Public health policy is among the most effective and cost-effective interventions in some areas of public health and is emerging as effective in others. Policy may be especially important for rural communities, where residents face serious health and economic disparities and local health departments (LHDs) lack resources to provide necessary services. Data from the 2008 National Association of County and City Health Officials National Profile of Local Health Departments were used to examine policy activity (eg, policy development; communication with policymakers) and policy adoption in a sample of 454 LHDs. Results indicate policy activity was low in some policy areas for all LHDs and lowest in all policy areas for rural departments. Policy activities had significant positive relationships with policy adoption for land use ($\phi = 0.31; P < .05$); tobacco prevention and control ($\phi = 0.37; P < .05$); indoor air quality ($\phi = 0.28; P < .05$); and nutrition and physical activity ($\phi = 0.21; P < .05$). These relationships differed for rural, suburban, and urban LHDs. Significant positive correlations were also identified between overall levels of policy activity and any policy adoption ($r = 0.16$-$0.27; P < .05$). Local health departments should increase participation in policy activity to facilitate public health policy adoption nationwide.

KEY WORDS: local health departments, public health policy, rural, urban.

The public health system faces challenges in delivering services and interventions that are effective and evidence based. Policy is one area where the evidence of effectiveness, and cost-effectiveness, is strong in some areas of public health and emerging in others. For example, research has demonstrated that a 10% cigarette price increase results in a 4.1% decrease in cigarette consumption and smoke-free workplace policies precede notable declines in smoking rates. Similar evidence is beginning to accumulate in other policy areas such as indoor air and water quality, land use policy, and nutrition and physical activity policy.

Despite some evidence of effectiveness, when asked the extent to which they conduct activities that define optimal performance for each essential service area, representatives from 315 local health departments (LHD) indicated that policy development was among the lowest performing services, at 38.1% of optimal. This low level of performance may be related to persistent underestimation of the importance of policy work. In the early 1990s, a study of the effectiveness of LHDs found that LHDs ranked policy development as the least important of the 3 core functions of public health. More recently, a 2003 survey of New York local public health system partners found just 18.2% believed policy development to be the most important of the 4 activities conducted under the develop policies and plans that support individual and community health essential service.

For LHDs to view policy activities, such as policy development and communicating with policymakers, as worthy of their limited resources, it is important to understand the relationship between LHD policy activity and local policy adoption. This study examines the relationship between policy activity and policy adoption for 454 randomly selected LHDs and their jurisdictions nationwide. Given the wide variation in LHD resources such as staffing levels, staff training, local partnerships, and financial resources, we aim to answer the following questions overall and for rural, suburban, and urban jurisdictions separately:

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1. To what extent are LHDs participating in policy activities?
2. What is the relationship between specific policy activities and related policy adoption in LHD jurisdictions?
3. Does overall level of policy activity in LHDs influence policy adoption in the jurisdiction?

Methods

Sample characteristics

This study used secondary data collected for the 2008 National Association of County and City Health Officials (NACCHO) National Profile of Local Health Departments Study. The Profile Study takes place periodically and measures LHD activities including funding, governance, capacity, and staffing. The 2008 Profile Study questionnaires included 2 components: a set of core questions sent to all LHDs and 3 sets of supplemental questions (modules) each sent to a random sample of LHDs. We used responses to questions from the core survey and from module 3, which includes policy and advocacy activities and policy adoption.

As part of the Profile Study survey process, stratified random sampling was used to identify 547 public health departments to participate in module 3. Of the 547 departments, 454 responded with an 83% response rate. Participating LHDs were classified as urban (n = 225; 50%), suburban (n = 91; 20%), and rural (n = 137; 30%) on the basis of Rural-Urban Commuting Area codes (http://depts.washington.edu/); one LHD was missing a Rural-Urban Commuting Area classification. The average jurisdiction population in the sample was 196,800, with the average population being 343,300 in urban areas, 82,800 in suburban jurisdictions, and 32,900 in rural areas.

Policy activity measures

The following 3 types of policy activities were measured in the Profile Study: (1) planning and policy development, (2) policy and advocacy communication, and (3) general policy and advocacy areas. First, planning and policy development was measured across 6 public health program areas (emergency preparedness and response, land use planning, tobacco prevention and control, influenza, obesity, and indoor air quality) with the question: The chart below shows the 10 essential public health services and 6 public health program areas in which these services might be applied. For each program area, go down the column and check each service which your LHD has employed in support of that program area during the past year.

Second, policy activity and advocacy communication was assessed at the local, state, and federal level. Participants were asked to check which of the following their jurisdiction participated in at each of the 3 (local, state, and federal) levels: (1) prepared issue briefs for policymakers; (2) gave public testimony to policymakers; (3) participated on a board or advisory panel responsible for public health policy; (4) communicated with legislators, regulatory officials, or other policymakers regarding proposed legislation, regulations, or ordinances; and (5) provided technical assistance to legislative, regulatory, or advocacy group for drafting proposed legislation, regulations, or ordinances.

In addition, participants were asked about general policy and advocacy areas in their jurisdiction with the survey item: Indicate areas where your LHD has been actively involved in policy or advocacy activities in the past 2 years (select all that apply: affordable housing, criminal justice system, education, environment, funding for access to health care, land use, labor, occupational health and safety, tobacco, other, and none).

Finally, participants were asked a general question about policy adoption: Has a new local public health ordinance or regulation been adopted in your jurisdiction in the past 2 years? (Yes/No). Participants were then asked to indicate each area in which a new local public health ordinance or regulation was adopted in the past 2 years (select all that apply: tobacco prevention and control, emergency preparedness and response, nutrition or physical activity, indoor air quality, land use planning, some other area, and none).

Data management and analysis

We used frequencies and percentages to describe policy activity and local policy change in LHD jurisdictions. The $\chi^2$ test was used to examine relationships between policy activities and rurality. Where significant associations were found, we used standardized residuals to determine where significant deviations from expected values occurred.

Correlations between activity in a specific policy area (e.g., tobacco) and policy change in the same area were examined using the phi coefficient ($\phi$). Phi ($\phi$) quantifies correlation among binary variables and has an interpretation consistent with Pearson $r$. In addition, point-biserial correlations, a special case of Pearson $r$, were used to examine relationships between any policy being adopted and overall activity in (1) planning and policy development, (2) policy and advocacy communication, and (3) general policy and advocacy areas. Overall amount of activity in each area was determined by summing responses to the items in each area for a scaled score ranging from 0 to 6 in planning and policy development and 0 to 9 in general policy and
advocacy areas. Because policy and advocacy activities were asked separately for local, state, and federal, summed values were separated for local, state, and federal LHDs for 3-scale scores, each ranging from 0 to 5.

● Results

To what extent are LHDs participating in policy activities?

Overall, LHDs participated in an average of 2.37 (SD = 1.66) of the 6 planning and policy activities, 2.98 (SD = 1.76) of the 5 local policy and advocacy communication activities, and 1.85 (SD = 1.77) and 0.37 (SD = 0.95) of the 5 state and federal policy and advocacy communication activities, respectively. In addition, LHDs participated in 2.59 (SD = 1.90) of the 9 general policy and advocacy areas (the Figure). There were significant differences (< .001) in the average number of activities rural, suburban, and urban LHDs were participating in for all categories, with urban conducting the most and rural conducting the fewest (the Figure).

Planning and policy development

Participation in planning and policy development across 6 areas varied (Table 1a), with fewer than half of LHDs participating in 4 of the 6 areas: influenza (46.3%), obesity (36.3%), land use planning (30.4%), and indoor air quality (17.2%). There was higher overall participation for emergency preparedness and response (77.3%) and tobacco prevention and control (54.9%).

Several significant associations were identified between rurality and planning and policy development activities (Table 1a). These significant relationships were driven by lower participation than expected in rural health departments for emergency preparedness and response and land use planning, and higher than expected participation for urban LHDs in influenza. There were no significant relationships between rurality and planning and policy development related to indoor air quality, obesity, or tobacco (Table 1a).

Policy and advocacy communication activities

The highest participation rate across the local, state, and federal levels was in communication with legislators, officials, or policymakers in the past 2 years (Table 1b). Participation was generally greater for local activities than state or federal activities.

Policy activity participation was associated with rurality across all local policy activities and some state and federal activities (Table 1b). Specifically, rural health departments had significantly lower participation than expected at the local level in all areas, and at the state and federal levels, in some areas. Urban health departments had higher participation than expected in preparing issue briefs and participating on a board or advisory panel at the local level, participating on a board or panel at the state level, and several activities at the federal level.

General policy and advocacy areas

Local health department participation across the 9 general policy and advocacy areas also varied greatly: tobacco (71.0%), environment (55.4%), and funding for access to health care (45.0%) had the highest participation in the past 2 years. Affordable housing (10.4%), criminal justice (10.0%), and labor (4.3%) had the lowest (Table 1c).

Of the 9 areas, significant relationships were found between rurality and involvement in environment (P < .001), funding for access to health care (P = .08), and occupational health and safety (P = .03). Rural health departments participated less often than expected in all 4 of these areas, whereas urban health departments participated more often than expected in the environment, land use planning, and occupational health and safety (Table 1c).

What is the relationship between specific policy activities and related policy adoption in LHD jurisdictions?

New local public health ordinances were passed in 59.0% of the jurisdictions in the sample, with 65.3% of urban jurisdictions adopting at least 1 new policy (Table 2). Many LHD jurisdictions passed tobacco prevention and control policies (42.4%), whereas few LHDs were in jurisdictions that passed land use planning (5.1%) or nutrition and physical activity (6.7%) policies. More than 100 LHDs indicated passing a policy in an area other than the 6 specific areas identified on the survey. Among the open-ended responses specifying the other types of policies adopted were several responses pertaining to water policies, sewage and septic tank policies, food and beverage ordinances, and animal control ordinances.

Most policy activities had a moderate and significant correlation with adoption of a corresponding local policy (Table 3). Specifically, conducting local policy activities around land use was correlated with adoption of local land use policies (φ = 0.31; P < .001) and conducting local policy activities around tobacco was correlated with adoption of local tobacco policies (φ = 0.37; P < .001). Indoor air quality planning and policy development was associated with adopting a local policy on indoor air quality (φ = 0.28; P < .001). Survey participants were not asked any question about...
policy activity specifically around nutrition and physical activity; however, planning and policy development related to obesity had a weak-to-moderate statistically significant relationship with adoption of a local nutrition and physical activity policy ($\phi = 0.21; P < .001$). Finally, no significant relationship was seen between planning and policy development and policy adoption for emergency preparedness and response ($\phi = 0.08$; nonsignificant). In addition, jurisdictions with LHDs not working on local policy were less likely to pass local policy ($\phi = -0.30; P < .001$).

Relationships between policy activity and policy adoption were moderate and significant across jurisdiction types, with a few exceptions (Table 3). Indoor air quality policy activity was not significantly associated with indoor air quality policy adoption in urban jurisdictions, but had moderate-to-strong correlations in suburban and rural jurisdictions. Rural jurisdictions demonstrated the strongest correlation between tobacco policy activity and tobacco policy adoption ($\phi = 0.39; P < .001$), but did not demonstrate a significant relationship between obesity policy activity and adoption of new nutrition and physical activity policy. Jurisdictions with LHDs not working on local policy were significantly less likely to pass local policy in urban ($\phi = -0.24; P < .001$), suburban ($\phi = -0.14; P < .001$), and rural ($\phi = -0.45; P < .001$) jurisdictions.

**How does the overall level of policy activity in an LHD influence policy adoption in the jurisdiction?**

Correlations between the overall level of policy activity and whether any public health policy had been adopted in the LHD jurisdiction were weak to moderate and significant (Table 3). The strongest relationship was between local policy and advocacy communication and local policy adoption ($r = 0.27; P < .001$), whereas the weakest was between federal policy and advocacy communication and local policy adoption ($r = 0.16; P = .001$).

There were several differences between rural, suburban, and urban LHDs in the relationship between overall levels of activity and policy adoption (Table 3). The relationship between policy adoption and planning and policy development activities was strongest in rural health departments ($r = 0.32; P < .001$) and weakest in urban health departments ($r = 0.18; P = .007$). Level of federal policy communication and advocacy activity was not significantly associated with policy adoption in rural and suburban LHDs, and level of state policy communication and advocacy activity was not associated with policy adoption in rural LHDs. For suburban LHDs, the relationship between general activities and policy adoption was also nonsignificant.
The goal of this study was to examine policy activity and policy adoption in LHDs nationwide and among urban, suburban, and rural LHDs. Our results indicated that policy activity participation rates for LHDs are low in some policy areas and for some jurisdiction types. In general, participating in policy activity had a moderate significant correlation with adoption of a corresponding local policy and LHDs not participating in policy activities were less likely to adopt new public health policy. Finally, urban jurisdictions were more likely than expected to pass new public health policies (Table 2).

Rural jurisdictions had lower levels of participation in all types of activities than suburban and rural jurisdictions (the Figure) and were less likely than expected to participate in 16 of the 30 policy activities measured.
TABLE 2 ● Proportion of LHDs Passing Public Health Policies in 454 Urban, Suburban, and Rural Local Health Departments Across the United States (2008)^

<table>
<thead>
<tr>
<th>Policy Area</th>
<th>Total (N = 454), %</th>
<th>Urban (n = 225), %</th>
<th>Suburban (n = 91), %</th>
<th>Rural (n = 137), %</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passed any new local public health ordinance in last 2 y</td>
<td>59.0</td>
<td>65.3^+</td>
<td>49.4</td>
<td>51.8</td>
<td>.002</td>
</tr>
<tr>
<td>Specific policies passed in last 2 y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco prevention and control</td>
<td>42.4</td>
<td>45.7</td>
<td>38.7</td>
<td>39.1</td>
<td>ns</td>
</tr>
<tr>
<td>Emergency preparedness and response</td>
<td>16.5</td>
<td>19.6</td>
<td>5.3−</td>
<td>18.3</td>
<td>.02</td>
</tr>
<tr>
<td>Nutrition or physical activity</td>
<td>6.7</td>
<td>8.5</td>
<td>6.7</td>
<td>3.5</td>
<td>ns</td>
</tr>
<tr>
<td>Indoor air quality</td>
<td>11.1</td>
<td>11.1</td>
<td>13.3</td>
<td>9.6</td>
<td>ns</td>
</tr>
<tr>
<td>Land use planning</td>
<td>5.1</td>
<td>6.0</td>
<td>5.3</td>
<td>3.5</td>
<td>ns</td>
</tr>
<tr>
<td>Some other area</td>
<td>29.6</td>
<td>36.2^+</td>
<td>25.3</td>
<td>20.9−</td>
<td>.01</td>
</tr>
</tbody>
</table>

Abbreviations: LHD, local health departments; ns, nonsignificant. Plus signs (+) indicate significantly higher than expected number of LHDs in a category; minus signs (–) indicate significantly lower than expected.

(Table 1). This finding is consistent with past research; the 1990 Profile Study found that only 37% to 47% of smaller jurisdictions were active in any of 3 policy areas, compared with 83% to 84% of larger jurisdictions. The 2005 Profile Study found that LHDs serving smaller populations were consistently less likely than LHDs serving larger populations to conduct 10 different policy making and advocacy activities.

Tobacco control and emergency preparedness were 2 policy areas that demonstrated greater participation across all jurisdiction types. High rates of activity in tobacco control and emergency preparedness may be due to the availability of funding to conduct activities, public support for policy change, and widely available evidence of policy successes in these areas. Local policy development is among the essential services most sensitive to LHD spending. In recent years, additional funding has been available for LHD emergency preparedness activities, for example, the events of 9/11 brought emergency preparedness into public discussion, and increased the visibility and support for emergency preparedness activities nationwide. Of the 454 LHDs in the study, 329 (72.5%) were receiving specific emergency preparedness funding from the Centers for Disease Control and Prevention as part of their budget.

Although specific funding for tobacco prevention and control was unspecified as an LHD resource in the Profile Study, since 1998, many states have received annual funds from the Master Settlement Agreement and all states collect tobacco excise taxes.

TABLE 3 ● Correlations Between Policy Activity and Policy Adoption Among Urban, Suburban, and Rural Jurisdictions in the 2008 NACCHO Profile Study^a

<table>
<thead>
<tr>
<th>Area of specific policy activity</th>
<th>All (N = 454)</th>
<th>Urban (n = 225)</th>
<th>Suburban (n = 91)</th>
<th>Rural (n = 137)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>0.37^b</td>
<td>0.38^p</td>
<td>0.29^p</td>
<td>0.39^p</td>
</tr>
<tr>
<td>Land use</td>
<td>0.31^b</td>
<td>0.36^p</td>
<td>0.19</td>
<td>0.25^p</td>
</tr>
<tr>
<td>Indoor air quality</td>
<td>0.28^b</td>
<td>0.10</td>
<td>0.56^p</td>
<td>0.43^p</td>
</tr>
<tr>
<td>Obesity/nutrition and physical activity</td>
<td>0.21^b</td>
<td>0.23^p</td>
<td>0.25^p</td>
<td>0.12</td>
</tr>
<tr>
<td>Emergency planning</td>
<td>0.08</td>
<td>0.08</td>
<td>−0.16</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Correlation with corresponding policy adoption in jurisdiction

<table>
<thead>
<tr>
<th>Policy area</th>
<th>Planning and policy development</th>
<th>Policy and advocacy communication—Local</th>
<th>Policy and advocacy communication—State</th>
<th>Policy and advocacy communication—Federal</th>
<th>General policy and advocacy activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and policy development</td>
<td>0.26^b</td>
<td>0.18^p</td>
<td>0.24^p</td>
<td>0.32^p</td>
<td>0.21^b</td>
</tr>
<tr>
<td>Policy and advocacy communication—Local</td>
<td>0.27^b</td>
<td>0.26^p</td>
<td>0.22^p</td>
<td>0.24^p</td>
<td>0.16^b</td>
</tr>
<tr>
<td>Policy and advocacy communication—State</td>
<td>0.21^b</td>
<td>0.17^p</td>
<td>0.30^p</td>
<td>0.13^p</td>
<td>0.16^b</td>
</tr>
<tr>
<td>Policy and advocacy communication—Federal</td>
<td>0.16^b</td>
<td>0.19^p</td>
<td>0.08^p</td>
<td>0.02^p</td>
<td>0.21^b</td>
</tr>
<tr>
<td>General policy and advocacy activities</td>
<td>0.21^b</td>
<td>0.23^p</td>
<td>0.10^p</td>
<td>0.19^p</td>
<td>0.21^b</td>
</tr>
</tbody>
</table>

Abbreviation: NACCHO, National Association of County and City Health Officials.

^aSection (a) shows the correlation between specific policy activities and corresponding policy adoption; (b) shows the correlation between the overall level of activity and adoption of any public health policy.

^bP < .01.
(www.tobaccofreekids.org). Although it is unclear whether or how these funds are allocated to LHDs, some of the funding is spent on programs to reduce tobacco use. In addition, evidence around the effectiveness of tobacco policy is strong and widely available. Tobacco policy is also often controversial, gaining public attention and support, which may prompt LHDs to adopt the issue. In addition, some diffusion of innovations may be at work with tobacco policy; LHDs may decide to follow the lead of neighboring jurisdictions or notable jurisdictions working on clean indoor air policies.

Obesity-related activities had among the lowest levels of participation in planning and policy development of the 6 areas measured (Table 1a). A recent article reported that local LHDs are well suited to address obesity because they have the ability to respond to local concerns while considering specific costs and impacts applicable to their communities. For example, New York City’s Department of Health and Mental Hygiene was the first local agency to play a role in passing a menu labeling ordinance. This success was due, in part, to collaboration with other organizations and legal advisors, community research to inform the efficacy of proposed policy components, and the presence of strong local public health advocates. In addition to menu labeling, LHDs working on obesity policy have the opportunity to learn from successes in tobacco policy by increasing public policy efforts related to soda or caloric sweetened beverage taxes. Recent studies suggest that, much like tobacco taxes, a penny-per-ounce tax on sugared beverages has the potential to reduce consumption in the short term, reduce obesity in the long term, and save $17 billion in medical costs over a decade. Like cigarette taxes, soda taxes also generate revenue and so may be more viable economically than other policy strategies; a 1-cent-per-ounce tax would generate $14.9 billion annually nationwide. Finally, the increasing attention paid to the national obesity epidemic may present an opportunity for LHDs to take advantage of public support on this issue.

Even when public support and a strong evidence base are available, LHDs must choose which programs and activities to conduct. Large urban health departments like New York City have the capacity to identify and choose to work on problems that many small rural LHD jurisdictions cannot support. Approximately 40% of LHDs nationwide serve small rural areas, and 92% of these serve jurisdictions with populations with fewer than 50,000 residents. These departments are less likely to have formally trained full-time staff, tend to have staff with limited public health skill sets, and are often isolated from other public health care professionals. In 1992-1993, 44% of small departments serving fewer than 25,000 employed 4 or fewer staff members. One study also found smaller rural departments less likely than larger urban departments to receive foundation funding for certain policy activities.

In addition to limitations on staffing and funding, small rural jurisdictions tend to have fewer local partner types. In larger jurisdictions, LHDs may have more opportunities to work with organizations, citizen groups, businesses, and others who lead or aid in policy development and other activities. Finally, small rural health departments may also perceive the risk of taking on large industry as a major barrier to policy work. For example, the New York City Health Department faced legal challenges in drafting its menu labeling rule, which would have been difficult for a small rural health department to counter.

### Conclusion

This study has a few limitations including cross-sectional data. In addition, analyses were limited by inconsistent measurement of policy activity and adoption. Specifically, the variation in the types of policies specified for the questions about policy activities and policy adoption resulted in a mismatch for several areas. For example, although participants were asked about policy activities in environment, access to health care, influenza, occupational health, and criminal justice, no corresponding policy adoption questions were asked. In addition, although participants were asked about policy activity around obesity, the related policy adoption questions focused on nutrition and physical activity. There was no measure of existing policy in jurisdictions, which likely influenced the policy activities jurisdictions participated in. Finally, the Profile Study has not been consistent in the policy questions asked at each administration, so examining policy activity and adoption over time using this data source is not possible.

Given the potential of policy interventions to improve public health, and the positive and significant relationship between LHD policy activities and local policy adoption, it is critical that LHDs add policy activities to their strategic plans and increase participation, or begin participation, in the policy process. In the absence of adequate resources, rural LHDs may need to employ creative strategies, such as using new technologies like Facebook or Twitter, to inform and collaborate with constituents, partners, and policymakers on policy development. All LHDs might learn from past policy successes and begin new policy work by building on public support already established for issues like obesity prevention.
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