

: *What is evidence-based decision making?*

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Evidence-based decision making is a process of reason and rationality. The fast-flowing torrent of content, including biased opinions and fake news, clogging the Global Internet has challenged the quest for both reason and rationality. Perhaps the "Modern Age of Reason" has ended. Perhaps reason and rationality are no longer goals for decision making behavior. Perhaps humankind is entering "The Age of Post-Rationality" (cf., Berreby, 2009; Colic-Peisker and Flitney, 2018; Philips, 2016). Let's explore evidence-based decision making in this context of information distortion and overload.

In late 2017, news sources reported that official budget documents at the United States Centers for Disease Control and Prevention (CDC) should no longer use the phrases "evidence-based" and "science-based" and a few other "forbidden" words and phrases, cf., Anapol, 2017; Engber, 2017; Levin, 2017; Sun and Eilperin, 2017. Apparently those phrases are controversial words, but no explanation for the ban or caution was provided. News accounts of the budget guidance document were vague, but there was mention of a concern that the words were being "flagged" at higher levels. Words are important and do shape our thinking and decision making.

The phrase "evidence-based" is probably overused and even hackneyed, but it promotes a noble goal -- try to make decisions based upon evidence. Evidence-based is an adjective phrase associated with an approach to decision-making in education, law, medicine, and science in general. In business, the terms fact-based, data-driven, data-based, or rational/analytical are more frequently used as synonyms for evidence-based.

What is happening? Colic-Peisker and Flitney (2018) discuss the post-truth society we seem to live in. Some new knowledge sources like Wikipedia attempt to insure accuracy using a cooperative, participatory process of content creation, while other sources publish and promote discredited lies and even hate speech. Colic-Peisker and Flitney argue there is an "emerging disrespect for experts and knowledge in a world of information hyper-accessibility and overload." Sources of facts differ in credibility, experts do know more about their area of expertise. It seems we live in a disruptive period of rapid change where we read too much that is irrelevant and know too little that is true and relevant. Is evidence still important?

Are evidence, reason and rationality important to making good decisions? Evidence remains an important concept in many judicial systems. In that setting, evidence is defined by concepts like the burden of proof, admissibility, relevance, weight and sufficiency. More generally evidence refers to the facts and information that prove or substantiate an assertion or a conclusion. Evidence is

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summarized by the reasons for concluding that something is true or false. Evidence is not always conclusive and evidence-based decision making may be supplemented by reasonable assumptions. Evidence-based decision making in non-judicial settings refers to a much less formal process of evaluating the various forms of proof. Let's examine some uses of the phrase "evidence-based".

One common use of the phrase evidence-based is associated with evidence-based medicine.

Check Wikipedia at URL

https://en.wikipedia.org/wiki/Evidence-based_medicine.

"Evidence-based medicine (EBM) is an approach to medical practice intended to optimize decision-making by emphasizing the use of evidence from well-designed and well-conducted research." Optimizing decision making is a vague goal. Most evidence-based decision making is research informed and certainly not optimized.

The term evidence-based practice is also used in the realm of medical practice. Check Wikipedia at URL

https://en.wikipedia.org/wiki/Evidence-based_practice.

"Evidence-based practice (EBP) is an interdisciplinary approach to clinical practice that has been gaining ground following its formal introduction in 1992." Interdisciplinary means that values and facts come from multiple disciplines. Evidence-based practice seems to mean medical doctors try to use evidence tempered by judgment.

Also, Evidence-Based Practice (EBP) is discussed at URL

<https://www.asha.org/Research/EBP/>. The American Speech-Language-Hearing Association argues "The goal of EBP is the integration of (a) clinical expertise, (b) best current evidence, and (c) client values to provide high quality services reflecting the interests, values, needs, and choices of the individuals we serve." Evidence according to ASHA must be tempered by expertise and values. Evidence is relative in the realm of ASHA.

The American Association of Nurse Anesthetists website explains Evidence-Based Practice. "The AANA realized the need to establish a systematic evidence-based process to analyze and resolve issues of import to the profession and clinical practice as the body of knowledge affecting nurse anesthesia continued to grow." Based on the work of Sackett et al. (2000), the AANA adopted the definition of evidence-based nurse anesthesia practice as "integration and synthesis of the best research evidence with clinical expertise and patient values' in order to optimize the care of patients receiving anesthesia services." Key Components of Evidence-based Practice: 1) Patient preference/values, 2) Clinical expertise, and 3) Best research evidence.

The Glossary of Education Reform defines evidence-based at URL

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edglossary.org/evidence-based/.

In a post on May 2, 2016, evidence-based is defined as "a widely used adjective in education, evidence-based refers to any concept or strategy that is derived from or informed by objective evidence — most commonly, educational research or metrics of school, teacher, and student performance. Among the most common applications are evidence-based decisions." Objective evidence is desirable. Some would argue that subjective evidence is not really evidence. Evidence seems to mean that the decision is informed by research.

The Center for Evidence Based Management at URL

<https://www.cebma.org/> provides learning materials about evidence-based practice and decision-making. The main issue related to evidence based management is what to teach? Do we teach methods and techniques? Do we teach logic and reasoning? or do we let people apply their own values and decide what is true and what is false no matter what the evidence is in a situation. Is evidence relative to a situation?

The phrase evidence-based is controversial because often people disagree about the truth and relevance of evidence. Many decision-makers present the facts and also are the sole judge of the facts. There is no independent judge to determine what facts are admissible and relevant to a specific decision situation. For example, facts relevant to social issues are not necessarily someone else's facts. Facts are not always facts. Although it may seem easier for business decision makers to agree on the "facts", there remains a reason managers need decision support. In many situations, facts are forecasts, facts are conflicting, facts are ambiguous or disputed, and facts may have high uncertainty.

The term evidence-based decision-making was equated with big data by Hammond (2013) in a Harvard Business Review article. He wrote "It is clear that a new age is upon us. Evidence-based decision-making (aka Big Data) is not just the latest fad, it's the future of how we are going to guide and grow business. But let's be very clear: There is a huge distinction to be made between 'evidence' and 'data.'" There is no rational justification for his claim that evidence-based decision making is also known as (aka) big data. Big data may provide additional data for evidence-based decision making, but that is not always the case.

In another Harvard Business Review article, Pfeffer and Sutton (2006) proclaimed "It's time to start an evidence-based movement in the ranks of managers." They discussed the similarities and differences in medical decision making relative to the practice of management. The phrase evidence-based management has not caught on, but some would say the focus on analytics and data science is a similar if not the same movement. Pfeffer and Sutton argued "If taken seriously, evidence-based management can change how every manager thinks and acts." Perhaps evidence-based management wasn't taken seriously.

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One criticism of evidence-based decision making is that it creates an over-reliance or excessive dependence upon quantification and quantitative data. A possible solution that has been suggested is more discussion and deliberation. Deliberation is recommended as a step or a phase of a dialogic, multi-perspective, and discursive process for reaching decisions. Deliberation, meaning careful thought and discussion, is useful, but a deliberative process must focus on evidence and not just personal opinion. Ideally a deliberative decision making process is evidence-based. Informed decision making requires unbiased facts, expert analysis and thoughtful commentary.

Claiming that decision-making is "evidence-based" does **not** mean that evidence is used or used appropriately, but rejecting the goal of trying to make decisions using relevant evidence avoids the real problem of reasonable disagreements about facts, truth, relevance and values. Actions suggest that valuing truth is not equally important to all of us. A common value hierarchy is increasingly in dispute in our society and means some areas of debate cannot be resolved. Facts, truth and rationality have always been important ideas in my personal value hierarchy. They remain so.

Rational decision behavior is goal-oriented in reaching a decision. Behavior is guided by the consequences likely to result from the selection of a given alternative. When making a choice based upon analysis and reasoning a decision maker believes that a chosen alternative will result in achieving one or more desired goals and objectives. Rational decision behavior can be supported and encouraged by a decision support application ... *if the system is well designed and used appropriately.*

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Evidence-based decision making only exists when an explicit, rational process is followed. Much of my research on decision making and planning has focused on using computer supported processes to improve decision quality and increase rationality in decision making.

Evidence-based decision-making is a worthy goal that is difficult to achieve or even illusory in many decision making environments and settings. Knowing the facts can lead to better decisions. Perhaps better computerized decision support can encourage and improve evidence-based decision-making. People can benefit from appropriate computer support.

One can imagine a society where decision support and evidenced-based decision making are the normal expected standard for making decisions, cf., Perkins, 2009. BUT, actually reaching that goal of wide spread rational decision making seems increasingly challenging, difficult and even controversial.

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