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Following on from the discussions at the London Conference in February 2020, I asked contributors if they would agree to a student converting their power-point presentations into short texts. This has again been partly successful this year. We did manage to get two of the presentations at the 2021 Conference converted to text and these were included in the last issue.

In this, relatively short, issue we have two very interesting articles by Serena Hussein questioning Census Categories and Paul Marchant on Road Safety; two thought-provoking reviews by John Bibby; and my usual take on COVID-19 statistics.

Prospects for RSN 132

We have at least one article promised for RSN 132, but, clearly, we are going to need more and our administrator has put out a call for contributions to the List. Our new Review Editor, Irina Motoc <**irinamotoc@gmx.com**> also has several books for review.

Another proposal for generating material was the relatively recent publication of the third RadStats compendium, Data in Society, which was presented by the books' editors on Saturday 28th 2020. It is a landmark publication, bringing together many of the crucial issues around the production and use of quantitative information.

The contributors to Data in Society summarise many of the concerns around the accessibility and use of statistics in contemporary society. Examples include the lack of data from banking and financial organisations hides the extent of tax evasion of taxation. Government agencies are reducing the number of data series they make available for public scrutiny. The number of healthcare treatments in Britain provided by private groups is growing steadily.

The book is an eye-opener on the difficulties in holding governments and large organisations to account. Do you agree with the authors' interpretations?

As the editors acknowledge there are data topics the volume does not cover in detail. These include the use of statistics by legal practitioners, housing and homelessness data and climate change data.

The editors of the RadStats journal have been planning to devote one journal issue to topics raised by Data in Society, and to topics not discussed in the book. Could you write an article for the journal on any of the topics above? Are there are areas of debate missing from Data in Society?

Administrative Issues

As the Administrator informed those receiving printed copies of the issue that, at the AGM held in London at the end of February 2020, the decision was taken to raise the subscription from £25 to £35 for those wishing to continue to receive printed copies (whilst the membership subscription only – with online access - would remain at £25 for those £10 for those on low incomes), otherwise they would be taken off the distribution list which originally includes all 300+ members.

The theme of the 2022 Conference is 'Taxing Wealth, Reducing Inequality' It is on Saturday 26th February and is being 'hosted' by the **Literary and Philosophical Society of Newcastle upon Tyne.** We expect the 2022 Conference will be predominantly remote and virtual. There are still preparation and ongoing costs. We are asking for a donation; the suggested amount is £20, however all smaller donations will help cover the costs.

Please make sure you have updated your subscription, *or make a donation*! - by going to www.radstats.org.uk/membership/ where you can pay by cheque, standing order, PayPal - or by filling in your details on page 45.

Editors

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Contemplating official categories: Is the devil in the detail?

Serena Hussain

Keywords: Official categories. National Census of Population. British Muslims. Ethnic identities. Kashmiris

Census 2021 will provide the third set of comprehensive statistics on religion in England and Wales, providing a means to explore how faith communities have changed over a twenty year period. The 2001 National Census of Population included, for the first time since 1851, a category on religious affiliation, which asked the public, 'What is your religion?' A Muslim category was amongst the tick box options, repeated again in 2011 and 2021. Muslim lobby groups were at the forefront of the campaign to include a question on religion in government data collection exercises, among which the National Census acts as a bench mark for all other official surveys including local authority data gathering (Aspinal, 2009). Therefore gaining recognition through becoming a category in the Census afforded a form of official recognition for 'Muslim' as a collective identification marker by officialdom, which would oblige other agencies to follow suit. Yet the campaign for the inclusion of a religion question, and indeed a Muslim category, took place before the sharp increase in both anti-Muslim discrimination and suspicion of the population, as a result of 9/11, 7/7 and government policies such as *PREVENT* (Hafez, 2018; Law et al., 2019; Abbas, 2020). Thus, what had been seen as a historically defining moment for British Muslims, in gaining official recognition as a community, came to be perceived as a potential means for surveillance and scrutiny (Hussain et al. 2021; Hussain 2022). Through exploring perceptions of the census among a sample of British Muslims, this article considers how the meaning attached with becoming an official category has shifted over time. It asks whether - just as collective identity markers are argued to increase and decrease in the salience groups afford them (Nagel, 1994; Cornell and Hartmann, 1998; Serpe and Stryker, 2011) – does

the meaning attached to official categories change for those who they are meant to represent?

Two key themes were noted within the study discussed here, firstly there was apprehension regarding how data derived from the Muslim category would be both used (in terms of state control) and perceived (in terms of facilitating negative narratives about Muslims). Secondly, there was concern that intra-community dynamics – namely the intricacies of daily life within grassroots communities who are heterogeneous, and in some cases competing for resources and recognition, can be masked and even disempowered by being analysed within broader categories, such as the Muslim one. According to writings by those such as Brubaker (2000:62) the first theme can be understood as discussion on a category of analysis – that is Muslim as a category "used by social analysts" namely governments and policy makers to codify and stratify populations; and the latter about the non-official lived experience of groups or collectives as categories of practice "native or folk or lay categories…of everyday social experience, developed and deployed by ordinary social actors". In the second type, a group can self-identify with an identity label which may well have been known and well established, even before their arrival on British shores, yet due to lacking official recognition it remains 'lay'. Despite this, in the British context, such identity-labels remain apparent and even those who would tick the same box for a broader category are able to distinguish themselves for important matters of marriage or local politics (see Ballard's writings on *biraderi* ,2004) from their next door neighbours group, whether its officially categorised or not. This is the reality of the categories of practice – they exist very much within the day to day exchanges that occur within our neighbourhoods.

In Brubaker's 2012 paper, *Categories of analysis and categories of practice: a note on the study of Muslims in European countries of immigration*, he writes, "[A]s scholars we can and should adopt a critical and self-reflexive stance towards our categories. This means, most obviously, emphasizing that 'Muslims' designates not a homogeneous and solidary group but a heterogeneous category. Beyond this, and more substantively, it means focusing on the changing ways in which the category 'Muslim' works, both as a

category of analysis and as a category of self- and other-identification in practice" (p.6)

Although Brubaker does not consider ethnic group differential in his essay – discussing Muslims as 'immigrants/immigrant origin' and thus attributing socio-economic disadvantage experienced by Muslims in Europe to - in the most part - an inevitable aspect of the immigrant experience in their journey to becoming more established. This does not meaningfully acknowledge the very real impact of a religious penalty beyond that, e.g. white British Muslims of non-immigrant stock experience a religious penalty when it comes to employment outcomes (see Khattab and Johnston, 2013). He does however describe potential intra-Muslim dynamics in terms of differences in theological interpretations, positions and identifications. Nevertheless, his work provides a useful analytical framework to consider how the meanings attached to the Muslim category differ for those who are identified by it *or* it is meant to represent; and whether an awareness of other group identities (as categories of practice) is justification enough to demand official recognition (become a category of analysis)? And If not, how can we acknowledge and respect the 'unofficial', so that they do not become marginalised among their neighbours belonging to official groups - who by their very inclusion within categories of analysis – are legitimate stakeholders for government attention and access to resources?

Becoming a category

Faith organisations were at the forefront of the campaign to collect official statistics on religious affiliation. Hussain (2017) discusses how previous data on ethnicity had pointed to higher levels of disadvantage among British Muslim communities, who could still only be identified through their ethnic groups (e.g. Pakistani and Bangladeshi). Minority faith group organisations – such as the Muslim Council of Britain (MCB) – lobbied the government to include a question on religious affiliation in the census with the expectation that it would provide evidence to improve the conditions of grassroots communities.

The 2001 data confirmed that the Muslim population was indeed more disadvantaged across a number of measures compared with all other faith groups, including leaving compulsory education with no qualifications, despite also showing a greater propensity to go onto Further and Higher Education, compared with the national average (Hussain, 2008). A related concern arising from the Census data was that Muslims are the least economically active among the faith categories (Peach 2006). Findings also revealed that Muslims had the highest proportion of households living in overcrowded conditions (42% compared with 12% nationally) and the lowest proportion of households with central heating (Hussain and Sherif, 2014; Hussain, 2017).

A second set of data was collected by the 2011 Census, which demonstrated the continued prevalence of deprivation found within the British Muslim population (MCB 2015). Approximately half of Muslims were living in poverty according to key indicators, such as the most disadvantaged neighbourhoods, overcrowded housing and higher rates of unemployment. Both censuses, therefore confirmed the perceived benefit of collecting official statistics on faith groups and Muslims in particular, in terms of highlighting areas of concern for targeted policy interventions. However, many saw the inclusion of religious categories as not merely a matter of evidence gathering for policy makers, but also an acknowledgment of how communities were choosing to self-identify and wished to be seen in the nation states they are citizens of. Hussain and Sherif (2014: 417) write,

The issue raised about distinguishing the 'religious' element from 'cultural' or 'ethnic' identification became increasingly contested by Muslims who challenged the notion that religious beliefs ought to be situated within domestic and personal domains (Weller 1998). Rather than, with time, coming to de-emphasise cultural and indeed religious markers, the opposite occurred. Greater recognition as what was, in the British context, increasingly identified as a 'faith community' correlated with the intensified demand for the right to practise the tenets of their religious duties outside of the home, in response to which more mosques, Islamic schools and cemeteries were established (Peach and Gale 2003). In addition to growing pressure to accommodate religious practices in public arenas, there was a

documented increase in the number of Muslims using their religious identity in addition to, or in place of, other social markers.

Furthermore, writers like Ballard (1996) suggested that combining Muslim communities – hitherto disparate ethnic groups – provided greater power in numbers both for domestic lobby but also as part of a global diaspora community. Others such as Saint-Blancat (2002) and Peak (2005) add that discrimination is easier to tackle as a collective, especially in the face of growing hostility towards Muslims in public and policy realms. Thus a unified Muslim category turned a number of smaller ethnic minority communities into the second largest faith group in the country over night.

Yet there were those from within the Muslim population who opposed the use of religion as an official category for a number of reasons. For example the well-known British Egyptian scholar Zaki Badawi articulated concerns over a religion question, fearing "it might pave the way to surveillance and state control" (Sherif 2011:11). His apprehension was expressed at a time where Muslims still remained 'under the radar' so to speak. The fact that this concern is now shared by many within the faith population under discussion here, is a direct consequence in the way that Muslims are now perceived by non-group members, rather than how Muslims view themselves.

However, the representation of Muslims as a single community was also flagged as problematic (Ballard 1996; Hellyer, 2005). Organisations attempting to speak for all Muslims and encouraging policy development in this direction have been challenged (Ali 2007; Pędzwiatr, 2007). Hussain and Sherif (2014: 426) write, "Although practitioners, census officials and other contributors carefully deliberated on what the census question should measure, such discussions largely occurred at mainstream Muslim organisational levels. It was agreed that no denomination or sub-groups would be listed. However Muslim minority groups may interpret this as a way of promoting mainstream interpretations of Islam at the expense of representing religious diversity".

Furthermore, others such as Hellyer (2005: 83) have discussed difficulties surrounding the use of religious affiliation as an identity for Muslims stating, "Muslims [are not] an ethno-cultural group by

virtue of being Muslim', thus pointing to the risk of a single Muslim category resulting in the 'ethnicisation' of Muslims." Therefore, there were some who had already commenced a debate on the risk of statistics on Muslims presenting an oversimplified narrative which would undermine intra-Muslim prejudice and disparities both along ethnic and religious lines (Ali 2007).

Khattab and Johnston's (2013) analysis confirmed that all Muslims experienced a 'penalty', that is when variables are the same, including for example, educational attainment, Muslims – including white British origin Muslims – are more likely to be unemployed. However, despite this, there was important differentiation in terms of intra-Muslim outcomes pointing to evidence of an ethnic hierarchy in which non-White Muslims experience an additional colour racism, and Black female Muslims the highest penalty, among all sub-groups. This therefore reminds us why there is merit in not only presenting statistics on Muslims as a 'bloc' or single faith community.

Against this backdrop there remain communities who lobby for official recognition through categories which are believed to better represent their needs (Ali 2007; Kalra et al 2019). Some activists argue that by presenting their communities as 'Muslim' has cast a shadow over important nuances and led to a neglect in catering for specific community needs. Two such groups are Kashmiris and Somalis – both of whom within a British context are almost entirely Muslim in terms of faith affiliation, yet despite forming substantial shares of the British Muslim population, and indeed the United Kingdom's ethnic minority populations, neither have an ethnic category within official data collection exercises. We now know that British Somalis have been disproportionately impacted by COVID-19 and in recent correspondence between Allen Brett, the Leader of the Rochdale Borough Council and the Census Engagement team, he confirmed that, "the majority of the wards with a large Kashmiri community were the first ones to suffer from COVID-19"[i].

On ticking the Muslim box

Hussain et al. (2021) reported findings from a study which undertook an online survey among British Muslims on their perceptions of the census. Over half of respondents reported that they "always or

mostly complete the form". Approximately 30% stated that they either did not understand the purpose of the census, or understood its purpose a little. Furthermore, over one third agreed with the statement that "the census has a negative impact on British Muslims". The authors write,

> *The reporting of findings from the previous two Censuses generated negative press, with some commentators using figures to predict inflated rates of Muslim population growth or to pin point towns and cities with higher than average Muslim communities as problematic. This together with the intense securitization of British Muslims has led to many within the community to be particularly reluctant to provide detailed information about their household members; fearing surveys are a tool for security monitoring.* (Hussain et al. 2021: 3)

Similar apprehension was reported by a study conducted in April 2021 – as the National Census was taking place. A sample of British Muslims were interviewed during online and in person focus groups. The majority of participants were able to describe what the census is used for in theory, and this was generally discussed in terms of understanding population trends and/or for planning and service provision, and representation. However, as with previous research, the focus group discussions highlighted, perceived lack of transparency on how Census data is used, resulting in apathy towards the exercise ii) distrust of government surveys, impacting willingness to take part and iii) ability to complete forms accurately (Hussain 2022). Therefore, although having data on the Muslim population has no doubt provided vital information about the social and demographic trends – which point to the need for deliberate action by policy makers - the Muslim category hailed for recognition and its function in facilitating group rights is simultaneously fraught with apprehension.

...and thoughts on missing boxes

Findings from earlier research (Hussain et al. 2021) suggested that some communities were conscious of the fact that they did not have their own ethnic category on the census form, despite forming large sub-sections of the British Muslim population; and that this could

potentially lead to disengagement with such official exercises. As a result of such concerns, research participants were also asked what they thought about large Muslim communities, such as Kashmiris and Somalis, not having their own ethnic categories. A significant amount of discussion was generated. Some felt that emphasising ethnic differences created divisions among British Muslims, as one quote sums up:

> *I don't understand, we're all Muslim, we don't need to differentiate ourselves*

However this was challenged, as one respondent recounts a conversation she had on this very topic with a neighbour:

> *it's all about recognition and just recognising your own culture and your identity, whereas all different races, all different cultures, you all have your different languages and you have your different cultures, but you're all one body, you are Muslims.*

Of course one can tick Muslim as well as an ethnic category, however, as stated, communities who form sizable proportions of the Muslim population do not feel as though they have an appropriate ethnic category; and that demands for such can be met with opposition for creating divisions when there had been concerted efforts to unify. This, it could be argued, is a step backwards in the face of what matters – combating discrimination and disadvantage among all Muslims, given the tangible outcomes Islamophobia has for all Muslim groups. Yet what we also know is there is stark variation in terms of experiences of poverty and discrimination within the Muslim population based on ethnicity (Khattab and Johnston 2013) as well as intra-community dynamics (Kalra et al 2019).

Opposition in the face of such demands was stated to be particularly apparent when attempting to differentiate Kashmiris from the existing official category they are classified within – Pakistani - in the census. The *British Kashmiri Identity Campaign* was established to lobby the state and relevant agencies to include a 'Kashmiri' category in the census, however, given it was not included on the 2021 form, a community wide campaign using social media platforms, encouraged the diaspora to refrain from ticking 'Pakistani' and

instead to write in 'Kashmiri' under 'Other'. Several respondents were aware of the campaign and had commented on the need for a separate category. One described her experience in encouraging members of her community to do the same:

> *We did get a bit of funny looks, when there was certain people that were in the supermarket that weren't from Kashmir and weren't speaking that [Pahari] language and they were Urdu or Punjabi speaking. It was almost like, I think some people find it quite offensive that we are doing this [asking for Kashmiri recognition] and we are trying to segregate. But whereas it's just what we were trying to say is that it's just us getting recognised, that's all it is.*

Interestingly, some respondents felt that it was more of a legitimate demand for Somalis to have their own official ethnic category than Kashmiris, and the former were seen as a distinct group who were currently being inserted into African – which is too broad a category as it represents an entire continent.

There were other groups who were discussed as not having their own official ethnic category, in addition to the two aforementioned communities. One of the focus groups with youth generated substantial discussion on how ethnic Pashtuns, although forming a quarter of Pakistan's population and a sizable section of the British Pakistani community, felt they remain a distinct community in the UK:

> *So you are getting branched under the Pakistani umbrella however you feel that the Pakistani community might not see you as Pakistani.*
>
> *…however you have to tick a box.*

And so we return to categories of practice, in Small Heath, Birmingham where the quote from this discussion group took place. On Ladypool Road, the Azad Kashmiris, who speak to each other in Pahari form the majority. However, the tailor in one of the fabric shops quickly switches to Punjabi for customers who are visiting the area. The in joke is that wherever you have two Pashtuns they will always speak Pashto, and so the lived reality of differentiation plays out on the streets of the UK, yet all of the three mentioned groups fall

under the Pakistani category of analysis. It was stated earlier how a group can self-identify with an identity label – e.g. Pashtun or Kashmiri, which may well have been known and well established, even before their arrival on British shores, yet due to lacking official recognition it remains 'lay'. Despite this, in the British context, such identity-labels remain apparent and even those who would tick the same box for a broader category – e.g. Muslim and Pakistani, distinguish between themselves for what are perceived as important matters. Is this problematic? After all Brubaker himself suggests not all groups who self-identify with a ethnic identity need have a corresponding category of analysis.

Members of the British Kashmiri community who actively lobbied for official recognition as a category in their own right would argue that it *is* deeply problematic based on findings that suggest they suffer from some of the highest levels of disadvantage and discrimination from both outside the Muslim community and within it (see Ali, 2007; Kalra et al., 2019). If the mere existence of a collective identity (as a category of practice) is not enough to demand official recognition, how can we ensure equal representation, as a non-official stakeholder group, for government attention and access to resources? As Muslims are the most ethnically diverse minority faith group in Britain it is important to undertake additional research on the impact of a lack of ethnic categories, given some sub-communities within the Muslim umbrella demonstrate higher levels of socio-economic deprivation. Therefore, gaining accurate information on such communities for targeted service provision and support is crucial.

As Brubaker (2012:5) points out, "[t]he making of European Muslims has involved not only a re-labelling of populations previously identified and categorized in other terms as Muslims, but also the production of public representations of Muslims and the generation of knowledge about Muslims. And wittingly or unwittingly, scholars have been party to this ongoing process. Identifying one's object of analysis as 'Muslims', for example, highlights religious affiliation and, at least implicitly, religiosity; it also marks the population of interest as different from the surrounding population in both religion and religiosity." However, what some communities claim is even more problematic than "identifying one's object of analysis as 'Muslim'", is

that it can act to de-emphasise other identity markers, or worse still, render claims for recognition of unofficially recognised identity markers as unnecessary.

As one such scholar who analyses data generated from the Muslim category, I am among those Brubaker described in the quote above a decade earlier. Despite the increasing apprehension surrounding statistics derived from the category and what they do (and do not) represent, they afford us - both academics and members of the Muslim faith population – a level of information that prior to becoming an official category was sorely needed to understand socio-economic and demographic trends, against a backdrop of growing evidence, and indeed, concern that the Muslim experience could not simply be understood as the immigrant experience. It is our challenge, however, to ensure that intra-Muslim dynamics are also given due consideration, and that lived experiences are not mistakenly deemed less relevant because they do not neatly map against the categories that "count".

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Bad Science: Comments on the paper 'Quantifying the impact of road lighting on road safety — A New Zealand Study' by Jackett & Frith (2013).

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Key Words: Road Traffic Collisions, Traffic Accidents, Road Lighting, Poor Study Design, Poor Statistical Practice, Statistical Errors, 'Cosmetic' Analyses, Poor Publishing Practices, Openness, Transparency.

Abstract

The paper of Jackett & Frith (2013), which purports to show considerable gains for road safety with increasing road luminance, is seriously flawed. It asserts that increasing the luminance on roads *causes* improvements in road safety. Its cross-sectional design fails to rule out major potential confounders. Using a longitudinal design would be a far superior approach. The paper exhibits poor statistical practice. The selection process for the relatively small sample of urban roads is unclear and the post hoc processing of the data is questionable. The analysis is seriously deficient, as variables which indicate detrimental effects of increased road lighting are removed from the modelling without proper justification and other variables are not included in the first analysis yet appear in the subsequent cosmetic analyses. The latter give an illusion of false certainty. The data collected, which would allow checking, is not published. The practice of the journal in which the paper appeared is seriously deficient in not allowing the publication of critical responses. Although being used to promote increased road lighting, the paper's claim disagrees with results from better quality research.

1. Introduction

The paper examined here, Jackett and Frith (2013) 'Quantifying the impact of road lighting on road safety — A New Zealand Study' (JF), presents a study that took the number of night and day crashes, on

a sample of roads, and modelled the crash ratio on the measured road lighting characteristics. It claims from the analysis that brighter road lighting causes greater road safety. However, the study and paper are seriously flawed and because of this, the claim it makes is unfounded. A major problem with the JF paper is the implicit assumption that the *correlation* between (increased) road luminance and (reduced) night to day road crash ratio is indicating a *causal* relationship. An example of such a spurious inference would be to blame the sale of ice creams as causing drowning deaths, because when more ice creams are sold, more drowning deaths tend to occur. The confounder in this case is warm weather, suitable both for eating ice cream and for entering water. A cause is what makes something happen when the 'dose' of the cause is changed. One can think of the output listening to the cause and obeying, therefore making the response happen. The JF paper contains much other poor statistical practise including seriously deficient analysis. Yet despite these extremely serious flaws the paper is widely cited.

The issue of poor science is of great current concern and was the subject of the research integrity inquiry by the UK Parliament (Commons) Science and Technology Committee, (2018). The author of this current work published a paper on some problems with lighting research, Marchant, (2017).

This paper extends an article in the joint publication of the Royal Statistical Society and the American Statistical Association, 'Significance', Marchant, (2019).

2. Overall Points

Finding sure-fire ways of reducing the heavy toll in death and injury caused by road traffic collisions (RTCs) would be a great benefit, see World Health Organization (2018). Increasing road lighting is widely believed to be a way to markedly reduce RTCs at night. However, what sound evidence is there for this belief? The JF paper, examined here, makes a strong claim for large road safety benefit as road luminance is increased. However, there are very serious problems with this work, so its claim is unfounded.

The JF study has very poor design. This is because the study is what JF class as 'relational', which means correlational through its 'cross-sectional' nature. That is, the study takes only one set of measurements (lighting characteristics and night and day crash numbers) and compares the night to day crash ratios between roads. (The crash ratio of course will vary if either the numerator or the denominator or both vary). The flaw in the JF study design is that any other quantities that are correlated with the quantity of interest (here, road luminance) could be the actual causes of the variation of night to day crash ratios, rather than the lighting itself.

One such 'confounder', a quantity correlated with road luminance that directly influences the road safety measure, could simply be the ratios of the numbers exposed to crash-risk night and day. Other examples might be the characteristics of the different kinds of traffic (associated with both vehicles and their drivers) using the roads night and day. For example, the types of driver and their behaviours may vary between busy (tending to be more brightly lit) and quiet (tending to be more dimly lit) roads. For example, anyone "under the influence" or wishing to drive over the speed limit might be more likely to choose a seemingly quiet road to avoid attention, but they may not find it quite as empty as assumed and thus become involved in an RTC.

Studies involving more than one set of measurements across time (longitudinal studies) with lighting being changed within the time period are far superior. A longitudinal study allows the effect of changed lighting to be seen by comparing a road with itself (before and after the change), as the road's other characteristics are likely to remain closely constant. Therefore, the attribution of cause is much more secure. As stated above, as but one example, the result of the JF study will be affected by the ratio of the numbers exposed to crash-risk, night to day and for a valid result, this ratio must have no dependence on the type of road lighting in operation. The result of a longitudinal study is much less likely to be affected by the ratio of numbers exposed to risk as each road is being compared with itself and this ratio for a given road is unlikely change very much when relit. See Appendix for the advantage of longitudinal studies in this regard.

The Cochrane Collaboration systematic review on street lighting for preventing road traffic injuries, by Beyer and Ker (2010), although having other problems, as discussed in its Feedback section, did have inclusion criteria to assist in achieving some 'control'. The review states: '*randomised controlled trials, quasi-randomised controlled trials and controlled before-after studies (CBAs) were eligible for inclusion in this systematic review.*' Therefore, the poor design quality of the JF study would mean it would not have been eligible for inclusion. JF briefly mention '*the traditional Before and After study'* and state that using their design allowed a much larger sample size. However, a large sample size may simply give a false sense of certainty while yielding a wrong conclusion due to confounding.

The much larger scale LANTERNS project (Perkins et al, 2015), commissioned by the UK National Institute for Health Research (NIHR), is a longitudinal study that investigated the effect of lighting change in England and Wales. Despite the title of the LANTERNS project being 'What is the effect of reduced street lighting on crime and road traffic injuries at night? A mixed-methods study', the study made a variation from protocol. This variation was to also include 'change to white light', such as LEDs, from such as low-pressure sodium and is therefore about increasing road illumination on some road segments as well as reducing it on others; (the reductions were: dimming, part night lighting, and switch off). The study did not detect any statistically significant effect of any of the four types of change to road lighting on personal injury accidents. That is, all the 95% confidence intervals around the aggregate point estimates of the effect of all four types of lighting change, (change to white light on 15833 km of roads, as well as the three types of reductions on others) include zero and so found no sound scientific evidence of any change. As in the JF study, LANTERNS also used the night to day accident ratio as the outcome measure. (Incidentally the LANTERNS study also found null results when examining crime, that is all the 95% confidence intervals around the aggregate point estimates of the effect of all four types of lighting change included zero).

The JF study just looks at roads in urban areas with more than 10 crashes, in the period 2006–2010, yet the population of interest is surely all urban roads and the results are likely to be taken as also applying to roads which are less crash prone. It is unclear how the roads in the research were in fact selected. Nine of New Zealand's 67 territorial local authorities were used. Four criteria were applied:

• had at least 10 injury+non injury crashes, 2006–2010

• had no significant road lighting changes in the period 2006–2010

• had a similar level of lighting along their length

• had places to stop safely and measure the lighting.

It is not made clear if the 152 road sections selected are all the roads in the 9 authorities that met these criteria or if some other criteria were also in use.

Additionally, according to JF's footnote 2 '*Some sites were subsequently shortened, subdivided or deleted to improve homogeneity*'. It is not properly made clear what motivated this action, nor is the extent of this post-hoc procedure given. No sensitivity analysis is presented to indicate what effect this had on the results. The action to '*improve homogeneity'* will have the effect of reducing the estimate of statistical uncertainty and therefore will tend to increase the chances of finding statistical significance. Chasing statistical significance is a malign, unscientific practice mentioned in the inquiry into research integrity by the UK Parliament (Commons) Science and Technology Committee (2018).

Note, the LANTERNS project did not arbitrarily exclude road segments with a small number of crashes.

Importantly, the full data, with which to check the results, is not provided by JF. Even descriptive statistics of the variables used are not given. No Declaration of Interest statement is made. No reference is made to how the study was commissioned or how it was paid for. No plan, known as a protocol, stating how the study would proceed, made in advance of executing the study, and against which what actually transpired can be assessed, is available. In contrast, the

LANTERNS protocol is available on the project website, given below, in References, Perkins et al, (2015).

3. Detailed Points

The size of the JF study is relatively small with 7944 crashes on 270 km of road. In contrast, the LANTERNS project, had 859935 collisions in the 62 local authorities available in the data set and at the end of the study period, in 2013, around 40000 km of road had lighting changes to be assessed. The LANTERNS study provides confidence intervals of the estimate of effect whereas JF regrettably use a crude star-system to indicate p-value ranges to indicate statistical significance.

3.1 JF's First Analyses

The modelling in JF section 3.2 using Generalised Linear Models leading to their Table 1 might have some validity, but without access to the data one cannot be sure. Although a '*Poisson multiplicative model*' is stated, it would seem that a binomial model would be the proper model for the data as it is the ratio, of night to day crashes, that is of interest. The values of the coefficients in Table 1 obtained from the modelling are such that the night to day crash ratio decreases as the coefficient value becomes more negative and vice versa. Model 1 with more terms, and therefore better fitting, has two other statistically significant coefficient estimates, in addition to Average Luminance. (Note the Average Luminance coefficient value given for Model 1, -.038, appears to be a possible typographical error: - a misplaced decimal point).

Table 1 From JF page 141

Table 1
Summary results of three models using the Poisson Multiplicative Model to predict the number of night time crashes.

		Independent variables				
Model No.	Constant term (a)	L_{avg}, Average Luminance	TI, Threshold Increment	Uo, Overall Uniformity	Ul, Longitudinal Uniformity	Colour (White=1)
1	−0.84	−.038**	1.08*	0.07	−0.08	0.35*
2	−0.81	−0.38**	0.95*			
3	−0.62	−0.44**				

Notes: The number of * indicates the significance of the parameter. * = two standard errors (significant at p<=0.05), ** = three standard errors (highly significant)

The two other statistically significant coefficient estimates, in Model 1 are Threshold Increment and Colour (with White =1). These two coefficients have magnitudes that are similar to, or larger than that of the Average Luminance coefficient, assuming its value should be -0.38. However, both Threshold Increment and White light values are positive so in the direction of a larger, that is detrimental, night to day crash ratios; in other words, a greater number of crashes occurring at night relative to day.

One of these statistically significant coefficients is the effect of white road lighting and it suggests that the effect of having white light increases night to day road crashes by 42%, by calculating exp(0.35). However, this finding is lightly dismissed by the authors in the second to last paragraph on p141 by mere assertion. No call is made in the paper for an investigation; in case rolling out more white light causes more crashes. One may wonder, in the circumstances, had the effect for white light been of similar magnitude but in the opposite (that is beneficial) direction, whether the effect would have been similarly discounted.

Nothing is said about the Threshold Increment variable, even though if this increases by 0.1 units the point estimate would suggest an estimated increase in road crashes of over 10%, by calculating exp(0.1x1.08). No reason is given for its dismissal from Model 3.

No discussion of the model selection is given, and the absence of the deviance statistics is unwelcome. However, the deviance (fit statistic)

would seemingly worsen significantly in simplifying the models when going from Model 1 to 3. Reporting the Akaike Information Criterion would be useful in balancing model fit against model complexity. No model checking, e.g. through examination of residuals, is mentioned. We are not given evidence that any of the models are, in fact, appropriate for the data.

Some further issues are that: 1) No consideration is given to the presence of statistical interactions; to see for example, whether the effect of Threshold Increment is different for different values of Average Luminance and 2) No reason is given as to why the variables that are brought into the subsequent erroneous, seemingly cosmetic 'grouped data' analyses are not entered into the first analysis and the results reported.

3.2 The Grouped Data Analyses

The further analyses using grouped data (Section 3.3) are inappropriate. Grouping data destroys information and results clearly depend on how the grouping is done, through the choice of the number of groups and the group boundaries. Grouping and combining the data masks the inherent variation and uncertainty. It is stated in JF (Section 3.1 Methods) '*Data from streets with a similar average luminance (0.25 cd/m2 band width) were then combined. With a larger crash sample in each group the night to day crash ratio could be more reliably estimated …*'. Again, it seems that statistical significance is being chased by unsound means. JF give a reference to Scott (1980) to justify the process but the small, old study only grouped data into 3 bands to perform initial exploration of the effect of the seven lighting variables; there were only a small number of cases that were complete. The Scott final analysis used ungrouped data.

The JF plots seem to arise from using the SPSS 'Curvefit' procedure. This runs an ordinary least squares simple linear regression on the logarithm of the night to day crash ratio values and then exponentiates the fit back to the original crash ratio scale. Displaying the R^2-values is misleading and should not be used for the analysis of count data. Presenting these plots give an illusory impression of a high degree certainty, as in Figure 2 of the JF paper (see below) with the display of $R^2 = 0.99$, which is remarkably high.

From JF page 142

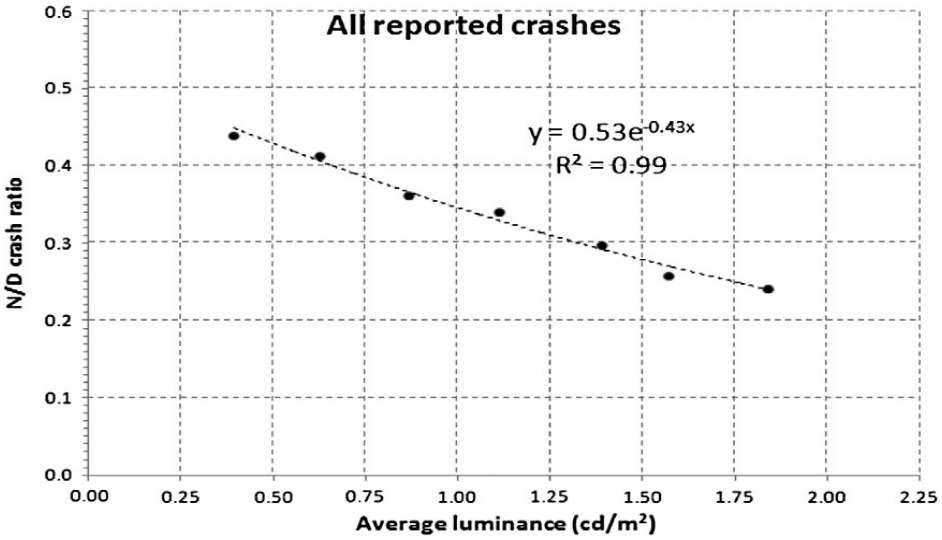


Fig. 2. The relationship between average luminance and the night to day crash ratio for all reported crashes.

It is puzzling why the variables used in JF's Figures 3, 4 & 5 (traffic volume, intersection and wet / dry road) were not included in the original generalised linear modelling, as might be expected in an appropriate statistical analysis.

From JF page 143

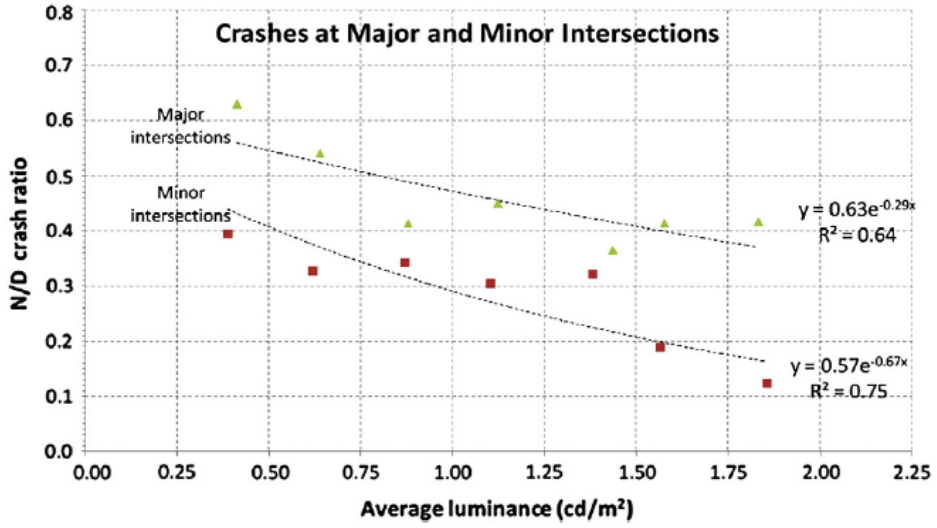


Fig. 4. The relationship between average luminance and the night to day ratio for intersection crashes for Major (traffic signals and roundabouts), Minor (other intersections).

What would be somewhat helpful to the reader of JF is a scatterplot of all 152 measurements of the N/D ratio, together with their

confidence intervals, against the luminance measurements, such that the scatterplot also indicates both the Threshold Increment and whether White Light was used. Ultimately, the properly scientific open practise would be to provide a table of the data from the 152 road sections giving both night and day crash numbers and the values of all the other variables collected. This would allow more informative plots to be produced and indeed an appropriate analysis to be performed. It is essential to have access to the initial data set before '*Some sites were subsequently shortened, subdivided or deleted to improve homogeneity*', along with the data set analysed, on which the paper is based. (Jackett and Frith have not only not published their data, but also have not responded to requests to gain access to it).

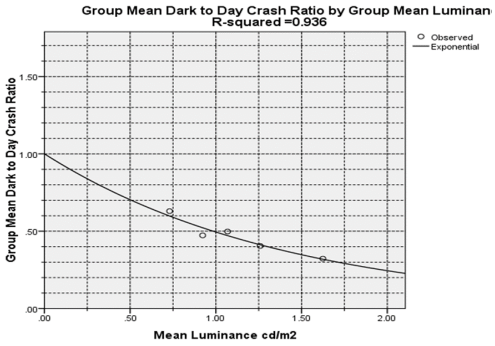
3.2.1 An illustration of the effect of grouping data

Given that JF's data was not made available, there now follows a short aside giving an illustrative example of the effect of using grouped data through using the data on individual roads of Hargroves & Scott (1979), a study of similarly flawed cross-sectional design. Hargroves and Scott (HS) did not perform grouped data (cosmetic) analyses but used the appropriate generalised linear model approach and commendably had their data printed as part of the paper. These data can be used to illustrate the flaw in the cosmetic nature of the graphs produced by JF. Here the HS 89 data are put into 5 roughly equal-sized luminance bands, each containing roughly 18 cases. The end-points, of the luminance bands are: 0.25 to 0.85, 0.87 to 0.97, 0.98 to 1.16, 1.18 to 1.35 and 1.40 to 2.03.

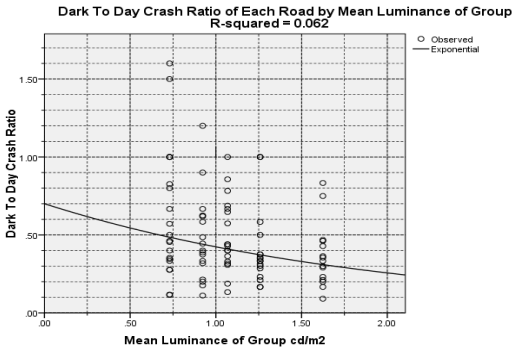
The left-hand figure below shows the result of taking the means of the night to day crash ratios within the five road luminance bands and running a regression on the logarithm of the crash ratio before transforming back. The analysis by this spurious means yields an impressive R^2 of 0.936. The right-hand figure shows the data points that comprise the luminance bands and the analysis that takes into account this obvious variation yields the small value of $R^2 = 0.062$.

The night to day crash ratio plotted against the mean group luminance values for mean and individual data.

The night to day crash ratio plotted against the mean group luminance values for mean and individual data.



Using the mean gives an impressive squared correlation coefficient, $R^2 = 0.936$



Using the individual 89 data points gives $R^2 = 0.062$ and a totally different, more realistic view

Using the mean gives an impressive squared correlation coefficient, $R^2 = 0.936$. Using the individual 89 data points gives $R^2 = 0.062$ and a totally different, more realistic view .

The above illustrates that working with aggregate values hides variation and hence uncertainty and it is therefore misleading to present research this way. (If data are weighted the R^2 values for grouped and individual situations are, as above, very different). It should be recognised that it is inappropriate to create the night to day crash ratios and run standard OLS linear regressions on the logarithm transformed data as underlies the above. (R^2 is not a suitable measure for count data). Note, if the number of night or day crashes is zero such cases cannot be included in such an analysis.

The important point is that the appropriate way to proceed is to use a model on the individual cases in which; 1) the count nature of the response is properly treated, 2) appropriate predictors are not excluded, 3) generalised linear modelling assumptions are respected, 4)

the fitted model is checked, 5) full details are reported and 6) data is made available to others.

4. Some Consequences of the JF study

There are of course real-world consequences of poor quality research. The JF work is being used to justify the introduction of extensive new lighting.

The Institute of Public Works Engineering Australasia report, titled 'SLSC Roadmap: Smart Lighting Smart Controls' (2016/17) is a pitch to 'accelerate to the deployment of LED street lights and smart controls in Australia and New Zealand'. The 100+ page report is available from http://www.slsc.org.au/slsc-publications/slsc-roadmap

SLSC Council members, see page ii of the document, seem to be predominantly a consortium of lighting and energy interests and the technical advisory group has a similar sort of membership.

Below is an image of the Roadmap document's disclaimer. The disclaimer does not seem to offer much in the way of guaranteeing that the Roadmap contains trustworthy statements.

Disclaimer

This work was performed with due care and in accordance with professional standards. However, the views expressed in the document are solely those of IPWEA and its advisers, Strategic Lighting Partners and Next Energy. Any representation, statement, opinion or advice, expressed or implied in this publication is made in good faith but on the basis that IPWEA, Strategic Lighting Partners and Next Energy are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice referred to here.

The JF paper is mentioned in Section iv, of 3.2.2 Road Safety, concerning Street Lighting Levels on page 9 of the Roadmap. On page 10 the $R^2 = 0.99$ graph is reproduced. Clearly nobody from the many organisations and technical advisors engaged in SLSC spotted the

fact that the $R^2 = 0.99$, impressive as it is, is a gross misrepresentation of the empirical evidence. Neither it seems was the inference of causation from the correlation of luminance with the night to day crash ratio subject to scrutiny and scepticism.

In its section 3.2.3, the Roadmap references Steinbach et al (2015) which is a short version of the previously mentioned Perkins et al, 2015 NIHR 'LANTERNS' report 'What is the effect of reduced street lighting on crime and road traffic injuries at night? A mixed-methods study'. As noted earlier the study made a variation from protocol to include changing to white / LED light (from such as low-pressure sodium), despite the title of the project being about reductions. The Roadmap document makes an excuse for LANTERNS not finding any effect, on the RTC rate, through lighting change. (As stated earlier, all the 95% confidence intervals around the aggregate point estimates of the effects of all the types lighting change studied, change to white / LED as well as reductions, include zero and so detected no good evidence of any change according to conventional scientific criteria.) The Roadmap however says on page 13, *'The fact is that all interventions to reduce lighting were prudently designed by UK councils to take place where and when road and street traffic was at its lowest levels and traffic accident frequency was at its lowest ….'*. It fails to point out that LANTERNS also investigated change to white / LED light, which operate throughout the night, and failed to find any effect for this. (Note that part of the reason for changing roads to white /LED light is because of the belief that it improves road safety, e.g. see, Croydon and Lewisham Boroughs Street Lighting PFI: Final Business Case. London, UK, 2011). White / LED lights are installed on typical roads not just those with low traffic levels. In fact, for the 15833km of road length that changed to white / LED light, the 95% confidence interval for night to day risk ratio, after change to before change, was (0.93, 1.09). That is the confidence interval goes from a 7% reduction, through zero to a 9% increase in risk, so the verdict is no detectable change.

Regrettably, the JF work is also cited by the Royal Society of New Zealand (2018) in its report 'Impacts of Artificial Blue Light on Health and the Environment, Evidence Summary' The JF paper is reference 84 of the downloadable documents and is cited as providing evidence

for lighting being 'an effective road safety measure'. (Other work of these authors is also cited in references 83, 89 and 161.)

The Journal that published the JF paper does not allow responses to its previously published papers that the journal has already published. The journal is IATSS Research (IATSS stands for International Association of Traffic and Safety Sciences) In response to the simple query "I do not see a method by which an article can be published criticising a previously published paper for its severe methodological short-comings" the reply received was, "Thank you for your query. We regret to inform you that we do not publish commentary." Email communication from Celina David, Journal Manager. Clearly in contrast to the policy of IATSS Research (an Elsevier publication), journals should always allow serious comment on previously published papers; such comment is also known as post-publication review. Journals clearly need to employ properly qualified statistical reviewers as part of the reviewing process to trap grave errors before a paper is published.

5. Conclusion

From the evidence given and without having access to the full data, very little credence can be given to the conclusion drawn in the JF paper. The assumption that any correlation detected, between night to day crash ratio and lighting, is showing that variation of lighting is *causing* variation in the crash ratio is clearly highly suspect. This is because the unsuitable study-design fails to eliminate plausible alternative causal explanations. The JF study certainly *does not* show what would happen to the night to day crash ratio if a road were to be relit with brighter lighting. The poor statistical approach it exhibits is of great concerns since human lives and injuries are involved. Journals in general and IATSS Research in particular need to guarantee statistical rectitude and encourage post-publication review. A general concern is that much research, in many fields, suffers from poor research practice, thereby threatening research integrity as discussed in the research integrity inquiry of the UK Parliament (Commons) Science and Technology Committee (2018).

It would be of benefit if the incremental roll out of large-scale public projects were to be done as rigorous scientific experiments, with clear

pre-defined measures of success, so that any claimed benefits could be checked as the implementation proceeds. By this means any programme could be stopped or adjusted if it was found to be not delivering its objectives. More success with policy implementations might arise, if advocates who stand to gain financially by a proposal's acceptance, share some of the financial risk of implementation failure. Doing so might encourage such advocates to be careful in only adducing sound scientific evidence for any proposal put forward.

5. Declaration of Interest.

The author has concerns about light pollution affecting astronomical observations and biodiversity, so has been motivated to examine the claims of benefit for increased public lighting. The author has previously published work critical of claims of substantial public safety benefit of increasing lighting. No funding was sought or obtained for this work.

Note by Author

This article was previously published in the, now sadly defunct, *World Transport Policy and Practice, 26(2) pp 8 – 20, March 2020*.

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Appendix

A simple example showing the superiority of using a longitudinal design instead of cross-sectional

To show effect of the number exposed to risk in night to day crash ratios: comparing cross-sectional and longitudinal approaches.

An issue of importance in road crash studies is the number, or rate (per unit time) of crashes 'C' adjusted for the number exposed to risk 'F', the flow of traffic. This would seem to be sensible. Then using subscripts 'N' for Night and 'D' for Day, the quantity of interest is no longer C_N/C_D but becomes C_N/C_D / $(F_N/F_D) = \frac{C_N F_D}{C_D F_N}$. However, without measurement of the number exposed to risk both night and day, we cannot know the size of this quantity. The ratio of the number exposed to risk Night to Day may vary considerably between different roads and may well be related to the nature of the road, which in turn may be key to the lighting chosen. Such considerations make any claim that it is the variation of lighting alone which is responsible for the variation of C_N/C_D crash ratio highly suspect.

Now for a 'Before and After' study (that is a longitudinal approach) where lighting is changed in-between, the quantity of interest for a road is the ratio, before and after, of the above quantity, $\frac{C_N F_D}{C_D F_N}$.

Using B to indicate 'Before' and A for 'After' we obtain the relevant quantity, the ratio of ratios.

$$\left[\frac{C_{NA} F_{DA}}{C_{DA} F_{NA}}\right] / \left[\frac{C_{NB} F_{DB}}{C_{DB} F_{NB}}\right]$$

A value of less than one would denote a reduction in the night to day crash ratio. A 'statistically significant' value of less than one would be taken as evidence that the change of lighting has been successful in reducing the night to day crash ratio.

Because one might expect the ratio of the night to day numbers exposed to risk to be approximately stable, before and after on a given road, these F_N/F_D values therefore cancel in above expression. Of course, it would be useful to have accurate measurements of traffic, flow F_N and F_D, to put into the above expression. However, in the

absence of such information it is reasonable to assume the values for traffic flow will closely cancel in the expression.

The ratio of after to before ratios of night to day crash numbers, $\frac{C_{NA}C_{DB}}{C_{NB}C_{DA}}$, in a longitudinal study is therefore likely to be a better indicator of whether new lights have improved or worsened matters as it is much less affected by ignorance of the numbers exposed to risk, as in the case of a cross-sectional study. It is these values, $\frac{C_{NA}C_{DB}}{C_{NB}C_{DA}}$, of the after to before ratio of ratios for every road in the study sample, together with their appropriate estimates of uncertainty, that need to be analysed in a longitudinal study.

The argument against a cross-sectional design, as opposed to using a longitudinal one, is the same for any other cause of the number of road crashes that is correlated with lighting (that is, one which is different from night to day numbers exposed to risk).

Therefore, as shown above, longitudinal studies give more trustworthy results when ascertaining what effect road lighting might have on road crashes as it tends to rule out extraneous impacts, as these are likely to remain more-or-less the same at the end as at the beginning

Omicron Numbers: A Wave of Infections or a Wave of Testing

Country	UK	FRANCE	GERMANY	ITALY	SPAIN
Total Tests Per Million	6.5	3.4	1.4	2.8	1.1

UK has almost twice as many as the closest neighbour and 6 times as Spain, which is why we have so many infections. Thus, UK had a peak of Omicron infections at the beginning of January of just under 200,000 a day, and, ONS suggest that we should expect somewhere between 14 and 18 days from symptons to death, so we have been having an average of c.350 deaths a day in the last ten days (18th-26th January) giving an average of 570 cases per death. Unfortunately, we cannot directly compare with other European countries: France, Italy and Spain do not yet appear to have reached their peak; and although Germany appeared to have a peak of cases late November followed by a peak of deaths mid-December, that has been followed by another rise in cases to nearly 200,000 from a trough of under 20,000 at Christmas 2021.

COVID 19-Where Have All Our Sage Experts Gone?

Data show that there was a peak of infections was Wed 29th Dec and Thurs 30th December at around 190,000 a day, but that was probably a Christmas effect, as infections decreased during the following week. The real peak was Tuesday 4th January at 195,000 infections. Since then the numbers have decreased by about 9,000 a day until today's(Monday 17th) figure of 85,000. Will we be receiving some shattering news from SAGE that the numbers are halving every fortnight that the numbers have been coming down steadily?

Previous experiences of spreads and contractions of pandemic viruses is that this will continue so that the SAGE scientists will indeed be shattered to find that they are out of a job by mid-February. It is interesting to note that Spain has now declared this is an endemic rather than a pandemic; shouldn't we do the same?

RadStats: *The Musical !! (1):* 1830s Edinburgh, 2020s Britain: science, class, and statistics

JOHN BIBBY

With thanks to Steven Shapin and Andrew Lloyd Webber

In his discussion of 1830s Edinburgh, Shapin (1983:170) uses attitudes to science to define a typology of class structure. There were at that time, he suggests, four different social groups which could be identified by their characteristic and differing attitudes to the ascendancy of scientific thinking. First were those who "saw in science an acutal or potential career or an appropriate avocation". We may call these the 'careerists'. Second were those who "viewed science as practically useful knowledge". These were largely merchants and industrialists – 'capitalists', we may call them (although for two centuries we have *all* been capitalists). The third group saw science as "a legitimation of the existing social order", and the fourth regarded it as "an important resource for undermining that order" - the 'conservatives' and 'radicals' respectively. Thus we have four groups: careerists, capitalists, conservatives and radicals. Shapin does not claim that these groups are either discrete or exclusive (i.e. they do not cover the entire social space). Clearly they are not. But are they recognizable?

Careerists, capitalists and radical may be easily recognised, but what of the third group, the 'conservatives'? These are those who see science as legitimating the existing social order. But *how* does science legitimate the social order? Is it that social order *determines the nature* of scientific development – of the questions that are asked and the answers that are given; or is it that the "objective" nature of science, and its alliance with the religious doctrine of the day, somehow validate the present state and State as entities that should be preserved; or is there some other meaning? (Then as now, the particular role of Edinburgh as a "provincial metropolis" must not be

ignored – the 1830s were closer in time to pre-Union Scottish sovereignty than to today's visualized future independence of the 2030s or beyond.)

Somewhat glibly, Shapin terminates his discussion with a quote from E. P. Thompson that "Class is defined by men (*sic*) as they live their own history", and with a note that in the 1830s, "Divergent social interests gave rise to conflict in the wider society and corresponding divergent interests in culture gave rise to conflict in science and its institutions". So it is no doubt today, but can Shapin's typology assist us towards an understanding of 2020s statistics? In particular, what light do his categories throw upon the "data wars" that have typified the Covid pandemic?

These questions may merit serious discussion. But let me first propose a Covid "musical", a bit like 'West Side Story" perhaps, with *four* competing gangs, not just two. The "Jobbers" are the careerists; the Caps (of course!) are capitalists if not Capulets, which then leaves the Cons and the Rads, the conservatives and radicals.

What could be the theme songs of these four gangs? Among titles that spring to mind are the following (adapting Shapin's typology):

- **The Jobbers (a gang of careerists for whom statistics is a "career or an appropriate avocation")**: More data, more data!; Model me more; I'm all for R; Theory without data is like bricks without straw (and other Holmesian themes); Science, Stats and Starmer.
- **The Caps (the capitalist gang: for them, stats is "practically useful knowledge"):** We have the contacts, We know the system; Keep businesses open; More furlough please; Get that Vax and get back to work *NOW*!!.
- **The Cons gang (conservatives: stats "legitimates the existing social order"):** When will we ever see Normal again?; Boris knows best.
- **The Rads (radicals: stats are " a resource for undermining that order"):** Bring on the fire-fighters; It's all a conspiracy!; Bring back Corbyn; Don't forget the climate, COP and Clasgow.

I leave others to develop the lyrics, music and plot.

Shapin, S. (1983) 'Nibbling at the Teats of Science': Edinburgh and the Diffusion of Science in the 1830s; pp.151-178 in *Metropolis and Province: Science in British Culture, 1780—1850* (Inkster & Morrell, eds.)

Sum (2009) and Incognito (2011), both by David Eagleman and published by Canongate

John Bibby

David Eagleman is a very learned and impressive author. Recently he was on "*The Life Scientific"* with Jim Al-Khalili. In 2020 and 2021 alone, he has produced some twenty publications. These range from deciphering sound via patterns on the skin, to predicting the risks of criminal recidivism, why "moist" is a word that people dislike, and how the internet can become a safety net for "surviving pandemics and other disasters".

"He must be a statistician!", you may suppose. How can all this be done without statistics as a linking methodology? No other field tears down "No Trespassing" signs with such vigour and conviction, opening the way for entry into other experts' territories. Not for nothing did Karl Pearson describe statistics as the inter-disciplinary field *par* excellence – tailor-made for "buccaneers" who thrive on looting other peoples' ideas. Statistics provides high-level viewing points over foreign lands from which we may gain "wide views in unexpected directions" and find "easy descent" into their territory. "I felt like a buccaneer of Drake's days", Pearson exclaimed – one of the order of men "not quite pirates, but with decidedly piratical tendencies".

Leaving aside one's views about Pearson or about buccaneers, my sense that Eagleman may "really" be a statistician was reinforced when he described life as "taking patterns from the data and making sense of it". From his book-title, "Sum", you might suspect he started life as a mathematician. However. Eagleman's first degree was in literature (British and American). Only later did he move into neuroscience. The tale of his journey is recounted in "*The Life Scientific".* (There have been more than 240 lives in this series so far. I believe a book is on its way.)

Great scope exists for parallel series of lives in other areas. Members of my U3A maths group have been giving talks under the title "A Life Mathematical" (note – 'a', not 'the'). Perhaps Radstats should sponsor a series of "Lives Statistical". I am sure we could learn much about each other, just as I am finding at the unfortunate series of funerals I have been attending recently that even friends I thought I knew really well had features or skills of which I was completely unaware – one collected butterflies, another was a cornet-player, a third had three earlier wives and many unexpected children who turned up at the funeral!

However, to return to Jim Al-Khalili's amazing series – why do we review books, but we do not review radio programmes? Ten years ago one could have argued that books possess permanence while radio programmes disappear with the waves. But this was a poor argument even then, and today in the age of "*BBC Sounds"* and *YouTube* it is no longer true.

More convincing is the argument that books are a "commodity" with a price-tag, while radio programmes are not. Also, books are expensive and a "status" commodity, so book reviews serve the interests of book-producers whilst also being in the interest of their consumers, whom they inform and assist in spending their ill-gotten gains in an optimally informed, evidence-based manner. Book reviewers are the aboriginal "influencers", active long before the internet. (The most important thing is to get talked about, so even 'bad' reviews can be commercially advantageous.)

Some of my above statements are 'testable' in that we could compare reviews of different categories of books in terms of variables such as length, frequency, number of times quoted or retweeted. That is more than can be said for some of the statements in Eagleman's book "*Incognito"*. Several of his predictions have an air of *Old Moore's Almanac* about them - Don't be too precise, and your forecasts may be well-nigh invulnerable. (I have been predicting the death of the Duke of Edinburgh for decades. At last in 2021 I have been proved right.)

Eagleman's "*Sum*" is very different from "*Incognito*". It is much slimmer, barely 100 pages, and contains 40 mystical *vignettes* "from

the Afterlives". Each *vignette* is a letter sent by a deceased person, on one particular subject. They often have one-word cryptic titles - "Missing", "Spirals", "Scales" and "Adhesion" , for example – which tend not to mean what at first sight they appear to mean. "Sum", for example, has nothing to do with addition. It refers to existence, as in "Cogito ergo sum".
The reviewers' comments reprinted in the blurb on *Sum*'s cover are ecstatic, almost orgasmic. "Dazzling" says Stephen Fry; "Elegant, surreal and philosophically questioning" says another reviewer; the book's "inventiveness, clarity and wit … add up to something completely original" says a third; it has "the unaccountable, jaw-dropping quality of genius", says *The Observer*.

Several of the *vignettes* are indeed thought-provoking, but others are irredeemably derivative. *Metamorphisis* takes the familiar meme that nobody really dies till they cease to be remembered. This happens only when all their friends are also dead, so their name has been spoken for the last, last time. This argument may be questioned on several fronts. Firstly, is it regressively circular. Second, its nominalism confuses the name with the thing, suggesting that the word is the concept is the essence. Eagleman converts this meme into an ante-room in the Afterlife where people must wait until they are truly dead in the never-again-to-be-mentioned sense. Until that happens, no peace is possible. So the farmer whose name is cited every week by a tourist guide recounting the story of his drowning is "stuck and he's miserable" after many centuries in the ante-room. Moreover, his story is retold so many times that its essence drifts: it recounts his name, but this is no longer his identity. "And that is the curse of this room", the story concludes: "since we live in the heads of those who remember us, we lose control of our lives and become who they want us to be".

God's personal and personnel problems feature in some of the stories. It may be a problem of management (all God's decisions are taken by committee), or it may be a problem of clientele ("only microbes are in the running for eternal punishment or reward"). There are also gender problems: God may be male or female (but not yet non-binary). In "*Missing*", they is a married couple. In "*Spirals*", the Creator is "a species of small, dim-witted, obtuse creatures".

The purpose of life is also much-discussed. One of the longest *vignettes*, "*Narcissus",* provides a theory that may appeal to statisticians: "In the afterlife you receive a clear answer about our purpose on the Earth: our mission is to collect data". We are like mobile cameras planted here by the Creator. "Our calling is to cover every inch of the planet's surface. As we roam, we vacuum data into our sensory organs, and it is for this reason alone that we exist." Unfortunately, all the data collected by our sophisticated cameras proves to be of no use. So the cameras turn their attention to each other. "On their sophisticated sensory skin, they simply want to be stroked". The head engineer is sacked. "He has created an engineering marvel that only takes pictures of itself" – narcissism and robotism combined, the very worst sort of statistics.

Eagleman's final story, "*Reversal",* appeals to me, not just because it is last. "There is no afterlife, but that does not mean we don't get to live a second time." However, in our second life time runs backwards and life runs in reverse, beginning underground. (Do crematees start in the air? We are not told.) Impossibilities happen. Broken vases reassemble, meltwaters refreeze into snowpersons, bearded men become smooth-faced children. We all become diseducated. On our last, last day, babies crawl back into the wombs of their mothers, who crawl back into the wombs of *their* mothers "and so on like concentric Russian dolls".

Continuing this "*Reversal*" theme, we shall end this review at the beginning of the book: Eagleman's first *vignette* indulges in some statistical reverie: each seventy-year life includes thirty years of sleep, two hundred days taking a shower, seven months having sex, six days clipping our nails, five months sitting on the toilet. Which is probably a very good place to end, and a good place to keep this book available for whatever use you choose to make of it.

Radstats Essay Competition 2022/22

The Radstats Essay competition for 2021/22 invites submissions by 31st January 2022.

We welcome essays that relate to the RadStats belief that statistics can be used to support radical campaigns for progressive social change. That statistics should inform, not drive policies and social problems should not be disguised by technical language.

We provide three example essay titles below. These are not prescriptive and so if you have another idea for an essay that reflects RadStats beliefs, please feel free to submit this or to discuss with the editors.

Example titles are:

A - In an era of austerity what contribution can statistics make to public understanding of the causes and consequences of this situation?

OR

B – Given the Climate Catastrophe what contribution can statistics make to public understanding of the implications of this potential development?

OR

C - In the light of the COVID-19 Pandemic what contribution can statistics make to understanding how governments and publics should respond to crises caused by pandemic infectious diseases?

Essays should be around 1,500 words with a 10% leeway either way.

There are two categories:

a) Open to anyone
b) For students i.e. anyone in full or part time education in school, further or higher education.

The best essay and runner up will be published in the Radical Statistics Journal

Essays should be sent to Radstats Administrator with DETAILS

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