FRIENDS ON TAP

THE ROLE OF PUBS AT THE HEART OF THE COMMUNITY

CAMPAIGN FOR REAL ALE

PUBS & WELLBEING

A Report for CAMRA

by

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THE ROLE OF PUBS AT THE HEART OF THE COMMUNITY

A Report for CAMRA

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January 2016

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EXECUTIVE SUMMARY

- Nothing is more significant, both to our lives and to the national economy, than our health and happiness. The more friends you have, the happier and healthier you are

- While 40% of people in the UK now typically socialise with friends in someone's home, a third of the population prefer to do so in pubs, and regard pubs as a safe place to meet friends

- Pubs, and small community pubs in particular, provide a safe environment in which to meet old and new friends face to face over a drink. The pub offers an enriching environment where we have the opportunity to meet a greater diversity of people from all walks of life than we might otherwise be able to do

- This report is based on a national poll of pub use and two studies of behaviour in pubs undertaken to assess the social value of small community pubs compared to large city centre pubs

- Almost a quarter of the UK population declared that they had a 'local' that they patronised regularly; their 'local' was characteristically close to where they lived or worked

- People who said they have a 'local' or those who patronise small community pubs have more close friends on whom they can depend for support, are more satisfied with their lives and feel more embedded in their local communities than those who said they do not have a local pub

- Friendships are created and maintained mainly by face-to-face interaction, even in the internet age – yet people in large city centres pubs are likely to be less engaged with their conversation group and more likely to leave a conversation than those in small community pubs, and their social interactions appear to be more transient as a result

- Small community pubs are more likely to be ‘beer-based’ and less likely to be ‘wine/spirit-based’. People in community pubs typically consume less alcohol than those in large city centre pubs

- There is evidence that modest alcohol consumption improves both cognitive ability and some (but not all) aspects of health

- Directly and indirectly (by allowing us to meet face-to-face), modest alcohol consumption also enables us to build friendships and create a sense of community, and there is considerable evidence that social network size and quality has dramatic effects on health, wellbeing, happiness and even survival

- We recommend that publicans and pub owners work closely with their community to develop a local community atmosphere

- We recommend that city planners and developers make greater efforts to ensure that communities have local pubs readily available to them

- Government policy on beer tax and business rate relief should consider the positive impacts which community pubs have on health and wellbeing

- If we can persuade people to get off their smart phones and get down to the pub to talk to each other, it is likely to have dramatic effects on health and wellbeing, as well as community cohesion

INTRODUCTION

Health & Social Networks

Nothing is more significant, both to our lives and to the national economy, than our health and happiness. A contented population is one that imposes fewer costs on the health and social services that cost governments and taxpayers increasingly frightening amounts of money. A contented population is one that works harder, that is more socially cohesive and politically engaged, less divisive, and more wiling to pull together. It is also likely to be one that experiences less crime.

There has been a growing recognition over the past decade that the single most important factor determining health, wellbeing and survival is the size and quality of our personal social networks. The more people you know, and the more often you see them, the better you feel and the healthier you are.

One recent study[1] collated data from 148 studies of heart attack patients, and found that the best predictor of survival over the 12 months after a heart attack was how well embedded the patient was into their social network. This had a bigger effect on survival than anything else except giving up smoking – better than any medication being taken, the quantity of alcohol drunk, the amount of exercise taken, even how overweight they were.

Another recent study[2] looked at illness rates in mothers and their toddlers, and found that the more often the mother saw her close family and friends in any given month, the less illness both she and her toddler suffered that month.

In short, friendships are good for you, for your health and for your sense of social worth. Investment in promoting opportunities to make and meet friends might do more to solve the budgetary hole in the NHS than anything else we could think of – if for no other reason than it would dramatically reduce demand. More generally, it might just do more than anything else to make us feel happier and

1 Holt-Lunstad, J. Smith, T. & Bradley Layton, J. (2010). Social relationships and mortality risk: A meta-analytic review. PLOS Medicine, 7, e1000316.

2 Oesch, N. & Dunbar, R. (2015). Influence of kin network on maternal and infant health and illness. J. Preg. Child Health 2: 146.

more content, and more socially engaged with our communities. The central problem is: how do we persuade people to engage with each other socially more often?

The Changing Role of the Pub

The public house has played a seminal role in British social life since the sixteenth century. Pubs came to represent the heart and soul of a community, providing both a place of entertainment and an engine for community bonding. In a world before the arrival of the motorcar, the clientele was largely local and the pub provided a venue in which friendships and a sense of community were sustained.

The closing decades of the twentieth century have witnessed major changes in both the style of public houses and their numbers. In 1951, there were 73,421 pubs in England and Wales; within 20 years, this had fallen to 64,087[3]. Closures continued apace through the ensuing decades, with as many as 2,365 pubs closing in 2009 and a further 1,300 pubs in 2010. As of 2014, the number of pubs had declined to 51,900[4], with pubs continuing to close at an average rate of 29 a week according to the most recent CGA-CAMRA Pub Tracker figures for 2015[5].

Many of these closures have been city centre pubs, making way for new developments. A significant number, however, have been local community pubs in and near housing areas that have been demolished or redeveloped, in some cases to provide multi-occupancy accommodation[6]. At the heart of the problem has been a combination of economic pressures arising from changing social habits (notably the availability of other forms of digital entertainment) and the cheap alcohol available via supermarkets for home consumption. These, combined with general economic forces, have placed considerable pressure on the financial viability of public houses, especially so in rural areas where declining populations and the lack of passing trade have undoubtedly had a significant impact.

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[3] *Jennings, P. (2007). The Local: A History of the English Pub. Stroud: The History Press*

[4] *BBPA [British Beer and Pub Association] (2015) http://www.beerandpub.com/statistics (accessed 20.11.2015*

[5] *http://www.camra.org.uk/press-releases/-/asset_publisher/R16Ta0pf6w5B/content/camra-urges-swift-action-to-stop-pubs-closing*

[6] *http://www.theguardian.com/lifeandstyle/2015/oct/13/the-death-and-life-of-a-great-british-pub*

The past two decades have also witnessed a dramatic change in drinking habits, associated mainly with an increasing switch from beer to wine, the appearance of gastro pubs and a greater emphasis on eating out rather than 'drinking out', and city centre wine bars with a clientele split between after-work drinkers and late evening clubbers. These more commercially-oriented entertainment ventures contrast, both in their business philosophy and in their social focus, with the older pattern of brewery-owned tied houses whose sole function was to provide an outlet for the brewery's own products. Nonetheless, despite these changes, beer still accounts for around 65% of alcohol sales in pubs (with ciders adding another 10%)[7].

In many cases, pubs have faced a double jeopardy created by falling trade, on the one hand, and, on the other hand, rising costs (notably in terms of high rental charges for leased premises and the taxes levied on both beer and businesses). The result has often been to squeeze landlord earnings (in some sectors, as many as half the landlords earned less than £10,000 a year in 2013[8]), thereby reducing the viability of many pubs. Between them, these factors have helped fuel the switch away from community-style pubs to late night bars with their business model that typically aims to maximise alcohol sales.

As a result of the dramatic decline of small community pubs, there is growing recognition of the need to protect these venues as valuable social assets. Campaigns across the country are being launched to highlight the community value of pubs by individually registering them as Assets of Community Value[9] under new Government legislation. To date 1,200 pub applications have been successful, protecting them under planning law from conversion or demolition by unruly developers.

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[7] *CAMRA (2014). CAMRA Beer Tax Briefing. http://www.camra.org.uk/documents/10180/21560/CAMRA+Tax+Briefing+2014.pdf/3c442f27-9341-494b-9ad1-2945734783b6*

8 *Pubco Licensee Survey: Report produced for CAMRA by CGA Strategy, June 2013;*

Pub Companies and Tenants: A Government Consultation. CAMRA, June 2013: http://www.camra.org.uk/documents/10180/21560/Response+from+CAMRA+-+Pub+Companies+and+Tenants+Consultation.pdf/d3b88743-f320-47eb-9293-896b2afddfa2

[9] http://www.legislation.gov.uk/ukdsi/2012/9780111525791/contents

The Role of Pubs in Social Cohesion

The focus of our concern is the pub as a social venue, and in particular its function as a social centre for a local community – a place to meet friends and form networks, a place to foster community spirit. Our focus is thus less with large city centre pubs (i.e. pubs with a city centre location and a more transient, often late night focused, clientele) and more with the 'local', the pub-on-the-corner that provided a social environment for its regulars as well as a base for sports and activities ranging from darts to village cricket. This report summarises a series of studies carried out on behalf of the Campaign for Real Ale (CAMRA) on the role that community pubs play in our health, happiness and social cohesion.

To set the scene, we first provide a brief overview of how we create our friendships. We then raise the problem of large scale social cohesion – perhaps the single most serious problem we currently face – and provide some insights into how we have engineered social cohesion in the past. Finally, we present the findings from three studies that carried out on behalf of CAMRA. These studies aimed to explore both the benefits that pub communities provide for their members and some of the reasons why they work.

FRIENDSHIP AND THE COMMUNITY

Friendships and How We Create Them

Our personal social networks typically consist of around 150 individuals[10], about half of whom are extended family members and half of whom are friends[11]. In effect, family and friends constitute two separate networks that are closely interleaved through all the layers of our social world. While this network of around 150 individuals represents a particular quality of relationship (one that has a history in past interaction and, through this, a sense of obligation, reciprocity and trust[12]), it actually forms one of a series of circles of acquaintanceship that spread inwards with increasing emotional closeness and outwards to progressively lower intensity, but still important, relationships (Figure 1). These circles of acquaintanceship are hierarchically inclusive and have characteristic sizes with a consistent scaling ratio: each layer is three times the size of the layer immediately inside it[13]. In other words, the 15-layer, for example, includes the five people from the innermost 5-layer plus an additional 10 individuals.

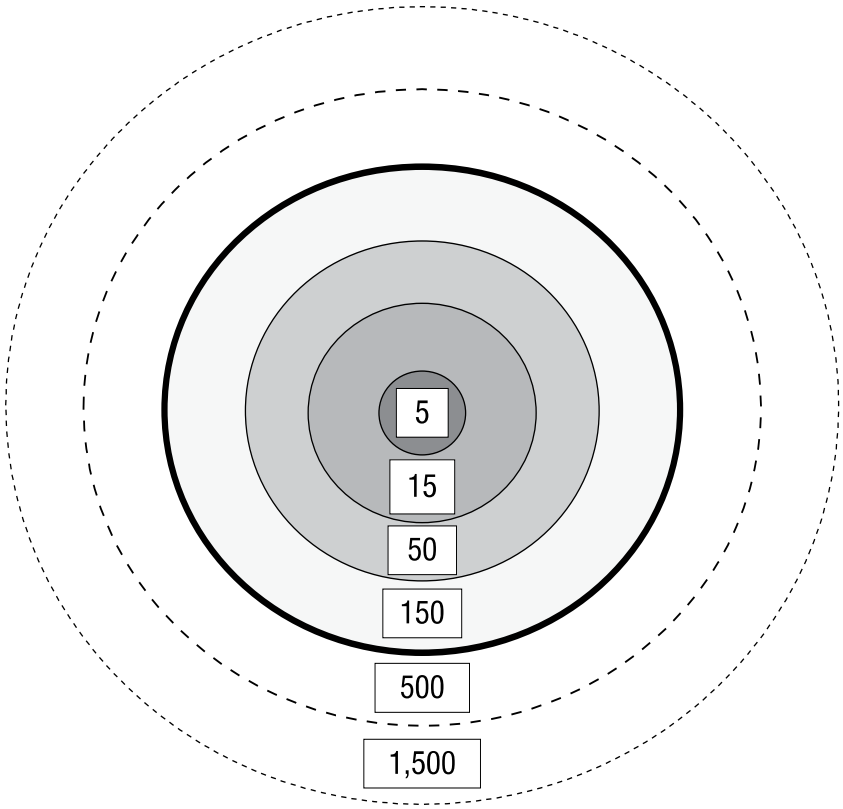
[10] *Hill, R.A. & Dunbar, R. (2003). Social network size in humans. Human Nature 14: 53-72.*

[11] *Roberts, S., Dunbar, R., Pollet, T. & Kuppens, T. (2009). Exploring variations in active network size: constraints and ego characteristics. Social Networks 31: 138-146.*

[12] *Dunbar, R. (2014). The social brain: psychological underpinnings and implications for the structure of organizations. Current Directions in Psychological Science 24: 109-114.*

13 *Zhou, W-X., Sornette, D., Hill, R. & Dunbar, R.: Discrete hierarchical organization of social group sizes. Proceedings of the Royal Society, London, 272B: 439-444.*

Figure 1



The circles of acquaintanceship. Our personal social networks form a series of concentric circles with us at the centre. Each circle has a very distinct size, being roughly three times the size of the circle within it, with the size of each circle being inclusive of the layers within it (i.e. the 15-layer includes the 5 individuals that form the innermost circle of intimate friends and family, etc). The circle at 150 represents the typical size of personal social networks (relationships based on personalised friendships). Beyond that is a layer of acquaintances, with the layer at 1500 representing the limit on the number of faces we can put names to, thus representing the outer limits for personal knowledge. Beyond that, everyone is essentially a stranger. *Source: Dunbar (2014)*[5]

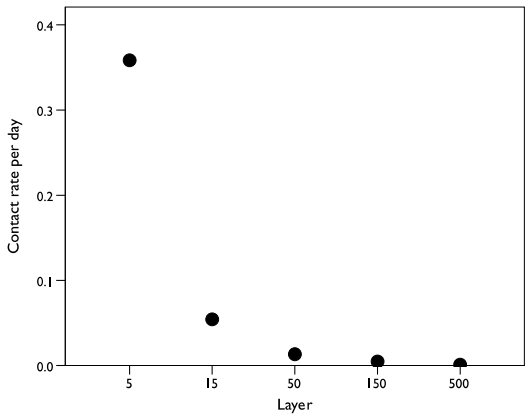
These layers are exactly what we find in small-scale traditional societies, such as those of hunter gatherers or traditional horticulturalists, in many parts of the world today. The 150 layer represents the typical size of communities, and the 1500 layer the typical size of the tribe[14]. Indeed, the average size of rural villages in England and Wales, both at the time of the Domesday Book (1087 AD) *and*

[14] *Dunbar, R. (2008). Mind the gap: or why humans aren't just great apes. Proceedings of the British Academy 154: 403-423.*

seven centuries later during the late eighteenth century, was almost exactly 150[10].

Our social networks are built up over a long period of time, and depend on frequent interaction, especially in the case of friendships. They represent the accumulation of social interaction over many years, and cannot be created overnight. This is reflected in Figure 2, which shows the mean rate with which we contact individual members in each of the layers of our personal social networks, based on data from the social networks of 250 British and Belgian women[11].

Figure 2



Mean frequencies with which we interact with individual members of our personal social networks, as a function of their position (or layer) in our social world. The layers are those shown in Figure 1; they represent degrees of emotional closeness, and have relatively stable numerical sizes.

Source: Sutcliffe et al. (2012)[15]

The bottom line is that we contact the handful of close friends and family who are most important to us more often, and the large number who are less important to us least often. These data also highlight the relatively small size of our social world. Fifteen people account for approximately 60% of our social effort, and represent the people who are most important to us – those we see regularly, often in one or another's houses. The 50-layer typically represents those individuals that we see most often in public social venues or at weekend parties. While the members of the 150-layer mostly represent geographically distant family (and some friends), the 500-layer (the layer of acquaintances, as opposed to true friends) will include many of the people we work with and those

[15] *Sutcliffe, A., Dunbar, R., Binder, J. & Arrow, H. (2012). Relationships and the social brain: integrating psychological and evolutionary perspectives. British Journal of Psychology 103: 149-168.*

we meet casually in our 'local' pub – people we don't know especially well, but whom we recognise and greet, and with whom we share the occasional conversation.

Family and friends differ in many important ways in terms of their dynamics, but perhaps the most important difference is that friendships are particularly susceptible to decay when individuals do not see each other as often as they previously had done. Family relationships tend to be robust, whereas friendships are fragile and require continuous investment[16]. Figure 3 illustrates this for a group of students leaving school for university or the world of work. The start of this study (time T1) was half way though their last year at school, and the period from month 6 to month 18 was the first year away from home at university or work. Mean emotional closeness (a measure of the strength of the friendship on a simple scale of 1 = neutral to 10 = intensely close) to the original set of friends back home from the start of the study (T1) drops off very rapidly as a consequence of the fact that they no longer have so much opportunity to interact with them, and especially so for those who recruited a large number of new friends as a result of this life transition. This is true whether or not the individuals concerned had a high turn over in the number of friends after this transition from school to university/work as a result of the opportunity these new environments offered for meeting and making new friends. Family relationships, in contrast, are much more robust to these kinds of effects.

Friendship arises from shared interests, attitudes and experiences. Indeed, the quality of a friendship (as indexed by the same emotional closeness measure), and our willingness to act altruistically towards that individual both correlate with how many of six major dimensions of friendship (shared language, growing up in the same location, similar educational experience, shared hobbies/interests [including musical tastes], similar moral/political/religious views, and similar sense of humour[17]) we share in common (Figure 4).

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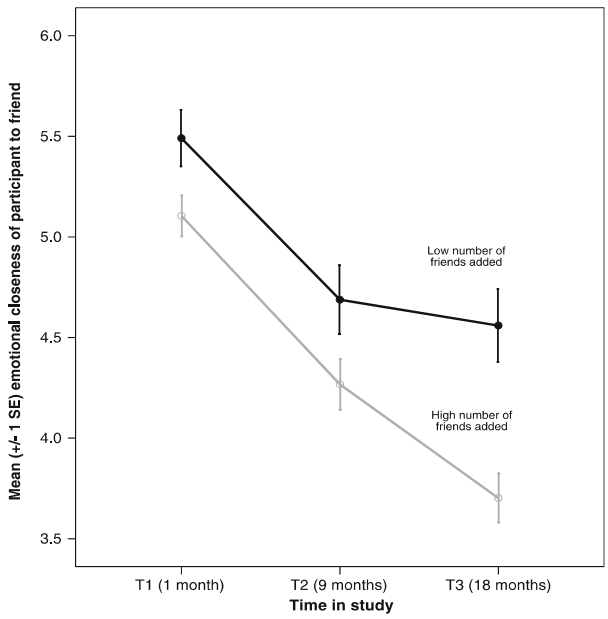
[16] *Roberts, S. & Dunbar, R. (2011). The costs of family and friends: an 18-month longitudinal study of relationship maintenance and decay. Evolution & Human Behavior 32: 186-197; Dunbar, R. (2014). The social brain: psychological underpinnings and implications for the structure of organizations. Current Directions in Psychological Science 24: 109-114.*

[17] *Curry, O. & Dunbar, R. (2013a). Do birds of a feather flock together? The relationship between similarity and altruism in social networks. Human Nature 24: 336-347; Curry, O. & Dunbar, R. (2013b). Sharing a joke: the effects of a similar sense of humor on affiliation and altruism. Evolution & Human Behavior 34: 125-129.*

Figure 3



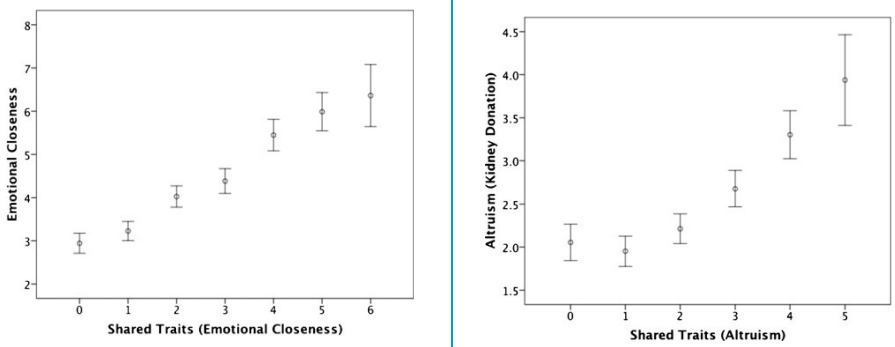
Mean emotional closeness (indexed on a self-rating scale of 1 [low] to 10 [high] to the set of friends at the start of the study changes over the course of 18 months. At month 5, everyone left school and moved to university or work, and did not have the opportunity to see their original set of friends as often. As a result, the emotional quality of the relationships with this original cohort of friends declined significantly. The data are distinguished by whether subjects had a low or high turnover in the number of friends after month 5. *Source: Roberts & Dunbar (2015)*[18]

These dimensions are all essentially cultural, and so change across an individuals' lifetime as we are exposed to new experiences and meet new people. Perhaps because of this, they stand as markers of group membership – they identify a small community that holds the same opinions as I do, people who think about the world in the same way, and whom I can therefore trust and rely on. We think the same way because we grew up in the same community, so I know how to interact with you – I can rely on you understanding my more cryptic allusions. By virtue of belonging to the same community, I know I can trust you.

[18] *Roberts, S. & Dunbar, R. (2015). Managing relationship decay: network, gender and contextual effects. Human Nature (in press).*

The important point here is that we maintain this similarity in our interests and views of the world by talking to each other, so that our opinions and interests change together with those of our friends. If we no longer have the opportunity or time to converse, our interests and views inexorably drift apart as we are exposed to new interests or experiences, and the quality of the friendship declines as a result. Family relationships differ in this respect because they are held together by the inalienable fact that we share a common interest by virtue of our membership of the same extended family. Family, it seems, trumps everything[19], but leaves friendships vulnerable.

Figure 4



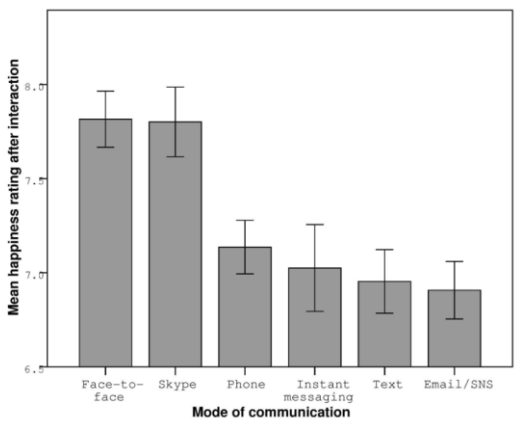
Relationship between (left panel) self-rated emotional closeness (rated on a 1 [low] to 10 [high] scale) and (right panel) willingness to act altruistically (rated on a 1 [low] to 10 [high] scale) to a named friend and the number of major friendship dimensions (traits) shared with that individual. The six trait dimensions are: shared language, place of origin, educational experience, hobbies/interests, moral/political/religious views and sense of humour. *Source: Curry & Dunbar (2013a)*[8]

Familiarity, then, is the crucial ingredient of well-bonded friendships, and we create familiarity by spending time with people. Although the internet provides a wonderful social resource through social networking sites like Facebook and media like SnapChat, Instant Messaging and WhatsApp, still it seems that there is nothing quite like a face-to-face encounter. In a previous study, we asked people to record their satisfaction with each interaction they had had during the day with each of their five best friends. The data showed rather clearly that face-to-

19 Roberts, S., Dunbar, R., Pollet, T. & Kuppens, T. (2009). Exploring variations in active network size: constraints and ego characteristics. Social Networks 31: 138-146; Curry, O., Roberts, S. & Dunbar, R. (2013). Altruism in social networks: evidence for a "kinship premium". British Journal of Psychology 104: 283-295.

face interactions are hard to beat, with only skype of all the digital media coming close (Figure 5).

Figure 5



At the end of each day, 45 subjects recorded their satisfaction (on a standard 1-10 happiness scale) for each interaction they had had with each of their five best friends, differentiating the medium of communication in each case. Face-to-face and skype interactions are significantly more satisfying than interactions via any other digital media. Bars are standard errors (se).

Source: Vlahovic et al. (2012)[20]

In summary, friendships are fragile, and we have to work at them. Failure to invest time in a friendship, and particularly in face-to-face encounters, results in a rapid decline in the emotional quality of the relationship. One consequence of this decline is that individuals are less willing to behave altruistically towards each other.

Pubs, of course, provide one natural environment in which people can engage in regular face-to-face interactions. As a focal point where friends can guarantee being able to meet up at regular intervals without having to make formal arrangements beforehand, they provide a natural context in which old friendships can be reinforced and new ones created.

Friendship and Community Cohesion

The opportunity to meet people and build friendships lies at the heart of community. Although our personal social networks are limited in size, in the

[20] *Vlahovic, T., Roberts, S. & Dunbar, R. (2012). Effects of duration and laughter on subjective happiness within different modes of communication. Journal of Computer-Mediated Communication 17: 436-450.*

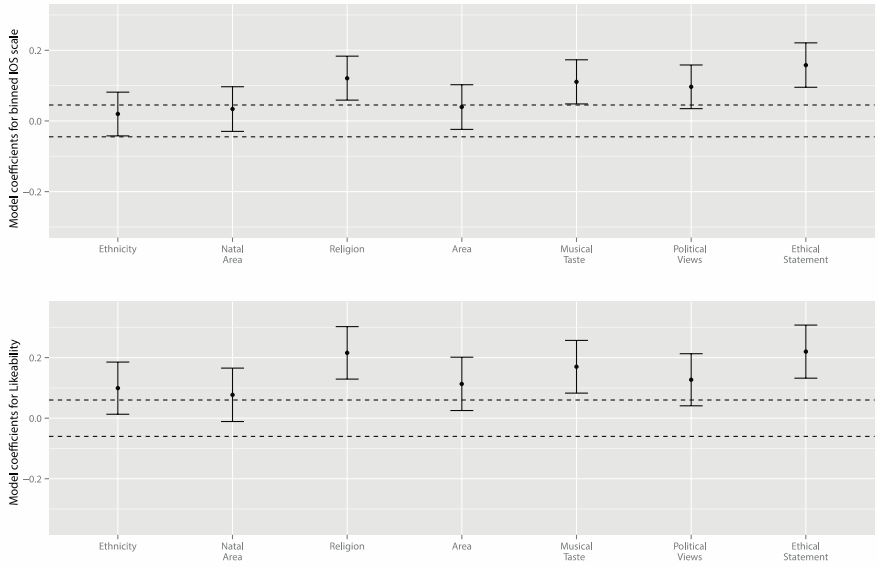
contemporary world we nonetheless form communities with many hundreds of thousands of individuals – a capacity that is crucial in allowing us to live in large cities, and even nation states.

One of the ways we achieve this is by exploiting the six dimensions of friendship and using these to identify people who are likely to be trustworthy (because they share particular cultural traits with us) and so likely to be the kind of people we would want to have as friends. In effect, we create 'clubs' based on one key criterion, one shared trait such as a common interest in tennis, cricket, bridge, amateur dramatics or whatever – a 'totem' which we all sign up to and which in itself becomes evidence that we belong to the club. Membership of the club provides a guarantee that we are likely to be trustworthy, signifying that we see the world in the same way even though we know nothing more about each other. It provides an opening gambit for a relationship, a signal that a stranger is in fact OK.

These 'clubs' may be based around almost anything cultural, but the key dimensions that underpin friendship emerge as being important. Figure 6 shows the individual effects on our sense of bonding (the *Inclusion of Other in Self*, or IOS, scale[21], which indexes in a very simple way our sense of feeling "as one" with someone else: see Figure 11, below, for an example) and how much we might expect to like a stranger when we find that we share a particular cultural trait with them. Political views, religious affiliations, musical tastes, sense of humour – all of these provide the basis for community membership, through which we identify strangers who can be trusted because they 'belong to our club'. A stranger who knows the rules of cricket well enough to appreciate the significance of my casual remark about silly mid-on dropping a dolly of a catch marks themselves out as a member of my 'club' – in this case, the club of cricket enthusiasts.

[21] *Aron, A., Aron, E., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. Journal of Personality and Social Psychology 63: 596-612.*

Figure 6



Mean (and standard error) for self-rated feeling of social closeness to a stranger (the "Inclusion of Other in Self" scale) (upper panel) and self-rated likeability of a stranger (lower panel) when similarity to the stranger involves different cultural traits. The dotted lines indicate minimum values for the mean to achieve statistical significance. *Source: Launay & Dunbar (2015)*[22]

However, shared cultural traits are not the only way we create friendships. In the course of building up friendships, we make use of a number of other more 'primitive' mechanisms as part of the process. These include laughter[23], singing and dancing[10]. These activities have dramatic effects on our sense of bonding, not just with people we already know but also with complete strangers.

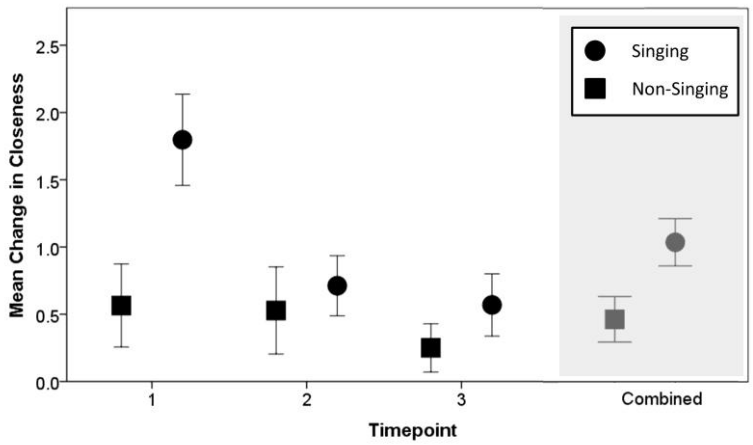
Figure 7 offers one example of this from a study of singing. In this study, groups of novices attended a course of weekly singing or hobby classes over a seven month period. At the beginning, middle and end of the study, they rated themselves at the beginning and end of each class for their feeling of belonging to the group on the *Inclusion of Other in Self* (IOS) scale. The singing classes showed a very rapid

[22] *Launay, J. & Dunbar, R. (2015). Playing with strangers: which shared traits attract us most to new people? PLoS One 10: e0129688.*

[23] *Dunbar, R. (2012). Bridging the bonding gap: the transition from primates to humans. Philosophical Transactions of the Royal Society, London, 367B: 1837-1846.*

increase in the sense of belonging, which we term the "icebreaker effect"[24]. The hobby classes also showed some improvement in bonding, but it was very modest by comparison with the singing classes and nothing like the extraordinary change shown by these as a result of their first few classes. Dancing (and, it seems, even just listening to emotionally arousing stories) has similar effects[25].

Figure 7



The "icebreaker effect". Mean (and standard error) for change in self-rated emotional closeness to other members of the class for four singing classes (circles) and three hobby classes (squares) measured across the beginning and end of each class at three time points during a 7 month course. All classes consisted of novices.. *Source: Pearce et al. (2015)*[24]

In sum, a number of conventional social activities like laughter, singing and dancing play a central role in the processes of community bonding, and often have a more direct effect than anything else. But we also use language-based exchanges (conversation) to establish that we have shared interests in common with someone, and these can provide a "first pass" guide as to how likely we are

[24] *Pearce, E., Launay, J. & Dunbar, R. (2015). The ice-breaker effect: singing mediates fast social bonding. Royal Society (London) Open Science 2: 150221.*

[25] Tarr, B., Launay, J., Cohen, E. & Dunbar, R. (2015). Synchrony and exertion during dance independently raise pain threshold and encourage social bonding. Biology Letters (in press); Duncan S., van Emde Boas, E., Maguire, L., Budelmann, F., et al. (2016). Cognition, endorphins and the literary response to tragedy. Poetics Today (n press).

to find a stranger trustworthy and the kind of person with whom we might want to form a friendship.

Why Community is Good for You

Community lies at the heart of our health and wellbeing. We are an intensely social species, and everything we do is bound up in our propensity to be social. Being socially engaged, and taking part in activities like laughing, singing and dancing that are part of that process of engagement, not only make us feel part of the community, but directly and indirectly also enhance our sense of wellbeing and even our health.

There is now considerable evidence that the size and quality of your social network has a direct effect on how ill you are likely to become, on your happiness, and even on how likely you are to die. Positive social bonds help reduce the effects of post-traumatic stress, depression, and increase the rate of recovery from illness; they even promote cancer survival[26] and survival after heart attacks[27]. A large family network reduces sickness rates as well as mortality rates among children[28], and explicitly so when this involves regular contact. You are even more likely to be happy if those around you are happy[29].

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[26] *Waxler-Morrison, N., Hislop, T., Mears, B. & Kan, L. (1991). Effects of social relationships on survival for women with breast cancer: A prospective study. Social Science & Medicine 33: 177-183; Sayal, K., Checkley, S., Rees, M., Jacobs, C., Harris, T., Papadopoulos, A., & Poon, L. (2002). Effects of social support during weekend leave on cortisol and depression ratings: a pilot study. Journal of Affective Disorders 71: 153-157; Kikusui, T., Winslo, J. & Mori, Y. (2006). Social buffering: relief from stress and anxiety. Philosophical Transactions of the Royal Society, London, 361B: 2215–2228; Pinquart, M. & Duberstein, P. R. (2010). Association of social networks with cancer mortality: a meta-analysis. Critical Review of Oncology and Haematology 75: 122-137; Charuvastra, A. & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. Annual Review of Psychology 59: 301-328; Liu, L. & Newschaffer, C. J. (2011). Impact of social connections on risk of heart disease, cancer and all-cause mortality among elderly Americans: Findings from the Second Longitudinal Study of Aging (LSOA II). Archives of Gerontology and Geriatrics 53: 168-173; Chou, A., Stewart, S., Wild, R. & Bloom, J. (2012). Social support and survival in young women with breast carcinoma. Psycho-Oncology 21: 125-133; Tilvis, R., Routasalo, P., Karppinen, H., Strandberg, T., Kautiainen, H. & Pitkala, K. (2012). Social isolation, social activity and loneliness as survival indicators in old age: a nationwide survey with a 7-year follow-up. European Geriatric Medicine 3: 18-22.*

[27] *Holt-Lunstad, J. Smith, T. & Bradley Layton, J. (2010). Social relationships and mortality risk: A meta-analytic review. PLOS Medicine, 7, e1000316.*

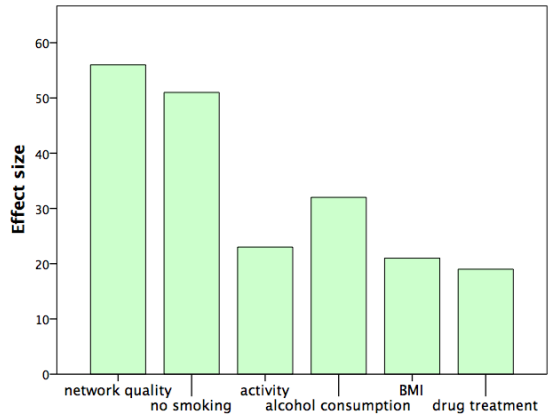
[28] *Spence, J. (1954). One Thousand Families in Newcastle. Oxford: Oxford University Press; Flinn, M. & England, B. (1995). Childhood stress and family environment. Current Anthropology 36: 854-866; Kana'iaupuni, S., Donato, K., Thompson-Colon, T. & Stainbeck, M. (2005). Counting on kin: social networks, social support, and child health status. Social Forces 83: 1137-1164; Oesch, N. & Dunbar, R. (2015). Influence of kin network on maternal and infant health and illness. J. Preg. Child Health 2: 146.*

[29] *Fowler, J. & Christakis, N. (2008). The dynamic spread of happiness in a large social network. British Medical Journal 337: a2338.*

This is true even of monkeys, where females who have more friends are more likely to be less stressed[30], live longer and have more surviving offspring[31]. The effects of network ties are clearly very deep-seated and of very ancient evolutionary origin.

Figure 8 illustrates this with data from one study. This study collated the results of 148 epidemiological studies of heart attack patients and asked which factors best predicted a patient's likelihood of surviving the next 12 months after the heart attack. The quality of a patient's social networks (how well embedded they were within their network, how supportive their friends and family were) had the biggest effect on likelihood of surviving – bigger than anything else except giving up smoking. Network quality outperformed how obese they were, how much exercise they took, what drug treatments they were on, and how much alcohol they consumed.

Figure 8



Relative magnitude (Effect size) of different variables' impact on the likelihood that heart attack patients survived the next 12 months., based on a compilation of 148 epidemiological studies

Source: Holt-Lunstad et al. (2010)[32]

[30] *Crockford, C., Wittig, R., Whitten, P., Seyfarth, R. & Cheney, D. (2008). Social stressors and coping mechanisms in wild female baboons (Papio hamadryas ursinus). Hormones and Behavior 53: 254-265; Wittig, R., Crockford, C., Lehmann, J., Whitten, P., Seyfarth, R. & Cheney, D. (2008). Focused grooming networks and stress alleviation in wild female baboons. Hormones and Behavior 54: 170-177.*

[31] *Silk, J., Alberts, S. & Altmann, J. (2003). Social bonds of female baboons enhance infant survival. Science 302: 1232-1234; Silk, J., Beehner, J., Bergman, T., Crockford, C., Engh, A., et al. (2009). The benefits of social capital: close social bonds among female baboons enhance offspring survival. Proceedings of the Royal Society, London, 276B: 3099-3104; Silk, J., Beehner, J., Bergman, T., Crockford, C., Engh, A., Moscovice, L., et al. (2010). Strong and consistent social bonds enhance the longevity of female baboons. Current Biology 20: 1359-1361.*

[32] *Holt-Lunstad, J. Smith, T. B. & Bradley Layton, J. (2010). Social relationships and mortality risk: A meta-analytic review. PLOS Medicine 7: e1000316.*

These health benefits of social networks have not been widely appreciated until very recently[33]. Yet, the extensive evidence now available on this reveals quite clearly that those who feel they are part of a community really do experience greater contentedness with their life, as well as greater health and wellbeing.

Aside from these personal benefits, there is another respect in which community plays an important role in society. Communities act as their own policemen because their members have a social right to comment on, and even discipline, those who stray from the community's norms. Good behaviour and social cohesion are maintained because people are less willing to infringe against these norms when doing so would invite censure from those they respect or with whom they are friends.

This effect doesn't necessarily require the community to act in a punitive way whenever someone breaks the law. At least as important is the fact that community members are less *willing* to break the law because of the sense of obligation and duty they feel towards other community members when they know these individuals personally. The effect of peer pressure is reflected even in simple things like the fact that we are more likely to give up smoking if those around us have given up smoking[34]. Similarly, we are more likely to behave altruistically towards other members of our network if the network is dense (i.e. the members interact frequently with each other) than if the links between individual members are weak[35].

[33] *House, J. (2001). Social isolation kills, but how and why? Psychosomatic Medicine 63: 273-274; Reblin, M., and Uchino, B. N. (2008). Social and emotional support and its implication for health. Current Opinion in Psychiatry 21: 201-205; Smith, K. & Christakis, N. (2008). Social networks and health. Annual Review of Sociology 34: 405-429; Dominguez, S. & Arford, T. (2010). It is all about who you know: Social capital and health in low-income communities. Health Sociology Review 19: 114-129.*

[34] *Chritakis, N. & Fowler, J. (2008). The collective dynamics of smoking in a large social network. New England Journal of Medicine 358: 2249-2258.*

[35] *Curry, O. & Dunbar, R. (2011). Altruism in networks: the effect of connections. Biology Letters 7: 651-653; Harrison, F., Sciberras, J. & James, R. (2011). Strength of social tie predicts cooperative investment in a human social network. PLoS One 6: e18338; O'Malley, A., Arbesman, S., Steiger, D., Fowler, J. & Christakis, N. (2012). Egocentric social network structure, health, and pro-social behaviors in a national panel study of Americans PLoS One 7: e36250*

THE PUB AT THE HEART OF COMMUNITY

The previous section set out the general background both as to why friendships, and more generally communities, are important for us, and how they might provide the basis of greater social cohesion and greater personal health and wellbeing.

To explore the extent to which pubs create a sense of community and enhance wellbeing, we undertook three studies on behalf of the Campaign for Real Ale (CAMRA). First, YouGov was commissioned to run a national survey in which 2254 adults, proportionally distributed by age, sex and regional population, were asked a number of questions about their use of pubs and their overall sense of health and wellbeing. The aim was to determine why people visit their local pub, how life satisfaction relates to pub use and how this varies across the U.K. Second, we undertook a series of samples in seven pubs in and around Oxford to determine the size and dynamics of conversation groups. Conversation lies at the heart of sociality, and our aim here was to see whether there were any differences in the patterns of conversation between small community pubs and large (mainly city centre) pubs and bars (those more modern city centre establishments that focus on a more anonymous clientele, often with late night drinking as a major focus). Finally, we asked 95 randomly-chosen people in seven Oxfordshire pubs to do a series of tasks to assess their social experiences and social skills.

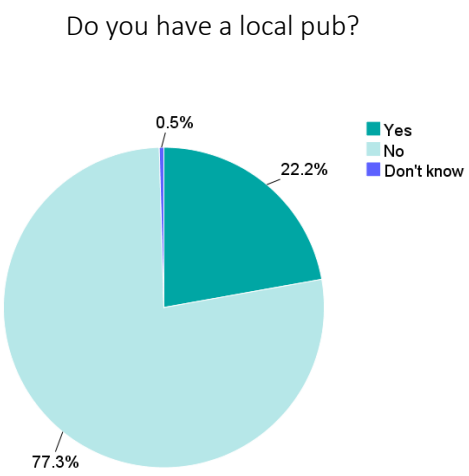
Full details of the methods used in these studies are given in Appendix A. In the text, we give only the summary conclusions, along with graphs illustrating these results. The statistical results that confirm these findings are given in Appendix B.

A National YouGov Poll

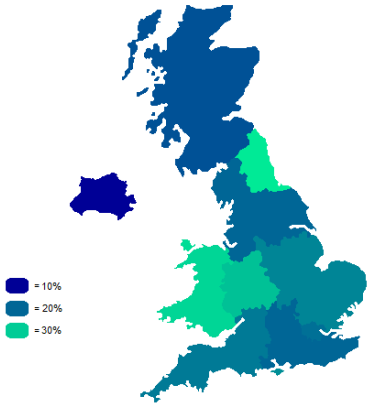
On behalf of CAMRA, YouGov conducted a national randomly stratified survey of over 2254 adults, proportionately distributed across the regions of the U.K., and balanced for the national demographic (age and gender) structure. The survey was conducted online in the first week of November 2015. All results reported here use weighted data to give an accurate representation of opinions across the UK. Details of the weighting method are given in Appendix C.

In our survey, 45% of respondents stated that they drank in a pub on a regular basis. However, only 22% of people surveyed said they had a regular 'local' – one particular pub that they habitually visited and where they knew the landlord and other customers on a personal basis (Figure 9). There is considerable national variation in the proportion of people who have a regular 'local', however. This is lowest (at a surprisingly low 10%) in Northern Ireland and Scotland (18%), and highest in Wales (31%) and the Northeast (33%) where around a third of those who used pubs had a regular 'local'.

Figure 9



In a national survey, just over a fifth of people said they had a 'local' that they habitually visit.

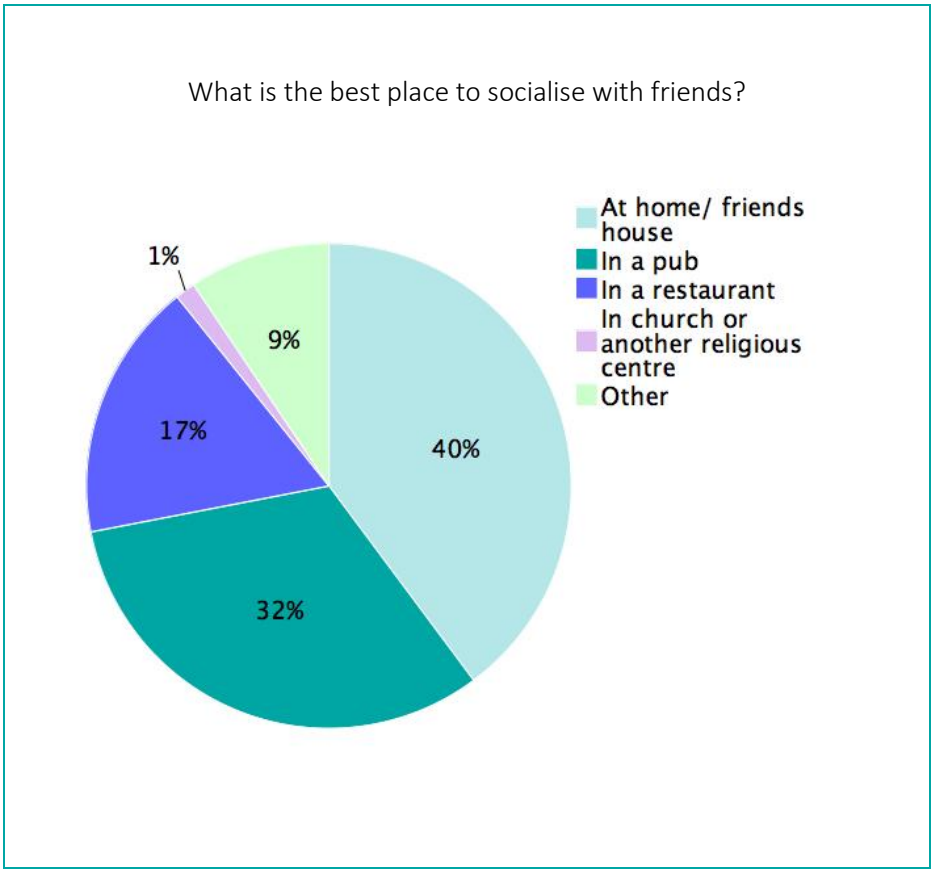


Across the UK, the proportion of people who have a 'local' varies considerably, being lowest in Northern Ireland and Scotland and highest in Wales and the Northeast.

Respondents reported that they were most likely to drink alcohol in their own home with friends (57%), with the second most common location being in a pub with food – 41% of drinkers say that this is a place that they regularly consume alcohol. It is worth noting that they regarded a pub as a relatively safe place to drink (and avoid binge drinking). Respondents identified a pub as the best place to socialise with friends (32%) after their own or a friend's house (40%, Figure 10).

One of the advantages of social drinking in venues like a community pub is that people tend to drink less than when on their own or, indeed, in large city centre pubs and bars. It is also likely that by drinking less, and being in a group which has drunk less, they will be less prone to risk-taking behaviours. While it is well known that drinking alcohol in groups increases risk-taking[36] and competitiveness[37], it seems that there can be a group-moderation effect when such studies are done in natural settings with naturally convened groups[38] rather than, as is usually the case in most experimental studies, in the laboratory. In effect, when drinking in moderation, the group acts as its own policeman.

Figure 10

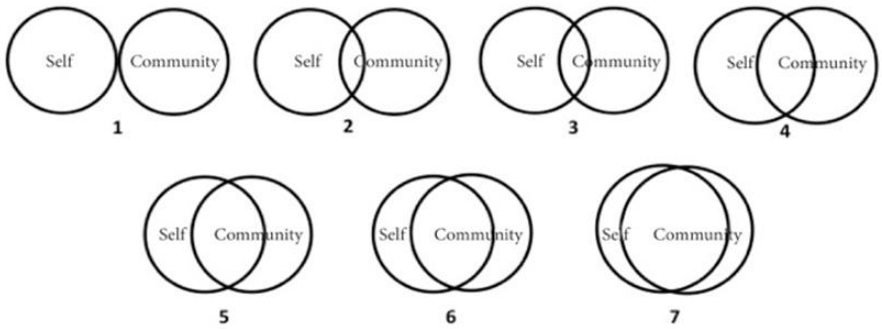


[36] *Abrams, D.,Hopthrow, T., Hulbert, L. & Frings, D. (2006). "Groupdrink"? The effect of alcohol on risk attraction among groups versus individuals. Journal of Studies on Alcohol and Drugs 67: 628-636; Sayette, M.A., Dimoff, J.D., Levine, J.M., Moreland, R.L. & Votruba-Drzal, E. (2012). The effects of alcohol and dosage-set on risk-seeking behavior in groups and individuals. Psychology of Addictive Behaviors 26: 194-200.*

[37] *Hopthrow, T., Abrams, D., Frings, D., Hulbert, L.G. (2007). Groupdrink: The effects of alcohol on intergroup competitiveness. Psychology of Addictive Behaviors 21: 272-276.*

[38] *Hopthrow, T., Randsley de Moura, G., Meleady, R., Abrams, D. & Swift, H.J. (2014). Drinking in social groups. Does 'groupdrink' provide safety in numbers when deciding about risk? Addiction 109: 913-921..*

Figure 11



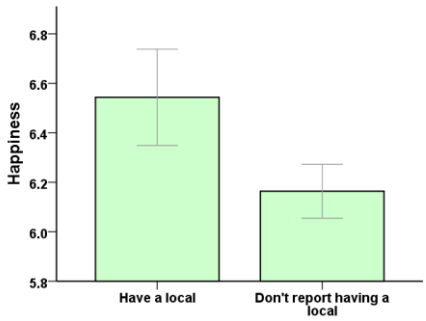
Subjects were asked to indicate the pair of circles that best described how well they felt they were connected to their community. People who had a 'local' felt significantly more connected to their local community, with 14% choosing images 5, 6 or 7, while only 11% of those without a local chose these images.

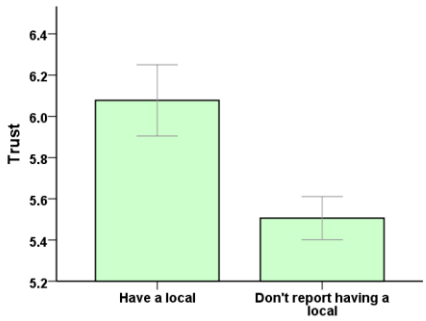
We asked respondents how well they felt they were connected to their local community, using a simple scale, the *Inclusion-of-Other-Self* (or *IOS*) rating scale (Figure 11: a 1-7 visual scale, in which 1 indicates low connectedness and 7 indicates high connectedness)[39]. Those who had a "local" reported that they were significantly more connected to their community than those who did not.

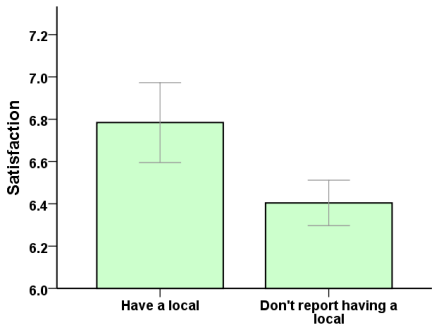
People who have a 'local' also rated themselves as feeling significantly happier than those who do not; they also had higher life satisfaction and felt that other people are significantly more trustworthy (Figure 12). We asked people to tell us how many close friends they had (defined as all those whom they would go to for help and support). People who declared they had a 'local' had significantly more such friends than people who did not have a 'local' or did not regularly use pubs – on average 7.2 friends compared to 6.0 (Figure 13).

[39] *Aron, A., Aron, E. & Smollan, D. (1992). Inclusion of Other in the Self scale and the structure of interpersonal closeness. Journal of Personality and Social Psychology 63: 596–612.*

Figure 12

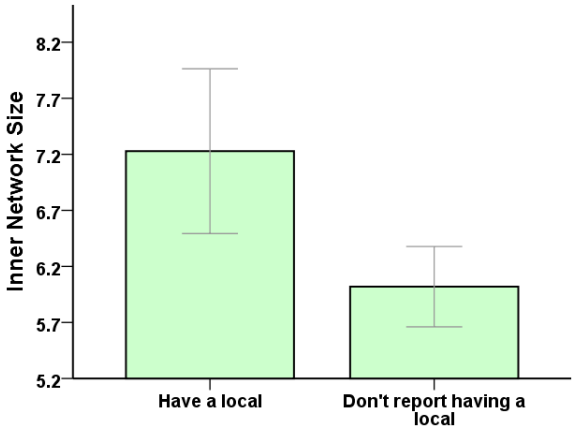






Participants who reported having a 'local' reported being significantly happier, feeling more trust in other people, and having greater life satisfaction than those who did not report having a local. The plotted values are the mean ratings (on a 0-10 scale), and the bars indicate 2SE[40].

Figure 13

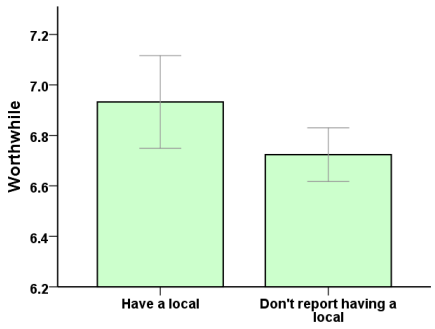


Mean (± 2 SE) number of friends that an individual could go to for support or help in times of distress.

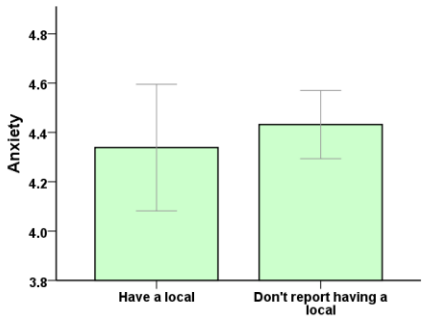
[40] *SE = standard error of the mean (an estimate of how accurate the reported mean is as an estimate of the true mean of the whole population).*

These responses contrast with responses to a number of more general standard life satisfaction questions where respondents with and without locals gave similar ratings. These included their experienced level of anxiety, and how worthwhile they found the things they do in life (Figure 14). The fact that there were no differences in these cases reinforces the significance of the fact that there were differences in response to the social questions. It is not just that 'local' and casual drinkers' responses differed on everything; it is specifically in respect of the social aspects of their lives, and those related to life happiness, on which they differ.

Figure 14



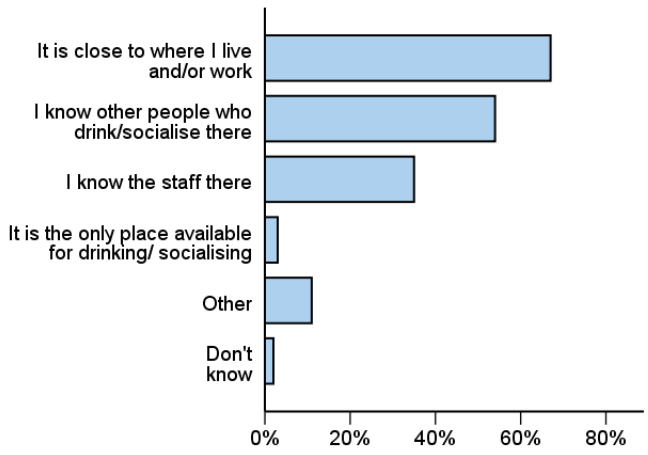
Mean (± 2 SE) ratings for how worthwhile participants reported the things they do in life. There were no differences between people with a local and those who did not report having a local.



There were also no differences in the anxiety experienced by people who had a local and those who did not report having a local.

We asked survey respondents who had a 'local' what it was that made this pub their regular venue. Proximity to where they lived or worked was the single most important criterion (68%), but the fact that they knew other people who drink or socialise there was a close second (54%) (Figure 15). Thus a combination of convenience and knowing they would meet friends were the two most important factors prompting people to visit a particular pub regularly. Knowing the staff comes a close third in the listings, perhaps suggesting that, in addition, the ambience of the pub itself may be important.

Figure 15



Characteristics that make a pub your 'local'. Respondents could tick as many criteria as they wished.

Respondents were also invited to offer open text comments on this question, and among the answers were:

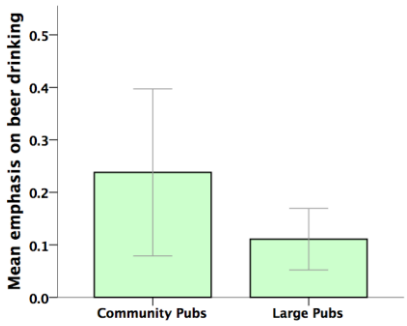
- 'It is the only "real" pub in the area, others are food based'
- 'Focal point for the village'
- 'Central meeting place'
- 'Convenience for meeting people'
- 'Atmosphere and style'
- 'Small but good selection of real ale and whisky, when I still drank'
- 'Quality of the beer'

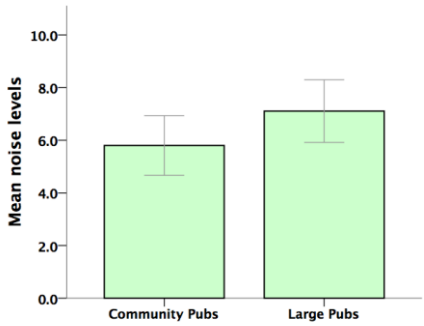
This survey thus suggests that the 'local' as a social institution is still alive and well, even though people's drinking habits in Britain have changed dramatically over the past half century. Importantly, those who frequented a 'local' had more close friends, trusted those around them more and were more contented with their life, even when the samples are adjusted for age, gender and region.

The Pub as a Social Venue

To provide insights into the dynamics of how people interact socially in pubs, we carried out a series of observational studies between noon and midnight in seven venues in the Oxford City area. Five of these were large pubs, and two were small community pubs. Since our main concern is with the social aspects of pubs, we focussed on monitoring conversational behaviour. How large is a conversation group? Do conversation groups differ between small community pubs and large city centre pubs and bars? How engaged are people in their conversations? We sampled 65 individuals and recorded the size and duration of the conversations they were engaged in during a 20-minute period.

Figure 16





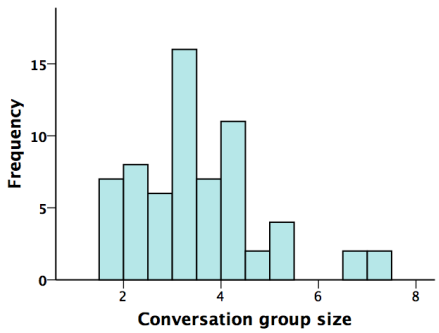
The emphasis on beer drinking is the ratio between the number of taps and the size of the pub. A small pub with lots of beer taps would have a high ratio, whilst a large pub (labeled 'bars') with few taps would have a low ratio.

Large city centre pubs were generally louder than small community pubs. Loudness was estimated by managers and averaged across weekend and weekday estimations, with 1 representing very quiet and 10 representing very loud.

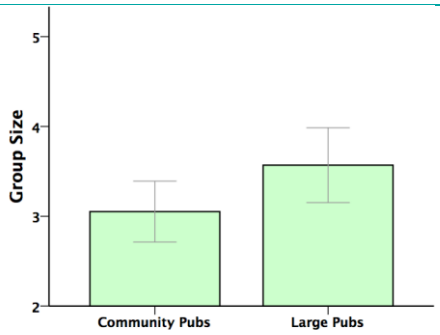
We first set the scene by characterising the ambiences of the two types of venues we sampled. Although neither is statistically significant due to the small sample size, the larger pubs with more of a late night focused clientele tended to be less likely to be beer-oriented (as indexed by the ratio of beer taps to bar area) and were more likely to be noisier (as rated by the managers) (Figure 16). Thus, in our sample, community pubs tended to be smaller, more intimate and more draft beer oriented.

Across all venues in the sample, the average size of conversations was 3.4±1.3 SD[41] (Figure 17, left panel). This is in close agreement with previous samples of conversation group sizes, both in pubs and in general public environments, which find a consistent upper limit of about four individuals on the size of naturally forming conversations[42]. The average conversation group size was, however, significantly larger in large city centre pubs than in small community pubs (Figure 17, right panel).

Figure 17



Time-weighted conversation group size in pubs (averaged over 20 minutes).



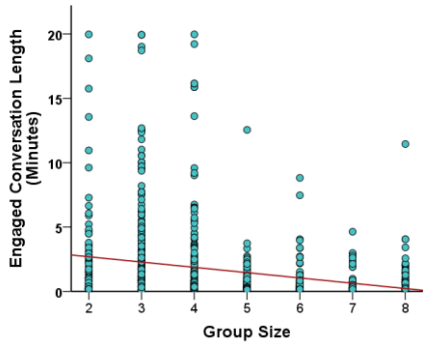
Mean (± 2 SE) of conversation group size in small community pubs and large city centre pubs.

[41] *SD = standard deviation (a measure of how variable the data are).*

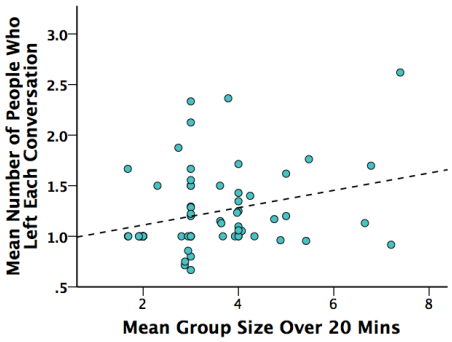
[42] *Dunbar, R., Duncan, N. & Nettle, D. (1995). Size and structure of freely forming conversational groups. Human Nature 6: 67-78; Dezecache, G. & Dunbar, R. (2012). Sharing the joke: the size of natural laughter groups. Evolution & Human Behavior 33: 775-779.*

In other words, the clientele in large city centre venues were more likely to be there in large social groups, perhaps on their way to another venue such as a club, whereas those in small community pubs were there for more directly social purposes (i.e. to have a conversation). This suggests that the social dynamics of these two types of venue are very different, and serve very different functions.

Figure 18

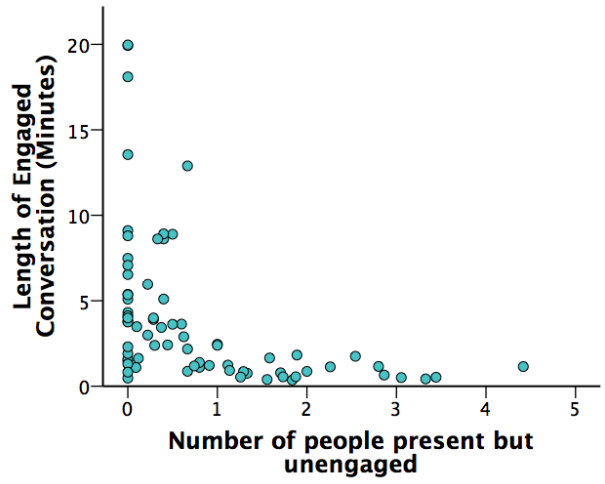


Conversation duration (minutes) as a function of conversation group size.



Mean number of people in each group who dropped out of each conversation as a function of conversation group size.

Figure 19

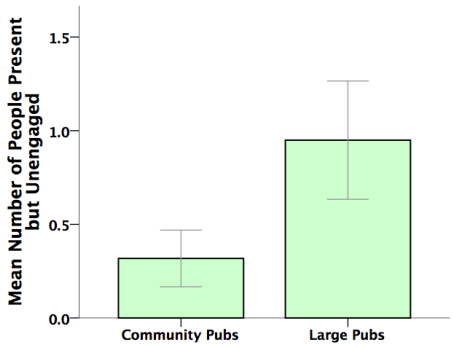


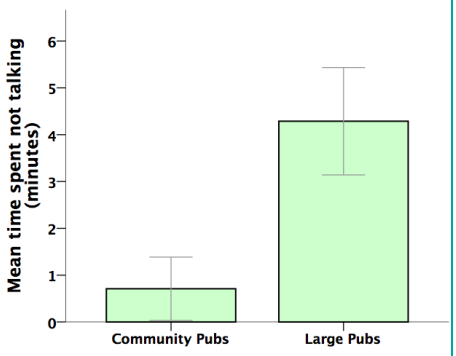
Length of conversation as a function of the number of people in the conversation who were not engaged with (paying attention to) the speaker

The size of a social group has significant consequences for its dynamics. Conversations became more broken up as the size of the group increased, with unbroken stretches of conversation being shorter (Figure 18, left panel), and more people dropping out of each unbroken stretch of conversation (Figure 18, right panel). Unbroken stretches of conversation were also shorter if more of the individuals in the group were not paying attention to the focal person we were observing (i.e. they were looking around the room, on their phones, or speaking with other people, rather than paying attention to the conversation) (Figure 19).

More importantly in the present context, the proportion of people who were not engaged with (i.e. paying attention to) a conversation was higher in large city centre pubs than in the smaller community pubs (Figure 20, left panel). More generally, people in large pubs spent significantly more time not taking part in the conversation they were associated with – behaviours such as "not talking" (e.g. sitting in momentary silence), "staring off elsewhere round the room", "waiting at bar", "in bathroom" and "on phone" (Figure 20, right panel). No one was ever recorded checking their phone in any of the samples in a small community pub, but in large city centre bars people often did so (the difference was highly significant).

Figure 20



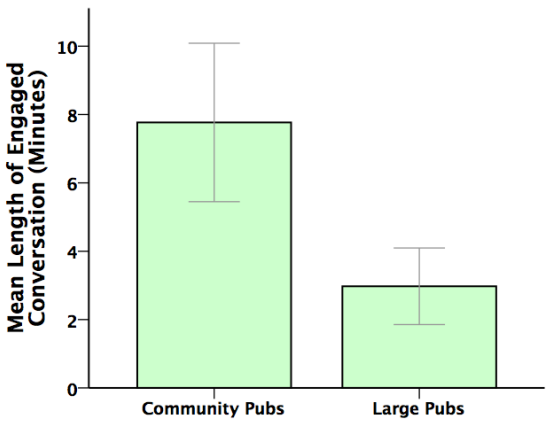


Mean (±2 SE) number of people present but not actively involved in a conversation (talking or listening) in small community pubs and large city centre pubs.

Mean (±2 SE) time spent not talking in conversations in small community pubs and large city centre pubs.

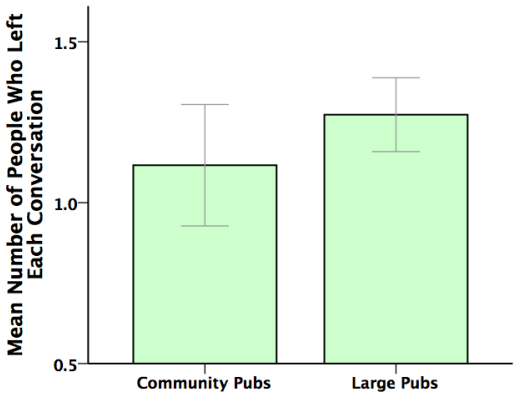
As a result, conversations lasted significantly longer in smaller community pubs than they did in large city centre type venues (Figure 21), and, although the difference is not statistically significant, people tended to drop out of conversations more often in the latter type of pub (Figure 22). In short, people in community pubs were more attentive to the speaker, and seemed to be more socially engaged with their conversation group. Overall, the total time people spent on their phones was significantly positively correlated with total time spent not talking (Pearson correlation: $r = 0.311$, $p = 0.012$)

Figure 21



Mean (±2 SE) length of conversations in small community pubs and large pubs and bars.

Figure 22



Mean (±2 SE) number of people who dropped out of each conversation in small community pubs and large pubs/bars.

In sum, large city centre pubs and bars have larger conversation groups, but these groups are much more transient and less engaged than is the case in more community-oriented pubs. In large city centre venues, people seem to be less engaged with each other, and move rapidly from one brief conversation to another, allowing less time to get to know their social companions or establish relationships with them. The more relaxed atmosphere of a community 'local' seems to encourage more social engagement.

Psychology at the Heart of the Pub

We sampled 95 customers across six pubs (four community pubs and two large city centre venues) between 8pm and 11pm on weeknights, and 3pm and 6pm on a Saturday afternoon, during November 2015. Customers were invited to take part in a brief exercise by completing a set of questionnaires. The aim was to explore in more detail the effects that social drinking might have on some core aspects of social behaviour.

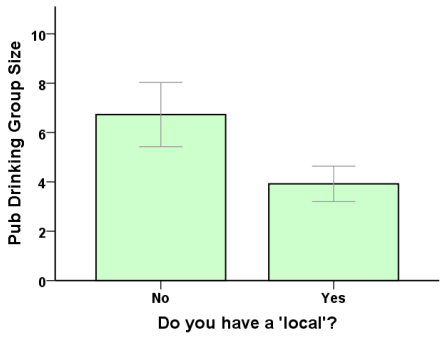
As we noted above in the observational study of venues, those who declared that they had a 'local' which they attended regularly were in significantly smaller social groups than those who were casual visitors (mean groups of 3.9 vs 6.7), (Figure 23, left panel). Notice that those attending their 'local' were in conversational sized groups, whereas casual customers were typically in parties that were much larger than the normative limit for conversations. Similarly, those who were drinking in large city centre venues were in larger drinking groups than those in community pubs, where, again, social groups were typically conversation-sized (Figure 23, right panel). Large social groups encourage individuals to flit from one conversation to another, and have a strong tendency to result in single-sex conversations once they exceed four people in size[43].

We also asked customers to rate how integrated they felt with the community in which they lived. Those sampled at community pubs rated their communities as significantly more integrated than those in large city centre pubs (Figure 23, left

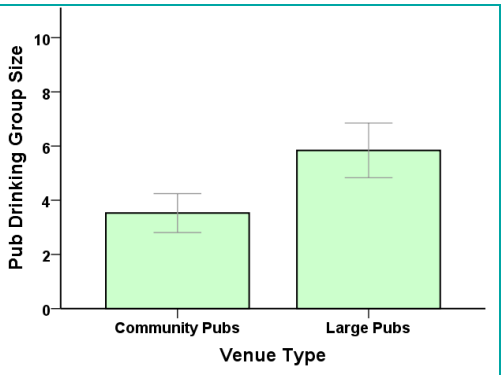
[43] *Dunbar, R. (2015). Sexual segregation in human conversations. Behaviour (in press).*

panel). Average weekly alcohol consumption also correlated with how integrated customers rated their community to be (Figure 23, right panel).

Figure 23



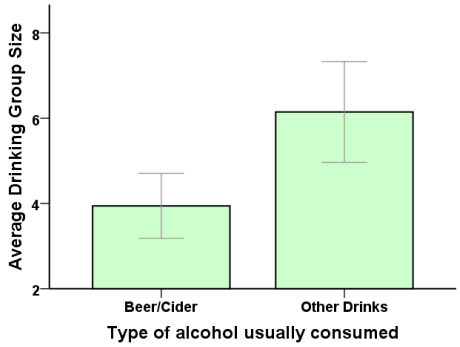
Mean (±2 SE) drinking group size as a function of whether or not respondents were drinking in their own "local".



Mean (±2 SE) drinking group size as a function of whether respondents were in large city centre pubs or community-style pubs.

Figure 24 shows drinking group size as a function of whether or not subjects were predominantly beer/cider drinkers. Beer/cider drinkers had significantly smaller groups, commensurate with the fact that they were more typically clientele at smaller community pubs.

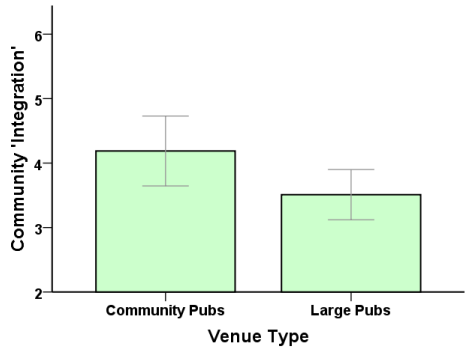
Figure 24



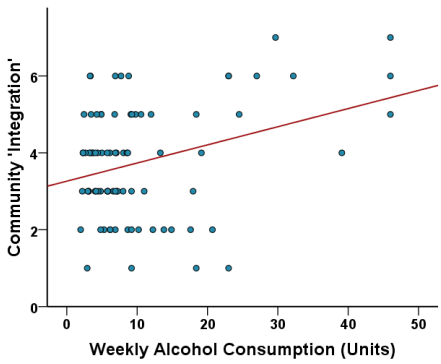
The average drinking group size observed is smaller for people who typically consume more beer/cider per week as compared to other types of other alcohol

Figure 25 plots how integrated into their local community people felt themselves to be, as a function of pub type and typical amount of alcohol consumed. Subjects in smaller, community-type pubs were more likely to feel that they were a member of their community than those attending larger city centre pubs (Figure 25, left panel). Notably, those who consumed more alcohol, on average, each week rated themselves as more embedded in their local community (Figure 25, right panel).

Figure 25



Self-rated degree of community integration (on a scale 1 = low to 10 = high) for customers in small community-style pubs and larger city centres pubs and bars.

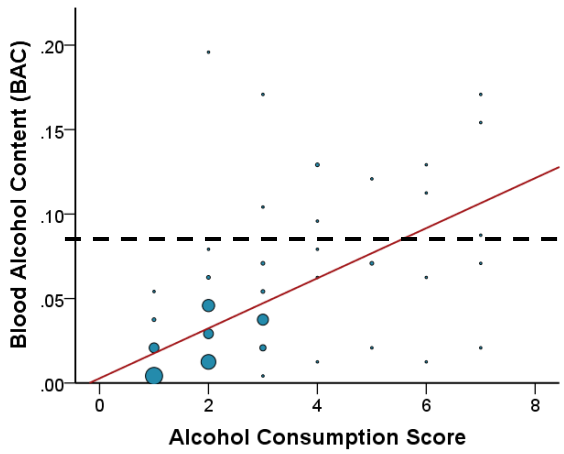


Self-rated degree of community integration plotted against estimated average weekly alcohol consumption.

We asked customers to rate how much alcohol they had consumed that evening on a simple 0 ('Completely sober') to 10 ('Extremely drunk') scale. We will refer to this as the 'Alcohol Consumption Scale'. This index correlates well with actual blood alcohol level estimated using a breathalyser (Figure 26). Note that only 13% of the individuals sampled exceeded the legal blood alcohol limit for driving, and the great majority of our subjects were thus, relatively speaking, sober.

Those who were casual visitors to the pub, and those in larger pubs, scored themselves as having consumed significantly more alcohol than those drinking in their "local" or in smaller community pubs (Figure 27).

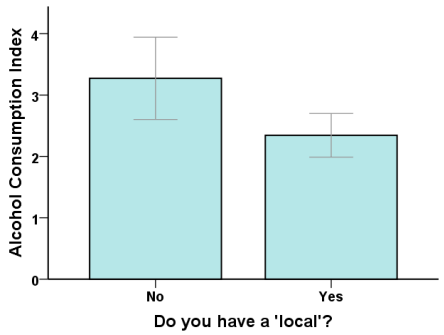
Figure 26



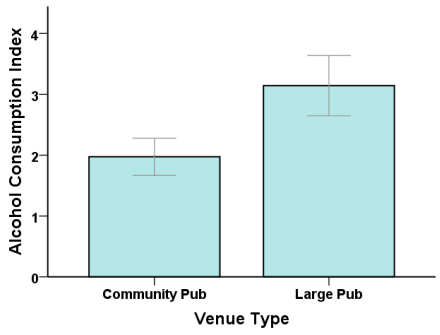
Actual blood alcohol content (BAC, or concentration of alcohol in the blood, as determined using a breathalyser) is significantly correlated with self-rated level of alcohol consumption at the time (estimated on a simple 1-10 scale, with 1 = completely sober and 10 = extremely drunk) ($r = 0.58$, $p < 0.001$).

The horizontal dashed line indicates the legal drink-drive limit in England and Wales.

Figure 27



Mean (±2SE) self-rated level of alcohol consumption (scored on a 1-10 scale) as a function of whether or not they were drinking in their 'local'.



Mean (±2SE) self-rated level of drunkenness as a function of whether they were drinking in small community pubs or in large city centre pubs/bars.

There is considerable evidence to suggest that moderate alcohol consumption improves mood, cognitive function (such as memory and mental arithmetic ability) and even life expectancy, and does so in terms of both average long-term consumption and, at least in respect of cognitive functions, actual alcohol

consumption at the time[44]. We wondered whether there is a similar effect in respect of social skills, such as the ability to interpret social signals correctly. We asked the customers in our sample to take four short tasks that measure different social skills.

We should note that the claims made here are not in contradiction to the UK Government's new recommended guidelines for alcohol consumption[45]. These focus primarily on a modest increase in risk of death by cancer, heart disease and accident from excessive consumption (and in respect of the last, with special reference to young adult males), while also noting that small benefits accrue, at least in respect of heart disease, from low levels of alcohol consumption. The evidence cited in the Chief Medical Officers' (CMOs) Report demonstrates that, for low to moderate consumption, the additional risks of disease and death remain modest in percentage terms. We note, however, that the CMOs' Report does not consider the social or community benefits of alcohol consumption, but instead focuses exclusively on *specific* health risks. That said, we fully endorse the CMOs' advice that excessive consumption of alcohol is dangerous, as well as being anti-social and, at a personal level, socially counterproductive, and that even moderate levels of consumption may entail both elevated health risks from some diseases and reduced cognitive function.

An important distinction needs to be drawn in respect of cognitive and social consequences between low-moderate alcohol consumption and high or excessive consumption. Most of the research on the negative outcomes of alcohol have

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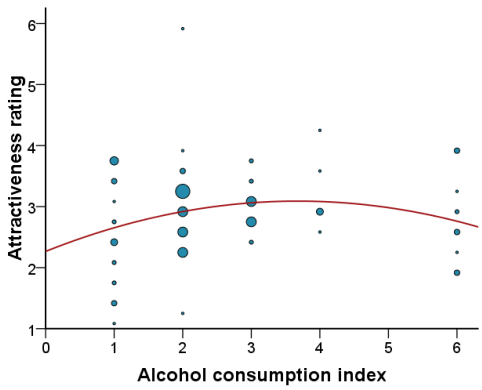
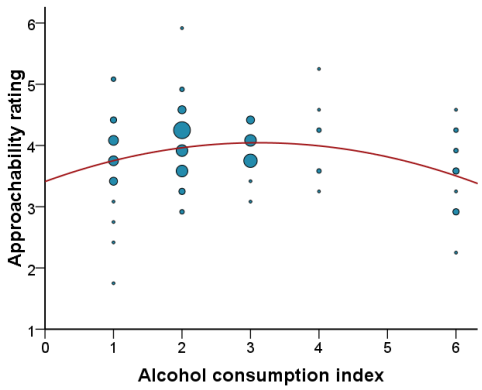
[44] *Lloyd, H. & Rogers, P. (1997). Mood and cognitive performance improved by a small amount of alcohol given with a lunchtime meal. Behavioral Pharmacology 8: 188-195; Peele, S. & Brodsky, A. (2000). Exploring psychological benefits associated with moderate alcohol use: a necessary corrective to assessments of drinking outcomes? Drug and Alcohol Dependence 60: 221-247; Stampfer, M., Kang, J., Chen, J., Cherry, R. & Grodstein, F. (2005). Effects of moderate alcohol consumption on cognitive function in women. New England Journal of Medicine 352: 245-253; Espeland, M., Gu, L., Masaki, K., Langer, R., Coker, L., Stefanick, M., Ockene, J., Rapp, S. et al. (2005). Association between reported alcohol intake and cognition: results from the Women's Health Initiative Memory Study. American Journal of Epidemiology 161: 228-238; Laing, I., Wallace, R., Huppert, F. & Melzer, D. (2007). Moderate alcohol consumption in older adults is associated with better cognition and well-being than abstinence. Age and Ageing 36: 256–261.*

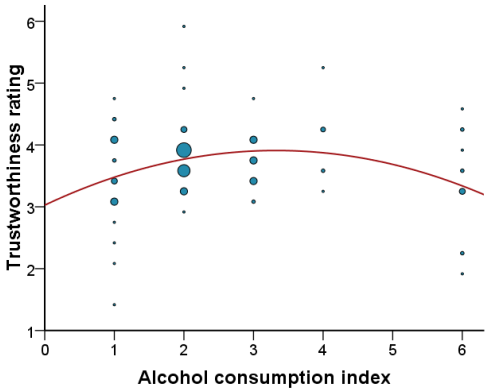
[45] *UK Chief Medical Officer's' Alcohol Guidelines Review. Department of Health, London, 2016.* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/489795/summary.pdf

Alcohol Guidelines Review – Report from the Guidelines Development Group to the UK Chief Medical officers. Department of Health, London, 2016.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/489797/CMO_Alcohol_Report.pdf

Figure 28







Rated attractiveness (top) and approachability (middle) of photographs of strangers' faces (on a 1-7 scale, where 1 = not at all and 7 = extremely) as a function of self-rated alcohol consumption (rated on a 1-10 scale). The best-fit equation is a quadratic function (though only the second is individually statistically significant). For present purposes, alcohol consumption indices of 5-7 are combined.

The legal drink-drive limit in England and Wales is roughly equivalent to an alcohol consumption index of 5.

Rated trustworthiness of faces (on a 1-7 scale) as a function of self-rated alcohol consumption. The best-fit equation is a quadratic function.

used alcohol consumptions well above the legal drink-drive limits[46].

In our study, we asked customers to rate the attractiveness, approachability and trustworthiness of a set of photographs of male or female faces (for details, see Appendix A). We chose these three indices as being generally indicative of people's ability to make judgements about strangers whom they might meet in such an environment. While there is no right or wrong answer on any of these (they simply reflect how the rater views another individual), consistent patterns of variation with alcohol consumption would suggest that individuals' abilities to make appropriate judgments are influenced by alcohol.

For these three indices, there is a distinctly inverted-U-shaped relationship between the amount of alcohol consumed and ratings of a stranger's face (Figure 28). Although only two of these are individually statistically significant, all three clearly show the same pattern and, taken together, they represent a set of results that is statistically significantly U-shaped[47]. We checked for gender differences on these measures, but there were none. These results suggest that people feel generally somewhat more comfortable about strangers, and hence, by implication, with engaging strangers in conversation, with low levels of alcohol consumption (those below the legal drink-drive limit in England and Wales), but decline as consumption exceeds this limit.

In Figure 29, we plot these same scores against percentage of beer or cider drunk, based on self-estimated average weekly alcohol consumption. Relative to the amount of wine and spirits drunk, approachability and trustworthiness ratings increase significantly with the percentage of beer consumed; ratings of attractiveness also increase with beer consumption, but not significantly so.

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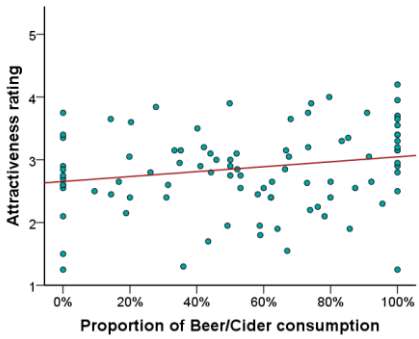
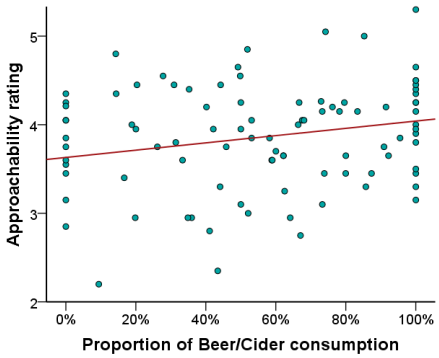
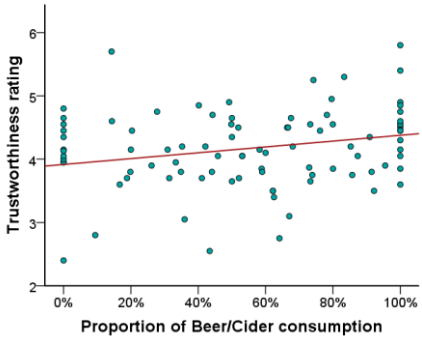
[46] *Schreckenberger, M., Amberg, R., Scheurich, A., Lochmann, M., Tichy, W. et al. (2004). Acute alcohol effects on neuronal and attentional processing: striatal reward system and inhibitory sensory interactions under acute ethanol challenge. Neuropsychopharmacology 29: 1527-1537; Easdon, C., Izenberg, A., Armilio, M., YU, H. & Alain, C. (2005). Alcohol consumption impairs stimulus- and error-related processing during a go/no–go task. Cognitive Brain Research 25: 873-883.*

[47] *Meta-analysis combining all three tasks in Figure 20: $\chi^2 = 22.43$, df = 6, p = 0.001, indicating that there is a common underlying trend of a U-shaped relationship across all three tasks.*

Figure 29







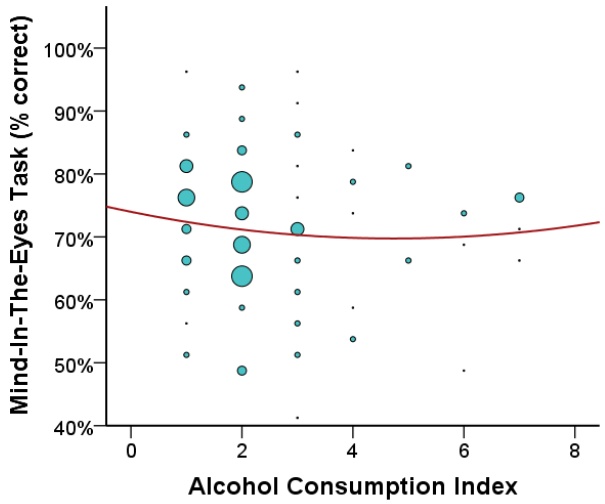
Relationship between the type of alcohol consumed per week on average (proportion of beer/cider alcohol units vs other alcohol units) and ratings of others' Attractiveness, Approachability and Trustworthiness

We also asked customers to do a task known as the Reading-the-Mind-in-the-Eyes task[48] (RMET). This task presents subjects with a series of photographs of human eyes expressing different emotions, and asks them to identify the emotion from a set of four emotion terms. This task represents a relatively high level social skill that is associated with the ability known as mentalising or mindreading (the ability to understand what another individual is thinking). Overall, there was no direct effect of alcohol consumption at all on performance on this task (Figure 30). Nor were there any gender differences on this task. Thus, at least within the range of alcohol consumption in our sample, there is no detectable effect of alcohol consumption on the ability to correctly identify someone esle's emotional expressions (and hence their ability to make correct social judgments of others) – at least within the limits of alcohol consumption in our participants (at most, approximately double the legal drink-drive limit for

[48] *Baron-Cohen, S. & Wheelwright, S. (2001). The "Reading the Mind in the Eyes" test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. Journal of Child Psychology and Psychiatry 42: 241–51.*

England and Wales). This is not, of course, to say that this skill may not decline precipitously with excess alcohol consumption (indeed, we assume that it probably does).

Figure 30



Performance on the Reading-the-Mind-in-the-Eyes task as a function of the amount of alcohol consumed

As found in previous studies of general cognitive abilities such as memory or mental arithmetic skills, most social skills typically improve with low alcohol consumption, but start to decline again once the alcohol consumption index is above about 4 (equivalent to a blood alcohol content of about 0.06, or just below the legal drink-drive limit in England and Wales: see Figure 26). Other social skills like the RMET show less evidence for any negative effects. This may be because the RMET indexes a cognitive skill (mentalising, or theory of mind) that you either have or don't have, such that there is less scope for variation as a function of how much alcohol one has consumed. This does not, of course, mean that performance does not decline with high levels of alcohol consumption (i.e. those two or three times above the drink-drive limit).

Taken together, then, these data reinforce the claim that limited alcohol consumption may enhance aspects of social cognition and increase sociability, just as it has been shown to enhance memory and other more conventional aspects of cognition. However, the data suggest that these benefits may be lost once consumption exceeds moderate levels, just as has been shown for inhibition

and other aspects of cognition in experimental studies of moderate-high alcohol consumption[49].

The results from the pub surveys suggest that people who go to small community pubs have more close friends and feel that their communities are better integrated, than people who habitually patronise large city-centre pubs and bars. More importantly, confirming the findings of the national survey, people in small community pubs also feel more contented with their lives, seem to be more socially engaged when in the pub, and are more likely to feel that they belong to a community. In general, such pubs are of course smaller, more intimate, and typically more beer-focussed than city centre establishments, especially those that cater for a late evening clientele.

While this may have something to do with the kinds of personalities and age cohorts that are attracted to these different kinds of venues, and to their respective drinking habits, an important contributing factor will be the different ambiences provided by the two kinds of establishment and the well established effects of social contagion on behaviour. People are likely to drink less if those around them are behaving in a more measured way and are, as a result, likely to be less tolerant of socially inappropriate or excessive behaviour.

[49] Schreckenberger, M., Amberg, R., Scheurich, A., Lochmann, M., Tichy, W. et al. (2004). Acute alcohol effects on neuronal and attentional processing: striatal reward system and inhibitory sensory interactions under acute ethanol challenge. Neuropsychopharmacology 29: 1527-1537; Easdon, C., Izenberg, A., Armilio, M., YU, H. & Alain, C. (2005). Alcohol consumption impairs stimulus- and error-related processing during a go/no–go task. Cognitive Brain Research 25: 873-883.

CONCLUSIONS

Our aim has been to determine whether small community pubs offer any social benefits. Our concern has been with the potential value of pubs as a focus of the local community – a venue in which friendships are developed and a community spirit established, as opposed to simply somewhere where you can get a drink.

We approached the question at three different levels: a national survey relating to pub use, an observational study of conversational behaviour in pubs and a more experimental study of social behaviour at a selected set of venues in Oxfordshire. Between them, these data allow us to draw a number of key conclusions:

- Almost a quarter of the UK population consider that they have a 'local' (a pub they habitually patronise)
- A pub is more likely to be seen as someone's 'local' if it is close to where they live or work
- People who have a 'local' and those patronising community-type pubs have more close friends on whom they can call for support, and are happier and more trusting of others, than those who do not have a local
- They also feel more engaged with (i.e. feel part of) their wider community
- People who are in their 'local' or in a community pub typically drink less alcohol than those in large city centre pubs and bars
- People in city centre bars may be in larger social groups than those in more community-oriented pubs, but they are less engaged with those with whom they are associating and have significantly shorter conversations
- A limited alcohol intake improves wellbeing and some (though not all) social skills, just as it has been shown to improve other cognitive abilities and health, but these abilities decline as alcohol intake increases beyond

a moderate level (roughly equivalent to the current drink-drive limit in England and Wales)

These findings suggest that pubs in general, and local community pubs in particular, may have unseen social benefits. Pubs provide us with a venue in which we can serendipitously meet new, in many cases like-minded, people. They offer an opportunity to broaden our network of acquaintances – something that has advantages both in terms of the potential to translate acquaintances into new friendships and in terms of widening our contact with a greater diversity of cultural groups by bringing us into contact with people from other walks of life and other cultures whom one might never otherwise meet.

In short, pubs allow us to engage in conversation with, and so get to know better, other members of our local communities. And by extension, they allow us to mix and meet a wider range of community members, and hence interact with a greater diversity of social classes and cultures, than would otherwise be the case if our social world is confined to work and home. This may have important implications for social cohesion if tolerance of other cultures and groups is a function of exposure to them (the so-called "contact hypothesis" of social integration[50]).

In addition, given the well attested effects of social network size and integration on health and wellbeing, being more engaged with your local community and being involved more frequently in conversations with other individuals can have substantial benefits by reducing loneliness, which in turn is likely to have significant health and wellbeing benefits. Happy people and those who are embedded in large, well integrated social networks are sick less often. Directly and indirectly, pubs as venues for social communities are likely to yield significant savings on health care budgets.

In this context, pubs serve an important hub function, by providing a venue at which people can meet. With the exception of places of worship, few venues in the contemporary world provide an open environment for meeting new people, especially for older age groups. For incomers to a neighbourhood and those whose turn of life has left them socially isolated, becoming a 'regular' at a

[50] *Williams, R.J. (1964). The Reduction of Intergroup Tensions. New York: Social Science Research Council Bulletin no. 57.*

community pub can become a gateway for meeting new friends – and, through this, a lifeline.

While the internet can provide a social outlet (and many people do meet friends and partners online), it is clear that there is no substitute for face-to-face interaction. Meeting someone in the flesh provides us with the kind of 'ground-truthing' that is all too often absent on the internet – the main problem associated with the dramatic increase in romantic scams on the internet that cost their victims several billion dollars each year worldwide[51]. Meeting someone 'in the flesh' provides us with direct cues of their honesty, trustworthiness and suitability as a friend or partner[52], making it less likely that we will be taken in by social or romantic predators. One conclusion we might draw is that we need to be more imaginative in finding ways to persuade people to abandon their smartphones and shut down their internet connections for an evening so they can talk to each other in the pub.

This is not, of course, to suggest that excessive alcohol consumption does not have serious health consequences that incur major costs for the NHS and other government agencies. Rather, our point is that we should not throw the baby out with the bathwater, but work harder to encourage a view of pubs as community social hubs. Our data suggest that moderate alcohol consumption in the kind of social environment provided by community style pubs does have social and wellbeing benefits. In this respect, beer offers considerable benefits over other forms of alcoholic beverage since its high volume and low alcohol content mean that it can be drunk over a longer period of time with less likelihood of intoxication than is the case for higher alcohol drinks.

While there is clearly room for many different styles of pub that cater to different clienteles and reflect different personal and business styles among landlords and pub owners (city centre wine bars versus community pubs versus gastro pubs, and many more), much could be done to preserve community pubs in the interests of promoting a greater sense of community and enhancing health and wellbeing. Providing an attractive, welcoming venue that will get people off the

[51] *Whitty, M.T. & Buchanan, T. (2012). The online romantic scam: a serious cybercrime. Cyberpsychology, Behavior and Social Networking 15: 181-183; Whitty, M.J. (2015). Anatomy of the online dating romance scam. Security Journal 28: 443-455.*

[52] *Dunbar, R.I.M. (2014). The Science of Love and Betrayal. London: Faber & Faber.*

internet and out of their homes into the world of face-to-face interaction can only be good for both the individual and the wider community.

In the final analysis, the substantive issue is: how can we persuade people to go down to their 'local' more often and interact with each other?

Our findings lead us to make a number of recommendations:

- Publicans and pub owners should be encouraged to work more closely with their communities in developing a local community atmosphere, and the companies that own pubs should perhaps provide more explicit training and support with this in mind.

- Pubs need to work harder at persuading people to see the pub rather than home as their preferred social venue

- The fact that a pub becomes a 'local' because it is close to where people live or work (Figure 15) demonstrates that we need more pubs in these kinds of locations

- Planning authorities should examine very carefully planning applications that seek to redevelop existing pub sites, and should explicitly consider the social consequences of losing 'locals' – especially when these have been nominated as Assets of Community Value under the new legislation

- Developers should be required to ensure that new housing developments have local pubs easily accessible to them (i.e. within easy walking distance)

- Government should consider cutting beer duty to help keep pints affordable and thereby support community pubs

- Government should consider extending business rate reliefs to more pubs to help reduce their costs

- We collectively need to find more effective ways of persuading people to put down their smartphones, find a 'local' and talk to each other

APPENDIX A

Methods

Research Team

The research was carried out by a research team from the University of Oxford that included: Dr Jacques Launay, Dr Eiluned Pearce, Dr Rafael Wlodarski, Dr James Carney, Dr Pádraig Mac Carron and Mr Cole Robertson, with help from a number of research assistants.

Online survey

We used an online YouGov survey to ask about respondents' drinking behaviour, their social networks and their wellbeing, using multiple-choice responses. This online survey was conducted, on behalf of CAMRA, by YouGov in November 2015 using a UK national random stratified sample (sample size = 2254) to ensure a representative sample for each geographic region based on gender and age.

In terms of drinking behaviour, the survey asked how often the respondent visited a pub, where they tended to drink and socialise, whether they had a 'local' pub, and how they defined this.

In terms of social behaviour, the survey asked how socially connected respondents felt to their local community, using the validated *Inclusion-of-Other-in-Self* [IOS] rating scale[53] (a 1-7 visual analogue scale, in which 1 indicates low connectedness and 7 indicates high connectedness). Respondents were also asked how much they trusted people in general (on a 0-10 scale), and how many people they could turn to for help if they need to (an index of the size of their support network).

The survey also included measures of the respondents' current sense of wellbeing using questions taken from the New Economics Foundation and the Office of National Statistics. These asked respondents to rate the following questions from 0-10 (with 0 being 'not at all' and 10 being 'very'):

[53] *Aron, A., Aron, E. & Smollan, D. (1992). Inclusion of Other in the Self scale and the structure of interpersonal closeness. Journal of Personality and Social Psychology 63: 596–612.*

- Overall, how satisfied are you with your life nowadays?
- Overall, how happy did you feel yesterday?
- Overall, how anxious did you feel yesterday?
- Overall, to what extent do you feel the things you do in your life are worthwhile?

Observations in pubs

To observe people naturally conversing, researchers visited seven pubs around the Oxford area (five large city centre pubs, and two community pubs). They used the Animal Behaviour Pro app on iPhones and iPads to record the conversational behaviour of 65 focal individuals for 20 minutes each (total sample time was 21.6 hours). Subjects were randomly selected, their gender recorded as well as the genders of anyone they were sitting with at the time. For the next 20 minutes, the researcher logged who the "focal individual" was speaking or listening to, as well as whether anyone arrived or left the individual's social group. The researchers used "eye contact and speaking" as criteria for who was engaged with their "focal individual" at any one time. A total of 283 people were observed, inclusive of the 65 focal individuals.

At the end of each sample, the researcher randomly selected a new focal individual from another group and began again. At any single venue, researchers conducted roughly 6 samples (representing 2 hrs of data collection in all), or as many as there were separate groups in the pub (researchers never scanned two people from the same group).

The data from the focal samples were used to estimate the time-weighted group size in which the focal individual was involved. The time-weighted group size is the momentary group size averaged across the 20 minute sampling period. Each bout of uninterrupted conversation was counted dyadically, i.e. as the length of time that a focal individual was engaged in conversation with a single other person. If the focal or other individual stopped paying attention, the bout was counted as over.

The number of people who dropped out of each conversation was counted as the difference between the number paying attention at the beginning of a bout and at the end—plus one. We add one since each bout of conversation was defined as ending when the focal or other individual stopped paying attention, e.g. if four people were paying attention at the beginning of a conversation bout and only two were at the end, this was counted as three "drop outs", since two dropped out during the bout, and the focal individual did so at the end.

The number of people not paying attention was calculated by subtracting number of people paying attention from the group total at that time (group size often changed as people came and left over the course of the 20 minutes of observation).

This study was approved by the University of Oxford's Combined University Research Ethics Committee (CUREC).

Experiments in pubs

Six pubs and bars were visited in the Oxfordshire area between 8pm and 11pm on weeknights, and 3pm and 6pm on a Saturday afternoon, over several days in November 2015. Pub-goers were invited to take part in a 10-minute survey/experiment on iPads. They were reimbursed £5 for their time. After they had completed the survey they were given a breathalyser test to confirm their level of inebriation. To make sure that accurate readings were taken by the breathalyser, they were asked not to drink while they completed the survey. Ninety-five people took part (~33% women).

Participants were asked to look at 20 photos (10 male and 10 female) of standardised faces from the Chicago Face Database[54] and invited to rate each face for 'Trustworthiness," "Approachability" and "Attractiveness." Participants were asked to rate these faces on each of these attributes using a 7-point scale, ranging from 1 = 'Not at all' to 7 = 'Extremely'.

[54] *Ma, Correll, & Wittenbrink (2015). The Chicago face database: A free stimulus set of faces and norming data. Behavior Research Methods.*

They were also presented with a validated measure of social cognition (the Reading the Mind in the Eyes task [RMET])[55]. Subjects were shown a series of photos showing just the eye region of faces, and a choice of four words describing different emotions. They were asked to choose which adjective best described the emotion being displayed in the photo. This task measures the ability to identify emotions from other people's faces, a capacity that underlies empathy (putting yourself in someone else's shoes) and hence mindreading (or mentalising) – the ability to understand someone else's thoughts (a key social skill).

Finally, they were asked about their drinking habits: how frequently they visited pubs, how much alcohol they usually drank per week, what they typically drank, whether they had a 'local' pub, whether they had consumed any alcohol before coming to the pub that evening and how sober they felt (on a 1-10 scale, where 1 = completely sober and 10 = extremely drunk). Finally, they were asked how well integrated they felt they were into their local community, and a note was made of the number of people in the social group they were with at the time.

This study was approved by the University of Oxford's Combined University Research Ethics Committee (CUREC).

[55] *Baron-Cohen, S. & Wheelwright, S. (2001). The "Reading the Mind in the Eyes" test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. Journal of Child Psychology and Psychiatry 42: 241–51.*

APPENDIX B

Statistical Results

Figure 11

Wilcoxon rank sum test $W = 1874634$, $p < 0.001$, $n = 2227$

We asked respondents how well they felt they were connected to their local community, using a simple scale, the *Inclusion-of-Other-Self* (or *IOS*) rating scale (Figure 11: a 1-7 visual scale, in which 1 indicates low connectedness and 7 indicates high connectedness). Those who had a "local" reported that they were significantly more connected to their community than those who did not.

People who have a 'local' also rated themselves as feeling significantly happier than those who do not; they also had higher life satisfaction and felt that other people are significantly more trustworthy (Figure 12). We asked people to tell us how many close friends they had (defined as all those whom they would go to for help and support). People who declared they had a 'local' had significantly more such friends than people who did not have a 'local' or did not regularly use pubs – on average 7.2 friends compared to 6.0 (Figure 13).

Figure 12

Upper Left panel: Wilcoxon rank sum test $W = 2073345$, $p = 0.001$, $n = 2328$

Upper Right panel: Wilcoxon rank sum test $W = 2049759$, $p < 0.001$, $n = 2328$

Lower panel: Wilcoxon rank sum test $W = 2068915$, $p < 0.001$, $n = 2328$

Figure 13

Wilcoxon rank sum test $W = 2328$, $p < 0.001$ (two-tailed), $n = 2328$

Figure 14

Right Panel: Wilcoxon rank sum test $W = 2096315$, p 0.14 (two-tailed), $n = 2328$

Left panel: Wilcoxon rank sum test $W = 586409$, $p = 0.52$ (two-tailed), $n = 2328$

Figure 16

Left panel: Wilcoxon rank sum test W = 37.5, p = 0.192, n = 12 (pubs)

Right panel: 'Small Community Pubs' mean = 5.8, SD = 1.27; 'Large Pubs' mean = 7.11, SD = 1.57; t(10) = -0.153, p = 0.156, n = 12 (pubs).

Figure 17

Left Panel: *Mean* = 3.44, *S.D.* = 1.33, *N* = 65 (groups)

Right Panel: Moses test of extreme reactions = 47, $p = 0.017$, $n = 65$ (groups)

Figure 18

Left Panel: *Pearson's r* = -0.423, $p < 0.001$, $n = 65$ (groups)

Right Panel: *Pearson's r* = 0.285, $p = 0.022$, $n = 65$ (groups)

Figure 19

Pearson's r = -0.449, $p < 0.001$, $n = 65$ (groups)

Figure 20

Left Panel: Wilcoxon rank sum test $W = 419.5$, $p = 0.093$, $n = 65$ (groups)

Right Panel: Wilcoxon rank sum test $W = 1332$, $p < 0.001$, $n = 65$ (groups)

Figure 21

Wilcoxon rank sum test $W = 234$, $p < 0.001$, $n = 65$ (groups)

Figure 22

Wilcoxon rank sum test $W = 415$, $p = 0.077$, $n = 65$ (groups)

Figure 23

Left Panel: 'No' *mean* = 6.73, *SD* = 3.74; 'Yes' *mean* = 3.94, *SD* = 2.78; $t(93) = 4.12$, $p < 0.001$

Right Panel: Small Pub *mean* = 3.56, *SD* = 2.20; Large Pub mean = 5.84, *SD* = 3.77; $t(93) = 3.38$, $p < 0.001$

Figure 24

t(92) = 3.25, p = 0.002

Figure 25

Left Panel: Small Pub M = 3.51, SD = 1.40, Large Pub M = 4.19, SD = 1.53, $t(81)$ = 2.01, p = 0.041

Right panel: *Pearson's r* = 0.33, p < 0.01

Figure 26

Pearson's r = 0.23, $p < 0.05$

Figure 27

Left Panel: 'No' *M*ean= 3.27, SD = 1.93;,'Yes' *Mean* = 2.34, SD = 1.34; $t(93)$ = 2.73, p = 0.008

Right Panel: Small Pub *Mean* = 1.97; SD = 0.93, Large Pub *Mean* = 3.14, SD = 1.85; $t(93)$ = 3.63, $p < 0.001$

Figure 28

Top panel: $y = 2.27 + 0.45x - 0.061x^2$, r^2=0.046,

$F_{(2,91)} = 2.21$, p = 0.116 (linear: r^2 = 0.013, p = 0.272)

Middle panel: $y = 3.41 + 0.41x - 0.065x^2$, r^2 = 0.073,

$F_{(2,91)}$ = 3 .57, p = 0.032 (linear: r^2 = 0.003, p = 0.619)

Lower panel: $y = 3.03 + 0.53x - 0.08x^2$, r^2 = 0.087,

$F_{(2,91)}$ = 4.33, p = 0.016 (linear: r^2 = 0.003, p = 0.580)

Fisher's meta-analysis of all three tasks, all tasks 1-tailed/positive:
χ^2 = 22.43, df = 2 x 3 = 6, p = 0.001

Figure 29

Attractiveness: *Pearson's r* = 0.18, p > 0.05

Approachability: *Pearson's r* = 0.21, p < 0.05

Trustworthiness: *Pearson's r* = 0.22, p < 0.05

Figure 30

Linear: RMET% = 72.1 - 0.4 Drink-index ($F_{1,93}$=0.3, p=0.594)

Quadratic: RMET% = 74.0 - 1.7 Drink-index + 0.2 Drink-index^2 ($F_{2,92}$=0.25, p=0.78)

APPENDIX C

Weighting Method for National Poll

When aggregating poll data, YouGov apply a standard weighting to account for the variability in sampling across regions of the UK.

Weighting adjusts the contribution of individual respondents to aggregated figures.

Weighting is used to make surveyed population more representative of a project-relevant, and typically larger, population by forcing it to mimic the distribution of that larger population's significant characteristics, or its size. The weighting task happens at the tail end of the data processing phase on cleaned data.

Weight Factors:

When weighting, each respondent is given a weighting factor. If everyone's weight factor was 1, then everyone's responses would be multiplied by 1 and the aggregation would be the same as a count of respondents

The weight factor is a decimal number, such as 1 or 1.2 or 0.5. It is calculated dividing the target proportion from the weight list by the actual proportion from the sample data. The weight factor is used as a multiplier on each of their responses during aggregation to determine their weighted contribution

In YouGov, the weighting used most commonly is RIM (Random Iterative Method) weighting. The RIM weighting approach is the standard approach in market research. One should always sample and weight to the same figures as RIM weighting struggles if we are trying to upweight something too much. We can create multiple weighting variable where each variable is a separate variable set to its own targets, and where only one weighting variable would be used at a time. In short, we can have a nat rep weight, and separate weights for the modules from a technical perspective.

Please see below for formula used:

Gender	Target	Data	Weight factor	Weighted data
male	45	33	45 / 33 = 1.364	33 * 1.364 = 45
female	55	77	55 / 77 = 0.714	77 * 0.714 = 55

Rim Weighting Formulae

Root Mean Square

The formula is given for a rim weighting matrix consisting of two variables (dimensions), but the same principle applies when there are more dimensions.

Notation	Represents
$m_{i\cdot}$	*The target number in category i in the first dimension.*
$n_{i\cdot}$	*The sum of the observed numbers in category i in the first dimension.*
$m_{\cdot j}$	*The target number in category j in the second dimension.*
$n_{\cdot j}$	*The sum of the observed numbers in category j in the second dimension.*
I	*The number of categories in the first dimension.*
J	*The number of categories in the second dimension.*

The formula for the weight adjustment is

$$mdd_{ij} = md_{ij}(m_{.j}/md_{.j})$$

Where

md_{ij}	*Represents the weight adjustment calculated in the previous iteration for the cell at the intersection of category i in the first dimension and category j in the second dimension. In the first iteration, it is substituted with* $n_{ij}(m_{i.}/n_{i.})$
$md_{.j}$	*Represents the sum of the weight adjustments calculated in the previous iteration for category j in the second dimension. In the first iteration, the expression* $(m_{.j}/md_{.j})$ *is substituted with 1.*

The calculation for the root mean square is

$$rms = \sum_{i=1}^{I}(m_{i.} - md_{i.})^2 + \sum_{j=1}^{J}(m_{.j} - mdd_{.j})^2$$

Where

$md_{i.}$	*Represents the sum of the weight adjustments calculated in the previous iteration for category i in the first dimension.*
$mdd_{.j}$	*Represents the sum of the weight adjustments calculated in the current iteration for category j in the second dimension.*

At the end of each iteration, the Weight component compares the root mean square with the product of the weighted total and the given limit. (The limit defaults to 0.005, but it can be set to another proportion.) The iterations continue until all of the weights are within the limit or the maximum number of iterations has been reached.

Rim Weighting Efficiency

The rim weighting efficiency figure gives an indication of how well balanced the sample is.

Let

P_j	*Be the preweight for case j*
R_j	*Be the rim weight for case j*

Then the rim weighting efficiency is

$$\frac{100.0\left(\sum_j P_j R_j\right)^2}{\sum_j P_j \sum_j P_j R_j^2}$$

If the data for many respondents needs to be weighted heavily up or down, the efficiency percentage will be low. The greater the percentage the more well balanced the sample.

Further Information

For further information on rim weighting see the Rim Weighting Theoretical Basis Paper entitled "ON A LEAST SQUARES ADJUSTMENT OF A SAMPLED FREQUENCY TABLE WHEN THE EXPECTED MARGINAL TOTALS ARE KNOWN", by W. Edwards Deming and Frederick F. Stephan, in Volume 11, 1940 of the Annals of Mathematical Statistics.