

Review

Using the Community Engagement Framework to Understand and Assess EJ-Related Research Efforts

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Abstract: Within an environmental justice frame, capacity-building has been an important component of efforts to address health disparities at the policy, system, and environment levels. While the literature is replete with studies that discuss the necessity of collective action as a means to generate power to overcome inequities, limited attention has been given to the structure of these efforts to build capacity and challenge environmental injustices. This study applies the community engagement continuum as a framework for understanding the scope of capacity-building strategies and the manner in which research investigators engage with their intended target community. Paired teams of independent analysts screened articles for relevance ($n = 8452$), identified records for content abstraction ($n = 163$), and characterized relevant studies ($n = 58$). Many articles discussed community engagement as being either collaborative or shared leadership ($n = 32$, 55.2%). While the most commonly used capacity-building strategies were organizing/social action (58.6%) and CBPR (50%), few studies were able to make an environmental impact ($n = 23$; 39.7%), and fewer had a direct legislative policy-related outcome ($n = 13$; 22.4%). This review identifies levels of collaborative involvement and strategic approaches used for strengthening community capacity in efforts of making transformative policy, systems, and environmental change.



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1. Introduction

Explicit and implicit discrimination in environmental policymaking, targeting of communities of color for toxic waste facilities, and under-resourcing and overburdening of communities have been collectively termed environmental racism [1] and have plagued the United States for decades [2]. The environmental justice (EJ) movement demands that “everyone is entitled to equal protection and enforcement of environmental health, housing, land use, transportation, energy and civil rights laws and regulations” [3], and over the past 30 years, has progressed to incorporate all aspects of “where we live, work, play, and pray” [3]. Additionally, EJ has expanded to a framework for organizing [4–9] to include but not be limited to food justice [10], green space [11], climate change [12], immigrant and indigenous rights [13] and refurbishment of brownfields [14]. The EJ framework delineates the necessity of centering the experiences of low-income groups, communities of color, and underrepresented groups to reduce the disproportionate exposure to adverse environmental impacts and hazards.

The patterning of environmental inequity has received great attention [15] and many studies have further highlighted the pervasive nature of race as the variable most consistently associated with higher risk and proximity to environmental hazards. Accordingly, overburdened communities have been a focus area for many institutions, foundation initiatives, and practitioners in the fields of public health, public policy, urban planning,

economics, and social work. Numerous empirical articles have cited discriminatory practices and the inequities with toxic waste distribution among low-income groups, indigenous people, and communities of color [3,15–24]. Broadly, these discussions within the scientific literature appear to fall into three categories: (1) characterizing environmental exposures among marginalized communities [2,25–31]; (2) epidemiologic studies linking exposures to health outcomes in low-income and racial ethnic populations [32–35]; and (3) intervention studies that seek to mitigate risk [36–39]. Across these categories, the necessity of building capacity and the need to engage community in addressing local environmental concerns/inequities have often been discussed. In particular, the intentional and meaningful practice of community-based participatory research (CBPR) has been employed by many academics [40–57]. However, while CBPR is a model strategy for engagement, it is only one equity-based approach, as the process of capacity-building centers on community empowerment, mobilization, and actions needed to accomplish goals, and extends far beyond this community–academic partnership structure.

The literature is replete with studies that discuss the necessity of collective action as a means to generate power to overcome social injustice [58]. This systematic scoping review provides an opportunity to understand decades of community-engaged partnerships and community-led efforts that have been employed to reduce environmental inequities. The theory of community capacity is used as an organizational framework, for understanding patterns for community building [59] and strategies to enhance a community’s ability to address environmental health concerns [60]. The community engagement continuum is also incorporated into this discussion to provide clarity on the levels of collaborative involvement and communication to better understand community-partnership relations in addressing environmental concerns. This review also serves to identify trends of successful community change efforts and allows for the identification of novel approaches in making transformative environmental and policy change.

2. Materials and Methods

Research methods for the systematic search and scoping review are described in Williamson et al. [61]. In brief, 58 peer-reviewed studies published from January 1986 to March 2018 are used in the review and detail community–academic partnerships and community-engaged efforts employed to address environmental inequities related to air, land, and water pollution in the United States (see Appendix A Figure A1). Included studies were published in English and considered eligible if the study detailed the use of any variation of community-engaged methods and included: (1) efforts for invoking a reduction in or resolution of an air-, land-, or water-related health concern; (2) the enactment of a strategy to address environmental health disparities; or (3) the application of an approach that enhanced community capacity, empowerment, leadership, or decision making in relation to environmental concerns.

2.1. Measures

A standardized form was used to extract relevant data that identified the policy, system, or environmental (PSE) change target [62,63]; capacity-building and community change strategies; and levels of community engagement. Additional abstraction measures (further detailed in Williamson et al., 2020) include author discipline, research design, study setting, and population demographics.

2.1.1. Policy (P), System (S), or Environmental (E) Change Target

Identified pollution concerns were categorized by one of the following: air pollution/air quality concerns; illegal dumping; hazardous waste inclusive of brownfields, superfund, chemical contaminants, soil contaminants, and fish contaminants; and water-quality concerns related to drinking water or groundwater.

2.1.2. Policy, System, or Environmental (PSE) Outcomes

Environmental Outcomes

Environmental outcome measures were author-developed and identified how pollution concerns were addressed. Outcomes included: (1) reduction in an environmental pollutant; (2) reduction in or clean-up of environmental concern; (3) remediation of toxic waste; (4) increased regulation of air pollutants/particulate matter; and (5) reduction in indoor allergens (i.e., mold, infestation of rodents, mites, roaches, etc.).

Policy and System-Related Outcomes and Responses to Community Advocacy Efforts

The measurement of varying policy outcomes was author-created and generated from an iterative process during the screening phase of the scoping review. Outcomes included: (1) the enforcement of environmental laws, implemented or enhanced regulation, or review of conditional-use permits; (2) the mitigation of environmental concerns; (3) the prevention of industrial development of noxious facility; (4) the development of any legislation, policy, or law to address toxic emissions, exposures, or pollution concern; (5) the settlement or litigation related to the concern; (6) increased compliance or the mandatory payment of fines for violation; (7) the application of any of the aforementioned policy strategies that resulted in a failed policy outcome; and (8) engaging in discussion or having a meeting with a political figure to raise environmental concerns.

2.1.3. Capacity-Building and Community Change Strategies

Strategies to Enhance Community Capacity

Community capacity can be invoked in multiple ways to shape PSE change. Accordingly, six strategies (informed by Freudenberg's intervention strategies to increase community capacity) [60] were used to capture this variation and included: (1) authentic participation; (2) CBPR; (3) community organizing and social action; (4) empowerment approaches; (5) technical assistance; and (6) training and technology transfer.

Direct Community Change Strategies

Additional community strategies that did not fall within traditional academic-led research practices were author-identified [61] through an iterative process of reviewing EJ literature: civil disobedience, letter writing, litigation, media advocacy, partnership, coalition building, and policy advocacy (see Table 1 for measurement definitions and examples).

Table 1. Strategies to enhance community capacity.

Strategies to Enhance Community Capacity Derived from Freudenberg [60]	
Authentic participation processes	A participation process that involves early engagement, the provision of information and resources to ensure full participation, and intentionality related to outcomes such that final results are a reflection of that participation [60].
CBPR	An intentional and meaningful practice of community-centered research in which community members are fully engaged in the research process by participating in the selection of priority issues, design of the research study, interpretation of findings, and presentation of results to decision makers (i.e., policymakers) in efforts to reduce environmental health inequities and promote healthier public policies [60].
Community organizing/social action	Community mobilization and organization to enable a disadvantaged segment of the population to make demands on the larger community for increased resources and more equitable policies [60].

Table 1. Cont.

Empowerment approaches	Process by which individuals, communities, and organizations gain power and mastery over their lives in the context of changing their social and political environment to improve equity and quality of life [60].
Technical assistance	Tailored support that enables community participants to gain information or skills to solve problems or to participate more effectively in decision-making processes [60].
Training and technology transfer	Process by which community participants gain knowledge, skills, competencies, or technologies that enable them to participate in assessing and remediating environmental hazards and participating in relevant policy deliberations [60].
Direct Community Change Strategies (Author-Created) [61]	
Civil disobedience	The refusal to comply with certain laws or to pay taxes and fines, as a peaceful form of political protest, that often includes nonviolent techniques such as boycotting, picketing [61].
Letter writing	An organized effort to coordinate as many people as possible to write to a decision maker (legislative or facility) asking them to take a particular action [61].
Litigation	The process of taking legal action to enforce or defend a legal right [61].
Media advocacy	Strategic use of traditional or social media outlets to disseminate information and promote policy initiatives [61].
Photovoice	A participatory method that has community participants use photography, and stories about their photographs, to identify and represent issues of importance to them [61].
Policy advocacy	Analysis of the cause of the problem and development of policy-based solutions to create sustainable change [61].

2.1.4. Community Engagement Continuum

The community engagement continuum [64] was used to better understand the manner in which research investigators engage with and develop partnerships with an identified/targeted community. According to the Principles of Community Engagement, community engagement is defined as “the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people” [64]. This relationship often involves partnership and coalitions that help mobilize resources and influence systems, change relationships among partners, and serve as catalysts for changing policies, programs, and practices. The community engagement scale [64] used for this analysis consists of five increasing categories of involvement/communication and a sixth, author-created category:

- (1) Outreach—limited community involvement in which communication is in one direction for the purpose of informing and only providing a community with information;
- (2) Consult—more community involvement for the purpose of getting information from the community to obtain feedback and address particular questions;
- (3) Involve—better community involvement in which communication flows in both directions and community members are involved in a participatory nature;
- (4) Collaborate—increased community involvement such that communication is bidirectional, allowing for the development of partnership and community involvement on multiple aspects of a project from development to solution;
- (5) Shared leadership—traditionally the most optimal form of engagement, in which leadership is bidirectional, strong community partnerships have formed, and final decision-making power is at the community level; and
- (6) Community-led—community spearheads the project and vision, priorities are established by community residents, alongside the formation of strong partnerships that build on local strengths.

3. Results

3.1. Capacity-Building and Community Strategies to Address Pollution Concerns

Capacity-building strategies described across included articles included: authentic involvement/participation of the community in planning and data collection (96.4%, $n = 53$; Table 2); the implementation of empowerment approaches (77.6%, $n = 45$); and community organizing/social action (58.6%, $n = 34$) that encouraged people to advocate for themselves and make demands for increased resources. Community-based participatory research (CBPR) was also a common strategy among half of included studies (50%, $n = 29$), with a demonstration of community participation at varying levels in the selection of priority issues, research design, interpretation of results, and dissemination efforts.

Table 2. Scoping Review Select Characteristics, $N = 58$.

	N	%
Capacity-Building and Community Change Strategies		
Community capacity-building Strategies		
Authentic participation processes	53	96.4
Community-based participatory research (CBPR)	29	50.0
Community organizing/social action	34	58.6
Empowerment approaches	45	77.6
Technical assistance	14	24.1
Training & technology transfer	12	20.7
Community Change Strategies		
Citizen science	13	22.4
Civil disobedience	10	17.2
Letter writing	6	10.3
Litigation	18	31.0
Media advocacy	19	32.8
Photovoice	7	12.1
Policy advocacy	14	24.1
Community Engagement Continuum		
Outreach	3	5.2
Consult	5	8.6
Involve	7	12.1
Collaborate	15	25.9
Shared leadership	16	27.6
Community-led	11	19.0
Unable to determine level of engagement	1	1.7
Observed environmental outcome		
Clean-up of pollution concern, reduced exposure, remediation of toxic waste	18	31.0
Increased regulation of PM _{2.5}	0	0
Other (i.e., roadway clearing, resident relocation, installation of monitoring station)	3	5.2
None reported	35	60.3

Table 2. Cont.

	N	%
Policy-related outcomes as a result of advocacy efforts *		
Discussions and meetings with political figures	7	18.1
Enforcement environmental law/regulation; review of conditional-use permit	11	18.9
Increased compliance; mandatory payment of fines for pollution and/or safety violations	0	0
Legislative resolution to address toxic emissions	13	22.4
Mitigation of concern	17	29.3
Prevention of industrial development of noxious facility	12	20.7
Other policy-related outcomes	3	5.2
Application of any aforementioned advocacy efforts with unsuccessful policy-related outcomes	10	17.2
Mention of policy implications of findings but no direct policy-related outcomes reported	36	62.1
No mention of policy implications and no policy-related outcome reported	14	24.1

Note: * Categories are not mutually exclusive.

3.2. Community Engagement and Relationships

Most articles identified community engagement as being either shared leadership (27.6%, $n = 16$; Table 1) with the formation of a strong partnership structure and the final decision making being made at the community level, or collaborative in nature (25.9%, $n = 15$) with a bidirectional flow of communication from project development to solution. Less than one-quarter of included studies (19%, $n = 11$) were identified as being community-led and did not mention the participation of an academic partner guiding or engaged in addressing the issue of concern; even fewer studies engaged in community involvement as a primary interaction (12.1%, $n = 7$), consultation (8.6%, $n = 5$), and outreach-only relationships (5.2%, $n = 1$).

3.3. Environmental and Policy-Related Outcome Resulting from Advocacy Efforts

Contrary to the implementation of multiple strategies and advocacy work, many of the included studies did not result in any environmental change (39.6%, $n = 23$) or any type of direct policy change (22.4%, $n = 13$; Table 2); however, many authors did discuss the policy implications of their findings for future work (62.1%, $n = 36$). Approximately one-third of studies detailed having some sort of environmental impact (36.2%, $n = 21$) that resulted in the reduction in exposure to an environmental pollutant. Policy-related outcomes were detailed in about one-third of studies (29%, $n = 17$) in which mitigation of an environmental concern occurred by reducing the risk of the community to the exposure of the environmental pollutant (e.g., reducing emissions, making technical modifications to plant operations, or updating monitoring systems). Fewer examples were identified with studies that resulted in a legislative resolution to address environmental concerns (22.4%, $n = 13$) or the successful prevention of industrial development (20.7%, $n = 12$). Less than twenty percent of studies (18.9%, $n = 11$) detailed being able to encourage the enforcement of an existing environmental law, regulation, or review of a conditional permit. Very few studies (5.2%, $n = 3$) detailed having success with other policy-related outcomes related to the enactment of new policies or legislation (e.g., bus idling, stop signs, or new air regulations) and several studies referenced their failed advocacy efforts in making policy change ($n = 17.2%$, $n = 10$).

4. Discussion

Within the context of environmental justice literature, building capacity is fundamental for promoting solidarity in the development of local solutions to problems and enacting broader policy change. This systematic scoping review describes community-engaged partnerships and community-led advocacy efforts to address pollution-related EJ concerns and the environmental and policy-related changes that have resulted.

4.1. *The Community Engagement Continuum*


The community engagement continuum is applied to further understand the scope of research and the manner in which communities have been engaged with to address varying environmental concerns (see Table 3). This continuum is a reflection of the principles of community engagement [64], which stress the importance of collaboration, partnership, and coalition building to mobilize resources and influence systems change. This lens is applied because community involvement and collaboration are essential to the improvement of public health. It not only allows for the identification of local concerns but also fosters a sense of connectedness, builds community capacity, and lays the foundation for collective power to mobilize for environmental change. In the application of the traditional community engagement continuum, there are only five levels of categorization; however, through this review process, it became apparent that an additional level of higher engagement was being overlooked in the literature. Accordingly, a sixth level of engagement was author-created and identified as “community-led” to represent communities in which an academic entity was not identified as leading, guiding, or partnering to address environmental concerns. This higher level of engagement is also referred to in the literature as community-owned and -managed research (COMR) [56] and identifies communities that are utilizing their own lived experiences and expertise as well as collaborating with community-based organizations to shape an agenda and strategy to address environmental concerns.

Many of the included articles of this review were identified with being high on the scale of the community engagement continuum (see Appendix A Table A1). When communication was bi-directional and partnerships were formed on each aspect of the project from development to solution, collaborative engagement was realized [40,43,53,55,56,65–75]. Shared leadership was exemplified when community concerns were prioritized, diverse coalitions were formed, and final decision making was made at the community level [45–48,50,76–86]. The highest level of engagement, described as community-led, was demonstrated when communities set their own research questions, selected partners for collaboration, and managed the implementation of solutions and dissemination of findings [87–99]. Fewer studies were categorized as being low-engagement, in which: information flowed in one direction from researchers to community (outreach) [100]; information fed to the community and was also extracted from the community (consult) [52,101–104]; or communication was bidirectional, cooperative, and involved community participation (involve) [44,51,105–110].

4.2. *Relationship between Community Engagement and PSE Change*

When making comparisons between the high and low levels of engagement, there appeared to be a trend with respect to the types of capacity-building strategies that were being utilized and the degree of success in making impactful community/policy change. Articles with higher engagement were more often involved in strategies related to empowerment, leadership, the identification of resources, and letter-writing activities. Higher-engagement articles also had greater discussion of policy-related outcomes with respect to the introduction of legislative resolutions to address toxic emissions and successful settlement or litigation related to environmental concerns. Consequently, it may be that these higher-engagement articles observed appreciable successes because of the greater emphasis on community priorities and alignment with community values, and were intentional in their sustainability efforts, which in turn created enhanced opportunities for realized community change.

Table 3. Community Engagement Continuum Study Examples.

Community Engagement Continuum	 Increasing levels of engagement	Variable	Definition	Study Examples
		Community-led	Community fully involved in shaping their own project and did not identify an academic partner guiding or engaged in addressing the issue of concern.	Residents living near industry merged with nearby communities to comprise a diverse coalition representing 11 working-class urban neighborhoods. This coalition protested and rallied for their participation in the decision-making process with local city council to address the redevelopment and renewal of their community. The coalition acts as the community social-service provider, city-planner, and liaison to City agencies and serves to convey community decisions to the zoning board, and other local regulatory bodies about suggested proposals for area land use [99].
		Shared Leadership	Entities have formed strong partnership structures and final decision-making is at the community level	Development of an action-oriented coalition among public health professionals, business leaders, k-16 schools, non-profit organizations, and community residents dedicated to reducing neighborhood toxins. Accomplishments entail the creation of an environmental health priority list for action, community health worker position, funding for environmental education, and advocacy for healthy neighborhoods and new construction of asthma-friendly housing units, and community-engaged strategies building advocacy among target community [46].
		Collaborate	Bi-directional communication and formation of partnership with community on each aspect of project from development to solution	Household exposure assessment of air and dust pollutants conducted among 50 homes with testing of over 150 compounds completed by a regional environmental justice advocacy organization trained to conduct air monitoring, dust collection and interviews. The study rigor was ensured by collective negotiation of study design, choosing sampling sites, recruitment methods, list of chemicals for analysis, and protocol for dissemination of findings to participants and community [110].
		Involvement	Participatory form of communication, bidirectional communication, and entities cooperate with each other	Participatory methods of citizen science and photovoice were used to involve youth in an environmental justice research study in which participants collected and analyzed indoor air samples and photos. Youth participants discussed findings, selected photos for display and presented findings at a community forum community with policy makers [105].
		Consultation	Research is answer seeking and gets feedback from the community	Participants were recruited to participate in one of fourteen focus groups conducted among women living in a community of study to assess knowledge and action concerning the relevancy of five specific risk reduction strategies to inform the development of a social action campaign [101].
Outreach	Information is provided to community	Residents across 16 communities were enrolled in a study with twice daily data collection to monitor ambient particulate matter, followed by informative interviewing that was used to develop research data collection instruments. Data gathered was reported back to participants in person though individual and group meetings through the display of visual choropleth and dot maps [108].		

These findings further emphasize that the ways in which researchers are engaging with communities may influence the impact that is made in driving meaningful and sustainable environmental, policy, and systems change. Community engagement is not just a step and checkbox in the research process. Deliberately making communities a part of the entire process from start to solution not only allows for greater connection but also for the identification of practices that are grounded, relevant, and potentially more sustainable in the long term. This intentional and meaningful practice of community-centered research is often referenced as CBPR and is a model strategy for engaging community in addressing local environmental concerns/inequities [40–57]. However, while this CBPR term was cited among half of the articles in this review, the fidelity of this practice was not always adhered to. On the community engagement continuum, CBPR would traditionally fall

into the “collaborate” stage [109], in which community would be partnered with and fully involved in all stages from development to solution; however, about 25% of these articles were actually conducting research at a much lower level of engagement. Among these, the understanding of the CBPR orientation varied greatly, where some implemented participant inquiry methods such as photovoice [52,105], citizen science [51,105], or performance theater [104], and others defined CBPR practice within the context of focus groups and group discussions [44,100–102]. To this extent, the manner in which CBPR is practiced can have varying impacts on the community with respect to moving the needle towards environmental justice. Unfortunately, CBPR research practices “have the ability to build capacity, but it is not always applied in a way that produces data to initiate compliance with civil rights, environmental, planning, and public health regulations (p.287, [109])”.

While CBPR represents the gold standard for engagement, it is only one equity-based approach, as the process of capacity building does not have to be constrained within an academic-partnership model. Capacity building can be represented across a myriad of diverse approaches employed at the community level to accomplish goals. Apart from one instance in which community-led research borrowed from the CBPR orientation and formed a resident–nonprofit organization partnership [93], the strategies employed to enhance capacity to address environmental justice concerns also included civil disobedience (peaceful political protests), citizen science, community organizing/mobilization, letter writing, and the application of technical assistance. Half of these community-led environmental justice studies were able to achieve environmental change with respect to the reduction in exposures to pollutants, prevention of industry development, and successful settlement/litigation related to their concerns. These findings can lend additional credibility to the power in not only engaging community but allowing community to fully manage the agenda in addressing local environmental concerns and inequities.

4.3. Limitations

This review was limited to peer-reviewed literature published in English and conducted in the United States, as reported in the peer-reviewed literature. Hence, the ability to compare and/or generalize these findings to what would be present in grey literature, research organization publications, and other geographic contexts is limited. Most articles included in this review are written from an academic lens in which varying methodologies and research designs are used; thus, making comparisons across studies is challenging to determine which strategies are most impactful in addressing environmental inequities and producing positive PSE community changes. This limitation continues to be a challenge within the scope of environmental justice work [110]. Further, while legislative, policy, and environmental change are optimal research outcomes, studying these changes within the scope of a cross-sectional review of this type are limiting given the lack of longitudinal observation and reporting. Consequently, there is great value in continuing to analyze the breadth of research conducted in this field, the identification of effective practices, and resulting PSE outcomes. Future efforts of this nature would not only add to the body of science [111], but results would be instrumental in advancing EJ and community-centered public health-oriented EJ efforts.

5. Conclusions

The field of EJ is grounded in community advocacy and has a history of bringing together varying stakeholders to create strategies to improve health outcomes. Many academics have acknowledged the value of forming community alliances and have discussed the necessity of building community capacity to address local environmental concerns and inequities [40–57]. While this scoping review has detailed a multitude of strategies and advocacy efforts that have involved or engaged communities in varying fashions, broadly these efforts have not made substantial progress in stimulating changes at the environmental or policy level. In this regard, it is important to stress the intentionality and reflexivity that is required with environmental justice efforts. If the research that is

being conducted is not driving the changes that are needed, then it is worth evaluating the strategies that are being used and not used, and assessing if the research is valuing and impacting the lives of community in the way that is most beneficial for them.

This work is the first body of literature to synthesize: a myriad of community-led and community–academic partnership strategies to address EJ issues; identify trends of EJ-related policy and environmental structural change strategies and outcomes; and utilize the community engagement continuum as frameworks for understanding EJ-related work. It is the intention that the findings of this scoping review can aid in improving praxis, give greater insight for making transformative change, and assist in the development of fruitful partnerships to achieve environmental justice.

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Informed Consent Statement: Not Applicable.

Data Availability Statement: The data presented in this study are available in the tables and figures and additional data can be obtained from the primary scoping review article at <https://www.mdpi.com/1660-4601/17/11/3765/htm> accessed on 15 January 2022.

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Appendix A

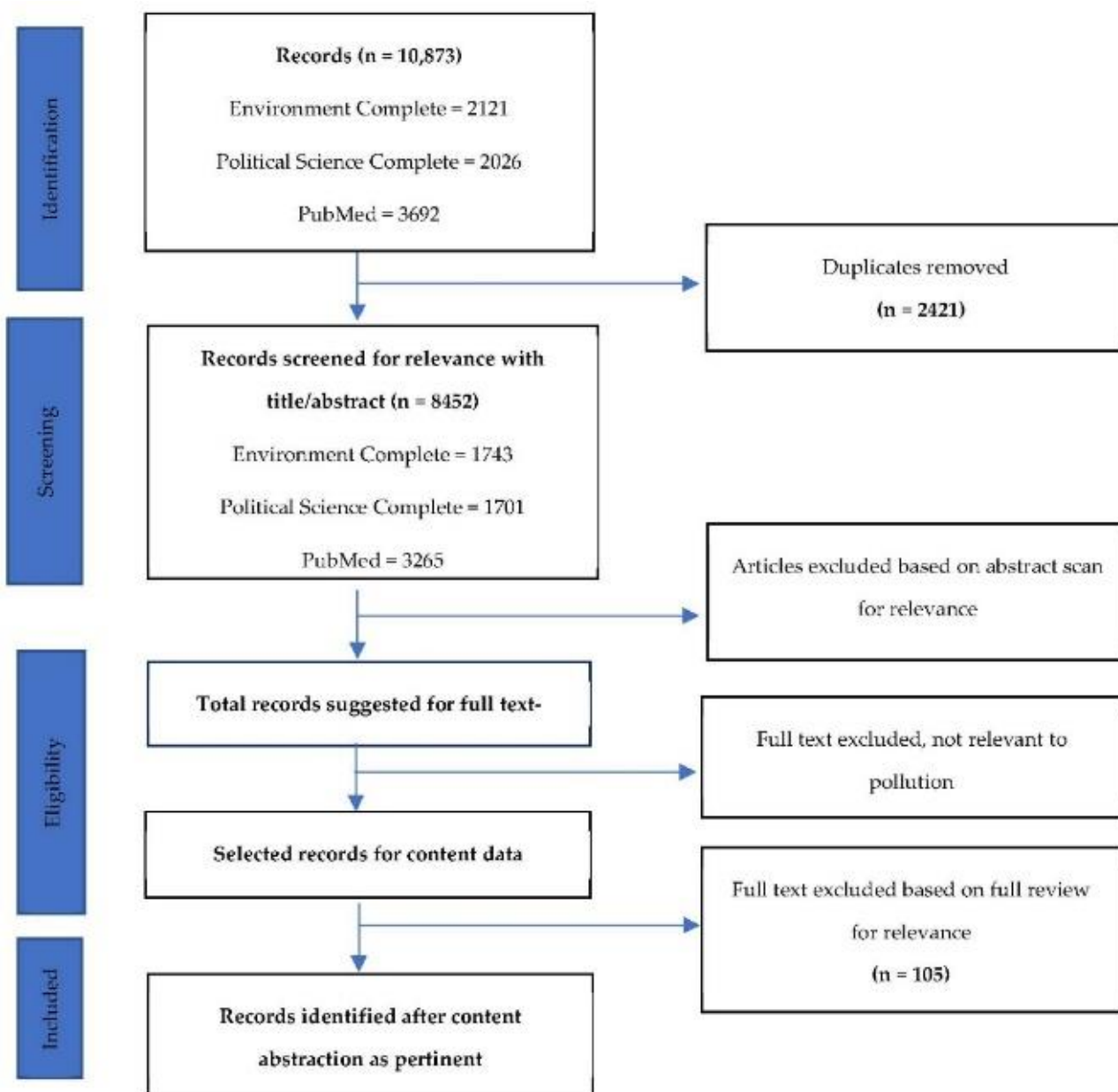


Figure A1. Cont.

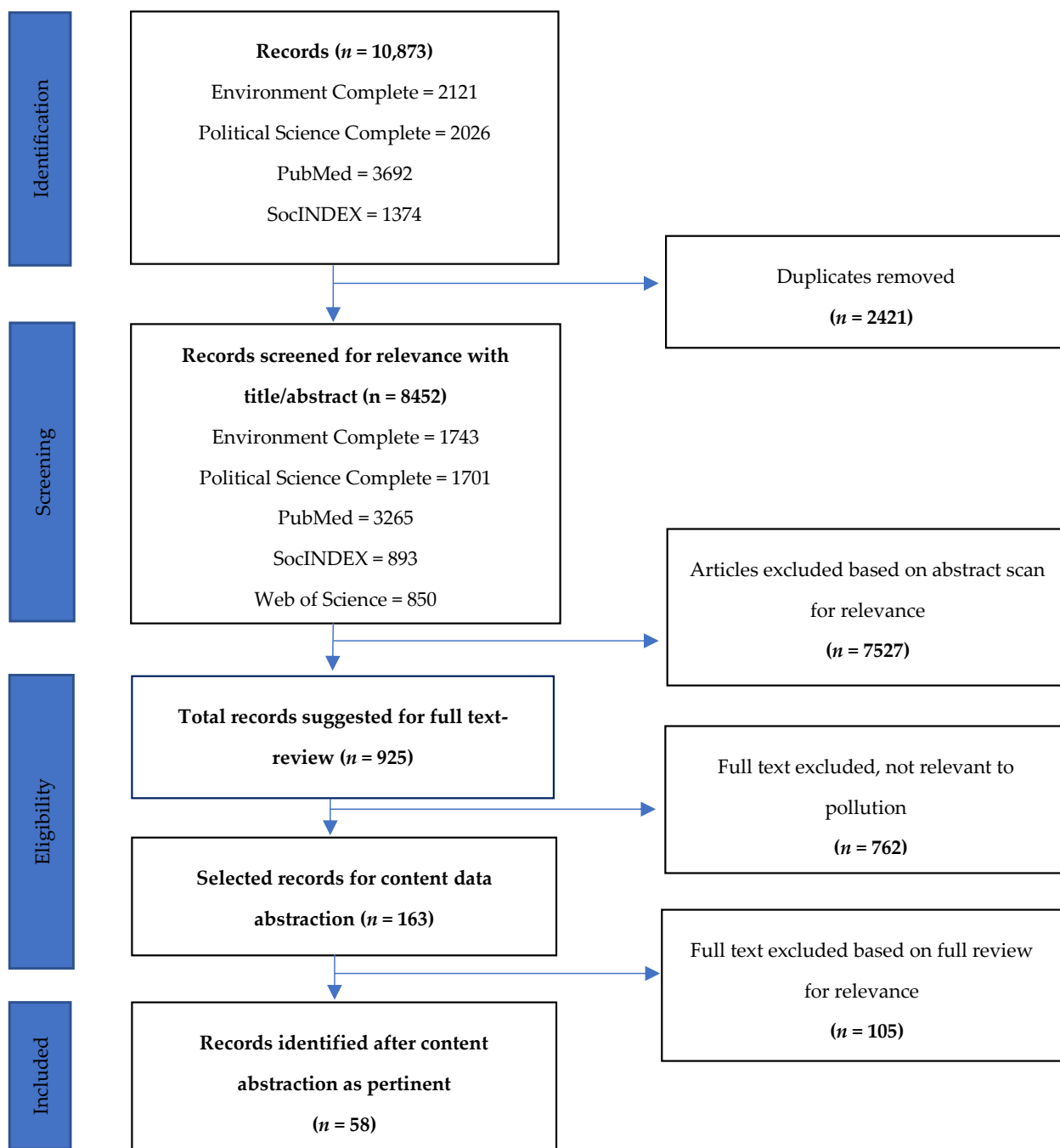


Figure A1. Prisma Flow Diagram.

Table A1. Community Engagement by Study.

Included Articles		Community Engagement Continuum: Levels of Community Engagement						
		Outreach	Consultation	Involvement	Collaborate	Shared Leadership	Community-Led	Unable to Determine
N (%)	Publication Year	3 (1.7%)	5 (8.6%)	7 (10.3%)	15 (27.6%)	16 (27.6%)	11 (22.4%)	1 (1.7%)
Bullard, R. D. and B. H. Wright. The quest for environmental equity—Mobilizing the African-American community for social-change. <i>Soc & Nat Resources</i> 3(4): 301–311.	1990						X	
Čapek, S. M. Environmental Justice Regulation and the local-community. <i>Int Journal of Health Services</i> 22(4): 729–746.	1992						X	
Jacobs, J. A Community Organizing Case Study: An Analysis of Cap-It’s Strategy to Prevent the Location of a Toxic Waste Incinerator in Their Community. <i>Int Q Community Health Educ</i> 13(3): 253–263.	1992						X	
Čapek, S. M. The Environmental Justice Frame: A Conceptual Discussion and an Application. <i>Social Problems</i> 40(1): 5–24.	1993						X	
Brown, P. and S. Masterson-Allen. The toxic-waste movement—A new type of activism. <i>Society & Natural Resources</i> 7(3): 269–287.	1994						X	
Allen, B. L. Saving St. Gabriel: The Emergence of a new African-American town <i>Contemporary Justice Review</i> 4(2): 145.	2001				X			
Corburn, J. Combining community-based research and local knowledge to confront asthma and subsistence-fishing hazards in Greenpoint/Williamsburg, Brooklyn, NY. <i>Environ Health Perspect.</i> S110–2: 241–8.	2002						X	

Table A1. Cont.

Included Articles		Community Engagement Continuum: Levels of Community Engagement						
		Outreach	Consultation	Involvement	Collaborate	Shared Leadership	Community-Led	Unable to Determine
N (%)	Publication Year	3 (1.7%)	5 (8.6%)	7 (10.3%)	15 (27.6%)	16 (27.6%)	11 (22.4%)	1 (1.7%)
Green, L., et al. “Hey, mom, thanks!”: Use of focus groups in the development of place-specific materials for a community environmental action campaign. <i>Environ Health Perspect</i> 110 Suppl 2: 265–269.	2002		X					
Loh, P., et al. From Asthma to AirBeat. <i>Environ Health Perspect</i> S110: 297.	2002					X		
Brown, P., et al. The health politics of asthma: environmental justice and collective illness experience in the United States. <i>Soc Sci Med</i> 57(3): 453–464.	2003				X			
Johnson, G. S. Grassroots Activism in Louisiana. <i>Humanity & Soc</i> 29(3/4): 285–304.	2005					X		
Blodgett, A. D. An Analysis of Pollution and Community Advocacy in ‘Cancer Alley’: Setting an Example for the Environmental Justice Movement in St James Parish, Louisiana. <i>Local Environment</i> 11(6): 647–661.	2006	X						
Grineski, S. E. Local Struggles for Environmental Justice: Activating Knowledge for Change. <i>Journal of Poverty</i> 10(3): 25–49.	2006					X		
Tajik, M. and M. Minkler. Environmental justice research and action: a case study in political economy and community–academic collaboration. <i>Int Q Community Health Educ</i> 26(3): 213–231.	2006				X			
Higman, K., et al. Using the PACE EH model to mobilize communities to address local environmental health issues—A case study in Island County, Washington. <i>J Environ Health</i> 70(1): 37–41.	2007	X						

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Wilson, S. M., et al. Use of EPA collaborative problem-solving model to obtain environmental justice in North Carolina. <i>Prog Community Health Partnersh.</i> 1(4): 327–337.	2007				X			
Barry, J. M. A Small Group of Thoughtful, Committed Citizens: Women’s Activism, Environmental Justice, and the Coal River Mountain Watch. <i>Environ Justice</i> 1(1): 25–33.	2008					X		
Drury, R. T. Moving a Mountain: The Struggle for Environmental Justice in Southeast Los Angeles. <i>Environ Law Reporter: News & Analysis</i> 38(5): 10338–10346.	2008						X	
Senier, L., et al. Brown Superfund Basic Research Program: A Multi-stakeholder Partnership Addresses Real-World Problems in Contaminated Communities. <i>Environmental Science & Technology</i> 42(13): 4655–4662.	2008					X		
Sherman, D. J. Disruption or Convention? A Process-based Explanation of Divergent Repertoires of Contention Among Opponents to Low-level Radioactive Waste Disposal Sites. <i>Soc Movement Studies</i> 7(3): 265–280.	2008						X	
Sullivan, J. and J. Parras. Environmental Justice and Augusto Boal’s Theatre of the Oppressed: A Unique Community Tool for Outreach, Communication, Education and Advocacy. <i>Theory in Action</i> 1(2): 20–39.	2008				X			
Wing, S., et al. Integrating epidemiology, education, and organizing for environmental justice: community health effects of industrial hog operations. <i>Am J Public Health</i> 98(8): 1390–1397.	2008			X				

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Schelly, D. and P. B. Stretesky. An Analysis of the Path of Least Resistance Argument in Three Environmental Justice Success Cases. <i>Society & Natural Resources</i> 22(4): 369–380.	2009						X	
Wier, M., et al. Health, traffic, and environmental justice: collaborative research and community action in San Francisco, California. <i>Am J Public Health</i> 99 Suppl 3: S499–504.	2009				X			
Williams, E. M., et al. Behind the fence forum theater: an arts performance partnership to address lupus and environmental justice. <i>New Solut.</i> 19(4): 467–479.	2009				X			
Emmett, E. A. and C. Desai. Community First Communication: Reversing Information Disparities to Achieve Environmental Justice. <i>Environ Justice</i> 3(3): 79–84.	2010					X		
Kegler, M. C., et al. Primary Prevention of Lead Poisoning in Rural Native American Children: Behavioral Outcomes from a Community-Based Intervention in a Former Mining Region. <i>Family & Community Health</i> 33(1): 32–43.	2010				X			
Minkler, M. Linking Science and Policy Through Community-Based Participatory Research to Study and Address Health Disparities. <i>Am J of Public Health</i> 100: S81–7.	2010					X		
Minkler, M., et al. Sí se puede: using participatory research to promote environmental justice in a Latino community in San Diego, California. <i>J Urban Health</i> 87(5): 796–812.	2010					X		

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Parker, N. E. A., et al. (2010). Community organizing network for environmental health: using a community health development approach to increase community capacity around reduction of environmental triggers. <i>J Prim Prev</i> 31(1–2): 41–58.	2010				X			
Sicotte, D. (2010). Don't Waste Us: Environmental Justice through Community Participation in Urban Planning. <i>Enviro Justice</i> (19394071) 3(1): 7–11.	2010						X	
Gonzalez, P. A., et al. (2011). Community-Based Participatory Research and Policy Advocacy to Reduce Diesel Exposure in West Oakland, California. <i>Am J of Public Health</i> 101: S166–S175.	2011					X		
Haynes, E. N., et al. (2011). Developing a Bidirectional Academic–Community Partnership with an Appalachian-American Community for Environmental Health Research and Risk Communication. <i>Environ Health Perspect</i> 119(10): 1364–1372.	2011				X			
Kreger, M., et al. (2011). Creating an environmental justice framework for policy change in childhood asthma: A grassroots to treetops approach. <i>Am J Public Health</i> 101 Suppl 1: S208–S216.	2011				X			
Stedman-Smith, M., et al. (2012). Photovoice in the Red River Basin of the north: a systematic evaluation of a community–academic partnership. <i>Health Promot Pract</i> 13(5): 599–607.	2012		X					

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Dressel, A., et al. The Westlawn Partnership for a Healthier Environment: Promoting Environmental Justice and Building Community Capacity. <i>Environmental Justice</i> (19394071) 6(4): 127–132.	2013					X		
Garcia, A. P., et al. THE (Trade, Health, Environment) Impact Project: A Community-Based Participatory Research Environmental Justice Case Study. <i>Environ Justice</i> 6(1): 17–26.	2013					X		
Balazs, C. L. and R. Morello-Frosch. The Three Rs: How Community-Based Participatory Research Strengthens the Rigor, Relevance, and Reach of Science. <i>Environmental Justice</i> (19394071) 6(1): 9–16.	2013			X				
Miller, P. K., et al. Community-based participatory research projects and policy engagement to protect environmental health on St Lawrence Island, Alaska. <i>Int J Circumpolar Health</i> 72.	2013				X			
Sadd, J., et al. The Truth, the Whole Truth, and Nothing but the Ground-Truth: Methods to Advance Environmental Justice and Researcher–Community Partnerships. <i>Health Educ Behav</i> 41(3): 281–290.	2014			X				
Bell, S. E. Bridging Activism and the Academy: Exposing Environmental Injustices Through the Feminist Ethnographic Method of Photovoice. <i>Human Ecol Rev</i> 21(1): 27–58.	2015				X			
Hines, R. I. The Price of Pollution: The Struggle for Environmental Justice in Mossville, Louisiana. <i>Western Journal of Black Studies</i> 39(3): 198–208.	2015						X	

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Jiao, Y., et al. Application of Citizen Science Risk Communication Tools in a Vulnerable Urban Community. <i>Int J Environ Res Public Health</i> 13(1): ijerph13010011.	2015			X				
Rohlman, D., et al. A Community-Based Approach to Developing a Mobile Device for Measuring Ambient Air Exposure, Location, and Respiratory Health. <i>Environ Justice</i> 8(4): 126–134.	2015		X					
Schwartz, N. A., et al. Where they (live, work and) spray: pesticide exposure, childhood asthma and environmental justice among Mexican-American farmworkers. <i>Health Place</i> 32: 83–92.	2015					X		
White, B. M. and E. S. Hall. Perceptions of environmental health risks among residents in the Toxic Doughnut: opportunities for risk screening and community mobilization. <i>BMC Public Health</i> 15: 1230.	2015	X						
Cohen, A. K., et al. Surveying for Environmental Health Justice: Community Organizing Applications of Community-Based Participatory Research. <i>Environ Justice</i> 9(5): 129–136.	2016			X				
Kaup, B. Z. and D. Casey. Coalition of injustice? Bodies, business, and the biosphere in struggles against unwanted land uses. <i>Environmental Politics</i> 25(3): 494–512.	2016					X		
Robinson, E. E. Sharing Stories. <i>Humanity & Society</i> 40(4): 442–461.	2016					X		
Spencer-Hwang, R., et al. Strategic Partnerships for Change in an Environmental Justice Community: The ENRRICH Study. <i>Prog Community Health Partnersh.</i> 10(4): 541–550.	2016		X					

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Allen, M., et al. Stronger together: Strategies to protect local sovereignty, ecosystems, and place-based communities from the global fossil fuel trade. <i>Marine Policy</i> 80: 168–176.	2017					X		
Brickle, M. B. and R. Evans-Agnew. Photovoice and Youth Empowerment in Environmental Justice Research: A Pilot Study Examining Woodsmoke Pollution in a Pacific Northwest Community. <i>J Community Health Nurs.</i> 34(2): 89–101.	2017			X				
Dhillon, C. M. Using citizen science in environmental justice: participation and decision-making in a Southern California waste facility siting conflict. <i>Local Environment</i> 22(12): 1479–1496.	2017					X		
Kennedy, A., et al. “Taking away David’s sling”: Environmental justice and land-use conflict in extractive resource development. <i>Local Environment</i> 22(8): 952–968.	2017							X
Kaufman, A., et al. A Citizen Science and Government Collaboration: Developing Tools to Facilitate Community Air Monitoring. <i>Environ Justice</i> 10(2): 51–61.	2017			X				
Sanchez, H. K., et al. Confronting Power and Environmental Injustice: Legacy Pollution and the Timber Industry in Southern Mississippi. <i>Society & Natural Resources</i> 30(3): 347–361.	2017		X					
Wilson, S., et al. Soil Contamination in Urban Communities Impacted by Industrial Pollution and Goods Movement Activities. <i>Environ Justice</i> 10(1): 16–22.	2017				X			

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Bruno, T. and W. Jepson. Marketisation of environmental justice: U.S. EPA environmental justice showcase communities project in Port Arthur, Texas. <i>Local Environment</i> 23(3): 276–292.					X			

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