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LINKING SCIENCE AND POLICY THROUGH COMMUNITY-BASED PARTICIPATORY RESEARCH TO STUDY AND ADDRESS HEALTH DISPARITIES

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The past 2 decades have seen growing attention to community-based participatory research (CBPR) as an alternative paradigm that may hold particular promise for addressing some of our most persistent health disparities. Succinctly defined as "systematic inquiry, with the participation of those affected by the problem, for the purposes of education and action or affecting social change,"[1(p2)] CBPR is not a research method but an orientation to research that emphasizes "equitable" engagement of all partners throughout the research process, from problem definition through data collection and analysis to the dissemination and use of findings to help affect change.[2,3] Although the action phase of CBPR can take many forms, CBPR partnerships increasingly are focusing on the policy level as a means of taking their work to scale to eliminate health disparities.[4–6]

I examine the potential of CBPR as a strategy at the intersections of research, practice, and policy to eliminate health disparities. Drawing on findings of a national multisite case study analysis,[7,8] I use 2 case examples to illustrate the utility of this approach for linking place-based research and action with broader policy change. I then highlight factors across all 10 sites in the larger study that appeared to support or impede partnership efforts at the policy level. Although the importance of analyzing contribution rather than attribution in policy-focused work is underscored, I emphasize the potential of CBPR as a strategy for helping promote healthy public policy.

I also discuss 2 interrelated concepts relevant to eliminating health disparities: *distributive justice* and *procedural justice*.[9] The former term, widely used in environmental justice work, typically refers to the need to redress disproportionate

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exposure to pollutants and other environmental hazards in low-income communities and communities of color. As illustrated in this paper, however, distributive justice also can relate to disproportionate lack of access to resources or assets, such as safe recreation areas and stores selling high-quality and affordable fresh fruits and vegetables. Finally, eliminating health disparities requires the promotion of procedural justice,[9] defined here as equitable processes through which low-income communities of color, rural residents, and other marginalized groups can gain a seat at the table—and stay at the table, having a real voice in decision making affecting their lives.

Methods

The national multisite case study analysis was conducted by researchers at the University of California, Berkeley, School of Public Health and at PolicyLink, a national research and action institute advancing economic and social equity. Funded by the WK Kellogg Foundation, with primary data collection in 2004 through 2006 and subsequent follow-up, the study's aims were to identify policy-focused CBPR partnerships in the United States and to examine in depth 10 of these partnerships that appeared to have contributed to policy change.

In this article, I use "community" primarily in geographic terms but also in reference to a shared sense of personhood based on common interest or identity (e.g., the community of people with disabilities in Chicago). The larger study used a qualitative multimethod case study approach,[10] with cases identified through purposive sampling[11] of a sampling frame compiled from a systematic review of CBPR cases in North America in 2004,[12] an updated literature review, and a request for other articles conducted with 24 relevant Internet sites. To be considered for inclusion in the study, potential cases had to meet Israel et al.'s[2,3] criteria for CBPR (e.g., recognizing community as a unit of identity; building on community strengths; involving equitable participation and colearning; fostering empowerment, systems development, and local capacity building; and balancing research and action). It was also necessary that potential cases appeared either to have contributed to a policy change relevant to the distal goal of reducing health disparities or to have shown promise for doing so in the near future.

Close to 80 cases appeared to potentially meet these criteria. On closer examination, however, many either did not fully adhere to the CBPR principles noted in the previous paragraph or, more often, were not far enough along in their policy-focused work to offer useful cases for this study. A national advisory committee

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helped narrow the list to 14 cases that met study criteria while capturing the range and diversity of cases under consideration regarding geography, problem focus and populations affected, research methods and policy approaches employed, and policy goals, approaches, and outcomes. Three of the 14 cases were unable or unwilling to participate in the study because of time constraints. Since our target number was 8 to 10, one of the remaining partnerships was invited to serve as a pretest site, with the other 10 comprising the final sample.

For each case study there were 1 or more site visits, where data collection included in-depth semistructured interviews with key partners using a 23-item interview schedule developed for this study. Topic areas included partnership genesis and evolution; research aims and methods; individual and community capacity building; policy goals, actions, and perceived outcomes; and factors perceived as contributing to or impeding the work. Focus groups averaged 6 or 7 community members. Review of archival material and participant observation also were conducted, with participant observation including attendance at community forums, trainings, hearings, and other relevant events.[7,8] Follow-up phone or in-person interviews with policymakers also were conducted, along with continued retrieval and analysis of media coverage and project-related documents.

Two or more research team members independently coded transcripts using a 46-item coding template, with code categories corresponding to each major domain of interest (e.g., partnership formation, partner roles in the research, policy goals and outcomes, community capacity building, and barriers faced). Checks for interrater reliability were used and discrepancies were reconciled. The qualitative software package Atlas.ti (Atlas.ti GmbH, Berlin, Germany) was then used to generate reports for each key domain. Pattern recognition analysis[11] was used to identify similarities and differences within and across domain code categories, and cross-site case study analysis was undertaken across the 10 cases.[7,8]

Results

A full review of the findings of all 10 case studies and their cross-site themes, which is beyond the scope of this article, is available elsewhere.[7,8] Presented here is our research team's analysis of 2 partnership projects from the larger study along with cross-site themes capturing factors that facilitated or impeded the partnerships' policy-focused work. The 2 case studies selected for inclusion in this report illustrate different partnership composition, research methods, health disparities explored, and policy approaches involved. Situated respectively in Harlem, New York, and the

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Bayview Hunters Point (here called Bayview) neighborhood of San Francisco, California, these 2 case studies also were selected as exemplars of CBPR's concern with distributive and procedural justice in efforts to address health disparities.[9] Although not a criterion for participation in the study, concern with distributive and procedural justice, as noted in the introduction, turned out to be a unifying theme across 9 of the 10 cases we examined.

Addressing Diesel Bus Pollution and Its Health Consequences

Harlem, in northern Manhattan, New York City, is home to a CBPR collaboration that began in 1988, when West Harlem Environmental Action (WE ACT) contacted the Columbia Center for Children's Environmental Health at Columbia University's Mailman School of Public Health. WE ACT was interested in finding out whether the high rates of asthma among the mostly Black and Latino children in its community were related in part to the neighborhood's high pollution levels. Northern Manhattan was home to 7 of the 8 diesel depots housing a third of New York City's 4200 municipal buses, 650 port authority buses, and numerous other polluting facilities.[13,14] By one estimate, 1 in 4 preschoolers in Harlem had asthma, a rate substantially higher than that of the city as a whole.[15]

With funding from the National Institute of Environment Health Sciences, 17 WE ACT interns aged 14 to 17 years were trained by Columbia epidemiologists. The youths learned geographic information system (GIS) mapping and how to calibrate and wear backpack air monitors while conducting vehicle and pedestrian counts at key intersections for five 8-hour days under the supervision of the scientists. Their research showed $PM_{2.5}$ concentrations (particles less than 2.5 μ in diameter) ranging from 22 to 69 μ/m^3 over each 8-hour period of data collection—levels far exceeding the Environmental Protection Agency's (EPA's) then standard of 15.1 μ/m^3—with variations related to the magnitude of local diesel sources.[13] At WE ACT's urging, the EPA then used ambient monitors in these same hot spots, and their findings closely replicated those of the partnership's study.[6,16]

While the research findings were undergoing peer review, the community partner was creating awareness through a broad-based public education campaign with the tag line, "If you live uptown, breathe at your own risk." The partners worked to get on the political agenda—which Kingdon[17] calls the set of issues to which policymakers are paying attention—by testifying at hearings, cosponsoring an alternative fuels summit, and holding "toxic and treasure tours"[16] for policymakers. Study

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results also were made accessible to community members through articles in WE ACT's newsletter, *Uptown Eye*, and other local venues.

To construct and weigh policy alternatives, WE ACT went though a strategic process of setting clear policy goals and identifying those individuals or institutions with the power to solve or ameliorate the problem. As one community partner explained,

> We will literally unfold charts of paper and start mapping the key actors: who is responsible for decision making, who is making policy and what is the policy? . . . What are the impacts of these types of policies coming out of this particular agency? How does it play out in terms of impacting our community, our organization, and our allies?[14(p105–106)]

The partners further engaged in effective media advocacy, anticipating what the opposition was likely to argue and developing counterresponses in media-friendly terms. For example, suspecting that the Metropolitan Transit Authority would argue that housing all but one of its bus depots in Northern Manhattan constituted "a legitimate business necessity," WE ACT countered that "if it's unacceptable downtown, it's unacceptable uptown," and that any double standard was "environmental racism."

Academic partners sometimes played a role in creating awareness and engaging in policy advocacy—participating in hearings, meeting with policymakers and community groups, and disseminating study findings. In the words of the lead academic partner, the goal of such activity was to "spread the word around in different settings about the partnership, the products and the policies" and to better integrate environmental health and justice into conversations among researchers and policymakers.[14] But WE ACT always took the lead in strategies that ranged from landing 10 000 postcards on the desk of the governor and Metropolitan Transit Authority director to joining in the filing of a formal complaint with the US Department of Transportation under Title 6 of the Civil Rights Act of 1964 (Pub L 88-352, 78 Stat 241). As a WE ACT leader noted, the legal approach was one of several avenues pursued, and although participants did not expect to win, this approach was seen as useful "as a pressure strategy, and one that would offer needed political visibility."[16(p328)]

Several policy and related outcomes were achieved, to which WE ACT and its partners were seen as having made substantial contributions. These included (1) conversion of New York City's bus fleet to clean diesel; (2) the setting of higher air quality standards, which have withstood all legal appeals; (3) the establishment, by

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the EPA, of permanent air monitoring in Harlem and other local and national "hot spots"; and (4) the development and adoption of a statewide environmental justice policy.[7,16]

As noted later in the Discussion section, the impossibility of teasing apart the multiple contextual and other factors contributing to changes at the policy level underscores the need for caution in efforts to highlight the potential role of any particular actor or set of actors. Bearing such considerations in mind, however, it may be noted that the policymakers interviewed for this study, along with review of documents and key source interviews, suggested that WE ACT and its partners played what was perceived as an important role in relation to each of the outcomes noted in the previous paragraph.

The youth intern study,[13] which was presented at EPA hearings on air quality standards, was described by 2 senior EPA officials and others as having played a major role in getting their agency to propose tighter air quality standards.[14,16,18,19] The landmark Harvard Six City Study,[20] published in the *New England Journal of Medicine* several years prior to the WE ACT research, had shown significant and powerful associations between fine particulate air pollution and mortality, after adjusting for smoking and other risk factors. That strong longitudinal study, together with the American Cancer Society's Cancer Prevention Study II[21,22] and other traditional epidemiological research, helped drive $PM_{2.5}$ regulation at the national level. For policymakers in New York, however, a well-designed local study demonstrating high exposure rates among youths, in a neighborhood bearing a disproportionate burden of New York City's diesel bus depots and related pollution sources, was compelling.

The combination of "good science" and powerful local advocacy was also particularly effective; one of the policymakers we interviewed noted that in addition to the strength of the research, the EPA's decision to conduct permanent community air monitoring in Harlem and other hot spots was largely a response to WE ACT's effective advocacy.[14,16] As Corburn[18] and Claudio[19] have pointed out, the partnership's work similarly

> highlighted the need for a city-sponsored asthma program to address neighborhood-specific responses to asthma and was instrumental in shaping New York City's first-ever Childhood Asthma Initiative.[18(p57)]

Finally, and consistent with its commitment to enhancing procedural justice, WE ACT helped initiate New York State's environmental justice policy, and WE ACT's

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executive director served as chair of the task force charged with developing the policy.

While remaining focused on their signature issue (e.g., cosponsoring hearings on the health impacts of bus operations), WE ACT and its partners subsequently have worked on other issues, such as indoor air pollution, climate justice, and efforts to promote the greening of New York City, with special attention to areas like Harlem that have high levels of pollution.[7,16] In addition to continuing to study and address issues related to distributive justice and health disparities, moreover, the WE ACT partnership has continued to promote procedural justice, spearheading the Environmental Leadership/Mental Health Leadership Training Program and cochairing the Northeast Environmental Justice Network.[7] Through these and other means, it has helped build individual and community capacity for leadership and policy advocacy, while working to ensure seats at the policy table for representatives of underserved communities.

Addressing Food Insecurity

Although CBPR frequently is used to study and address health disparities arising from disproportionate exposure to environmental burdens, it also may be employed when the problem is not what people are exposed to but what they are not exposed to, including such resources for living[23] as access to healthy foods. Earlier research by Horowitz et al.[24] demonstrated the powerful disparity in healthy food access for patients with diabetes in New York's largely White and wealthy Upper East Side and the largely Black and Latino East Harlem community nearby. Differential access by race and ethnicity to full-service supermarkets,[25] parks,[26,27] and other basic amenities also has been demonstrated.

When a community survey in the largely low-income Bayview neighborhood in San Francisco revealed food insecurity to be among the residents' top concerns, a partnership between the local department of public health, an outside evaluator, and the nonprofit youth empowerment organization Literacy for Environmental Justice (LEJ) used CBPR to help study and address the problem.[7,28] The last supermarket had left Bayview in 1994, and local access to fresh fruits and vegetables was limited to the offerings available in small corner "mom and pop" stores, whose supply of such foods tended to be small, costly, and of poor quality.

With funding from the San Francisco Department of Public Health's Tobacco Free Project, local high school students affiliated with LEJ were taught the

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department's 5-step Community Action Model. Described in detail elsewhere,[28] the model emphasizes critical thinking and research skills for identifying a problem and its root causes and contributing factors, gathering data, developing systems- or policy-oriented solutions, and evaluating.[28] The LEJ youths also learned about the effects of large multinational tobacco parent companies and their subsidiary food companies on communities locally and internationally.[29,30] Finally, the youths were taught research techniques, such as store shelf diagramming,[31] in which they used quadrille graph paper and color markers to indicate the amount of shelf space devoted to different types of products in 11 local stores. Although adult researchers probably would not have been allowed into these establishments to undertake such data collection, local youths were allowed, and their findings were revealing: almost 40% of shelf space was devoted to packaged foods, followed by 26% for alcohol and tobacco, 17% for sodas and other beverages, and just 2% to 5% for produce and other healthy foods.[7,28,30] Their research further indicated that the top nontobacco and nonalcohol products at the 11 stores were cookies, breakfast cereals, and crackers, and that 80% to 90% of these products were made by tobacco subsidiary companies Kraft and Nabisco.[28,30,32]

Through GIS mapping and the gathering of additional survey data, the partnership learned that it took the average resident 1 hour and 3 bus rides to get to the nearest full-service grocery store, and that fully a quarter ate at least 1 fast food meal a day.[28,32] Surveying local residents, the youths further were able to learn what it would take to get them to shop locally instead of taking their business out of the community. The youths interviewed local merchants about what incentives they would need to stock more healthy foods. An economic feasibility study was conducted by a graduate student at the University of California, Berkeley, and relevant policy avenues pursued in other cities also were examined.

The partnership studied and weighed policy alternatives, key among them getting a city resolution that would require greater access to healthy foods and decreased advertising of alcohol and tobacco in the neighborhood. The latter option was dropped, however, when it was realized that such an ordinance would "lack teeth" and hence do little to address the problem.[32]

On the basis of their findings, and working closely with a charismatic city supervisor, the LEJ partnership instead helped to create a voluntary policy—the Good Neighbor Program—that aimed to improve food security by working directly with local merchants rather than attempting strong-arm tactics that would

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likely be perceived as antagonistic to local business. In the words of the project evaluator,

> [The LEJ partnership] decided on a voluntary policy because . . . they didn't want to go into the neighborhood and say "we're another group telling you what you should be doing."[32(p361)]

Instead, the Good Neighbor Program was designed to offer incentives to local stores that agreed to make specific, health-promoting changes in business practices—for example, devoting a minimum of 10% of shelf space to healthy foods and reducing the amount of advertising space for alcohol and tobacco products. The LEJ partnership's strong relationship with their local supervisor was seen by policymakers and others we interviewed as having helped the partnership secure program endorsements from the San Francisco Redevelopment Agency and several other municipal departments.

Formal memoranda of understanding were developed and used—with the Redevelopment Agency, for example, offering façade improvements to local stores that agreed to participate. Free advertising also was provided, with other concessions, such as discounted loans and energy efficient appliances, anticipated in the future.[7]

The LEJ partnership helped implement a pilot intervention at a single store in December 2003, which showed that sales from fresh fruits and vegetables as a percentage of total sales grew from 5% just prior to program's initiation to 15% after the first 7 months of operation, and a corresponding drop in alcohol sales from 25% to 15%. Four years later, fresh produce sales at that first store remained up 12%, alcohol and cigarette sales down 10%, and profits up 12%.[7,32] With funding from The California Endowment, 4 more stores became Good Neighbors, and at least 5 more were slated to adopt the policy. The severe economic recession, however, required a temporary suspension of the Good Neighbor Program in 2009, as LEJ strategically assessed its program goals and workloads.

Well prior to the recession, however, the LEJ partnership had laid important groundwork for sustainability on a larger scale, providing some of the impetus and support for a new assembly bill (AB 2384) that would take the program to scale through a statewide demonstration program modeled in part on the Good Neighbor Program. Although the measure did not receive a budgetary appropriation, its passage and signing into law in 2006 were themselves considered

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important victories.[7,32] Recently, moreover, in light of the recession, the state requested an amendment to the measure so that private funds could be sought to support the program. Reflecting their continuing concern with the issues of distributive and procedural justice as these in turn affect health disparities, LEJ and its partners remained important players in these state-level efforts. Further, despite funding-related cutbacks, LEJ continues to be committed to addressing food security in the Bayview community as a key element of its environmental justice work. LEJ and its partners thus have continued to meet with policymakers and other stakeholders and allies to ensure a voice for the organization—and for the Bayview community—in decision making that can ensure sustainable change to redress distributive injustice and health disparities related to healthy food access.

Facilitating Factors Across Sites

The 2 case studies described here, and the 8 others we explored, were each unique in focus and in the specific methods used to study and address health disparities. At the same time, several factors observed across most or all of the sites appeared to have facilitated efforts by these partnerships to contribute to change on the policy level.

- The presence of strong, autonomous, community-based organizations prior to the development of the CBPR partnership that could, in the words of one community partner, "stand eye to eye, peer to peer" with the academic or health department partner in making true collaboration possible. Such community-based organizations frequently had a history of effective community mobilization and action, and their presence often proved particularly critical in the policy advocacy phase of the partnership's work.[7]
- A high level of mutual respect and trust among the partners, and an appreciation of the complementary skills and resources each partner brought to the table. An academic partner in the WE ACT partnership reflected such respect when he commented,

  > [S]ometimes as scientists we make assumptions and don't rethink assumptions to see how they fit in a natural situation. I think community people, because they are looking at it from a fresh perspective, will question the assumptions in a way that actually improves the science. It may tailor things to the situation in a way we would not have thought of.[8(p134)]

- Commitment of all partners to solid scientific data as a necessary prerequisite to making the case for policy action. Several policymakers we interviewed

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commented on the high quality of the data that the partnerships' research had produced, and that both policymakers and the partners then could use with confidence in making the case for policy change.

- Commitment to "doing your homework"—finding out what other communities had done, who held decision-making authority, and key leverage points, as well as what sorts of policy-relevant data needed to be collected, from whom, and how.[7]
- Facility for building strong collaborations and alliances with numerous and diverse stakeholders beyond the formal partnership—sometimes including regulators and administrators who later may be key to helping bring about a policy change.[7]
- Knowledge of and facility for attending to a variety of "steps" in the policy process, whether the language of policy was spoken or not. Although community and outside research partners talked freely at some sites about taking advantage of windows of opportunity, engaging in strategic planning, and developing and evaluating alternative policy options, many others appeared to engage in these same activities without ascribing policy labels to their actions.[7]

Tensions and Challenges Across Sites

Along with the cross-site strengths and success factors, several widely shared tensions also emerged. These included the following:

- Differences in the research timetable of the community and academic partner, with the former often anxious for a quicker execution of data analysis and release of findings that could be used to promote change. The tightrope walk involved in balancing what community psychologists Price and Behrens[33] called "the necessary skepticism of science" with the "action imperative of the community" often was observed, with community partners feeling frustrated at the length of time before the results of the science could be used for education and action.
- Different perspectives on policy work held by the academic, health department, and community partners, with the latter often more clear from the outset about the need for and nature of policy goals and objectives.
- Difficulty talking in terms of policy goals and activities because of real or perceived funding constraints. An academic partner in one CBPR project noted

> that when going to city council to press for policy changes, the community partners always went on their own, not as representatives of the project. And a community partner whose project also was funded by the National Institutes of Health made a point of saying several times, "We don't do policy—we just educate legislators."[34(p252–253)]

Discussion

The case studies highlighted in this article, and the 8 others explored in this study, suggest that CBPR may play a role in helping to link research with policy efforts to help eliminate health disparities. Considerable caution must be used, however, in attempting to document such potential contributions. First, as Guthrie et al. have noted,

> most policy work involves multiple players "hitting" numerous leverage points. In this complex system, it is difficult to sort out the distinct effect of any individual player or any single activity.[35(p9)]

Second, the likelihood of a policy victory may be greatly influenced by changes in the policy environment, including an economic downturn, the opening of a window of opportunity following a media exposé, or the appointment or election of a new policymaker who shares the partnership's goals.[7] The role of such external forces, and the complex, nonlinear nature of the policymaking process,[5,6,17,35–38] further militate against simplistic attribution of causation where policy change is concerned.

Third, some CBPR partners may be reluctant to discuss their policy-related work out of fear that their funding precludes activity on this level. Although federal regulations do put some limits on the ability of nonprofit organizations to directly lobby for a particular piece of legislation, these limitations tend to be far less constraining than many community-based organizations, or their academic partners, frequently believe.[35]

Fourth, both the tendency of the mass media to single out one contributor—often a politician—to "credit" for a policy victory, and the potential among CBPR partners for over- or understating their own perceived role—sometimes to strategically direct the spotlight to an important policy ally—may further compound the difficulty of analyzing a contribution.

Finally, the fact that policy change tends to take place over a long period of time makes evaluation of a partnership's work in this regard challenging. As noted by

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Guthrie et al., rather than asking whether policy has changed, a more fruitful question might be, "How did the [partnership's] work *improve the policy environment* for this issue?" or "How successful was the [partnership] in *taking the necessary steps toward the policy change* [italics added]?"[35(p8)] In our present work for The California Endowment, which examines CBPR as a strategy for linking place-based work and policy to help build healthy communities to reduce health disparities in the state, we are using this more nuanced approach. New research also is needed, however, that would involve comparative analyses of traditional studies and CBPR with regard to the translation of findings into changes in practice and policy or the policy environment. Particularly since an important argument for CBPR is that it has the potential to translate findings into practice and policy more quickly than traditional research, efforts to study and document this claim should be pursued.

The use of multimethod case study analysis, and the triangulation of data it affords, can improve our ability to tease apart some of the ways in which CBPR partnerships may help promote change in policy or in policy environments, which in turn may help reduce health disparities over the longer term. At the same time, the importance of avoiding attribution, and instead exploring connections and contributions[7,35] in this regard, is underscored. Finally, and while keeping these critical differences in mind, the factors discovered in this cross-site study to have improved CBPR partnerships' ability to help link place-based research to broader policy change efforts should be emphasized. Key among these are the following: mutual respect and trust among partners; appreciation by all partners of the need for strong science; facility for building a broad and diverse network of allies, including policy allies; and the ability to address a variety of "steps" in the policy process, while appreciating the complexity of the environments in which policy change takes place.

Conclusions

As Freudenberg has noted,

> Changing policies . . . provides an intermediate level of action that transcends the limitations of individual and community level work while offering more immediate health payoffs than the distant and difficult structural changes that are also needed.[39]

To date, however, and despite a rapidly growing literature in CBPR, little attention has been focused on this approach as a vehicle for helping to promote and support healthy public policies, which in turn can help eliminate health disparities.[4,7]

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Multimethod case study analysis is an increasingly popular tool in health disparities research. It can also play a useful role in studying the contributions of CBPR partnerships in helping to promote a more favorable policy environment and in supporting health-promoting, policy-level change in other ways. Further research is needed that can demonstrate the utility of multimethod case study methodology, particularly when used prospectively, for exploring the intersections of science, practice, and policy in CBPR aimed at eliminating health disparities. Particular attention should be focused on the pathways through which CBPR can help create policy environments that promote procedural as well as distributive justice and develop, enact, and enforce measures aimed at eliminating health disparities. As Lasker and Guidry noted, "If we want to realize the promise of community participation"—and, I would add, achieve procedural justice—"we need to be less content with giving historically excluded groups influence at the margins and work to create processes that give them influence that counts."[40(p218)] Community-based participatory research aimed at changing policies and policy environments—with the ultimate goal of eliminating health disparities—may constitute one such promising approach.

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