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Measuring the Impact of Forensic Science Research

"What are the effects of forensic science research?"

It's a qualitative question that can be answered by aggregating a multitude of quantitative measures. Because forensic science is such a diverse, applied field, it can be difficult to administer meaningful, qualitative measures that are flexible enough to be relevant to all of the forensic disciplines.

For information on how to measure research performance, I turned to the European Union's 2010 research policy report titled "Assessing Europe's University-based Research – Expert Group on Assessment of University-based Research" (citation at the end). This 151-page document lays out a general *a la carte* framework for evaluating the output of research groups on a departmental basis. Similarly, the National Institute of Justice partitions its forensic science research into topical areas (e.g., Friction Ridge Analysis, Crime Scene Investigation).

Bibliometrics is a commonly used performance indicator. It is the application of mathematical and statistical methods to quantify books, articles and other media. Bibliometrics measures a researchers reputation by counting publications-related data, including publication years, citations, online downloads, authors and coauthors listed on publications, and journal impact factor. Here is an example of bibliometrics: The CiteSeerX profile for Dr. Anil Jain, a prominent biometrics researcher and NIJ grantee, shows that he has published 270 times from 1989 to 2008. One of his publications has been cited 487 times, and his overall H-index, or field-dependent measure of scholarly productivity, is 36.

From 2009–2012, NIJ invested $86 million in 210 forensic science research initiatives. As of February 2013, this pool of awards has resulted in 150 publications, including those in refereed journals, 370 presentations, and 31 final technical reports. The final technical report is an extensive narrative of the analytical procedures, findings, and conclusions of the research, and it is the definitive deliverable of all NIJ R&D awards. A list of past and current NIJ research awards, as well as abstracts and final technical reports, is available on NIJ's website (**www.nij.gov/nij/topics/forensics/forensic-awards.htm**).

While a high number of citations are typically a strong indicator of academic performance and peer accountability, what bibliometric methods cannot capture is the complexity and technical merit of the research. Publication numbers are ineffective at putting the research into context. Additionally, some forensic disciplines are presented with fewer avenues for dissemination, which can skew the publication numbers towards forensic chemistry and forensic DNA analysis. In that regard, the *Journal of Forensic Identification* serves as a crucial platform for disseminating research that is relevant to the IAI community.

An indicative measure of how research effects practice is end-user esteem, which reflects how well-regarded the research is by the scientific community. It is characterized by the willingness of stake holders to use the final research product. The economic and social benefits of research can be rendered by observing how it influences policy, technology, administrative, and legal decisions. In forensic science practice, for example, an indication of end-user esteem can include citations in Daubert hearing testimony, citations in laboratory operating procedures, changes in laboratory protocols, influence in equipment procurement decisions, required reading as part of a continuing education requirement, and the discontinuation of certain laboratory testing methods. This criterion also extends to the scientific research community, where foundational research can spur applied or interdisciplinary studies.

I would like to learn more about how contemporary research affects your day-to-day work life. If you or anyone you know uses NIJ research in a similar capacity to that which was mentioned above, then please feel free to contact me at **tomcik_ryan@bah.com**.

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References

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