Citations show academic and non-academic researchers 'win' when they collaborate

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A new analysis of research citations by University of Maryland professor of computer science [Ben Shneiderman](#) indicates that the average number of citations a university research paper receives is progressively boosted by having: (1) more than one author; (2) coauthors from multiple U.S. institutions; (3) international coauthors; and, most powerfully, (4)

coauthors from business and/or government and/or NGOs.

These and related findings are presented in a new paper in the *Proceedings of the National Academy of Sciences (PNAS)*, in which Shneiderman makes the case for "the superior benefits" of what he calls a "Twin-Win Model" for conducting research—a model that encourages the formation of teams that simultaneously pursue the goals of generating breakthrough published research, AND validated, ready to disseminate, solutions to real human problems.

Shneiderman—a widely recognized pioneer in human-computer interaction and information visualization and a Distinguished University Professor—found that for UMD researchers a university-corporate collaboration produced research papers that averaged 20.1 citations, almost seven times the number of citations (3.0) of published research by single-authors. These findings were based on data, through 2016, from the Elsevier SCOPUS database, which holds the metadata on 70 million published papers.

In the article, published in the December 10th edition of PNAS, National Academy of Engineering member Shneiderman wrote that SCOPUS data on research output at other top U.S. private and public universities also shows this same pattern of substantially higher impact university research when researchers at these institutions co-authored papers with off-campus colleagues.

According to his PNAS paper, evidence shows business professionals also benefit from working with academics. Shneiderman found that SCOPUS data on published research from 12 large corporations during 2012-2016 showed that papers by corporate researchers that also had academic coauthors had almost twice the average citation count (11.7) as papers without academic coauthors (average citations of 6.3). These data provide new evidence in support of the arguments in Shneiderman's

2016 book [The New ABCs of Research: Achieving Breakthrough Collaborations](#).

Professor Lorne Whitehead at the University of British Columbia notes: "It makes sense that when experts from different societal sectors partner deeply, their combined expertise can produce more ideas and better research outcomes. This view has motivated the formation of the [Highly Integrative Basic and Responsive (HIBAR) Research Alliance](#), including the University of Maryland, the University of British Columbia, and others, with the goal of helping all universities advance this work.

"Shneiderman's newly discovered correlations strongly support this effort," said Whitehead, who was not involved in this PNAS study. Whitehead and Shneiderman are among a number of academics who helped form the HIBAR Alliance.

In his new *PNAS* paper, Shneiderman further makes the case for these twin-win university-business collaborations by citing a [2017 study in the journal *Science*](#) that looked at the relationship between scientific [research papers](#) and subsequent patents.

"This study found that patents often cited academic papers, but more importantly, academic papers that are cited by patents get greater attention in the research community," he wrote. And he notes this study in *Science* found that patented inventions that draw directly on scientific advances also were more impactful compared to other patents.

"There is growing evidence that when academics work with business or government partners, they address authentic problems that challenge the research team to produce more potent solutions. Such partnerships often have access to more resources (money, staff, data, etc.), enabling them to take on more substantive problems," Shneiderman said.

He noted that some academic researchers continue to have reservations about such partnerships. And certainly there are challenges in such collaborations for both university researchers and their collaborators in the private or government sectors. However, many researchers and many universities, including the University of Maryland, have recognized the power and benefits of such partnerships, he said.

More information: Ben Shneiderman, Twin-Win Model: A human-centered approach to research success, *Proceedings of the National Academy of Sciences* (2018). DOI: 10.1073/pnas.1802918115

Provided by University of Maryland

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