What Gets Measured, Gets Changed: Evaluating Law and Policy for Maximum Impact

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Does law matter regarding public health outcomes? Regardless of what one may think about the answer to this age-old question, in recent years the public health community has increasingly demonstrated and recognized the roles that public health laws and policies play in effectuating long-lasting and broad-based population-wide changes.[1] Public health laws and policies have been instrumental in the following ways: reducing smoking prevalence; reducing underage alcohol-related drinking, driving, crashes, and fatalities; reducing exposure to second-hand smoke; eliminating vaccine–associated paralytic poliomyelitis (VAPP); increasing seat-belt use and reducing traffic fatalities; reducing dental carries; and reducing access to and consumption of unhealthy foods and beverages sold in schools and to reductions in caloric intake and overweight.[2] In fact, in a review of the ten greatest public health achievements in the 20th century, all were influenced by policy change.[3]

While there are decades of evidence as to the role that public health law and policy play in improving societal health, literature on the need for and the "art and science" of conducting systematic law and policy surveillance and evaluation research has only recently emerged.[4] In this article, we briefly discuss: (1) the need for and relevance of conducting systematic policy surveillance and evaluation; (2) factors to consider when measuring or evaluating laws and policies; and (3) examples of how policy impact studies have informed policy debates and decision-making.

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The Need for Systematic Public Health Law and Policy Surveillance

In recent years, numerous scholars and public health law practitioners have provided the foundation for how law is a critical tool in public health.[5] Without systems in place to carefully monitor these laws and their changes on population health outcomes, we will be unable to truly understand their impact and utility in advancing public health. In essence, the notion of "public health law and policy surveillance" must be institutionalized. In public health, surveillance and reporting of disease are standard practices. According to the Centers for Disease Control and Prevention, "public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data.... Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation, and formulating research hypotheses."[6] A logical extension of this definition would be for public health law and policy surveillance systems that involve the "ongoing, systematic collection, analysis, interpretation and dissemination" of information about a given body of public health law and policy (e.g., tobacco control, cancer control, school health policy, built environment-related, food environment, HIV/AIDS, etc.). Through such public health law and policy surveillance systems, the public health field would enhance

understanding of the impact of public health laws and policies on communities, environments, and individuals. Such systems could provide longitudinal data on the existence, breadth, and depth of such laws and policies that would be a necessary precursor to examining the impact of a given policy on communities, organizations (e.g., worksites), systems (e.g., schools), social environments (e.g., the built environment), and, ultimately, on the population at large.

At the outset, it is important to distinguish such surveillance systems from legislative or regulatory tracking systems which are commonly utilized by the public health community (see Table 1). Specifically, legislative or regulatory tracking/reporting systems are often qualitative in nature and provide (1) useful updates on the status of a bill or regulatory measure and (2) brief descriptions of the bill/regulation, sponsor (if applicable), and other pertinent information. Some systems report on all legislative/regulatory actions (enacted and pending); others only report on enacted or adopted measures. These tracking systems are useful for monitoring policy interest and action on a given topic at the federal, tribal, state, or local levels of government and are routinely compiled by organizations such as the National Conference of State Legislatures and public health and non-profit organizations.[7]

In contrast, public health law and policy surveillance systems provide information on the status of a given law or category of laws/policies as of specific points in time. Such systems often include quantitative measures of the law or very specific qualitative measures. They are essential precursors to being able to conduct studies on (1) public health law implementation (i.e., how a law is implemented and enforced); (2) intervention (i.e., the effect of a given law on health outcomes or in mediating the relationship between an intervention and health outcomes); and (3) mechanism (i.e., examination of which laws effect broader environmental, behavioral, and societal outcomes) as noted by Scott Burris and colleagues.[8] In recent years, a number of federal agencies, university researchers, and others have developed longitudinal law and policy surveillance systems on topics such as tobacco control, cancer control, alcohol policy, illicit drug laws, school-based nutrition and physical education, and beverage taxation.[9] Data from these systems have been used to examine the influence of state laws on a variety of risk factors and health outcomes including the impact of state laws and policies on: outpatient substance abuse treatment service provision, body mass index in children and youth, and on underage drinking.[10]

Table 1

Selected Factors Differentiating Policy Surveillance Systems from Policy Tracking Systems

Factor	Policy Surveillance System	Policy Tracking/Reporting System
Focus of the system	Examines changes in laws and policies over time • Usually focused on enacted laws/ policies	Reports on individual policy measures without linking to prior policy action • e.g., Bill level reporting of pending and/or enacted legislation
Type of information included	Can be quantitative and/or qualitative • Policy impact and intervention studies often rely on quantitative measures	Usually qualitative in nature • Often text-based reporting of policy actions or yes/no type reporting
Periodicity of information	Policy data tied to specific reference date • e.g., Policies in effect as of January 1 of each year	New measures reported with certain frequency • e.g., Newly introduced or enacted legislation occurring during each quarter of a given year
Utility for examining changes in law/policy over time	Easily enables monitoring of changes in codified laws	Difficult to measure details of actual policy change over time, particularly if includes introduced and enacted measures
Research/advocacy orientation	More research/evaluation oriented • Facilitates policy implementation and impact studies	More advocacy/reporting oriented • Can be utilized to show progress/success of policy advocacy

Factors to Consider When Measuring Laws and Policies

For any public health law and policy surveillance system to be useful, however, it must contain useable "data" that can be linked with relevant public health outcomes (e.g., change in school food and beverage practices or reductions in smoking prevalence). Essentially, these systems need to have systematic and reliable measures of the law which may be quantitative, qualitative, or both. For some policy issues, such as tobacco product taxation, policy measurement is relatively simple — documentation of the actual tax rate. For most other policy issues, however, measuring and accounting for policy nuances can be complicated.[11]

In the business world, there is an adage that "what gets measured gets done." In the public health policy field, perhaps the adage should be: "what gets measured, gets changed."[12] In other words, we must "measure" or evaluate the nuances of a given policy by evaluating its breadth and depth in a systematic and reliable fashion. As Melanie Wakefield and Frank Chaloupka noted, we need to be able to measure the "policy inputs."[13] With such measures, public health law and policy surveillance systems would provide the necessary policy inputs for assessing the implementation and impact of these laws and policies on the desired public health outcomes. For example, state smoke-free air laws have existed for decades. Simply documenting their presence or absence without teasing out the extent to which smoking is restricted (i.e., through designated areas or through separately ventilated, separately enclosed areas) or completely banned, does not allow one to determine what level of smoking restriction was most effective at reducing exposure to secondhand smoke. By conducting this level of policy analysis, the degree of policy or combinations of policy that may have the most impact on the desired behavior change can be shown.

Creating such measures is easier to do in theory than in practice. Charles Tremper and colleagues provide an in-depth discussion of the considerations involved with measuring laws for evaluation research.[14] Building on this work, Table 2 identifies some of the key factors to consider when conducting public health law and policy measurement and evaluation. While not intended to be all-encompassing, the table summarizes the major factors associated with several public health law and policy measurement exercises to date.[15]

The Importance of the "Feedback Loop" in Making Law and Policy

As has been noted, public health law and policy are critical public health tools.[16] Public health policymaking is, however, a recursive process that relies heavily upon: the results of implementation of a given law; scientific evidence emanating from policy impact studies; awareness of unintended consequences of a given law/policy; new problems that may arise (and for which law/policy is non-existent or limited); and the recognition that for many issues, policies evolve, incrementally, over time.[17]

A few examples illustrate the importance of this "feedback" for the policymaking process. Based on scientific evidence, vaccination law and policy in the United States changed over time from an entirely oral poliovirus vaccine (OPV) prior to 1997, to a schedule of inactivated poliovirus vaccine (IPV) followed by OPV in 1997-1999, to a schedule of entirely inactivated poliovirus vaccine (IPV) in 2000. The impacts of these policy changes were substantial. The first change, from that of an OPV-only to IPV followed by OPV, led to a 54% reduction in the mean number of cases of VAPP. The policy change to a completely IPV schedule led to a complete elimination of new cases of VAPP in the U.S.[18]

In other cases, scientific evidence or a public health problem has led to changes in policy or justification for the need for public policies in areas where they are lacking. For example, extensive scientific evidence has documented the potential revenue-generation and public health impact of tobacco product taxation.[19] Such evidence has led to substantial increases in federal and state tobacco taxes and resulting declines in tobacco use over the past 20 years.[20] Given the success of tobacco taxation in reducing smoking prevalence, the public health community is now examining the potential for sugar-sweetened beverage taxation as a way to reduce consumption of high caloric beverages among children and youth.[21] Based on the revenue generation potential of such taxes as well as the potential public health benefits, several states including California, New Mexico, New York, Rhode Island, and South Carolina introduced such measures during the 2009-2010 legislative sessions.[22]

Marketing and advertising practices also have been widely studied by the public health community and have impacted public policy and/or informed future policy debates. Scientific research has documented the extent of tobacco industry marketing and advertising to children and youth and the need for regulatory efforts to restrict such practices.[23] With Congress' passage of the Family Smoking Prevention and Tobacco Control Act in 2009, the Food and Drug Administration was authorized and subsequently issued regulations to, among other things, reduce the appeal of tobacco products to minors through marketing, labeling and advertising restrictions.[24] Similarly, in a recent study of children's exposure to food advertising

Table 2
Factors to Consider When Planning to Evaluate Laws and Policies

Consideration	Description/Issue
Evaluation purpose	What is the purpose of evaluation? Are you trying to assess the impact of a policy on changes at the community or individual levels? Is it to examine the policy response after scientific evidence documented gaps in existing policies?
"Role" of policy in the evaluation study	Does your policy "measure" the outcome variable? Is policy being examined as a causal factor associated with changes in a community or at the individual level? Or, is policy an initial outcome that could then lead to other intermediate or long-term changes?
Policy complexity	How simple or complicated is the policy issue? Are there multiple "levels" or "degrees" of the policy? Can the policy be coded using a simple dichotomous (yes/no) coding scheme? Or is it necessary to account for the breadth and depth of the policy area?
Policy jurisdiction	What jurisdiction are you examining: • Countries • National • State • Local government (e.g., county/municipal) • School district
Policy type	What type of policy will you examine: • Statutory law (legislative materials) • Administrative law (rule-making documents, administrative law decisions, Executive Orders) • Judicial decrees (case law) • Policy materials without the force of law (planning documents, position papers, memos, etc.)
Periodicity	What time period is of interest? What is the reference date for your study (e.g., laws in effect as of January 1 of each year)? Are you conducting a one-time evaluation or a longitudinal evaluation?
Resources	Are there any resource constraints that might affect your ability to conduct primary legal research and analysis? • Time, staffing, and overall budget considerations may limit your ability to collect and analyze policies for all possible units (e.g., all possible counties and municipalities or all possible school districts in the U.S.) and may require sampling techniques
Type of data seeking	Will the study require quantitative measures of the law/policy? Or will qualitative measures be able to be incorporated into the study design?
Policy status	Are you only interested in laws that have been adopted or are effective or are you interested in examining policy introductions or pending measures? Are you interested in measuring the current status of a law at a given point in time (i.e., through statutory, administrative, and/or case law) or are you interested in evaluating individual bills/regulations which may not provide the full "picture" of the law at a given point in time?
Policy availability	Depending on the type of law and the jurisdiction of interest, the laws of interest may not be readily available in electronic format for all years of interest from subscription-based legal research services such as Westlaw or Lexis-Nexis. In other cases, policy collection will be wholly dependent on primary legal research (e.g., contacting each school district directly).
Evidence-base for measurement categories	Is there a scientific basis for the policy measurement categories? Is there evidence that a certain type of law or policy or combination of approaches is most effective at achieving the desired outcome?

Notes: See also, Tremper et al., *infra* note 4, and Brownson et al., *infra* note 17.

on television, Lisa Powell and colleagues found that a voluntary agreement by 15 food and beverage companies (known collectively as the Better Business Bureau Children's Food and Beverage Advertising Initiative) to focus food and beverage advertising directed at children under 12 years old on healthy options and healthy lifestyles may have contributed to reduced exposure to advertising for sweets and sugar-sweetened beverages, but there was an overall increase in fast food and regular restaurant advertising. They also found that children aged 12-17 (who were not covered by the voluntary agreement) saw 4% more food ads

daily between 2003 and 2007, 20% more fast food ads, and 39% more full-service restaurant ads during this four-year period. The authors emphasized continued monitoring of these voluntary pledges, the need for better regulation of food and beverage advertising, and the need for restrictions on advertising targeted at youth aged 12-17.[25]

Conclusion

Law and policy are critical public health tools. To maximize their impact, however, the field needs to follow the path of public health in general by instituting methods for policy measurement and ongoing surveillance of public health laws and policies. Through such efforts, assessments of the impact of public health laws and policies can be achieved. Consequently, public health, legal, and policy communities will be better positioned to demonstrate not only what works, but also those areas where public health policy is lacking or needs to be changed.

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