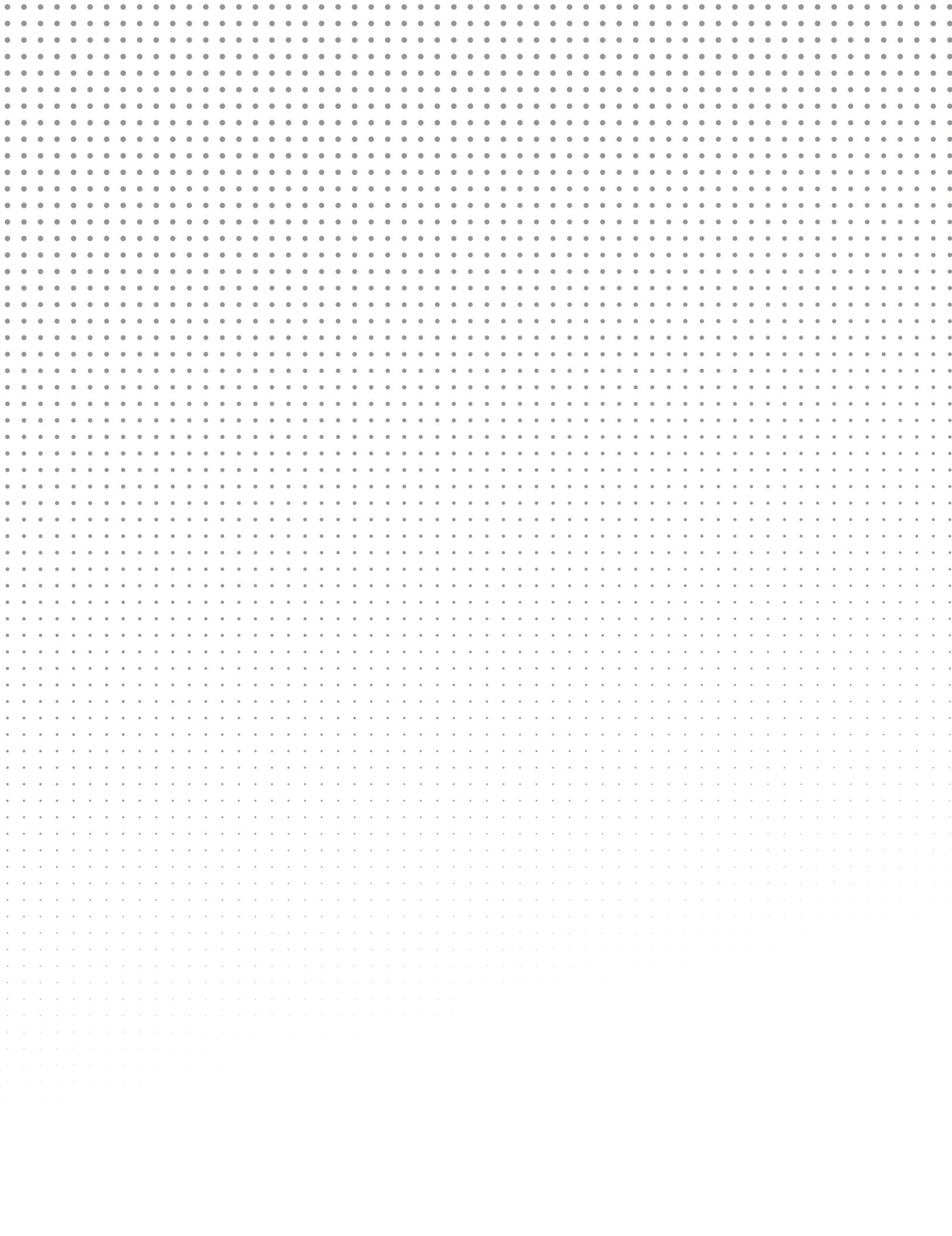


RESOLVE /

MINING THE GAPS:

A Text Mining-Based
Meta-Analysis of the
Current State of Research
on Violent Extremism

Rex W. Douglass and Candace Rondeaux



CONTENTS

<u>ABOUT RESOLVE</u>	4
<u>ABOUT THE AUTHORS</u>	5
<u>ACKNOWLEDGMENTS</u>	5
<u>EXECUTIVE SUMMARY</u>	7
<u>INTRODUCTION</u>	11
<u>METHODOLOGY</u>	14
<u>FINDINGS</u>	18
<u>MEASURING THE BREADTH AND DEPTH OF P/CVE RESEARCH</u>	18
<u>THE GEOGRAPHIC COVERAGE OF P/CVE RESEARCH</u>	24
<u>IMPACT FACTOR: MEASURING THE INFLUENCE OF SCHOLARLY ELITES</u>	30
<u>CONCLUSION</u>	35
<u>ANNEX A: LIST OF JOURNALS IN MANUAL LITERATURE REVIEW</u>	37
<u>ANNEX B: DESCRIBING P/CVE-REVELANT RESEARCH TOPIC BREAKDOWN</u>	40
<u>REFERENCES</u>	44

ABOUT RESOLVE

THE RESEARCHING SOLUTIONS TO VIOLENT EXTREMISM

(RESOLVE) NETWORK is a global consortium of researchers and research organizations whose work focuses on understanding the drivers of vulnerability and sources of resilience to violent extremism. International stakeholders established the RESOLVE Network to generate, facilitate, aggregate, and synthesize methodologically sound, locally informed research on the dynamics of violent extremism. The Network promotes opportunities for impactful exchanges between researchers, practitioners, and policymakers on ways to build effective, sustainable responses to the drivers of violent extremism. The United States Institute of Peace (USIP) is a member of the RESOLVE Network Steering Committee and serves as the Secretariat for RESOLVE. Led by a team of career public policy experts, researchers, and practitioners from across the conflict security and development sphere, the RESOLVE Network Secretariat staff has worked on the front lines of armed conflict and along fault lines of violent extremism in numerous countries across Africa, Asia, and the Middle East. To learn more about our team and the RESOLVE mission, please visit the RESOLVE Network website at www.resolvenet.org.

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EXECUTIVE SUMMARY

The research literature on violent extremism is vast, variegated, and growing by the day. From conflict and terrorism studies to governance, climate change, and migration, the quantity of existing research is too large for a single researcher or even a moderately sized team of researchers to penetrate or fully examine by traditional manual literature-review techniques. A peacebuilding practice area that frequently crosses disciplinary boundaries, the research on preventing and countering violent extremism (P/CVE) draws on a wide array of theories and methodologies. There is clearly an emerging policy agenda centered on building effective responses to extremism; however, more controversies than consensus exist on the bounds of the P/CVE agenda as a policy portfolio or area of academic study. What exactly does violent extremism mean? Does the term encompass civil war, domestic and international terrorism, sectarian violence, genocide, or all of the above? What does it mean to counter violent extremism? Does countering violent extremism include the causes, consequences, or policy responses to violence? Where exactly in the world is our policy and research focus most needed and useful? Failing to find an exact definition of violent extremism itself, particularly one that policymakers and researchers might overwhelmingly agree on, research for this study finds traditional literature reviews are unlikely to yield satisfactory answers to these questions.

Even if the necessary resources were available, and a sufficiently multidisciplinary team could be tasked to conduct a literature review of relevant topic areas, the body of available literature is too vast; the number of experts who have written on topics related to the subject of violent extremism runs well into the thousands. The actual P/CVE literature is much broader than the small 3,000-plus sample of articles analyzed for this study. Research conducted for this study unearthed about 80,000 authors and over twenty-five unique high-level topics in the P/CVE literature, spanning fields as disparate as psychology and game theory. Analysis for this study found citations to 93,992 other unique books, articles, and reports—a number that is growing by the day. The sample of academic articles collected for this study contain over 14 million words. An average individual researcher would require over a year and a half to read that body of work.¹ Were time not a constraint, lack of broad expertise would be the next most limiting factor. No one academic discipline adequately covers the complexity of the extremist challenge.

Going forward, the community of practice will require some automation of search, triage, and literature review to remain abreast of the state of the art in P/CVE literature. Relevant P/CVE research is characterized by a remarkable amount of specialization. The study’s findings suggest that much of the P/CVE research rarely reflects the complex crosscutting dynamics that feed into violent extremism. In fact, despite the interdisciplinary nature of the problem, the broad review of the literature conducted for this study indicates scholars have not addressed the overlaps between topic areas. The subject matter treated in the research literature is fragmented and topic areas are highly specialized. This is also true for research methods and countries of study. Specialization is not necessar-

¹ Assuming only an hour per article and nonstop 40-hour workweeks with no time off.

ily a bad thing, often reflecting maturity within a discipline, but the level of specialization at every level of aggregation revealed by this study suggests relatively little cross-topic discussion between scholars or practitioners. This creates an added burden on readers, and especially policymakers, to understand the broader implications of any one finding, and further underscores the imperative to cast a wide net across many different sources.

Moreover, in the research, topics related to violent extremism in South and South-east Asia, parts of Africa, and Latin America are underrepresented, while European and Middle Eastern conflicts are overrepresented. Given the global proliferation of violent extremism, it is striking that the geographic distribution of English-language P/CVE research does not fall uniformly across regions or conflicts. Al-Qaeda and Da’esh are among the most prominent extremist groups, with operations and affiliates in more than two dozen countries. The UN terrorism sanctions list contains more than 100 violent extremist organizations around the world that are considered a threat to global stability. The number of mentions of a country is only weakly correlated with the severity of fighting that has taken place there. In particular, several of the more intractable conflicts in Southeast Asia and Africa have fallen out of vogue within the academic and policy community. Although the tactics employed by nonstate actors engaged in conflict in places like Algeria, Chad, Vietnam, Laos, and Cambodia bear strong resemblance to those used in Syria, Iraq, Libya, Mali, and Afghanistan, these historical precedents no longer appear as points of comparison for the current generation of P/CVE scholarship.

More cross-country and cross-regional comparisons that draw on historical examples in the areas identified in this study could yield new insights into what works and what does not, to effectively address violent extremism. Although the number of violent deaths resulting from extremist attacks has risen exponentially in parts of Africa, South and Southeast Asia, and the Middle East over the last several decades, the amount of English-language literature published and authored by researchers from those regions is remarkably slim. The meta-analysis conducted for this study suggests a significant disconnect within at least the recent English-language research literature between the historicity of violent conflict, nationalist movements for independence, and the progressive rise of anti-pluralist belief systems near the turn of the twenty-first century. Though the drivers of violent extremism may be context-specific, it may be just as likely that sources of resilience among communities confronted with violent conflict driven by extremism are generalizable on some level. Approaching research on the drivers of violent extremism clearly requires taking a long view on the problem that looks both forward to solutions and backward for lessons learned from prior conflicts.

If P/CVE research is to advance the wider community of practice, it will also need to be more intentional about applying a wider range of methodologies to test existing and emerging theories. Certain topic areas such as public health and communications studies, for instance, appear to lean almost exclusively on surveys. Much of the literature on political violence, however, centers on game theory analysis and relies almost singularly on statistical regression analysis. Few studies on P/CVE-relevant topics employ social network analysis or ethnographic methods—a stunning finding given the growing body of anecdotal evidence on the centrality of social bonds

and cultural currency in conflicts shaped by identity politics. Likewise, although they are a near prerequisite for theory development in many areas of economics and political science, formal models are a niche commodity rarely touched on in much of the literature reviewed for this study.

All of these factors indicate a shallow empirical basis for many of the programmaticic responses to violent extremism. Beyond drivers, even less is understood about the sources of community resilience and contributing factors in community decision-making to exit violence and end conflicts. Hypotheses tested by a number of the most prominent and widely cited English-language scholars in the field tend to coalesce around theories on the role of grievances in shaping the political economy of conflicts driven by extremist nonstate actors. Only a handful of these leading researchers, however, consistently apply new techniques or mixed quantitative and qualitative methods. Fewer still rely on primary source materials in local languages or locally collected data in their analysis. Almost none of the top scholars hail from the countries and regions most impacted by the threat of violent extremism. Failing a more robust effort to develop a locally informed, empirically derived evidence base, and continual collection and systematic review of emerging research, it will be difficult to know with any degree of accuracy what works, and what does not, to prevent and counter extremism.

INTRODUCTION

This working paper presents the preliminary results of the RESOLVE Network Secretariat's meta-analysis on the state of the research literature on violent extremism. The second in a series of working papers that takes stock of existing research in the field of preventing and countering violent extremism (P/CVE), this report examines large-scale patterns in P/CVE research.² Using automated text-mining analysis tools, the authors and their teams collected and reviewed over 3,000 peer-reviewed English-language research articles and synthesized a number of findings to guide future P/CVE research efforts. The first of its kind to employ automated machine-learning analytical techniques to review literature on the intersection between conflict, political violence, and anti-pluralist belief systems, the study revealed a number of critical gaps in existing research on violent extremism. A topic and term that is widely contested among policymakers, practitioners, and researchers alike, violent extremism defies attempts to define its conceptual boundaries. The analytical tools applied for this research, however, revealed important central threads that with further research might provide a pathway to a more cohesive analytical taxonomy of this highly complex, multifaceted field of research.

The RESOLVE Network Secretariat, a global consortium of research organizations and researchers, was established to fill a void in the community of researchers, policymakers, and practitioners and serve as a central source of locally informed data and analysis on extremism and violent social movements. The Network focuses on finding solutions to the challenge of violent extremism. A first-order task of the Network and its members is to understand the state of the art in existing research, to leverage findings and expert networks that already exist, and to avoid needless duplication of ongoing efforts. This requires a mastery of diverse academic and policy literature in, for instance, security studies, political science, sociology, economics, and law. Unfortunately, the volume of this literature and the rate at which it is growing and reacting to conflict developments make it unrealistic for small teams to have a perpetual and real-time understanding using only manual review. If practitioners are to have access to all relevant existing knowledge in their fields, their staffs will require automated and semi-automated methods of collecting, organizing, and understanding emerging research.

The growth of digitized scholarly literature over the last decade and a half and powerful computational tools have combined to create a revolution in conducting systematic reviews of large collections of research literature. This is particularly true in life sciences, physics, and linguistics, where the application of text-mining tools and techniques has lit the way to further scientific discovery.³ While trends indicate that text-mining techniques have been applied more broadly in the humanities and hard sciences, their wider use within the social sciences is relatively recent.

In conducting this study, the authors set out to test the efficacy of employing natural language processing tools to the seemingly intractable policy problem of contested definitions and conceptual boundaries within the research literature on topics related to violent extremism. The aim was to map the topics

² RESOLVE Network Secretariat 2016.

³ A. M. Petersen et al. 2012.

underlying P/CVE-relevant research and define boundaries between neighboring topics. To do so, a text-mining technique called statistical topic modeling was applied in the analysis of thousands of peer-reviewed journal articles. This natural language processing tool uses statistical modeling to uncover hidden patterns and conceptual relationships between subject areas, and is in many ways ideal for the systematic review of the vast literature related to violent extremism.

The RESOLVE Network Secretariat in partnership with Stability Analytics Incorporated (SAI) launched a study in the summer of 2016 to survey and organize academic research relevant to P/CVE work. The project's systematic review of the literature consisted of two phases. First, we collected a large body of academic articles that capture the landscape of P/CVE-relevant research. Second, we developed text-mining technologies for automating several important tasks of literature review. Together, the two initiatives provide insights about where P/CVE research is, what defines it, and where there are knowledge gaps and targets of opportunity.

METHODOLOGY

The researchers for this study pursued four objectives. **The first objective** was to define the scope of P/CVE research, using what practitioners in the field consider relevant to their work. The study identified twenty-five different topics, the words and phrases associated with each, their presence or absence across each article, and their distribution across our moderately sized sample of research. **The second objective** was to map the geographical coverage and gaps in P/CVE literature. We applied geolocation coding to map specific sites and countries that are discussed in the broader English-language P/CVE literature. Findings for this study identify the countries and conflicts that receive both the most and the least attention, and show that academic and policy attention is only weakly correlated with the severity of conflict.⁴ **The third objective** was to identify the most influential and widely cited works and authors in P/CVE literature. We extracted citations from each article in our corpus and developed a network map of the authors and works that tend to be cited in each topic area. With that in hand, we found that there are relatively few influential authors and works that are repeatedly cited. **The fourth and final objective** was to demonstrate that some text-mining technologies are sufficiently mature to assist in a systematic literature review process. Beyond simple commercial tools like Google Scholar, we found several relatively easy-to-implement technologies that can provide targeted answers to policymakers and practitioners' questions on the evidence base for research on violent extremism.

The RESOLVE Network and SAI teams selected the academic articles that form the corpus of research literature for this report in two phases.⁵ First, approximately 2,000 articles were selected from a list of forty peer-reviewed journals as part of a multipart research project to establish a shared, consensus-based research agenda for the Network.⁶ Drawing in large part on methodologies applied from other benchmark reviews of the literature on terrorism,⁷ the RESOLVE Network Secretariat team manually identified articles from the 1998 to 2016 period—from the list of journals and from existing literature reviews, bibliographies, focus groups, surveys, and written queries to subject experts. The 1998 start date was selected because it coincided with the al-Qaeda bombings of US embassies in Kenya and Tanzania, which precipitated the first global counterterrorism sanctions regime against a specific violent extremist group.⁸ In the second wave, SAI identified the remaining third of articles using Google Scholar searches of common P/CVE keywords.⁹ Together, the final collection of articles contains 3,147 peer-reviewed research articles and over 14 million words of text.

⁴ To examine the potential relationship between geographic coverage in the literature and levels of violence, we used the Uppsala Conflict Data Program (UCDP)/Peace Research Institute (PRIO) dataset for our baseline analysis. The Department of Peace and Conflict Research, Uppsala University and the Centre for the Study of Civil War at the International Peace Research Institute, Sweden, have collaborated in the production of a dataset of armed conflicts, both internal and external, in the period 1946 to the present. See Gleditsch et al. 2002.

⁵ All articles were downloaded from open source and subscription services; they are in English, born digital, and predominantly in PDF format.

⁶ RESOLVE Network Secretariat 2016.

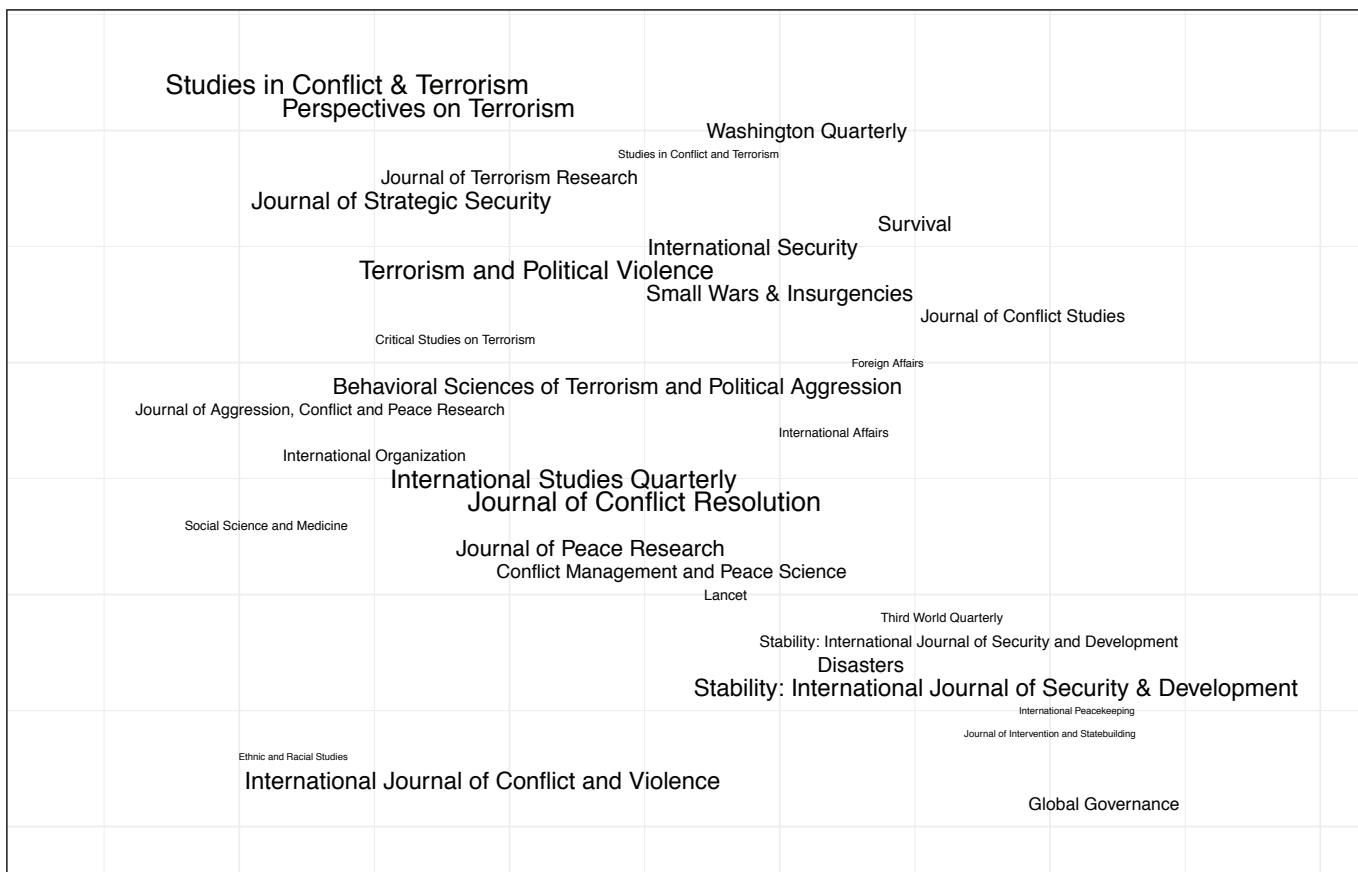
⁷ A. P. Schmid 2011.

⁸ Known colloquially as the “al-Qaeda sanctions regime,” the sanctions were imposed under UN Security Council Resolution 1267 in 1999, and were subsequently amended multiple times to include additional groups and individuals, including the Taliban and Da’esh.

⁹ Search terms included, for instance, “violent extremism,” “terrorism,” “violent social movement,” and “political violence”; manual identification of relevant articles by journal included *International Journal of Conflict and Violence*, *Journal for Deradicalization*, *Journal of Conflict Studies*, *Journal of Terrorism Research*, *Journal of Strategic Security*, *Perspectives on Terrorism*, and *Stability: International Journal of Security and Development*.

The strength of the collection of articles analyzed for this study lies in its breadth and relevance. The collection is drawn from 631 different journals. Nearly 250 of those journals contained more than one article; 63 had five or more articles (see figure 1). The weakness of the corpus is its nonrandom sampling strategy and the ambiguity of the relevant universe of research. Absent consensus on definitions of terms, it is challenging to ascertain where one topic ends and another begins. If a topic is relevant, there is a good chance the corpus has at least one example of related work, but aggregate proportions of the corpus are not necessarily representative of aggregate proportions in the universe of all research. Despite that potential shortcoming, these results are a strong first step in identifying the relevant areas of research and the boundaries between them, and in determining how to more precisely define the broader universe of research. With a large sample of relevant articles in hand, we set out to perform and automate several tasks of literature review. We focused on three tasks: topic modeling, georeferencing, and bibliographic mapping.

Figure 1. Journals with Five or More Articles in the Corpus



Note: N = 63. Size of label reflects the number of articles (log). Proximity reflects average topic similarity between journals.

Topic modeling involves identifying all latent ideas that describe what documents are “about.” Defining and measuring a topic is not straightforward. Consider a presidential debate, where the moderator signals the end of one topic and start of another. Academic papers rarely have such signposting; when they do, authors do not always agree on how to define a topic, and they do not always stay within the bounds of the designated topic. So instead, we learn about and measure topics inductively based on the words commonly used across documents. When a group of words tends to go together very often—for exam-

ple, PTSD, trauma, symptom, depression—this is called the *coherence* of an underlying topic. When words tend not to appear alongside other words—for example, PTSD rarely appears alongside election—we call that the *exclusivity* of an underlying topic. A *well-formed* topic, then, is a group of words that are coherent with each other and exclusive with regard to others.

Since topics are defined through patterns of words, special care must be taken in cleaning and normalizing a given text before analysis. We removed place names, author names, common stop words (and, or, in), numeric digits, words with fewer than four letters, and punctuation. We identified stem words—“feminine,” “feminism,” and “feminist,” which are shortened to a root token “femin”—and our analysis began from there. After sifting through the data, we pared the number of unique tokens to a little more than 90,000. The tokens are distributed exponentially, with few words appearing often and a long tail of tokens appearing only a few times. We only considered tokens that appear in at least fifty documents, or about 1.5 percent of the collection, leaving out 5,733 unique tokens.

We determined inductively that there were approximately twenty-five unique topics in the collection by performing a grid search of 2 to 100 topics and then selecting the model that performed best on several diagnostics. A model with twenty-five topics has enough flexibility to accurately fit the data and provide granularity across specific ideas of interest. The texts could have been further disaggregated into more topics, say fifty instead, but many would have been degenerate topics poorly supported by the data and difficult to interpret. Likewise, the texts could have been aggregated into a smaller number of topics, say twelve, but that would have blurred boundaries between distinct ideas. We can better capture that parsimony by clustering topics into larger groups that are easier to discuss.

Georeferencing consists of mapping text descriptions of places to their real-world locations. It answers some of the following questions: What parts of the world are researchers focusing on in their studies? Are some areas overrepresented or underrepresented overall, or within specific topics? We identified 150,551 mentions of locations in the text. We georeferenced those mentions to 4,848 unique geographic locations with precise latitudes and longitudes. We then further aggregated each location to a specific country.

Finally, bibliographic mapping entails extracting citations from written research. It answers questions about which works and authors are most influential. In measuring the impact factor of specific authors and their argumentation around specific theories and concepts, we were able to recover bibliographic references from 3,038 articles (97 percent of the collection), taking care to parse natural language citations rather than relying only on machine-readable formats like DOIs or embedded BibTeX information, which would have biased our sample toward more recent and methodologically oriented papers. We found a total of 93,992 unique references, or an average of thirty-one unread new citations to follow for every one already in our corpus.

FINDINGS

Measuring the Breadth and Depth of P/CVE Research

The universe of potentially relevant research on violent extremism is in the hundreds of thousands of books, papers, and reports. Beyond the problem of size, a more serious issue might be the number of different subject areas and fields of expertise that are involved. A large and highly multidisciplinary team would be required to understand and evaluate all the different subject areas that crosscut the P/CVE theme. Topic modeling allowed us to group twenty-five topics into four higher-level conceptual categories:

- **Political Violence:** (1) statistical approaches, (2) civil war, (3) revolution, (4) game theory, (5) indiscriminate violence, (6) ethnic violence;
- **Political Economy of Governance:** (7) (counter) insurgency, (8) (humanitarian) aid, (9) fragility, (10) peace, (11) global commons, (12) justice, (13) economics, (14) crime;
- **Intervention Demographics:** (15) radicalization, (16) surveys, (17) gender/family, (18) health;
- **Communicating Belief:** (19) activism, (20) jihad, (21) terrorism, (22) media, (23) religion, (24) philosophy, (25) networks/organization.

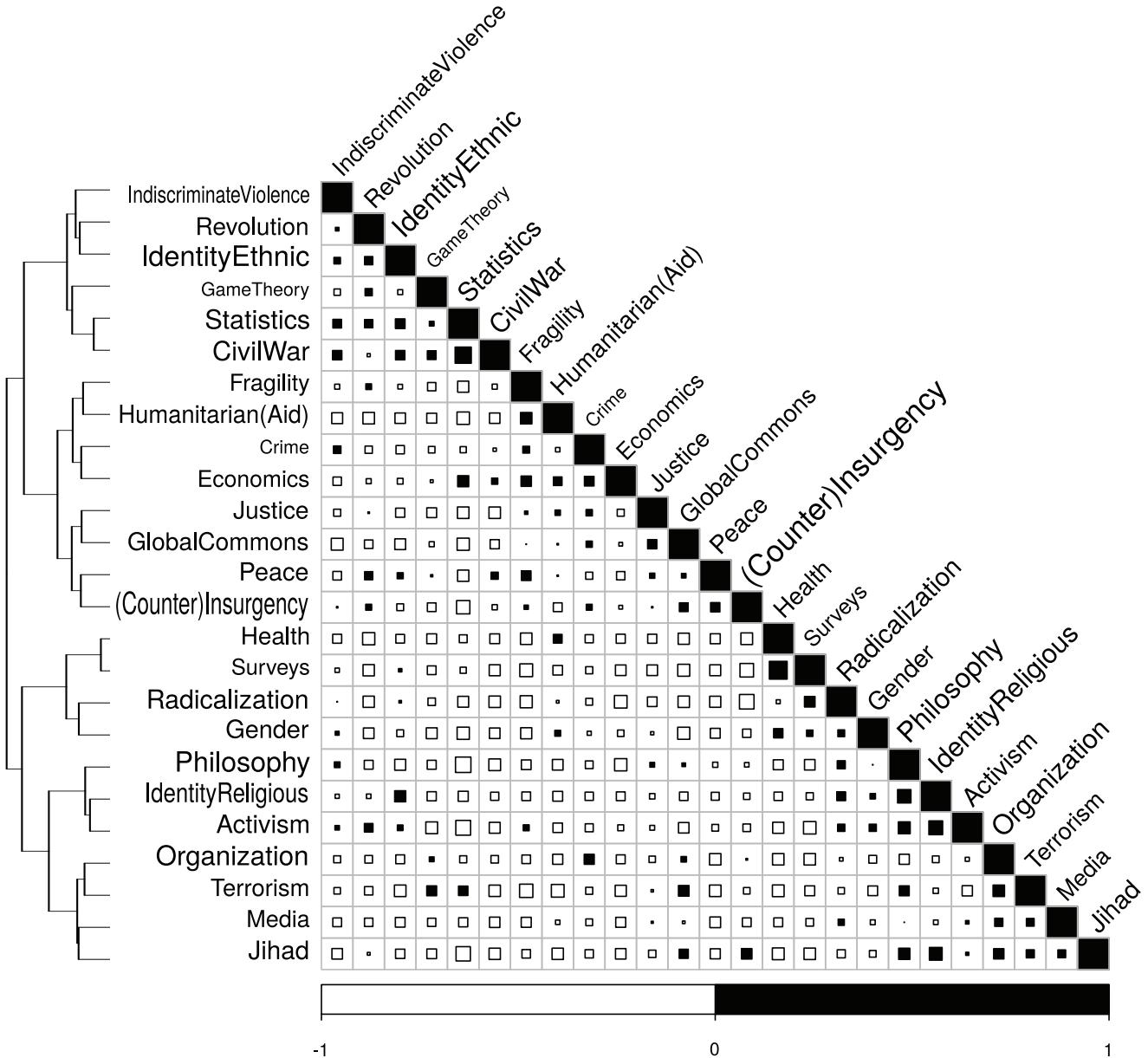
The conceptual breakdown of topics into these four larger conceptual categories is illuminating in several ways. First, there are more distinct branches of knowledge than we expected. Given the overlap between certain topics and lack of consensus around definitions of terms, such as “terrorism,” we had assumed that many topics would simply be subfields of others. However, it turns out that each branch has its own substantial literature, expert base, questions, and methodologies. Second, methodologies emerge as distinct topics, including statistical approaches, game theory, surveys, philosophy, and networks/organization. Third, topics group around remarkably coherent breaks along the unit of analysis. **Political Violence** covers questions about the interaction between states and rebel groups or other subnational actors. The **Political Economy of Governance** encompasses the political economy of national and subnational institutions and the political health of a state and its ability to maintain the monopoly of violence internally. **Intervention Demographics** covers questions about public health challenges associated with mass violence and the demographics of groups that might be targeted for interventions. **Communicating Belief** is concerned with the way ideas about morality, ethics, and violence are communicated between networks of people and organizations. It is unclear whether researchers intentionally organize along these lines or whether it is an emergent property. But, it is fairly obvious upon examination that these four conceptual categories form an important nexus in the taxonomy of P/CVE-related research. (For a more detailed breakdown of how topics are organized, see annex B.)

Disaggregating Research Topics

The aggregate groupings above are developed by measuring when topics tend to appear alongside each other in the same article. At one extreme, a comprehensive literature review might briefly mention all twenty-five topics; at the other extreme, a brief and pointed research note might only discuss one. By measuring how often topics appear alongside one another, we can build a family tree of issue areas. Each cell in figure 2 shows the bivariate correlation between two topics measured at the document level. Topics that appear together often will have a strong positive correlation (large black square), and topics that rarely show up together in the same document will have a strong negative correlation (large hollow white square). For example, the two most strongly related topics are health and surveys. The two least related topics are philosophy and statistics. Most topics are unrelated or generally negatively related to one another.

Five of the discovered topics in methodology are statistics, philosophy, game theory, surveys, and network analysis/organizations. Because no topic quite captures other methods of interest (for example, archival research or interviews), we add a sixth, “None of the Above,” to indicate an absence of the other methods. Figure 3 shows the bivariate correlation between methods employed and substantive topics within each document.

Figure 2. Hierarchical Clustering of Twenty-Five P/CVE Topics by Similarity

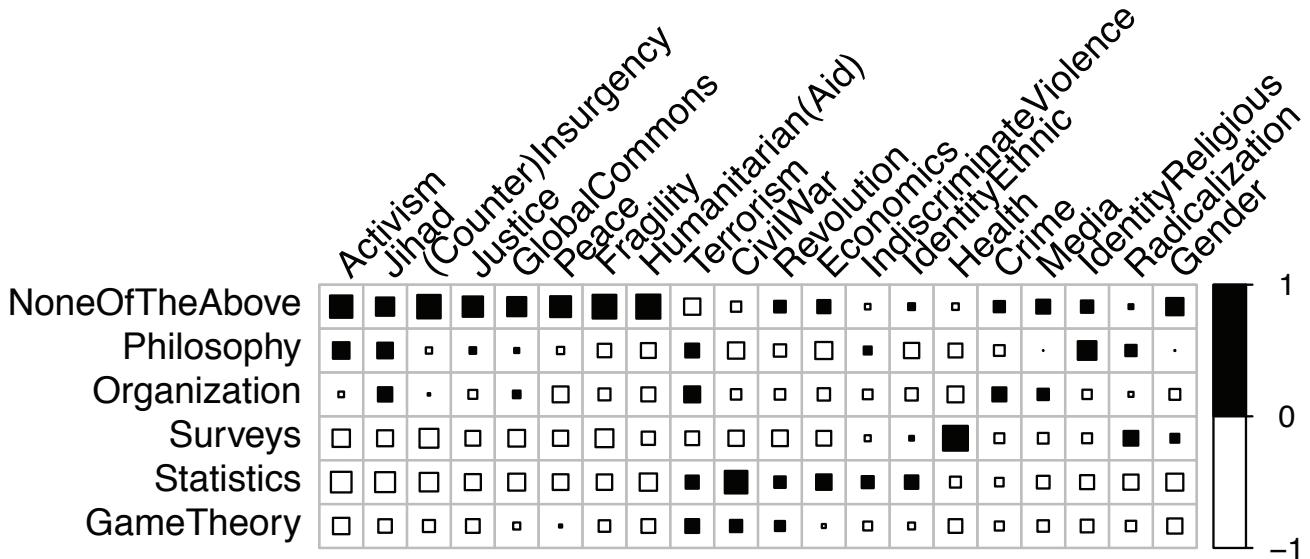


Note: Topics closer to one another and those that merge lower in the tree are more similar than those that are far apart and merge higher in the tree.

Based on when topics tend to appear alongside one another, we can further group them into a family tree of topics. Along the left-hand side of figure 2 is a dendrogram, a kind of family tree that shows which topics are most closely related to one another. Each topic begins as an individual leaf at the bottom of the tree; then, based on similarity in overlap, topics are combined into larger and larger groups until they finally merge as one single group at the top of the tree. We identify four macro-level clusters of topics. The first cluster broadly covers violence, in terms of the indiscriminate targeting of civilians, revolutionary violence, ethnic conflict, civil war, and statistical and formal approaches to modeling it. The second cluster covers issues of fractured governance, in terms of state fragility, humanitarian disasters, crime, economic strife, justice, issues like weapons of mass destruction (WMD) and piracy, peace, and counterinsurgency. The third cluster covers issues

of individuals, personal and mental health, radicalization, and gender. The fourth cluster covers ideas about identity and performance, religious identity, activism, organization, terrorism, recruitment and communication through media, and jihadism.

Figure 3. Bivariate Correlation between Methodological Approaches and Substantive Topic Areas



Note: Bivariate Correlation between methodological approaches and substantive topic areas is the unit of analysis in the document. Rows reflect logged number of methodological approach mentions per document. Columns reflect proportion of a document on a given topic. Cells reflect the bivariate correlation. Black squares reflect positive correlation, and hollow white squares reflect negative correlation. The size of the square indicates strength of the correlation.

We found that research methods in studies cited in the sample articles vary widely between topics. There are in general three main clusters of topics with similar methodical profiles. The first cluster is the most distinct and includes Activism, Jihad, (Counter) Insurgency, Justice, Global Commons, Peace, Fragility, and Humanitarian (Aid). These topics are examined primarily from a qualitative perspective—except for Activism and Jihad, which include issues of morality, as well as some network/organizational work on Jihad. Outside of the number of qualitative interviews conducted for research on these topics, there is little indication that other quantitative methods were applied to examine the complex web of topics that weaves through research on political violence specific to certain geographic areas.

The second cluster of topics contains a great deal of quantitative and formal modeling work, and includes Terrorism, Civil War, Revolution, Economics, Indiscriminate Violence, and Ethnic Identity. The final cluster employs surveys, organizational analysis, and some philosophical issues, and includes Health, Crime, Media, Religious Identity, Radicalization, and Gender. The main outliers are health-related themes, which disproportionately rely on surveys, and civil war-themed articles, which largely use cross-national quantitative studies. Perhaps not surprisingly, but still importantly, we find that a consistent thread that runs across the majority of topic areas centers on the use of indiscriminate violence against civilian targets. This reinforces observations made by experts during

focus group discussions led by the RESOLVE Network Secretariat about the close conceptual overlap between the study of genocide and the study of violent extremism.¹⁰

These findings suggest that few studies in many of the most widely referenced research articles on P/CVE do use a mix of quantitative and qualitative methods. While some studies rely heavily on perception surveys, for instance; and others on analysis of events-based data such as the Peace Research Institute of Oslo's (PRIO) Battle Deaths dataset; and still others, sets of qualitative interviews; few combine more than one of these methods. This tendency toward the application of singular methodologies in P/CVE-relevant literature belies the enormous complexity of violent extremism. Applying multiple methods to the problem is much more likely to reveal insights into collaborative strategies for intervention and prevention across the public and private sectors. In looking at the breakdown of methodologies cited in the articles we examined, there is clearly ample opportunity to apply new methods to new issue areas.

Organization and network analysis is underrepresented in most topics, and would be particularly interesting to apply in research on activism, radicalization, and ethnic identity. Statistical analyses are noticeably missing from areas that are data-poor, like international issues (for example, WMD, piracy, response to terrorism), justice, and radicalization. Better use of surveys, particularly experimental surveys, could make an impact in almost any area. Likewise, despite being a near prerequisite for theory development in many areas of economics and political science, formal models remain a niche skill in most disciplines.

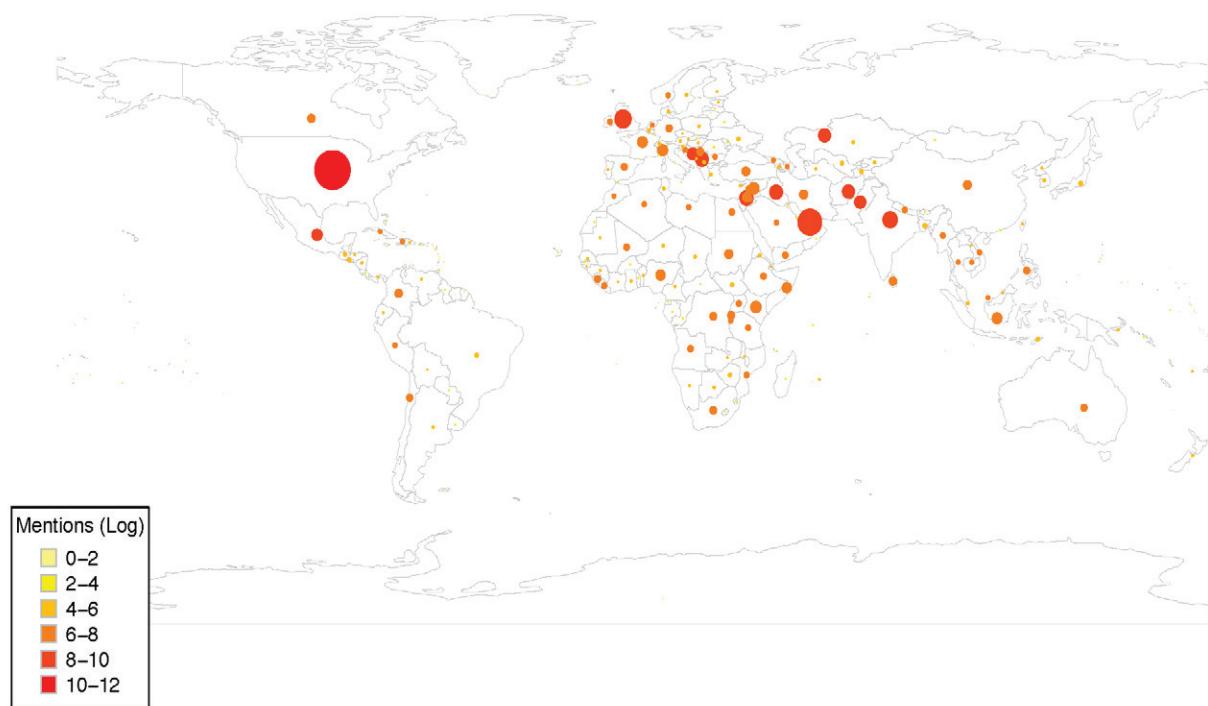
10 RESOLVE Network Secretariat 2016.

The Geographic Coverage of P/CVE Research

Average researchers conducting a traditional or manual literature review on topics such as terrorism, radicalization, political violence, sectarian violence, civil war, and state fragility will more than likely stumble on a few obvious patterns. One of these is the concentration of studies that focus on specific regions of the world. This is a familiar conundrum for English-language scholars of conflict studies who usually find that much of the research on topics such as radicalization is on conflicts in the Middle East and Europe. Without doing any real work, one can assume that Northern Ireland and Palestine will be referenced widely across different types of articles and journals. This approach, however, would be guesswork at best—hardly a good starting place for empirically grounded research.

The unique value of our methodological approach is that it confirms with a reasonable degree of confidence that certain regions of the world are vastly overrepresented in P/CVE-relevant research. More importantly, for the future of an empirically derived P/CVE research agenda, several critical regions where levels of violence perpetrated by extremist groups are particularly high or have marked historical highs are vastly underrepresented in the literature. A quick glance at figure 4 reveals that South America, South and Southeast Asia, and parts of Africa are sparsely represented. Much of the collection covers a corridor running from Kosovo, through the Middle East, to India. These are areas with relatively recent conflicts and a great deal of Western attention. Figure 4 shows the distribution of countries mentioned in our sample of articles. Each dot represents a country; the location is the average latitude/longitude of places mentioned, and the size and color represent the log of the number of times that location was referenced.

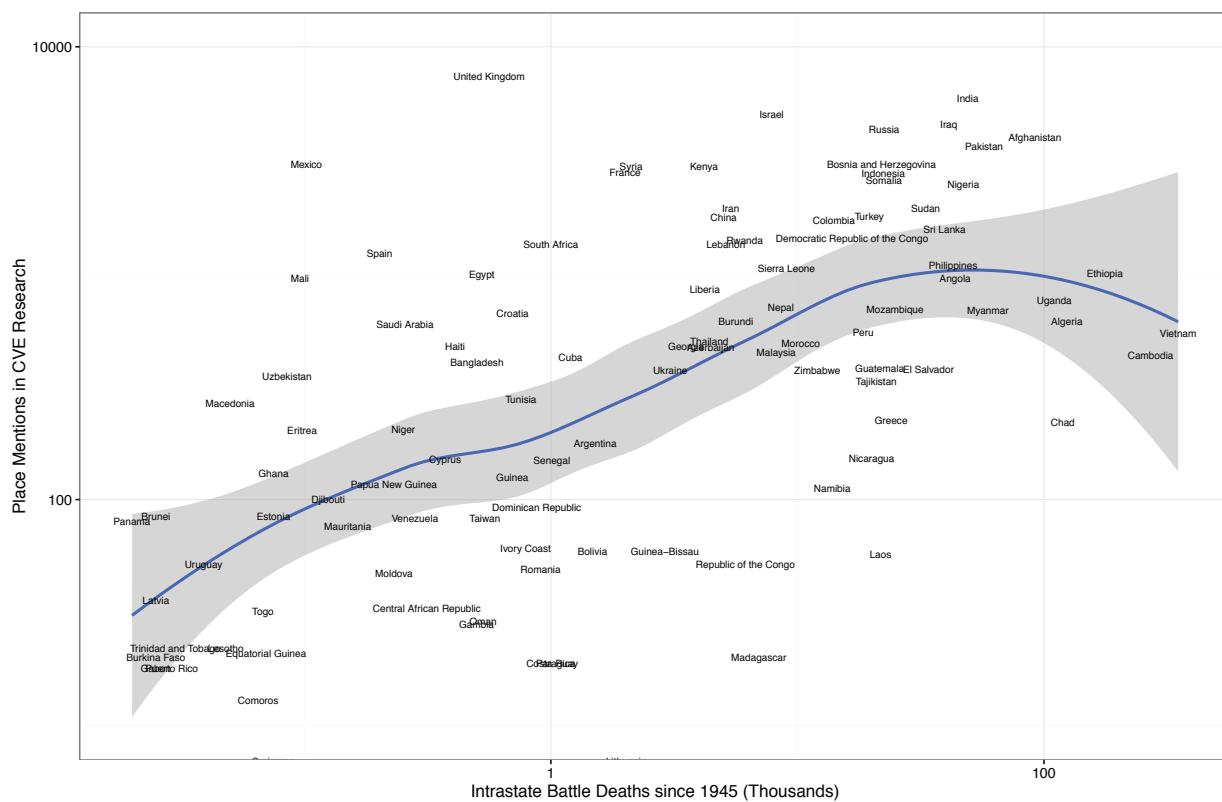
Figure 4. Distribution of Locations Mentioned in P/CVE Literature



Note: Distribution of locations is aggregated to the country level. Dots indicate mean latitude/longitude for places mentioned, and size indicates the total number of times these mentioned places were referenced (log).

It might be tempting to assume that these differences in geographic coverage have something to do with the intensity of the conflict and the number of casualties associated with conflict in a given area. The disparity of place mentions in P/CVE research, however, cannot be attributed entirely to disproportionate violence in some places compared to others. In figure 5 we compare the number of country mentions in P/CVE research to the amount of subnational violence that has occurred there between 1945 and 2008.¹¹ We consider only casualties within the territory of that country.¹² The results are surprising. On the one hand, there is a predictable, positive trend: about a 14 percent increase in mentions of specific geographic places for every 1 percent increase in battle casualties. On the other hand, the correlation is weak, and there are several outliers. Some states, like the United Kingdom, are large positive outliers because of Western attention, and because they are the origin of much research in the corpus. States like Mexico are positive outliers because data on battle deaths greatly underestimate the severity of violence in killings and kidnappings. States like Syria represent more recent conflicts beyond 2008. Moreover, the fit is nonlinear. States toward the top of the distribution, with extreme levels of violence, have fewer mentions than one would expect.

Figure 5. Number of Place Mentions in P/CVE Research versus Number of Deaths in Intrastate Conflicts on that Territory, 1945–2008



Note: Trend line is a LOESS fit with 95 percent confidence interval shown in grey.

¹¹ Data are from PRIO's Battle Deaths dataset, version 3.0; <https://www.prio.org/Data/ArmedConflict/Battle-Deaths/The-Battle-Deaths-Dataset-version-30/>.

¹² We exclude any places with zero battle casualties over their own territory.

The geographic disparities point to several countries and conflicts that require greater attention going forward. In table 1, we show the top 10 countries that are underreferenced given their history of violence, measured by the ratio of mentions to battle deaths. One common thread among these underrepresented cases is that they arose primarily out of anticolonialist movements, which were also protracted and particularly bloody. Cases such as the uprising in Algeria, for instance, might hold important lessons for particularly large modern conflicts, such as Syria. Since in some cases conflicts ultimately resulted in negotiated settlements that permitted some postconflict reconstruction, stability, and reduction in extremist violence, there are also opportunities for archival research, particularly on Vietnam and Algeria. Work on Uganda, Chad, and Ethiopia might have applications as matched comparisons for other modern conflicts in Africa.

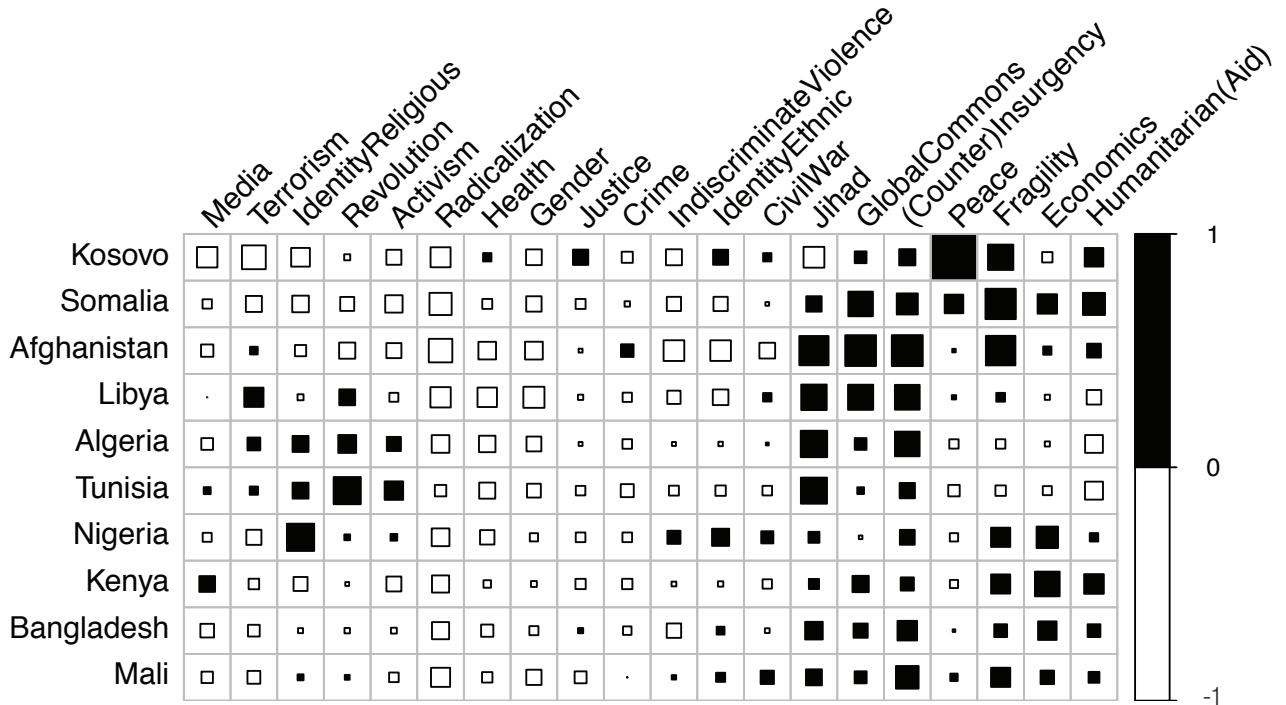
Table 1. Most Underrepresented Countries in P/CVE Research

	Underrepresented Conflicts	Mentions	Deaths (thousands)	Ratio
1	Vietnam	543	350	1.5
2	Cambodia	434	270	1.6
3	Chad	220	119	1.8
4	Laos	57	22	2.6
5	Madagascar	20	7	2.9
6	Lithuania	7	2	3.4
7	Algeria	614	124	5.0
8	Ethiopia	998	177	5.7
9	Uganda	760	110	6.9
10	Nicaragua	152	20	7.6

Note: Underrepresentation of countries is determined by the number of deaths in intrastate conflicts on that territory between 1945 and 2008.

Similarly, we find disparities and segmentation of topics within different countries. We compared a given document's topics with the number of times it mentions a country. We focus on ten countries highlighted by the RESOLVE Network as areas where research is most critically needed: **Kosovo, Somalia, Afghanistan, Libya, Algeria, Tunisia, Nigeria, Kenya, Bangladesh, and Mali**. The bivariate correlation of topics and the number of country mentions (log) are shown in figure 6.

Figure 6. Bivariate Comparison of Topic Distribution by Country



Note: Bivariate comparison of topic distribution by country is the unit of analysis in the document. Rows reflect logged number of country mentions per document. Columns reflect proportion of a document on a given topic. Cells reflect the bivariate correlation. Black squares reflect positive correlation, and hollow white squares reflect negative correlation. Size of square indicates strength of the correlation.

We found that countries mentioned in the collection of articles fall into four groups. Kosovo stands as an outlier, and is studied primarily from a statebuilding angle of Peace, Fragility, Humanitarian (Aid), and Justice. Somalia and Afghanistan are disproportionately studied from the perspective of Fragility, Global Commons, and Jihad. Libya, Algeria, and Tunisia are primarily studied in terms of Revolution, Activism, Religious Identity, and Terrorism. Finally, studies on Nigeria, Kenya, Bangladesh, and Mali have a stronger focus on Economics, Humanitarian (Aid), and Fragility. This seems to confirm findings detailed in the RESOLVE Network's preliminary study that existing research in the Network's priority regions is at best spotty. There is little to suggest, for instance, that such crucial topics as detention practices, prison management, or nonviolent strategies are examined in any great detail in much of the more commonly cited English-language literature.

There are clear opportunities for the application of topics to new geographic areas. Radicalization and Gender, for instance, are not areas of focus in any of these countries. Other topics are only associated

with one or two countries: Media with Kenya and Tunisia, Health with Kosovo, and Crime (drugs) with Afghanistan. In some cases, this finding is idiosyncratic; for example, there is little opium production in Kosovo. In other cases, we see it as research taking targets of opportunity, like studying media with regard to Kenya and Tunisia. Such low-hanging fruit are excellent for establishing initial results, but the fuller test will be to see if research pioneered in only a couple of countries will generalize to all conflict countries of interest. Though it is likely that drivers of violent extremism may be context-specific, it may be just as likely that sources of resilience among communities confronted with extremist-driven violent conflict may be generalizable at some level.

Impact Factor: Measuring the Influence of Scholarly Elites

Potentially even more interesting than the articles sampled for our corpus are the 124,553 citations we found for 93,992 unique works. The citation network reveals a very small overlap of touchstone works or authors. This suggests that P/CVE-relevant research has a long way to go before a set of coherent and convincing theories of change emerge. While it is relatively easy, and indeed quite telling, to establish a hierarchy of authors whose ideas and concepts are among the most widely debated in the literature, it is far more difficult to identify which theories rise to the top of the variegated heap of research that is P/CVE-relevant.

Citations in academic research follow an exponential distribution, with 88 percent of articles cited only once, 7 percent cited twice, 2 percent cited three times, and so on. A small handful of papers are cited dozens or over a hundred times, and they serve as a starting point for P/CVE practitioners. Table 2 shows the top ten most cited works. For example, the most popular referenced work is James D. Fearon and David Laitin’s “Ethnicity, Insurgency, and Civil War” (2001).

Table 2. Top Ten Works Cited by Articles in the Corpus

	Titles of Works	Author(s)	Corpus Cites	Google Scholar Cites
1	Ethnicity, Insurgency, and Civil War	Fearon and Laitin	196	5,958
2	Beyond Greed and Grievance: Feasibility and Civil War	Collier, Hoeffler, and Rohner	149	6,278
3	The Logic of Violence in Civil War	Kalyvas	97	2,485
4	Inside Terrorism	Hoffman	85	3,618
5	The Strategic Logic of Suicide Terrorism	Pape	82	1,425
6	Why Men Rebel	Gurr	78	6,121
7	Ethnic Groups in Conflict	Horowitz	74	8,016
8	The Causes of Terrorism	Crenshaw	69	1,135
9	Understanding Terror Networks	Sageman	68	2,654
10	Dying to Win: The Strategic Logic of Suicide Terrorism	Pape	66	1,707

For comparison, we also provide the number of citations reported by Google Scholar for each source. Our citation count correlates with Google Scholar's, which is evidence that the corpus is representative of the broader literature. There is some disagreement between the comparisons, particularly with quantitative works cited more predominantly in our corpus. We suspect this is due to sampling bias, and that some topic areas are more consistent in self-citing within their field than others. The pedagogical provenance of some of the leading English-language researchers and their direct line to elite US universities is nonetheless notable.

These findings speak volumes about the state of locally informed research on violent extremism. Although the number of violent deaths resulting from extremist attacks has risen exponentially in parts of Africa, South and Southeast Asia, and the Middle East over the last several decades, the literature continues to be authored and published largely by US researchers. The policy implications of these shortcomings are troubling, to say the least. They suggest that the vast majority of peer-reviewed, policy-relevant studies on topics such as political violence and radicalization are led not by researchers living and working in communities impacted by extremism, but by parties external to the conflicts in question. Moreover, it appears to reconfirm the apparent research capacity deficits in areas where violent extremism has proliferated and resulted in civil war. Although the policy community has recently come to valorize locally driven research, our findings raise serious questions about the extent to which research on violent extremism truly draws on locally informed data and evidence. Many of the theories espoused in some of the more influential works may in fact be generalizable, but there is no way of knowing for certain without continually “ground-truthing” and testing hypotheses at the local level.

Relatedly, we found citations for 80,447 unique authors.¹³ Citations for authors also follow an exponential distribution. The few authors cited in more than a handful of papers are then the common intellectual network for P/CVE research. Table 3 shows the ten most cited authors. Next to each author we provide the number of citations for examples of works from the corpus. We note that the corpus is limited to articles available digitally—and so, even though Ted Gurr is the fourth-most cited author, we only discover the importance of his work, *Why Men Rebel*, because we further mine bibliographic records (finding the book to be the sixth-most cited source).

Table 3. Top Ten Authors Cited by Articles in the Corpus

	Most-Cited Authors	Number of Citations
1	J. Fearon (Fearon and Laitin 2016; Shapiro and Siege 2007; Fearon, Laitin, and Bush 2016; Fearon 2005)	312
2	P. Collier (Collier 2005; Collier, Hoeffler, and Rohner 2009; Collier and Duponchel 2013; Collier and Hoeffler 1998)	293
3	D. Laitin (Fearon, Laitin and Bush 2016). 2016; Fearon and Laitin 2016)	285
4	T. Gurr (Gurr 2005)	254
5	B. Hoffman (Hoffman 2002, 2003; Hoffman and McCormick 2004; Hoffman 2004, 2006, 2009; Hoffman, Shelton, and Cleven 2013)	244
6	A. Hoeffler (Azam and Hoeffler 2002; Collier and Hoeffler 1998, 2009, 2016)	219
7	T. Sandler (Sandler 2010, 2013, 2015)	200
8	N. Sambanis (Sambanis 2004, 2009, 2013)	192
9	M. Crenshaw (Crenshaw 2001, 2016)	191
10	C. Tilly (Tilly 2005)	176

Note: Multiple citations of the same author in a single article are ignored.

13 Author names are disambiguated at the level of abbreviated first name and full last name.

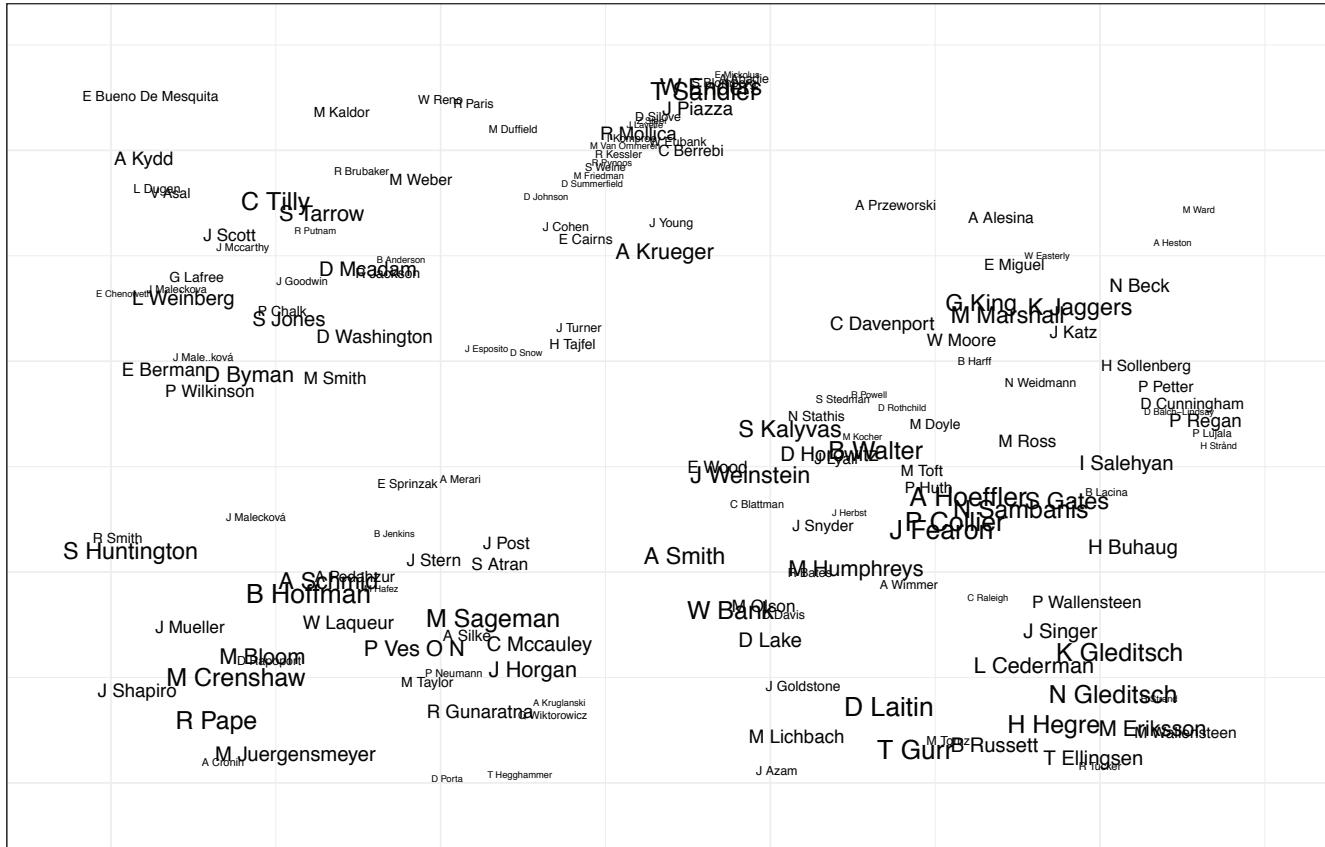
The club of authors who have a broad impact across many topics is even more exclusive. Table 4 shows the top authors by the number of topics in which they are cited. For example, the single most broadly influential author is Ted Gurr, who was cited in twenty-two out of the twenty-five topics in the corpus. Because prolifically cited authors are also more likely to be cited broadly, the two lists overlap, but the rank ordering varies, and there are some new additions. Samuel Huntington, for example, has fewer citations than others on this list at 132, but citations for his work are spread across eighteen different topic areas, suggesting a broader impact on the P/CVE literature.

Table 4. Most Broadly Cited Authors across Different Topics

	Authors	Topics
1	T. Gurr	22
2	B. Hoffman	21
3	C. Tilly	20
4	M. Crenshaw	20
5	D. Laitin	19
6	J. Fearon	18
7	N Sambanis	18
8	P. Collier	18
9	S. Huntington	18
10	A. Schmid	17

Finally, because P/CVE research tends to be hyper-segmented, authors and their citations are clustered into like-minded research agendas. We analyzed this segmentation in the literature by measuring the topics in which authors tend to be cited, and then measuring the similarity between authors. Figure 7 shows a map of similarity for the 155 authors who were cited by more than 50 articles in the corpus. The size of the label reflects the number of citations in the corpus (log). Spatial proximity of the two dimensions represents the similarity of topics for which the authors are cited. We find commonality, for example, between groups that study civilian targeting (S. Kalyvas, J. Weinstein, J. Lyall, etc.). We find that formal modelers cluster, as do economists and qualitative scholars. Thus, we recommend readers select an author with whom they are familiar and pursue research by the nearest neighbor in this topic space whose work they have not read. We note that this method also solves a practical research problem of which authors to follow for a given project. An author plotted close to an author one already enjoys is likely to have a very similar portfolio of research.

Figure 7. Topical Similarity of Authors Based on their Citation in Paper Topics



Note: Size of label reflects number of citations in the corpus (log). Proximity reflects similarity in the kinds of papers that cite those authors. The 155 authors with more than 50 citations are shown.

CONCLUSION

In a field of research where definitions can be challenging and generalizable theories highly elusive and hotly contested, automated text-mining techniques hold great promise for determining the contours of future P/CVE research. Our analysis suggests that text-mining techniques can provide a unique and large-scale view of the relevant literature. Identifying thematic and geographic gaps in the research can be done with much greater rigor. Automating specific labor-intensive tasks could lead to more rapid advances in P/CVE research.

We discovered ways to simplify the typology of P/CVE-related literature and a means to developing a taxonomy of relevant topic areas. While it is unlikely that a traditional literature review would reveal more than a loose thread between key concepts and theories, text mining holds out the promise of identifying areas of theoretical convergence and divergence if applied consistently. The approach outlined in this study can be scaled to a research corpus of any size or any article collection.

Given the exponential growth of interest in research in the four key conceptual areas—Political Violence, Political Economy of Governance, Intervention Demographics, and Communicating Belief—it may pay dividends to invest more in the regular collection and analysis of relevant literature. This is particularly true when considering the uneven application of different research methods and insufficient coverage of geographic areas impacted by extremism. Importantly, the disparities we found in where and how substantive P/CVE topics are studied open up opportunities for further research. In some cases, country-method-topic combinations have been neglected, providing a window for new projects. In other cases, topics have been disproportionately studied with a single method or in a single country, which raises questions about generalizability that should be tested. We anticipate these results will be used as a guide for prioritizing and targeting future P/CVE research.

Future work should focus on enlarging the collection of research with an eye toward correcting for known biases and oversampling rare country-method-topic combinations. Now that the general outlines of topics are known, an effort should be made to determine the bounds of the full universe of relevant research. A larger sample will enable additional comparisons, such as research priorities over time and differences in research priorities by nation and institution. A larger corpus would also enable useful knowledge mining: the identification of relevant facts and lessons learned from research as it is published. A large-scale, real-time knowledge graph of emerging P/CVE research would be an invaluable tool for practitioners and academics across institutions.

Annex A: List of Journals in Manual Literature Review

African and Asian Studies
Aggression and Violent Behavior
American Historical Review
American Journal of Orthopsychiatry
American Journal of Political Science
American Journal of Sociology
American Political Science Review
American Sociological Review
Annals of the American Academy of Political and Social Science
Annual Review of Political Science
Annual Review of Sociology
Applied Ergonomics
Armed Forces and Society
Asian Survey
Behavioral Sciences of Terrorism and Political Aggression
British Journal of Criminology
British Journal of Political Science
British Journal of Politics and International Relations
Cambridge Review of International Affairs
Communication Research
Comparative Political Studies
Comparative Politics
Conflict and Health
Conflict Management and Peace Science
Cooperation and Conflict
Criminology
Critical Sociology
Critical Studies on Terrorism
Current Directions in Psychological Science
Current History
Disasters
Dynamics of Asymmetric Conflict
Environment and Planning C: Government and Policy
Environment and Urbanization
Ethnicities
European Journal of International Relations
European Review of Economic History
European Union Politics
Evolutionary Psychology
Feminist Criminology
Georgetown Journal of International Affairs
Global Governance

Group Processes & Intergroup Relations
Human Relations
Human Rights Quarterly
Humanity & Society
Insight on Africa
International Affairs
International Area Studies Review
International Interactions: Empirical and Theoretical Research in International Relations
International Journal of Behavioral Development
International Journal of Comparative Sociology
International Journal of Middle East Studies
International Journal of Police Science & Management
International Journal of Public Opinion Research
International Organization
International Political Sociology
International Relations of the Asia-Pacific
International Security
International Sociology
International Studies Perspectives
International Studies Quarterly
International Studies Review
Journal of African Economies
Journal of Cold War Studies
Journal of Conflict Resolution
Journal of Contemporary History
Journal of Creative Behavior
Journal of Cross-Cultural Psychology
Journal of Democracy
Journal of Economic Geography
Journal of Forensic Sciences
Journal of Global Security Studies
Journal of Interpersonal Violence
Journal of Modern African Studies
Journal of Peace Research
Journal of Personality and Social Psychology
Journal of Politics
Journal of Refugee Studies
Journal of Research in Crime and Delinquency
Journal of Strategic Security
Journal of Theoretical Politics
Journal of Transformative Education
Journal of Travel Research
Lancet

Media, War & Conflict
Methodological Innovations
Middle East Journal
Middle East Policy
Middle Eastern Studies
Oxford Economic Papers
Party Politics
Personality and Social Psychology
Perspectives on Politics
Perspectives on Psychological Science
Perspectives on Terrorism
Political Psychology
Political Research Quarterly
Political Science Quarterly
Political Studies
Politics and Society
Progress in Development Studies
Progress in Human Geography
PS: Political Science & Politics
Quarterly Journal of Economics
Rationality and Society
Research & Politics
Review of Economic Studies
Review of International Studies
Security Dialogue
Security Studies
Small Arms Survey
Small Group Research
Social Forces
Social Science Computer Review
Sociological Perspectives
Sociological Theory
South Asia Economic Journal
Studies in Conflict and Terrorism
Survival
Terrorism and Political Violence
The World Bank Research Observer
Urban Studies
Violence Against Women
World Development
World Politics
Youth & Society

Annex B: Describing P/CVE-Relevant Research Topic Breakdown

Detailed descriptions of the twenty-five topics are presented in table B.1. Each topic has a name in bold that was selected manually. Each has a percentage of total text in the corpus assigned to that topic. For example, the most common topics in the corpus are Statistical Methods (7 percent of the text in the corpus), (Counter) Insurgency (6 percent), Philosophy (6 percent), and so on. Each has a set of seven example tokens reflecting the words most associated with that topic.¹⁴ Each has five representative citations of articles most associated with that topic.¹⁵ Finally, alongside each topic we provide a brief description based on a selection of articles associated with that topic.

Table B.1 Topic Descriptions, Tokens, and Representative Citations

Topic: Description (percentage of corpus)	[Tokens] (citations)
Statistical Methods: Approaches to violence, which include cross-national analysis of violence onset, duration, mediation, and termination. (7%)	[variabl, data, statist, estim, coeffici, model, test] (Weidmann and Ward 2010; Hegre 2006; Braithwaite and Li 2007; Hegre et al. 2013; Enders, Hoover, and Sandler 2014)
Civil War: Violence to hold territory or capture the capital. (3%)	[rebel, war, civil, conflict, onset, durat, rebellion] (Greig, Mason, and Hammer 2016; Greig 2015; Greig and Regan 2008; Greig 2015; Svensson 2009)
Revolution: Violence by the state or for control over the state, includes coups, dictatorship, mass protests, and nationalism. (3%)	[elect, elector, vote, democrat, democraci, Kurdish, parti] (Conrad 2011; Wig and Rod 2014; Bell 2011; Ciorciari and Weiss 2016; Bustikova-Siroky 2013)
Game Theory: Modeling actors' incentives; covers topics of deterrence, commitment, the role of uncertainty and information, and optimization under constraints. (3%)	[August, equilibrium, game, cost, concess, payoff, signal] (Bueno de Mesquita 2005; Amegashie and Runkel 2012; Langlois and Langlois 2005; Arce and Sandler 2010; Wolford, Reiter, and Carrubba 2011)
Indiscriminate Violence: Use of violence against civilians, genocide, and the conditions under which tactics will be more or less selective in their targeting. (3%)	[violenc, genocid, violent, civilian, nonviol, kill, victim] (Daniel 2002; Straus 2012; Verdeja 2012; Bhavnani, Miodownik, and Choi 2010; Luft 2015)
Ethnic Violence: Includes ethnic rebellion, violence by or toward immigrants, issues of integration, and Social Contact Theory. (3%)	[ethnic, minor, discrimin, grievanc, ident, ethno, autonomi] (Hayes and McAllister 2009; Hayes and Dowds 2006; Hayes, McAllister, and Dowds 2007; Fox and Squires 2001; Cunningham and Weidmann 2010)

¹⁴ Tokens are truncated word prefixes. The top seven tokens have the highest FREX score: a weighted combination of how frequently that word appears in that topic and how exclusively it appears in that topic and no others.

¹⁵ Here “representative” means that the article is most exclusively about that topic. It may contain other topics and it may be a poor example of the state of the art in that area, but it is a good example of the words, phrases, and ideas that repeatedly appear under that topic.

Radicalization: Includes issues of recruitment, culture of and support for terrorism, and the epistemological foundations of violent jihad. (5%)	[emot, radic, individu, cognit, extrem, theori, social] (Knapton 2014; Figueiredo, Doosje, and Valentim 2015; King and Taylor 2011; Sieck 2011; Wright 2015)
Surveys: Covers large-scale interviews, particularly for issues of psychology, sociology, and measuring group identity. (5%)	[item, exposur, sampl, score, respond, aggress, adolesc] (Wang et al. 2013; Tuvblad et al. 2013; Kerestes 2006; Niv et al. 2013; Duckitt and Mphuthing 1998)
Gender/Family: Covers issues of family, children, and gender inequality in society. (4%)	[women, femal, gender, male, girl, woman, youth] (Kantengwa 2014; Berko and Erez 2007; Boothby and Thomson 2013; Boothby, Crawford, and Halperin 2006; Boothby 2006)
Health: Covers mental health, particularly after violence, or for at-risk groups such as refugees. (4%)	[PTSD, trauma, refuge, mental, traumat, health, patient] (Hallas et al. 2007; Kondro 2012; Slobodin and de Jong 2015; Rohlof, Knipscheer, and Kleber 2014; d'Ardenne et al. 2007)
(Counter) Insurgency: Covers methods, tactics, and consequences of highly contested internal fighting, particularly the state's ability to respond with appropriate doctrine and indigenous forces. (6%)	[insurg, counterinsurg, troop, command, Iraqi, soldier, provinc] (Weidmann and Ward 2010; Hegre 2006; Braithwaite and Li 2007; Hegre et al. 2013; Enders, Hoover, and Sandler 2014)
Humanitarian (Aid): Covers man-made and natural disasters and the politics of domestic and international response. (5%)	[disast, humanitarian, aid, program, relief, assist, project] (Wells et al. 2013; Young 1999; Van Niekerk 2015; Barishansky and Mazurek 2012; Mutongwizo, Leoschut, and Burton 2015)
Fragility: Covers definitions of state stability, determinants of state failure, statebuilding, and mixed governance structures. (5%)	[legitimaci, institut, warlord, stabil, actor, peacebuild, build] (Boege et al. 2009; Debiel et al. 2009; Belloni 2012; Richmond 2013; Boege, Brown, and Clements 2009)
Peace: Covers international efforts to intervene and prop up internal governance, including early warning efforts. (4%)	[peacekeep, Albanian, ltte, NATO, utc, JSTOR, peac] (Harland 2010; Weller 2008b; Schmeidl and Jenkins 1998; Economides, Ker-Lindsay, and Papadimitriou 2010; Weller 2008a)
Global Commons: Covers lawlessness relevant to global commons, including WMDs, high-impact cross-national terrorism, and piracy. (4%)	[conict, nuclear, piraci, intellig, unit, signic, alli] (Diez, Clark, and Zaw-Mon 2010; Farley and Gortzak 2009; Weitz 2009; Posen 2001; Klein 2012)
Justice: Covers the disposition of individuals relative to the state or other actors, including torture, amnesties, civil liberties, and trials for high crimes. (4%)	[court, polic, prison, law, legisl, legal, commiss] (Spiric et al. 2010; Puchooa 2011; Gal-Or 2008; Deflem and McDonough 2015; Mallinder and McEvoy 2011)

Economics: Covers both the market determinants and consequences of poor governance and violence; environmental and market shocks; and the role of industry, wages, and income. (4%)	[economi, oil, incom, labor, revenu, industri, growth] (Hove, Ngwerume, and Muchemwa 2013; Smucker and Wisner 2008; Verpoorten 2009; Johannes, Zulu, and Kalipeni 2014; Yousif 2016)
Crime: Covers all the extralegal governance, economics, and violence that states fail to prohibit, particularly in the areas of drugs and other illicit commodities. (1%)	[FARC, traffick, drug, DDR, homicid, Colombian, paramilitary] (Reza-Djalili and Kellner 2012; Cañizares Arévalo, Cardenas Garcia, and Velasco Burgos 2015; Marrero Rocha 2004; Saab and Taylor 2009; Cook 2011)
Philosophy: Covers ethics, self-perception, performance, and ethnographic research. (6%)	[moral, justifi, word, just, mind, innoc, intent] (Henry 2006; Muldoon and Trew 2000; Funes 1998; Meisels 2009; Sussmann 2013)
Activism: Covers social movements, transnational politics, migrant rights and mobilization, and populism. (5%)	[discours, movement, activist, struggl, space, contemporari, organis] (Stammers 2016; Doherty and Doyle 2006; Però and Solomos 2010; Waters 1998; Jansen 2011)
Networks/Organizations: Methodological topic covering organizations and network analysis, particularly command and control of terror groups, performance as a function of organization, and agent-based models. (4%)	[network, organiz, organ, cell, recruit, member, structur] (Harris-Hogan 2013; Jackson 2006; Koschade 2006; Kenney, Coulthart, and Wright 2016; Li et al. 2015)
Jihad: Covers the ideology of jihadist movements, regional focus, politics within the movement, and the global response. (4%)	[Islamist, jihadist, jihadi, qaeda, caliph, Pakistani, Laden] (Celso 2014; Gregg 2009; Nesser 2011; McGregor 2003; Brooke 2008)
Terrorism: Covers mass killing, leadership strikes, mass casualty bombings, rebel bombings against civilians, and suicide bombings. (4%)	[terrorist, suicid, attack, bomb, terror, target, bomber] (Falk 2015; Quillen 2002; Chasdi 2004; Kaplan et al. 2005; McCartan et al. 2008)
Media: Covers technological methods of recruitment and communication between violent groups, including social networks propaganda, public-facing internet presences, and private communications. (3%)	[media, internet, news, onlin, video, communic, phone] (Ishengoma 2013; Gordon 2005; Droogan and Peattie 2016; Weimann 2016; Weidmann 2015)
Religion: Covers issues of tolerance and how religious dogma can either support or oppose the use of violence. (1%)	[Christian, Boko, religion, religi, sacr, Hindu, Buddhist] (Dowd 2014; Byman 2007; Mani 2012; Juergensmeyer 2009; Kedar and Yerushalmi 2011)

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