Leir, S; Parkhurst, J (2016) Bias in the use of evidence for policy: technical bias and issue bias. Working Paper. London School of Hygiene and Tropical Medicine.

GRIPHEALTH

Brief 2

October 2016

Bias in the use of evidence for policy: 'technical bias' and 'issue bias'

Advocates of evidence-based policymaking (EBP) often argue that policy decisions are improved when they are informed by rigorous and accurate scientific evidence. However, some critical authors argue that public policies cannot be decided on technical evidence alone. They stress that calls to simply 'base' policy on evidence risks ignoring the fundamental importance of politics as a mechanism to debate and choose between multiple competing social concerns, and further risks imposing de facto policy priority on those concerns which have been measured, or those which are conducive to measuring in particular ways. At times, debates between these groups appear to paint an intractable difference of opinion on the role that evidence can or should play in policymaking. However, here we argue that both sides have valid concerns to consider, yet their concerns are very different in nature. For champions of evidence, there is a problem with the *politicisation of science* – the ways that political interests appear to drive the misuse, manipulation, or cherry picking of evidence to promote political goals. This can otherwise be defined as a concern over *technical bias* in the use of evidence – evidence utilisation that does not follow principles of scientific best practice (which can include invalid uses of individual pieces of evidence, as well as failing to systematically include all the relevant evidence that best answers a particular question) and which therefore leads to poorer policy outcomes than would otherwise be possible.

The critical policy perspective, on the other hand, points to the problems caused by the *depoliticisation of politics* – in particular the ways in which social values can be obscured or marginalised through the promotion of certain forms or bodies of evidence. This is also a form of bias, but can be alternatively termed *issue bias* to capture how evidence utilisation can shift the political debate to particular questions or concerns in a non-transparent way. The first form of bias broadly reflects the value of scientific fidelity, while the second broadly reflects the value of democratic representation.

This brief defines these concepts and explores the political origins of these different forms of bias in order to help move beyond the debates between evidence champions and critical perspectives, as well as to help guide efforts to avoid bias or mitigate its impact.

At a glance

- Two distinct forms of evidentiary bias in policy-making exist:

  1. *Technical* bias – evidence utilisation that does not follow principles of scientific best practice.
  2. *Issue* bias – evidence utilisation that shifts political debates to particular questions or concerns in a non-transparent way.

- Both forms of bias may arise within the creation, selection, or interpretation of evidence.
- Exploration of these multiple politics of evidence may enable greater success in mitigating or avoiding evidentiary bias in the future.

Technical bias

Simply put, technical bias arises when evidence utilisation does not follow the principles of scientific best practice. Such bias can arise in the creation, selection, or interpretation of evidence.

Technical bias in the **creation** of evidence

According to established ideas of good scientific practice, research should be conducted from an impartial position. Personal or political goals should not influence the study design. However, numerous cases are known where policy-relevant research has been undertaken in ways that are structured to provide a particular answer or are strategically manipulated to produce desired outputs. Corporate actors are known to conduct research designed to produce results which support their products. For example, the tobacco industry is renowned for its manipulation of research evidence in order to down-play the harmful effects of smoking(1, 2). Yet, scientifically flawed research may also be conducted by individual scientists as well – potentially driven by career ambitions, financial interests, or ideological goals.

Technical bias in the **selection** of evidence

Technical bias may also occur when a body of (potentially technically valid) evidence is cherry-picked to only highlight those pieces of evidence which support a desired outcome. This is particularly pertinent in policy debates concerning complex or uncertain issues where there may be many pieces of relevant, and often contradictory, information. The selective use of pieces of evidence allows groups to focus on only those facts which align with their political goals. Strategic selection of evidence is apparent in climate change debates, for instance, in which there have often been accusations of cherry-picking evidence - e.g. in the selection of start years and time periods to make arguments about whether or not there is a trend in rising global temperatures.

Biased selection of evidence can also be undertaken by politicians. The concept of 'policy-based evidence making' - often lamented by EBP advocates – is used to capture the way that politicians may call for evidence to support pre-existing plans.

Technical bias in the **interpretation** of evidence

Finally, evidence can also be interpreted in technically biased ways, where invalid conclusions are drawn from an otherwise comprehensive body of evidence. Put simply, this would reflect cases where evidence is taken to say something that it does not. Such misinterpretation can be accidental or deliberate, but the result may be to mislead the public, or to result in less effective or potentially harmful policy choices than if technically valid interpretations were utilised.

Equating correlation with causality is a common example of this form of technical bias – with implications for programme success if an outcome is erroneously assumed to be caused by an intervention or policy response. The misinterpretation of risk statistics provides another common error – particularly when there is a failure to distinguish between absolute risk (the chance of something actually happening) and relative risk (the difference in the chances of something occurring between two comparison situations). Often media reports will simply report on a 'risk' increasing, without sufficient detail to judge its importance. Indeed, if an outcome is rare (with a low absolute risk of occurring), even a large increase in relative risk may still not warrant a higher priority policy response - yet such interpretation errors can have important policymaking implications.

Issue bias

In contrast to technical bias, which is principally concerned with scientific fidelity, issue bias reflects how bodies of evidence can shift the political debate to particular concerns and, in doing so, 'bias' decisions towards different outcomes. Like technical bias, issue bias can also manifest itself in either the creation, selection, or interpretation of evidence.

Issue bias in the **creation** of evidence

Issue bias in the creation of evidence arises in the decisions made over what topics to research and which outcomes to evaluate. Generating evidence through

research takes times and money; consequently, the choice of social issues to study requires some level of prioritisation and, accordingly, will be a fundamentally value-based exercise. In some cases, there may be a deliberate societal bias against studying the needs of a particular group. Ethnic minorities, the homeless, or other stigmatised groups may face systemic discrimination in that they are less likely to be the subject of research in the first place. There may also be groups in great need of policy attention, but for whom evidence generation is nearly impossible. Research on victims of human trafficking, for example, is plagued by challenges due to the hidden and illegal nature of the subject(3). If political agendas were driven exclusively by availability of evidence about a problem, issue bias would result through the ways in which priority would be placed on the needs of the groups for whom there is a larger evidence base to act upon.

Issue bias can also arise from the choice of which outcomes to measure within programme evaluations. The selection of outcomes serves as a de facto indication of what 'success' looks like and hence what social values are seen to be important.

Issue bias in the **selection** of evidence

Issue bias in the selection of evidence occurs when a supposedly 'evidence-based' argument is made by reference to bodies of evidence that only represent a limited number of relevant social concerns. When a policy has multiple social impacts and outcomes, groups on both sides of a political debate can each point to a body of evidence on which to justify their position. Both groups can therefore claim that their policy choices are 'evidence based', but issue bias is imposed by not considering the full spectrum of social concerns. This can be illustrated by considering gun control debates in the United States. If one reviews evaluations of how criminals behave in relation to armed citizens or whether being armed affects how much victims lose during a theft, the evidence would support policies of gun liberalisation. However, if one reviews the studies that evaluate accidental deaths from the

widespread availability of guns, the evidence would support policies in favour of greater gun control.

Issue bias in the **interpretation** of evidence

Incorrect interpretations of findings usually represent examples of technical bias; however, there can be cases where pieces of evidence are interpreted to have greater political implications than they otherwise might.

A particularly relevant form of this bias reflects cases where certain research methodologies are given political priority based on their methods, rather than the importance of what is being studied. Assigning priority to policy interventions supported by randomised controlled trials (RCTs) is perhaps the most obvious example. Advocates of EBP argue that these methods represent the 'gold standard' of knowledge upon which policies should be based. However, whilst RCTs are fundamentally designed to measure intervention effect, they do not indicate the value of what is measured from a political perspective, nor do they necessarily capture all relevant policy concerns outside intervention effectiveness(4). Deference to hierarchies of evidence (with RCTs at the top) therefore risks imposing issue bias if it results in the prioritization of social concerns for which experiments have been conducted, or where the intervention is conducive to experimentation. For example, medical treatments are typically more conducive to testing in RCTs (and are often in the interests of the pharmaceutical industry). However, prevention efforts may be much harder to evaluate experimentally, especially when they aim to address broader social or structural determinants of health. As such, prioritising policies tested by RCTs risks the introduction of issue bias if it leads to the prioritisation of treatments over prevention efforts simply because the former are more conducive to experimental evaluation.

Discussion

Champions of EBP and critical scholars both have concerns over the politics of evidence, but by exploring and distinguishing between technical bias and issue bias, the presence of *multiple* politics of evidence is apparent. Delineating between these multiple politics of

evidence is important for a number of reasons. First, it helps to overcome the debates between champions and critics of the EBP movement by illustrating that both have valid, but different, normative concerns and clarifying the different concerns these groups embrace. Further, by illustrating when and how forms of evidentiary bias arise, the political factors that serve to drive different forms of bias may be better scrutinized. This in turn informs thinking on how to overcome bias and improve the use of evidence in policymaking. The table below summarises and provides examples of these distinctions:

	Technical bias *(politicisation of the scientific process)*	Issue bias *(depoliticisation of the policy process)*
Creation of evidence	Designing a study to advance a desired policy goal. Altering study design mid-stream to produce positive findings.	Obfuscation of the value choices or of the value implications arising from the: - Choice of topic to research; - Availability of data or feasibility to generate evidence (e.g. marginalised or hidden populations); - Selection of outcomes to include.
Selection of evidence	'Cherry-picking' and strategic review of data to justify a pre-determined position.	Presenting a policy option as 'evidence-based' while utilising evidence from only a sub-set of relevant policy concerns.
Interpretation of evidence	Erroneous interpretations in policy debates e.g. premature causal claims about a preferred strategy; confused understanding of risks.	Interpreting methodological rigour as an indication of policy relevance.

References

1.   Oreskes N, Conway EM. Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming. 1 ed. New York: Bloomsbury Press; 2011. 368 p.
2.   Bero LA. Tobacco industry manipulation of research. Public Health Reports. 2005;120(2):200-8.
3.   Di Nicola A. Researching into human trafficking: Issues and problems. In: Lee M, editor. Human trafficking. Cullompten: Willan Publishing; 2007. p. 49-72.
4.   Petticrew M, Helen R. Evidence, hierarchies, and typologies: horses for courses. Journal of Epidemiology and Community Health. 2003;57(7):527-9.

European Research Council
Established by the European Commission

GETTING RESEARCH INTO HEALTH POLICY AND PRACTICE
GRIPHEALTH

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE