Strategies for creating partnerships to tackle society's Grand Challenges

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AGENDA

Introduction - sample topic

Taking an interdisciplinary/multidisciplinary approach

Leveraging both internal and external expertise

Identifying potential partners outside of academic

institutions:

> Funders
> Policy makers
> Industry partners

References and resources

Wrap up and Q&A

MacBook Pro

NORDP 2021

The opioid crisis - a multi-faceted global challenge

The Post's View

Opinion: The deadly opioid epidemic is getting worse. It must not be forgotten.

Government of Canada gives $7.7M to help Toronto fight opioid crisis

Projects receiving funds to help with safer supply, harm reduction

NEWS · APR 14, 2021 | BY AARON D'ANDREA ✉ | CITY CENTRE MIRROR

NIH to Leverage Data Management for Opioid Crisis Research

UNC and RTI International will provide data management and stewardship expertise to enhance NIH-funded opioid crisis research.

Source: Thinkstock

By **Jessica Kent**

Asia is hurtling towards a fentanyl disaster

25 June 2020

Author: Pascal Tanguay, Bangkok

In May 2020, authorities in M... bathtubs' worth — alongside ... found cut into common illici... **times** more potent than mor...

Lessons from Abroad: How Europeans have tackled opioid addiction and what the U.S. could learn from them.

This series of stories reported in late 2018 explores how Switzerland, France and other European countries implemented drug policies and programs that have diminished their rates of opioid overdose and related infections.

Both the Swiss and the French accomplished this by supporting drug users in different ways.

Switzerland led Europe with the first drug consumption rooms and heroin assisted treatment facilities. The Swiss approach is all about removing barriers and getting the majority of drug users into treatment. This resulted in trickled down benefits for law enforcement as the street drug market weakened and the theft rate dropped.

The French approach is about seeing drug users as people first and supporting the whole person. There are more than 300 harm reduction centers, that include needle exchanges, places to shower, do laundry, meet with social workers, psychiatrists and medical doctors. In addition to that, there are 480 addiction treatment facilities. The whole network works together to support drug users to live their best lives.

lessons from abroad

Taking an interdisciplinary approach

What related expertise are we aware of?
What do we need?

Big problems require interdisciplinary efforts

Brown bristles at the suggestion that the global push for interdisciplinarity might be a fad.

"The answer is a resounding 'no'," he says. "Things have changed — now people focus on big problems, and if you go for a big problem you need to be interdisciplinary."

Excerpt (full citation on slide 30)

https://www.nature.com/news/how-to-solve-the-world-s-biggest-problems-1.18367

nature
International weekly journal of science

Home | News & Comment | Research | Careers & Jobs | Current Issue | Archive |

Archive > Volume 525 > Issue 7569 > News Feature > Article

NATURE | NEWS FEATURE

عربي

How to solve the world's biggest problems

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Exploring relevant fields

Beginning broadly, what are the relevant fields of research that should be pulled together for a multidisciplinary/interdisciplinary approach to the issue?

For this sample search, a boolean search of full data in Dimensions was used, limited to publication dates within the last 10 years "opioid addiction" AND (studies OR therapy OR solution OR intervention OR policy)

Field of Research	Publication count	Total citations to set
Public Health and Health Services	4,533	68,711
Clinical Sciences	2,435	30,919
Pharmacology and Pharmaceutical Sciences	1,882	30,106
Psychology	1,359	18,163
Neurosciences	1,227	20,272
Nursing	417	2,943
Paediatrics and Reproductive Medicine	339	4,807
Genetics	199	2,711
Law	188	719
Applied Economics	174	720

Looking among the top 10 fields of research based on publication volume alone gives some insight and demonstrates the diversity of fields publishing related work

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Go beyond the "top" fields in publication volume to identify valuable contributions that occur in fields of that may be overlooked

Field of Research	Publication count	Total citations to set
Policy and Administration	143	905
Sociology	124	680
Biochemistry and Cell Biology	122	1,576
Cognitive Sciences	88	1,084
Education	84	267
Political Science	76	190
Immunology	73	817
Artificial Intelligence and Image Processing	72	361
Analytical Chemistry	67	655
Criminology	63	438

More than ever, it's critical to examine not only the "what" but the "how" - for example, how is artificial intelligence being used in studies? What are the implications or advantages?

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Examine related publication trends by field

Publications in each year for the selected categories (Criteria: see below)

Legend:
- 18 Law and Legal Studies
- 1110 Nursing
- 17 Psychology and Cognitive Sciences
- 13 Education
- 1605 Policy and Administration
- 0801 Artificial Intelligence and Image Processing
- 1115 Pharmacology and Pharmaceutical Sciences
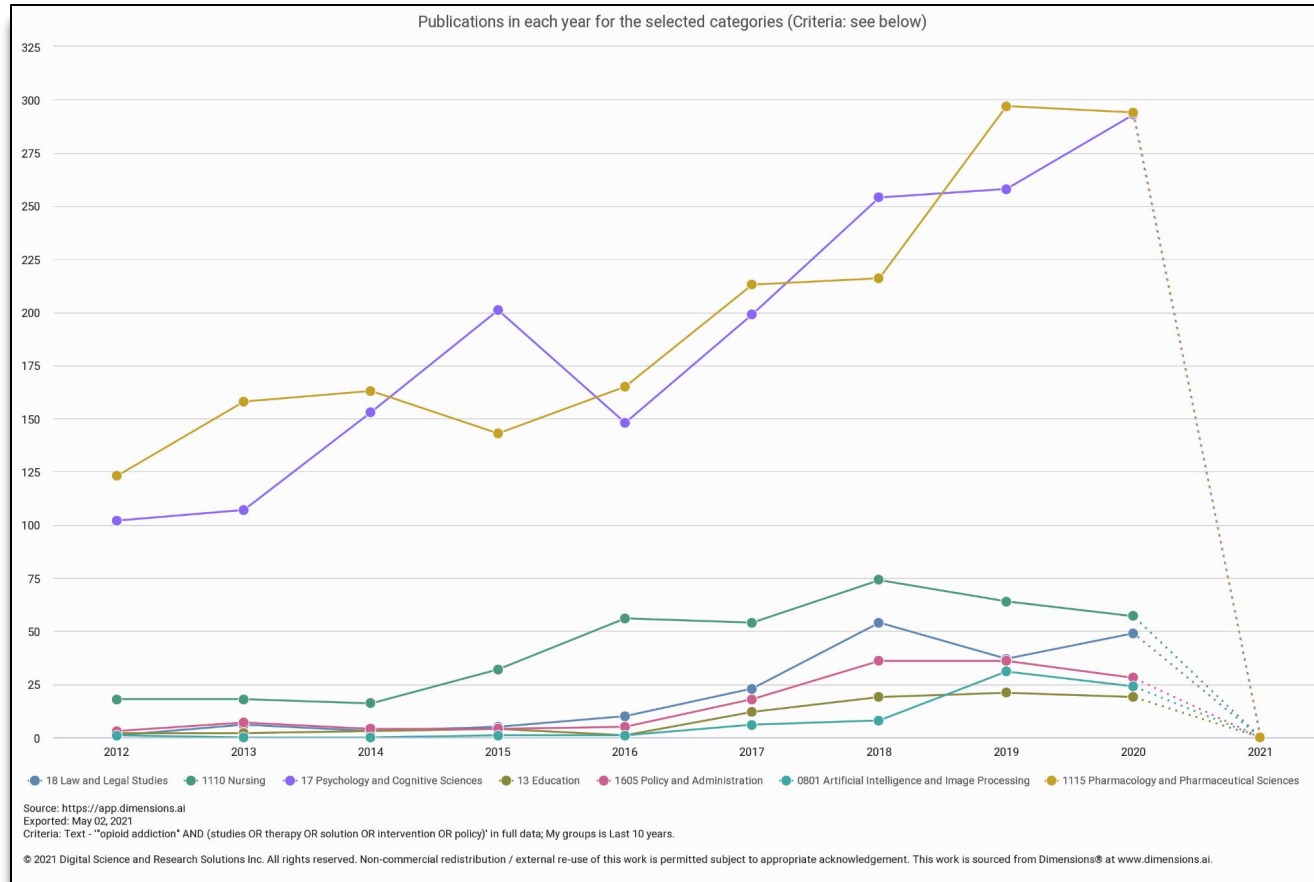
Here we've limited to seven selected fields of research to get a sense of trends in related publication volume for each.
Are these fields increasing their contributions in this area?
How can we leverage upward trends to make our efforts more inclusive of these fields?

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Leveraging both internal and external expertise

What expertise exists at my institution?
What expertise do we need to seek out?

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Find out who your experts are
and who they're already collaborating with

- Analyze data from internal faculty information management systems
  - Publications - journal articles, books, chapters, preprints, conference proceedings
  - Professional activities
  - Awarded funding
  - Intellectual property

- Supplement this knowledge other resources such as
  - ORCID profiles
  - Researcher/lab/institute websites
  - Dimensions
  - Web of Science
  - Scopus

- Network analysis - VOSviewer (free network visualization software)

What expertise do you need?

number of publications in each research category. (Criteria: see below)

11 Medical and Health Sciences ████████████████████████████████ 88

17 Psychology and Cognitive Sciences ████ 16

06 Biological Sciences █ 4

16 Studies in Human Society ▏ 1
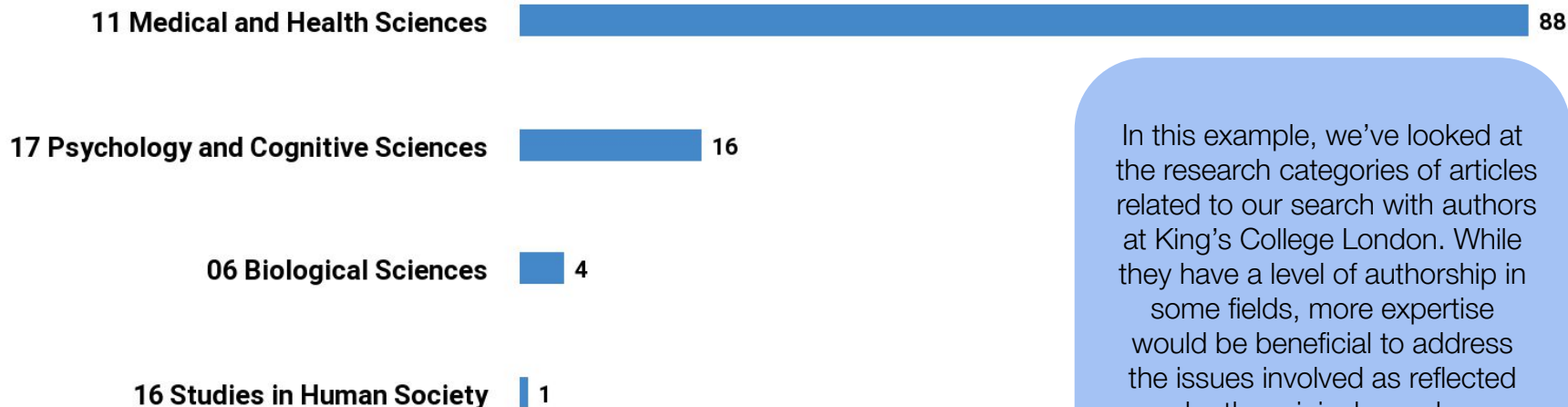
In this example, we've looked at the research categories of articles related to our search with authors at King's College London. While they have a level of authorship in some fields, more expertise would be beneficial to address the issues involved as reflected by the original search.

Source: https://app.dimensions.ai
Exported: May 02, 2021
Criteria: Text - '"opioid addiction" AND (studies OR therapy OR solution OR intervention OR policy)' in full data; My groups is Last 10 years; Research Organization is King's College London.

Identify expertise and potential collaborators

Publications for each item for the shown fields of research. (Criteria: see below)

Legend: 0 | >1 | >2 | >3

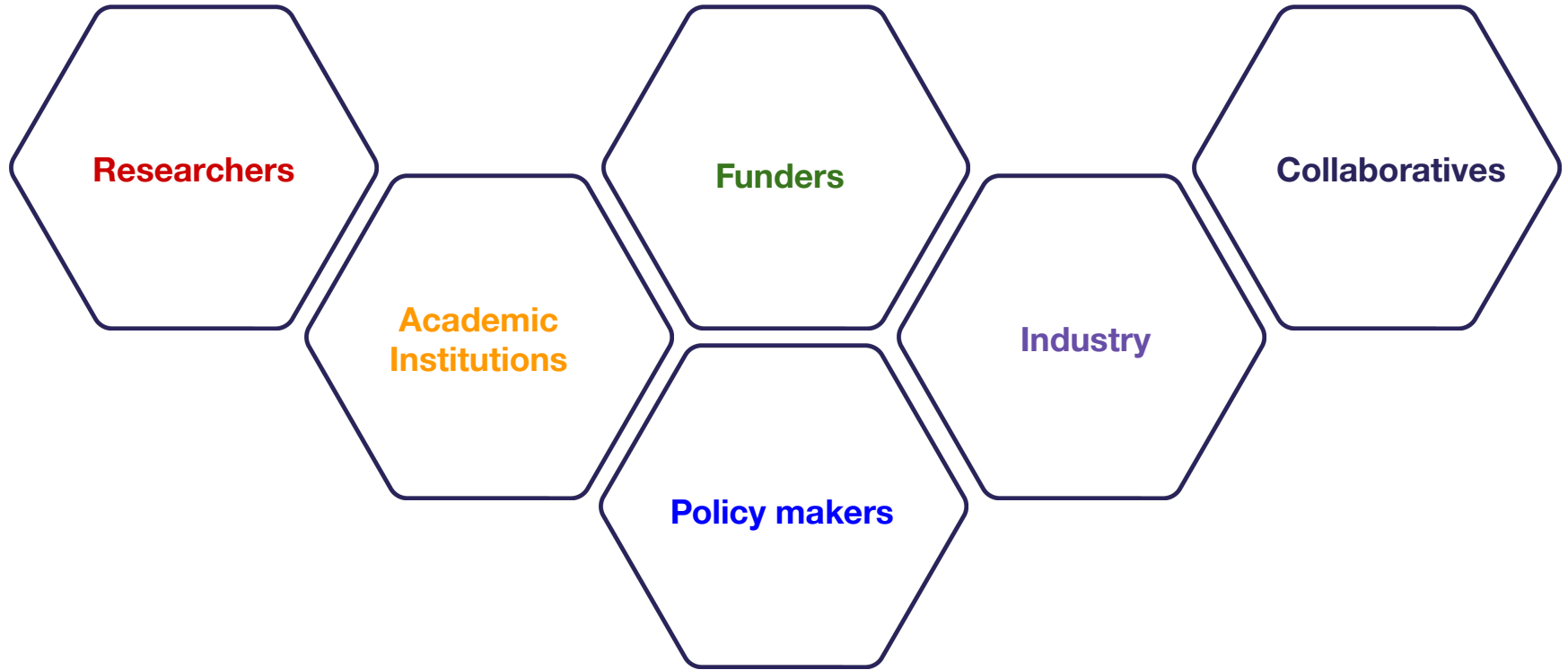|	16 Studies in Human Society	18 Law and Legal Studies	1801 Law	1605 Policy and Administrat...	11 Medical and Health Scie...	1608 Sociology	1117 Public Health and Heal...	1606 Political Science	1602 Criminology	22 Philosophy and Religious...
Leo Beletsky	3	4	4	1	0	0	0	0	2	1
Corey S Davis	4	3	3	3	3	0	2	0	0	2
Abbe R Gluck	1	4	4	1	0	0	0	0	0	1
Richard C Ausness	0	3	3	0	2	0	2	0	0	0
Frederick Lewis Altice	3	0	0	0	2	0	1	0	1	0
Benedikt Fischer	3	1	1	1	2	0	1	0	1	0
Kevin E O'Grady	3	0	0	0	0	0	0	0	3	0
J Mitchell Miller	3	0	0	0	0	0	0	0	3	0
Robert P Schwartz	3	0	0	0	0	0	0	0	3	0
Helena Bjerring Hansen	3	0	0	0	0	2	0	0	0	1
Timothy W Kinlock	3	0	0	0	0	0	0	0	3	0
Nathan E Kruis	3	1	1	1	0	0	0	0	3	0
Rebecca L Haffajee	2	2	2	2	1	0	1	0	0	1
Katherine Mclean	3	1	1	0	1	1	0	0	2	0
Kathryn A Couvillion	3	0	0	0	0	0	0	0	3	0
Michael Scott Gordon	3	0	0	0	0	0	0	0	3	0
Ruthanne M Marcus	3	0	0	0	2	0	1	0	1	0
Daniel J O'Connell	2	0	0	0	0	2	0	0	0	0
Melissa D Grady	2	0	0	0	0	0	0	0	0	0
Emery Rose Eaves	2	0	0	0	0	1	0	0	0	0

Source: https://app.dimensions.ai
Exported: May 02, 2021
Criteria: Text - '"opioid addiction" AND (studies OR therapy OR solution OR intervention OR policy)' in full data; My groups is Last 10 years; Fields of Research is 18 Law and Legal Studies or 16 Studies in Human Society or 1605 Policy and Administration or 2201 Applied Ethics
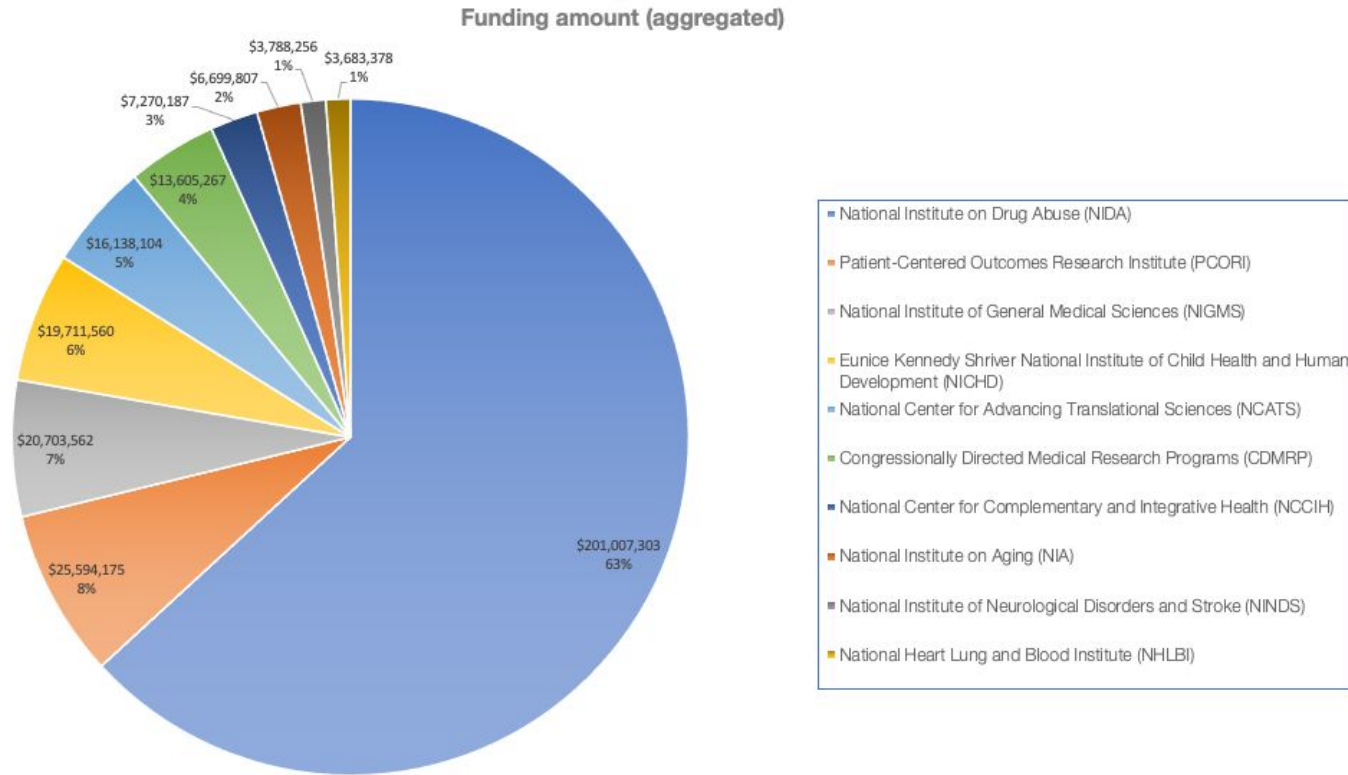
Identifying potential partners outside of academic institutions

Effective strategies involve different partnerships

Researchers

**Academic Institutions**

Funders

Policy makers

Industry

Collaboratives

Funders

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Where is most of the funding for related research coming from?

Funding amount (aggregated)

Pie chart segments:
- $201,007,303 — 63%
- $25,594,175 — 8%
- $20,703,562 — 7%
- $19,711,560 — 6%
- $16,138,104 — 5%
- $13,605,267 — 4%
- $7,270,187 — 3%
- $6,699,807 — 2%
- $3,788,256 — 1%
- $3,683,378 — 1%

Legend:
- National Institute on Drug Abuse (NIDA)
- Patient-Centered Outcomes Research Institute (PCORI)
- National Institute of General Medical Sciences (NIGMS)
- Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
- National Center for Advancing Translational Sciences (NCATS)
- Congressionally Directed Medical Research Programs (CDMRP)
- National Center for Complementary and Integrative Health (NCCIH)
- National Institute on Aging (NIA)
- National Institute of Neurological Disorders and Stroke (NINDS)
- National Heart Lung and Blood Institute (NHLBI)

Historically, the National Institute on Drug Abuse (NIDA) has, somewhat unsurprisingly, been the leading funder on this issue.

However we can also identify other funders that may not be awarding at the same level who are making related investments.

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Are particular funders increasing or decreasing their investments in this area?
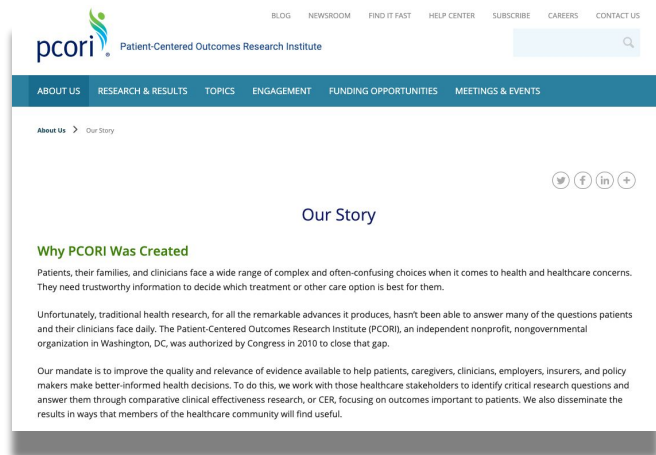
The second leading funder, PCORI, is a relative newcomer, authorized by the US Congress in 2010 in order to "to improve the quality and relevance of evidence available to help *patients, caregivers, clinicians, employers, insurers, and policy makers* make better-informed health decisions."

If we broaden our search somewhat to limit to the word "opioid" in the grant title or abstract, we can see a fairly steady upward trend.

BLOG   NEWSROOM   FIND IT FAST   HELP CENTER   SUBSCRIBE   CAREERS   CONTACT US

pcori   Patient-Centered Outcomes Research Institute

ABOUT US   RESEARCH & RESULTS   TOPICS   ENGAGEMENT   FUNDING OPPORTUNITIES   MEETINGS & EVENTS

About Us > Our Story

Our Story

Why PCORI Was Created

Patients, their families, and clinicians face a wide range of complex and often-confusing choices when it comes to health and healthcare concerns. They need trustworthy information to decide which treatment or other care option is best for them.

Unfortunately, traditional health research, for all the remarkable advances it produces, hasn't been able to answer many of the questions patients and their clinicians face daily. The Patient-Centered Outcomes Research Institute (PCORI), an independent nonprofit, nongovernmental organization in Washington, DC, was authorized by Congress in 2010 to close that gap.

Our mandate is to improve the quality and relevance of evidence available to help patients, caregivers, clinicians, employers, insurers, and policy makers make better-informed health decisions. To do this, we work with those healthcare stakeholders to identify critical research questions and answer them through comparative clinical effectiveness research, or CER, focusing on outcomes important to patients. We also disseminate the results in ways that members of the healthcare community will find useful.

Patient-Centered Outcomes Research Institute (PCORI)   Close chart   56   USD 181.7 M
United States

Relevant funding in relation to total funding

Chart | Table

30.0 M

Aggregated funding amount
Aggregated funding amount in 2019

20.0 M
27.4 M USD
8% of aggregated funding amount

10.0 M
Show grants

0
2012   2013   2014   2015   2016   2017   2018   2019   2020   2021

Total funder budget   Aggregated funding amount

The lines plot the relevant funding amount in USD in relation to total funder budget.

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Are particular funders increasing or decreasing their investments in this area?

By contrast, the National Institutes of Mental Health, one of the funders who has awarded *more* in total aggregated funds, does not reflect the same steady upward trend nor the level of recent awarded funds in this area.

National Institute of Mental Health (NIMH)
United States
Close chart
172
USD 284.7 M

Relevant funding in relation to total funding

Chart | Table

Aggregated funding amount
Aggregated funding amount in 2020

19.5 M USD

1% of aggregated funding amount

Show grants

Total funder budget   Aggregated funding amount

The lines plot the relevant funding amount in USD in relation to total funder budget.

The importance of finding funding collaboratives

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Data shows an increase in awarded funding from these collaborators
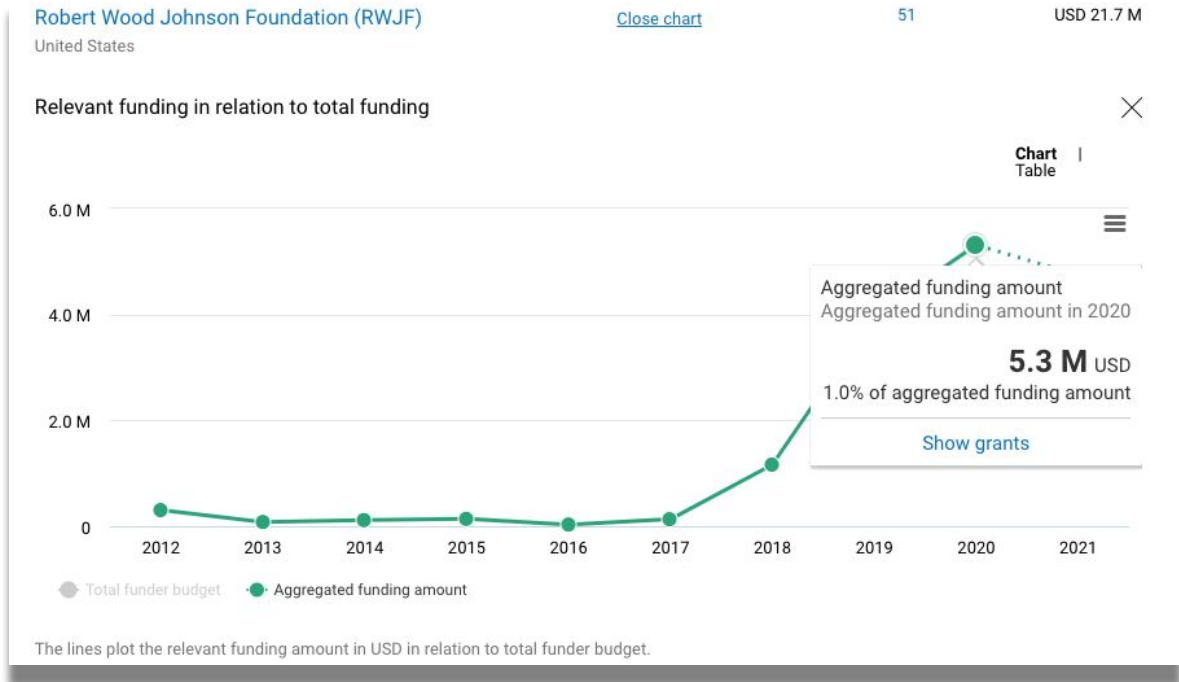
Exploring non-federal funding is highly recommended. With increasing competition for federal grants, diversifying your pool of potential funding sources can be reap benefits.

Look for funders that want to work within and for your community or region in particular, and utilize partnerships and collaborations between your institution, local community organizations and industry partners to strengthen your grant applications.

Policy makers

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Which organizations are publishing related policy documents or reports?

January 2018

Un-burying the Lead:
Public health tools are the key to beating the opioid epidemic

Dayna Bowen Matthew

USC-Brookings Schaeffer Initiative for Health Policy

NBER WORKING PAPER SERIES

VARIATION IN PERFORMANCE OF COMMONLY USED STATISTICAL METHODS FOR ESTIMATING EFFECTIVENESS OF STATE-LEVEL OPIOID POLICIES ON OPIOID-RELATED MORTALITY

Beth Ann Griffin
Megan S. Schuler
Elizabeth A. Stuart
Stephen Patrick

URBAN INSTITUTE

Rapid Growth in Medicaid Spending on Medications to Treat Opioid Use Disorder and Overdose
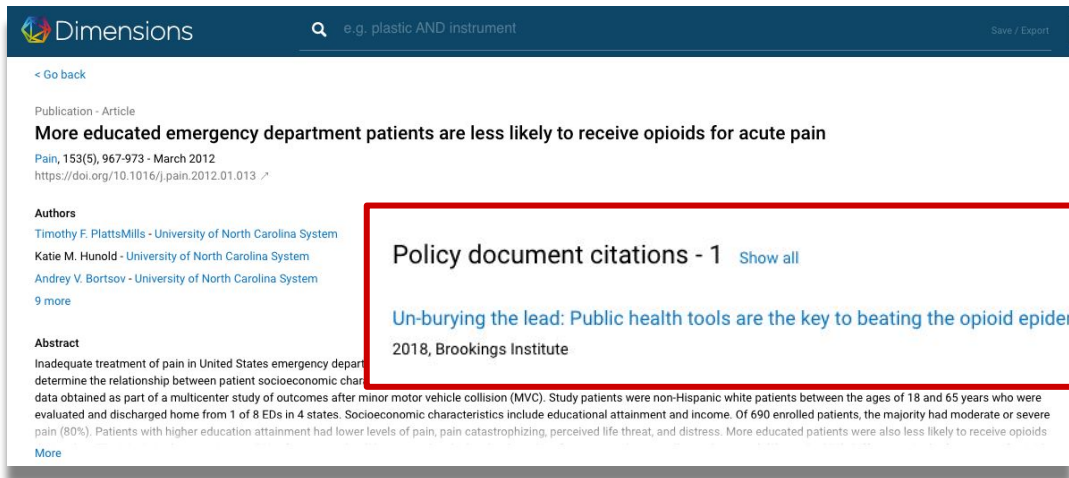
Lisa Clemans-Cope, Marni Epstein, and Genevieve M. Kenney
June 2017

CALL TO ACTION
Public Libraries and the Opioid Crisis

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Using policy documents to enhance strategy and amplify outputs

- Incorporate policy documents into your landscape analysis
- Understand the leading publishing organizations
- Invite authors to participate in events or projects
- Share your results with the appropriate audiences
- Demonstrate the impact of your work by determining which policy documents have cited your research (example below)

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Industry partners

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The value of industry partnership

"NIH will continue to build upon breakthroughs in the treatment of opioid addiction and the reversal of opioid overdose and find ways to advance the development of new products. For example, buprenorphine, one of the three FDA-approved options for MAT treatment, was developed through a partnership between NIH and industry. The intramural program of the National Institute on Drug Abuse (NIDA) conducted the early clinical studies on buprenorphine and then later partnered with industry to develop user-friendly and abuse deterrent formulations. In addition, a NIH public-private partnership helped to develop the only FDA-approved intranasal naloxone product to reverse opioid overdose, an invaluable tool to those on the front lines combating the opioid crisis."

Source: National Institute on Drug Abuse

The Federal Response to the Opioid Crisis (testimony to Congress)
October 5, 2017
Presented by Dr. Francis Collins, NIH Director and others
Presented to Senate Committee on Health, Education, Labor & Pensions

Written testimony on behalf of the following witnesses from the Department of Health and Human Services (HHS):
Elinore McCance-Katz, M.D., Ph.D., Assistant Secretary for Mental Health and Substance Use, Substance Abuse and Mental Health Services Administration, HHS
Deborah Houry, M.D., MPH, Director, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, HHS
Francis Collins, M.D., Ph.D., Director, National Institutes of Health, HHS
Scott Gottlieb, M.D., Commissioner, Food and Drug Administration, HHS

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Common partnership needs

Industry expectations

Develop skilled manpower
Solutions for concerns
Operational approach
Market-aligned courses
Feasible goals
Funding & infrastructure
Equal partnership
Placements

Source - World Economic Forum

We often think of academic-industry partnerships as illustrated on the left, but project-specific partnerships can be just as fruitful for both parties.

Some common needs still apply (and can go both ways):

- Solutions for concerns
- Funding & infrastructure
- Feasible goals
- Operational approach

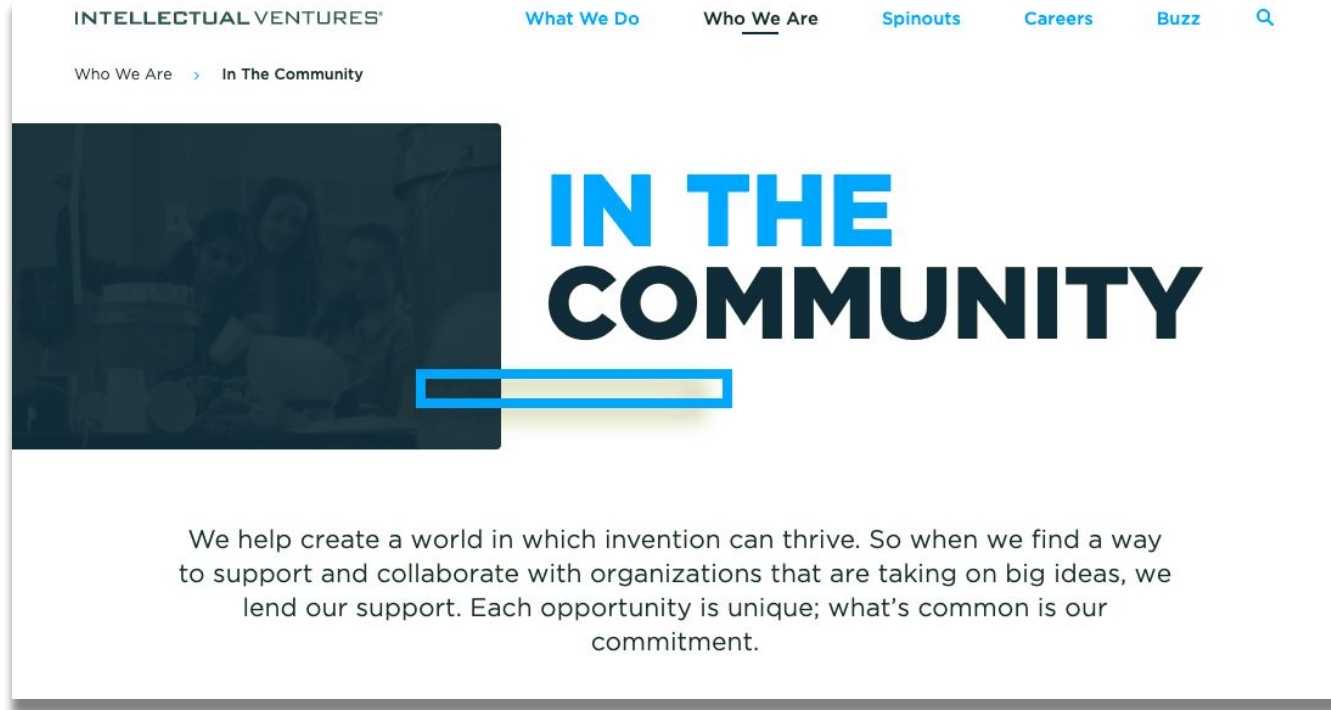# Identifying potential partners via patent records

This is a sample search using Dimensions specifically for patent records related to substance abuse with "opiod addiction" OR "opioid abuse" appearing in the text.

Just as with publications, examine patent record assignees through various lenses

Investigate programs and mission statements

INTELLECTUAL VENTURES®

What We Do   Who We Are   Spinouts   Careers   Buzz

Who We Are › In The Community

IN THE COMMUNITY

We help create a world in which invention can thrive. So when we find a way to support and collaborate with organizations that are taking on big ideas, we lend our support. Each opportunity is unique; what's common is our commitment.

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Approaching industry partners

- Do any of your researchers have prior collaborations with this organization?

- Do you have alumni at this organization?

- Do you have equipment, expertise or other resources that would be attractive to this organization?

- Are they located in your region?

- Has this organization publicly committed to common goals and outcomes?

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References and resources

Bammer, G., O'Rourke, M., O'Connell, D. et al. "Expertise in research integration and implementation for tackling complex problems: when is it needed, where can it be found and how can it be strengthened?" *Palgrave Commun* 6, 5 (2020). https://doi.org/10.1057/s41599-019-0380-0

Ledford, H. "How to solve the world's biggest problems." *Nature 525, 7569 (2015). https://doi.org/10.1038/525308a*

Sabina Leonelli, Rachel A. Ankeny, "Repertoires: How to Transform a Project into a Research Community," *BioScience* 65, 7 (2015) https://doi.org/10.1093/biosci/biv061

Nabarun Dasgupta, Leo Beletsky, Daniel Ciccarone, "Opioid Crisis: No Easy Fix to Its Social and Economic Determinants", *American Journal of Public Health* 108, no. 2 (2018) https://doi.org/10.2105/AJPH.2017.304187

Julio A. Pertuzé, Edward S. Calder, Edward M. Greitzer and William A. Lucas, "Best Practices for Industry-University Collaboration" *MIT Sloan Management Review* (2010) https://sloanreview.mit.edu/article/best-practices-for-industry-university-collaboration/

Resource & reference articles

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The Science of Team Science (SciTS) listserv "facilitates knowledge sharing among individuals engaged in, studying, facilitating, and supporting team science, in the US and internationally. It is maintained by the SciTS Team of the National Cancer Institute of the U.S. National Institutes of Health."

The National Academies of Sciences, Engineering and Medicine's Government-University-Industry Research Roundtable (GUIRR) "provides a unique forum for dialogue among top government, university, and industry leaders of the national science and technology enterprise."

UIDP "provides members...with an opportunity to increase the success" of university-industry collaborations and research projects. You can join their listserv here.

Other resources

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Wrap-up & Q&A

Key points

- Big challenges require an interdisciplinary approach

- Look out for expertise in fields that are conducting related research (Are fields like emerging technology, ethics, law, policy reflected?)

- Know what expertise you have and where you might need to seek collaboration

- Examine funding trends and investigate funding collaboratives

- Involve partners outside academia

- Take advantage of community resources on best practices for building interdisciplinary teams

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