This is the first text to advance beyond traditional research methods for promoting community health by presenting a new paradigm that integrates qualitative and quantitative research methods. Written for graduate students of public health and practicing researchers, the book highlights new technologies and methodologies that are particularly suited to addressing complex health issues, translating research into action, and engaging the community and relevant stakeholders. Eschewing the rigid distinction between qualitative and quantitative methods, this new paradigm facilitates a more fluid use of integrated methods and interdisciplinary expertise. With a focus on inferring meaning, the book stresses the conjoint effects of place, time, voice, organization, and scale on health outcomes. Use of these new research methods will provide greater insight into how and why contextual and community factors impact health and aid in developing more effective intervention programs.

The text focuses on new methods for inferring meaning from both the quantitative information that characterizes communities and the words community members use to describe their lives. It pays particular attention to data collection and analysis and clearly demonstrates the intricacies of using spatial, systems, and modeling analysis for community health. The first section on inferring meaning from numbers includes spatial analysis, agent-based models, community network analysis, and realist reviews. The second section, about inferring meaning from words, addresses system dynamics, concept mapping, visual voices, and media analysis. Chapters describe, step by step, how to apply new methodologies to pressing health issues and provide Web links to interactive mapping and videos of agent-based models. Additionally, the authors provide examples from their research to support methodological points.

**KEY FEATURES:**
- Introduces a new paradigm for community public health research that integrates qualitative and quantitative methods
- Provides in-depth guidance about applying these new methodologies to pressing community health issues
- Details applications of new methods such as agent-based simulations, visual voice methods, geospatial analysis, and concept mapping
- Bridges the disciplines of community health and epidemiology
- Written for and by multidisciplinary public health scholars
Methods for Community Public Health Research
Jessica G. Burke, PhD, MHS, is an associate professor of behavioral and community health sciences at the University of Pittsburgh Graduate School of Public Health. She is trained in cultural anthropology (BA, New York University), international health (MHS, Johns Hopkins Bloomberg School of Public Health), and social and behavioral sciences (PhD, Johns Hopkins Bloomberg School of Public Health). Dr. Burke’s work aims to improve the health and well-being of women and children on whose behalf she tackles complex issues, including intimate partner violence, HIV/AIDS, and racial disparities in birth outcomes. She successfully uses a transdisciplinary approach to her work and has over a decade of experience nurturing long-term partnerships with academic and community colleagues. Her 2005 *Qualitative Health Research* article was the first to introduce public health researchers to concept mapping as a participatory mixed-methods approach for generating hypotheses and developing theory regarding complex issues. Dr. Burke has coauthored more than 50 articles and book chapters in behavioral and community health sciences. She teaches graduate-level courses in community health, community-based participatory research, and concept mapping and directs the University of Pittsburgh Certificate Program in Community-Based Participatory Research and Practice.

Steven M. Albert, PhD, MSPH, is professor and chair of behavioral and community health sciences at the Graduate School of Public Health at the University of Pittsburgh. He is trained in anthropology (PhD, University of Chicago) and epidemiology (MS, Columbia University) and completed postdoctoral fellowships in aging and health policy (Rutgers University) and aging and cognition (Columbia University). Dr. Albert has 20 years of research experience in public health with completed projects investigating disability transitions in old age, mental health at the end of life, cross-cultural variation in health and chronic disease, the challenges of home health care and family caregiving, and medication adherence. He conducted fieldwork in Papua New Guinea as a Fulbright Scholar. Current projects include studies of medication review in senior housing, dynamic computational modeling of health behavior, and primary prevention of geriatric syndromes. Dr. Albert is the author or editor of 3 books and over 150 peer-reviewed articles. He is the author of *Public Health and Aging: Maximizing Function and Well-Being* (with Vicki Freedman; 2nd edition, 2010), and *Assessing Quality of Life in Alzheimer’s Disease* (with Rebecca Logsdon; 2000).
To our communities
Contents

Contributors ix
Preface xiii
Acknowledgments xv

PART I: INTRODUCTION

1. Community Health Research in the 21st Century
   Jessica G. Burke, Jeanette Trauth, and Steven M. Albert 3

PART II: INFERRING THE MEANING OF NUMBERS

2. Spatial Analysis of Communities
   Ann C. Klassen, Frank Curriero, Loni Philip Tabb, and
   Amy Carroll-Scott 19

3. Agent-Based Modeling of Factors Influencing Community Health
   John J. Grefenstette and Jessica G. Burke 45

4. A Network Approach to Community Health Research
   Christopher Keane 69

5. Realist Review and Evaluation: What Do We Know About What Works?
   Maritt Kirst and Patricia O’Campo 105

PART III: INFERRING THE MEANING OF WORDS

6. System Dynamics and Community Health
   Kristen Hassmiller Lich, Karen Minyard, Rebecca Niles, Gaurav Dave,
   and Emily M. Gillen 129

7. Concept Mapping for Community Perceptions
   Renee E. Walker, Jennifer R. Jones, and Jessica G. Burke 171
8. Visual Voices as a Method for Community Engagement in Research and Action
   Rebecca D. Ochtera, Kimberly J. Rak, and Michael A. Yonas  195

   Katherine Clegg Smith  219

PART IV: CONCLUSIONS

10. Advancing Community Health Using Emerging Research Methods
    Jessica G. Burke, Jennifer R. Jones, and Helen I. Meissner  245

Index  257
Contributors

Steven M. Albert, PhD, MSPH  Professor and Chair, Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania

Jessica G. Burke, PhD, MHS  Associate Professor, Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania

Amy Carroll-Scott, PhD, MPH  Assistant Professor, Department of Community Health and Prevention, Drexel University School of Public Health, Philadelphia, Pennsylvania

Frank Curriero, PhD  Associate Professor, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

Gaurav Dave, MD, DrPH, MPH  Administrative Director, North Carolina Translational and Clinical Sciences Institute, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Emily M. Gillen, MA  Graduate Research Assistant, Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

John J. Grefenstette  Professor, Department of Biostatistics; Director, Public Health Dynamics Laboratory, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania

Kristen Hassmiller Lich, PhD, MHSA  Assistant Professor, Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina
Jennifer R. Jones, MPH  Community Engagement Coordinator, Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania

Christopher Keane, PhD  Assistant Professor, Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania

Maritt Kirst, PhD  Research Scientist, Centre for Research on Inner City Health, St. Michael’s Hospital; Assistant Professor, University of Toronto, Dalla Lana School of Public Health, Toronto, Canada

Ann C. Klassen, PhD  Professor, Department Chair, and Associate Dean for Research, Department of Community Health and Prevention, Drexel University School of Public Health, Philadelphia, Pennsylvania

Helen I. Meissner, PhD  Senior Advisor, Office of Behavioral and Social Sciences Research, National Institutes of Health, Bethesda, Maryland

Karen Minyard, PhD  Director, Georgia Health Policy Center; Associate Research Professor, Public Management and Policy, Andrew Young School of Policy Studies, Georgia State University, Atlanta, Georgia

Rebecca Niles, MS  Senior Facilitator of System Strategy, ReThink Health Dynamics, Morristown, New Jersey

Patricia O’Campo, PhD  Director, Centre for Research on Inner City Health, St. Michael’s Hospital; Professor, University of Toronto, Dalla Lana School of Public Health, Toronto, Canada

Rebecca D. Ochtera, PhD, MPH  Manager of Health Education and Evaluation, Department of Population Care and Prevention Services, Kaiser Permanente Colorado, Denver, Colorado

Kimberly J. Rak, PhD, MPH  Research Associate, Clinical Research, Investigation and Systems Modeling of Acute Illness (CRISMA) Center, Department of Critical Care Medicine, University of Pittsburgh, Pittsburgh, Pennsylvania

Katherine Clegg Smith, PhD  Associate Professor, Department of Health, Behavior and Society; Director, Center for Qualitative Studies in Health and Medicine, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

Loni Philip Tabb, PhD  Assistant Professor, Department of Epidemiology and Biostatistics, Drexel University School of Public Health, Philadelphia, Pennsylvania
Jeanette Trauth, PhD  Associate Professor, Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania

Renee E. Walker, DrPH, MPH  Assistant Professor, University of Wisconsin-Milwaukee, Joseph J. Zilber School of Public Health, Milwaukee, Wisconsin

Michael A. Yonas, DrPH, MPH  Director of Research, Evaluation, and Engagement, Office of Data Analysis Research and Evaluation, Allegheny County Department of Human Services, Pittsburgh, Pennsylvania
What can and should be done to improve the health of community members? The goal of this book is to introduce emerging research methods that will assist community health researchers interested in effectively addressing the complex health issues faced by communities today. The book introduces readers to several research methods particularly appropriate for addressing the context of health issues, translating research into action, and engaging community and relevant stakeholders. Use of these methods will lead to advancements in the field of community health and ultimately to improvements in community health.

Written for graduate students of public health and practicing researchers alike, the methods described here point to a new integrated paradigm for community health research. The content illustrates how community health researchers must move beyond the rigid distinction between qualitative and quantitative methods to adopt new integrated research methods to understand health as a community system. Part II, on inferring meaning from numbers, includes spatial analysis, agent-based models, community-network analysis, and realist reviews. Part III, about inferring meaning from words, addresses system dynamics, concept mapping, visual voices, and media analysis. The two parts stress “inferring meaning.” We make a strong case for crossing the divide between numbers and words to infer meanings relevant to community health assessment, planning, and change. In this way, community perceptions, networks, and spaces can be brought together as we “rethink” public health to make it community health.

Each chapter in the book describes the steps involved in using a particular method as well as the challenges and benefits of doing so. In addition, the chapter authors offer examples from their current research to highlight key methodological points.
We specifically designed the text to be a user-friendly introduction to the methods presented. Each chapter provides information about the preparation and process of using the particular method and advice about particular challenges. The methods chapters serve as a platform for community health researchers to rethink their own research.

Jessica G. Burke, PhD, MHS
Steven M. Albert, PhD, MSPH
The idea for this book has been percolating in my head for a very long time. I’d like to thank Steve Albert and the contributing authors for working with me to finally make it a reality.

Jessica G. Burke

Thanks to the many authors, and to Sheri W. Sussman at Springer Publishing Company, for their hard work in helping us to rethink the dynamics of health-behavior change and community health.

Steven M. Albert
Introduction
The overall purpose of this book is to introduce readers to several emerging research methods particularly appropriate for community health research and to encourage the application of these methods to advance this field. Each chapter in the book describes the steps involved in using a particular method as well as the challenges and benefits of doing so. In addition, authors offer examples from their current research to illustrate and highlight key methodological points. The goal of this chapter is to stress the need for a new research paradigm that will more fully address the community context of health and health behavior—one that will focus on the integration of quantitative and qualitative methods—and to introduce the reader to a set of emerging research methods in community health that exemplify this integrative approach. This chapter provides a definition of community health that speaks to the need for action-oriented and engaged community health research. The chapter underscores the value of each method and offers insights into why each method was selected for inclusion. The content of this and the following chapters in this book was developed to complement existing valuable resources already available for community health researchers and to challenge those working in the field to adopt new research methods.
COMMUNITY HEALTH AS AN EVOLVING FIELD OF PUBLIC HEALTH

The leading causes of death worldwide in the 21st century include noncommunicable diseases (e.g., heart disease, stroke, and diabetes) as well as other health issues (e.g., injury and violence). These causes of death are the result of complex forces that interact at multiple levels of behavior and challenge traditional approaches to exploring public health problems (Table 1.1). Whereas notable public health successes, including vaccinations for communicable diseases such as polio, measles, pertussis, and diphtheria, have helped control the spread of select infectious diseases, other infectious diseases—such as HIV/AIDS and influenza, continue to lead the list of leading causes of mortality and morbidity worldwide. In the United States and around the globe, public health professionals are increasingly tasked with preventing and addressing intractable health issues and need guidance about the best way to do so among specific communities.

Within the discipline of public health, community health is an important and evolving subdiscipline that specifically emphasizes disease prevention and early intervention for members of a given community. Although often defined as a geographic area, the term “community” can also be used to refer to groups of individuals with shared experiences or identities. For example, residents of a specific neighborhood are a community, but so too are women with a shared history of breast cancer.

<table>
<thead>
<tr>
<th>TABLE 1.1</th>
<th>Top Ten Leading Causes of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>United States</strong></td>
<td><strong>Worldwide</strong></td>
</tr>
<tr>
<td>1 Heart disease</td>
<td>Heart disease</td>
</tr>
<tr>
<td>2 Cancer</td>
<td>Stroke</td>
</tr>
<tr>
<td>3 Chronic lower respiratory diseases</td>
<td>Lower respiratory disease</td>
</tr>
<tr>
<td>4 Stroke</td>
<td>Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>5 Accidents (unintentional injuries)</td>
<td>Diarrheal disease</td>
</tr>
<tr>
<td>6 Alzheimer’s disease</td>
<td>HIV/AIDS</td>
</tr>
<tr>
<td>7 Diabetes</td>
<td>Trachea, bronchus, lung cancers</td>
</tr>
<tr>
<td>8 Nephritis, nephrotic syndrome, and nephrosis</td>
<td>Diabetes</td>
</tr>
<tr>
<td>9 Influenza and pneumonia</td>
<td>Road injury (accidents)</td>
</tr>
<tr>
<td>10 Intentional self-harm (suicide)</td>
<td>Prematurity</td>
</tr>
</tbody>
</table>

Community health researchers approach improving the health of communities by building on the widely accepted, four-step public health approach (Figure 1.1): (a) surveillance to define the scope of the health problem, (b) investigations to establish causes of the health problem, (c) development of interventions, and (d) implementation and dissemination of evidence-based interventions. However, unlike public health in general, community health researchers tend to focus on the later steps of the public health approach; they are specifically concerned with the evaluation, implementation, and dissemination of interventions.

Over the course of the past two decades, a growing body of evidence has demonstrated the important role that context plays in health behaviors and health outcomes. The chapters in this book provide examples of research methods that can be used to better understand the complexities and causal mechanisms linking systems together and to health. To effectively reduce the burden of disease and illness in specific communities requires that we understand the complex web of factors influencing health along with their dynamic interplay. Public health is increasingly focused on systems science approaches and ecological models of health as attention has shifted away from a reductionist focus on single risk factors. It is now widely recognized that understanding the interaction between individuals and their environments is critical to understanding how best to intervene and prevent disease (Schneiderman, Speers, Silva, Tomes, & Gentry, 2001). Achieving significant reductions in disease-attributed mortality and morbidity requires intervention at multiple levels to address the interacting and reinforcing risk factors. Ecological models, based on the premise

![FIGURE 1.1  Public health approach.](image-url)
that multiple factors influence health and that those factors are interrelated (Sallis & Owen, 1997), can help public health researchers organize and classify the range of factors affecting communities’ health and well-being. Figure 1.2 provides a simplistic ecological model that illustrates the range of potential influences, moving from intrapersonal factors associated with an individual at the center of the figure out to the individual’s interpersonal interactions with friends, family, and others, on to the neighborhood environmental context, and out into the realm of policy-level influences. Although there are several other representations of this general model, this overly simple presentation is used to emphasize the point that the health of individuals and communities is influenced by a range of factors that exist at multiple levels.

As the subdiscipline of community health continues to develop and as community health researchers work to conduct research designed to provide new knowledge regarding disease prevention and early intervention for community members (McKenzie, Pinger, & Kotecki, 2012), it is clear that new research methods are necessary for the field to evolve. This book seeks to move the field of community health forward toward effectively addressing the intractable health problems we face by specifically advocating the explicit adoption of four key principles within community health research:

1. Practice an integrated community health research paradigm
2. Recognize and address context in community health
3. Translate research into action within communities
4. Engage community and relevant stakeholders

The following sections address these principles in greater detail and provide support for why each should be embraced by community health researchers working to improve health in the 21st century.

PRINCIPLE 1: PRACTICE AN INTEGRATED COMMUNITY HEALTH RESEARCH PARADIGM

Traditional research methods draw an overly rigid distinction between qualitative and quantitative methods. The chapters in this book illustrate how community health researchers must move beyond this distinction and adopt new research methods to understand health as a community system. Community health researchers need to design studies that employ innovative methods, and which, in many cases, blur the line between traditional quantitative and qualitative approaches.

Mental models or patterns of activities (also known as paradigms) that shape the progress of science also shape the conduct of all research and have contributed to our successes and failures in community health promotion. Two broad categories are often used to classify research methods and the researchers who use them: Positivist methods, which are used to test hypotheses, are often seen as the polar opposite of interpretive methods, which are generally used to build theories. Similarly, quantitative and qualitative methods are usually presented as contrasting approaches and are often associated with positivist and interpretive paradigms, respectively. Quantitative methods, put simply, involve numbers and tend to provide generalizable findings, whereas qualitative methods involve text and tend to be focused on in-depth explorations of phenomena. Typical quantitative research methods include surveys, case-control studies, and randomized controlled trials (RCTs). Classic qualitative research methods include in-depth interviews, ethnographic observations, and document reviews.

The new methods presented in this collection challenge these distinctions and combine the two approaches. Integration of qualitative and quantitative data is key to generating unique insights into the mechanisms linking complex community health issues and to providing critical guidance regarding the pathways toward effective intervention and prevention. Quantitative and qualitative research methods are complementary and can be intentionally and systematically integrated in research studies to maximize strengths and minimize weaknesses (www.esourceresearch.org/; Creswell, Klassen, Plano Clark, & Smith, 2011). To date, relatively
simplistic approaches have been proposed for integrating qualitative and quantitative approaches (Creswell & Plano Clark, 2011):

1. Merging data: Combining qualitative text or image data with numeric quantitative data
2. Connecting data: Analyzing one dataset (e.g., a quantitative survey) and then using the information to inform subsequent data collection (e.g., identification of participants to interview)
3. Embedding data: Embedding a dataset of secondary priority within a larger, primary design

The methods presented in this book go beyond the mere combination of specific methods within a single study to the integration of analytic approaches within a single research method. For example, in Chapter 7, Walker, Jones, and Burke present concept mapping as an innovative method for community health researchers interested in using a community-engaged approach to explore the neighborhood context. Whereas concept-mapping results are inherently qualitative in nature (i.e., classification of words), rigorous quantitative analytic methods, including multidimensional scaling and cluster analysis, are used to organize and visualize the qualitative data. It is the integration of qualitative and quantitative approaches that fundamentally allows for an enhanced exploration of rich data. Another example in Chapter 3 is Grefenstette and Burke’s discussion of the ways in which agent-based modeling (ABM) was used to address community crime and violence. Here, quantitative data were assessed using a qualitative approach. Each of the chapters in this book provides specific guidance regarding how data were collected and analyzed for each method and provides support for the assertion that an integrative research paradigm is critical for the advancement of the field of community health research.

**PRINCIPLE 2: RECOGNIZE AND ADDRESS THE CONTEXT OF COMMUNITY HEALTH**

It is now well recognized and accepted that context has an impact on health. Interpersonal context is one level of influence that can affect an individual’s health. For instance, people may imitate, for better or worse, the behavior of others they encounter. We have seen examples of this phenomenon in the work of Christakis and Fowler (2007, 2008, 2009); the examples show how both negative (e.g., obesity) and positive (e.g., smoking cessation) health behaviors can spread through a social network. People may even choose not to take preventive action—they may avoid vaccinations...
or forego condom use—thus affecting the likelihood of the spread of infectious diseases. These examples show how the action of one individual affects the health conditions of others, a central concern for community health research and practice.

In Chapter 4, Keane discusses the concept of a social network and introduces network models. The chapter illustrates how we can graphically represent the interactions among three or more individuals (actors) based on rules that specify how the actors connect with one another. This chapter also provides a compelling example of the value of network modeling, that is, why it is important to understand how individual actions can lead to complex and often unintended collective results. As Thomas Schelling (1971) demonstrated several decades ago, individuals may be fairly tolerant of differences when they make a decision about where to live, but the combined effect of their individual decisions can lead to unexpected outcomes (e.g., pronounced segregation) that may, in fact, run counter to an individual’s stated beliefs or desires.

Despite the growing interest in the relationship between neighborhood factors and health, less is known regarding mechanisms linking residential contexts to outcomes and health. Displaying and interpreting information spatially is a key method for understanding health patterns and for gaining critical insights into potential neighborhood-level intervention opportunities. Although childhood obesity is an issue of national concern, studies showing that fewer children walk or ride a bike to school than in the past and parental concerns about safety as a major concern when deciding whether or not to let their child walk to school are good examples of research highlighting the importance of the residential neighborhood context. Public health researchers, policy makers, school officials, and parents interested in improving the health of children may ask, “How can we make walking to school feasible?” In order to answer that question we need data regarding the existence of sidewalks or bike paths, the volume of traffic, the ease of crossing the street, drivers yielding to walkers, and loose dogs roaming the neighborhood. A spatially informed investigation, such as that presented by Klassen, Curriero, Tabb, and Carroll-Scott in Chapter 2, is an ideal method for examining “place-based” types of questions about a local community as part of the planning and implementation of an intervention.

The essence of spatial analysis is the creation of visual maps that can capture both qualitative and quantitative characteristics of a geographic space. Klassen and colleagues make the case that one of the strengths of this approach is the ability to juxtapose multiple types of information according to geographic proximity [and thus] shed light on patterns undetectable by other methods. This can facilitate a multilevel ecological approach to the design and implementation of complex public health
research studies. Another advantage of this method is that it allows us to examine the “spatial nature of health,” that is, the concentration of disease- or health-promotion behaviors in a given community. Visual displays of information through mapping may reveal spatial patterns of disparities for future investigation.

Many of the most intractable public health issues that we confront today, such as the rise in the cost of health care, the effective management of chronic diseases, or disparities in health outcomes, are problems that are complex and continually evolving along with larger systems. These types of problems typically involve a complex web of interconnected factors across social ecological levels, and it is difficult to know how to proceed and intervene. In a desire to address pressing problems, decision makers often fail to address system forces in favor of quick solutions that may fix the immediate problem but may be costly, inefficient, and fail to address the underlying mechanisms driving the problem. Systems science methods, including system dynamics (SD), ABM, and network analysis (NA), have been developed to understand the dynamic connections between a system’s structure and its behavior over time.

SD acknowledges up front the complexity of problems. It says that we not only need to think about problems differently, but also use different tools and methods to help solve problems. Basically, it is both a way of thinking and a set of tools and methods for use with active participation from stakeholders in order to (a) facilitate understanding of how complex systems function, (b) identify leverage points for change, and (c) compare the impact of different interventions focused on the identified leverage points. In Chapter 6, Hassmiller Lich and colleagues describe how SD methods were used in two different situations. In the first case, it was used to support intervention planning to improve pediatric asthma management among vulnerable youth across practice-based settings. In the second case, SD modeling was used to build consensus around a strategy for achieving the aims of an Atlanta, Georgia, collaborative for improving health. In short, SD is an approach to doing research that allows the researcher to have a “panoramic view” of the complex system under investigation. It helps to identify possible leverage points for intervention and finding possible solutions.

**PRINCIPLE 3: TRANSLATE RESEARCH INTO ACTION WITHIN COMMUNITIES**

Working to enhance and improve the health of communities requires some degree of interaction and collaboration with community members. Multiple factors, including news media coverage and information dissemination,
influence community perceptions regarding key community health issues and community capacity to advocate programmatic change. In the realm of health news reporting, what appears in print, online, or on the network evening news programs conveys what people come to know as the most salient health issues of the day—what people should pay attention to, what they should worry about, and what actions they should take to protect themselves. Therefore, understanding what the media is reporting about health issues is of fundamental concern to community health researchers. In Chapter 9, Clegg Smith defines news media analysis as a research effort to systematically review and understand the messages conveyed to an audience on a given topic via one or more news outlets. The objective of this type of research in some instances is simply to determine the accuracy of news reporting. In other cases, it may be to examine, for instance, differences in news coverage on climate change in states with stricter air pollution emission laws versus states without such laws. Researchers engaged in this type of research are interested in questions such as: How are issues presented? How are the stories told? What causal factors are presented? What solutions are offered? In her case study of the print news coverage of residential fires in the Baltimore area, Clegg Smith discusses how news media analysis was used to build media advocacy capacity within the injury-control community and also to educate the public about effective fire prevention strategies, including policy initiatives. Chapter 9 reminds the reader about the great power of the news media not only to inform but also to help set public health policy agendas.

Public health professionals are often called on to assist policy makers and others in deciding how best to protect or improve the health of a given population. They want answers to questions such as: What will happen if we implement Policy A rather than Policy B? Which intervention is more cost-effective? Will there be unintended social consequences as a result of implementing a particular intervention? In order to be able to address these types of questions, public health researchers, including community health researchers, are turning to the emerging method: ABM. At its core, ABM involves creating an artificial society on a computer populated by individual agents who behave according to a given set of rules. The agents interact with one another and with the environment over a period of time and generate a “future” state of interest to researchers and policy makers.

Grefenstette and Burke, in Chapter 3, describe the ABM method and provide a detailed example of how ABM can be used to model crime in a community. Some of the distinguishing features of ABM are: (a) individual agents, just like real people, are different from one another and have unique preferences and knowledge; (b) they know what is happening around them from people in their social network, but they are not
omniscient and make decisions based on limited information; (c) and they behave according to rules. The development of these behavioral rules provides an opportunity for lay participation, especially among those who have first-hand experience dealing with a particular issue. Ultimately, ABM is a method that allows us to peer into the future and examine the larger social outcomes that can result from individual behaviors. ABM cannot predict exactly what events will occur. However, ABM can provide some sense of the likely outcomes and unintended consequences of particular behaviors or course of action. They can also suggest possible types of effective interventions.

When challenged with the question, “How do we know if an intervention to improve community health will work?” public health researchers invariably respond that it should be based on the best available evidence to enhance the likelihood of success. The conventional wisdom in many public health circles is that the best evidence emerges from RCTs. Although this type of study design yields important information, an exclusive focus on quantitative studies of this type may mean that researchers miss how other factors—social, political, economic, and interpersonal—can simultaneously contribute to the success or failure of public health interventions designed to address complex public health problems.

A useful approach to what works beyond the RCT is the realist approach. As the authors of Chapter 5, Kirst and O’Campo explain, a realist approach to public health research is: “an explanatory method of analysis aimed at discerning what works for whom, [under] what circumstances . . . and how” (pp. 119–120). This philosophical approach to public health research seeks to uncover the underlying mechanisms or processes and contextual factors that lead to change in an individual’s or organization’s behavior. As the authors point out, by breaking down an intervention into its component parts, researchers are better able to attribute program outcomes to program components. This approach to research requires collecting lots of data and asking lots of questions in order to uncover the mechanisms that account for the success or failure of program implementation.

The authors offer several examples of the value of a realist approach. In one example, they compare a realist approach with a conventional approach to conducting a systematic review of the intimate partner violence (IPV) literature regarding types of screening, referral, and violence reduction interventions that work best in health care settings. They point out that “numerous traditional systematic reviews have concluded that insufficient evidence exists to show effectiveness of these programs on reduction of IPV” (p. 108). The results of their realist review of the same literature along with the published gray literature shows that “comprehensive, multicomponent universal screening programs were the most successful in yielding
increased screening outcomes” (p. 112). Through the use of a broad body of evidence about the impact of screening, their project produced results that have practical implications for addressing IPV.

**PRINCIPLE 4: ENGAGE COMMUNITY AND RELEVANT STAKEHOLDERS**

In recent years, it has become increasingly clear that community-partnered research is essential to the development of the translational sciences. Community-based participatory research (CBPR) is a collaborative approach to research that equitably involves all partners, including researchers and community members, in all aspects of the research process (Blumenthal, DiClemente, Braithwaite, & Smith, 2013; Israel, Eng, Schulz, Parker, & Satcher, 2005; Minkler & Wallerstein, 2008). As eloquently noted by Leung, Yen, and Minkler (2004, p. 500), “With its attention to action as an integral part of the research process, CBPR further encourages epidemiology to expand beyond a science that measures associations of exposure and disease to become a data-driven approach to improve community health and well-being.” CBPR is an approach, not a research method, to public health that seeks to empower communities to serve as true partners in the entire process of research, from idea generation through to dissemination and implementation of research findings. The rationale for such an approach is that all partners can contribute unique insights to enhance understanding of a given phenomenon and that having everyone working together from the start of a research project will help to ensure that the data collected is effectively translated into practice. Instead of viewing communities as groups of people in need of vaccination and improved sanitation, increasingly public health professionals and researchers recognize that communities can be sources of valuable insight and information regarding disease prevention and health improvement.

CBPR is not a primary focus of this book; there are several existing resources available to provide guidance and training in that area (http://depts.washington.edu/ccph/; Blumenthal et al., 2013; Israel et al., 2005; Minkler & Wallerstein, 2008). Instead, this book focuses on providing illustrative examples of how the selected research methods featured here can be used along the continuum of community-engaged research. Figure 1.3 is adapted from Winer and Ray (2000) and illustrates how CBPR is at the far-right side of the community-engagement continuum under “partnership” and how, on the left side, we find “cooperation” and “coordination” between community members and researchers. Historically, a majority of public health research has fallen on one side of the continuum, where community members may cooperate with the implementation of a typical epidemiological survey but do not play an active role in the design and
implementation of the study or in the data analysis, interpretation, and dissemination of results. We believe that when appropriate, based on the intent of the project, enhanced community inclusion into the research process can enrich a study. The methods presented in this book can be used along this continuum of community engagement.

Participatory methods are critical to the solution of many public health challenges that we face today. For example, different forms of violence, including drive-by shootings and dating violence, are public health issues of concern in many communities. They can take a toll on community members, especially those who are most vulnerable—for example, children and adolescents. In order to be able to address such problems that affect youth, it is essential to gain their input and perspective. But understanding how to engage youth in developmentally appropriate ways is a challenge to research. Visual Voices, described in Chapter 8, is an arts-based, participatory research method for cultivating relationships between stakeholders (e.g., academic researchers and community youths). This method is most commonly used in the formative stage of research, when researchers are engaged in assessment and planning activities.

As the authors, Ochtera, Rak, and Yonas explain, Visual Voices is an arts-based method that uses multiple sessions to address a focal research area, most often generated by community stakeholders. The method involves an overview discussion about the topic of interest, creative painting or drawing and writing about the topic, a group discussion of the visual and written pieces created, and the construction of an exhibit of the works created for display in the community. The authors provide an example of how they used Visual Voices to explore adolescent sexual behaviors and attitudes among 10- to 13-year-olds living in an economically underserved community in southwestern Pennsylvania. This topic
was identified as important by adults in the community because they were concerned about the negative sexual health outcomes caused by poverty and a lack of resources. As the authors point out, this research activity facilitated a community dialogue, which led to discussions with local service providers about the need to address relationship issues with young adolescents.

Visual Voices is a unique method that can be used with any age group although it has been used primarily with children and adolescents. It is a developmentally appropriate fun way to gain participant’s insights on a topic. By using the arts, youth are able to express their thoughts and experiences (some of which may be highly emotional) in ways that they find most comfortable. The Visual Voices method is used to forge trusting relationships between the researcher and the youth participant; these relationships are critical to the participation of the youth in the research.

CONCLUSIONS

There is a growing recognition of the important contributions of community health research and the need for succinct and clearly written texts detailing the application of innovative community health methods. This book focuses specifically on research methods within community health and does not address the role of community health workers in practice. Nor does this book provide an exhaustive review of all emerging community health research methods. Rather, the goal is to introduce readers to the methods and to provide tangible examples of how the methods can be used to enhance our understanding of complex and complicated health issues to improve community health.

Exploring community health issues and developing appropriate interventions requires the use of methods that seek to uncover mechanisms linking risk and protective factors to health outcomes. Traditional public health research methods, such as surveys and focus group discussions, are very good for producing data that document the scope of health problems and issues. But such methods are not adequate for identifying mechanisms of community health benefit or harm. Cutting-edge research in community health requires a more fluid appreciation of integrated methods and interdisciplinary expertise. These newer methods are much better at enhancing our understanding and allowing us to develop interventions, implement solutions, and disseminate information. For many public health professionals and researchers, the goal is to have a lasting positive impact on the health and well-being of our communities. The question that the following chapters address is: How does the method presented help move us toward improved community health and well-being?
REFERENCES


