Changing from doing what we know to doing what we know works: The need for effective evidence translation as part of knowledge exchange in Scottish transport planning. A Public Health perspective.

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Introduction: the broader landscape and challenges

Challenges surrounding adaptation from current practices of *what we know* to *what we know works* beset transport planning across the UK. These range from inertia and business as usual ways of working, to political boundary setting for what is and what is not acceptable, down to just simply not knowing what is the best available evidence and how to access it. Clearly some of these are inter-connected and public acceptance is often linked with political acceptance. The perceived central role of the car in UK society arguably sets boundaries for acceptable interventions even if these clash with evidence which strongly suggests interventions such as traffic calming, road space re-allocation to sustainable transport etc…The re-shaping of the transport sector after the second World War has brought with it some ways or working which arguably are out of step with the best scientific evidence. From a health perspective some of these are becoming critical, as will be touched on below. Challenges can be grouped into a number of categories. Here I set them out as three main barriers:

1. Growing urbanisation and the rise of lifestyle diseases: social determinants of health
2. The meaning(s) and importance of evidence
3. The dearth of knowledge translation in transport planning

The first is increasing important as a result of environmental influences on human health in cities and towns. A renewed importance comes from the relentless global trend of urbanisation.[i] Most people now live in cities and towns, and forecasts have shown that urbanisation will continue. How we build, design, manage, maintain and renew our towns and cities is critical for human health. The rise in non-communicable disease (lifestyle diseases) presents challenges and risks to health and heath equity. Over the past 50 years urban environments were remodelled for greater car use (after the Buchanan Report of 1963).With a built-in time delay it was only from the 1980s that we began to witness weight gain and associated rises in Type II diabetes, now on a staggering scale. This has been assisted by sedentary car oriented travel behaviours for millions, contributing to what by the late 1990s was termed 'obesogenic environments[ii]. Add to this polluted air (once again – the 1956 Clean Air Act dealt with industrial and domestic sources), and the theft of child independent mobility through mass motorisation, and we have a strong case that the way transport planning works is contributing to damage to health of increasing numbers of the population.

Secondly, in order to implement what works in transport planning in terms of improving health outcomes as opposed to what we know how to do, there is an implicit assumption as to what constitutes robust evidence. This creates a number of challenges which are critical in a transition to implementing what the science tells us works. This then leads to the need to address the third barrier, the lack of evidence translation programmes. Evidence translation, drawing on the most robust and best available evidence is, arguably, a key to the progression of more sustainable transport planning which will meet the needs for Scottish society during and beyond the 21st century. Knowledge translation from peer reviewed evidence literatures is, however, sadly more often noted by its absence than its presence.

1 Growing urbanisation and the rise of lifestyle diseases: social determinants of health

With the increasing focus on the need for resilience, from the global to the local, transport planning needs to respond to the health challenges of the 21st century. Urban space provides the context and background for much of population health, from the small towns to the two big cities Scottish cities. Putting health and wellbeing centre stage would result in streets, green spaces, and neighbourhoods that encourage more walking and cycling and opportunities for informal social contact and interaction. Noise and light pollution, which cause stress and inhibit communication, could be addressed through a skilful and balanced application of legislation and planning. There is a consensus that until now the consideration of health and wellbeing has had little effect on the creation of the built environment, with socio-economically disadvantaged communities being worst affected.[iii] The U.S. Surgeon General stated back in 2004 that, "because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will have a shorter life expectancy than their parents".[iv] Or, they may lead a larger proportion of their lives in poor health and at higher costs to health services. So, many health challenges thus have their origins outside of health services and we term them the social determinants of health (Figure 1).

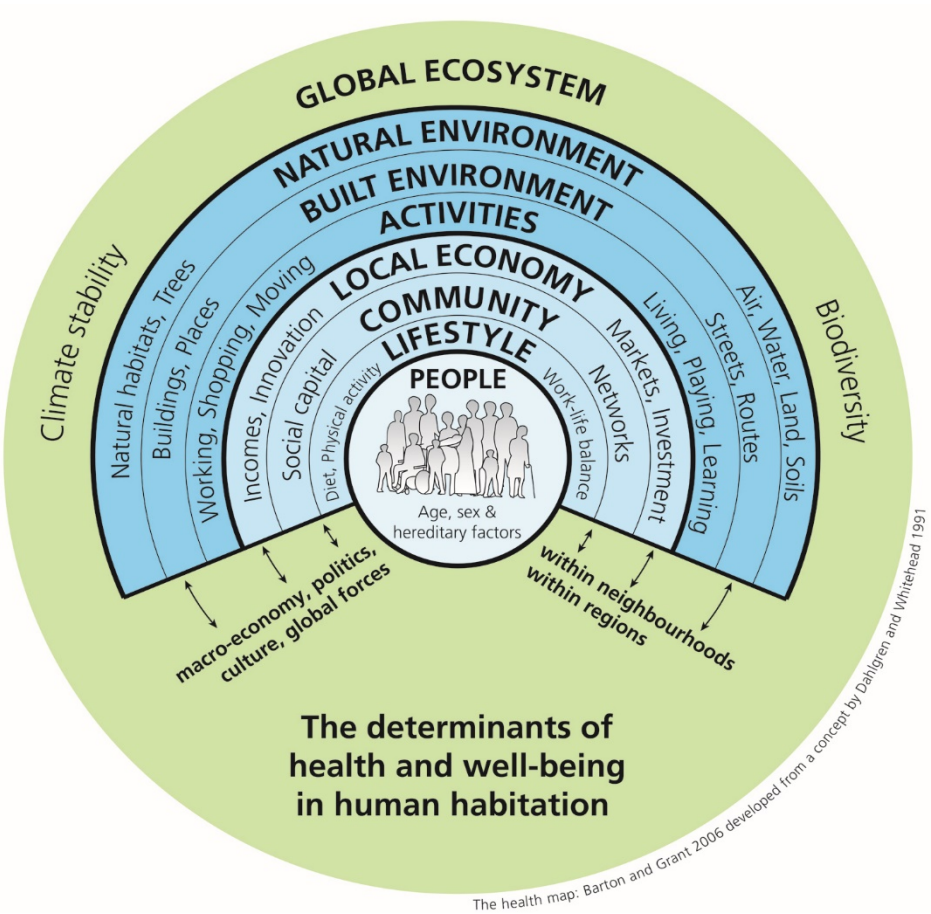

Fig. 1 The Health Map: The determinants of health in towns and cities. Source: Adapted from Barton, H. and Grant, M. (2006) developed from the model by Dahlgren and Whitehead, 1991.

Based on a review of the literature on buildings, public spaces and movement networks, a 2006 study indicated an evidence base for over 60 health problems, covering social, physical and mental health issues, linked to some 15 attributes of the built environment relating to their design, maintenance or availability.[v] Transport planning is heavily implicated in contributing to unhealthy environments. Paradoxically, perhaps, the evidence-base for the health effects of transport has grown substantially since 2000 and we have now a far greater knowledge base as to the healthy transport options than previously (Figure 2).

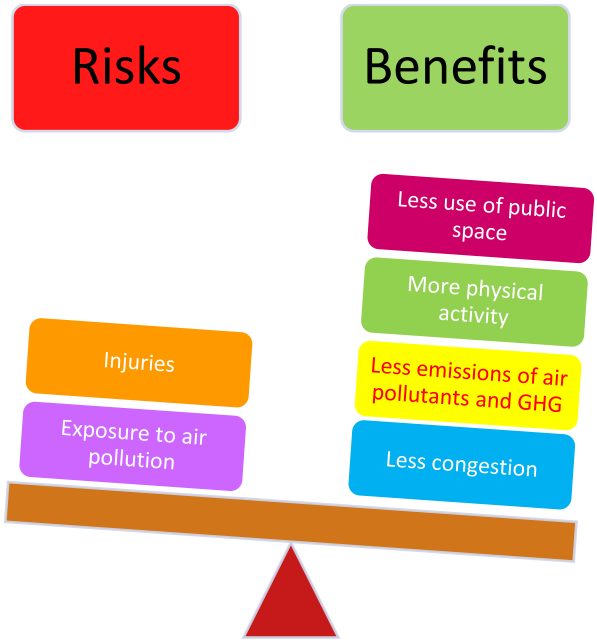

Figure 2: The risks and benefits of aspects of transport planning

Taking the topic of physical activity, transport planning which enables to people to choose to be active (lifestyle) is a major determinant. Physical activity is the nearest health intervention we have to a 'magic bullet' in warding off disease and ill-health. Incorporating physical activity into everyday life is likely to be the most effective way of reaching the recommended guideline of 150 minutes per week and reduce the risk of premature death and disease – high doses strengthen immune function and substantially slow the aging process in cells.[vi] And how? Take public transport: Public transport impacts upon physical activity levels as most trips begin and end with some form of physical activity to access the service. One early study found that the average transit trip included 19 minutes of physical activity, almost two-thirds of the recommended daily minimum.[vii] Conversely, another early study on the association between time spent in cars, physical activity and obesity found that each additional hour spent in a car per day was associated with a 6% increase in the likelihood of obesity.[viii] Many more studies since have reported similar results for both public transport use and physical activity and car use and weight gain. Moreover, researchers have observed that switching from private motor transport to active travel or public transport is associated with a reduction in BMI, even in a relatively short-time period of under 2 years. A shift in the proportion of commuters using more active modes of travel could contribute to efforts to reduce the population's average BMI.[ix] [x] This could make a significant contribution to the NHS let alone the quality of life of those with reduced BMIs.

And although the Scottish Intercollegiate Guidelines Network (http://www.sign.ac.uk/our-

guidelines.html) does not offer guidance on transport planning the default in this case is NICE Public Health Guidance (National Institute for Health Care Excellence) and there are 6 items of guidance addressing transport. How many of you have ever looked at NICE Transport Guidance let alone suggested using it to assist your organisation's policies and practice? None, maybe? But where is the nudge, the steer to do so? Is a steer to such evidence supported by the Scottish Government, Transport Scotland, the CIHT, ICE etc? No. We will return to this issue but from a different tack when addressing knowledge translation.

2 The meaning(s) and importance of *Evidence*

As a little historical context, evidence-based public policy is not so old and many commenters remind us that the rise of evidence-based policy and practice was first attributed to medicine and that evidence- based medicine (EBM) became 'fashionable coinage' during the 1990s.[xi, xii] Adherence to the mantra of evidence-based policy (EBP) and practice has now spread across most, if not all, areas of European public policy,[xiii] and arguably across many other areas of the world. In the UK, this application was significantly bolstered by the Labour Government (1997-2010), at least in rhetoric, and not least in the broader ambition to achieve social progress through the application of reason.

Those concerned with strengthening the influence of research evidence on policy and practice are faced with a formidable task. Improving the supply of evidence may be necessary but it is not a sufficient means for getting evidence of 'what works' disseminated and implemented. Much evidence is written in jargon, behind paywalls and simply hard to access. Instead of a relatively tightly knit medically trained fraternity, actors are many different professional and practitioner disciplines each with a different relationship to what they call 'evidence'. We can count amongst these actors architects and urban developers and investors; landscape architects and urban ecologists; transport planners and town planners; those in the housing, energy, water and waste sectors; public health practitioners; and city leaders and community activists. Many of these to date have also given very little, or no, thought to the health impacts of their actions. Health may be outside their traditional professional roles and their knowledge domains.[xiv]

And what is meant by evidence across such a range of professions? One of the defining claims for scientific knowledge is its objectivity, and freedom from distorting factors that may alter the way that the object under study is detected, measured and reported. To some of these stakeholders, evidence is understood as a central pillar of public policy decision-making (notably medicine and public health) while for others evidence may be considered more of a second order consideration once the policy direction has been decided. Yet, looking at various disciplinary-based literatures it is evident that the meaning of evidence for some disciplines appears very clear cut, seeming to ignore insights gained in other disciplines. Complicating matters further, when attempting to apply the results of often hard-won research knowledge, what counts as evidence and the rules and criteria for assessing evidence, and indeed whether evidence is valued at all, are all negotiated in 'realpolitik'. A diverse stock of 'evidence' is drawn on by various professions, and by lay people (often this means Elected Members), with a matching diversity of what constitutes 'evidence'.

As Rychetnik and Wise note:

> "concepts of evidence vary among professionals, disciplinary and social groups: for example, scientists have traditionally adopted different standards of evidence to lawyers."[xv]

This should not be a surprising outcome given the above. From a UK perspective, researchers have noted that the EBP version of evidence does not seem to pervade local government:

> "The successes of the evidence-based healthcare movement have been much trumpeted…Strikingly, local government work on the determinants of health appears to be one arena in which this paradigm was largely absent."[xvi]

One example from road safety and the use of, or absence of, evidence comes from a study by Hewson.[xvii] In running training courses in the use of EBP, Hewson noted that "Research says" was a common prefix to many discussions, and it became apparent that there are unchallengable dogmas in road safety. For example, one group considered a randomized controlled trial of child visibility aids. This was readily accepted as "good" evidence that should guide practice, yet the paper appraised only shows that children can be encouraged to wear small and discrete visibility aids for a short time; it neither provides evidence that these aids are visible enough to be effective, nor evidence that casualties were reduced by the intervention. Generally, it became clear that direct use of the evidence base was limited among most participants:

"I have never considered research as a method of looking at a particular road safety issue. Whilst aware that obviously research was being undertaken, and from time to time hearing about it, I have never given it much credence [or] seriously looked at it as any more than general information"

Reinforcing this analysis, in public health and medicine, an Evidence Hierarchy (Figure 3) is taught at undergraduate level in filtering out less robust evidence, partly though study designs that are more prone to a range of biases such as cross sectional surveys. Such hierarchies are not taught in most other subject areas.

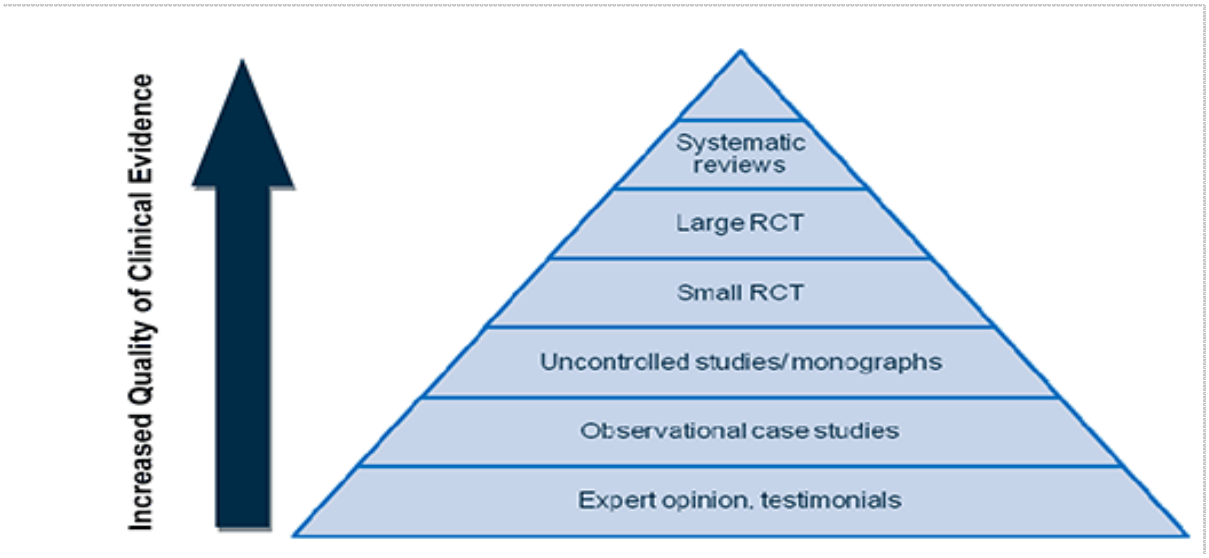

Figure 3: The clinical and public health evidence hierarchy

When a public health lens is focused on decision-making processes in government (local or national) we almost see an inverse of the evidence hierarchy (Fig. 4). If this is correct, the habits and ways of decision-making pose a major barrier to EBPP and don't help with evidence translation.

Figure 4: Policy makers' hierarchy of evidence
(adapted from Davies 2005 with acknowledged from developments by Hunter, D. 2017, Health in All Policies: Making it Work in Practice - Winter School, Durham University)

The process of decision-making consequently then takes on a cherry-picking process of evidence which fits with an ideologically led position. The process model tends to look like that set out in Figure 5. It should be said, of course, that this should be no surprise, given the role of politics in democratic societies. That is, except, in the demonstration of evidence, we can sometimes show that selected interventions are unlikely or highly unlikely to achieve the claimed outcome and could do harm. Those old enough may remember the 1980s Conservative Government's claims about opening up bus services to the free market and the improvements that would result for the public as a consequence of the 1985 Transport Act. Objective analysis has shown that the Act was largely damaging to the general public in terms of access needs but did give a boost to car sales. Just compare the bus service provision between Glasgow and Edinburgh, one where privitisation took hold, and the other still run as a public service by Lothian Buses. This itself adds a further dimension which is politicians who have no interest in EBP.[xviii]

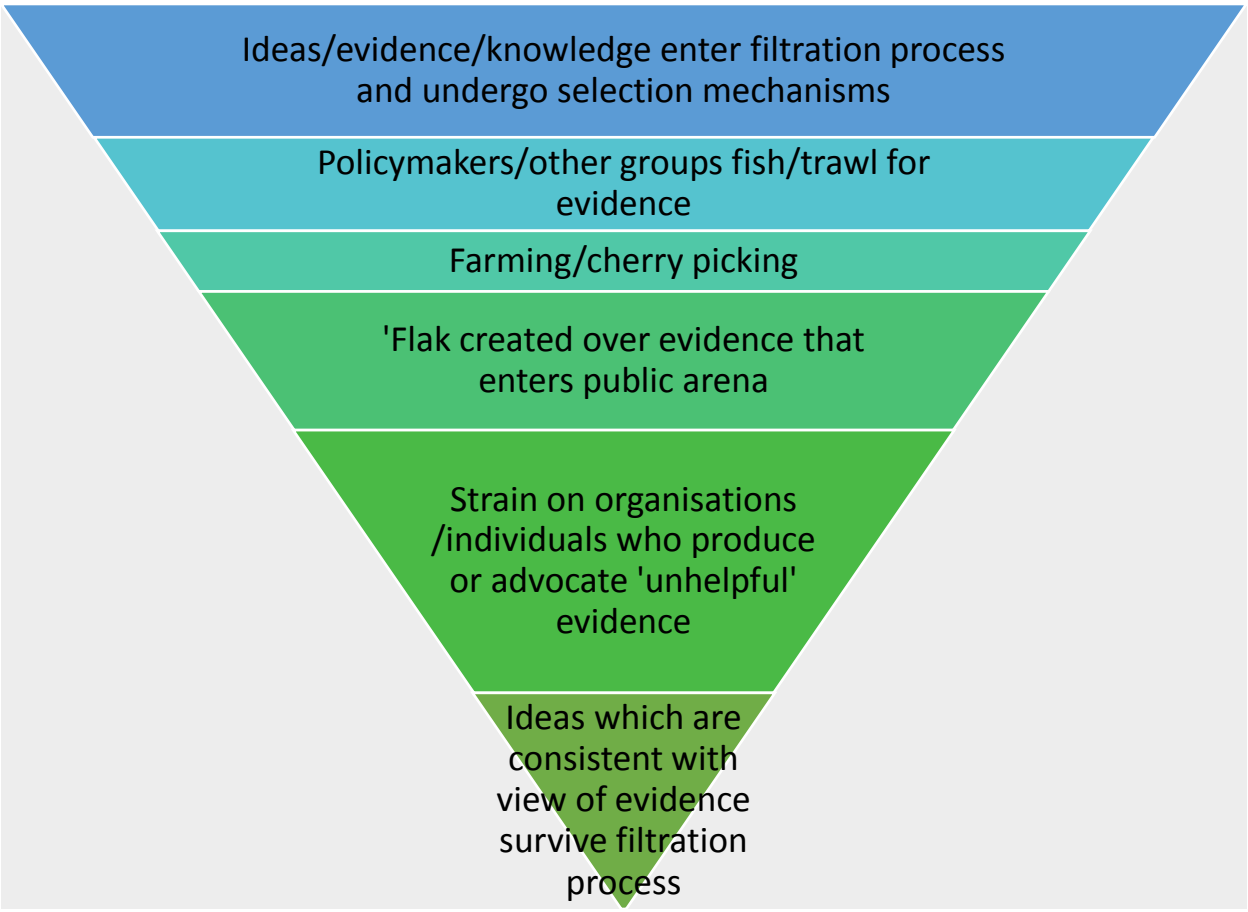

Figure 5: The process model of evidence-based policy making[xix]

3 The dearth of knowledge translation in transport planning

> "It has been acknowledged that a large gulf remains between what we know and what we practice. Hence a task, if not the main task, is to improve knowledge transfer."[xx]

Knowledge translation has been described as a more complex, multidimensional activity than knowledge transfer or exchange, involving blurring of the boundaries between knowledge producers and consumers. It has been described as the process of making sense of and then transforming knowledge in order to render it useful to another party. Yet, virtually no knowledge translation services exist to provide guidance and support arising from academic research in transport planning in the UK. This stands at odds with a growing literature documenting prevention and health promotion interventions that have proven successful in well-controlled research. In transport planning, relatively few successful interventions have been tried based on such evidence (one example of reliance on peer reviewed evidence might be road pricing, another traffic calming). This is despite the fact that discussions about what interventions works and for whom and under what circumstances understandably consume a significant amount of researcher time and effort. [xxi, xxii]

Knowledge translation has to be able to reach and have influence, by giving confidence to those – often in service delivery - not least transport planners and other built and natural environment

professionals, to take a stance or approach less common or rarely taken. The barriers at this point when evidence translation is provided is still that business as usual and incrementalism rule the day, overseen by the ever-present risks of political rejection or dilution.

I have portrayed a relationship within national and municipal government as a bounded reality triad where evidence is a much smaller constituent part of a triad (Figure 6).[xxiii] Whether tailored, short, de-jargonised summaries, can have influence on policies and practice may depend on how well embedded and accepted such a 'service' is. That service exists in perhaps a handful of local authorities across the UK.

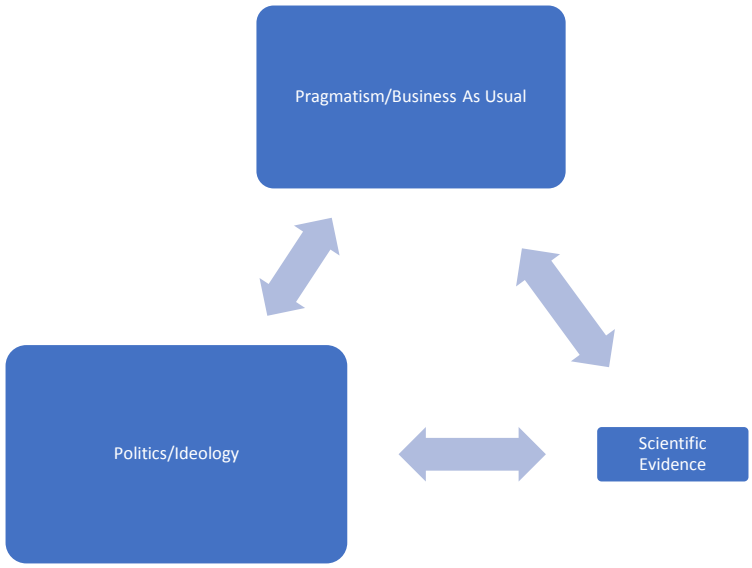

Figure 6 The bounded reality triad of government decision-making

Power and influence lies not with the evidence providers but with politicians tempered by incrementalism, a business as usual approach. Strong advocacy is, therefore, needed to support even the best evidence. And as Khries and colleagues note, this requires knowledge translation with the overtly stated benefit of population health.

> '. . . researchers within the different disciplines need to translate their knowledge and understanding into action and actively work together to ensure that the health of the population is at the top of the list of competing priorities for regulatory policy decision-making'. [xxiv]

My first-hand experience comes as a public health specialist in transport planning embedded into Bristol City Council's transport policy team since 2008. My approach has been one of a translator of bite-sized amounts of peer reviewed evidence, which often seeks to strengthen the case for work that is already being progressed through identification of health effects, including their quantification and distribution. The most visible version of my translational work is the *Essential Evidence on a Page* series (Fig. 7). Since 2009 I have been selecting topical transport issues or concepts, identifying the most robust peer reviewed paper(s) and then distilling key findings onto one page in a de-jargonised format. To my initial surprise this has proved popular and is now subscribed to (free) by over 1,600

people over half of whom are from outside of Bristol. The original target audience was the Council's transport and urban environment planners (www.travelwest.info/evidence).

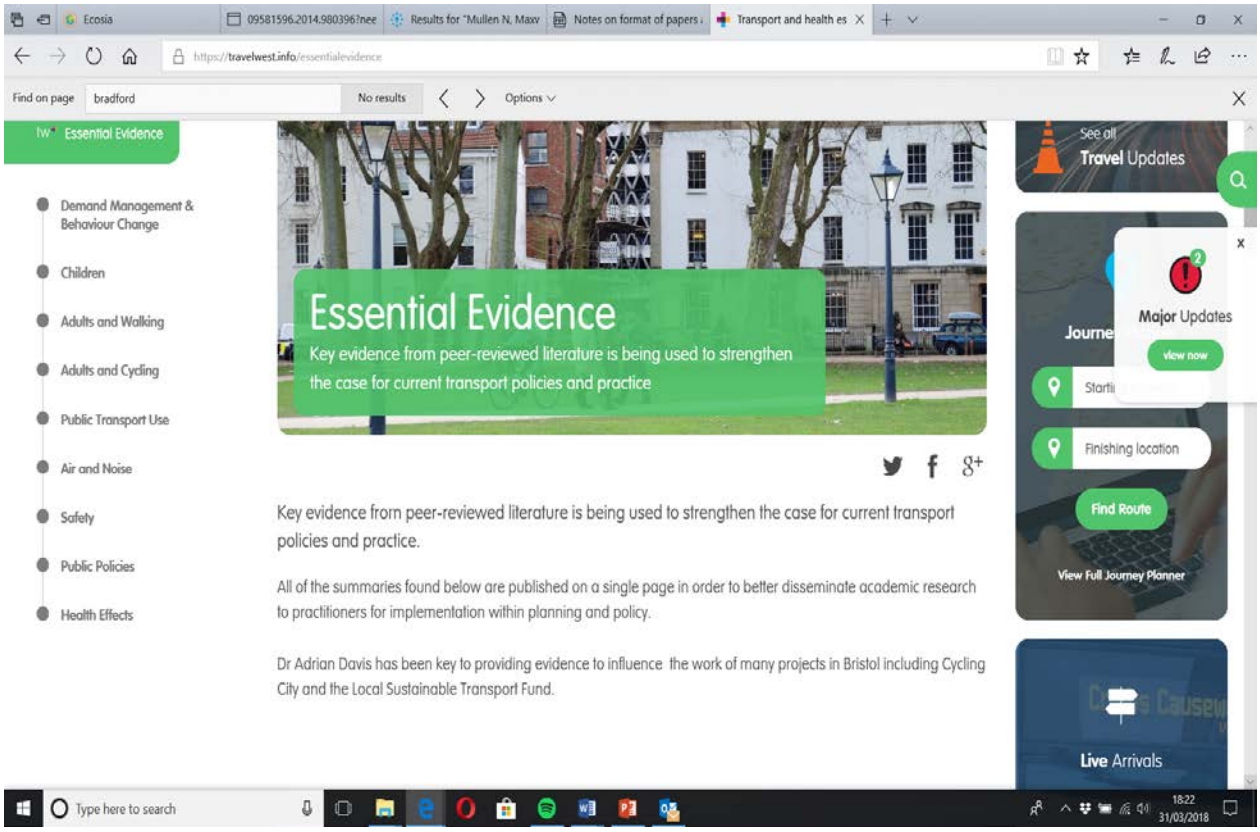

Figure 7: Essential Evidence on a Page website with 166 issues reporting on peer reviewed road transport planning research topics in a de-jargonised form

Another Bristol example of a public health evidence-based approach to evidence translation in regards the selection of local road safety measures by lay people. As part of localism more power and budget was devolved to lay people involved in their neighbourhoods. Traffic Choices, a web-based tool (Fig. 8), provides research evidence, in lay language, as to the effectiveness of different types of road safety interventions such as road crossings eg Puffin and Zebra crossings, their advantages, restrictions, and rough costs. An aim was to have better informed discussions with Council staff, speed up scheme identification through prior learning via the website, and also to help manage public expectations of what can be achieved through specific interventions (www.trafficchoices.co.uk). So far one other highway authority has partnered with the City Council to develop their own version of Traffic Choices.

The third example is Askfuse (www.fuse.ac.uk/askfuse/), a public health focused evidence translation service (Figure 9). Since its launch in June 2013, researchers from five universities across the north east of England have pooled their skill sets and have been working with nearly 100 partners in Local Authorities, NHS, general practices, and voluntary and community organisations across the North East and beyond. With the support of Fuse researchers, the programme has helped these partners to access existing knowledge or develop new research evidence that was relevant, timely and tailored to their needs and enabled them to find answers to local issues that matter. Fuse responds to requests

made by policy, practice and third sector partners, and works in collaboration to find research solutions to address pressing local issues. One-to-one approaches based on initial discussion, followed by tailored service to identify needs are then work up with the organisation (eg to evaluate the existing service, review documents, analyse data, initiate new research). Initial responses are provided within 48 hours followed by discussion; and if research is to proceed, a memorandum of Agreement drawn up related to agreed timeframe, costs & deliverables.

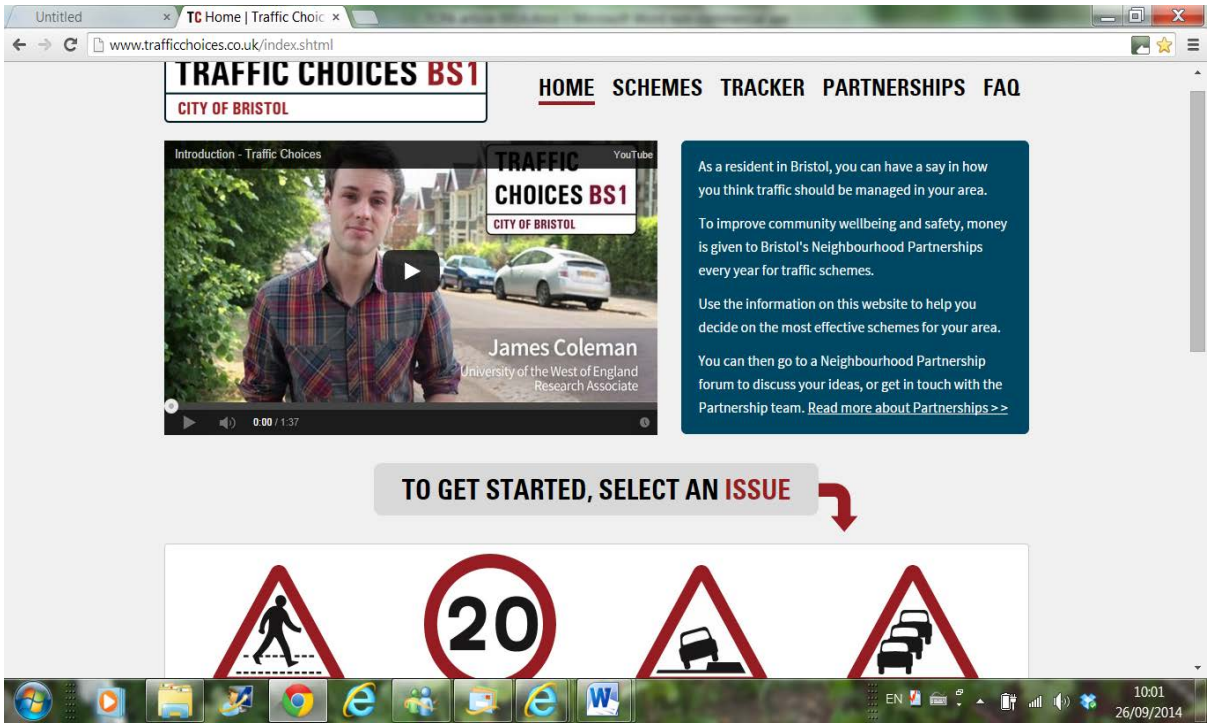

Figure 8: Traffic Choices website for use by lay people concerned about local traffic issues

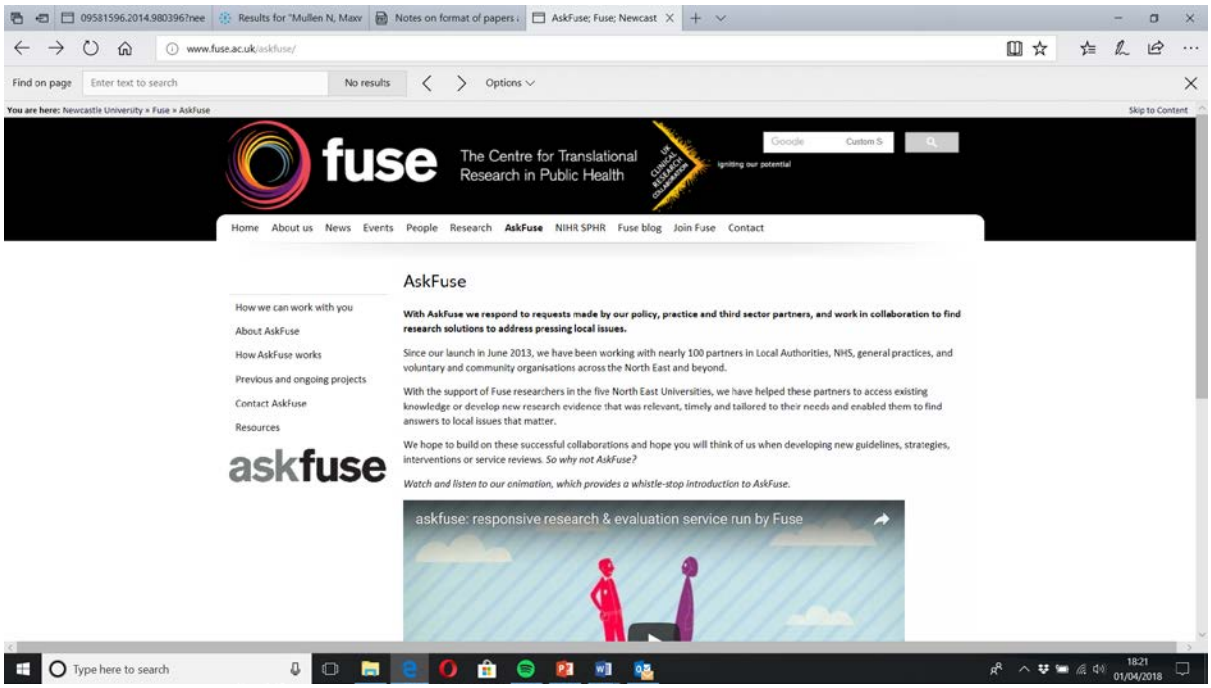

Figure: 9 Askfuse is a public health translational research programme supported by 5 universities across the north east of England

Discussion and conclusions

Knowledge co-generation has also been used as a term to capture a new settlement between science, lay knowledge and practice. This has some similarity to a previously proposed partnership and maxim to:

- ensure the development of an appropriate research evidence base;
- establish mechanisms to push the evidence out to policy makers and practitioners;
- encourage a situation where there is a pull for evidence among policy makers and practitioners.[xxv]

Research must be seen to add value, have salience, and improve health/transport outcomes by employing robust methods and asking questions that need addressing, and not be driven by those with different agendas and interests. This will require researchers to be both skilled scientists and capable participants in the world of policy and politics – a model of engaged scholarship,[xxvi] and conversely for policy-makers to assume a reflective stance akin to the reflexive practitioner.[xxvii] This then has resonance with Machenbach's public health big idea – that we have to reach out as advocates with the best available evidence to work with those who may be receptive.[xxviii] Great in theory, harder in transport planning in local government even when you have the best available evidence to hand. Not yet quite so hard in public health inside NHS Health Boards.

Public health professionals become politicians	**Trying to obtain positions in government to reach their objectives**
Influencers	Directly influence the political process eg by lobbying and by actively engaging politicians of specific political parties
Active dissemination	Public health professionals actively disseminate relevant information among politicians eg reports to Government, and use of media
Political passivism	Information on health risks and opportunities for health improvement exchanges within the health sector only

Figure 10: The Public Health Big Idea: Evidence-based advocacy

I remain acutely aware that peer reviewed evidence has no particular standing within local authority transport departments (or consultancies etc…) which have many pressures to implement particular interventions irrespective of what any peer reviewed evidence demonstrates. Politics and power take the lead in determining what and how evidence is used. Thus, I stress how, with limited budgets and Freedom of Information requests, it is important to evidence what are the most effective interventions, both for population health as well as key transport objectives. I contend that this can be highly effective in not only winning funding bids and ultimately in saving the authority money – and incidentally improving the health of populations. I add that, in researching this paper at least six Essential Evidence on a Page evidence summaries were drawn on in supporting claims made by the author.

As a coda, I pose the question, with the experience of 10 years in a municipal authority: Should not all transport departments have someone trained in evidence reviewing to ensure that managers and politicians have the best available evidence to hand?

Acknowledgement

On-going collaborative work on articles and book chapters with Marcus Grant have contributed to ideas and identification of literaure which have helped inform this paper.

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[ii] The term “obesogenic environment” refers to “an environment that promotes gaining weight and one that is not conducive to weight loss” within the home, as part of meeting access needs or in the workplace. Indeed, some neighbourhoods or districts may be far more conducive to weight gain due to the widespread availability of energy dense foods, and environments not supportive of active travel.
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