Systematic Literature Reviews

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Workshop in Methods, Social Science Research Commons

Indiana University-Bloomington

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Goals: At the end of this workshop, you will:

- Know the terminology of literature reviews, and be able to differentiate among their many forms.
- Understand the public value in taking a systematic approach to a review article.
- Understand the process for collecting and producing replicable and generalizable knowledge in a review article.
- Understand how to organize and execute a literature review following systematic methods for collecting and analyzing the data.

Why should we care?

- Rising number of scientific publications increases the need for summaries of research fields.
- Review articles have high scientific impact.
- Confusion about how to do it right.
- Breaking news: Review articles can be biased!

Think*Pair*Share 1

Consider this scenario: A scholar produces a “review of the literature” on a topic by scanning only the top-ranked journals in their field. Advantages? Disadvantages?

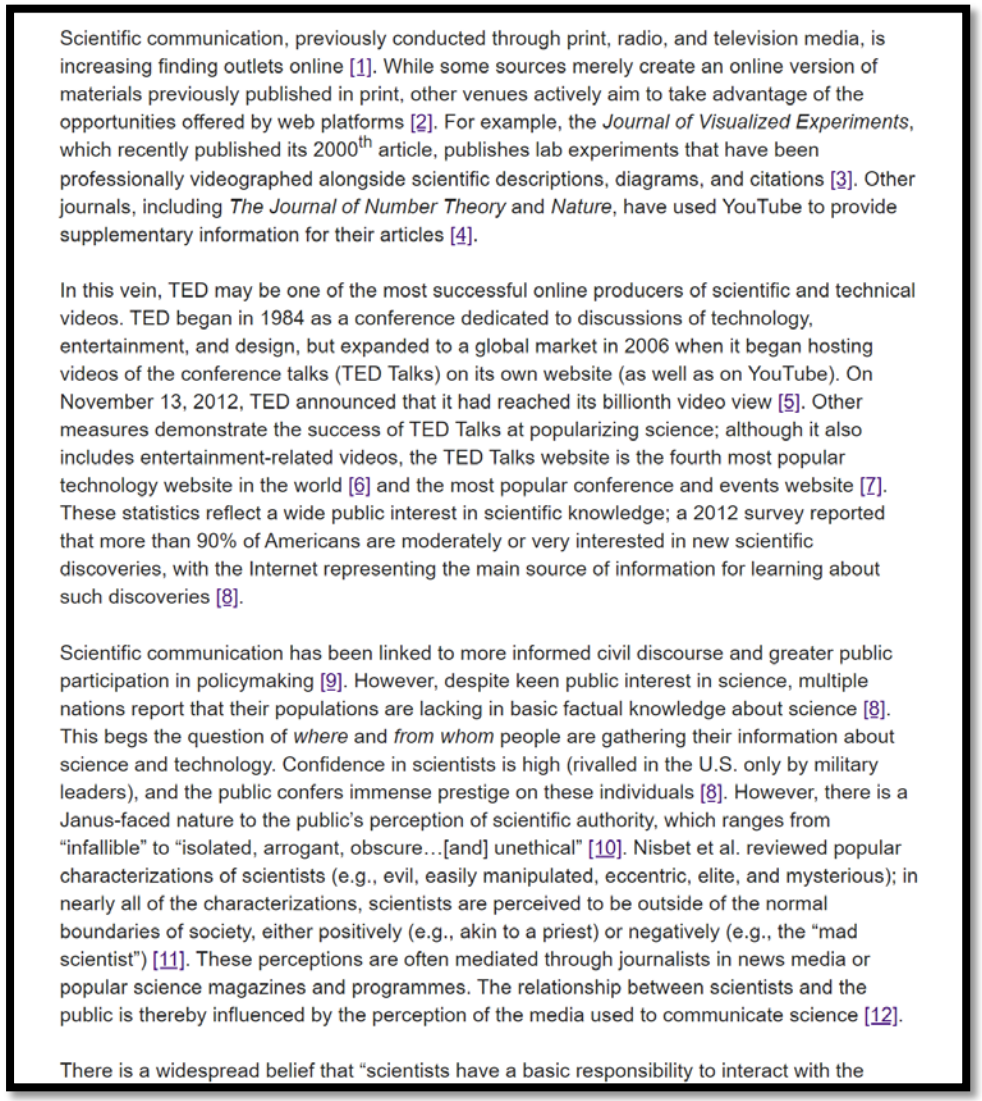
Approaches to summarizing research

- **Literature review**: The general term for a section of a research article in which the author summarizes earlier literature prior to setting up a new research question, new data and analysis, etc. AKA “Traditional or Narrative Literature Review”
- **Systematic review**: A rule-based synthesis of prior scholarship with the goal of providing a replicable, reliable, and robust analysis of the state of research field
- **Meta-analysis**: A quantitative, statistical analysis of prior data drawn from many studies to produce a summary of prior findings, such as pooled estimates of effect sizes.
- **Bibliometric analysis:** The study of bibliographic material of published research in order to describe general patterns of scientific production and interaction
- **Meta-review**: A cross-study “review of reviews” where the interest is in summarizing/analyzing only content from other review articles to produce new knowledge.

All share a goal of describing the "state of a field" and all rely on secondary publications as the research object …

…but vary significantly in terms of the research design and question.

Traditional social science literature review



Scientific communication, previously conducted through print, radio, and television media, is increasing finding outlets online [1]. While some sources merely create an online version of materials previously published in print, other venues actively aim to take advantage of the opportunities offered by web platforms [2]. For example, the *Journal of Visualized Experiments*, which recently published its 2000th article, publishes lab experiments that have been professionally videographed alongside scientific descriptions, diagrams, and citations [3]. Other journals, including *The Journal of Number Theory* and *Nature*, have used YouTube to provide supplementary information for their articles [4].

In this vein, TED may be one of the most successful online producers of scientific and technical videos. TED began in 1984 as a conference dedicated to discussions of technology, entertainment, and design, but expanded to a global market in 2006 when it began hosting videos of the conference talks (TED Talks) on its own website (as well as on YouTube). On November 13, 2012, TED announced that it had reached its billionth video view [5]. Other measures demonstrate the success of TED Talks at popularizing science; although it also includes entertainment-related videos, the TED Talks website is the fourth most popular technology website in the world [6] and the most popular conference and events website [7]. These statistics reflect a wide public interest in scientific knowledge; a 2012 survey reported that more than 90% of Americans are moderately or very interested in new scientific discoveries, with the Internet representing the main source of information for learning about such discoveries [8].

Scientific communication has been linked to more informed civil discourse and greater public participation in policymaking [9]. However, despite keen public interest in science, multiple nations report that their populations are lacking in basic factual knowledge about science [8]. This begs the question of *where* and *from whom* people are gathering their information about science and technology. Confidence in scientists is high (rivalled in the U.S. only by military leaders), and the public confers immense prestige on these individuals [8]. However, there is a Janus-faced nature to the public's perception of scientific authority, which ranges from "infallible" to "isolated, arrogant, obscure…[and] unethical" [10]. Nisbet et al. reviewed popular characterizations of scientists (e.g., evil, easily manipulated, eccentric, elite, and mysterious); in nearly all of the characterizations, scientists are perceived to be outside of the normal boundaries of society, either positively (e.g., akin to a priest) or negatively (e.g., the "mad scientist") [11]. These perceptions are often mediated through journalists in news media or popular science magazines and programmes. The relationship between scientists and the public is thereby influenced by the perception of the media used to communicate science [12].

There is a widespread belief that "scientists have a basic responsibility to interact with the

- **Organization**
  - Thematic
  - Linear
- **Use of secondary literature**
  - Rhetorical persuasion
  - Gap identification
- **Heuristics**
  - Synthesis over summarization
  - Acknowledge related knowledge
- **Goals**
  - Contextualize the research area
  - Motivate the research question

A move towards empiricism: RIC

Research in context

Evidence before this study

We searched PubMed, Web of Science, and Google Scholar on June 2, 2016 (and periodically thereafter) for articles related to sex reporting published from inception, using the search terms "sex reporting", "sex analysis", "sex inclusion", "gender bias", "gender disparities", and "sex factors". These terms were also analysed with regards to bibliometric terms (eg, "citation" and "author"). There were no language restrictions. Our search yielded around 1100 articles on related topics, primarily reinforcing sex-based differences in medicine and the under-representation of women in science. These studies showed that there are strong sex-based differences at the genetic, cellular, biochemical, and physiological levels and argue for the construction of policies for greater sex-related reporting and analysis in medical research. Sex-related reporting is low, but increasing. However, extant studies are often monodisciplinary (or cover only a few specific specialties or diseases) and do not account for the translation from biomedical, to clinical, to public health research. Sex disparities in studied populations have potentially negative effects because research done on one sex in the biomedical phase is then translated and used on patients of the opposite sex in public health research. Furthermore, a growing body of research suggests an association between the sex of the researchers and the outcomes of the research.

Added value of this study

Our findings show that sex-related reporting is generally increasing in research, and how it varies across medical disciplines and specialties. Clinical specialties report on sex much more than do biomedical specialties, with fertility, obstetrics and gynaecology, and urology having the highest incidence of sex-related reporting, and haematology, immunology, and pharmacy having the lowest incidence. When we controlled for confounding factors we found that female first or last authors had a higher probability of sex-related reporting than male authors, female authors are more likely to report studying females or both sexes, and journals with high impact factors are less likely to report sex. This evidence forms a contemporary and comprehensive analysis that complements earlier studies of rates of sex-related reporting and provides a novel extension of research showing the association between sex-related reporting and author gender.

Implications of all the available evidence

There has been an increase in sex-related reporting over the past 40 years, particularly in clinical research and public health, but sex remains widely under-reported in biomedical studies. This disparity can be addressed through policies at several levels; funding agencies should mandate sex-related reporting in proposals and journal editors should insist upon sex-related reporting in submissions. Sex-related reporting should be a necessary requirement for ethical and replicable medical science. Furthermore, this research suggests several consequences of the demographic composition of the scientific workforce and the distribution of labour on scientific teams. Women are under-represented in leadership positions and are more likely to do experimentation than to be responsible for research design. Our research suggests that these findings are probably related to lower rates of sex-related reporting and analysis, particularly for female populations. Diversification of the scientific workforce is essential to produce the most rigorous and effective medical research.

Systematic literature reviews

Class	Inclusion/Exclusion Criterion
Study Purpose	• The purpose of the study should be to evaluate an IIR system or feature. This includes studies of various IIR retrieval techniques (where the system interface may be constant), studies of different interfaces and features, and studies of different interaction techniques. • The study should be empirical and attempt to use at least some aspects of the scientific method. • The study should compare two or more systems, where at least one of these systems is experimental (this criterion excludes usability studies of single systems and it also excludes studies where people are observed using commercial search engines only). • Subjects must engage in interactive searching, where it is necessary to enter a query and evaluate results. • If the study is declared a pilot by the authors, it is excluded.
Study Design	• Humans must be included as test subjects. Subjects should be adults with a normal range of cognitive abilities. • Only studies of end-users are included. Studies of mediated searching are excluded. • The study should report some quantitative results. These results do not necessarily have to be about the user (e.g., the results may be more focused on the system). • The study should take place in a controlled environment. Naturalistic studies are included if they meet other inclusion/exclusion criteria, but experiences must be bounded in some way and involve researcher intervention. • Studies only using log data where no intervention has occurred and users are basically unknown are excluded. However, studies where the researcher introduces a variant of a commercial system, pushes this to a subset of users and compares this use with the use of the standard system are included. • Studies of evaluation design or measures are excluded, unless they are part of a larger IIR system evaluation. • Studies designed to only collect relevance assessments from users are excluded and studies of relevance assessment behavior are also excluded.
System Type	• Studies of expert systems and decision support systems are excluded, unless such systems are for traditional IR applications. • Studies of filtering and recommender systems are excluded since such systems usually do not require users to engage in searching but instead push information to them. • Studies of online public access terminals are included. • Only studies using traditional desktop and/or laptop applications are included. Studies of mobile devices and other novel hardware are excluded.
Tasks and Information Objects	• Subjects must complete searching tasks where it is possible to enter a query and view results. • Search tasks can vary in kind and can be both natural and assigned. • Information objects searched must be textual documents. • Studies of multimedia retrieval systems are excluded. • Studies of email management tools are excluded.

Table 2. Inclusion and exclusion criteria for selection of study sample

- **Organization**
  - Analytic
  - Structured
- **Use of secondary literature**
  - Research objects
  - Sample
- **Heuristics**
  - Search criteria
  - Selection criteria
  - Coding criteria
- **Goals**
  - Replicable and reliable
  - Answer a research question

Meta analysis

Moderate alcohol intake and lower risk of coronary heart disease: meta-analysis of effects on lipids and haemostatic factors

Eric B Rimm, Paige Williams, Kerry Fosher, Michael Criqui, Meir J Stampfer

Abstract

Objective To summarise quantitatively the association between moderate alcohol intake and biological markers of risk of coronary heart disease and to predict how these changes would lower the risk.
Design Meta-analysis of all experimental studies that assessed the effects of moderate alcohol intake on concentrations of high density lipoprotein cholesterol, apolipoprotein A I, fibrinogen, triglycerides, and other biological markers previously found to be associated with risk of coronary heart disease.
Participants Men and women free of previous chronic disease and who were not dependent on alcohol. Studies were included in which biomarkers were assessed before and after participants consumed up to 100 g of alcohol a day.
Interventions Alcohol as ethanol, beer, wine, or spirits.
Main outcome measures Changes in concentrations of high density lipoprotein cholesterol, apolipoprotein A I, Lp(a) lipoprotein, triglycerides, tissue type plasminogen activator activity, tissue type plasminogen activator antigen, insulin, and glucose after consuming an experimental dose of alcohol for 1 to 9 weeks; a shorter period was accepted for studies of change in concentrations of fibrinogen, factor VII, von Willebrand factor, tissue type plasminogen activator activity, and tissue type plasminogen activator antigen.
Results 61 data records were abstracted from 42 eligible studies with information on change in biological markers of risk of coronary heart disease. An experimental dose of 30 g of ethanol a day increased concentrations of high density lipoprotein cholesterol by 3.99 mg/dl (95% confidence interval 3.25 to 4.73), apolipoprotein A I by 8.82 mg/dl (7.79 to 9.86), and triglyceride by 5.69 mg/dl (2.49 to 8.89). Several haemostatic factors related to a thrombolytic profile were modestly affected by alcohol. On the basis of published associations between these biomarkers and risk of coronary heart disease 30 g of alcohol a day would cause an estimated reduction of 24.7% in

Introduction

The inverse association between moderate alcohol intake and coronary heart disease is documented in over 40 prospective studies in diverse populations.[1–5] Men and women who consume one to three drinks a day have a 10% to 40% lower risk of coronary heart disease than those who abstain. In most large studies risk of coronary heart disease decreases in a downward linear fashion with alcohol intake up to three drinks a day.[6–7] This reduction is generally attributed to the beneficial effects of alcohol on lipids and haemostatic factors.[5 8–15]

Over 75 experimental studies have examined the effects of alcohol intake on lipids, haemostatic factors, vitamins, glucose, insulin, and lipid peroxidation.[10 16–50] However, only a few epidemiological studies have simultaneously examined the relation between alcohol intake, biochemical variables, and subsequent risk of coronary heart disease.[6 56–61] From these studies it is estimated that half of the beneficial effect of moderate alcohol intake is due to increased high density lipoprotein cholesterol concentrations. This calculation may, however, be an underestimate because it does not take into account measurement error in the assessment of average alcohol intake or biological variability in high density lipoprotein cholesterol concentrations. In several of these studies potential confounding by other lifestyle factors—for example, diet, obesity, and physical activity—was also not considered. Furthermore, other biochemical variables, such as fibrinogen, triglycerides, von Willebrand factor, and insulin, were not examined in these simultaneous models.

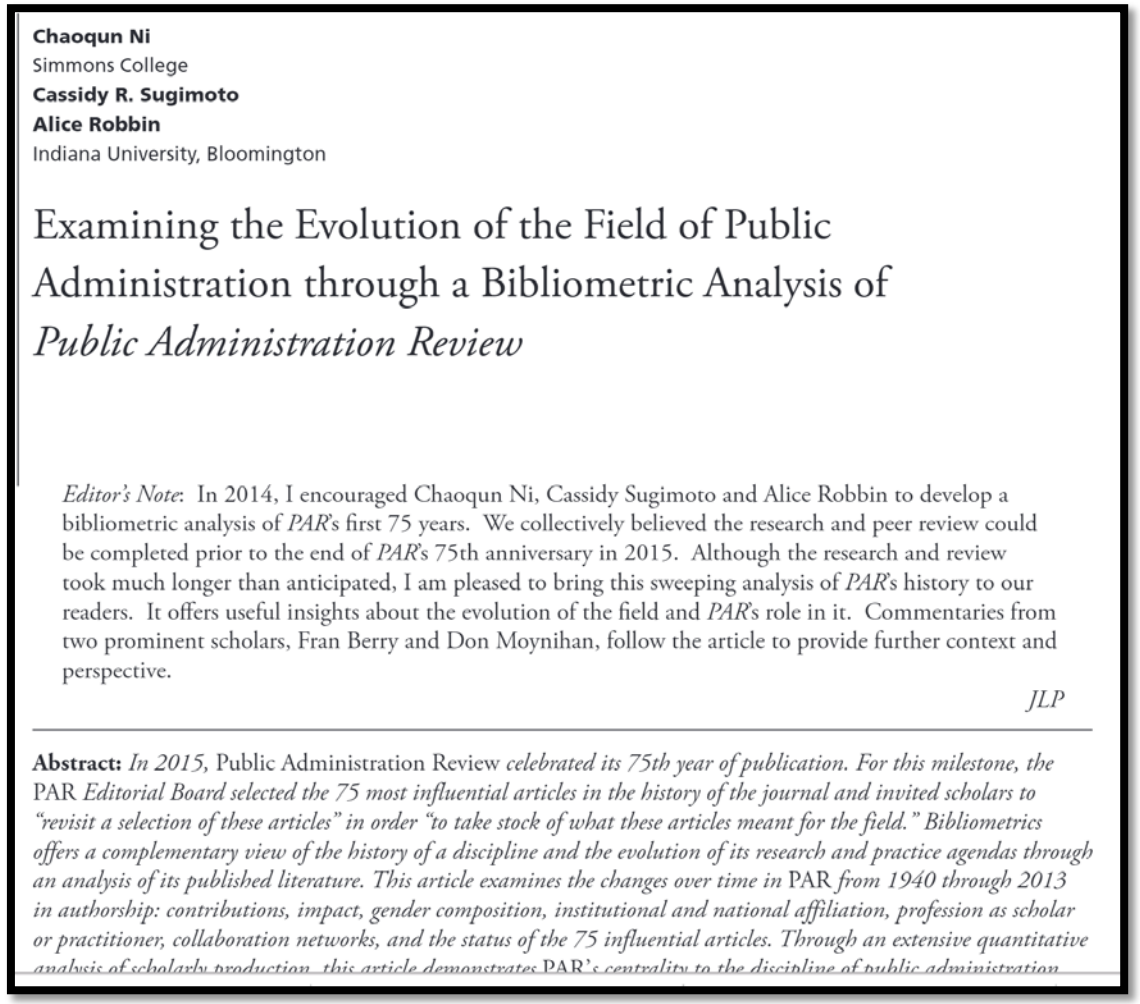
We quantitatively summarised the effects of alcohol on a variety of biomarkers from experimental studies using standard meta-analysis methods, and we projected the impact of those changes on risk of coronary heart disease using data from published studies relating biomarker concentrations to coronary heart disease.

Methods

Data from the secondary studies, rather than the studies themselves, serve as the objects of study.

- **Should be done in the context of a systematic review.**
- **Should have sufficient, comparable, data.**
- **Output is new statistical analysis.**

Bibliometric studies



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Simmons College
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Alice Robbin
Indiana University, Bloomington

Examining the Evolution of the Field of Public Administration through a Bibliometric Analysis of *Public Administration Review*

Editor's Note: In 2014, I encouraged Chaoqun Ni, Cassidy Sugimoto and Alice Robbin to develop a bibliometric analysis of *PAR*'s first 75 years. We collectively believed the research and peer review could be completed prior to the end of *PAR*'s 75th anniversary in 2015. Although the research and review took much longer than anticipated, I am pleased to bring this sweeping analysis of *PAR*'s history to our readers. It offers useful insights about the evolution of the field and *PAR*'s role in it. Commentaries from two prominent scholars, Fran Berry and Don Moynihan, follow the article to provide further context and perspective.

JLP

Abstract: *In 2015,* Public Administration Review *celebrated its 75th year of publication. For this milestone, the* PAR *Editorial Board selected the 75 most influential articles in the history of the journal and invited scholars to "revisit a selection of these articles" in order "to take stock of what these articles meant for the field." Bibliometrics offers a complementary view of the history of a discipline and the evolution of its research and practice agendas through an analysis of its published literature. This article examines the changes over time in* PAR *from 1940 through 2013 in authorship: contributions, impact, gender composition, institutional and national affiliation, profession as scholar or practitioner, collaboration networks, and the status of the 75 influential articles. Through an extensive quantitative analysis of scholarly production, this article demonstrates* PAR*'s centrality to the discipline of public administration*

<u>Metadata</u> from the secondary studies, rather than the studies themselves, serve as the objects of study.

- **Sampling/selection should be systematic**
- **Statistical analysis**

The most meta of them all: meta-reviews

The impact of pharmacological and non-pharmacological interventions to improve physical health outcomes in people with schizophrenia: a meta-review of meta-analyses of randomized controlled trials

Davy Vancampfort, [1,2] Joseph Firth, [3,4,5] Christoph U. Correll, [6,7,8] Marco Solmi, [9] Dan Siskind, [10,11] Marc De Hert, [2,12] Rebekah Carney, [4] Ai Koyanagi, [13,14] André F. Carvalho, [15,16] Fiona Gaughran, [17,18] and Brendon Stubbs [17,18]

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ABSTRACT

Go to:

We summarized and compared meta-analyses of pharmacological and non-pharmacological interventions targeting physical health outcomes among people with schizophrenia spectrum disorders. Major databases were searched until June 1, 2018. Of 3,709 search engine hits, 27 meta-analyses were included, representing 128 meta-analyzed trials and 47,231 study participants. While meta-analyses were generally of adequate or high quality, meta-analyzed studies were less so. The most effective weight reduction interventions were individual lifestyle counseling (standardized mean difference, SMD=–0.98) and exercise interventions (SMD=–0.96), followed by psychoeducation (SMD=–0.77), aripiprazole augmentation (SMD=–0.73), topiramate (SMD=–0.72), d-fenfluramine (SMD=–0.54) and metformin (SMD=–0.53). Regarding waist circumference reduction, aripiprazole augmentation (SMD=–1.10) and topiramate (SMD=–0.69) demonstrated the best evidence, followed by dietary interventions (SMD=–0.39). Dietary interventions were the only to significantly improve (diastolic) blood pressure (SMD=–0.39). Switching from olanzapine to quetiapine or aripiprazole (SMD=–0.71) and metformin (SMD=–0.65) demonstrated best efficacy for reducing glucose levels, followed by glucagon-like peptide-1 receptor agonists (SMD=–0.39), dietary interventions (SMD=–0.37) and aripiprazole augmentation (SMD=–0.34), whereas insulin resistance improved the most with metformin (SMD=–0.75) and rosiglitazone (SMD=–0.44). Topiramate had the greatest efficacy for triglycerides (SMD=–0.68) and low-density lipoprotein (LDL)-cholesterol (SMD=–0.80), whereas metformin had the greatest beneficial effects on total cholesterol (SMD=–0.51) and high-density lipoprotein (HDL)-cholesterol (SMD=0.45). Lifestyle interventions yielded small effects for triglycerides, total cholesterol and LDL-cholesterol (SMD= –0.35 to –0.37). Only exercise

Health and Social Care in the community

Review | Open Access

Gaps in the evidence on improving social care outcomes: findings from a meta-review of systematic reviews

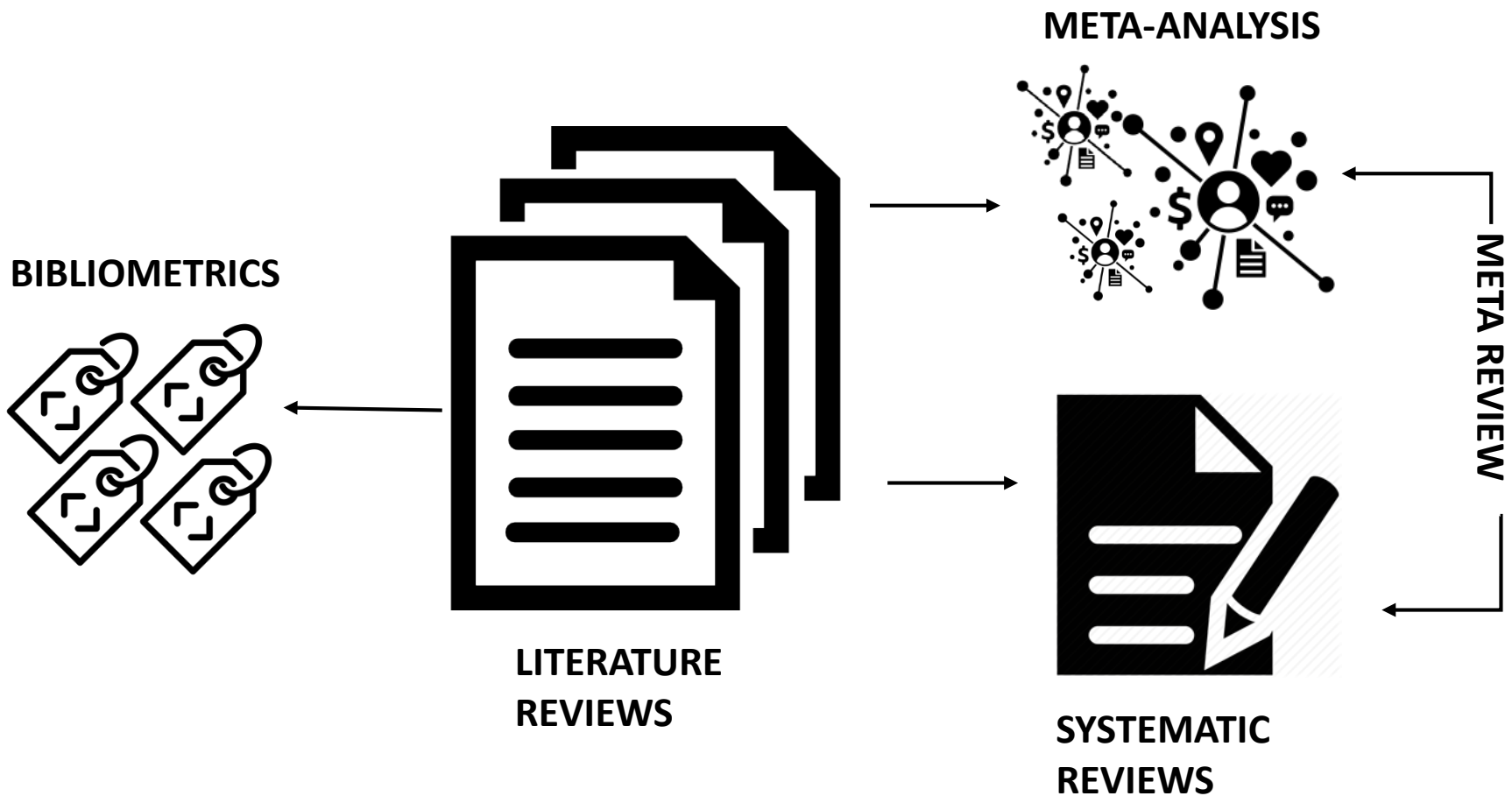
Kelly Dickson BSc (Hons) MSc, Katy Sutcliffe BA (Hons) MSc PhD, Rebecca Rees MA MSc FHEA, James Thomas MA MMus GGSM PhD

First published: 26 October 2015 | https://doi.org/10.1111/hsc.12300 | Cited by: 1

1 PRISMA checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	#1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	#1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	#2
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	#2
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	No – but full report available
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	#3
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	#3
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Provided in web-appendix
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	#3
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	#3; #4
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	#3

Empirical analysis of secondary research



Think*Pair*Share 2

What are the limitations of a traditional literature review?

When might it be useful to do a systematic review?

Why use a systematic review instead of another type of review?

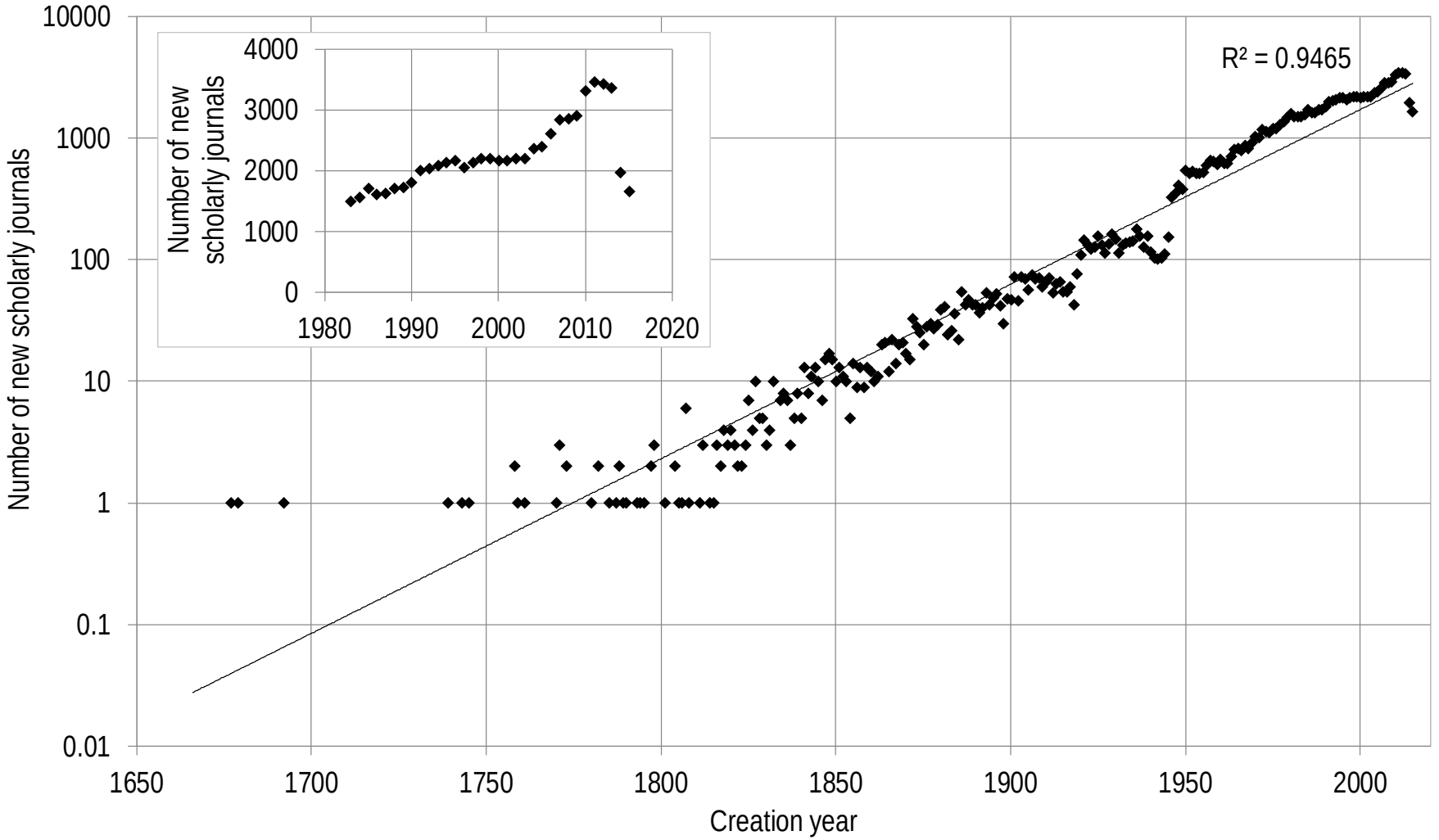
The traditional literature review is by far the most common tool, but it has risks:

- **Credibility:** Does the reader know if the lit review truly reflects the state of a field or just the author's own viewpoint?
- **Bias**: Search may have been limited to the author's discipline, or to a certain time period, or part of the world….
- **Non-generalizability:** Search may not have been exhaustive
- **Non-replicability:** The search method is rarely captured and reported

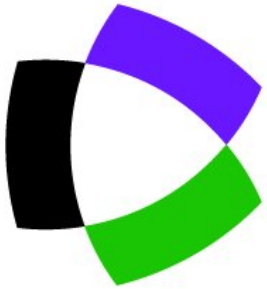
So where do we find this secondary literature?

And what tools can help us make our searching more systematic?

Exponential growth of journals



Bibliographic databases



WEB OF SCIENCE
13K JOURNALS

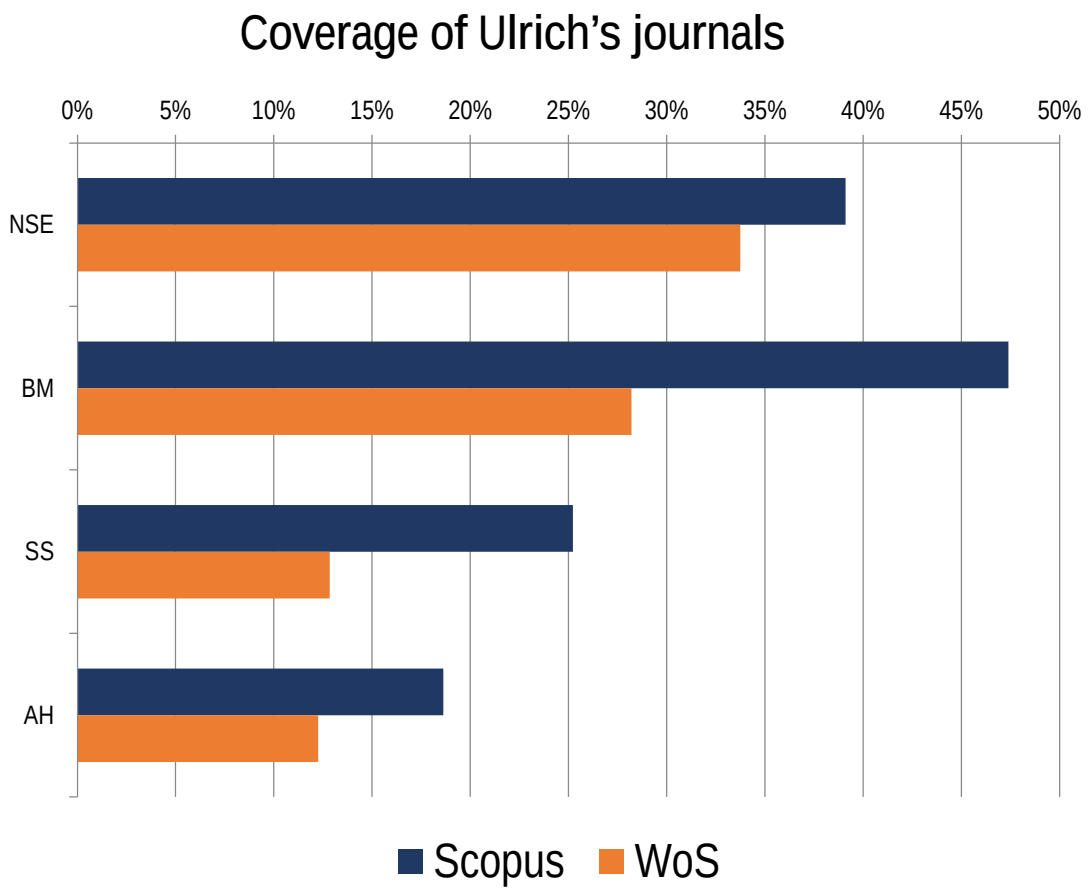
PUBMED
16k (medical)

SCOPUS
23K JOURNALS

GOOGLE SCHOLAR
ALL ONLINE

Indexed: highly structured data with complete metadata
Coverage: must have breadth of disciplines, years, countries
Retrieval: designed for research selection

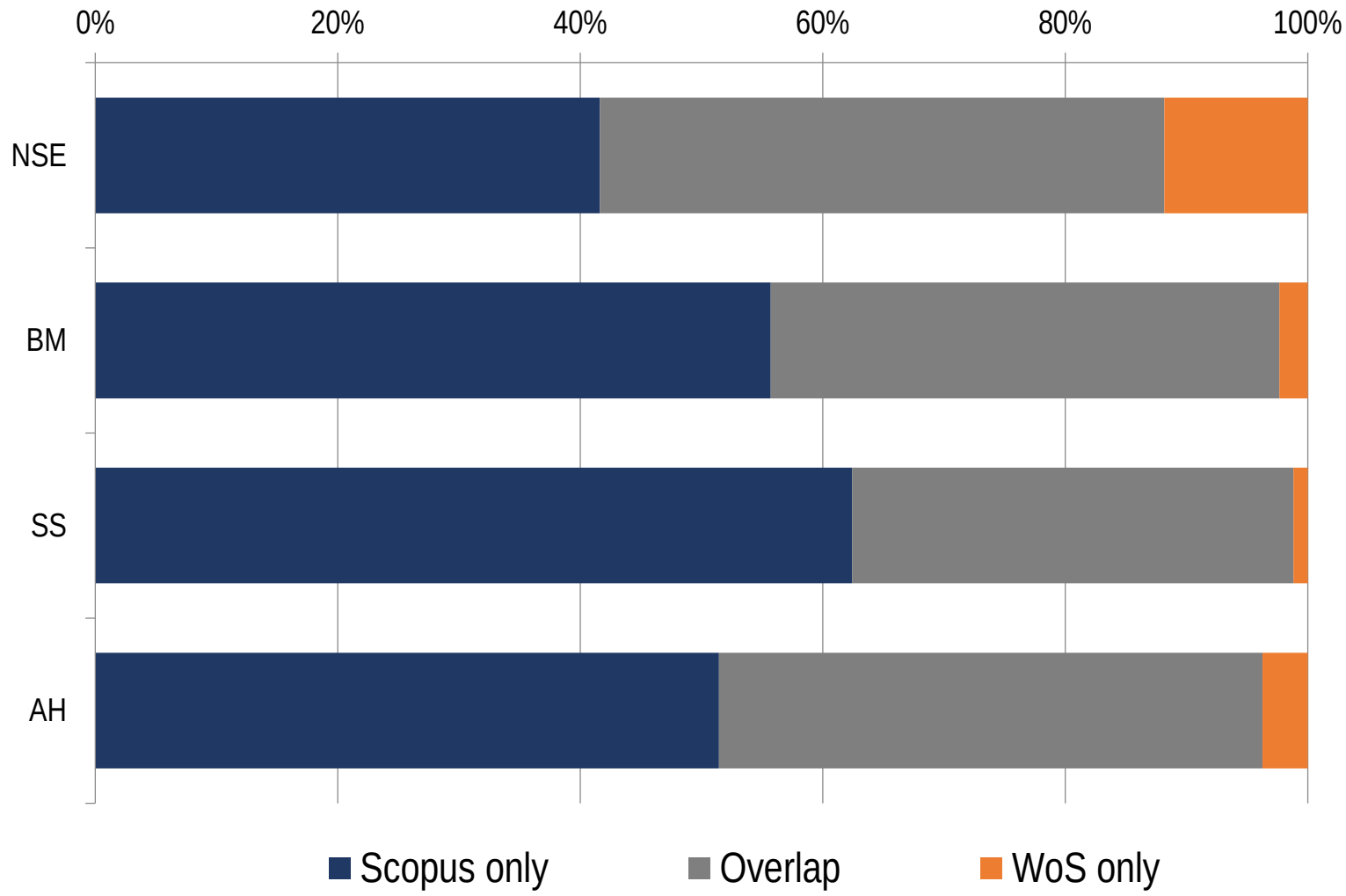
Coverage of journals



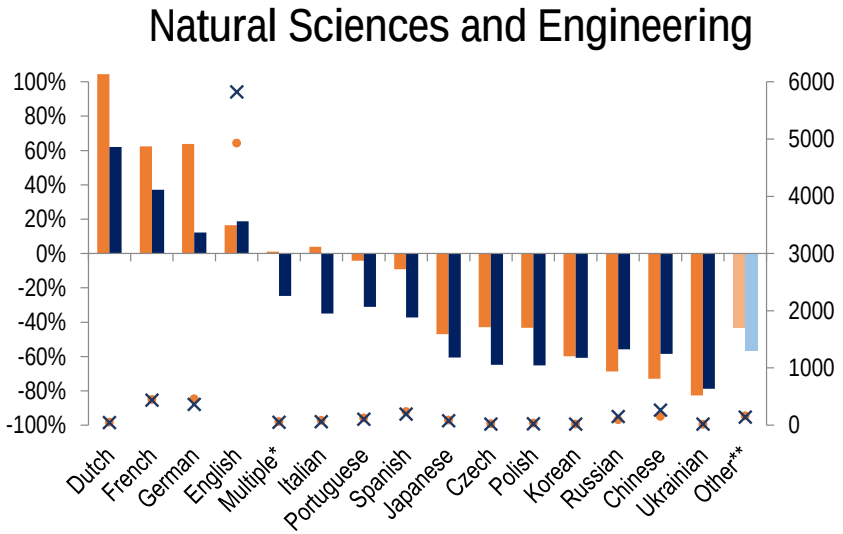
Number of journals

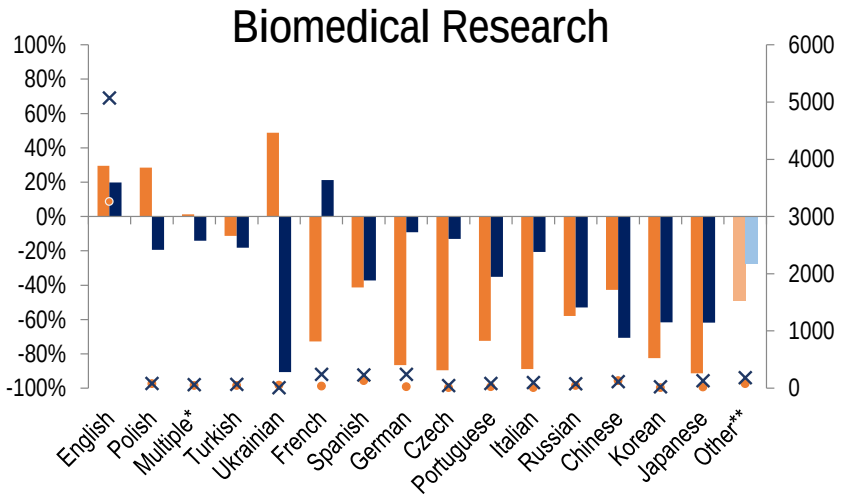
Field	Ulrich	Scopus	WoS
NSE	17,213	6,730	5,810
BM	13,232	6,271	3,732
SS	22,519	5,682	2,893
AH	9,559	1,781	1,172

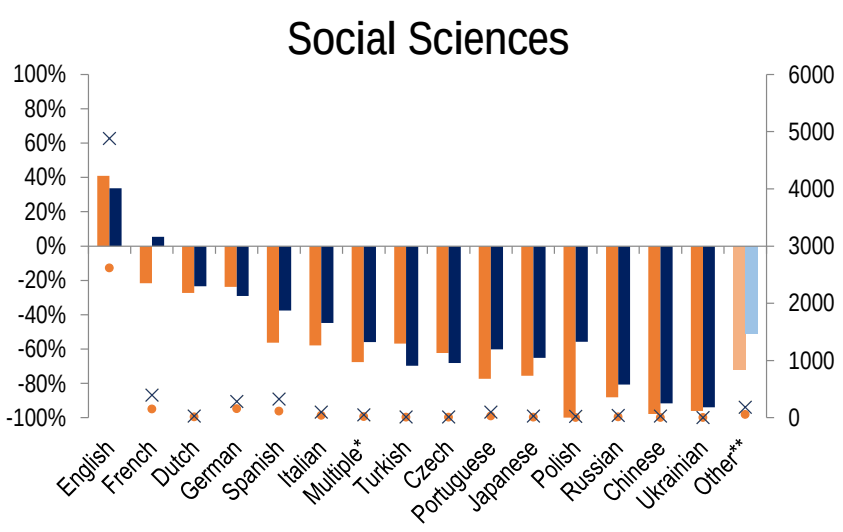
Overlap between Scopus and WoS

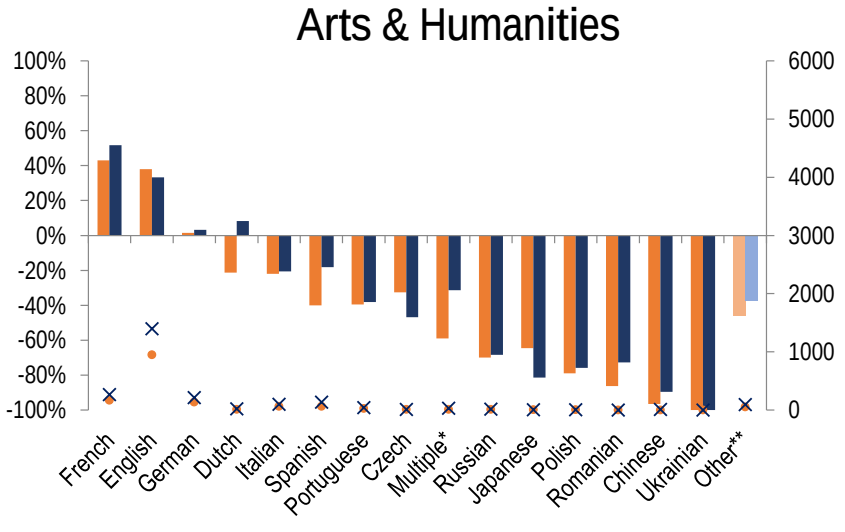


Language coverage

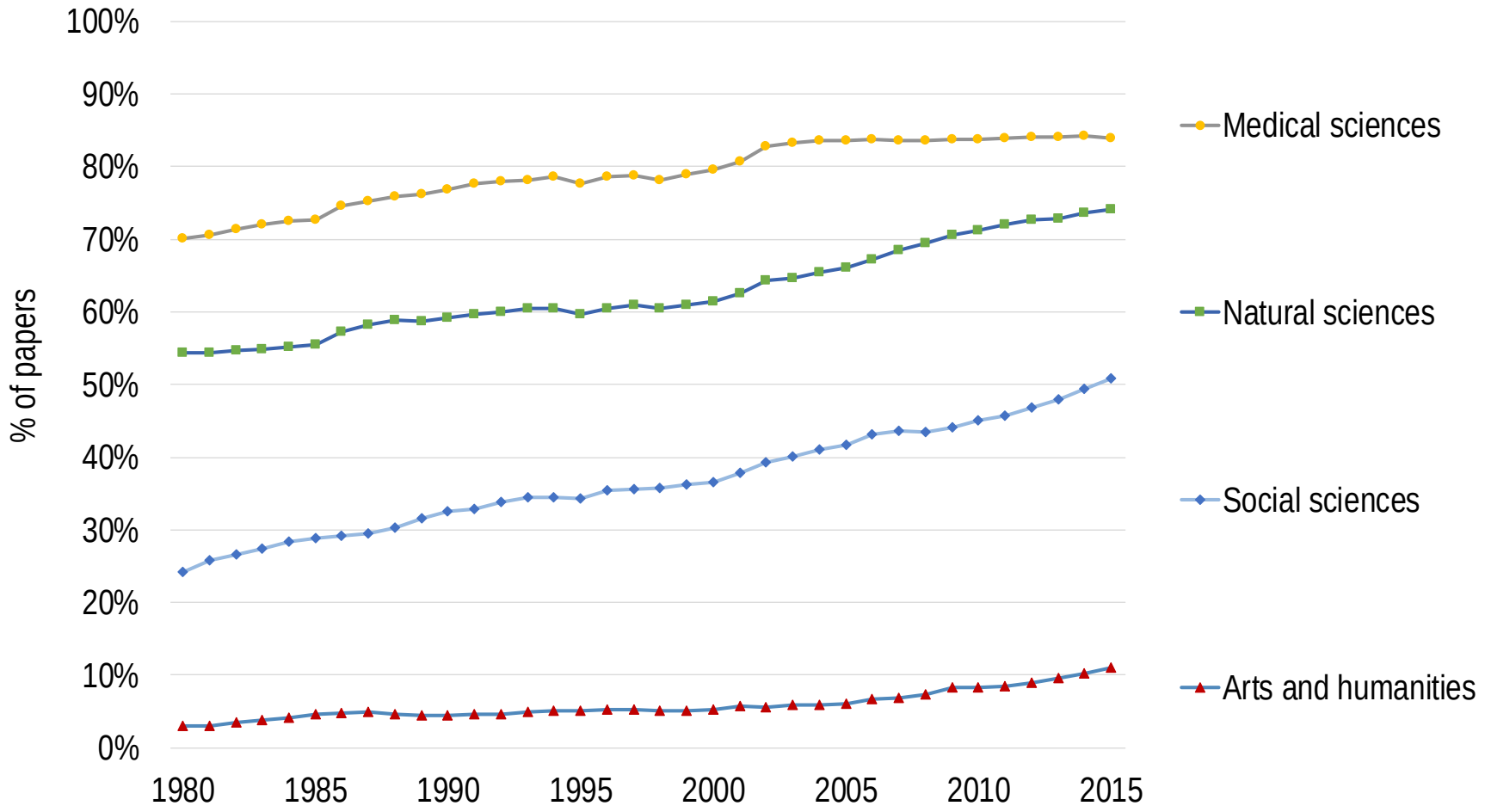








Disciplinary differences in knowledge base

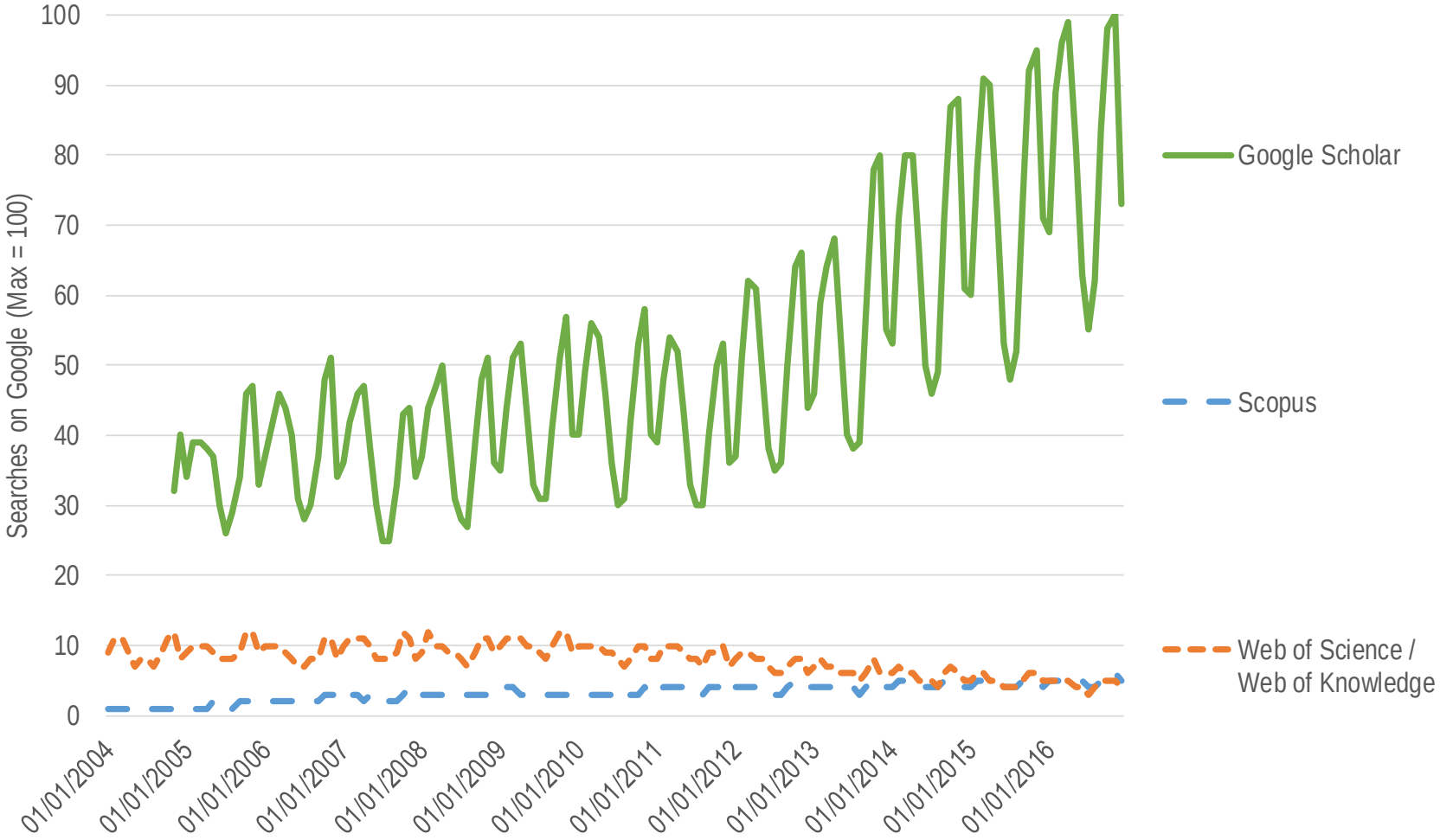


Mostly journal articles, but…

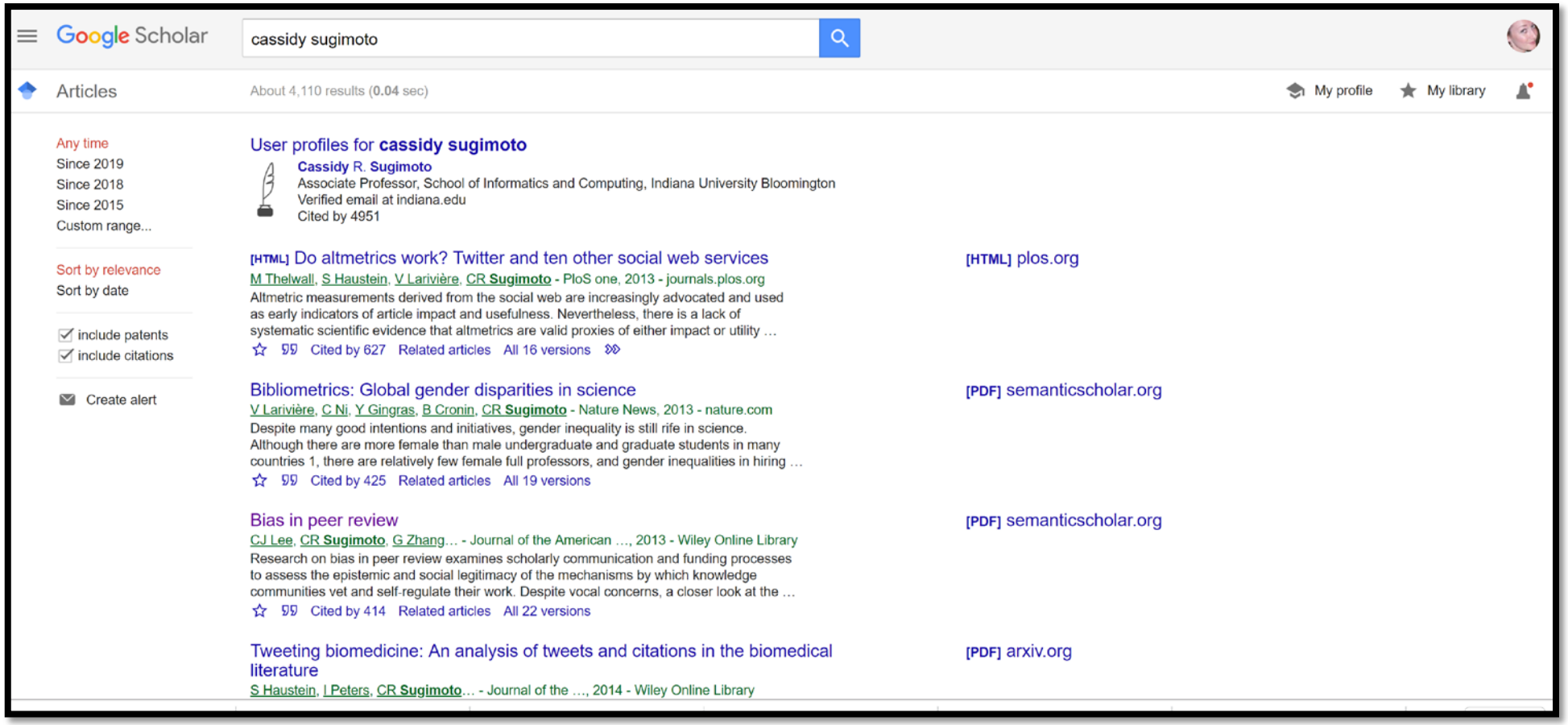
WEB OF SCIENCE
160k conference proceedings
68k books

SCOPUS
6.4M conference proceedings
40k books

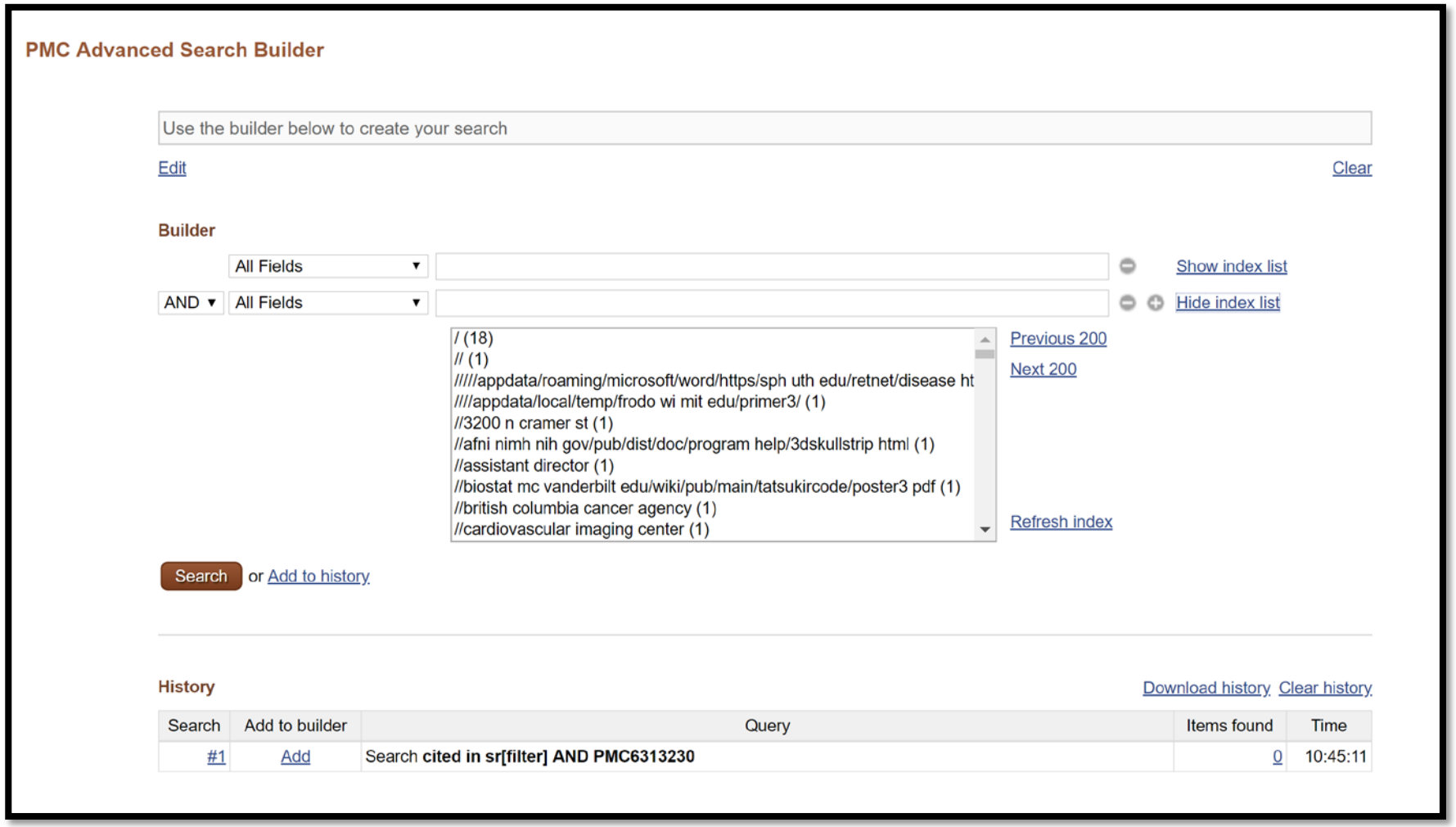
Growth of Google Scholar



Google Scholar



PubMed


PMC Advanced Search Builder
Use the builder below to create your search
Edit
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Previous 200
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Refresh index
Search
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Think*Pair*Share 3

Think about your discipline or research question. What would be the best source of data for you? Why?

Alright, I’m convinced. I want to do a systematic literature review.

So what do I next?

Systematic literature review (SLR)

- Sometimes referred to as a research synthesis.
- Prior scholarship is the focus of inquiry, contents of publications become the data (ex: year in which an article was published, region of world, size of a study's sample, nature of its findings, etc.)
- Goal is replicable, reliable, and robust conclusion about the full state of a research field.
- Method is a rigorous, rules-driven approach to the analysis of the prior scholarship, which has in turn been produced using explicit selection criteria.

Conducting a SLR using Cochrane-Campbell protocols

- Establish research questions and keyword search protocols in advance
- Determine eligibility criteria in advance
- Employ a reproducible methodology
- Conduct a systematic search that attempts to identify all studies meeting eligibility criteria
- Use independent teams of reviewers to minimize bias in selection or interpretation of the literature (Higgins & Green, 2011).

For those in medical/psychology fields:

- https://campbellcollaboration.org/research-resources/writing-a-campbell-systematic-review.html
- https://training.cochrane.org/handbook

SLR process

1. Define a focused research question

EXAMPLE:

*"What **research** has been generated on nonprofit collaboration in its broadest sense, meaning both within and without the nonprofit and civil society literature?*
*What **disciplines** are represented, and what **theories** have been employed over the full timeframe of scholarly activity to understand nonprofit collaborative behavior?*
*What **methods and units of anal**ysis are being employed?*
*What is the direction of these empirical and analytical **trends**?*
*What can be concluded from this prior research to guide **future** analysis?"*

B. Gazley and C. Guo. 2015. "What do We Know about Nonprofit Collaboration? A Comprehensive Systematic Review of the Literature". Proceedings of the Seventy-fifth Annual Meeting of the Academy of Management.

SLR process

2. Create a keyword search protocol

EXAMPLE:

The abstract included any of the words “nonprofit”, “non-profit”, “NGO”, “non-governmental”, in combination with the stem “collaborat*”

B. Gazley and C. Guo. 2015. “What do We Know about Nonprofit Collaboration? A Comprehensive Systematic Review of the Literature”. Proceedings of the Seventy-fifth Annual Meeting of the Academy of Management.

Keyword tip: Be conscious of how a term may be used differently across cultures and geography

SLR process

3. Find a source of data

Google scholar
Indiana University’s Onesearch@IU
Indiana University interlibrary loan service

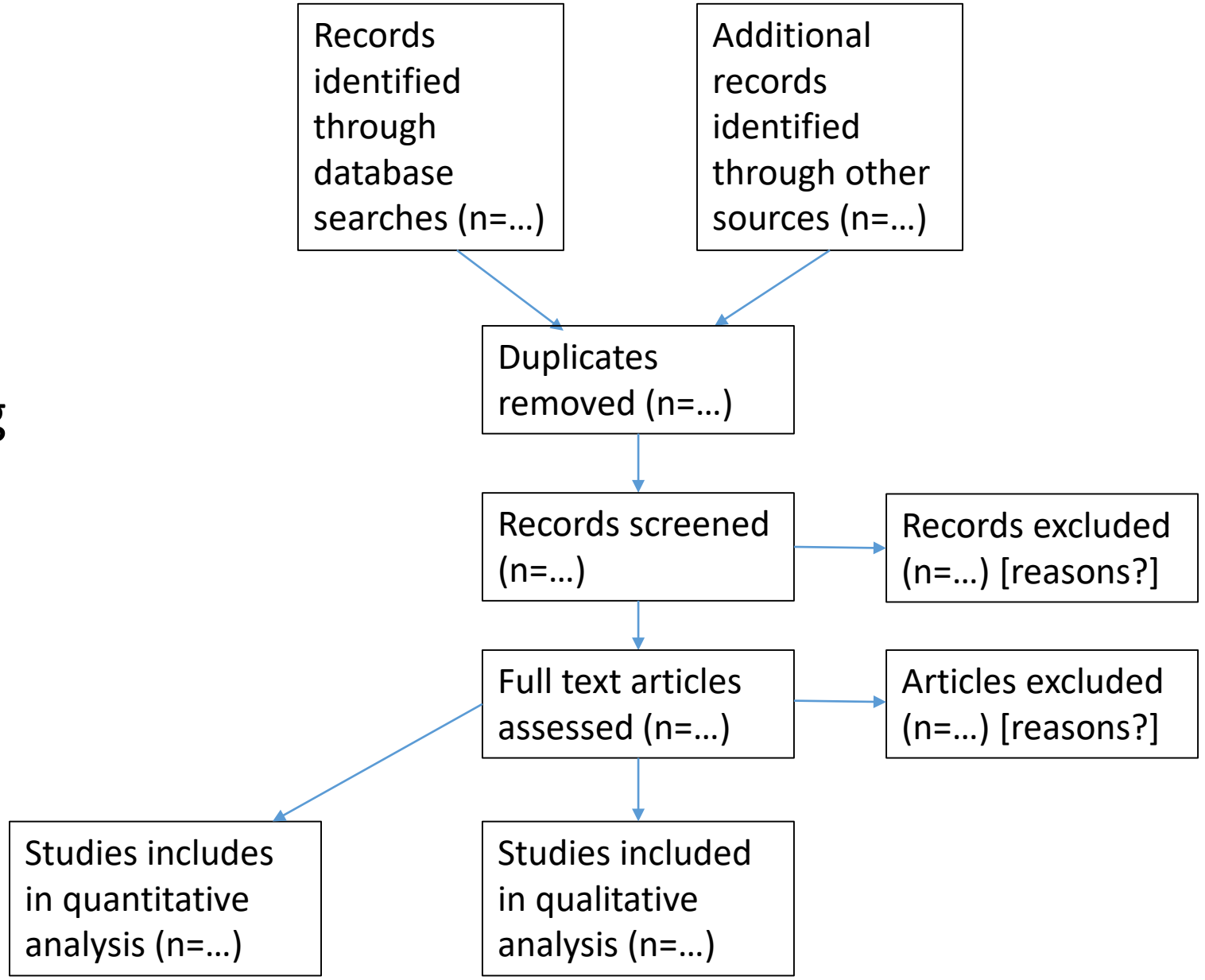
SLR process

4. Download articles

ID	AU (Author)	JT(Journal Title)	TI(Artilce Title)	YR (Published Year)	AB (Abstract)
91	Taylor, Rvland A. ,	Journal of Economics & Business	An assessment and review of the economics of cooperation a	1972	
841	M., Beaver ,	Public Health ,	Relationship of academic departments of community medicir	1980	This paper was presented at
1087	Scott A., Boorman and Paul R., Levitt ,	Economics Letters	The network matching principle. A model of efficient resourc	1982	A new mathematical model
1057	Musselwhite, James C. Jr. ,	Publius	The Impacts of New Federalism on Public/Private Partnership	1986	A fundamental tenet of the
323		Policy Studies Review	DOWN TO BUSINESS: THE COMMODIFICATION OF NONPROI	1987	
1638	RENAUD, L ,	CANADIAN JOURNAL OF PUBLIC HEALTH-REVUE CA	HEALTH-EDUCATION AND TELEVISION - CASE-HISTORY OF A	1987	This article analyzes the rela
884	P.H., Selman and Annabel J., Barker ,	Land Use Policy ,	Rural land use policy at the local level. Mechanisms for collab	1989	Countryside policies in the U
1002	Smith, Steven Rathgeb ,	Child Welfare	The Changing Politics of Child Welfare Services: New Roles fo	1989	Tobacco settlement money
1021	Evan M., Berman ,	Research Policy ,	The economic impact of industry-funded university R&D. ,	1989	In recent years, industry has
857		Journal of Economic Literature	Research in government and nonprofit accounting.	1990	Procedures intended to prov
312	WEINBLATT, J ,	INTERNATIONAL JOURNAL OF SOCIAL ECONOMICS	DO GOVERNMENT TRANSFERS CROWD OUT PRIVATE TRANS	1992	The nonprofit sector - neith
556	Goetz, Edward G. ,	Urban Affairs Quarterly	Local government support for nonprofit housing: a survey of	1992	The article focuses on the c
1530	GUNDLACH, GT and MOHR, JJ ,	RESEARCH POLICY ,	COLLABORATIVE RELATIONSHIPS - LEGAL LIMITS AND ANTIT	1992	Competitors are increasingl
1136	TEITEL, L ,	EDUCATIONAL POLICY ,	THE STATE ROLE IN JUMP-STARTING SCHOOL UNIVERSITY C	1993	This article describes and ar
1534	MCFARLAND, BH and DIBLASIO, FA and BEL	Administration and Policy in Mental Health	COLLABORATIVE RESEARCH IN MENTAL-HEALTH. ,	1993	This paper describes advant

SLR process

4. Maintain a flowchart of results (searching, screening and assessing for eligibility, inclusion decisions)



SLR process

5. Trained coders extract data from article using open coding

Categories	Variables	Code
Publication	Article ID	
	Delete Variable	1 = Delete article if article fails to meet the three criteria: (1) about nonprofits (2) about organizations (3) empirical. Keep articles that don't explicitly use the term "nonprofits" but are about nonprofits (e.g. universities).
	Author Name	
	Journal	
	Article Title	
	Publishing Year	Four digit year, no punctuation, all "na" dates cleaned and entered
	Abstract	
Authorship	First Author Affiliation	1. Academic/Research 2. Government 3. Nonprofit Organization (NPO) 4. Other
Field	Field Studied	1. Multi-field/Non-specific 2. Disaster Management 3. Education 4. Environmental/Natural Resource Management 5. Health Service Provision 6. Information Technology 7. Social Service Provision 8. Business/Industry 9. Research 10. Other
	Field Studied Other	Specify.
	Unit Analysis	Mark all that apply. 1. Single Organization 0=no, 1=yes 2. Partnership/Network 0=no, 1=yes 3. Individual 0=no, 1=yes

Tips for maintaining quality in open coding process

- Group training
- Then two choices:
  1. Have two people code each article, working together to resolve disagreements in interpretation, resulting in zero inter-rater disagreements. (Slower, but more accurate, but potential bias must be managed.)
  2. Have two people work independently to code each article, and calculate inter-rater reliability. If outside bounds of statistical confidence, retrain coders until reliability is within acceptable levels. (Faster, but weaker results.)

Common challenges encountered in SLRs

- Obtaining a comprehensive sample. Example: Collecting data from articles outside your known languages, “grey literature”
- Training multiple coders
- Lengthy time frame (an SLR can take 2+ years)
- Bias must still be addressed. Examples: survivorship bias, publication bias (studies with null findings less likely to be published).
- Publication challenges (your study may challenge conventional wisdom in your field; data may be valuable but mainly descriptive in nature)

Resources:

Steven Jansen. 2017. Bias within systematic and non-systematic literature reviews: the case of the Balanced Scorecard. https://essay.utwente.nl/73771/1/Jansen_MA_BMS.pdf

Almeida, C.P.B.D. and Goulart, B.N.G.D., 2017. How to avoid bias in systematic reviews of observational studies. *Revista CEFAC*, *19*(4), pp.551-555. http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462017000400551

Thank you!

Questions?