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The Role of Health and Physical Activity in the Adoption of Innovative Land Use Policy: Findings From Surveys of Local Governments

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Background: Research has established that built environments, including street networks, bicycle and pedestrian infrastructure, and land uses, can positively affect the frequency and duration of daily physical activity. Attention is now being given to policy frameworks such as zoning codes that set the standards and expectations for this built environment. ***Methods:*** We examined the adoption and implementation of mixed-use and related zoning provisions with specific attention to the role that physical activity serves as a motivation for such policies and to what extent public health agencies influence the adoption process. A sample of planning directors from 53 communities with outstanding examples of mixed-use developments and 145 randomly selected midsized communities were surveyed. ***Results:*** Physical activity is not a dominant motivator in master plans and/or zoning codes and public health agencies played minor roles in policy adoption. However, physical activity as a motivation appears to be increasing in recent years and is associated with higher levels of policy innovation. ***Conclusions:*** Recommendations include framing the importance of physical activity in terms of other dominant concerns such as livability, dynamic centers, and economic development. Health agencies are encouraged to work in coalitions to focus arguments on behalf of physical activity.

Keywords: city planning, active living, diffusion of innovation

There is an emerging body of evidence that the built environment, including street networks, bicycle and pedestrian infrastructure, and land uses, can positively affect the frequency and duration of physical activity in daily life.[1–10] As recognition of the relationship between the built environment, active living, and health grows, researchers are increasingly focusing on policy implementation as a means of changing the form and function of human settlements.[11,12] Understanding how to motivate policy change and how local policies are implemented were among the top 5 research priorities related to the environment, policy, and physical activity identified by a conference of experts.[13] The Active Living Research program of the Robert Wood Johnson Foundation has placed increasing importance on research that will stimulate policy change.[11,14] Some of the focus among health researchers has been on how to translate scientific evidence into policy change, highlighting the differences between the 2 realms.[12] Schmid, Pratt, and Witmer develop a model of how policy progresses from formulation to implementation to influences on physical activity and health.[15] They distinguish between policy research and research to identify correlates of activity and note a need to "better understand how policies are made and implemented."

The importance of the fields of health and urban planning to work together in this arena is widely recognized.[5,9,15,16] There is a history of efforts to reform US land use development practice away from what is commonly characterized as auto-oriented sprawl.[17] Early efforts in the 1970s and 1980s focused on compact development and mixed-uses, often motivated by environmental preservation and energy conservation.[18–20] Over time, additional objectives included reducing traffic congestion, central-city revitalization, sustainability, air pollution, and climate change.[21–29] The concepts proposed have included jobs-housing balance, neo-traditional development, new urbanism, transit-oriented development, and smart growth, among others.[30–34] State growth management programs have sought to require effective land use planning and regulation.[35] The current emphasis on active living and health reinforces and extends these efforts.

There are many exciting and inspiring examples of plans, communities, and individual projects throughout the US that are designed to reduce auto dependence and foster active living. And yet the entrenchment of the status quo throughout the US suggests that these reform efforts have a long way to go. It stands to reason that a better understanding of the process of the acceptance and implementation of innovation at the local level is needed.

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A wide range of research literature from different fields looks at factors that influence policy adoption. One useful area of research uses the notion of innovation and the diffusion of innovation as a central concept.[36] The research, which helps guide our work, looks for patterns in the spread of a policy and the factors or political mechanisms that are common to adopting jurisdictions. These studies generally consider 3 categories of factors: (1) motivations to innovate, (2) obstacles to innovation, and (3) resources available for overcoming obstacles.[37–42] Elected officials, other public agencies, and interest groups have been identified as both obstacles to innovation and a resource to overcome opposition in local land use planning.[43]

This paper examines the role of physical activity as a motivation for local land use policy innovation and public health agencies as a player in the process. The notion of innovation is defined with respect to policies that counter the dominant American land use form that results in the separation of land uses, low densities and development patterns that require reliance on the private automobile. We use mixed-use development as an innovation proxy, and defined it as a mix of residential and nonresidential uses (such as commercial and public) on the same parcel or in the same building. While it is a throwback to the preautomobile era for many communities, new mixed-use development challenges current practices. A content analysis of the monthly development trade publication *Urban Land* revealed 6 articles on mixed-uses in the 1970s versus 26 in the 1980s, 16 in the 1990s, and 58 in the current decade (through June 2008), underscoring that the current emphasis on mixed-use is a relatively recent phenomenon.[I]

By definition, mixed-use creates proximity among different land uses thus increasing the possibilities of walking as the preferred mode of travel. Furthermore, the higher densities often associated with mixed-use developments can make the provision of transit more feasible. While mixed-use development is innovative in its own right, we expected to find that jurisdictions that allow this type of development would also have in place a wide range of other innovative policies that support built environments that facilitate active living.

The focus here is on the highest level of policy commitment: formal policies, adopted in the form of codes or regulations, which bear legal authority.[15] A city or county zoning code is the most common mechanism for such policies. Specific questions that this paper will address include the following:

- To what extent were innovative land use policies that support active living adopted by local governments explicitly motivated by increasing physical activity?
- To what extent did public health agencies play a role in the adoption of such policies?

To address these questions, we will consider the experiences of both communities identified as having innovative land use policies in place and randomly selected midsized communities that are queried with respect to their readiness for innovation.

Methods

The study used 2 surveys to address the research questions: (1) an in-depth survey of planning directors from 53 communities with outstanding examples of mixed-use developments (Best Practices) and (2) a survey of 145 planning directors from randomly selected midsized cities (Random). Both surveys were conducted on the web, with invitations and at least 2 reminders sent via e-mail. In most cases the survey was personally addressed to the planning director. Phone messages were also left with the Best Practices communities to improve the response rate. The survey methodology was reviewed and approved by the IRB at both authors' universities.

A sample of 218 Best Practices communities was identified from a number of sources including planning, environmental and advocacy organizations that have given awards to innovative mixed-use developments throughout the US.[II] The sample included cities and counties with examples of recognized, modern mixed-use projects completed or underway *and* mixed-use zoning policies as determined through an internet search of a jurisdiction's zoning code. The survey was test piloted and then conducted between March 28th and September 17th, 2008. The final dataset contains responses representing 53 communities, a 24% response rate. The respondents were from 24 states. The states with the most responses are Florida (7), North Carolina, South Carolina, California (5 each), and Oregon (4). Eight respondents were from counties, one from a tribal government, and the remainder from cities or towns. The population of the Best Practices communities ranged from under 1000 to 1.2 million, with 55% between 25,000 and 200,000. Respondents had worked for the community an average of 12 years (SD = 9.7 years), with 74% having worked there for 3 years or more. Nearly all (92%) of were members of the American Planning Association (APA) and 62% were members of the American Institute of Certified Planners (AICP). The majority (62%) had a degree in city, urban, and/or regional planning. The survey did not ask other demographic questions.

The Random survey focused on cities and towns with at least 25,000, but fewer than 200,000 population. We decided to limit the size range because of our focus on transferability of findings. Experiences of very large cities differ from that of small towns. We hoped that planners and policy makers in cities anywhere within the range chosen would feel that they could learn from comparably sized jurisdictions. It was thought that cities smaller than 25,000 may not have the planning capacity to adopt many innovative land use policies. The upper limit was chosen so as to exclude municipalities with wide variations in population which would raise questions of comparability. There were only 94 cities in the 2002 Census of Governments with populations of 200,000 or more and these populations ranged up to 8.3 million residents. In comparison, there were 1560 cities with populations between 25,000 and fewer than 200,000 in 2002.

The sample of cities and towns was chosen using the 2002 Census of Governments; we subsequently obtained the name and contact information for the jurisdiction's planning director on the web or by phone. The survey was test piloted and then administered between December 2008 and February 2009. Of the 498 invitations, 145 responses were received, for a response rate of 29%. Comparing the respondents to the nonrespondents revealed no response bias with respect to population size. In addition, a random sample of nonrespondents with zoning codes available via the internet found comparable levels of adoption of mixed-use zoning (75% versus 84% of respondents). Respondents had worked for the community for an average of 11 years (SD = 8.6 years), with 73% having worked there for 3 or more years. Nearly all (90%) of the respondents were members of the American Planning Association (APA) and 60% were members of the American Institute of Certified Planners (AICP). The majority (63%) had a degree in city, urban, and/or regional planning.

The Best Practices survey asked details about the mixed-use zoning adopted as well as implementation experience, while the Random survey asked whether the community had adopted a list of 30 different land use, parking, and design policies. The list of innovative policies was developed based upon a review of the research and practice literature examining the links between land use and urban design and walking and bicycling. Respondents indicated that their city/town had adopted anywhere from 1 to 25 of the policies. The cities were divided into 3 categories of innovation based upon the number of policies adopted: Low, 1 to 10 policies (45 respondents); Medium, 11 to 15 policies (56 respondents); and High, 16 to 25 policies (45 respondents).

Both surveys asked about motivations for adoption and levels of support or opposition from various people and organizations internal and external to the jurisdiction, along with reasons for opposition. Nearly all of the questions were close-ended. One limitation of the survey is that respondents were asked retrospective questions about a zoning or planning process that may have occurred several years ago. In addition, while we attempted to direct the survey to long-term staff, some respondents may not have worked for the jurisdiction at the time. The questionnaire did ask about the respondent's role in the process and allowed them to answer "don't know" in response to questions.

Results

Physical Activity as a Motivation for Innovation

Respondents to the Best Practices survey were asked, "what goals do you recall were expressed for mixed-use zoning during the political/public dialogue in the adoption process for the zoning?" Respondents were also asked to indicate whether the same set of goals for mixed-use zoning were explicitly stated in their master plans, zoning codes, or both. Generally, goals were less commonly expressed in public dialogue than in the master plan or zoning code. The most common goals included livability, create dynamic centers, and economic development (Table 1). Enabling physical activity was less common overall, with only 36% of respondents citing it as expressed in the public dialogue, but 62% citing it as explicitly stated in their code or master plan. The difference between these 2 figures may indicate that planning

Table 1 Goals for Mixed-Use Zoning Cited by Planners in Best Practices Communities (n = 53; nonresponses included)

	Expressed as a goal during political/public process (%)	Stated goal in master plan, zoning code, or both (%)
Livability	81	89
Create dynamic centers within jurisdiction	76	87
Economic development	66	85
Traffic congestion relief	51	83
Enable people to live and work in the same structure	59	77
Community revitalization	59	75
Support existing development form in jurisdiction (such as traditional "Main Street" developments)	45	72
Conservation of natural resources	40	72
Desire to avoid bad development	53	66
Enabling physical activity	**36**	**62**
Energy conservation	25	55
Reduce air pollution	23	55
Responding to changing demographics	28	53
Expand existing areas that already have mixed-use developments	19	49
Accommodating the aging of the population	21	45

staff (who write the language in the plans and codes) recognize and support the link between mixed-use development and walking/bicycling, but that the public process is focused on other, perhaps more salient, objectives.

There is some indication that the role of physical activity as a motivation is increasing. Of the 8 communities where mixed-use zoning was adopted in the 1970s or 1980s, none cited physical activity as a goal expressed during the public process. This increased to 31% of the 16 communities that adopted such zoning in the 1990s and 50% of the 28 communities adopting in the 2000s. The increase was not as pronounced with respect to goals stated in the code or master plan, rising from 50% in the 1970 to 80s, to 63% and 63%, in the 1990s and 2000s, respectively. This may indicate a lag between motivations identified by planning staff and those expressed by elected officials and the general public.

Respondents to the Random survey were asked to rate the importance of motivations for all of the innovative policies adopted. The top motivations were avoiding bad development, promoting economic development, livability, creating dynamic centers, and community revitalization (Table 2). Enabling physical activity (for everyone, for children, or for older adults), energy conservation, and reducing air pollution were less important motivating factors, all averaging fewer than 3.0 on the 1 to 5 scale (1 = not important at all, 5 = very important). The importance of physical activity increased with the level of innovation. There were no significant differences in *which* of the 30 policies were adopted when comparing cities where increasing physical activity overall was more important (4 or 5 on scale) to cities where it was less important.

Table 2 Motivations for Adopting Innovative Land Use Policies (Random Survey Results)

For the innovative policies listed in the previous questions that have been adopted into your zoning code, how important were the following (motivations/plans, laws or regulations) in influencing the adoption of the provisions?	Level of importance (mean, 1–5 scale, 1 = not important at all, 5 = very important)			
	Level of Innovation			
	Low	Medium	High	All
Motivations for innovation: Issues				
Desire to avoid bad development	4.3	4.2	4.6	4.3
Economic development	4.4	4.2	4.2	4.3
Livability	**3.8**	**4.1**	**4.4**	**4.1**
Create dynamic centers	3.8	4.1	4.3	4.1
Community revitalization	3.9	4.1	4.1	4.1
Support existing development	3.6	3.7	4.0	3.8
Conservation of natural resources	**3.2**	**3.7**	**3.9**	**3.6**
Traffic congestion	**3.0**	**3.6**	**3.8**	**3.5**
Responding to changing demographics	3.3	3.4	3.5	3.4
Accommodating aging population	3.1	3.1	3.4	3.2
Expand existing areas with mixed-use	**2.4**	**3.2**	**3.4**	**3.0**
Accommodating people with disabilities	2.9	2.9	3.1	3.0
Enable people to live and work in same structure	**2.4**	**3.0**	**3.5**	**3.0**
Increase physical activity overall	**2.6**	**2.9**	**3.4**	**2.9**
Energy conservation	**2.5**	**2.9**	**3.5**	**2.9**
Reduce air pollution	**2.3**	**2.8**	**3.4**	**2.9**
Increase physical activity for children	**2.3**	**2.7**	**3.2**	**2.7**
Increase physical activity for older adults	**2.2**	**2.7**	**3.0**	**2.6**
Motivations for innovation: Policies & Plans				
Jurisdiction's Master Plan	3.9	4.3	4.6	4.3
State land use laws/regs	3.1	3.1	3.7	3.3
Regional transportation plans	2.6	3.0	3.6	3.1
State transportation plans	2.8	2.7	3.5	3.0
Regional land use laws	2.7	2.7	3.4	2.9
State housing laws/goals	2.5	2.8	3.3	2.9
Regional land use plans/policies	2.6	2.6	3.5	2.9
Federal air quality standards	2.4	2.5	2.9	2.6
n (varies due to nonresponses)	35–45	47–56	37–44	126–144

Note. Bold indicates significant differences between levels of innovation, ANOVA, $P < .05$.

The Role of Public Health Agencies in Policy Innovation

Both surveys revealed that public health agencies have played a minor or nonexistent role in local land use innovation to date. In the Best Practices survey, 42% of the respondents did not know whether public health officials were supportive or not of the mixed-use zoning code change. Of those who did know (n = 29), only 7% indicated that public health officials were supportive and 83% said that they were neither in support or opposition (Figure 1). The most supportive actors in adopting mixed-use zoning were jurisdictions' planners and elected and appointed officials, followed by developers and land owners. Respondents were also asked how influential each of these parties were; 96% of those who knew indicated that public health officials were "not influential at all," with the remainder saying they were "somewhat influential."

A larger share of the respondents to the Random survey (61%) indicated that they did not know whether public health agencies were supportive of the innovative policies their city had adopted, or that the question was "not applicable." Of the respondents who did indicate a level of support (n = 44), 46% stated that public health agencies were supportive, while 50% indicated that they were neither opposed nor supportive (Figure 2). As with mixed-use zoning among the Best Practices communities, planners and elected and appointed officials were among the most supportive players in the process of policy adoption. However, other agencies, such as metropolitan planning organizations (MPO, regional agencies charged with transportation planning under federal regulations), transit agencies, and urban renewal agencies played a more supportive role for adopting the broader list of innovative policies presented in the Random survey. Individual developers and developer interest groups were slightly more likely to oppose the broader innovations. This makes sense since some of these innovations (eg, urban growth boundaries, maximum parking requirements, and design restrictions) impose limits that developers may feel reduce profitability. In contrast, with mixed-use zoning, mixing land uses is usually allowed but not required, and developers may find the option attractive. In fact, in one-third of our Best Practices communities the zoning was initiated in response to a specific development proposal.

The Random survey also asked about several potential reasons for not adopting the innovative policies. Lack

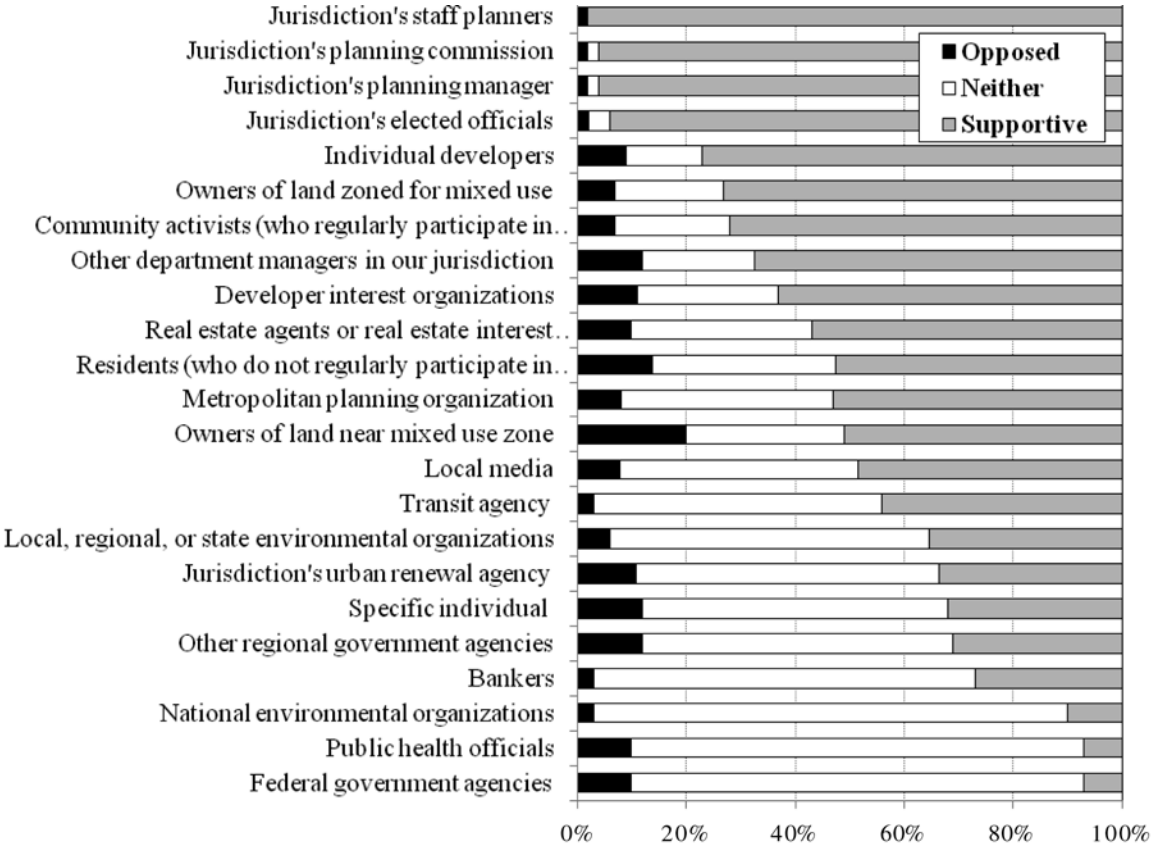

Figure 1 — Sources of support and opposition to mixed-use zoning (Best Practices Survey results). *Note: "Don't know" responses not included.*

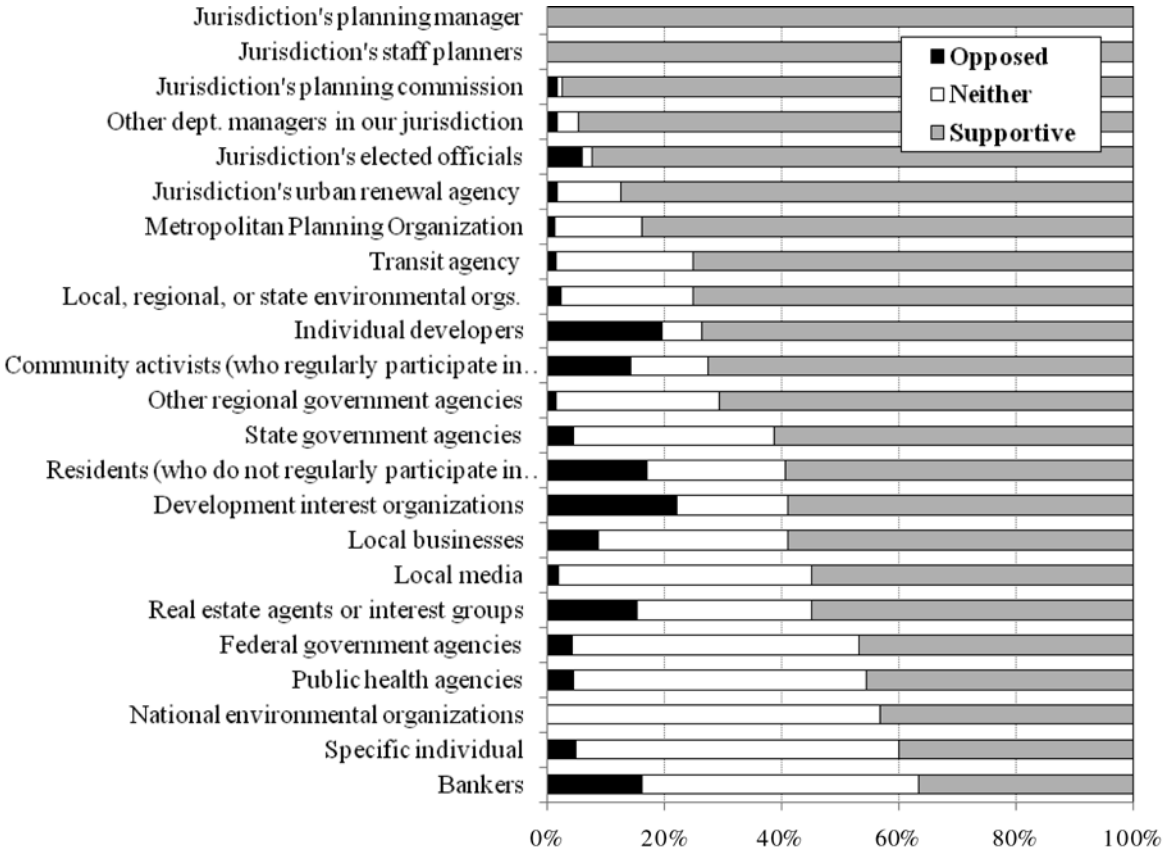

Figure 2 — Sources of support and opposition for land use policy innovation (Random Survey results). *Note: "Don't know" responses not included.*

of planning staff time, opposition from residents and the business community, and lack of leadership from elected officials were the most commonly cited reasons (Table 3). Some of the basis of this opposition included concerns about density, perceptions of incompatible land uses, challenges to the single-family residential norm, and traffic congestion.

Conclusions

This study addressed 2 primary research questions: (1) To what extent were innovative land use policies that support active living adopted by local governments explicitly motivated by increasing physical activity? and (2) To what extent did public health agencies play a role in the adoption of such policies? To address those questions, we surveyed planning officials in Best Practices communities identified as having innovative land use policies and development and randomly selected midsized communities. Regarding the first question, both surveys indicate that increasing physical activity has not been a dominant motivation in adopting land use zoning innovations that might support active living although it was cited in a majority of master plan and or zoning codes for Best Practices jurisdictions. Second, public health agencies have played a minor or nonexisting role in the process of local land use innovation.

The study design and methods present some limitations in our findings. Because the survey is retrospective, in some cases several years after the fact, respondents may not accurately remember details of the adoption process. And, while the invitation to the Best Practices survey attempted to identify a staff member involved in the mixed-use zoning adoption process, some respondents were not present during adoption. In many of these cases, respondents answered "don't know," resulting in less data to analyze. In addition, the Random survey was limited to cities of population 25,000 to fewer than 200,000, as explained in the Methods section. However, it may be that larger cities have more active public health agencies with potentially greater influence on land use policies. As with most surveys, there is a potential for respondent bias, though our checks for this did not reveal any bias with respect to population size or adoption of mixed-use development policies.Despite these limitations, the 2 surveys reveal some useful trends and help identify issues that practitioners and policy makers might address. For example, physical activity as a motivation appears to be

Table 3 Reasons for Not Adopting Innovative Policies (Random Survey Results) (n = 145)

	Somewhat + Very much	Somewhat of a reason	Very much a reason	Not a reason at all	Don't Know
A lack of planning staff time	65%	44%	21%	32%	3%
Opposition from residents	65%	44%	21%	27%	8%
Opposition from business community	57%	45%	12%	34%	9%
Lack of leadership from elected officials	52%	32%	20%	44%	5%
Opposition from other organizations	41%	34%	7%	39%	20%
Lack of knowledge about such policies	40%	37%	3%	57%	3%
Lack of leadership from planning commission	31%	28%	3%	65%	5%
Lack of leadership from planning director and/or department	13%	10%	3%	84%	4%

Note. The question wording was "Please indicate whether the following are general reasons for why the innovative policies listed in previous questions have not been adopted in your jurisdiction."

increasing in recent years and is associated with higher levels of innovation. These findings are supported by other research. A policy-focused intervention in Michigan identified growing interest in linking land use and health.[44] Interviews with planning and transportation professionals in England found that health could be an important motivation in changing planning practice.[45] A study of the local policy change process in Canada also found increasing awareness and support of the link between the built environment and public health among the general public and elected officials.[46]

This study identified staff resources and political support (including opposition from interest groups and lack of leadership) as top barriers to innovation. Other studies have identified similar barriers.[47] Inadequate funding and staff resources was also the top barrier cited by respondents to 5 separate surveys of planners, city/county officials, and environmental health officials conducted in 2004.[48] Those surveys also found that physical activity was not a priority for 20 to 38% of the agencies responding, which was a greater barrier than lack of knowledge. Examples of language from zoning codes where innovative policies have succeeded may help overcome the problem of staff resources.

Given the reasons innovative policies were not adopted, efforts to insert public health and physical activity into the process should target local elected officials, in addition to the broader community. Physical activity could be effectively framed in terms of other dominant concerns such as livability, dynamic centers, and economic development. Economic arguments and demonstrating other measurable benefits, such as improved quality of life, can be effective at convincing policy makers. In addition, research findings need to be translated to concise language that policy makers understand, focusing on findings and implications more than methods and limitations.[49] Personalizing the issue, perhaps through the use of anecdotes, may also be effective.[12]

For the broader array of innovative policies, other agencies, including MPOs, transit agencies, and urban renewal agencies also play a supportive role. For example, MPOs and transit agencies played a supportive role in over three-quarters of the Random survey communities and over 40% of the Best Practices communities. This finding has 2 implications for public health agencies. First, there is room for agencies other than the city itself to influence the process. Just because health agencies are not actively involved in the policy making process does not mean that other agencies, per se, do not play important roles. Second, health agencies might consider reaching out to these other agencies. Having a coalition of public agencies making the same argument for physical activity may be more effective than targeting only the city or county. For example, MPOs adopt the regional transportation plan, which can be a positive motivation for innovation (Table 2).

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Notes

I. The review used a variety of search terms, including mixed-use, mixed-uses, mix of uses, and mixed land uses.

II. The organizations included the American Planning Association, Town Paper, Smart Growth Network, The Congress for New Urbanism, Urban Land Institute, Walkable Communities, Inc., Robert Wood Johnson Foundation, National Association of Homebuilders, Harvard University's Government Innovators Network, Fannie Mae Foundation, Michigan Land Use Institute, University of North Carolina at Chapel Hill's Center for Urban and Regional Studies, San Diego State University's Active Living Research, The National Center for Smart Growth and Education at the University of Maryland, The Active Living Resource Center, US Department of Transportation, and the National Historic Preservation Society.

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