

**Harvard Data Science Review • Issue 4.2, Spring 2022**

# **The Value of Science: Special Theme**

**Julia Lane<sup>1</sup> Brian Kim<sup>2,3</sup> Frauke Kreuter<sup>4,2,5</sup> Allison Nunez<sup>6</sup>**

<sup>1</sup>New York University, New York City, New York, United States of America,

<sup>2</sup>Joint Program in Survey Methodology, College of Behavioral and Social Sciences, University of Maryland, College Park, Maryland, United States of America,

<sup>3</sup>Department of Electrical and Computer Engineering, A. Kames Clark School of Engineering, University of Maryland, College Park, Maryland, United States of America,

<sup>4</sup>Department of Statistics, Ludwig Maximilians University of Munich, Munich, Germany,

<sup>5</sup>Social Data Science Center, College of Information Studies and College of Behavioral and Social Sciences, University of Maryland, College Park, Maryland, United States of America,

<sup>6</sup>The State University of New York at Albany, Albany, New York, United States of America

**Published on:** Apr 28, 2022

**DOI:** <https://doi.org/10.1162/99608f92.4a01213d>

**License:** [Creative Commons Attribution 4.0 International License \(CC-BY 4.0\)](https://creativecommons.org/licenses/by/4.0/)

This special report on the [Value of Science: Data, Products, and Use](#) reflects the results of a [conference](#) intended to advance understanding of the value of data by showcasing new data, products, and use resulting from recent data investments in science policy.

Improving the quality of data that can be used for evidence building has been a major focus in many countries. In the United States, at the federal level, passage of Public Law 115-435, known as [the Foundations for Evidence-Based Policymaking Act of 2018 or the “Evidence Act,”](#) and the Federal Data Strategy have galvanized government agencies and the academic community. As the House Committee on Oversight and Government Reform pointed out in 2015, “Without evidence, the federal government is an ineffective fiduciary on behalf of the taxpayer. Unfortunately, in many instances, federal decision-makers do not have access to the data necessary to best inform decisions. In such instances, agencies are unable to show the benefits or impacts of the programs they administer and cannot determine what, if any, unintended consequences are created by programs, or whether programs can be improved” (H.R. Rep. No. 114-211, 2015).

Much can be learned about how to make investments in evidence from the experience of investments in the science of science. Almost 20 years ago, then Presidential Science Advisor John Marburger noted to the National Science Board: “I am not at all confident that the right questions are being asked or answered to provide guidance for action. We have workforce data that I do not understand how to use, and we have workforce questions whose answers would seem to require more than merely data” (Marburger III, 2011). The response of the federal government was to invest in data and evidence about the science and engineering enterprise with the establishment of the Science of Science and Innovation Policy (SciSIP) program and the Science and Technology for America’s Reinvestment: Measuring the Effect of Research on Innovation, Competitiveness and Science (STAR METRICS) at the National Science Foundation (Teich, 2018) Philanthropic foundations—particularly the Alfred P. Sloan and Ewing Marion Kauffman Foundation—subsequently invested in the UMETRICS data infrastructure at the Institute for Research on Innovation and Science (IRIS) at the University of Michigan (IRIS, 2021; Lane et al., 2015).

The Value of Science [conference](#), for which over one thousand people from all over the world registered, highlighted some of the fruits of those investments. In addition to reading this special issue, we encourage readers to watch the conference presentations of the authors in this value as well as additional contributions from Nobel laureate [Paul Romer](#) (Professor, New York University), [Helen Nissenbaum](#) (Professor, Cornell Tech), [Rayid Ghani](#) (Professor, Carnegie Mellon University), [Jevin West](#) (Associate Professor, University of Washington), [Jeff Jonas](#) (Founder and CEO, Senzing, Inc.), [Jessica Cunningham](#) (Executive Director, Kentucky Center for Statistics), [Andrew Toole](#) (Chief Economist, U.S. Patent and Trademark Office), [Ed Smith-Lewis](#) (Executive Director, United Negro College Fund, Institute for Capacity Building).

The commentaries by [Clemencia Cosentino](#) and [Henry Kautz](#) will provide a high-level overview of the papers in this special issue from two different perspectives. The commentaries by [Jonathan Auerbach and Catherine](#)

[Elizabeth DeLazzero](#) and [Kaye Husbands](#) capture broader discussions we had at the conference touching on the power of linked data, and the importance of linked data to understand diversity.

We hope that the readers of this special issue will be as excited by the potential to improve the quality of data for decision making as are we, the editors, and the sponsors—the National Science Foundation’s National Center for Science and Engineering Statistics, *Harvard Data Science Review*, the Coleridge Initiative, and the Institute for Research on Innovation and Science at the University of Michigan. We also hope the results can help inform efforts like the Evidence Act both in the United States and more broadly.

---

## Disclosure Statement

Brian Kim, Frauke Kreuter, Julia Lane, and Allison Nunez have no financial or non-financial disclosures to share for this editorial.

---

## References

H.R. Rep. No. 114-211 (2015). <https://www.congress.gov/congressional-report/114th-congress/house-report/211/1>

IRIS. (2021). *Summary documentation for the IRIS UMETRICS 2020 data release*. <https://doi.org/10.21987/9wyn-8w21>

Lane, J. I., Owen-Smith, J., Rosen, R. F., & Weinberg, B. A. (2015). New linked data on research investments: Scientific workforce, productivity, and public value. *Research policy*, 44(9), 1659–1671. <https://doi.org/10.1016/j.respol.2014.12.013>

Marburger III, J. H. (2011). Why policy implementation needs a science of science policy. In J. I. Lane, K. H. Fealing, J. H. Marburger III, & S. S. Shipp (Eds.), *The science of science policy*. Stanford University Press: Stanford, 9–22. <https://doi.org/10.1515/9780804781602-003>

Teich, A. H. (2018). In search of evidence-based science policy: From the endless frontier to SciSIP. *Annals of Science and Technology Policy*, 2(2), 75-199. <https://doi.org/10.1561/110.00000007>

---

©2022 Brian Kim, Frauke Kreuter, Julia Lane, and Allison Nunez. This /editorial is licensed under a Creative Commons Attribution (CC BY 4.0) [International license](#), except where otherwise indicated with respect to particular material included in the editorial.