems small on Encounters and similar sites.

How many fake profiles and misleading claims?

There are almost as many statistics for the dating industry worldwide as there are websites – and new ones are appearing every day. Here are some snapshot statistics from a website that claims to review the entire industry.

> ***There are either 8 million or 15 million singles in the UK.*** The confusion here is that 8 million is close to the number of single person households, and 15 million may be the number of single people – but is 'single' defined simply as unmarried or not in a relationship and available for one? It is further claimed that a third of singles (5 million) are looking for love online.

In 2008 singles in the UK went on 24 million first dates with 69% being arranged via online dating and social networks. Given that social networking is free of charge, maybe a large percentage were arranged this way?

58% of Europeans have been victims of online dating dishonesty (howsoever defined!) – Italians at 72%, Germans at 58%, French and British at 58% and Dutch at 48%. Given the range of possible answers to vague questions about 'dishonesty' such statistics convey little information.

More than 5 million UK singles use dating websites and 65% of users are aged 35 and older, and the gender split is 50:50. Here there are two questionable statistics – whilst 5 million singles may have dabbled in online dating how many have tried it once and left disappointed? How many have paid to become 'subscribing members' and so able to contact other members? In some actual samples the gender split is far from 50:50.

The average internet relationship lasts 7 months. As long as that?

Every month 7 million UK singles visit a dating website. But is this 7 million different singles or 7 million visits?

In the UK singles aged 55 and older are the most active online daters. This is certainly not true for some major sites, including those studied here. There are however several dating sites devoted to the over 50s.

On average, 8.2 dates arranged online result in 2.1 long term relationships (presumably long term is longer than 7 months?).

Ten minutes research on the internet can yield many stories of people having experienced fake profiles and of women being used to lure men into subscribing on different websites. Certainly, even genuine profiles include many 'lies' – usually related to age and to the age of photographs or to wealth. Some women (and men) do tend to think of themselves as they were 20 years ago and to use photographs from that era. Some sites try to assure subscribers that photos are genuine by highlighting those taken and submitted via a webcam, which presumably can also be faked.

Here is one internet post from the Guardian website. The topic of discussion was an article on internet dating using the large match.com website.

> "Surprised she never mentioned the 99% of fake profiles on these sites! Internet dating is in reality populated by either fat, sweaty Russians pretending to be 24 year old blonde bimbos looking for a sugar daddy or African scam artists doing their best to extract cash out of you!
>
> And when you do 'connect' with a flesh and blood woman the chances are they use a photo which to be honest bares no resemblance to how they currently look...this probably says more about me but one woman I met used a photo which did make her look like Lara Croft. Imagine my disappointment when Bilbo Baggins turned up!"

In 'chatting' online to women over the years, many have horror stories of dating, meeting people who were nothing like they said they were (etc). Others relate the experiences of friends – which in turn have made them cautious. In contrast, serious violence seems to be rare – but that is no reason not to be careful.

Deliberate and organised fake profiles are probably more centred on the 'youth market' sites but do seem to be extensive, and with probably some overlap between the people who run porn sites and those who operate dating websites. However near to 100% fake profiles may exist on some sites.

As for narrative content, it is perhaps not surprising that so many profiles are similar – not only do most people have so little ability to write even a short essay but the need to do so has apparently been removed by the sale of 'apps' for smart phones that will write a profile for you once you have ticked a few boxes in a multiple choice questionnaire and chosen from a few stock phrases. Quite a few women have told me how original (sometimes refreshingly original!) my profiles have been – they were probably amongst the few that had been written starting with a blank canvas, allied perhaps to a degree of cynicism.

One 'survey' of online dating (itself conducted on-line and maybe therefore biased towards people who are regular on-line users) was conducted by yougov on behalf of match.com and is reported on the match.com website and as 'marketing' material. The often quoted statistic of '1 in 5 relationships now start online' appears to derive from this survey.

> Research conducted by YouGov found match.com is responsible for more relationships and more marriages than any other online dating site. All data was collected using an online survey and respondents were members of the YouGov panel.

> The 20,000 strong research sample for this study was sampled and weighted to a UK nationally representative 18+ adult profile. Fieldwork was conducted between the 29th November to the 6th December 2011 and it was a blind survey eg. match.com was not named as the sponsor.

> From the sample of 20,000, 2371 (2192 unweighted) who are/ have used an online dating site in the last 5 years and 1786 (1568 unweighted) married in the last 5 years were found. Questions asked of both groups included: "How many relationships of 3 months or more did you have via xxx site?" Respondents were asked this question of every site they have ever been a member of.

> Those who stated they had married in the last 5 years and met their partner on a dating site were asked; "Which dating site did you meet your partner/spouse on?"

> Those who had been in a relationship for 5 years or less 3,384 (2970 unweighted) were asked; 'Did you meet your current partner online?' 21% replied yes. (1 in 5 relationships start online).

It may of course be questioned just how truthful were the answers to these questions. The phrasing of the questions may be significant – asking about a relationship of five years or less would include (for the youth market especially) all the casual sex of the past month or year. Occasionally, this may apply (or be claimed to apply) for older people also:

http://news.bbc.co.uk/1/hi/wales/4004783.stm

The numbers may be entirely unrepresentative of the number of serious relationship started online – as opposed to casual liaisons. For the number of marriages in the last five years (given as 1786) no data is given for the number who met online – maybe less than 1%? Also it may be questioned whether the people who elected to take the survey were representative of the whole population. It appears that only about 1 in 10 people in the survey had used on-line dating in the last 5 years – and yet it is likely both that a majority of these remained non-subscribers and that many were members only for a brief trial period. If these factors are included, the data (such as it is) may align broadly with that given in the present article.

Sugar Daddy sites – automated blonde bimbos?

I once joined a 'meeting millionaires' type of website, based in the USA. These are sometimes called 'sugar daddy' sites – where rich men will offer to 'keep' an attractive younger woman (sometimes a student in financial trouble) in return for her 'company'. You can choose how much money per month you need to live the life of a 'kept woman' – although it is not put in such stark terms. It is the amount you would like to receive by way of regular 'gifts' in return for your 'company'.

Needless to say, there was no check as to who I was or where I lived. There was a means of 'validating' a profile for location, wealth etc but few members used it. Amazingly however, I managed to join using a user name that was my own website – complete with .co.uk My screen name was SeeRedcouk.

You would imagine therefore that anyone with half a brain would recognise this as a possible way to contact me directly, if they really wished to do so. Yet over three years I received not a single direct contact. I did of course receive hundreds of messages from supremely attractive leggy women in the USA, often aged 35 to 45 and who were (according to the 'circular' messages they were probably sending to hundreds of other men) a possible match. Curiously, these seem to arrive in batches – a possible sign of an automated process.

Of course, none of these possibly non-existent women had actually read my (fake) profile or probably that of the many other men to whom they had written. The whole exercise seemed to be little more than an endless

stream of wholly insincere and perhaps machine-generated messages sent to a wide selection of supposedly rich men.

Yet the fees for any real people were hundreds of dollars to join (more for 'exclusive' membership rights) and the site probably generated millions of dollars for its creator. 'Hollywood' style parties were also organised from time to time, if you happened to live in California or were prepared to travel. And of course there was an additional fee to attend.

It is impossible accurately to estimate the percentage of genuine entries but that is maybe not the most relevant observation. Universally, these websites are selling a commodity that has been in demand throughout the ages, and long before the internet was invented.

The marketing of hope.

Hope is allied to desperation and often to loneliness. People will willingly buy cures for all manner of diseases, lotions for £100 or more to remove wrinkles, pills to prolong life (or active life), clothes and jewellery that they believe will make them look more attractive and (in poverty stricken Africa) Coca Cola and similar useless drinks instead of food.

Always the commodity on sale is essentially the same – hope. Hope of a cure, the promise of improved appearance or attractiveness, hope that someday they might join the affluent Western way of life even if they are stuck in the depths of poverty and disease in a 'third world' slum. Of course, the product itself doesn't need to work, it is the hope that is perceived to be encapsulated within it that is being marketed.

The pedalling of hope is perhaps the central feature of dating websites too. There are several recurring themes amidst the profiles written by women. On the lower class sites, often it is the search for Mr Right, presumably after experience with so many Mr Wrongs. On other sites, a large number of 'upper class' or 'professional' and quite attractive women seem to have become divorced after a life spent travelling the world, living the high life (with photos from every continent to prove it) and they simply wish for a replacement man with whom to continue their hedonistic adventures.

'Time to live again' seems to be a popular idea, and the number of women who love nothing more than snuggling down in front of a log fire watching a

DVD is legion – maybe even exceeding the number of open fires in the UK? There seem to be more of these profiles on Encounters than on Telegraph Dating – but I've not looked at a large enough sample to draw firm conclusions.

Other women even ridicule these stereotypical profiles on their own profiles. Similarly, a large number of profiles talk of being comfortable in either wellies or a LBD (little black dress). Most women could be – unless perhaps there was something medically wrong with them – so what is the point in littering a profile with such references? Yet it is the sheer self-centred attitude of so many women that shines through. Rarely is there any reference to how they contribute to the good of the world or to any voluntary work they undertake. Against this, many claim to have raised well adjusted children by themselves and are now seeking some 'me time' and a well deserved 'fresh start' after divorce.

However, so often their existence seems centred around how many countries they have visited, a huge appetite for shopping and dining out at quality restaurants and allied to theatre, opera and dinner parties whenever they can find the time. Almost as an aside, they mention much skiing, tennis, scuba diving and golf they managed to pack into the last year.

In only a very few profiles is there any mention of the reasons for divorce, maybe that a man had tired of what is perhaps a self centred and vain woman whose early life was dominated probably by getting everything she wanted via her good looks. Yet the reasons for previous 'failure' would surely be important in selecting a possible future partner. One or two honest examples stand out: "After 27 years with the same man I discovered I didn't have exclusive rights" – which tells you she was not maybe to blame but also that she does not have a forgiving nature. "Very family oriented and I didn't expect to be starting again at my time of life" – again some honesty and originality come across.

At the other end of the social scale (on Dateline and match.com for example) there are probably tens of thousands of profiles from women who are single mothers, on a limited income, and seeking desperately for a way out to a better life (and maybe out of the sink estate on which they live) 'Genuine man wanted' is seen so often – presumably all the rest have

proven to be either hopeless, dishonest or worse. Once you have broadband installed, the internet provides a cost-free way of spending hours every day meeting people, even if it is only online. It is much cheaper than going out, and you don't need a babysitter.

But as they say, where there is life (and the internet) there is hope.

A methodology for analysing dating websites.

On the Encounters and Kindred Spirits (Telegraph) websites, it is easy to estimate the (claimed) age distribution of members. It is also straightforward to estimate how many profiles are 'dead' but more difficult to estimate how many have been active for how many years.

Some examples of datasets follow: those from the Encounters site were obtained primarily in 2011/2012 and from the Telegraph site in mid and end 2012. Where no clear distinction is made, the data is from the Encounters site – that from the Telegraph was used primarily for comparison purposes and so less was collected.

Using the search facilities on the site, samples can be obtained by many methods but truly random samples – where there is no bias for age, date of profile creation, date of last login, etc, take a little care. Choosing parts of user names is a useful illustration – for example all people whose screen names contain the letters 'hoe' (thus Prettyshoes51 would be found, as would Phoebus, but not Tutu Toes or Twinklyfeet). If an uncommon selection of letters or numbers is chosen then there may be fewer results than those permitted to be returned by the search (this is limited to 100 for logged out searches). If 95 are returned then these may possibly be a valid sample of all profiles for the purposes of estimating sex distribution, geographical location and age both of members and their profiles (assessed by the last logged on date).

However, if you chose 'pretty' or 'sue' as the search letters, you might expect more women than men to be returned. Using 'sunshine' as a search word returns a vast number of profiles – and over 90% of them are women. In contrast 'sadness' returns none at all. Using 'sad' returns a useful 60 profiles (65 from the Telegraph). It is not a word used as such, but merely a sequence of letters commonly found in user names. Even use of 'hoe' may

introduce some bias, because more women than men may use 'shoes' in their usernames.

The 60 profiles with a username containing 'sad' can be analysed as a 'snapshot' of the site as of Feb 2012: the first surprise is the greater number of men – 36 compared with 24 women. However some of the excess of men can be explained by the number using 'crusader' as a part of their username, and a few such as 'sad old git' and 'sado'. However, these are insufficient to explain the M/F mix in this sample as opposed to all others.

On the Telegraph site the M/F ratio was much the same – 37 men and 28 women.

The startling observation (and paralleled in other samples not discussed here) is that so many of the profiles were 'dead', having been created, used for a few days or weeks (or maybe longer) and then abandoned but not deleted.

The Encounters data were separated by 'last date logged in' as follows,

2005	1	2008	10	Jan -June 2011	7
2006	3	2009	9	July – Dec 2011	12
2007	4	2010	9	2012	5

Out of the 60 profiles where the user name contains 'sad', 36 had not been accessed for over a year (denoted as 2005 to 2010 above) and including 27 not accessed since the end of 2009 – these might be termed 'dead and buried'. A further 7 had not been accessed since the end of June 2011 and a further 12 not since the end of 2011, despite Valentine's day having occurred in February 2012. Therefore if the 'live' profiles are defined as those accessed during the last six weeks, they represent only 5/60 or 8.3% of the total.

The corresponding Telegraph data were separated by 'last date logged in' as follows, and a similar picture emerged:

2005	1	2008	10	2011	16
2006	2	2009	8	Jan- Mar 2012	5
2007	4	2010	9	April + May '12 (6 wks)	10

It may be noted here (by way of a topic for further study) that there may be a correlation between the high percentage of men in this sample and the low percentage of recent log-ons. There is some evidence that, on average, men may give up on internet dating before women do.

Searching for usernames containing 'def' produced only 26 results with a more usual mix of 16 women and 10 men (60% women). Out of the total of 26, 5 had a 2012 log-in date. On the Telegraph site there were 28 members with 9 men and 19 women. A total of 4 out of 28 had logged on in the last six weeks.

Usernames containing 'from' returned a useful 57 matches. Of these, 31 were women (54%). The last logged-in dates were as follows and the date distribution was quite different, with 30% having logged on in 2012.

2005	0	2008	3	Jan -June 2011	3
2006	2	2009	6	July – Dec 2011	8
2007	3	2010	15	2012	17

Combining the two larger data sets yields the following, for a combined sample of 117 profiles chosen (it is to be hoped) without too much unseen bias. The low numbers of 'dead and buried' profiles from the early years probably reflect the much smaller size of the Encounters website during its initial growth phase. (The Telegraph site claimed 31,000 members in 2008, compared with 90,000 in 2012). There were 22 profiles (19%) active in 2012.

2005	1	2008	13	Jan -June 2011	10

2006	5	2009	15	July – Dec 2011	20
2007	7	2010	24	2012	22

The equivalent search base on 'from' in user names on the Telegraph site yielded 66 members, 39 of whom were women (59%).

The distribution of login dates was again much the same but with a higher percentage of profiles 'active' in the last period – 23/66 = 35%

2005	0	2008	2	2011	8
2006	1	2009	6	Jan – Mar 2012	9
2007	4	2010	13	April + May '12 (6 wks)	23

Adding a further data set for the letters 'water' the total was 65 profiles with 38 of these women (58%). The last logged-in dates were as follows.

2005	0	2008	4	Jan -June 2011	4
2006	1	2009	13	July – Dec 2011	10
2007	4	2010	8	2012	21

The equivalent data from the Telegraph site was a total of 80 members including 45 women (56%) and with login dates as shown.

2005	0	2008	5	2011	14
2006	2	2009	10	Jan – Mar 2012	6
2007	5	2010	9	April + May '12 (6 wks)	29

Combining the three larger datasets from Encounters (60, 57 and 65 = 182 profiles) yielded the following. Of the 182, 93 were women – 51%. This result is quite different from that obtained from both geographic and age

specific samples and is skewed to some extent by the first of the three data sets which had a remarkably high number of men, although not all the reasons for this have been explained. Overall, geographic samples may give the more reliable result, since there can be bias with chosen parts of usernames.

However, the Telegraph dating website claims that it has 52% women and 48% men overall, so maybe it is some of the local geographic distributions that are far from representative. If that is true, there must be a very marked variation of M/F ratios in different postcode areas (and/or age groups) and indeed, this has been shown to be the case with some 'country' areas having a markedly higher percentage of female members. These will not skew the overall site percentages by very much – because so many of the profiles are centred upon the big cities.

The combined dataset from Encounters is as follows.

2005	1	2008	17	Jan -June 2011	14
2006	6	2009	28	July – Dec 2011	30
2007	11	2010	32	2012	43

It is interesting (and maybe easily explained) why 30 profiles were terminated in the latter half of 2011 compared to only 14 in the earlier part of the year. This pattern is seen in the subset data also. Valentine's day always produces a rush of new profiles and activity on the site – with maybe few people giving up on the whole idea until a few months later. This would explain the peak in 'last logged in' data between July and December. Overall, out of the 182 profiles 43 were still perhaps active – or 24%. Of course, some of these may also already be 'dead' (but not yet recognised as such), just as a few of the earlier ones may come back to life!

For comparison the combined dataset of 211 from the Telegraph site is shown below with 62/211 = 29% active in the last six week period:

2005	1	2008	17	2011	38

2006	5	2009	24	Jan – Mar 2012	20
2007	13	2010	31	April + May '12 (6 wks)	62

As always, some care is needed when dealing with datasets, and the results of many similar searches should be amalgamated. Using numbers as search terms can skew the age distribution of members – because some people aged 51 include 51 in their screen name, or they include their year of birth. Doing a radius search around a postcode should not be used to estimate age distributions for the whole site – because some postcodes are dominated by either young or retired people. Using people whose stated birthday is the day when data is collected is unreliable – most people would enter a false date anyway (even for security purposes) and dates that easily come to mind such as 1 April or 1 January or Christmas day may be chosen more than others.

However, if the number of profiles returned by the search exceeds the allowed display limit then care is also needed but for different reasons – because the system returns a biased sample with people who have logged on more recently being higher up the list of all those potentially available for selection – so such a sample of 100 should not be used for estimating how many profiles are currently active as opposed to those that are dead. If the number potentially available for return was (say) 487 then the last 115 of these might contain all the profiles that had been inactive for 3 or more years, with of course none of them being returned in the first 100. However, there would probably be no serious error if the data was used to estimate the age distribution of members, but this can be done more directly.

Using these techniques, it is estimated that the sex mix is about 70:30 (70% of profiles are of women seeking men) but in some samples closer to 85:15. It is also possible to estimate the number of profiles that have been active in the last year and with a smaller fraction being active in the last month. Men seeking men (etc) have not been estimated reliably as a part of this initial study but seem to be 10% or less of profiles on the mainstream dating sites. There are many niche dating sites serving the gay and lesbian population.

Many different selections can be made to estimate age distributions and these may be expected to reflect (for example) the higher population of retired people in the rural county of Devon as opposed to large city centres. Taking samples from profiles 'currently logged on' should not be use to estimate age distribution (because times of day that are free for browsing may be weakly correlated to age and/or employment) but should be more reliable for geographic profiling.

It is however easy (albeit tedious) to obtain data for the number of people of either sex of each stated age range between 18 and 100. Data from Encounters in late 2012 is shown below and to some extent explains the high F/M ratio in some other samples – there are more men than women in both very young and very old age ranges but far more women than men between approximately 40 and 55 – precisely the age range chosen for much of the sampling. The data for the young age range is easily explained – young men are seeking any woman they can lay their hands on – and often they are not too fussy how old she is. In the very old age range (70 to 100) the explanation may be that older men get lonely more easily than do women (so I am told!).

Data are given in the table below for women from the UK, resident in the UK, within 300 miles of London, with at least one public photo, and for each (claimed) age range. The total number of profiles returned was 16,004. These would contain most of the 'serious' profiles in the UK (those with at least one public photo) but most of the 16,004 would be expected to be 'dead' or non-subscribers – so the number that were both 'active users' of the site and subscribers may well be as low as 3000.

Ages	18-29	30-39	40-49	50-59	60-69	70-100
Profiles	865	2101	4311	5287	3070	370

Only snapshots of the M/F mix of profiles was obtained and for the specific (claimed) ages shown below:

Age	23	25	27	30	37	40	45	52	56	70+

Men	86	139	174	183	203	205	212	260	219	462
Women	51	84	119	146	232	319	432	628	575	370

There is a 'cross-over point' at about age 35 where there are roughly an equal number of men as women. In the age range 45 to 55 women outnumber men by 2:1 or more, a bias that is reversed only at age 70+.

Geographic spread: population density and other factors.

Amongst the obvious factors here is that there would be a strong bias towards the population centres of the south east and other large cities and, for 'upmarket' dating sites, perhaps a secondary bias towards the affluence of London and the Home Counties. Here, 'acceptable radius' is a useful concept – how far would people travel to meet a potential mate?

People living in rural Devon or in the wilds of Wales might think nothing of driving over 30 miles each way to meet a potential mate – such distances are 'par for the course' even to visit a pet shop or a major supermarket. In London, maybe 10 miles would seem more reasonable – if only because of the preconception that there should be many matches within ten miles both because of the high population density and the 'ghetto' effect seen in cities. This results in people of similar 'social standing' choosing to live together and with closely adjacent areas sometimes having a wholly different 'social mix'. In any case, driving 30 miles in rural Devon is usually a pleasant experience, whereas driving 30 miles from any central London postcode on a series of 'wild goose chases' may be exasperating.

The 'ghetto effect' is well known to the 'direct marketing' industry. Thus, postcode profiling is used extensively in deciding exactly where to deliver which type of 'junk mail' leaflets. Similarly, 'matching' of television advertising to particular programme types or channels is routine.

The Encounters system allows simple radius searching centred upon a postcode – which is very useful. However, so many physically attractive women do claim to live in Kensington and Chelsea (broadly postcodes SW3 and SW10) that it may be questioned whether they genuinely reside there or are seeking to ensnare a man from such an upmarket and affluent

area. Men may make similarly false claims as to their location, and on both Encounters and Telegraph Dating it is possible to change this as often as you wish – maybe to make yourself appear more suitable to a woman who you particularly wish to meet!

Much interesting data can be extracted – especially relating to the paucity of 'attractive' potential mates with 20 or even 50 miles if one lives in a rural area.

Dates and divorcees per square mile

It is easy enough to perform a rough check on how many 'matches' you would expect to find within various distances from home. The land area of the UK is around 94,000 square miles, but if Scotland is excluded (apart from major population centres) the total is around 70,000. England alone comprises about 50,000 square miles. This is a useful starting figure as it equates to roughly one 'active' profile per square mile on the Encounters website (excluding those dormant for over a year).

Calculating the area contained within circles of different radii from home is also straightforward: for a one mile radius the area is 3.14 square miles, for 5 miles 78, for 10 miles 314, for 20 miles 1256 and so on. Extending the distance you are prepared to travel by a factor of 10 increases the chances of finding a 'match' by a factor of 100, assuming the whole area has a uniform population density.

Other factors are also important in the rise of internet dating, quite apart from the now ubiquitous availability of the internet. There has been a large increase in the number of single person households, a trend that is a root cause of the present 'housing shortage'. Indeed the Cameron government in the UK has stated clearly that 'we have enough houses' in terms of the accommodation they offer, the problem is that so many 2 and 3 bedroom houses are now occupied on a permanent basis by single people. This has led even to calls for older single people to vacate their houses, so that young families could occupy them.

Data on single households and divorce rates, etc is given in Appendix A.

Response rates and filters.

Thus far, attention has centred upon the statistics of populations and profiles. For a man, the base figure of 82,000 profiles claimed by Encounters can be reduced to (say) 60,000 women (or 41,000 if you believe a 50:50 ratio) of which 30,000 (or 20,000) may have been active online in the recent past and maybe 10,000 (or fewer) within the last month. Applying filters for age distribution could reduce the number of potential matches to well under 3000 (depending how fussy you are and how attractive you think you are to younger and/or older women!) and applying reasonable geographic filters can either have little effect (if you are based in London and the south east) or have a dramatic effect, maybe reducing 3000 to zero for rural areas.

Then there are the filters for smoking, photos/no photos, for the obviously insane or just plain silly, for the obese, the dishonest, those in poverty and for those confessing to excessive alcohol consumption - and then for the photos and/or narratives that look distinctly unappealing. Taken together, these can easily decimate the number of possible profiles by 90%. Of course not all filters are simply multiplicative because the variables are not independent. The three primary filters are for age, distance and photogenic appeal – so it is remarkable that more attention is not paid to uploading images of reasonable quality, especially for female profiles. A voice profile can also be an important filter – yet few people upload one. This may in itself be a strong indication of the large extent of 'window shopping' on these sites as opposed to people who are seriously 'looking for someone'.

In estimating the success of any contact between members, additional 'filters' come into play – and with similarly dramatic effect. Of (say) 100 messages sent to members, many will be to non-subscribers (who cannot reply except by way of a one line standard message) and some will not be read – let alone not replied to.

Anecdotal evidence suggests that over half of 'active' profiles are non-subscribers – the profiles having been generated purely for the purposes of 'window shopping' or casual browsing. This factor alone might reduce the base figure of 82,000 down to 10,000 or even fewer – this is of course overlapped with the reduction owing to profiles being 'dead' since few people would continue to pay a monthly or annual subscription yet not even log on to read their messages for months or years. The true fraction of

members who are both subscribers and currently active on any website is a closely guarded secret.

In analysing the number of messages that are ever read, part of the psychology of some 'physically very attractive' women can be discerned. Out of typically 100 messages sent in a 3 day test period, 70 will be read and 10 to 20 will never be read. Out of these, 4 or 5 will never be read despite the recipients having logged on at a later date.

A few of the 'never read' messages are those sent to 'very attractive' women who have developed their own techniques for giving the cold shoulder to men they consider to be beneath notice. These women receive an overwhelming number of messages, especially when they are new to the site, or when they generate a replacement profile. Often, this runs into many hundreds. It is to be expected therefore that they may not have time to answer or to read many of their messages. Indeed this is confirmed by some voice messages posted on profiles – "I'd like to thank the hundreds of men who have responded in the last week and although I have not been able to answer you all personally please do accept my thanks for reading my profile" – it must be nice to feel so wanted! But at least they have the courtesy to acknowledge replies.

For these women who have 'long term' profiles, there is no similar excuse since it seems to be universally true that the response rate falls markedly once they have been on the site for a couple of months and have dropped out of the 'most popular' or top-twenty rankings. It is not possible for a woman (or man) to maintain such a position for long – the calculations are based on the numbers of men (or women) who have expressed their approval of their photos or profile in the recent past. Fame is transitory on these websites – often lasting only a few days or weeks.

Yet these favoured few women continue to log on regularly and sometimes do not open messages. When they are notified of a new message (this can be via an email message from the Encounters site), they go to the profile whilst not logged on, decide that the man is a loser/wimp/old man/not wealthy enough (etc) and then not bother even to read his message the next time they do log on (last time of log-on is data available on all profiles). In effect, these women send men a clear message – "whatever the content

of your message, it is of no interest to me – so go away". The principal reason for messages not being read is however simply that the intended recipients have not logged on.

However, of more significance in estimating 'dating potential' are the consequences from the 70 messages that are read, and (typically) 35 responded to. Many of these responses will be 'one liners'– either from non-subscribers or from subscribers who cannot be bothered to compose a dismissive reply. These replies cannot contain contact details as they have to be chosen from a drop down list. The fraction of subscribers (=full members) in any sample cannot reliably be estimated from these data. As already noted, this remains one of the unresolved parameters of many dating websites, yet it is crucial in deciding whether it is worthwhile to subscribe. Site owners go to some length to stress that it is never allowed to say in a profile if you are a subscriber. They may be acutely aware that most of the people they have on display are not really available to be contacted and maybe dated, even out of the fraction that are truly 'active' at any one time.

In summary, out of maybe 100 messages sent to people known to be 'active' on the site, 70 will be read, 35 responded to, 17 conversations commenced and 1 or 2 potential dates may result – an overall 'success rate' of 1 or 2 percent. In chatting to women on the site, such low overall success rates are typical – but few women undertake a 'crash course' of sending 100 messages inside 2 days as part of a 3 day trial subscription. In contrast, the most physically attractive and younger women living in affluent and highly populated areas may rarely be without offers of dates – and with this continuing over many years as new men join the site. For them, an annual subscription may be good value in terms of getting fed on a regular basis! Others seem content to indulge in 'chat' and teasing – sometimes this persists for a few days until they get bored and move onto the next man. Whether their stunning photographs are genuine does of course remain uncertain!

What seems generally true (and not only for the Encounters site) is that even in cases where a conversation has been struck up either via the site or via private email, few such on-line liaisons result in a physical date – and (I guess!) even fewer in sex, which at first sight might appear to be the

primary objective of the entire exercise, at least for many of the men. A recurrent complaint on some of the 'downmarket' websites such as Dateline and West Country Singles (affiliated to Dateline) and viewable via their inane 'dating diaries' is that women get wholly tired of messages from men who want 'only one thing'. They also complain regularly about men who cancel dates at the last minute or simply do not show up. Much of this seems centred on 'social class C' profiles.

My direct experience of West Country Singles was a 6 month subscription – obtained for only £5 (the most I have ever spent in this whole research exercise!). Maybe WCS needed more men at the time or maybe it was a standard 'once in a lifetime' offer to ensnare people into signing what amounts to a 'continuous credit card authority', with renewal fees of £69.95 being taken automatically after the initial six month period, if you forget to cancel! It was certainly an eye-opener as regards the low quality of the clientele.

Therefore, why do so many 90%+ of on-line chats and longer conversations fail to result in a face to face meeting? One theory is that so many people use the internet primarily to chat and are not really ever interested in a physical meeting – once they have exhausted their casual banter and in expanding upon their life of woe (or repartee of teasing) with one contact they are content to wait for the next.

Many people do seem to embark on 'chatting' as a regular daytime or evening activity – and for years on end. After returning to some sites after a year (having been given another 3 days subscription), many of the same familiar faces came up, and all having logged on in the last few days, and presumably almost every day for the past year too.

It may be noted in passing that an entirely different picture emerges for the 'young adult casual sex market', at least in the USA. Here it has been suggested that the wide availability of internet dates, almost upon demand, is making the ending of existing relationships much easier and with partners being viewed as disposable.

http://www.theatlantic.com/magazine/archive/2013/01/a-million-first-dates/309195/

Disappointment is the name of the game.

Back in the 'middle aged UK market' however, the fear of (or history of) disappointment may be a factor limiting the willingness actually to date. Indeed 'disappointment' seems to be the word above all others that encapsulates experience of face to face meetings that result from on-line conversations. People who chat on-line tend (even if they don't realise it) to imbue each and every potentially attractive man or woman with the characteristics they are seeking, and it is such a disappointment to have the dream shattered. This appears to be a very significant 'final filter'. Against this, a couple of women have insisted to me that lack of honesty in so many profiles is as much a factor as their own wishful thinking when forming an impression of men they have yet to meet.

As already noted, even talking on the phone could dispel many preconceptions, since you can tell so much about education, intelligence and attitude from a voice. A few profiles do have an associated voice message – and it is remarkable is how little care is sometimes taken in their preparation and editing. Many profiles showing a possibly cultured and 'upmarket' woman can be discarded after the first few sentences. The opposite can also apply – a profile nearly rejected on the basis of a photograph that seems not to appeal can be associated with an endearing and thoughtful voice profile. Mandatory voice profiles would be one way forward – but would lose the sites so much revenue that it will never happen. Similarly, video profiles are well within the scope of present technology – but not within the ability of individuals to produce a competent presentation, witness most of the material on youtube. These would be an even more effective filter than are voice profiles. The history of dating using video recordings apparently goes back to the 1980s – before the internet age.

However, even amateur video presentations posted on youtube could help overcome one of the severe limitations of ordinary photographs: so many profiles with multiple photos leave you wondering if they are of the same woman – let alone of the same woman at different times in her life. They just look like different people! So never rely on internet dating photos alone.

Another factor, important for older people but almost irrelevant for the youth market, is the daunting prospect of relocating even if a distant 'match' did turn out to be someone you could settle down with – or maybe thought you could. For young people who have not established themselves in properties of their own and whose friends are scattered around the country after university, moving may not be thought much of a problem. But for older people, settled in an area after one or more marriages and with a host of friends, evening activities and maybe family nearby, relocating would be a truly life changing experience, as well as an expensive one. Thus, whilst a distant 'chat' and online friendship may be OK, there may be a reality check once face to face contact is seriously contemplated. A large fraction of the middle aged women on these websites are divorced – and their finances could be further impacted by relocation.

Distance alone may be enough to limit the usefulness of dating sites primarily to the more densely populated areas – a factor already well established from 'speed dating' which in the UK seems limited to major cities and largely to the 25 to 35 age group.

Many people are also disappointed by the returns offered by any investment in online dating – both time and money. It just doesn't seem to live up to the initial (perceived) promise, but an element of that may of course have been wishful thinking.

A major factor in the disappointment felt by some older women (45+) is that they were too often over looked by men their own age who were always seeking younger women. Many women of 40 to 50 say they tire of the number of advances from men aged over 60. One frustrated woman even started the 'Plankton' blog to vent her fury: This is from the Guardian in July 2011:

> "I gave up internet dating when I realised it was only older men who were contacting me, which doesn't really interest me. I prefer men of my own age. But a lot of those men my age are only looking at women in their 20s or 30s."

> "It can be a full-time occupation when you have to really fight to meet the sort of men that are worth meeting because they are the ones refusing to look at you as a potential date. Because of its 'anything is

possible', 'sweet-shop' appeal, online dating just encourages men to cherry-pick their ideal – usually younger – mate. Which is depressing if you're a woman of a certain age."

"On dating sites men have the pick up and down the age range. They are also much more in a rush to get into a new relationship and are much less likely to give someone a second chance, which may seem callous but they are much more likely to fall in love quickly. For men, it's a case of you fulfil the criteria, let's buy the double duvet."

"Women are more cautious. It's a shame men aim for the younger age range because women of 45 and 55 are arguably much more sexually mature and able to give a lot more pleasure than, say, a woman of 25."

"I may live till I am 90, but a sort of death has already come. I am already in a wilderness – maybe [facing] my time again, over 40 years, it's possible, but with no one."

But it is not all gloom and gloom – witness niche sites such as toyboywarehouse where older women seek (and apparently find) younger men – but the lengths of any ensuing relationships are perhaps not a major selling point.

Distributions and filters applied to total available matches

At this stage it is useful to summarize the application of the analysis techniques that have been illustrated. The Encounters website was claimed to comprise 82,000 profiles.

Taking the example of a man seeking a woman, it has been shown that this initial promise may reduce to 10,000 profiles of women who have been active on the site in the last month. Filtering simply within a suitable age range can reduce this total to 3000 over the whole of the UK or down to zero for ten or even twenty miles around a rural postcode. Other filters for photogenic appeal, sanity, smoking, wealth, intelligence and other factors can easily reduce 3000 (spread over the whole UK) down to a dozen or less, and with most or all of them located hundreds of miles away in major population centres. This is one of the realities of internet dating – as is further illustrated below. But as will be explained, it doesn't have to be like this!

Match prediction and software inadequacies – rural Devon as an example.

East Devon is a largely country district (population 130,000) which has Exeter as the only nearby large city (population 120,000 with about 55,000 people between ages of 30 and 60).

With a suitable profile generated, and with the benefit of a 3 day trial subscription, the results of both 'logged on' and 'logged out' searches were compared, for the Encounters website. Undertaking a search whilst 'logged out' is broadly the same on these websites as undertaking a simple search when logged in – only basic parameters can be specified. The differences arise when only profiles with photos are requested – a logged-out search will only return profiles with a publically available photo, whereas a simple logged-in search will return also those profiles where there is a 'hidden' photo, presumably because if the person doing the search is a subscriber he may be invited to view them. In what follows, logged-out searches were often used for basic parameter searches.

When logged in, and entering a reasonable mix of criteria under 'advanced search', for example seeking a woman aged 43 to 58, a non smoker and with a photo (and other 'minor' match characteristics) yielded only one profile within 5 miles of EX14. A search within 10 miles yielded 9 profiles of which only 4 had 'recent' log-in activity (defined here as within the last two months). These data were the same on the Telegraph site (but the last period was 6 weeks not 2 months). Extending the area to a radius of 20 miles, and to include the nearby city of Exeter, yielded 84 profiles on Encounters of which 31 were currently active. Few of these women appeared to be 'attractive' based on often poor quality photos and/or narratives that demonstrated a poor and/or unoriginal use of English. On the Telegraph site there were only 24 results returned – instead of 84. This was one of the results that showed a different geographical coverage for the two websites – maybe reflecting the number of profiles created via distinct readerships of newspapers and before profiles became so widely copied between sites or maybe as a result of 'terms and conditions' having been altered to allow this.

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What was remarkable however is that two particular women living very locally and with characteristics closely matching those of the search were somehow excluded from all the results returned by the 'logged-on' search – yet they came near the top of the 'logged out or simple' searches. Once logged back in, and entering their names manually (via search/username) they were confirmed to have a very high percentage match. This was subsequently explained (at least on the Telegraph site) as being due to a quirk in the matching software: if a woman put 'ask me later' against a minor parameter this could see her excluded entirely from an advanced search – even though the parameter might have been unimportant to a man and despite that in all other respects they were assessed as a 98% match.

Other inconsistencies were noted in comparing the results from automatic 'match' searches to the results obtained by a manual radius search: several very well matched women were returned via 'matches' but not via a radius search. The explanation is probably that their exact postcode (which is not publically displayed but is used to refine match searching) lay just outside the radius specified in the manual search. The latter may use an exact 'cut off' rather than a fuzzy boundary based on how important you say distance is in the match search. What seems certain however, is that using all the available search routines (radius, logged in and out and automatic matches when logged in) must be used if a few potentially close matches are not to be excluded. Also, setting all 'secondary' parameters to 'any' should ensure that most suitable matches are returned.

Using the above data for land areas, there may be 40,000 reasonably active Encounters profiles for 50,000 square miles. 70% are here assumed to be women. The population of the UK (all ages) is around 65 million - maybe 50 million within the major populated land area of 50,000 square miles – this is a rough estimate but useful as it gives an average population density of 1000 per square mile. In London an average figure is over 12,000 per square mile and in rural parts of the UK around 450 per square mile (an average figure for Devon), and with only a few people per square mile for 'wilderness' areas. The ratio of population density for the whole of Devon compared with London is therefore 12,000/450 = 27. Whilst this figure is used below, it is important to note that Devon itself is highly non-

uniform. There are several large towns (and Exeter as a major city) all separated by areas having a much lower population density. The population density of London also varies widely. Some central areas have over 25,000 per square mile - examples would be Camden and Kensington and Chelsea – both of which are studied in what follows. More outlying areas, yet still within a 10 miles radius, have a population density between 5000 and 10,000 per square mile.

Taking a 'search radius' of 10 miles (an area of 314 square miles) the population in and around London would be 3.8 million compared with 140,000 in Devon, all as averages. Given that this test area of London would contain 7.6% of an assumed population of 50 million (3.8/50 = 7.6%), it might contain 10% or more of Encounters subscribers because of a general wealth + south-east positive bias – or upwards of 2800 women from the estimate above of 40,000 reasonably active profiles (70% of them women). In Devon however, no London bias would be expected so based on population density alone the same test area might contain only 140,000/50 million of 28,000 or 78 women. In fact fewer than this would be expected because there might be a 'negative bias' to balance any London bias. This might reduce 78 to (say) 68.

This aligns poorly with the actual total within 10 miles of 9 profiles of which 4 had recent log-in activity – but this was after applying various filters. If no age or other filters are applied, and using a radius of 10 miles around postcode EX14 (the market town of Honiton and surrounding villages) and with a present location specified as in the UK, yields 65 actual female members. Given all the estimation used here, this is a remarkably close (and probably fortuitous) result (78 or 68 predicted, 65 actual).

However, searching for men instead of women yields only 32.

The equivalent figures for EX14 from the Telegraph site were 73 women and 38 men with no filters applied, and with only 41 of the 73 women having a photo included – thereby perhaps marking them out as amongst the more serious members.

Almost two years later, the Telegraph site yielded 68 women and (again!) 38 men and with only 34 of the 68 women having a publically available photo. In this area therefore, online dating had not increased in popularity.

All this proves is that the estimates based on area and adjusted for average population density can produce data of the right order – in one geographical area. Yet the agreement may be fortuitous if only because the exact area that is defined by 'radius of ten miles' cannot be determined. The software may select profiles exactly ten miles or less from the centre of the chosen postcode or ten miles around the boundary or central core of a postcode area. For adjacent postcodes covering large rural areas, the first approach could see 'matches' excluded if people lived within a short distance of each other but the centres of their postcodes were many miles apart. Checking the validity of the factor of 27 would require more exact data than it is possible to collect.

Out of the 32 men on Encounters only 17 had a recent log-in date (in the last two months), whereas for the 65 women only 26 had a recent log-in.

For a central London postcode where the population density is over 25,000 per square mile (Camden, WC2B), over 100 results were returned even for the lowest allowed search radius of 5 miles. Narrowing the 5 mile data to filter for ages 40 to 50 and including a photo again produced over 100 results for both women and men. In contrast, applying the same criteria for postcode EX14 produced only one man and zero women. This suggests that the ratio of 27 (based purely on average population density) is a serious underestimate of the bias towards London and the south-east, and maybe other large cities also.

If the age range is narrowed to between 48 and 50 then once again over 100 women are found for the WC2B postcode, opposed to 84 men. Narrowing the range still further (ages 49 to 50 only) produced 49 men and again over 100 women. On the Telegraph site there were 59 men and over 100 women in this restricted age range.

Almost two years later, the figure above of 49 men (ages 49 to 50) had increased to 67, whilst on the Telegraph site the figure of 59 men had increased to 72. Given the number of profiles that are common to both these websites, similar changes would be expected. It is interesting however to note that over this period of nearly 2 years, usage of these two sites had (if anything) fallen in country areas - where the system is largely useless – yet increased in a central London area.

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Whilst logged in to the site more criteria (such as height, weight etc) could be selected – but it was also necessary to expand the age range to 47 to 52 to obtain an adequate number of results, even in London. Here, 86 women were found within 5 miles compared with 36 men, giving the M/F mix at about 30/70. A search using the same criteria and centred upon EX14 yielded zero men and zero women.

Again, the ratio of 27 looks far too low but analysis of a larger data set (see below) shows that no significant 'London and south east' bias may exist. There is however much uncertainly in all of these figures – any credible analysis would need to establish the fine structure of population densities and number of profiles found within closely prescribed areas. The data given here are therefore merely illustrative of what can easily be extracted from some dating websites.

As a quick check of the gay and lesbian content of the site, 6 men seeking men were returned, and zero women seeking women, both applying the same criteria that produced 86 'straight' women and 36 'straight' men in London. This suggests (from a small sample in one area) that there are far more gay men than lesbian women – but maybe only amongst those who read the Times and/or use Encounters!

Further data to check the expected ratio of 27 can readily be obtained for several major cities, albeit recognising that only in London may a high population density extend to a five mile radius: London (as above and using WC2B), Exeter (EX1), Bristol (BS1) and Canterbury (CT1).

For age ranges 49 to 50 and 5 (10) mile radii centred on a postcode and with a public photo (via a logged in search with all variables set to 'any') data are as follows for Telegraph Dating (as of Dec 2012):

Code/sex	WC2B	EX1	BS1	CT1
Men	63 (119)	0 (0)	4 (10)	1 (4)
Women	87 (274)	7 (12)	11 (20)	1 (7)

For Encounters the equivalent data were as follows

Code/sex	WC2B	EX1	BS1	CT1
Men	67 (110)	0 (0)	2 (8)	1 (4)
Women	123 (259)	8 (12)	11 (18)	2 (7)

These data contain few surprises. There are far more women than men in all of the samples where the numbers are large enough to be significant. Expanding the search area from 5 to 10 miles would not be expected to increase the number of matches in proportion to the greater area because the population density will be much lower between 5 and 10 miles than in the city centres. Yet the absolute numbers are pitifully low except for the central London location. Even here, the websites contain only a tiny fraction of all 'available' people in the area, but at least they produce numbers large enough to give a woman (or a man) some choice without travelling 100 miles or more – even when it is recognised that typically more than half of these profiles will be 'dead' (not having been accessed for many months or years).

It is the ratios between the numbers of profiles that are most useful – and the starting point should be as large a sample as possible – close to the maximum of 1000 allowed within an advanced search. The data below are for two areas that might be as comparable as possible without going into all the fine detail of affluence and population density vs. individual postcode areas.

Three postcodes were selected for use on the Telegraph dating site: SW3 (affluent Kensington and Chelsea), EX14 (Honiton and largely rural hinterland) and EX1 (central Exeter, the major city in Devon). Using reasonable search parameters and allowing any type of photo (private or public) and an age range of 37 to 58 the following data were obtained. This age range was chosen because it gave 999 matches at 20 miles for SW3. This radius encompasses an area far beyond 'central London' and what is typical for SW3 itself. Indeed, 20 miles from SW3 is a little further than many stretches of the M25 orbital motorway. As before, the searches were for 'straight' women seeking men and vice-versa.

Distance	SW3 Women	SW3 Men	EX14 Women	EX14 Men	EX1 Women	EX1 Men
20m	999	522	60	22	56	16
10m	644	341	16	4	30	10
5m	348	183	0	0	17	3

These data are largely as expected. In all cases there are more women than men – often by a factor of 3 or more. The 20 mile data for EX14 and EX1 are comparable because both include the dominant population centre of Exeter – EX14 contains it at the extremity of the 20 mile radius, whilst EX1 contains it at its centre. At a 5 mile radius the dominance of EX1 is clear – there are zero matches within EX14.

The ratio between SW3 and EX1 data can now be tabulated and compared with the simple estimate of 27. The ratio of 61 (Men, 5 miles) can be discounted because the sample size (just 3 men in EX1) is a quirk – just two more men would have given a ratio of 183/5 =37 and the M/F ratio would then be a more normal 17/5 = 3.4 instead of the observed 17/3 = 5.7. The other ratios are remarkably close to the simple estimate of 27.

Looking at the absolute numbers however, a woman in SW3 has a choice of 183 men within 5 miles whilst a woman in central Exeter has a choice of only 16 even out to a 20 mile radius (and not many more at 40 miles owing to the low average population density beyond Exeter) .

The reason why these websites fail to work in many areas is primarily therefore that they comprise only a tiny fraction of 'available' singles – maybe far less than 1%. This applies in SW3 also of course – but as with WC2B at least there is some choice for a woman even if it is again limited to far less than 1% of what might potentially be on offer!

SW3/EX1	Women	Men
20m	17.8	32.6
10m	21.5	34

5m	20.4	61

This is not a 'digital divide' caused by lack of access to technology but simply by the population density being too low given that online dating does seem to be used only by a tiny fraction of all those potentially interested in 'dating and mating'. If this fraction could be increased – from say less than 1% to 50% and on a single website, viable numbers of 'matches' might be found for all areas of the UK.

Overall, the UK's population density is one of the highest in the world. Almost one-third of the population lives in England's prosperous and fertile southeast and is predominantly urban and suburban - with about 8.6 million in the capital of London, which remains the largest city in Europe. If 'outer London' is included, the population of London is around 13 million.

So (and taking the overall average figures) if internet dating doesn't work in the UK would it work anywhere? The answer seems to be that at present it works well only where the population density is close to that achieved in major cities.

Cirencester: upmarket, unconnected and 80% female?

As an example of a wealthy area outside of the London area, consider the small Cotswold market town of Cirencester, set amidst the Gloucestershire countryside. The population is about 20,000 and with maybe 22,000 people living either in the town or within a 5 miles radius. There must surely be a few hundred single or divorced people potentially 'looking for someone' and living within the 5 mile radius. Taking the figures cited above of 15 million single people out of an adult UK population of 50 million (30%) would suggest about 6,600 single people in and around Cirencester. The nearest large town is Swindon – about 16 miles away. (50 million here is the total adult population out of a total population of 60 million, the figure of 15 million singles is presumably 15 million adult singles).

The Cirencester website emphasises the connectivity of the town as follows:

> "Cirencester is situated in the heart of the Cotswolds. It enjoys a relatively central position, with London, to the East, only 90 minutes away via the M4 motorway, Birmingham to the North is 75 minutes away, and Cornwall only 2 hours down the M5."

Potentially therefore, suitable matches could be found in many of the larger cities – but how many live within 5 or 10 miles?

Utilising a logged off and 5 mile radius search on Encounters (with no filtering applied for other characteristics) and including all ages between 18 and 100 yields 75 women and 22 men for the GL7 postcode – at the high end of F/M ratios. However, if those not having logged on for 2 months are excluded the numbers fall to 32 women and 7 men – over 80% women! On the Telegraph site there were 85 women and 28 men but when these were broken down by 'last logged in' dates, only 40/85 women and 12/28 men had any recent activity.

Almost two years later, 75 had fallen to 69 but with still the same number of men (22). As in the example quoted above for the Telegraph website, the numbers of women had fallen slightly over this period.

If the requirement for some type of photo is included (whether on public view or available only to selected potential matches) the base numbers fall to 40 women and 7 men, of which 22 women and only 4 men have a recent log-in history. Again, over 80% are women seeking men. It is reasonable to exclude the no-photo profiles from the total of 'serious' online daters – they are in any case most likely not subscribers (= full members). It is known that profiles without a photo receive less than 10% of the attention given to those with a public photo.

To set these data in context they represent a total of 26 out of maybe 6,600 single people living within the area – or 0.4%. Indeed, since a few may be married people seeking a liaison, the fraction may be lower than 0.4%. Yet it is claimed that 5 million singles are looking for love online (not all at the same time maybe!) out of a total singles population of 15 million – which would be 33%. These data are out of line by a factor of about 80, reflecting perhaps to some degree the exaggeration that may be inherent in the on-line dating industry.

Obviously, Encounters is not the only dating website – there are dozens of them, but many are very small and cater for particular niche activities. Most significantly perhaps, so many people merely dabble in internet dating for a brief period and yet are counted by the industry as 'active' online daters. Many people may try several websites and be counted as 'on-line daters' many times over.

Prospects look even worse if an age filter is applied – say between 40 and 50. The figures above (22 women and 4 men with recent login history) fall to 8 women and 1 man. On the Telegraph site it is a similar picture – 30 women and 10 men with a recent login history fall to 9 women and 3 men.

These numbers do not represent the numbers of potential matches because most people would (out of necessity) consider profiles well outside the 5 mile radius. But they do help to prove that these websites are utilised at any one time only by a tiny fraction of the potentially available singles market.

Utilising a 'logged-in' search in which various reasonable filters are applied yields the following data, for a radius of 10 miles and seeking a match aged 43 to 56. Results show 10 women seeking men and with 5 having a recent login date with several having stated addresses of Swindon and Cheltenham. The corresponding numbers of men were 3 in total, 2 having a recent login date. One was from Cirencester and one from Cheltenham – hardly a wide choice for a woman! However, the figures were markedly higher for the Telegraph site – maybe reflecting the greater use of the newspaper in this 'Tory rural heartland'. Instead of only 3 men (2 of which were 'recently logged in) the Telegraph site yielded 16 out of which 10 had recently logged on.

Widening the search to 20 miles yielded 13 men of which 10 had a recent login (an unusually high percentage). There were 51 women of which 27 had a recent log-in – the ratio here is more in line with other data sets. As usual many of the profiles were years old in terms of last login date – some of them 7 years old. In terms of actual date of creation no data is given on the site, but some would probably have been written over a decade ago – and still searching for Mr Right?

Again the Telegraph data were markedly different for the 20 mile radius search. Instead of 13 men there were 89, instead of 10 recently logged in there were 54 and there were 231 women instead of only 51 on Encounters of which 90 had a recent logon date – compared with only 27 on Encounters. Clearly (if indeed such data are seen elsewhere) it can be worthwhile assessing which site is most populated by 'suitably local specimens' before paying a subscription. As profiles become more copied between websites, these distinctions may disappear.

Use of the Cirencester postcode (GL7) was deliberate because it includes Lechlade on Thames, many miles to the east of Cirencester. There is a chance that the system centres radius searches at the centre of the postcode, which is an area of open country where few matches would be expected. To test for this, it is possible to centre searches on specific towns rather than on postcodes. For a login search with filters applied as above and for a search centred upon Cirencester itself, 7 women were returned, of which 4 had a recent login. For men, two were returned, both with a recent login date. No radius of search is applied to 'town or city centred' searches.

Therefore whichever method of search is applied, it is confirmed that active members of the Encounters website comprise only a tiny fraction of single men or women living in the area – well under 1%, and a higher but unknown percentage of all those interested in new liaisons.

The churn rate.

Churning is a term coined in the Financial Services industry to describe how financial advisors change the investments of their clients from time to time – based of course on little more than the fees they will receive for setting up the new investments. So 'churning' investments generates a constant fee stream whilst adding nothing new to real benefits for the clients. Indeed the process costs clients a lot of money.

Similarly, adding new profiles and the recycling of old ones (some women have several profiles but using the same photos) can add very little to the prospects of a local 'match' on dating websites. Of crucial importance, and as a cross check of other data, are the number of new members joining each month. This is easy to estimate – simply search at fixed times each

day for many days for new members. Helpfully, many dating websites and including Encounters and Telegraph Dating highlight those profiles that are 'new since your last log-in' – and these people are eagerly pounced upon by the hoards of existing subscribers who have given up on all the tens of thousands of existing profiles. Thus, new members receive disproportionate interest and a barrage of messages in their first few weeks on the site, which may encourage them to subscribe.

Gradually a reliable picture can be built up of the average new membership in each 24 hour period and also their stated age distributions and the M/F mix – which may be different to that of the existing pool of profiles.

There is a wide variability in the number of new members joining each day and at what times of day, Many factors influence this – time of year (with a distinct lull before Christmas), nothing else to do at the weekend, bank holiday weekends, frustrated by yet another Saturday evening spent alone, bored at work, the weather, etc. A rough average of 50 new women per day will be used here. Actual numbers varied between 20 and nearly 100 per day during various test periods. Comparable figures could be obtained for men utilising a female profile.

Of interest here also is the geographical spread because the data on 'new members' over a few months might help confirm a conclusion reached quite separately by other means. For rural areas, if there are only a few 'potentially acceptable' matches within 50 miles from the entire 82,000 profiles, then it is likely one would have to wait many years before a new member joined who was the right age, the right sex, of acceptable 'type' , matching certain criteria and willing actually to go on a date.

It is now possible to estimate how long it might take actually to meet a woman who fulfilled not only basic criteria but who was prepared to go on dates and also who proved a wholly suitable match. In other words, for a man living in a rural area how long might it be before 'Miss Perfect' was brought into his life and utilising the Encounters website, and assuming that all existing members either lived too far away, did not have appealing photographs and/or profiles (etc)?

The starting point is the number of 'new' women joining the site each day – taken here as 50. Of these, several usually vanish within a few hours or a

day or so, the people concerned having had second thoughts and never having loaded either a photo or any substantial narratives. So maybe the base figure should be 45. As an average, how many of these might live within a suitable catchment area, taken here as a radius of 10 miles (simply to align with some of the data used above)?

It has been shown above using geographic and population weighting statistics that out of the tens of thousands of existing female profiles only 78 or maybe 68 were predicted to fall within this area compared to 65 actually found. The figure of 65 will be used here. It was shown also that there were probably 28,000 'reasonably active' female profiles existing on the site – the 'dead' profiles (either tens of thousands or maybe millions on other websites) should not be included in what follows: it is required to compare the ratio of newcomers to the existing stock of 'viable prospects' before any filtering.

By definition, all newcomers are 'viable', excluding those who drop out very shortly after joining. Thus a fraction of 65/28000 'viable' existing women live in the test area having a radius of 10 miles. The fraction of 'new' women located within this area would be expected to be much the same. In a year therefore 45 x 365 or 16,425 new women might join and of these 38 might live within the test area. It is now necessary to apply filters and based on previous experience of the numbers of all women from a sample meeting a reasonable range of characteristics (age, photogenic appeal, smoking, education, wealth, etc). This can reduce the numbers dramatically – certainly by a factor of ten or more, down to maybe 1 or 2 new women per year. Now additional filters must be applied – and relating to their viewing the man as 'dateable'. Presumably much the same criteria may apply in both cases, so it is not appropriate to apply another factor of ten. But actual willingness to go on a date as opposed to 'chat' seems to have a high ratio, here taken as between 5 simply because it is a reasonable estimate and it reduces the number of 'new' women down to one every few years.

This aligns remarkably well with actual experience over several years – out of all the new female profiles that have appeared over the years of this study I can think of only a handful who might have been realistic dateable prospects even from a 40 miles radius – let alone 10 miles.

The figure of 16,425 can be compared with the number of divorces in the UK each year (see Appendix A) – about 120,000 in England and Wales and 10,000 in Scotland (so this number of both sexes become 'new singles'). Very few of these divorcees – maybe less than 20% would be the 'class' of people often found on Encounters and the large majority of all profiles for ages over 35 are indeed divorced people. So maybe there are 20,000 'mid-market' divorcing women per year in the UK – but it is absurd to think that most of them end up on Encounters – so something is wrong with these figures. One explanation is that internet dating suddenly became so popular that a backlog of divorcees from previous decades were added over just a few years to the current year total of new profiles, which would boost the fraction for a few years, before a 'stable state' was attained. If even 5% of new female and 'mid-market' divorcees ended up on Encounters this would be only 1000 per year (5% of 20,000) – compared with 16,425 new profiles, many of whom are indeed middle aged divorcees. Another factor may be that an increasing fraction may be younger single women – an explanation is certainly needed!

Now we introduce the final filter: of all the women that one meets in everyday life, and finds attractive, and might date, how many would you settle down with, let alone marry? Maybe one in ten, or one in a hundred? Thus for a man living in the West Country and prepared only to travel 10 miles, it might take years, maybe decades to find his 'soulmate' via Encounters. Again, this seems common experience on the site – the 'successes' in terms of marriage are maybe 1 in 10,000.

Of course, the figure of 16, 425 sounds large – this many new women every year! It also explains why (apparently) so many people spend so long on dating sites – they have 45 new women to look at every day as well as collate all the messages from previous days and weeks. It is probably addictive, especially for people who are members of several sites.

Yet 16,425 is only about 0.2% (1 in every 500) of all the single women in the UK (16,425 out of 7.5 million single women, itself half of 15 million singles). If even 5% of these (375,000) 'start looking for someone' during any year, the site can offer only 4% (16425/375000) of those potentially available.

Against this should be considered the chances of finding a match in the local pub or at a local dance or social activity. These methods immediately remove most of the 'distance' filter which is a primary factor in reducing 28,000 down to 65 and may include many locals who are not on any website.

Little wonder therefore that even in the digital age most people meet their partners (temporary or otherwise) at local events and not online. Online dating could be massively more effective in the rural areas – but only if it accommodated the entire 'singles' population instead of (at any one time) a tiny fraction. In densely populated areas, it would be expected to be far more effective even with present membership and subscriber levels – yet even here many people spend years online and apparently find no-one.

The conclusions that follow from the present numerical analysis are supported by those in an article published in the Sunday Telegraph on 12 Feb 2012 by a journalist who tried a dating website, again by way of experiment, and using three different personas. He met a fraudster, a serial dater and gold digger and an older woman who wanted a lift to musicals.

> "My advice to anyone joining the (claimed) five million or so Brits who go in for online dating is develop a thick skin. Be innocent as a dove and wise as a serpent. Maintain a sense of humour. Play for small stakes. Watch out for scammers.

> And remember there are lots of angry resentful, unhappy, unscrupulous, solipsistic and plain mad people out there. Not their fault: it's the way we live now. Yet the proportion of those on a dating website will probably be greater than you would find walking into a pub – which is where, statistically, most couples first meet. Even today."

Success! (Occasionally?)

Within the Encounters website there is a small section for 'success stories'- subscribers can write in to say how glad they are they joined, how quickly they found a match, how they met the man of their dreams after only a few weeks, etc. There is no similar section for disappointed members.

The 'success' section comprises about 6 entries per month, from a claimed membership of 82,000 but in reality from maybe a genuinely active membership of maybe 20,000 or less. Each success story relates (presumably) to two subscribers out of 20,000 or a success rate of 1 in 10,000 per month, maybe 1 in 1000 per year.

However, 'success' is defined as merely getting on, having met someone you like, and is far from confirmation of a long term relationship or marriage – here the figures are maybe more like 1 in 10,000 per year, or a couple of marriages from the entire 82,000 membership. Against that, not all ecstatic couples may write in to share their new-found joy. But there is a 'prize' awarded for these entries so there is an incentive both to enter and to fabricate data.

One in 10,000 might sound like reasonable odds, but 10,000 is a very high number. According to internet statistics sites (which themselves may be dubious) the chances of being murdered in a lifetime are 18,000 to 1 (rather higher in South or North America probably), and you have a 1 in 10,000 chance of finding a four leaf clover on your first attempt.

Striking it rich on Antiques Roadshow is given as 60,000 to 1 – presumably based on the total number of people presenting objects for valuation, as opposed to the few that are given airtime. More worryingly, the chances of the Earth being hit by an asteroid in the next 100 years is said to be 1 in 5000. These figures are not authenticated – merely reproduced here because they appear elsewhere on the internet - which is unwise!

Problems and possible solutions.

There are probably hundreds of thousands of people in the UK alone who are seriously either 'looking for love' or for marriage (sometimes combined!) and maybe many more looking for dates.

Internet dating has rapidly overtaken the more traditional methods (although these survive in some newspapers, perhaps to promote the associated on-line products). Virtually all 'social stigma' has been removed with people now freely admitting that they met 'online'. I only know one such couple – and they met on Dateline, a fact I find even more remarkable given the downmarket nature of this site compared to Encounters.

A major problem for consumers is that there are simply so many websites and the clientele are spread so thinly between them. Many sites cater for the 'youth' casual-sex market (often via mobile phones), a dozen or more specialist sites enable you to meet millionaires (so they claim) and there are many 'overtly naughty' sites centred explicitly on facilitating extra-marital affairs. There are probably over 100 sites in all with members from the UK. The overall usage of the sites maybe in excess of 100,000 at any one time (this is speculative) with millions of people having joined at some time – but the large majority of these will probably be 'dead' profiles.

In contrast to internet shopping, dating websites are seriously hard work. For shopping, not only are the websites of major retailers user-friendly but there are many 'supersites' (comparison websites) to make life easy for consumers. These make their money via click through advertising but enable a product (and its price) to be found very quickly. Whether you are searching for a certain type of wine or a savings account offering competitively high interest, all you need is a few clicks – the sites will search all other participating sites and present data showing where (for example) the selected wine can be purchased and at what cost. The same is true for courier services. These have grown massively in recent years as a consequence of ebay trading and online shopping. www.interparcel.com is one such site – all you need to know about which courier would be best for your specific requirements can be discerned in a few clicks.

There is nothing even remotely comparable for online dating, and indeed creating any 'supersites' would be very difficult not so much because of the number of parameters involved but because of the different ways sites choose to categorise profiles – and the degree of fakery that seems to be inherent in so many of them.

Yet there are even doubts centred on whether the regression and other algorithms used by dating sites to find 'best matches' actually work, or whether (as in economics maybe!) it is mostly 'a load of mumbo jumbo' with obscure mathematical terminology masquerading as science.

Therefore it may be just as good to use only three principal parameters – distance, age and wealth and/or social class. And of course a few genuine photographs! The vast number of minor variables that are purported to be

analysed by algorithms may offer little or no genuine benefit in finding or ranking potential matches.

This seems to be confirmed by scanning through the profiles returned for a rural area of the UK. Out of the 100 always returned for non-subscribers, about 10 to 15 are often reasonably local and with other factors close to those specified. But this much could be achieved with simpler routines that took no account of all 'minor' parameters such as a stated preference for eye colour, astrological sign, etc.

The other 80 profiles are usually from many miles away – many of the calculated best matches being 200 or more miles distant. Yet when scanning manually through (say) the logged on profiles at any one time (which should provide a roughly random sample) as many if not more 'interesting' profiles can be found as those within the final 80 of the 'best matches'. In short the system relies on either no science at all or on some very poorly applied science – the results obtained almost at random seem equally valid. Some of the matches returned as 100% are simply absurd – women living 200 or 300 miles away who specify 'anywhere in the UK' as entirely acceptable for Mr Right. The number of successful relationships that begin as a result of such distant matches via online dating must be miniscule.

Appendix B comprises one woman's view of the uselessness of 'tick box' matching – within her own rather amusing profile.

Appendix C is a not untypical 'last plea' from a physically attractive 48 year old women in the centre of wealthy Surrey. Having tried internet dating within an area brimming with suitable matches, she is on the point of giving up.

For subscribers, the absurd nature of 'best matches' is revealed quite starkly because the system produces 1000 of them, most from 100 or even 200 miles away. How could it be otherwise? There are simply so few members located close to many rural postcodes.

In a research article published in the journal Psychological Science in the Public Interest (13(1) 3-66), Eli Finkel, an associate professor of social psychology and his co-authors asserted that

> "If dating sites want to claim that their matching algorithm is scientifically valid, they need to adhere to the standards of science, which is something they have uniformly failed to do."

http://faculty.wcas.northwestern.edu/eli-finkel/documents/2012_FinkelEastwickKarneyReisSprecher_PSPI.pdf

The research article is titled: Online Dating: A Critical Analysis From the Perspective of Psychological Science. But be warned – you'll need several hours to read it and many more to comprehend it!

The article gained some publicity in the UK via the BBC website http://www.bbc.co.uk/news/technology-17017963

Any estate agent will tell you that when taking on new clients little notice is taken of what they say they are seeking in a new property– because experience shows they often buy something quite different. Maybe the same is true of partners – if only because so little is on offer (or more correctly) is genuinely available. This alone might set a limit on the usefulness of any method that seeks (via mumbo jumbo science or otherwise) to rank potential matches.

Nevertheless, as in the truly massive dieting industry, a little pseudo science wrapped up in layers of marketing hype continues to be successful in peddling hope to hundreds of millions of people. The profits are huge – which if nothing else is a testimony to the universal desire to appear more attractive.

What is certain, and it is most immediately obvious from the 'rural' statistics, is that any one of the major dating websites will contain only a tiny fraction of the 'available' men or women in the local area – well under 1%. Therefore whilst there is potentially scope for a massive increase in on-line dating, the existing structure of the whole industry would need to change. This would include websites that were as comprehensive and user-friendly as those developed for online shopping, itself facilitated so much by 'supersites'.

Within the huge investment market are websites dedicated to finding the best savings account for you, and based on your own personal circumstances, sometimes including the accounts you now possess.

Savingchampion.co.uk had its origins in the sheer frustration experienced by so many people in searching constantly for the best deals, and with many product providers seemingly intent on making life as complicated as possible. The same situation is evident for gas and electricity utilities, and for home and car insurance. Here, the complexity inherent in a blizzard of competing products and choices can be narrowed down in a few clicks – although effecting the recommended changes can still involve weeks of dealing with incompetence.

Recognising the present inadequacy of what is on offer to consumers seeking a mate or a marriage partner, there are also many premium or 'serious money' matching companies dedicated to cutting through the dross and finding intellectually, culturally and financially suitable matches for people who lead such busy professional lives they don't have time to waste trawling through the ill structured and often false profiles hosted on dozens of internet sites.

The 'upfront' fees can be in excess of £5000 (or even £50,000!), which includes of course a personal and in-depth interview, video recording and (for women) professional photography. But for those lonely souls earning £150,000 or more a year (and there are tens of thousands of them in the UK alone) this is small change. Spending even £50,000 to find a suitable match for the next 20 or 40 years is only a few months' salary, or less than one annual bonus. A summary of some of these sites is on a website linked to The Executive Club of St James – a long established 'upmarket' matching service based in London. It is worth reading these sites if only to study 'how the other half date and mate'!

www.thematchmaker.co.uk , www.professionalintroductionagency.co.uk

Online dating is a lucrative business at all ends of the market, for established companies. New entrants might have a hard time of it – as with porn, the market is already saturated and with many well established and keenly competing major players.

As a final cautionary note, it is not only when analysing dating sites that you need to be careful with the numbers – even a simple question such as 'how many millionaires are there in the UK' can produce a range of answers.

One definition of a millionaire (or a millionaire family) may include property assets such as one's own home. Then the answer is around 620,000 millionaires in the UK (or maybe it is millionaire households, which is a different thing). Half of these live in London and the south-east. But does this allow for any mortgages?

According to the Zoopla website: British property millionaires now number 226,344 or one in 118 homeowners in Britain today. At the peak of the market in 2007, one in 97 properties was valued at over £1 million.

This is quite different from the definition of a millionaire who owns his (or her!) home (of whatever value) outright and has a net additional worth (in cash or shares for example) of over £1 million. In any case, to live a truly 'millionaire' lifestyle one needs these days about £20 million: a mere one million will hardly buy the yacht let alone the country estate and all the upkeep. Even refuelling a yacht can cost more than £40,000!

Fee options – time for pay as you go?

As currently structured, the online dating industry is centred upon charging a small number of paying users a substantial amount of money to view what are predominantly 'dead' and/or duplicated profiles many of which are in any case located more than 100 miles away.

A remarkably uniform feature of dating websites is this lucrative yet arguably outdated fee structure. Typically fees are around £150 to £200 per year with monthly rates being far higher – maybe £35. Premium sites charge more. Bespoke introduction companies may charge £3000 to £10,000 initially and a monthly fee of £150 or more. There is wide variability and apparently if you decline to pay the brochure fees some companies come back with a special offer – 90% off!

The UK population is around 60 million, of whom 50 million are over 15 years old and classed as adults. However the number in the age ranges 40 to 65 and most associated with 'mature' websites such as Encounters is maybe 25 million, and of those maybe 1 in 30 of either sex might at any one time be 'seeking someone' – and including many married people! This suggests about 420,000 men and 420,000 women as potential UK subscribers. But at least a quarter of the adult population have insufficient skills to add up a grocery bill, let alone write a half-cogent profile, so this

reduces to 300,000 of either sex. Once social 'class' is taken into account maybe 60,000 of either sex might be suitable for Encounters.

Yet Encounters already claims to have 82,000 members, maybe 40,000 of either sex.Match.com UK claims over a million (mainly younger) members but a large majority of these 'young adult' profiles are likely to be either 'dead' or posted 'just for a laugh'. Many sites share profiles, thus there may be a substantial element of double or multiple counting. Nevertheless these figures do not align with the proven fact that these websites contain only a tiny fraction of available singles – so some of the assumptions used above must be incorrect.

Part of the explanation may lie in the fact that some of the claimed 82,000 profiles may lie outside of the UK. These websites allow worldwide membership and a search on Telegraph Dating for women in Russia (and with Russia as a country of origin) yields over 200 profiles. Paralleling those from the UK, many have not been accessed for 5 or more years and may be classed as 'dead'. Many are (supposedly) of delectable young women seeking a man anywhere in the world – anywhere except Russia maybe? It is possible to quantify this effect. Setting an advanced search to 'any country' as both origin of a woman and her place of residence and for a single age of 49 yields 670 profiles on Encounters with at least one public photo. Limiting the search to women residing in the UK (but from any country) yields 615 profiles and specifying both origin and residence in the UK yields 551 profiles. The maximum 'foreign' effect is therefore less than 20%, at least for women aged 49.

Once again we come back to a key question an accurate answer to which eludes any of the analysis here – of the claimed 82,000 members how many are genuinely 'active' profiles of people based in the UK and who have subscribed? As a guess, the answer could be as low as 5000.

Assuming however 50,000 paid up subscribers to all the major sites in the UK at £200pa this still represents around £10 million per year – not bad for operating a few servers. Yet it represents a tiny fraction of the total worldwide on-line dating and matching industries and a small fraction of what was claimed to be the size of the UK industry back in 2004 (see link below) – and it has certainly exploded since then. Therefore, the estimate of 50,000 must be a serious underestimate – and one explanation may be that there are many more subscribers who join only for a short period.

Arguably, other charging models are potentially more attractive to many people – maybe the option of paying only for the right to contact one or two particularly (and apparently) attractive potential mates in any month. This could be done on a 'pay as you go' basis with maybe £1 or £2 charged per message.

Many businesses make their money in the internet age not by charging a small number of consumers a significant annual fee but by charging tens of millions of people such a small amount that they are willing to pay regularly – witness downloading songs for less than £1 each.

Both of these are standard business models. When you are marketing hope, there are many people who will pay upwards of £100 (even for a jar of face cream that doesn't remove wrinkles). There are also maybe tens million people in the UK alone who would spend a few pounds (little more than the price of a cup of coffee) to experiment with on-line dating – yet few dating sites offer a short term membership and none appear to offer pay-as-you-go, perhaps because so many people could very easily discover that a longer term subscription might not be worth the outlay.

Within newspaper based dating adverts premium rate phone line numbers (090 etc) are still used for leaving or retrieving message from potential matches – yet these are absurdly expensive. The online alternative could offer photos, an email and maybe even video exchange via youtube for £1 or £2. Thus many people who now have fallen out of a regular subscription might be tempted back on an occasional basis (if and when any new member catches their eye) and the many non-subscribers might be tempted to try a few contacts. Many 'hardcore' or addicted devotees of the sites might continue to pay annual subscriptions whilst others might be tempted occasionally, thus providing an additional revenue stream.

The major problem for consumers however is the poor value for money of these websites outside of the major population centres once it is recognised just how few suitable matches there are within reasonable distances, and how few new ones may appear. The root of this problem is the very poor market penetration of any individual site, despite most

households now having access to broadband. Much of this may be owing to their excessively high 'contract only' charging structure and the fact that, despite all the marketing hype (and the associated hundreds of millions of pounds of turnover of dating websites), on-line dating seems still to be an uncommon method of finding partners.

Conclusions.

This study started with the intention of answering two questions:

> Assuming that none of the existing profiles met all expectations, how then to calculate the likelihood of highly suitable 'matches' within all the new members joining any given website within a given time period?
>
> Also, what chance would there be of one or more of them proving suitable as a long partner, assuming that this was desired?

Conclusion 1: The methodology adopted has proven capable of addressing the principal questions. Some of the analysis produces predictions that are very much in line with observed data. In other areas, there is disagreement. These areas have been highlighted and possible reasons given. Further work is clearly required before a complete analysis of even one major on-line website can emerge.

Conclusion 2: Internet dating with the aim of finding a serious partner seems to prove a huge disappointment for most people outside of the areas where large numbers of suitable matches can be found within short distances. This is as predicted. For very attractive women living near or within major population centres the sites can work well – many are rarely short of dates with agreeable men. More 'ordinary' looking or older women are given far less choice – maybe one or two actual dates a year.

Conclusion 3: Several people of both sexes have told me (and it is noted on some profiles also) that although they have tried 'long distance' relationships (having failed over some years to find any closer to home), these simply do not work. Those few that do are very much the exception. For people who cannot afford to live 'jet set' lives, distance matters – and will matter even more as fuel costs escalate.

Conclusion 4: Prospects would improve were all sites to be amalgamated and with clearer principal filters including 'social standing' put in place for all profiles. This would fundamentally change the nature of the sites from 'largely unregulated and unchecked' (and overly complex) to heavily authenticated yet simplified to contain only principal variables. It would be expected that 'niche' sites would continue to attract their own members. However a large degree of fakery and obsolescence might still continue to obscure the true picture. Far greater use of voice profiles and the introduction of video clips using youtube.co.uk (available by invitation only as is already possible for photographs) would help immensely in filtering profiles before any physical date.

Conclusion 5: Much of the 'mystique' that these websites like to ascribe to their 'matching' software is simply bunkum – it is pseudoscience employed to add credibility to a dubious product. It can readily be shown that whilst the algorithms produce good matches where these are obvious from the basic parameters of age and distance, in all other cases (that is the large majority of matches out of any 100 or 1000) the matches are ranked no better than could be achieved via random selection of profiles once obvious mismatches had been excluded.

Conclusion 6: If sites were to remove or archive profiles that had not been 'active' for (say) two months it would do much to clarify the true numbers of participants and make the sites easier to use. The potential number of participants would appear to be much greater than at present – maybe by a factor of over 100. On some sites, maybe 90% of existing profiles may be either fake or 'dead'.

The key factors that currently reduce 'initial promise' down to 'reality' are the number of filters that can be applied to profile numbers – for age (obsolescence) of profiles, photogenic appeal, age, distance, smoking, wealth, relationship status, willingness to meet, and others.

Conclusion 7: The core methodology presented here could be extended and applied to a larger number of data sets in order more reliably to assess the effectiveness of many other dating websites and thereby, the entire industry.

A parallel study could also be undertaken of the 'upmarket' introduction agencies who offer interviews and a personal date selection service. A brief summary of some of these is given here: www.professionalintroductionagency.co.uk. Similarly, the newer 'social networking' sites such as Zoosk who use 'apps' and link to facebook and smart phone technology claim tens of millions of (mainly younger) users. It might be interesting to assess the number of genuinely active users at any given time.

Conclusion 8: Overall, (and as already suggested in one of my published articles on folk dancing) – www.seered.co.uk/folk166.htm going to a local dance or other social event may be a much more effective way of 'meeting someone' if you are middle aged, even if 90% of the people attending are either too old, married or usually both.

The author is a research scientist and author living (alone!) in Sidmouth.

Appendices follow:

APPENDIX A:

Divorce rates etc.

A twenty minute search on Google produced the following statistics: (20 years ago you'd have needed to spend a week in the local library).

> "The proportion of single women living alone more than doubled from 9.8 per cent in 1983 to 21.7 per cent in 2002. The root cause is the financial independence of career women. "

> "Single-person households are a worldwide phenomenon. It is estimated that single households account for 11.8 per cent of total households worldwide but for more than 25 per cent of all households in the affluent areas of the West. In Africa the figure drops to only 3.1 per cent of households. In general, the trend towards single households seems to be closely correlated to culture and living standards."

In other words – when people can afford to live alone many choose to do so, and maybe seek to obtain 'dating and mating' as and when they choose and via external contacts, rather than risk a live-in partner.

> "Single-person households in the UK are projected to increase by 163,000 per year, from 6.8 million in 2006 to 10.9 million in 2031"

> "In the age group over 65, twice as many women live alone as men". This is well known – men have in the past tended to die earlier owing in part to their higher consumption of tobacco and alcohol.

In general, there are three main groups of people living on their own: single young professionals, middle-aged divorcees and elderly people. All these groups are served by a multitude of different dating websites. This is one of the key negative aspects of the internet dating industry – profiles are spread so thinly over so many sites.

Many articles have been written on the statistics of divorce. Rates are around 12 per 1000 couples per year. The number of divorces in 2010 was highest among men and women aged 40 to 44. A few years later these people find their way onto Encounters!

However, the actual number of marriages continues to fall – down from a peak of around 450,000 eighty years ago (and with a much smaller total UK population) to fewer than 250,000 in 2010. In simple terms, 60 and 80 years ago it was 'the done thing' to get married. If trends continue, it will become quite unusual.

The reason cited for a divorce has changed markedly over the last 20 years. Adultery was the number one reason to divorce in 1990 as cited by men – maybe a sign of the intolerance of those days. Only half as many men cited the general behaviour of the wife as a principal reason. For women, the behaviour of their husbands (excluding adultery) was cited in a huge number of cases and with adultery alone being an ever decreasing reason – down by 50% over 20 years. Straightforward desertion continues to be a very small factor.

22% of marriages in 1970 had ended in divorce by the 15th wedding anniversary, whereas 33% of marriages in 1995 had ended after the same period of time. In conclusion – whilst marriage itself is decreasing in popularity, people are becoming less tolerant of each other in general. However, simple adultery is nowadays far less of a reason to divorce.

The median age for divorces continues to show a small rise – up from mid 30's between mid 1970s to mid 1990s to over 40 years old for both men and women in 2010. The median duration of marriages before divorce seems remarkably constant at around 11 years during the last 50 years, although there was a dip below 10 years in the years 1985 to 1995 – maybe reflecting the hedonism of the 1960s. Simple separation as grounds for divorce with consent by both parties has also remained remarkably constant.

It is dangerous to draw too many conclusions from datasets, but of interest for internet dating (which is used apparently by many married men) is that adultery alone has become perhaps 'accepted' (or maybe something that can be forgiven) by both men and women. The total number of divorces in England and Wales is currently about 120,000 per year, with an extra 10,000 for Scotland. Internet advertisements offer divorces for less than the cost of a tank of petrol: "Divorce in weeks - £37 – 100,000 satisfied customers!"

APPENDIX B: one woman's view of dating websites.

The following text formed the narrative of a 50 year old attractive women in Kent, posted on the Telegraph Dating website. It is of interest because it cites a Guardian article about internet dating – and also because it is quite amusing.

Why should you get to know XXXX?

The one that hits the lips & as instantly it's as if it was made exclusively. It stimulates the senses with just the right heat, smoothness & kick, that has an almost adrenalin rush quality to it. Wouldn't it be something if we met someone who stimulated the senses as instantly, but remained on the lips MUCH longer :)

Would be great to find magnetism with a devilishly matched male. Reich said, loving regular physical contact with the right person is a great healer, a life promoter. Passion, energy, love, is not worth living a life without. I enjoy my femininity & equal masculinity of the right guy.

Mind you, if you read the article in the guardian on online dating findings, you might be forgiven for hitting the delete profile key pronto! Falling into one of three camps, sex addicts, emotionally insecure, or relationship averse; they suggest we are doomed to the disaster of meeting one of the 3 & becoming disillusioned by the whole process. Sadly there is some truth to the world of social networking making us all as disposable as shrink-wrap, if we don't fulfil unrealistic ideals

The best we can do is try not to promote ourselves like the latest must have gadget. Finding someone who doesn't tick a wish list is probably the healthiest thing for us. Ultimately don't be in such a hurry to hit the flip-bin lid for a few hurdles. Perfect scenario's are there to be created rather than stumbled upon.

So I'm not professing to running marathons, scuba diving or climbing the face of mountains all before breakfast! I'm direct, feisty, compassionate, fiercely loyal to those dear, grounded, emotionally intelligent, flirtatious. A voluptuously full hourglass who is fun & engaging in the right company, who isn't!

A little mutual pulse racing would be great, those elusive fireworks, butterflies, whatever your preferred adjective that let's you know you are in the company of someone who could make you feel pleasantly awkward, dry mouthed & nervous in the nicest way possible

Eternally optimistic is a good trait.. right?

She describes her ideal match thus:

I don't believe attraction is a simple definition or distinction. That perceptions of a handsome guy, beautiful girl depends on hair colour, height, age, eye colour, body type. Attraction can hit in all shapes & sizes & is far too subtle for box ticking definitions You just know it, when you meet it...

Hoping for a guy who can get inside my head & hijack my brain, causing me to involuntarily think about him all the time. This can be highly inconvenient, but it's also the surest sign there is! Friendship first, leading to lover. Strong, assertive, direct, chivalrous, romantic all +'s. Insincere sugary-coated types, don't waste your time. I don't have a high tolerance threshold. I find inner confidence & strength very attractive, moral fibre & principled. Open to a little mutual resonating.

SEXY in that smouldering sensual force of nature, throw you off balance kinda way. It's an allure. Energy which oozes from every single pore. Potential hanging in the air like a flame given the right conditions can ignite into a roaring bush fire. The chemical stuff. As instinctive, as it is distinctive a quality we perceive in another, which is as much about attitude, demeanour, as it ever is looks.

(Yes I know, wish list / sentiment syndrome. Is it in check? almost!)

Subjective, but we do get a sense, when that someone special crosses our path. Not a perfect person, but the desire to learn an imperfect person perfectly, would be great

Longevity I suspect, comes when having got to know each other & despite each other's little idiosyncrasies & flaws, that mutual attraction & magnetism persists. It can render most irritations as low level as a midge in summer & bring a smile to our face & desire in our hearts even when our partner is driving us nuts! After all, it's rarely about what you do, but who you do it with

So nuts & chemistry welcomed in equal measure. OK, well almost, let's not get carried away, there's only so many nuts you want to handle at any one time & guys already have a head start in that department!

Appendix C: a last minute plea from an attractive woman in leafy Surrey.

Why should you get to know XXXXXXX?

IF YOU ARE SOMEONE WHO NEEDS TO CHAT, FLIRT AND DATE SEVERAL WOMEN AT THE SAME TIME PLEASE DO NOT GET IN TOUCH, YOU ARE NOT WHAT I AM LOOKING FOR. DESPITE A DISAPPOINTING ENCOUNTER WITH SOMEONE FROM THE SITE I AM STILL DETERMINED TO FIND SOMEONE TO LOVE ME AND BE IN A VERY LOVING RELATIONSHIP so here it goes ...one last time

I have had enough singledom and I would like a soul mate to share life's twists and turns.

I love my family and my job. I enjoy keeping fit, eating out, cooking, gardening, horseriding, hiking, the Arts or just relaxing at home

I have a positive attitude, warm personality.

I am and always will be an incurable romantic

I am comfortable with heels as I am with wellies :)

ALL PHOTOS TAKEN AUGUST 2012

She describes her ideal match thus:

I would like to meet someone intelligent, good with people and who knows how to enjoy life. Happy to give as well as take. Tactile, active, business minded, successful, mature, open, positive, kind, loyal and passionate.

Someone who I can have a long term relationship with who I can share hopes, fears and dreams with, who will listen and tell me to stop if I am talking a load of twaddle or take me in his arms and make the world melt away ...

I like a man to be interested in the world, love the outdoors as well as art and museums, maybe he can teach me about a hobby or activity he loves. I am equally prepared to be totally surprised by falling for someone with whom I have great chemistry yet who does not fit all of the above categories. The most basic quality I am looking for is honesty.

Appendix D:

To be added.