Moving from Intersection to Integration: Public Health Law Research and Public Health Systems and Services Research

Scott Burris
Temple University Beasley School of Law

Glen P. Mays
University of Kentucky School of Public Health

F. Douglas Scutchfield
University of Kentucky School of Public Health

Jennifer Ibrahim
Temple University Public Health Law Research National Program

March 12, 2013

Cite: Milbank Quarterly, Vol. 90, No. 2, pp. 375-408, 2012

This paper can be downloaded without charge from the Social Science Research Network Electronic paper Collection: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2147461
Moving from Intersection to Integration: Public Health Law Research and Public Health Systems and Services Research

Scott Burris
Temple University Beasley School of Law

Glen P. Mays
University of Kentucky School of Public Health

F. Douglas Scutchfield
University of Kentucky School of Public Health

Jennifer Ibrahim
Temple University Public Health Law Research National Program

March 12, 2013

Cite: Milbank Quarterly, Vol. 90, No. 2, pp. 375-408, 2012

This paper can be downloaded without charge from the Social Science Research Network Electronic paper Collection:
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2147461
Moving from Intersection to Integration:
Public Health Law Research and Public Health Systems and Services Research

Scott Burris, JD*, Glen P. Mays, PhD, MPH^,
F. Douglas Scutchfield, MD^ and Jennifer K. Ibrahim, PhD, MPH*

* National Program Office, Public Health Law Research Program
  Temple University

^ National Coordinating Center for Public Health Systems and Services Research
  University of Kentucky

The published version of this paper is available in the Milbank Quarterly, 90 (2), 375-408, http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0009.2012.00667.x/pdf .
Abstract

Context: For three decades, experts have been stressing the importance of law to the effective operation of public health systems. Most recently, the Institute of Medicine in a 2011 report recommended a review of state and local public health laws to ensure appropriate authority for public health agencies; adequate access to legal counsel for public health agencies; evaluations of the health effects and costs associated with legislation, regulations and policies; and enhancement of research methods to assess the strength of evidence regarding the health effects of public policies. These recommendations, and the continued interest in law as a determinant of health system performance, speak to the need for an integrated approach between the emerging fields of Public Health Law Research and Public Health Systems and Services Research.

Methods: Expert commentary.

Findings: This paper sets out a unified framework for the two fields and a shared research agenda built around three broad inquiries: 1) the structural role of law in shaping the organization, powers, prerogatives, duties and limitations of public health agencies, and thereby their functioning and ultimately their impact on public health (“infrastructure”); 2) the mechanisms through which public health system characteristics influence the implementation of interventional public health laws (“implementation”); and 3) the individual and system characteristics that influence the ability of public health systems and their community partners to develop and secure enactment of legal initiatives to advance public health (“innovation”). Research to date has laid a foundation of evidence, but progress requires better and more accessible data, a new generation of researchers comfortable in both law and health research, and more rigorous methods.

Conclusions: The routine integration of law as a salient factor in broader PHSSR studies of public health system functioning and health outcomes will enhance the usefulness of research in supporting practice and the long-term improvement of system performance.
Keywords: Public Health Law Research; Health Promotion/legislation & jurisprudence; Public Health Systems and Services Research; Models, Theoretical; Public Health Practice; Public Health Administration.
The role of law in establishing, empowering and constraining public health agencies has long been a matter of interest to legal scholars and health practitioners (Gostin 2008; Gostin, Burris, and Lazzarini 1999; Tobey 1939). The importance of “legal infrastructure” to public health, and the need to review and possibly update the statutes that define the authority of health agencies at the federal, state and local levels, have now been emphasized in three major IOM reports since 1988 (Institute of Medicine 1988, 2002, 2011). Other commentaries have stressed the importance of the public health work force exhibiting competency in the use of legal authority and the appreciation of its boundaries (Center for Law and the Public's Health 2001; Gebbie K, Rosenstock L, and Hernandez LM 2003; Moulton et al. 2003). Healthy People 2010’s chapter on “Public Health Infrastructure” included as an objective “Increas[ing] the proportion of Federal, Tribal, State, and local jurisdictions that review and evaluate the extent to which their statutes, ordinances, and bylaws ensure the delivery of essential public health services” (Office of Disease Prevention and Health Promotion and U.S. Department of Health and Human Services 2010). Healthy People 2020 likewise encouraged the use of public health law research and public health systems and services research to measure and understand improvements in public health system outcomes (Office of Disease Prevention and Health Promotion and U.S. Department of Health and Human Services 2011).

The importance of law to the effective operation of public health agencies and systems, often and plausibly asserted, has rarely been the subject of academic research. Only a handful of researchers have empirically examined the relationship between law and public health system performance, and the work to date has not been informed by an explicit, shared conceptual framework or research agenda. The recent emergence of Public Health Law Research (PHLR) and Public Health Systems and Services Research (PHSSR) makes it possible to fill the void in theory and research. The framework offered here identifies three broad areas of inquiry that deserve closer attention:

1) The structural role of law in shaping the organization, powers, prerogatives, duties and limitations of public health agencies, and thereby their functioning and ultimately their impact on public health (“infrastructure”);

2) The way that public health system characteristics influence the implementation of interventional public health laws (“implementation”); and
3) The individual and system characteristics that influence the ability of public health systems and their community partners to develop and secure enactment of legal initiatives to advance public health (“innovation”).

The paper begins by defining PHLR and PHSSR and articulating their relationship. It then presents a causal diagram setting out the main domains of interest, which is used to frame a critical discussion of the research to date. The review demonstrates the opportunities for integrating PHLR and PHSSR through common methods drawing upon both the health services and empirical legal research traditions, and points the way to a common research agenda. The results of a common agenda and research at the intersection provide an additional powerful tool for public health’s efforts to improve public health practice and ultimately the health status of communities.

What is Public Health Law Research?

PHLR is defined as “the scientific study of the relation of law and legal practices to population health” (Burris et al. 2010). Law is given the broad definition used in modern sociolegal research. It embraces not just the “laws on the books” – the constitutions, statutes, regulations and other texts that formally state the law – but also the attitudes and practices of those who enforce the law or are subject to its enforcement (Ewick and Silbey 1998; Silbey 2005). PHLR is also concerned with the process of law-making and the determinants of public health policy. The field is inevitably multidisciplinary, informed by scholarship in law, economics, epidemiology, behavioral health, social work, sociology, anthropology, history, psychology and political science.

PHLR draws on a rich and diverse set of theories and tools for investigating how law is made and works. For example, why people obey the law has been explained in terms of deterrence (i.e., the fear of sanctions), legitimacy (i.e., normative belief in the authority of the lawmaker to set rules) and, more recently, the degree to which individuals experience encounters with law as procedurally fair (Tyler 1990). Research in the “law and society” tradition treats law less as a set of rules we consciously follow and more as a set of cultural beliefs and practices that shape how we see the world and that influence our behavior in ways of which we may not even be aware (Silbey 2005).
PHLR distinguishes three principle forms of public health law (Burris et al. 2010; Moulton et al. 2003). “Interventional public health laws” are enacted with the explicit aim of protecting and improving public health. When it is deliberately used as a tool for promoting healthier environments or behaviors, law can and should be evaluated for effectiveness, in the same manner as any other form of public health intervention. “Incidental public health laws” are enacted primarily for purposes other than promoting public health, but nonetheless have positive or negative consequences for health. Studies examining the effect of criminal laws and the practice of criminal justice agencies on the spread of communicable disease (Burris et al. 2004) or injury prevention (Wood, Ibrahim and Gentile, in press) exemplify incidental public health law research. Laws that have important unintended effects on population health can be studied; where necessary, they can be altered. Finally, “infrastructural law” establishes the powers, duties and features of public health agencies (Moulton et al. 2009). Infrastructural law is the domain in which PHLR and PHSSR most clearly overlap, and is the main focus of this paper. We also consider how health department characteristics influence the enforcement of interventional public health laws and the capacity of departments to develop and advance interventional policy initiatives.

**What is Public Health Systems and Services Research?**

Public health systems and services research (PHSSR) is a “field of study that examines the organization, financing, and delivery of public health services within communities and the impact of those services on public health” (Mays, Halverson, and Scutchfield 2004; Scutchfield and Patrick 2007). Growing from the field of Health Services Research, which focuses on the delivery and financing of medical care, PHSSR is concentrated on parallel concerns within the realm of public health service delivery (Scutchfield et al. 2007). The 1998 Institute of Medicine report called for research focused on the solution of “real world problems,” including research questions actively derived from public health practice (Institute of Medicine 1988). Both the 2002 Institute of Medicine report and *Healthy People 2010* noted the need for more research to inform policymaking, with a focus on workforce, infrastructure and financial investments (Institute of Medicine 2002) as well as better information on the character, performance and nature of local health departments (Office of Disease Prevention and Health Promotion and U.S. Department of Health and Human Services 2010). Most recently, the federal Patient Protection
and Affordable Care Act of 2010 called attention to the need for PHSSR by authorizing an ongoing, federally-funded program of research for “optimizing the delivery of public health services” (ACA Section 4301).

The field of PHSSR focuses on six categories of investigation surrounding public health services, including 1) organization and structure of public health agencies, 2) finance, 3) access to services for defined populations, 4) infrastructure and workforce, 5) quality and performance improvement, and 6) evaluation (Scutchfield FD, Mays GP, and Lurie N 2009). The causal model for research in each domain takes into account the context in which a local public health department functions; its resources, processes, and services; and the outcomes -- specifically a community’s health status -- achieved by the use of resources in providing public health services. PHSSR recognize that a health department operates within a larger system of agencies and organizations in communities that contribute to the mission of public health, “assuring conditions in which people can be healthy” (Institute of Medicine 1988).

Across each of these areas, there are a range of legal considerations, including authority to act or create policies, regulations on routine functions, and even agency composition. There are also issues related to the perception of law and its utility among individuals within a health agency, the other members of the public health system, as well as the organization overall and the manner in which law is used as a tool to advance population health. While such legal factors have been assumed or implicitly included in previous research, more research is needed to draw out these factors and carefully examine their role in public health systems and the delivery of public health services.

**Integrating PHLR and PHSSR**

PHSSR and PHLR both had early support from the CDC (Horton et al. 2002; Scutchfield et al. 2007) and have been nurtured by the Robert Wood Johnson Foundation (Larkin and McGowan 2008; Pérez and Larkin 2009; Scutchfield FD, Mays GP, and Lurie N 2009), but the two fields have developed independently. Meeting at the intersection of law and public health services, they draw on different research traditions, theories and perspectives that have not been sufficiently integrated. PHSSR is building an increasingly empirical approach to classifying public health systems, their characteristics, their resource utilization, their performance, and their
impact on population health outcomes. The goal of an integrated approach is to understand how law relates to other inputs and resources that determine how, and how effectively, public health systems operate. The present challenge is to move from the intersection of the fields to integration of theoretical frameworks, research methods and research agendas.

To address this challenge, we offer a causal diagram of the relationship among public health law, public health system characteristics, system outputs and public health outcomes (Swanson and Ibrahim 2011). We start with the input of law and move to the factors that mediate the performance of public health agencies, including legal culture and legal capacity, authority to act, structural capacity and implementation of the law. Important outputs include a variety of regulatory and health activities and the development of new health policy tools (see Figure 1). The main focus of the causal diagram is on the mechanism by which law and legal authority impacts public health agency and system performance. We also recognize that the public health agency or system operates within a larger context that includes social, political and economic forces, as well as the system of medical care delivery. The following sections provide detailed explanations of each component of the model.

Law on the Books as a Structural Factor in Public Health System Performance

The hypothesis that the law that establishes the powers, duties, organization and jurisdiction of public health agencies (“legal infrastructure”) matters has been repeatedly stated (Gostin, Burris, and Lazzarini 1999), and put into intervention practice in the form of widely circulated and adopted “model law” provisions (Hartsfield, Moulton, and McKie 2007). The starting point in Figure 1 is, therefore, legal authority. Public health agencies are established by Constitutions and laws that set their powers, geographic and topical jurisdiction, procedures and management structures. Public health departments may be organized on state, county or local levels, or in a variety of combinations; they may be established as stand-alone entities, or as units within larger health and human services agencies (Beitsch LM et al. 2006a; Beitsch LM et al. 2006b). There may be a board of health or not, and the powers of boards of health vary from giving advice when asked to formal rule-making (National Association of Local Boards of Health 2011). Not all agencies that regulate important public health matters such as education, transportation and land use planning have “public health” – or even “health” -- in their name (Institute of Medicine 2011).
Although the federal government’s role in public health has been steadily increasing for more than a century, the legal infrastructure of state and local health agencies remains almost entirely a matter of state law (Grad 2004). The heterogeneous legal architecture of public health systems across the states amounts to a long-term experiment in public health management, but one that has not been extensively evaluated. Even in recent textbooks, the discussion of law in public health administration is limited to the functions of the agency in the context of the larger governmental bureaucracy (Novick, Morrow, and Mays 2008) as opposed to a more thorough examination of the internal processes by which the law shapes public health agency performance.

*Legal Implementation and Public Health System Performance*

The exercise of legal authority – implementation -- is mediated by two sets of variables in Figure 1: legal capacity and structural capacity. Decades of research in empirical legal studies and implementation has documented the decisive impact of implementation factors on how the law on the books is actually expressed in practice (Bardach 1977). This rich tradition in legal research has not been widely drawn upon in public health law. How actors in public health systems understand and apply the law, and the resources they have to do it, are likely to be powerful mediators of the effect of legal infrastructure on public health system outputs and outcomes.

Perhaps the largest deficit in the existing research on the role of law in public health agency performance is its thin conception of legal capacity. There is a small literature that defines “legal competencies” (Center for Law and the Public's Health 2001; Gebbie et al. 2008; Lichtveld et al. 2002) The field has not yet drawn on the theoretically richer sociolegal literature on “legal consciousness” and “legality” of individuals and organizations (Cooper 1995; Edelman 2005; Edelman and Suchman 1997; Ewick and Silbey 1998; Silbey 2005). In this approach, law is not treated simply as a “tool” or “rule” that agents wield or consciously or subconsciously obey, but also as a set of individual beliefs and organizational norms about what the legal system is, how it actually works, and whether and why people should obey its commands. It encompasses what people consciously believe about law, but also a range of unconsciously accepted norms and assumptions. Sociolegal theory moves beyond how people “use law,” or their explicit legal knowledge, allowing researchers to bring critical empirical attention to bear on how the rule of law is socially constructed, contested and perpetuated in social fields (Cooper
1995). At both the individual and the institutional level, we cannot get a strong grasp on why the law is used to advance public health goals without understanding “when and by whom it is not used” (Silbey 2005)(p326). It is as important to study why some health departments avoid law as a tool as it is to identify the determinants of creative and effective regulatory behavior. The sociolegal literature provides powerful theoretical and research methods for getting at how health system agents understand their legal roles and authority to implement laws, their ability to act within a legal framework, and indeed the nature of that legal framework itself (Yngvesson 1988).

Figure 1 suggests that both objective legal competency – explicit knowledge of the law and one’s legal role -- and the individual’s ideas about law (“legal consciousness”) are important determinants of an individual and agency’s capacity to use legal authority effectively. Figure 1 posits that these can be understood as individual-level attributes and as characteristics of an agency or other organizational unit, and that individual legal consciousness and competencies influence and are influenced by the institution’s legal culture. The effect of law on organizations, particularly in terms of compliance, has traditionally been a core concern of empirical legal research, and has produced a distinguished body of theory and evidence (Ayres and Braithwaite 1992; Braithwaite and Drahos 2000; Chriqui, O'Connor, and Chaloupka 2011; Gunningham 2009; Power 1997). Work on law in organizations has shown the value of understanding the construction of law at an organizational level and the processes through which legal decisions are made (Edelman and Suchman 1997). Organizations are not simply passive recipients of outside legal commands, but are actively engaged in interpreting and reshaping law to make it consistent with organizational imperatives, norms and beliefs (Edelman 2005; Teubner 1987). Strategies of law enforcement and regulation are shaped by politics and even a version of fashion, not just evidence and experience (Power 1997; Wood 2004). Understanding the institutional culture and its determinants is essential to a proper assessment of the work of a regulatory agency.

This leads to the second set of mediating variables – the structural capacity of the health department and the public health system in which it operates. In the health services tradition, PHSSR posits that a set of basic structural capacities can be measured and assessed for their effect on the performance of public health systems (Bhandari et al. 2010). These include human, physical, and financial resources, organization and relationships, agency information and technology. These capacities influence implementation of the system’s legally established
mission. For example, environmental work such as inspection and citation is dependent on agency budgets, and as the budget drops, so does environmental work at the health department (Arnett 2011).

Structural capacity interacts with legal capacity and the larger social context. If there are constraints in human or financial resources, there may not be time to think about law or funds available for public health staff to collaborate with legal counsel. If the county executive is running for reelection at the same time the health department is citing influential local business owners for violating health department regulations, there may be more or less subtle pressure on the health department to ignore a major responsibility. If self-regulation and small government are the current fashion, advancing new command and control rules enforced by a bureaucracy will be difficult. Health departments are bureaucratic regulatory agencies. They operate within a larger administrative system, and may be constrained by internal competition for rewards or resources, or jurisdictional confusion. Authority may be conferred to other departments or divisions within the bureaucracy (e.g. environmental, public safety or transportation) or the authority to act may be shared.

Public Health System Outputs and Outcomes

Figure 1 depicts the outputs of the public health system as the ten essential public health services. This typology is now at the center of efforts within PHSSR to develop robust measures of public health agency performance. Their origin is the 1988 IOM report (Institute of Medicine 1988), which defined public health governmental responsibility as assessment, policy development and assurance. These were seen as specifically governmental activities, to be carried out by governmental public health agencies in partnership with other organizations that contribute to public health. The IOM report called attention to the unique roles played by governmental public health agencies in mobilizing, coordinating, and monitoring the contributions of other organizations that operate within the larger public health system. Later work elaborated those three governmental responsibilities into ten essential public health services, which are shown in figure 1. The ten essential public health services have become a touchstone for public health activities involving performance and drafting public health related documents describing the role of local health departments and their system partners (Erwin 2008).
Work with the three core responsibilities and the ten essential public health services derived from them has led to new understanding of the mechanisms by which the public health infrastructure and inputs influence performance. For example, the services have been used recently to develop an evidence-based typology of local public health systems that allows classification and comparison of systems based on the scope of public health activities performed, the array of organizations involved in performing these activities, and the distribution of effort between the governmental public health agency and other system partners (Mays et al. 2010). The instruments developed by the National Public Health Performance Standards Program have become vital to the establishment of the Public Health Accreditation Board (PHAB), which began its initial accreditation efforts in the fall of 2011 (Martin et al. 2010; Mays et al. 2007; Public Health Accreditation Board 2009).

**Public Health Policy Innovation**

Health policy can be an important output as well as an input for public health systems. The practice, experience and knowledge acquired by actors within the public health system can drive the development of new public health laws, regulations and enforcement strategies to improve system performance and public health outcomes. Health agencies often have substantial regulatory authority themselves, and can partner with other stakeholders to advance legislative and regulatory initiatives before other policymaking bodies, and in some instances, be involved in litigation. The extent to which individual staff and health agencies have an appetite for understanding and using the law and under what circumstances this occurs is a gap in the existing literature on policy innovation within health departments.

**Existing Research**

The PHLR literature has not yet been catalogued. The number of studies in incidental and interventional PHLR is predicted to be quite large, but we have been able to identify only a handful of studies addressing infrastructural legal questions. A recent review of PHSSR identified 74 papers on the organization and structure of public health in the published and gray literatures (Hyde 2011). Most studies looked at the relationship between organization, structure and performance, but few engaged law in a significant way. While the connections between
PHSSR and PHLR are apparent when one looks for them, the existing research does not sufficiently engage both disciplines.

The strength of evidence as a guide to practice is customarily assessed with reference to a hierarchy of research design. The criteria of the U.S. Preventative Services Task Force give greatest weight to the randomized controlled trial, followed by controlled observational or quasi-experimental studies, uncontrolled studies, qualitative case studies and expert opinion (Harris et al. 2001). Research at the intersection of PHSSR and PHLR has to date clustered in the lower reaches of this hierarchy. In this respect, PHSSR/PHLR is consistent with other areas of empirical health law (Mello and Zeiler 2008). The limited literature offers instances of ambitious design and rigorous execution, but also weaknesses. Law is generally insufficiently theorized or measured, or a thorough legal analysis is used in a study that does not adequately account for the influence of the public health department or system’s organizational characteristics. Strong qualitative findings are not followed up with research that could yield generalizable results. We will draw on examples from the existing literature addressing infrastructural law in PHSSR to illustrate these weaknesses and suggest topical and methodological directions for integrating the two fields.

*Infrastructure*

The important implications for practice of rigorous infrastructural research at the borders of PHLR and PHSSR can be seen in studies that have taken on one of the most widely held assumptions in public health law. For quite some time, influential scholars in public health law have pointed to antiquated or technologically superannuated statutes as a barrier to effective public health agency performance (Gostin, Burris, and Lazzarini 1999). The work in PHSSR to develop measures of public health system performance makes it possible now to investigate that question empirically, and there are a few studies that attempt to do so. McCann, for example, examined the core question of how the type and extent of discretion granted by a statute to a public health agency influenced the agency’s success in implementing the statute (McCann 2009). Using a quasi-experimental, time-series design, the study defined three forms of discretion in setting standards for newborn screening: to decide which conditions to include in the screening panel; to set the charges assessed on hospitals; and to develop the criteria for including conditions in the panel. The study tested the hypothesis that each of these forms of
Moving from Intersection to Integration

discretion would be associated with fewer implementation problems. Fiscal discretion and the authority to choose what conditions to include were associated with successful implementation, while, interestingly, the discretion to set criteria slowed implementation. The study, as the author puts it, “only scratches the surface of public health law’s importance for public health practice” (McCann 2009). Discretion is well-theorized and has a robust impact, but the contradictory findings suggest that key mediating factors are missing from the theoretical framework.

One cure for laws that are out of date or inconsistent with best practices, widely promoted, has been the “model law.” Model laws are intended to set out clearer requirements more in keeping with current technologies, health practices and legal norms (Erickson et al. 2002). Hartsfield and colleagues asked a deceptively simple question: to what extent did the sponsors of model laws provide information on the procedures – and the evidence – used to develop them? Such information was, it turned out, provided for only 7 of 107 model public health laws published between 1907 and 2004 (Hartsfield, Moulton, and McKie 2007). Model laws may embody evidence-based best practices, but there is, apparently, no evidence that they do. Simple in design and narrow in scope, the study illustrates the valuable insights that can be gleaned from systematic legal research and straightforward content analysis.

Using performance data from the National Public Health Performance Standards (Centers for Disease Control and Prevention 2011), Merrill and colleagues examined the congruence among state enabling statutes, the mission and essential services of public health as defined in “Public Health in America,” (Public Health Functions Steering Committee Office of Disease Prevention and Health Promotion 1994) and self-reported delivery of at least some essential services in 207 localities (Merrill et al. 2009). The data in this cross-sectional, observational study were analyzed using binary logistic regression. In most local public health systems, the agency mission and essential services were rated congruent or highly congruent with the state statutory language constituting the agencies’ legal infrastructure. The association between congruence and agency performance varied from positive to negative across the ten essential services. As the authors themselves observe, the challenge for future research is to integrate legal variables with the wider range of structural capacity and other factors depicted in Figure 1 in a design that will support causal inference.
Most recently, Jacobson and colleagues investigated how federal and state laws influence the preparedness of public health systems as reflected in the knowledge and attitudes of 144 agency staff, their legal counselors and legislative staff in nine states (Jacobson et al. In press). Explicit criteria were used to select sites that varied by key characteristics (per capita health expenditure, geographic region, organization of the public health system and level of emergency preparedness) and semi-structured interviews were used to elicit what laws respondents thought were influencing preparedness and how. Although the study did not explicitly deploy sociolegal theories of individual or organizational legal consciousness, the researchers took it as given that there are “gaps between the objective and perceived legal environments,” and that much of the explanation of how law influences preparedness would be found in them. The study found that local public health agency practitioners are ill-informed and poorly advised about legal requirements influencing preparedness. Though not generalizable, the study is richly informative of the kinds of legal conundrums health officials worry about, the ways they try to resolve them, and the types of effects law has on preparedness. The study exemplifies the potential for qualitative research to address important questions in rigorous ways – and the need for quantitative research to investigate hypotheses emerging from the study.

McCann’s study included the collection of data on newborn screening statutes in all 50 states over a period of 16 years. Merrill and colleagues collected the basic public health enabling statutes from all the states (Meier, Merrill, and Gebbie 2009). In neither case, however, was there a detailed description of the legal data set or how it was created, nor is there any indication that the data are available to other researchers. This is not unusual, and exemplifies an area where new standards could benefit the field. In a few topics, notably tobacco control and alcohol policy, excellent scientific data sets are available and information about law is readily accessible to the public (Fishman et al. 1999; National Institute on Alcohol Abuse and Alcoholism 2011), but all these individual data collections could be bricks in a building the field needs to construct together: a comprehensive, consistent data set of infrastructural public health law.

Implementation and Enforcement
McCann looked at the association between discretion and outcomes, but did not study the process of implementation itself, work that would perhaps have helped explain why similar kinds of discretion had opposite effects on outputs. Merrill and colleagues found some associations between statutory language that matched public health mission and service standards and the delivery of services, but likewise did not examine the processes through which that occurred. Moreover, they used a design that could not illuminate whether more expansive statutes produce higher functioning agencies or higher functioning agencies earn more expansive powers. The study of how legal authority or other legal factors influence the day-to-day practices of health agencies is in its infancy. There are, as far as we know, no studies other than Jacobson and colleagues’ (Jacobson et al. In press) that observe and assess the actual day-to-day exercise of general legal authority within health agencies, let alone any that draw upon (and test) the elements posited as important in Figure 1.

The impact of particular interventional health laws is the most fully developed topic area of PHLR. The depth of the literature is captured in reviews of such important interventions as safety belt law (Houston and Richardson 2005), alcohol taxes (Wagenaar, Tobler, and Komro 2010), workplace smoking bans (Fichtenberg and Glantz 2002), and school vaccination requirements (Briss et al. 2000). Some evaluations of interventional health laws include data on implementation, but by no means do all. Few studies consider in depth the effect of health department activities or health system characteristics on implementation. An exception is the rich body of qualitative work that has looked at how power, values and politics have played out in the enforcement by health and other agencies of smoking restrictions (Ashley, Northrup, and Ferrence 1998; Howard et al. 2001; Montini and Bero 2008).

An excellent example is Jacobson and Wasserman’s report of case studies in seven states and 19 local jurisdictions (Jacobson and Wasserman 1999). The researchers found a sharp divergence in enforcement practice between clean indoor air laws and youth access restrictions. The former were seen by health officials as largely self-enforcing, so most agencies only took action when there was a complaint. Laws that restrict youth access to tobacco, by contrast, were deemed by most agencies to require more active enforcement, though strategies and intensity varied. The authors identified a number of legal and structural capacity issues retarding enforcement, including lack of resources, concerns on the part of counsel that enforcement would withstand legal challenge, and fragmented enforcement authority. This work illustrates
the practical value of research that illuminates the determinants of effective enforcement. Like McCann’s work, though, it also offers tantalizing glimpses of topics that could use much greater attention, such as the nature and quality of the relationship between health officials and their legal advisers, or the gap between counsel’s beliefs about litigation success and the actual outcomes (Nixon, Mahmoud, and Glantz 2004). Like Jacobson and colleagues’ preparedness work, it invites confirmatory quantitative research.

Innovation in Policymaking

The role of state and local health agencies in the development of and advocacy for new health laws is another area where there is a high level of interest and a low level of research. Again, the exception has to be made for anti-smoking policy-making, which has been the subject of many useful case studies that identify strategies and mediating factors that influence the success of health agencies in promoting new health laws (Dearlove and Glantz 2002; Givel 2005; Ibrahim, Tsoukalas, and Glantz 2004; Macdonald and Glantz 1997; Tsoukalas and Glantz 2003) The HIV epidemic has also produced some strong policy-making research, perhaps most notably the work of political scientist Ronald Bayer (Bayer 1989).

Putting aside their value as embodiments of best practices, model laws have received attention as a mechanism to “galvanize” lawmaker interest in public health. To test this effect, Meier and colleagues undertook a comparative case study of the process and impact of considering the Turning Point Collaborative Model Public Health Act in four states (Meier, Hodge, and Gebbie 2009). The Turning Point Model Law embodied a comprehensive set of recommendations regarding agency mission and function, infrastructure, collaborations and partnerships and authorities and powers. The study conceptualized the use of the model law in three stages – use of the act to develop or focus support for reform; drafting of actual state legislation; and enactment – and identified barriers and facilitators at each stage. In two of the states, the model law process did in itself help set the agenda for change; in a third it failed to generate momentum to the second stage, while in the fourth the model law added some impetus to reform efforts that were already under way. The study’s careful, qualitative research gives us insight into questions no one has tried to answer before. The next step is to build on the formative findings in more robust, generalizable studies. It will be useful to take a broader view of health policy-making and its determinants, for example looking for patterns in the breadth of
health issues states choose to regulate and the depth or intensity of their regulations on particular topics.

Policy development outside of legislatures – litigation, administrative rule-making, executive orders and enforcement strategies – has been almost entirely neglected. The public health work of attorneys general, which has led to such important results as the 1998 Master Settlement Agreement, has not been studied by PHSSR or PHLR researchers (Jacobson and Wasserman 1999; Rutkow and Teret 2010). What Kromm and colleagues call “public health advocacy in the courts” encompasses a wide range of “actions by public health professionals that inform and affect how courts approach matters that affect the public's health legislative modes of policy development” (Kromm et al. 2009). These include not only filing suits but also providing expertise as witnesses, submitting amicus briefs, educating the judiciary, influencing judicial selection, and monitoring and evaluating court outcomes. The production of administrative law, arguably the most important vehicle for regulation under the control of public health agencies (Kinney 2002), has likewise not been touched by empirical research in PHLR or PHSSR.

The Path Forward

The 2011 Institute of Medicine report, *For the Public’s Health: Revitalizing Law and Policy to Meet New Challenges*, devotes an entire chapter on law and public health infrastructure (Institute of Medicine 2011). The report recommends once more a review of state and local public health laws to ensure appropriate authority for public health agencies, but it adds some new, important and quite practical suggestions: ensuring that health officials have adequate access to legal counsel; making evaluation of the health effects and costs associated with legislation, regulations and policies prior to and following implementation a more frequent practice; and using better research methods to assess the strength of evidence regarding the health impacts of public policies (Institute of Medicine 2011). All of these recommendations speak to the need for an integrated approach between PHLR and PHSSR, and, at their core, point to three primary PHLR/PHSSR research questions.

Three Questions
What is the relationship between statutory architecture and language and the outputs and outcomes of public health systems? Despite the repeated recommendations from the IOM, there are those who doubt that legal infrastructure is a significant factor in agency performance (Richards and Rathbun 2003) and in the thirty years this has been a talking point, most legislatures have declined to act. Answering the question is still important because if legal infrastructure does matter, understanding how will allow potentially low cost changes in law that can promote greater effectiveness in the delivery of health services. If there is a right way or a best practice in public health infrastructural law, we should know what it is. The IOM Committee and many supporters have encouraged states to consider the Turning Point Model Act, but the fact remains that it is based on the wisdom of experience rather than empirical evidence of effectiveness. While innovation and improvement should not await definitive evidence, neither should it proceed in an evidence-free zone. We still don’t know whether law works, which law(s) work, or even whether the exercise of law reform is good or bad for public health systems in terms of gaining a place on the policy agenda (DeVille 2009).

The legal relationship of local health departments to each other is an urgent area for integrated PHLR-PHSSR work. Governments across the nation continue to restructure health departments in the face of massive budget cuts. New organizational structures vary from voluntary shared services among local health departments to regionalization and varying levels of centralization where multiple local health agencies are joined together under the leadership of the state health department (Libbey and Miyahara 2011). What is the optimal arrangement to share services? Is it best to be voluntary and flexible or should strict parameters be mandated by law? Are there certain types of services that should be shared? Are there particular responsibilities - for example fiscal decisions - that should remain under the legal authority of individual local health agencies? How does preemption factor into the considerations? Economics must be balanced with legal requirements for the performance of health departments as outlined in state constitutions and statutory requirements for both state and local health departments (Baker and Koplan 2002; Baker et al. 2005; Institute of Medicine 2002). As state and local agencies experiment with various models of shared governance, real-time evaluations of the performance of the health agencies and the associated impact on population health will be needed. The new structures also call for ongoing assessment of the functions of the health departments and the quality of the provision of public health services.
What are the structural/operational determinants of implementation of law by health agencies? Few would disagree with the observation that some health agencies and leaders use legal authority more robustly, and more effectively, than others. But why? Is it an accident of personality, background, geography or local political culture? Does it reflect the way a public health agency is organized or its resources and capacities? Is there any sign that legal training for health officials, or health training for lawyers, plays a role? Research that documents how legal authority is used and identifies enabling and retarding factors can help us increase the effective use of legal authority. If we can figure out what the most effective users of legal power know, how they learned it, and how they put it into practice in the context of other governmental agencies and other levels of government, we have something to scale up to health agencies across the land.

The IOM acknowledges the importance of legal capacity and “recommends that every public health agency in the country have adequate access to dedicated governmental legal counsel with public health expertise” (Institute of Medicine 2011). It is a reasonable suggestion, but there are plenty of questions. How much of a change would this be – i.e., what is the current state of legal representation for health officials? How does the need for and provision of counsel in health agencies fit within the overall design of legal services in local and state governments? The current ASTHO and NACCHO biennial health agency surveys contain two questions addressing the legal counsel arrangement and legal services provided. However, this is merely descriptive and does not explain the logic for the arrangement or the mechanism by which the provision of services occur; future research must address this gap. Jacobson and colleagues’ work on preparedness makes a good start (Jacobson et al. In press). The PHLR NPO has undertaken a formative study of legal representation available to health officials at the state and local level.

The empirical study of regulation and governance, which focuses on effective use of regulatory authority, has largely neglected public health agencies (Braithwaite, Coglianese, and Levi-Faur 2007). The IOM report mentions two important implementation issues arising from our federal system - preemption and co-enforcement. Preemption is a constraint: federal law can supersede state law, and state law can supersede local. Preemption can bring uniformity, but it can also cut off policy innovation. It is, politically, a weapon of choice for any interest group that wants to set a broadly applicable standard, so is a regular topic of health policy making.
Knowing more about how the risk or reality of preemption is managed by public health agencies can help us assess whether its overall impact on enforcement is positive or negative. By contrast, co-enforcement – where state and federal agencies join forces to enforce health and safety regulations – is potentially a source of new practical authority and efficiency. Potentially, but so far not shown to be positive by evidence. The need for research on the relationship between federal, state and local governments reinforces the need for more sophisticated analyses which can account for hierarchical relationships.

Accreditation, which the IOM recommends and that has had an enthusiastic reception in public health practice, is seen both as a way of improving agency performance and increasing agency credibility and influence (Bender and Halverson 2010). As a moving target, accreditation in recent years presented a number of pressing legal issues relating to how current state law would influence the process. PHLR funded a legal mapping study and case studies of pilot accreditation implementation. The study found an unexpected synergy between the emerging accreditation movement and an interest in regionalization largely driven by increasingly severe budget pressures (Matthews and Markiewicz 2011). As accreditation settles in, and budgets stabilize, research at the intersection of PHLR and PHSSR will be needed to determine whether accreditation is bearing fruit. With time, we will be able to get a clearer picture of how legal infrastructure influences the choice to be accredited, and the success of the process; how accreditation influences agency performance, including enforcement of law, achievement of basic outputs, and ability to devise and promote new uses of legal authority. The challenge is to ensure that research on accreditation takes on the legal issues in a sophisticated and determined way.

**What individual and system characteristics influence the ability of public health systems and their community partners to develop and secure enactment of legal initiatives to advance public health?** We have a toe-hold in the climb to understand the role of health agencies in promoting innovation in public health law. Case studies in areas like tobacco and HIV document the contest between those promoting health regulations and those who oppose them on ideological or economic grounds. There is no magic bullet to be discovered, no secret to winning in the political process. The importance of the research is in increasing the odds for healthy public policy by identifying the strategies and habits of mind of agencies and leaders that come up with and are able to advance laws and regulations that improve the public’s health.
The IOM offers a ringing endorsement of a Health in All Policies approach (HIAP). HIAP involves collaboration among government and the private sector to devise and implement coordinated strategies to promote health (Collins and Koplan 2009; Institute of Medicine 2011). Operationally, this entails creation of coalitions or councils of the many public and private actors whose activities are important to health. Data on the known or potential effects of policies are seen as essential to moving diverse stakeholders to align their interested and agree on action. Health Impact Assessment (HIA) is “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (Sapsin et al. 2004). From a research perspective, the question is whether HIA in fact does mobilize and inform stakeholders, get health on the agenda, and produce better policy outcomes for health. Although a new development in the US, HIA has been used for more than a decade in Europe and some cautionary findings have emerged (Wright, Parry, and Mathers 2005)

**Improving Research at the Intersection of PHLR and PHSSR**

These primary questions are the nucleus of a research agenda that will continue to grow as more researchers, practitioners and funders immerse themselves in the field. They implicate a number of challenges for the field in producing more, and more rigorous, research.

**Data: [This is a level 3 head]**

Poor availability of legal data has been identified as a general challenge to empirical health law (Mello and Zeiler 2008). The lack of legal data sets that capture the features of public health law in a scientifically credible, and useable, way, has been a chronic impediment to sophisticated research on the impact of law in public health systems (Chriqui, O’Connor, and Chaloupka 2011). Taking up a suggestion made by PHLR researchers (Burris et al. 2010), the IOM called for work to test the feasibility of systematic “policy surveillance,” as part of a broader effort to give “evidence-based policy” the same sort of documentary resources as evidence-based medicine (Institute of Medicine 2011). The Committee suggested that CDC develop a policy surveillance pilot, which would track a set of important laws across the states and over time. For its part, The National Program Office of PHLR has begun the process of building consensus on basic standards and methods for quantitative legal data sets (Tremper, Thomas, and Wagenaar 2010). The standard includes a core set of elements such as date of passage, date of enactment, regulatory targets, and the regulatory elements themselves,
comprehensively and (for the most part) dichotomously coded. The NPO also suggests the use of FIPS (Federal Information Processing Standard) codes as unique identifiers for states, facilitating the integration of legal with data on public health agency performance or population health outcomes. Studies that create such data sets – referred to as “mapping studies” (Burris et al. 2010) -- should be recognized as an important contribution to public health research, even if they do not themselves correlate the legal data with outputs or outcomes (Ibrahim et al. 2011)

The routine inclusion of a protocol documenting the search methods to collect the laws, a codebook to document the variables and types of measures, and the data itself in readily accessible forms, such as Excel, ASCII, or specific statistical analysis package formats, creates the possibility that many more health researchers can have access to updatable, adaptable and low-cost legal data. The hope is that supply will stimulate demand as researchers realize that prior barriers to including legal variables in research are falling. The value of this approach to collecting and coding laws goes beyond research, however. A wide audience of policy-makers, advocates, health professionals and non-governmental organizations has an interest in knowing what the law is and how it is changing. Currently, they get this information from occasional “fifty-state surveys” published by researchers in legal or medical journals (Burris et al. 2011; Gostin et al. 1996; Houry et al. 2002), or from websites maintained by various interested parties, such as the Governors Highway Safety Association. Published 50 state surveys rapidly go out of date, while websites rarely provide the documentation that would allow a user to assess the validity or timeliness of the information, or the level of detail about the laws themselves that allow independent assessment of the law. Legal data that are not prepared quantitatively cannot readily be integrated with health data. Across the new landscape of health information data platforms like the County Health Rankings that organize health data by jurisdiction (Robert Wood Johnson Foundation and The University of Wisconsin Population Health Institute 2011), law is almost entirely absent. Policy surveillance would serve these needs as well and provide a more comprehensive picture of the law.

The development of PHSSR has faced comparable obstacles. Basic data about health systems have been unavailable. For example, between 1992 and 2008, no data on the current characteristics of state health departments were gathered. In other instances, data were available but not comparable. NACCHO, ASTHO and NALBOH, working with the University of
Kentucky’s Center for Public Health Services and Research, have established a standardized database for state and local health departments and their governing entities. These data may be matched with legal data to answer questions posed by PHLR and PHSSR researchers (Scutchfield et al. 2009).

**Researchers**

A hallmark of PHSSR has been its organic connection as a research enterprise with public health practice. The ethic of research by practitioners about practice for practitioners remains strong, and is also a value of PHLR. Partnerships with practitioners can drive the appetite for research among practitioners, both as consumers of research findings and participants in research development and implementation. Practitioners can provide valuable insight into the development of research questions and guide the conduct of the research to ensure that the findings are relevant and useful. Public health practice-based research networks (PBRNs) can facilitate and institutionalize this type of inquiry by bringing multiple public health practice settings together into an ongoing collaboration with academic partners to support the design, implementation, translation, and dissemination of new research (Mays 2011). The practice setting can provide a real-time “lab” in which to study the development, implementation and effect of public health laws on public health systems performance and even encourage experimental study designs. Adding PHLR to the mix adds a new segment of practice -- legal counsel. Unlike health practitioners, lawyers typically are not exposed to empirical research or methods during their professional training, so bringing lawyers into research and practice networks requires openness and willingness to learn on both professional sides. Mello and Zeiler have discussed the many challenges of recruiting and supporting researchers in empirical health law (Mello and Zeiler 2008).

**Research Methods**

The limited PHLR/PHSSR literature is comprised primarily of qualitative and uncontrolled observational designs. Most existing PHSSR studies use cross-sectional designs that do not support robust causal inferences (Lenaway et al. 2006). This is to be expected in a new area of research, where formative research helps create a foundation for hypotheses and the development of research tools. More sophisticated methods, including longitudinal analyses and
multilevel modeling can be used to examine change over time and the relationships between different levels of government agencies. Most changes in laws and regulations affecting population health are natural experiments, offering great scope for sophisticated quasi-experimental studies that can provide a strong basis for assessing the causal impact of law (Wagenaar and Komro 2011). Randomized controlled trials of law will always be the exception: the same diversity of law-making and executive authority that creates a favorable climate for quasi experiments makes true experiments difficult to arrange. Researchers are virtually never in a position vis a vis legislators or public health officials to randomly assign a set of local health departments to one legal intervention and another group to a control/placebo – though including practitioners in research teams could make it more feasible to implement new legal interventions in a manner that would allow experimental designs (Ayres, Listokin, and Abramowicz 2010). PHLR is developing a series of methods monographs describing the tools for studying how law influences health and health behavior, including both guidance on research design and on how to theorize and measure legal effects (Public Health Law Research Program 2011). PHSSR’s funding is being directed in particular at supporting quasi-experimental studies.

Care should be taken to assure that classic epidemiologic methodology issues are addressed. Research in PHSSR and PHLR should be sensitive to issues of confounding, bias and the inferential limits of cross sectional regression analysis. Rigor in scientific method must apply to the research of PHSSR and PHLR if it is to be an accepted part of the community of science. That said, it is also important to affirm the value of qualitative and observational research, legal mapping studies and health impact assessments to public health research and practice. Qualitative research can provide invaluable insights, rooted in the experience of their peers, to practitioners and policy makers. When longitudinal data or cross-jurisdictional variation are lacking, cross-sectional studies and regression analysis are indispensable to building a broad evidence base. HIA and other modes of systematic rapid assessment make up in timeliness what they lack in certainty. The field requires work at every level of the evidentiary hierarchy. Progress means that every study at every level is as well-done, as well-targeted and as well-timed as possible.
Conclusion

Historically and to the present day, law has been treated, by empirical researchers, as an after-thought to the organization and work of health agencies. Perhaps due to a lack of a clear conceptual framework and supporting research methodologies, researchers often leave law for discussion sections rather than truly engage and measure the effects of law. There can now be no disputing that law is an important force at work in public health systems, and that it requires the same study and attention as other drivers of public health agency characteristics, performance and outcomes. Integration of PHLR and PHSSR is essential because law, for all its importance, is a force that works in interaction with other factors – resources, training, community values – and the impact of which is likely to vary over time, topic and place. Our vision is not one of a new crop of studies devoted solely to law (although some formative research is certainly needed) but the emergence of PHLR as an integral part of PHSSR and vice versa.

More and better research is needed – but research remains a means, not the end. Law has enormous potential to improve the delivery of public health services, both in terms of efficiency and effectiveness. In the face of demands for austerity, resistance to a “nanny state,” and long-term ideological attacks on the effectiveness of government regulation of any kind, policy makers and public health practitioners must be able to demonstrate that what they are doing works and works cost-effectively. Reorganization of health departments, redrafting of enabling statutes, accreditation, and the development of new legal health interventions have no inherent value: they are justified by results. And so it should be. PHSSR and PHLR must work in partnership with practice to wisely use, credibly justify and (in so doing) properly increase public funding and political support for public health.

Acknowledgements: The authors thank Angela McGowan, Anthony Moulton, Eleanor Kinney and an anonymous reviewer for helpful comments on an earlier version of this manuscript. The authors’ work was supported by grants from the Robert Wood Johnson Foundation. The opinions expressed in this article are the responsibility of the authors and do not necessarily represent the view of the Foundation.
Figure 1: A Causal Diagram of the Impact of Law and Legal Practices on Public Health System Performance
References

Arnett, P. 2011. *Unpublished Dissertation*. Lexington, KY: University of Kentucky.

Ashley, M., D. Northrup, and R. Ferrence. 1998. The Ontario ban on smoking on school property: Issues and challenges in enforcement. *Canadian Journal of Public Health* 89: 229 - 32.

Ayres, I., and J. Braithwaite. 1992. Responsive Regulation: Transcending the Deregulation Debate. New York and Oxford: Oxford University Press.

Ayres, I., Y. Listokin, and M. Abramowicz. 2010. Randomizing Law In Yale Faculty Scholarship Series. New Haven: Yale Law School.

Baker, E.L., Jr., and J.P. Koplan. 2002. Strengthening the nation's public health infrastructure: historic challenge, unprecedented opportunity. *Health Aff (Millwood)* 21: 15-27.

Baker, E.L., M.A. Potter, D.L. Jones, S.L. Mercer, J.P. Cioffi, L.W. Green, P.K. Halverson, M.Y. Lichtveld, and D.W. Fleming. 2005. The public health infrastructure and our nation's health. *Annu Rev Public Health* 26: 303-18.

Bardach, E. 1977. *The Implementation Game: What Happens After a Bill Becomes Law*. Cambridge, MA: MIT Press.

Bayer, R. 1989. *Private Acts, Social Consequences: AIDS and the Politics of Public Health*. New York: The Free Press.

Beitsch LM, Brooks RG, Grigg M, and Menachemi N. 2006a. Structure and Functions of State Public Health Agencies. *American Journal of Public Health* 96: 167-72.

Beitsch LM, Grigg M, Menachemi N, and Brooks RG. 2006b. Roles of Local Public Health Agencies Within the State Public Health System. *Journal of Public Health Management and Practice* 12: 232-41.

Bender, K., and P.K. Halverson. 2010. Quality Improvement and Accreditation: What Might It Look Like? *Journal of Public Health Management and Practice* 16: 79-82 10.1097/PHH.0b013e3181c2c7b8.

Bhandari, M.W., F.D. Scutchfield, R. Charnigo, M.C. Riddell, and G.P. Mays. 2010. New data, same story? Revisiting studies on the relationship of local public health systems characteristics to public health performance. *J Public Health Manag Pract* 16: 110-7.

Braithwaite, J., C. Coglianese, and D. Levi-Faur. 2007. Can regulation and governance make a difference? *Regulation and Governance* 1: 1-7.

Braithwaite, J., and P. Drahos. 2000. *Global Business Regulation*. Cambridge: Cambridge University Press.

Briss, P.A., L.E. Rodewald, A.R. Hinman, A.M. Shefer, R.A. Strikas, R.R. Bernier, V.G. Carande-Kulis, H.R. Yusuf, S.M. Ndiaye, and S.M. Williams. 2000. Reviews of evidence regarding interventions to improve vaccination coverage in children, adolescents, and adults. The Task Force on Community Preventive Services. *Am J Prev Med* 18: 97-140.

Burris, S., E.D. Anderson, A. Craigg, C.S. Davis, and P. Case. 2011. Racial disparities in Injection-Related HIV: A Case Study of Toxic Law. *Temple Law Review* 82: 1263-307.

Burris, S., K.M. Blankenship, M. Donoghoe, S. Sherman, J.S. Vernick, P. Case, Z. Lazzarini, and S. Koester. 2004. Addressing the "Risk Environment" for Injection Drug Users: The Mysterious Case of the Missing Cop. *Milbank Quarterly* 82: 125-56.
Burris, S., A.C. Wagenaar, J. Swanson, J.K. Ibrahim, J. Wood, and M.M. Mello. 2010. Making the case for laws that improve health: a framework for public health law research. *Milbank Q* 88: 169-210.

Center for Law and the Public’s Health. 2001. Core Legal Competencies for Public Health Professionals. Available at http://www.publichealthlaw.net/Training/TrainingPDFs/PHLCompetencies.pdf (accessed May 5, 2011).

Centers for Disease Control and Prevention. 2011. National Public Health Performance Standards Program (NPHPSP). Available at http://www.cdc.gov/nphpsp/index.html (accessed April 1, 2011).

Chriqui, J.F., J.C. O’Connor, and F.J. Chaloupka. 2011. What gets measured, gets changed: evaluating law and policy for maximum impact. *J Law Med Ethics* 39 Suppl 1: 21-6.

Collins, J., and J.P. Koplan. 2009. Health impact assessment: a step toward health in all policies. *JAMA* 302: 315-7.

Cooper, D. 1995. Local Government Legal Consciousness in the Shadow of Juridification. *J.L. & Soc’y* 22: 506-26.

Dearlove, J.V., and S.A. Glantz. 2002. Boards of Health as venues for clean indoor air policy making. *Am J Public Health* 92: 257-65.

DeVille, K. 2009. The turning point model state public health act and responsible public health advocacy. *J Public Health Manag Pract* 15: 281-3.

Edelman, L. 2005. *Law at Work: The Endogenous Construction of Civil Rights Law*. In *Handbook of employment discrimination research : rights and realities*, edited by L.B. Nielsen and R.L. Nelson, 337-52. Dordrecht: Springer.

Edelman, L., and M.C. Suchman. 1997. Legal Ambiguity and Symbolic Structures: Organizational Mediation of Civil Rights Law. *American Journal of Sociology* 97: 1531-76.

Erickson, D.L., L.O. Gostin, J. Street, and S.P. Mills. 2002. The power to act: two model state statutes. *J Law Med Ethics* 30: 57-62.

Erwin, P.C. 2008. The performance of local health departments: a review of the literature. *J Public Health Manag Pract* 14: E9-18.

Ewick, P., and S. Silbey. 1998. *The Common Place of Law: Stories from Everyday Life*. Chicago: University of Chicago Press.

Fichtenberg, C.M., and S.A. Glantz. 2002. Effect of smoke-free workplaces on smoking behaviour: systematic review. *BMJ* 325: 188.

Fishman, J.A., H. Allison, S.B. Knowles, B.A. Fishburn, T.A. Woollery, W.T. Marx, D.M. Shelton, C.G. Husten, and M.P. Erikson. 1999. State laws on tobacco control--United States, 1998. *MMWR CDC Surveill Summ* 48: 21-40.

Gebbie K, Rosenstock L, and Hernandez LM. 2003. *Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century*. Washington, D.C.: National Academies Press.

Gebbie, K.M., J.G. Hodge, Jr., B.M. Meier, D.H. Barrett, P. Keith, D. Koo, P.M. Sweeney, and P. Winget. 2008. Improving competencies for public health emergency legal preparedness. *J Law Med Ethics* 36: 52-6.

Givel, M. 2005. Oklahoma tobacco policy-making. *J Okla State Med Assoc* 98: 89-94.

Gostin, L.O. 2008. *Public Health Law: Power, Duty, Restraint*, Second ed. Berkeley: University of California Press.
Gostin, L.O., S. Burris, and Z. Lazzarini. 1999. The law and the public's health: a study of infectious disease law in the United States. Columbia Law Review 99: 59-128.

Gostin, L.O., Z. Lazzarini, V.S. Neslund, and M.T. Osterholm. 1996. The public health information infrastructure. A national review of the law on health information privacy. JAMA 275: 1921-7.

Grad, F. 2004. Public Health Law Manual 3rd edition: American Public Health Association.

Gunningham, N. 2009. The New Collaborative Environmental Governance: The Localization of Regulation. Journal of Law and Society 36.

Harris, R.P., M. Helfand, S.H. Woolf, K.N. Lohr, C.D. Mulrow, S.M. Teutsch, and D. Atkins. 2001. Current methods of the US Preventive Services Task Force: a review of the process. Am J Prev Med 20: 21-35.

Hartsfield, D., A.D. Moulton, and K.L. McKie. 2007. A Review of Model Public Health Laws. Am J Public Health 97: S56-61.

Horton, H., G.S. Birkhead, C. Bump, S. Burris, K. Cahill, R.A. Goodman, B. Kamoie, P. Kocher, Z. Lazzarini, K. McKie, A.D. Moulton, M.M. Ransom, F.E. Shaw, B. Silverstein, and J.S. Vernick. 2002. The dimensions of public health law research. Journal of Law, Medicine and Ethics 30: 197-201.

Houry, D., C.J. Sachs, K.M. Feldhaus, and J. Linden. 2002. Violence-inflicted injuries: reporting laws in the fifty states. Ann Emerg Med 39: 56-60.

Houston, D.J., and L.E. Richardson, Jr. 2005. Getting Americans to buckle up: the efficacy of state seat belt laws. Accid Anal Prev 37: 1114-20.

Howard, K.A., K.M. Ribisl, B. Howard-Pitney, G.J. Norman, and L.A. Rohrbach. 2001. What factors are associated with local enforcement of laws banning illegal tobacco sales to minors? A study of 182 law enforcement agencies in California. Prev Med 33: 63-70.

Hyde, J. 2011. The Structure and Organization of Governmental Public Health in the United States: A Systematic Review of Literature. Robert Wood Johnson Foundation.

Ibrahim, J.K., E.D. Anderson, S.C. Burris, and A.C. Wagenaar. 2011. State laws restricting driver use of mobile communications devices: "distracted-driving" provisions, 1992-2010. Am J Prev Med 40: 659-65.

Ibrahim, J.K., T.H. Tsoukalas, and S.A. Glantz. 2004. Public health foundations and the tobacco industry: lessons from Minnesota. Tob Control 13: 228-36.

Institute of Medicine. 1988. The Future of Public Health. Washington, DC: National Academy Press.

Institute of Medicine. 2002. The Future of the Public’s Health in the 21st Century. National Academies of Science.

Institute of Medicine. 2011. For the Public's Health: Revitalizing Law and Policy to Meet New Challenges. Washington, DC: The National Academies Press.

Jacobson, P.D., and J. Wasserman. 1999. The implementation and enforcement of tobacco control laws: policy implications for activists and the industry. Journal of Health Politics, Policy & Law 24: 567-98.

Jacobson, P.D., J. Wasserman, A. Botoseneanu, A. Silverstein, and H.W. Wu. In press. The Role of Law in Public Health Preparedness: Opportunities and Challenges. Journal of Health Politics, Policy & Law.

Kinney, E.D. 2002. Administrative Law and the Public's Health. Journal of Law, Medicine & Ethics 30: 212-23.
Kromm, J.N., S. Frattaroli, J.S. Vernick, and S.P. Teret. 2009. Public health advocacy in the courts: opportunities for public health professionals. Public Health Rep 124: 889-94.

Larkin, M.A., and A.K. McGowan. 2008. Introduction: strengthening public health. J Law Med Ethics 36: 4-5.

Lenaway, D., P. Halverson, S. Sotnikov, H. Tilson, L. Corso, and W. Millington. 2006. Public health systems research: Setting a national agenda. American Journal of Public Health 96: 410-3.

Libbey, P., and B. Miyahara. 2011. Cross-Jurisdictional Relationships in Local Public Health: Preliminary Summary of an Environmental Scan. Princeton, NJ: The Robert Wood Johnson Foundation.

Lichtveld, M., J.G. Hodge, Jr., K. Gebbie, F.E. Thompson, Jr., and D.I. Loos. 2002. Preparedness on the frontline: what's law got to do with it? J Law Med Ethics 30: 184-8.

Macdonald, H.R., and S.A. Glantz. 1997. Political realities of statewide smoking legislation: the passage of California's Assembly Bill 13. Tob Control 6: 41-54.

Martin, R., A. Conseil, A. Longstaff, J. Kodo, J. Siegert, A.-M. Duguet, P. Lobato de Faria, G. Haringhuizen, J. Espin, and R. Coker. 2010. Pandemic influenza control in Europe and the constraints resulting from incoherent public health laws. BMC Public Health 10: 532.

Matthews, G., and M. Markiewicz. 2011. Legal Frameworks Supporting Public Health Department Accreditation: Key Findings and Lessons Learned from Ten States. Chapel Hill: UNC Gillings School of Global Public Health.

Mays, G., L.M. Beitsch, L. Corso, C. Chang, and R. Brewer. 2007. States gathering momentum: promising strategies for accreditation and assessment activities in multistate learning collaborative applicant States. J Public Health Manag Pract 13: 364-73.

Mays, G.P. 2011. Leading improvement through inquiry: practice-based research networks in public health. Public Health Leadership Forthcoming.

Mays, G.P., P.K. Halverson, and F.D. Scutchfield. 2004. Making public health improvement real: the vital role of systems research. J Public Health Manag Pract 10: 183-5.

Mays, G.P., F.D. Scutchfield, M.W. Bhandari, and S.A. Smith. 2010. Understanding the Organization of Public Health Delivery Systems: An Empirical Typology. Milbank Quarterly 88: 81-111.

McCann, P.J.C. 2009. Agency Discretion and Public Health Service Delivery. Health Services Research 44: 1897-908.

Meier, B.M., J.G. Hodge, Jr., and K.M. Gebbie. 2009. Transitions in state public health law: comparative analysis of state public health law reform following the Turning Point Model State Public Health Act. American Journal of Public Health 99: 423-30.

Meier, B.M., J. Merrill, and K.M. Gebbie. 2009. Modernizing state public health enabling statutes to reflect the mission and essential services of public health. J Public Health Manag Pract 15: 284-91.

Mello, M.M., and K. Zeiler. 2008. Empirical Health Law Scholarship: The State of the Field. Georgetown Law Journal 96: 649-702.

Merrill, J., B.M. Meier, J. Keeling, H. Jia, and K.M. Gebbie. 2009. Examination of the relationship between public health statute modernization and local public health system performance. J Public Health Manag Pract 15: 292-8.

Montini, T., and L. Bero. 2008. Implementation of a workplace smoking ban in bars: The limits of local discretion. BMC Public Health 8: 402.
Moulton, A., R. Gottfried, R. Goodman, A. Murphy, and R. Rawson. 2003. What is public health legal preparedness? *Journal of Law, Medicine & Ethics* 31: 672-83.

Moulton, A.D., S.L. Mercer, T. Popovic, P.A. Briss, R.A. Goodman, M.L. Thombley, R.A. Hahn, and D.M. Fox. 2009. The Scientific Basis for Law as a Public Health Tool. *Am J Public Health* 99: 17-24.

National Association of Local Boards of Health. 2011. Profile of Local Boards of Health Launched. Available at http://www.nalboh.org/Profile.htm (accessed May 5, 2011).

National Institute on Alcohol Abuse and Alcoholism. 2011. Alcohol Policy Information System (APIS). Available at http://www.alcoholpolicy.niaaa.nih.gov (accessed August 18, 2011).

Nixon, M.L., L. Mahmoud, and S.A. Glantz. 2004. Tobacco industry litigation to deter local public health ordinances: the industry usually loses in court. *Tob Control* 13: 65-73.

Novick, L., C. Morrow, and G. Mays. 2008. *Public Health Administration: Principles for Population-Based Management*. Sudbury, MA: Jones and Bartlett Publishers.

Office of Disease Prevention and Health Promotion, and U.S. Department of Health and Human Services. 2010. Healthy People 2010. Available at http://www.healthypeople.gov/2010/default.htm (accessed March 14, 2011).

Office of Disease Prevention and Health Promotion, and U.S. Department of Health and Human Services. 2011. Healthy People 2020. Available at http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=35 (accessed March 14, 2011).

Pérez, D.J., and M.A. Larkin. 2009. Commentary: Partnership for the Future of Public Health Services and Systems Research. *Health Services Research* 44: 1788-95.

Power, M. 1997. *The Audit Society: Rituals of Verification*. Oxford and New York: Oxford University Press.

Public Health Accreditation Board. 2009. Draft National Voluntary Accreditation Standards for Public Health Accreditation. Available at http://www.phaboard.org/index.php/beta_test/standards/ (accessed May 5, 2011).

Public Health Functions Steering Committee Office of Disease Prevention and Health Promotion. 1994. *Public Health in America*. Washington, DC: United States Public Health Service.

Public Health Law Research Program. 2011. Methods Guides. Available at http://publichealthlawresearch.org/methods-guides (accessed September 28, 2011).

Richards, E.P., and K.C. Rathbun. 2003. *Legislative Alternatives to the Model State Emergency Health Powers Act (MSEHPA)* Baton Rouge: LSU Program in Law, Science, and Public Health

Robert Wood Johnson Foundation, and The University of Wisconsin Population Health Institute. 2011. County Health Rankings. Available at http://www.countyhealthrankings.org/ (accessed October 4, 2011).

Rutkow, L., and S.P. Teret. 2010. Role of state attorneys general in health policy. *JAMA* 304: 1377-8.

Sapsin, J.W., L.O. Gostin, J.S. Vernick, S. Burris, and S.P. Teret. 2004. SARS and international legal preparedness. *Temple Law Review* 77: 155-74.

Scutchfield FD, Mays GP, and Lurie N. 2009. Applying health services research to public health practice: an emerging priority *Health Services Research* 44: 1775-87.
Scutchfield, F.D., N. Lawhorn, R. Ingram, D.J. Perez, R. Brewer, and M. Bhandari. 2009. Public health systems and services research: dataset development, dissemination, and use. 
*Public Health Rep* 124: 372-7.

Scutchfield, F.D., J.S. Marks, D.J. Perez, and G.P. Mays. 2007. Public health services and systems research. *Am J Prev Med* 33: 169-71.

Scutchfield, F.D., and K. Patrick. 2007. Public health systems research - The new kid on the block. *American Journal of Preventive Medicine* 32: 173-4.

Silbey, S.S. 2005. After Legal Consciousness. *Annual Review of Law and Social Science* 1: 323-68.

Swanson, J., and J. Ibrahim. 2011. Picturing Public Health Law Research: Using Causal Diagrams to Model and Test Theory. Available at http://publichealthlawresearch.org/methods-guide-type/monograph/method-guide/picturing-public-health-law-research-using-causal-diagrams (accessed December 14, 2011).

Teubner, G. 1987. *Juridification: Concepts, Aspects, Limits, Solutions*. In *Juridification of Social Spheres: A Comparative Analysis in the Areas of Labour, Corporate, Antitrust and Social and Welfare Law*, edited by G. Teubner, 389-435? Berlin and New York: De Gruyter.

Tobey, J. 1939. *Public Health Law: A Manual of Law for Sanitarians*, 2d ed. New York: Commonwealth Press.

Tremper, C., S. Thomas, and A.C. Wagenaar. 2010. Measuring Law for Evaluation Research. *Eval Rev* 34: 242-66.

Tsoukalas, T., and S.A. Glantz. 2003. The Duluth clean indoor air ordinance: problems and success in fighting the tobacco industry at the local level in the 21st century. *Am J Public Health* 93: 1214-21.

Tyler, T.R. 1990. *Why People Obey the Law*. New Haven: Yale University Press.

Wagenaar, A.C., and K.A. Komro. 2011. *Natural Experiments: Design Elements for Optimal Causal Inference*. In *PHLR Methods Mongraph Series*. Philadelphia: Public Health Law Research.

Wagenaar, A.C., A.L. Tobler, and K.A. Komro. 2010. Effects of Alcohol Tax and Price Policies on Morbidity and Mortality: A Systematic Review. *Am J Public Health*: AJP0.2009.186007.

Wood, J. 2004. Cultural Change in the Governance of Security. *Policing and Society* 14: 31-48.

Wright, J., J. Parry, and J. Mathers. 2005. Participation in health impact assessment: objectives, methods and core values. *Bulletin of the World Health Organization* 83: 58-63.

Yngvesson, B. 1988. Making Law at the Doorway: The Clerk, the Court, and the Construction of Community in a New England Town. *Law & Society Review* 22: 409-48.