



Are We Ready? REPORT 2

PREPARING FOR THE PUBLIC HEALTH CHALLENGES OF **CLIMATE CHANGE**

NACCHO
National Association of County & City Health Officials

Table of Contents

Introduction	3
Research Methods	7
Findings	10
Part I: Beliefs of LHD Directors as Compared to Beliefs of the General Public.....	11
Part II: Public Health Readiness to Address Climate Change: Comparisons of 2012 and 2008.....	13
Part III: Breakdown by Belief in Climate Change, Geographic Region, and Department Budget.....	20
Part IIIa: Perceptions—Tables 11–21.....	20
Part IIIb: Perceived Health Impacts of Climate Change—Tables 22–24.....	21
Part IIIc: Anticipated Health Impacts of Climate Change—Tables 25–36.....	22
Part IIId: Current Activity and Changes to Programs in Climate Change-Related Areas—Tables 37–49.....	23
Part IIIe: Mitigation-Related Programs—Tables 50–56.....	24
Conclusion	25
References.....	27
Appendices	28
Appendix A: Survey.....	29
Appendix B: Tables 11–56.....	34

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The mission of the National Association of County and City Health Officials (NACCHO) is to be a leader, partner, catalyst, and voice for local health departments.

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> Introduction

Climate change has serious health implications for present and future generations.¹ The health effects of climate change are myriad and may include the following: heat-related health effects; extreme weather-related health effects; air pollution-related health effects; shifting distributions of disease vectors and diseases; health problems associated with food and water supply disruption and contamination; health problems associated with allergens; and health problems associated with social and economic disruption.² Local health departments (LHDs) play a vital role in helping communities prepare for and address the health effects of climate change.

To assess the readiness of LHDs to prepare for and address the health effects of climate change, the Environmental Defense Fund, the National Association of County and City Health Officials (NACCHO), and the George Mason University Center for Climate Change Communication (GMU CCCC) conducted a survey in 2008 of a nationally representative sample of LHD directors, *Are We Ready? Preparing for the Public Health Challenges of Climate Change*. The study found that most LHD directors recognized climate change as a serious threat to public health in their jurisdictions but were not confident in their agencies' capacities to assess the potential health impacts of climate change on their communities, conduct adaptation planning, or conduct mitigation planning.

To assess LHD directors' current perceptions of their agencies' readiness to prepare for and address the health effects of climate change and to assess changes in such perceptions between 2008 and 2012, NACCHO and the GMU CCCC conducted a follow-up survey to the 2008 *Are We Ready?* survey in 2012. Survey questions assessed the following: respondents' perceptions of the existence, causes, and dangers of climate change; respondents' perceptions of the past and future impacts of climate change in their jurisdictions; respondents' perceptions of their agencies' prioritization of climate change and capacity to assess and address the impacts of climate change within their jurisdictions; and the activities, both current and planned, within agency climate change-related areas and mitigation-related programs.

This report contains survey responses to a geographically representative online survey of 174 LHD directors out of 350 in the survey sample. This represents a response rate of 49.7 percent (LHD directors were randomly selected from NACCHO's membership*). Survey responses were compared to the results of the 2008 *Are We Ready?* study and to a fall 2011 national survey of American adults, *Climate Change in the American Mind: Americans' Global Warming Beliefs and Attitudes*.^{3,4} NACCHO further examined the survey responses based on three variables: (1) LHD director belief that climate change was or was not occurring; (2) geographic region of LHD; and (3) size of LHD budget.

* NACCHO's membership represents the nation's 2,800 local health departments. For more information about NACCHO's membership, visit nacchoprofilestudy.org

This report summarizes survey results measuring the following perceptions of LHD directors:

- 1. The existence, causes, and dangers of climate change**
- 2. Past and future impacts of climate change**
- 3. Prioritization and capacity to assess and address the impacts of climate change.**

Nearly 8 out of 10 health directors think that climate change is occurring.



Compared to 6 out of 10 Americans who believe that global warming is occurring.

Survey respondents were more likely than the general population to believe that climate change was happening. Three-quarters of LHD directors thought climate change was occurring, compared to 63 percent of Americans nationally who believed that “global warming” (see *Caveats* under Research Methods) was occurring.

The proportion of LHD directors who believed that climate change had impacted or would impact their jurisdictions—and who anticipated serious local health problems as a result—changed little from 2008 to 2012. In both 2008 and 2012, roughly two-thirds believed their jurisdictions had experienced climate change over the past two decades; roughly three-quarters believed their jurisdictions would experience climate change during the next two decades; and roughly 60 percent believed their jurisdictions would likely experience one or more serious public health problems as a result of climate change during the next two decades. However, in 2012, LHD directors’ beliefs

regarding the local health impacts of climate change were more polarized than they were in 2008, and the proportion of directors without opinions on the issue had decreased. Directors in 2012 were more likely than they had been four years prior either to strongly agree or to strongly disagree that climate change was or would be impacting their jurisdictions, and they were less likely to respond that they did not know whether local impacts had occurred or would occur.

Despite the sustained high percentages of respondents who believed that climate change was occurring and likely to cause serious public health problems in their jurisdictions, the proportion of LHD directors who believed that preparing to deal with the public health effects of climate change was an important priority for their health departments decreased from 51 percent in 2008 to 41 percent in 2012. Further, the proportion of LHD directors who strongly believed that preparing to deal with the public health effects of climate change was not an important priority for their health

LHDs are already dealing with the health impacts of climate change in communities across the United States. However, nearly 9 out of 10 health directors believe that their LHD lacked sufficient resources needed to protect their communities from these health impacts.



departments had significantly increased from four percent to 29 percent between the same years.

Respondents again indicated a lack of perceived expertise to prepare for the public health impacts of climate change. In the earlier 2008 survey, the majority of surveyed LHD directors believed their LHDs lacked ample expertise to assess the potential public health impacts of climate change in their jurisdictions (77%) and to create effective climate change adaptation plans (83%). In the 2012 survey, 76 percent of directors believed their LHDs lacked the expertise to assess the potential impacts, and 80 percent believed their LHDs lacked the expertise to create effective plans to protect residents from the health impacts of climate change. Furthermore, in 2012, 87 percent of LHD directors believed that their health departments did not have sufficient resources to effectively protect local residents from the health impacts of climate change.

Climate change is a severe threat to the public's health. LHDs are already dealing with the health impacts of climate change in communities across the United States. A sizeable majority of LHD directors recognized the threat of climate change both in 2008 and again in 2012. Yet, LHDs continued to lack the expertise and resources necessary to prepare for and address the health effects. As the climate proceeds to change, this space between need and ability poses a significant and urgent threat that decision-makers at all government levels must recognize and address to protect the public.

This report contains three parts. Part I compares LHD directors' perceptions regarding climate change to the perceptions of American adults generally. Part II compares the perceptions of LHD directors in 2012 to those of LHD directors surveyed in 2008. Part III presents survey data in relation to three variables: respondent belief in climate change; geographic region; and LHD budget size.



➤ Research Methods

With the completion of two “Are We Ready” surveys, the comparisons of survey results in this report provide longitudinal data about changes in attitudes and beliefs among LHD directors about climate change over time. In addition to the two national surveys of LHD directors conducted in 2008 and 2012 as part of the “Are We Ready” project, the report also uses data from a national survey of American adults conducted in fall 2011 for comparison.^{3,4} The report focuses primarily on the 2012 survey results and presents the other survey results for comparison.

The 2011 survey of American adults, *Climate Change in the American Mind: Americans’ Global Warming Beliefs and Attitudes*, was a nationally representative online survey of 1,000 American adults, fielded Oct. 20, 2011, through Nov. 16, 2011.⁴ The 2008 survey, *Are We Ready? Preparing for the Public Health Challenges of Climate Change*, was a geographically representative telephone survey of 133 LHD directors, fielded between December 2007 and February 2008.³ The 2012 survey was a geographically representative online survey of 174 LHD directors, fielded Dec. 19, 2011, through Feb. 4, 2012. Research methods used in the 2012 survey are described below.

A stratified random sample of 350 LHDs was selected to participate in the survey. The sampling plan included 12 strata based on (1) U.S. Census Region (Northeast, Midwest, South, West)²⁴ and (2) population of LHD jurisdiction (<50,000, 50,000 to 499,999, 500,000+). The sample was designed to provide both national estimates and estimates for subgroups by geographic region and jurisdiction population size. An invitation to participate in the survey was sent initially by mail on Dec. 13, 2011, followed by an e-mail invitation on Dec. 16, 2011. A second e-mail invitation containing a link to the online survey was sent on Dec. 19, 2011. Two follow-up e-mail reminders were sent to non-respondents during January 2012. Remaining non-respondents were reminded by telephone on Jan. 20, 2012.

The 2012 survey instrument largely replicated closed-ended items drawn from the 2008 survey, with several items also drawn from the 2011 national American adult survey. Questions assessed respondents’

perceptions of the existence, causes, and danger of climate change; their perceptions of past and future health impacts of climate change within their jurisdictions; their perceptions of their agencies’ prioritization of and capacity to assess and address the impacts of climate change within their jurisdictions; and the current and planned adaptation and mitigation programs of their agencies. For the purposes of a brief follow-up study, a request for the names and e-mail addresses of survey sample LHD environmental health directors was also included. The survey took an average of 10 minutes to complete and was pre-tested for length and clarity by NACCHO’s Environmental Public Health Tracking Workgroup prior to fielding.

The “Are We Ready?” project measures the climate change beliefs of LHD directors. With the release of the second report, the project offers a longitudinal look at how these beliefs are changing over time.

A total of 174 LHD directors responded to the 2012 survey (49.7% response rate); three declined. The sample differed from the general NACCHO membership in two respects: (1) survey responses reflected a higher proportion of LHDs with large budgets and a smaller proportion of LHDs with mid-sized budgets; and (2) survey responses reflected a

higher proportion of LHDs from Western states and a lower proportion of LHDs from Midwestern states.

For the purposes of survey results analysis, the 2012 survey data were downloaded and merged with the results of the 2008 survey and the 2011 national American adult survey in SPSS®. SPSS® was used for all data analyses. Indices were constructed for the number of types of current and anticipated local public health impacts of climate change and for the number of types of current and planned adaptation and mitigation programs. Cross-tabs, chi-square tests, and t-tests were used to compare the perceptions of the 2012 survey respondents to those of the 2008 survey respondents and to those of the 2011 national American adult survey respondents. Cross-tabs, chi-square tests, and t-tests were again used to compare the climate change programmatic information, as provided by respondents in the 2008 and 2012 surveys.

The 2012 survey responses were further examined in relation to three variables: (1) LHD director belief that climate change was or was not occurring; (2) geographic region of LHD; and (3) size of LHD budget. Analysis-of-variance tests were used to assess differences on the indices of impacts and programs by these three variables.

Geographic region was missing for some respondents because the respondents' agency affiliations were not identifiable. The online questionnaire did not

require a login number to identify the respondent, but the initial question on the survey requested the name of the respondent's agency. This resulted in several ambiguities (e.g., more than one LHD with the same name). Hence, the breakdowns in Part III by geographic region have fewer respondents.

Caveats: The comparisons of the 2012 survey responses to the 2011 national American adult survey responses and the 2008 survey responses are qualified by two considerations:

The 2011 national American adult survey asked respondents about the existence and causes of "global warming," while the 2012 survey asked respondents about "climate change." Recent research finds that Americans are six percent more likely to acknowledge the reality of climate change than global warming.²⁵ This tendency may have resulted in a lower proportion of 2011 national American adult survey respondents reporting a belief in "global warming" than would have reported a belief in "climate change" and thus amplified the differences identified in this report between LHD directors and the general population. However, these differences are large enough that they would still be significant had both studies used the same term.

The 2008 survey used a personal telephone interview, while the 2012 survey used an online questionnaire. Respondents may answer questions differently, depending on the survey method used.



➤ Findings

Part I: Beliefs of LHD Directors as Compared to Beliefs of the General Public

The beliefs of LHD directors surveyed in 2012 were compared to those of a national sample of American adults surveyed in fall 2011. The surveys used identical questions, with one exception: LHD directors were asked about climate change, while the national sample was asked about global warming. (For a discussion of the implications of this difference, please see the Research Methods section.)

LHD directors were significantly more likely to believe that climate change was occurring than was the general population. As indicated by Table 1, three-quarters of directors thought climate change was occurring (76.5%), compared to 63 percent of Americans nationally who believed that global warming was occurring.

LHD directors were more certain of their belief that climate change was occurring than was the general population. On a nine-point scale of belief certainty, in which nine represented “extremely sure climate change is happening,” five represented “don’t know,” and one represented “extremely sure climate change is not

TABLE 1 | LHD Directors Are More Likely to Believe that Climate Change Is Happening than the General Public

	Public Health Directors	General Public
<i>Do you think that climate change/global warming^a is happening?</i>		
Yes	76.5	63.4
No	11.2	16.6
Don't know	12.4	19.9 ^b
<i>N</i>	170	973
<i>[[if yes]: How sure are you that climate change/global warming^a is happening? [[if no]: How sure are you that climate change/global warming^a is not happening?</i>		
Extremely sure is happening	12.9	14.0
Very sure is happening	33.5	21.9
Somewhat sure is happening	27.1	24.5
Not at all sure is happening	2.9	2.9
Don't know	12.4	20.1
Not at all sure is not happening	1.2	.9
Somewhat sure is not happening	6.5	6.1
Very sure is not happening	2.4	6.1
Extremely sure is not happening	1.2	3.5
<i>N</i>	170	973
<i>mean</i>	6.84	6.28 ^c

^aThe public health director survey said “climate change”; the national sample survey said “global warming.” National data have been weighted to match census benchmarks on demographic characteristics.

^b $\chi^2 = 10.94, p < .01$

^c $t = 3.44, p < .001$

happening,” LHD directors averaged 6.8, compared to 6.3 for the general population.

Comparable proportions of LHD directors and the general public agreed that human activities were the primary cause of climate change (49% and 50%, respectively), but directors were more likely than the general population to believe that climate change was being caused by a combination of human activities and natural changes in the environment (17% and 6%, respectively).

LHD directors were significantly more likely than the general population to believe that people in the United States were currently being harmed by climate change (43% and 30%, respectively). On a six-point scale, where six represented “they are being harmed now,” and one represented “never,” LHD directors averaged 4.3, compared to 3.8 for the general population, a significantly higher mean.

However, LHD directors were almost as likely as the general population to believe that people in the United States would never be harmed by climate change (14% and 16%, respectively). (See Table 2.)

TABLE 2 | LHD Directors Are More Likely than the General Public to Believe that Climate Change Is Currently Causing Harm

	Public Health Directors	General Public
<i>Assuming climate change/global warming^a is happening, do you think it is...</i>		
Caused mostly by human activities	48.8	50.3
Caused mostly by natural changes in the environment	28.0	33.2
A combination of human activities and natural changes (volunteered)	16.7	5.9
Other	.0	1.6
None of the above because global warming isn't happening	4.2	8.3
Don't know (volunteered)	2.4	0.7 ^b
<i>N</i>	168	971
<i>When do you think climate change/global warming^a will start to harm people in the U.S.?</i>		
They are being harmed now	43.6	30.3
In 10 years	9.2	9.7
In 25 years	15.3	13.2
In 50 years	9.8	15.3
In 100 years	8.0	15.4
Never	14.1	16.1
<i>N</i>	163	975
<i>mean</i>	4.28	3.76 ^c

^aPublic health director survey said “climate change”; national sample survey said “global warming.” National data have been weighted to match census benchmarks on demographic characteristics.

^b $\chi^2 = 33.71, p < .001$

^c $t = 3.32, p < .001$

Part II: Public Health Readiness to Address Climate Change: Comparisons of 2012 and 2008

Part II of the report assesses the changes between 2008 and 2012 in LHD directors' perceptions of their agencies' readiness to prepare for and address the health effects of climate change.

In 2012, LHD directors' beliefs regarding the local health impacts of climate change were more polarized than they had been in 2008, and the proportion of directors without opinions on the issue had decreased. Directors in 2012 were more likely either to agree strongly or disagree strongly (as opposed to agreeing or disagreeing somewhat) that climate change was currently, or would be, impacting their jurisdictions than they were four years before. They were also less likely to respond that they did not know whether local impacts had occurred or would occur. (See Table 3.)

The percentage of LHD directors who strongly agreed that their jurisdictions had experienced climate change over the past 20 years doubled, from nine percent to 18 percent, and the percentage who strongly disagreed jumped from one percent to 12 percent. The percentage of LHD directors who did not know whether their jurisdictions had experienced climate change decreased by six percent.

When asked whether their jurisdiction would experience climate change over the next two decades, LHD directors demonstrated increased attitude formation and polarization; strong agreement increased from 23 percent to 39 percent; strong disagreement increased from one percent to 10 percent; and "don't know" responses decreased from 19 percent to eight percent.

Strong agreement that climate change would cause a serious local public health problem over the next 20 years increased from 11 percent to 29 percent; strong disagreement increased from two percent to 11 percent; and "don't know" responses decreased from 31 percent to 15 percent.

TABLE 3 | The Majority of LHD Directors Believe that Their Jurisdiction Has Experienced or Will Experience Climate Change

	Public Health Directors	
	2012	2008
<i>My jurisdiction has experienced climate change in the past 20 years.</i>		
Strongly agree	18.4	9.0
Somewhat agree	47.5	60.2
Somewhat disagree	8.9	10.5
Strongly disagree	12.0	0.8
Don't know	13.3	19.5
<i>Mean (excluding "don't know")</i>	<i>2.83</i>	<i>2.96</i>
<i>My jurisdiction will experience climate change in the next 20 years.</i>		
Strongly agree	39.2	22.6
Somewhat agree	37.3	55.6
Somewhat disagree	6.3	2.3
Strongly disagree	9.5	.8
Don't know	7.6	18.8
<i>Mean (excluding "don't know")</i>	<i>3.15</i>	<i>3.23</i>
<i>In the next 20 years, it is likely that my jurisdiction will experience one or more serious public health problems as a result of climate change.</i>		
Strongly agree	29.1	11.3
Somewhat agree	32.3	48.1
Somewhat disagree	13.3	8.3
Strongly disagree	10.8	1.5
Don't know	14.6	30.8
<i>Mean (excluding "don't know")</i>	<i>2.93</i>	<i>3.00</i>
<i>I am worried about the impact of climate change on the health and well-being of people in my jurisdiction.</i>		
Strongly agree	31.8	
Somewhat agree	35.7	not
Somewhat disagree	12.7	asked
Strongly disagree	14.6	
Don't know	5.1	
<i>Mean (excluding "don't know")</i>	<i>2.89</i>	
<i>N</i>	<i>158</i>	<i>133</i>

Two-thirds of LHD directors (67.5%) in 2012 were worried about the impacts of climate change on the health and well-being of people in their jurisdictions.

LHD directors were less likely in 2012 than they had been in 2008 to perceive that they or other relevant senior managers in their departments were knowledgeable about the potential public health impacts of climate change. In both 2012 and 2008, large majorities of LHD directors perceived that their LHDs did not possess ample expertise to assess the potential public health impacts of climate change on their communities or to create effective plans to protect local residents from those impacts. (See Table 4.)

The percentage of LHD directors who believed that they were knowledgeable about the potential public health impacts of climate change decreased from 66 percent to 59 percent, while the percentage of directors who believed that they were not knowledgeable about the potential impacts increased from 31 percent to 39 percent. The percentage of LHD directors who believed that other relevant senior staff in their health departments were knowledgeable about the potential public health impacts of climate change decreased from 46 percent to 36 percent.

In 2008 and 2012, large majorities of LHD directors believed that their agencies lacked ample expertise to assess the potential public health impacts of climate change that could occur in their jurisdictions (77% and 76%, respectively) or to create effective climate change adaptation plans (83% and 80%, respectively). However, the responses were more polarized in 2012 than in 2008, and the percentage of LHD directors who strongly disagreed that their agencies had the expertise to assess the potential local health impacts of climate change or to create effective plans was much higher. The percentage of directors who

TABLE 4 | The Majority of LHD Directors Believe that Their LHD Lacks the Expertise Necessary to Address Climate Change

	Public Health Directors	
	2012	2008
<i>I am knowledgeable about the potential public health impacts of climate change.</i>		
Strongly agree	14.7	4.5
Somewhat agree	44.2	61.4
Somewhat disagree	19.9	28.8
Strongly disagree	19.2	2.3
Don't know	1.9	3.0
<i>Mean (excluding "don't know")</i>	<i>2.56</i>	<i>2.70</i>
<i>The other relevant senior managers in my health department are knowledgeable about the potential public health impacts of climate change.</i>		
Strongly agree	6.4	3.8
Somewhat agree	29.5	42.0
Somewhat disagree	30.8	36.6
Strongly disagree	28.2	5.3
Don't know	5.1	12.2
<i>Mean (excluding "don't know")</i>	<i>2.15</i>	<i>2.50</i>
<i>My health department currently has ample expertise to assess the potential public health impacts associated with climate change that could occur in my jurisdiction.</i>		
Strongly agree	5.1	3.8
Somewhat agree	13.9	18.8
Somewhat disagree	29.1	49.6
Strongly disagree	46.8	27.8
Don't know	5.1	0.0
<i>Mean (excluding "don't know")</i>	<i>1.76</i>	<i>1.98</i>
<i>My health department currently has ample expertise to create an effective plan to protect local residents from the health impacts of climate change.</i>		
Strongly agree	4.5	.8
Somewhat agree	12.3	15.9
Somewhat disagree	34.4	51.5
Strongly disagree	45.5	31.8
Don't know	3.2	0
<i>Mean (excluding "don't know")</i>	<i>1.69</i>	<i>1.86</i>
<i>My state health department currently has ample expertise to help us create an effective plan in this jurisdiction to protect residents from the health impacts of climate change.</i>		
Strongly agree	5.2	3.0
Somewhat agree	16.1	22.6
Somewhat disagree	29.7	34.6
Strongly disagree	34.8	18.8
Don't know	14.2	21.1
<i>Mean (excluding "don't know")</i>	<i>1.63</i>	<i>1.68</i>
<i>N</i>	<i>158</i>	<i>133</i>

strongly disagreed that their LHDs had the expertise to assess the potential local health impacts of climate change increased from 28 percent in 2008 to 47 percent in 2012. The percentage of directors who strongly disagreed that their LHDs had the expertise to develop effective adaptation plans increased from 32 percent in 2008 to 45 percent in 2012. Further, the percentage of LHD directors who strongly disagreed that their state health departments had the expertise to help them to create effective adaptation plans increased from 19 percent to 35 percent.

The percentage of LHD directors who believed that preparing to deal with the public health effects of climate change was an important priority for their agencies was lower in 2012 than in 2008. The vast majority of LHD directors in 2012 believed that their agencies lacked sufficient resources to effectively protect local residents from the health impacts of climate change. (See Table 5.)

The proportion of LHD directors who believed that preparing to deal with the public health effects of climate change was an important priority for their agencies was substantially lower in 2012 than in 2008. The proportion of directors who agreed that it was a priority decreased from 51 percent in 2008 to 41 percent in 2012. The proportion of directors who strongly disagreed that it was a priority increased from four percent in 2008 to 29 percent in 2012.

In 2012, 87 percent of LHD directors believed that their agencies did not have sufficient resources to effectively protect local residents from the health impacts of climate change.

In 2012, LHDs' climate change-related programmatic activity was significantly reduced from 2008. This is consistent with the attitudinal data suggesting that LHDs were less prepared to assess and address the health impacts of climate change on their communities in 2012 than they were in 2008. (See Table 6.)

In 2012, out of a possible 12 options for health issues that climate change may affect, respondents selected an average of 5.8 as areas of LHD programmatic

TABLE 5 | The Majority of LHD Directors Believe that Their LHD Lacks the Resources Necessary to Protect Against Climate Change

	Public Health Directors	
	2012	2008
<i>Preparing to deal with the public health effects of climate change is an important priority for my health department.</i>		
Strongly agree	16.5	12.0
Somewhat agree	24.7	39.1
Somewhat disagree	24.7	40.6
Strongly disagree	28.5	3.8
Don't know	5.7	4.5
<i>Mean (excluding "don't know")</i>	<i>2.31</i>	<i>2.62</i>
<i>My health department currently has sufficient resources to effectively protect local residents from the health impacts of climate change.</i>		
Strongly agree	1.3	not asked
Somewhat agree	7.1	
Somewhat disagree	28.6	
Strongly disagree	58.4	
Don't know	4.5	
<i>Mean (excluding "don't know")</i>	<i>1.49</i>	
<i>N</i>	<i>158</i>	<i>133</i>

activity. In 2008, an average of 7.7 of these issues were areas of LHD programmatic activity. The percentage of LHDs that had heat waves and heat-related illnesses as an area of programmatic activity remained largely unchanged in 2012 (56%) from 2008 (57%). For each of the remaining 11 types of health issues, a smaller percentage of LHDs addressed the issue through programmatic activity in 2012 than they had in 2008.

Larger percentages of LHD directors in 2012 than in 2008 perceived six types of health issues, out of 12 options available, to have been affected by climate change in their jurisdictions. LHD directors in 2012 believed that climate change had affected an average of 3.32 types of health issues in their jurisdictions; LHD directors in 2008 believed that climate change had affected an average of 3.81 types of health issues. This difference was not statistically significant. (See Table 7.)

TABLE 6 | LHDs Are Currently Working in Several Programmatic Areas that Will Be Impacted by Climate Change

	Public Health Directors	
	2012	2008
<i>Below is a list of health issues that climate change may affect. For each of these health issues, please answer "Yes" if the health issue is currently an area of programmatic activity for your department.</i>		
Heat waves and heat-related illnesses	56.2	57.1
Storms (including hurricanes) and floods	71.9	76.7
Droughts, forest fires, or brush fires	30.7	37.6
Vector-borne infectious diseases	88.9	94.7
Water- and food-borne diseases	92.1	97.0
Anxiety, depression, or other mental health conditions	21.1	30.8
Quality or quantity of fresh water available to your jurisdiction	46.4	66.9
Quality of the air, including air pollution, in your jurisdiction	34.9	50.4
Unsafe or ineffective sewage and septic system operation	70.6	78.9
Food safety and security	75.0	89.5
Lack of housing for residents displaced by extreme weather events	26.3	37.9
Lack of healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)	50.7	57.1
<i>Mean number of programs in climate-change related programmatic areas (out of a possible 12)*</i>	<i>5.83</i>	<i>7.74</i>
<i>N</i>	<i>158</i>	<i>133</i>

* $t = 5.92, p < .001$

TABLE 7 | The Majority of LHD Directors Believe that Climate Change has Affected Extreme Weather Such as Heat Waves and Floods in Their Jurisdiction

	Public Health Directors	
	2012	2008
<i>Do you think climate change has affected each of the following in your jurisdiction?</i>		
Heat waves and heat-related illnesses	53.6	56.9
Storms (including hurricanes) and floods	56.3	45.9
Droughts, forest fires, or brush fires	42.4	47.7
Vector-borne infectious diseases	32.0	40.6
Water- and food-borne diseases	25.8	18.2
Anxiety, depression, or other mental health conditions	25.8	22.2
Quality or quantity of fresh water available to your jurisdiction	23.2	43.8
Quality of the air, including air pollution, in your jurisdiction	40.4	42.5
Unsafe or ineffective sewage and septic system operation	11.3	13.1
Food safety and security	17.9	14.7
Housing needs for residents displaced by extreme weather events	24.5	19.5
Need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)	30.2	26.6
<i>Mean number of perceived local impacts of climate change (out of a possible 12)*</i>	<i>3.32</i>	<i>3.81</i>
<i>N</i>	<i>158</i>	<i>133</i>

* $t = 1.26, n.s.$

TABLE 8 | The Majority of LHD Directors Believe that Climate Change Will Make Extreme Weather Events, Vector-Borne Infectious Disease, and Poor Air Quality More Common in Their Jurisdiction

	Public Health Directors							
	2008				2012			
	more common	no change	less common	don't know	more common	no change	less common	don't know
<i>Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?</i>								
Heat waves and heat-related illnesses	73.5	18.5	7.9	0.0	75.2	15.5	0.8	8.5
Storms (including hurricanes) and floods	68.2	21.9	2.0	7.9	57.9	24.1	1.5	16.5
Droughts, forest fires, or brush fires	62.9	27.2	1.3	8.6	60.8	20.0	0.8	18.5
Vector-borne infectious diseases	53.0	33.1	1.3	12.6	56.4	21.1	3.0	19.5
Water- and food-borne diseases	44.4	41.7	0.7	13.2	36.4	34.8	1.5	27.3
Anxiety, depression, or other mental health conditions	49.0	25.2	0.0	25.8	41.9	20.2	0.8	37.2
Quality or quantity of fresh water available to your jurisdiction	49.7	34.4	0.7	15.2	64.6	18.5	3.1	13.8
Quality of the air, including air pollution, in your jurisdiction	54.3	29.8	1.3	14.6	67.4	14.0	2.3	16.3
Unsafe or ineffective sewage and septic system operation	26.5	53.6	3.3	16.6	19.1	48.1	6.1	26.7
Food safety and security	42.0	42.0	1.3	14.7	31.3	49.6	3.1	16.0
Housing needs for residents displaced by extreme weather events	54.3	31.8	0.0	13.9	43.1	38.5	0.0	18.5
Need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)	60.9	25.2	0.0	13.9	55.0	31.0	1.6	12.4
<i>Mean number of anticipated increased impacts (out of a possible 12)*</i>		5.54				5.97		
<i>N</i>		158				133		

**t* = .95, *n.s.*

In both 2012 and 2008, the majority of LHD directors believed that climate change would make the following types of health issues more common or severe over the next 20 years in their jurisdictions: heat waves and heat-related illnesses, storms and floods, droughts and fires, vector-borne infectious diseases, air quality and air pollution, and healthcare needs for people with chronic conditions during service disruptions (such as extreme weather events). Furthermore, a larger percentage of LHD directors in 2012 than in 2008 believed that climate change would make eight types

of health issues more common or severe over the next 20 years.* (See Table 8.)

In 2012, one-fifth of LHDs were increasing activities in the areas of heat waves and heat-related illnesses (21%) and storms and floods (21%) in response to changes in the climate. In 2012, the least common increased activity (one percent of LHDs) was in the area of anxiety, depression, or other mental health conditions in response to changes in the climate. In 2012, between five percent and 10 percent of LHDs

*The response scales for anticipated impacts were different in the 2008 and 2012 surveys. The 2012 scale included more response options, which are not shown in Table 8. To see the full scale and all the responses, please see Tables 25–36.

were increasing activities for each of the remaining nine (out of 12) programmatic areas, in response to changes in the climate. (See Table 9.)

In 2008, 66 percent of LHDs had at least one type of program that may help to limit future impacts of climate change. In 2012, the percentage of LHDs that had at least one such type of program had decreased to 45 percent. This decrease was statistically significant. (See Table 10.)

In 2008, 50 percent of LHDs had programs to encourage or help people to use active transportation, such as walking and cycling. In 2012, only 38 percent of LHDs had such a program. In 2008, eight percent of LHDs had programs to educate the public about climate change and its potential impact on health. In 2012, only four percent of LHDs had such a program. Out of six options available to respondents, only one was more prevalent in 2012 than in 2008: programs to encourage or help people to change the way they purchase foods such as buying locally grown foods, organic foods, or plant-based foods (36% and 34%, respectively).

TABLE 9 | The Majority of LHDs Are Not Changing Current Activities in Response to Climate Change

	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities
<i>Is your health department changing its activities in any of the following areas, in response to changes in the climate?</i>			
Heat waves and heat-related illnesses	21.2	10.6	68.2
Storms (including hurricanes) and floods	20.5	13.9	65.6
Droughts, forest fires, or brush fires	9.3	9.3	81.5
Vector-borne infectious diseases	7.9	17.9	74.2
Water- and food-borne diseases	6.0	18.5	75.5
Anxiety, depression, or other mental health conditions	1.3	14.0	84.7
Quality or quantity of fresh water available to your jurisdiction	7.3	9.9	82.8
Quality of the air, including air pollution, in your jurisdiction	5.3	13.9	80.8
Unsafe or ineffective sewage and septic system operation	4.6	14.6	80.8
Food safety and security	6.0	17.9	76.2
Lack of housing for residents displaced by extreme weather events	6.6	12.6	80.8
Lack of healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)	7.3	16.7	76.0

TABLE 10 | Few LHDs Are Engaged in Mitigation Programs for Climate Change

	Public Health Directors			
	2012		2008	
	Current program	Planned program	Current program	Planned program
<i>Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...</i>				
Encourage or help people to use active transportation, such as walking and cycling	37.5	19.7	50.4	11.3
Encourage or help people to use mass transportation	15.1	7.9	15.0	6.0
Encourage or help people to change the way they purchase foods such as buying locally grown foods, organic foods, or plant-based foods	36.2	20.4	33.8	9.0
Educate the public about climate change and its potential impact on health	3.9	15.8	8.3	18.0
Reduce fossil fuel use or conserve energy in the operation of the health department	18.5	13.9	21.1	18.8
Help residents of your jurisdiction reduce their fossil fuel use or conserve energy	5.3	7.9	6.0	8.3
<i>N</i>	158		133	
Number of current and planned mitigation programs	2012		2008	
0	55.2		33.8	
1	16.7		25.6	
2	11.5		23.3	
3	8.0		11.3	
4	5.7		2.3	
5	2.3		3.0	
6	0.6		0.8	
<i>Mean number of current programs</i>	1.02		1.35	

$t = 2.06, p < .05$

Part III: Breakdown by Belief in Climate Change, Geographic Region, and Department Budget

Part III of the report examines differences in perceptions and programming among the 2012 survey respondents based on three potentially important factors: belief in climate change; geographic location; and LHD budget. The findings reveal that these factors were strongly associated with perceptions about climate change and the health impacts of climate change, as well as current and planned mitigation activities.*

Part IIIa: Perceptions—Tables 11–21

Belief in Climate Change

LHD directors' belief that climate change was occurring was strongly associated with their perceptions of current and future climate change impacts in their jurisdictions. Seventy-seven percent of directors who believed that climate change was happening also believed that their jurisdictions had experienced climate change in the past 20 years and 88 percent believed that their jurisdictions would experience climate change over the next 20 years. In contrast, 88 percent of directors who did not believe climate change was real did not believe that their jurisdictions had experienced climate change in the past 20 years, and 82 percent did not expect local impacts.

Directors who believed that climate change was occurring were more likely to report that climate change was an important priority for their departments. They were less likely to believe that their departments had the necessary expertise to conduct risk assessments, to develop adaptation plans, or to believe that their departments had sufficient resources to protect local residents from the health impacts of climate change. Directors who did not believe that climate change was occurring were about as likely to believe they were knowledgeable about the potential public health impacts of climate change (59%) as directors who believed climate change was occurring (62%).

See Appendix B for tables 11–56

*Note that the number of respondents for some of these analyses is small and should be interpreted cautiously.

Geographic Region

Northeastern LHD directors were more likely than Western, Midwestern, or Southern LHD directors to believe that their jurisdictions would experience climate change and its related public health impacts over the next two decades. Northeastern LHD directors were also more worried about the impact of climate change on the health and well-being of people in their jurisdictions. However, the percentage of Northeastern LHD directors who believed that their jurisdictions had already experienced climate change in the past two decades (63%) was slightly lower than that of Western LHD directors (69%), Midwestern LHD Directors (67%), or Southern LHD directors (65%).

Climate change adaptation was a priority for a larger percentage of Western and Northeastern LHDs (48% and 44%, respectively) than Southern or Midwestern LHDs (38% and 36%, respectively). Southern LHD directors were most likely to believe that they (72%) and other senior managers (39%) were knowledgeable about potential health impacts of climate change. Midwestern LHD directors had the lowest self-assessed knowledge: 51 percent perceived themselves to be knowledgeable, and 33 percent believed that other senior managers were knowledgeable.

Department Budget

Directors of LHDs with large budgets (\$5M+) were more likely than directors of LHDs with mid-sized budgets (\$1–4.99M) and small budgets (<\$1M) to believe that their jurisdictions had experienced climate

change in the past 20 years and to believe that their jurisdictions would experience climate change in the next 20 years. Three-quarters (76%) of directors of LHDs with large budgets believed that their jurisdictions had experienced climate change in the past 20 years, compared to 62 percent of directors of LHDs with small budgets and 58 percent of directors of LHDs with mid-sized budgets. Over four-fifths (86%) of directors of LHDs with large budgets believed that their jurisdictions would experience climate change in the next 20 years, compared to 76 percent of directors of LHDs with small budgets and 65 percent of directors of LHDs with mid-sized budgets. Eighty percent of directors of LHDs with large budgets were worried about the impact of climate change on the health and well-being of people in their jurisdictions, compared to 60 percent of directors of LHDs with small budgets and 63 percent of directors of LHDs with mid-sized budgets.

Directors of LHDs with large budgets were much more likely than directors of LHDs with mid-sized budgets

or small budgets to believe themselves knowledgeable about the potential public health impacts of climate change (73%, 56%, and 48%, respectively). Directors of LHDs with large budgets were also more likely to believe that the other relevant senior managers in their departments were knowledgeable about the impacts. They were somewhat more likely to believe that their departments had the expertise needed to conduct climate change risk assessments and develop effective climate change adaptation plans. Directors of LHDs with large budgets were more likely to believe that preparing to deal with climate change health impacts was an important priority for their departments. However, they were no more likely to believe that their departments had sufficient resources to effectively protect local residents from the health impacts of climate change: only nine percent of directors of LHDs with large budgets, five percent of directors of LHDs with mid-sized budgets, and 10 percent of directors of LHDs with small budgets believed that their departments had sufficient resources.

Part IIIb: Perceived Health Impacts of Climate Change—*Tables 22–24*

Belief in Climate Change

The number of types of health issues that LHD directors perceived in their jurisdictions as having been affected by climate change was strongly statistically related to their beliefs that climate change was occurring. Directors who believed that climate change was happening perceived an average of 4.3 types of health issues as having been affected locally by climate change, while directors who were uncertain whether climate change was happening perceived 0.6 types of health issues as having been affected by climate change; those who believed climate change was not happening perceived 0.1 types of issues (see column of means in Table 24).

Among LHD directors who believed that climate change was happening, the most frequently cited types of local health issues that were believed to have been affected by climate change were storms and floods (68%), heat waves and heat-related illness (63%), and droughts, forest fires, or brush fires (52%).

Few LHD directors who were uncertain whether climate change was occurring or who believed that it was not occurring recognized that climate change had affected any types of local health issues. A quarter of directors who were uncertain believed that climate change had affected storms and floods (27%). Twenty percent believed that climate change had affected mental health conditions, including anxiety and depression.

Geographic Region

The number of types of health issues that LHD directors perceived in their jurisdictions as having been affected by climate change was not significantly different between Northeastern LHD directors (3.08), Midwestern LHD directors (3.63), Southern LHD directors (3.83), and Western LHD directors (2.85).

Regional differences in the types of health issues that LHD directors perceived as having been affected in their jurisdictions were apparent. A larger percentage of Southern LHD directors (62%) than Midwestern

(61%), Northeastern (57%), or Western (39%) LHD directors perceived heat waves and heat-related illness as having been affected by climate change. Larger percentages of Northeastern and Midwestern LHD directors than Southern and Western LHD directors perceived storms (including hurricanes), floods, and vector-borne infectious diseases as having been affected by climate change. Conversely, larger percentages of Western (57%) and Southern (57%) LHD directors than Midwestern (42%) and Northeastern (20%) LHD directors perceived droughts, forest fires, or brush fires as having been affected by climate change. Larger percentages of Southern (35%) and Midwestern (34%) LHD directors than Western (18%) and Northeastern (17%) LHD directors perceived anxiety, depression, or other mental health conditions as having been affected by climate change. Larger percentages of Western (54%) and Southern (43%) LHD directors than Northeastern (37%) and

Midwestern (34%) LHD directors perceived air quality as having been affected by climate change.

Department Budget

The number of types of health issues that directors of LHDs with large budgets perceived in their jurisdictions as having been affected by climate change (4.0) was higher than the number perceived by directors of LHDs with small budgets (3.38) and mid-sized budgets (2.64). Also, a larger percentage of directors of LHDs with large budgets perceived heat waves and heat-related illness; droughts, forest fires, or brush fires; vector-borne infectious diseases; water-borne and food-borne diseases; quality or quantity of fresh water available to their jurisdictions; quality of the air in their jurisdictions; housing needs for residents displaced by extreme weather events; and need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events) as having been affected by climate change.

Part IIIc: Anticipated Health Impacts of Climate Change—Tables 25–36

Belief in Climate Change

The number of types of health issues that LHD directors anticipated becoming more, or much more, common or severe over the next 20 years because of climate change in their jurisdictions was strongly statistically related to their belief that climate change was occurring. LHD directors who believed that climate change was occurring anticipated, on average, that seven types of health issues would become more common or severe, or much more common or severe, in their jurisdictions, compared to 2.4 types of health issues anticipated by directors who were uncertain whether climate change was occurring and compared to 0.4 types of issues anticipated by directors who did not believe that climate change was occurring (see Table 36).

Among LHD directors who believed that climate change was occurring, the health issues anticipated to become more or much more common or severe over the next 20 years because of climate change were heat waves and heat-related illnesses; storms and floods; and droughts, forest fires, or brush fires.

Geographic Region

The average number of types of health issues that LHD directors anticipated becoming more or much more common or severe in their jurisdictions over the next 20 years because of climate change was very similar for Northeastern, Midwestern, Southern, and Western LHD directors.

Regional similarities and differences in the types of health issues anticipated to become more or much more common or severe were apparent. The issues that the greatest percentages of Midwestern and Southern LHD directors anticipated becoming more or much more common were severe heat waves and heat-related illness (78% and 71%, respectively); storms and floods (76% and 63%, respectively); and droughts, forest fires, or brush fires (62% and 63%, respectively). The issues that the greatest percentages of Northeastern LHD directors anticipated were storms and floods (80%); heat waves and heat-related illness (77%); and the need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events) (70%). The issues that the greatest

percentages of Western LHD directors anticipated were droughts, forest fires, or brush fires (79%); the need for health services for people with chronic conditions during service disruptions (75%); heat and heat-related illness (71%); and air quality (71%).

Department Budget

The average number of types of health issues that LHD directors anticipated becoming more or much more common or severe in their jurisdictions over the next 20 years because of climate change was significantly larger for directors of LHDs with large budgets (6.8) than for directors of LHDs with small budgets (5.5) or mid-sized budgets (4.4).

Of the available health issues, LHD directors with large budgets most anticipated heat waves and heat-related illness (87%), storms and floods (78%), and air

quality (78%) becoming more or much more common or severe. Large percentages of directors of LHDs with large budgets also anticipated a need for health services for people with chronic conditions during service disruptions (72%); droughts, forest fires, or brush fires (69%); and housing needs for residents displaced by extreme weather events (69%).

The issues that the greatest percentages of directors of LHDs with mid-sized budgets anticipated were heat waves and heat-related illness (61%); need for health services for people with chronic conditions during service disruptions (58%); storms and floods (55%); and droughts, forest fires, and fires (55%).

The issues that the greatest percentages of directors of LHDs with small budgets anticipated were also heat waves and heat-related illness (70%), storms and floods (68%), and droughts and fires (63%).

Part III: Current Activity and Changes to Programs in Climate Change-Related Areas— Tables 37–49

Belief in Climate Change

LHDs with directors who believed that climate change was happening had programmatic activity in an average of 6.13 climate change-related areas. LHDs with directors who were uncertain whether climate change was happening, or who believed that climate change was not happening, had lower average numbers of programmatic activity (5.52 and 5.32, respectively), but the differences were not statistically significant (see Table 49).

LHDs with directors who believed that climate change was happening were increasing an average of 1.15 activities in response; LHDs with directors who were uncertain whether climate change was happening were increasing an average of 0.29 activities; and LHDs with directors who believed that climate change was not happening were not changing activities in response to climate change.

Geographic Region

Southern LHDs had programmatic activity in an average of 6.61 climate change-related areas. This was a slightly higher number than that of Midwestern, Western, or Northeastern LHDs (5.86, 5.82, and 5.03, respectively). Southern LHDs were also increasing a slightly higher number of activities in response to changes in the climate than were Midwestern, Western, or Northeastern LHDs. However, these differences were not statistically significant (see Table 49).

Department Budget

LHDs with large budgets had programmatic activity in an average of 7.05 climate change-related areas. This was significantly higher than the average number of types of climate change-related areas of programmatic activity for LHDs with mid-sized or small budgets (5.47 and 5.33, respectively). LHDs with large budgets were also changing a slightly higher number of activities in response to changes in the climate than were LHDs with mid-sized or small budgets.

Part III: Mitigation-Related Programs—*Tables 50–56*

Belief in Climate Change

LHDs with directors who believed that climate change was happening had a significantly higher average number of current programs that may help to limit future climate change than LHDs with directors who were uncertain whether climate change was happening or believed that climate change was not happening (see Table 56). LHDs with directors who believed climate change was happening had an average of 1.2 current programs; LHDs with directors who were uncertain if climate change was happening had an average of 0.7 programs; and LHDs with directors who believed that climate change was not happening had an average of 0.4 programs.

LHDs with directors who believed that climate change was happening, who were uncertain whether climate change was happening, or who believed that climate change was not happening did not differ significantly in their average number of planned programs that may help to limit future climate change.

Geographic Region

Western LHDs had a higher average number of current programs that may help to limit future climate change

(1.35) than did Southern (1.10), Midwestern (0.86), or Northeastern LHDs (0.73), although the differences were not statistically significant. Midwestern LHDs had the highest average number of planned programs that may help to limit future climate change, although the differences between the regions were again not significant. The percentage of Western LHDs that had current programs to encourage or help people to use active transportation, such as walking and cycling, was second to the percentage of Southern LHDs that had such programs (39.3% and 44.7%, respectively).

Department Budget

LHDs with large budgets had a significantly higher average number of current programs that may help to limit future climate change than did LHDs with mid-sized or small budgets. LHDs with large budgets had an average of 1.8 current programs, while LHDs with mid-sized and small budgets had an average of 0.6 programs.

LHDs with large budgets had a higher average number of planned programs that may help to limit future climate change than did LHDs with mid-sized or small budgets, although the differences were not statistically significant.



➤ Conclusion

Overall, history has shown that climate variability is an important determinant of health. The health effects of climate change are part of a broader context, and the existence of local physical and social conditions preceding extreme weather events can either moderate or exacerbate the overall impact.

Climate change will affect human health and the geographic range, incidence, and severity of health outcomes that are sensitive to weather and climate. Climate change affects public health at many dimensions. A substantial amount of literature focuses on climate change at the global scale, and this report examines public health preparedness for climate change at the local level.

This report identifies critical gaps in resources, programs, and expertise in the U.S. public health system's capacity to respond to the health impacts of climate change. Specifically, this survey found that in 2012, 80 percent of LHD directors believed their LHDs lacked the expertise to create effective climate change adaptation plans, and 87 percent of LHD directors believed their LHDs lacked sufficient resources to effectively protect the local population from the impacts of climate change. Only four percent of LHDs have programs to educate the public about climate change and its potential impact on health.

A sizeable majority of LHD directors recognized the threat of climate change both in 2008 and 2012. Yet, LHDs continued to lack the expertise and resources necessary to prepare for and address the health effects. As climates proceed to change, this space between need and ability poses a significant and urgent threat that decision-makers at all government levels must recognize and address to protect the public. From a public health perspective, scientific research must facilitate advocacy work. Involving local communities in monitoring, discussing, advocating, and assisting with climate change adaptation is crucial.

NACCHO supports local public health activities to address climate change, including the following:

- Instituting strong, continuous, science-based, and culturally competent education programs to inform policymakers, communities, and LHD staff on the health impacts of climate change and on issues and opportunities regarding mitigation of climate change and adaptation to climate change.
- Developing local climate change mitigation plans and adaptation plans that address the health impacts of climate change.
- Participating in scientifically based research programs related to climate change that readily translate to the practice of public health.
- Supporting research on emerging health impacts related to climate change and public health best practice standards.
- Conducting ongoing health monitoring of climate change impacts on local communities, including conducting vulnerability assessments and environmental studies and using the best available tools (e.g., geographic information system mapping) and sciences (e.g., ecology, climatology, geography) to better understand the impacts of climate change on public health. Particular attention must be given to the most vulnerable populations.
- Advocating for policies, plans, programs, and resources to support climate change mitigation and adaptation. Mitigation and adaptation activities should be health-based, science-based, equitable, and sustainable.
- Building partnerships with key local stakeholders to engage and enlist them in the response to climate change.
- Providing opportunities to educate and train public health leadership and the public health workforce to ensure the capacity of LHDs to respond to the health effects of climate change.
- Using environmental health regulatory activities and authorities to protect the public's health from climate change.

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➤ Appendices

Appendix A: Survey

Public Health and Climate Change: Are We Ready?

Thank you for taking the time to complete this survey. It should take about 10 minutes to complete.

We are interested in learning how public health departments are responding to the health impacts climate change may be causing in the U.S. Your responses will help NACCHO and CDC to develop materials that support your efforts.

To begin, we'd like to ask you some background questions.

What is the name of your health department? _____

1. What is the approximate annual budget for your health department?
 - Less than \$1,000,000
 - \$1,000,000 to \$4,999,999
 - \$5 million or more
2. "Climate change" refer to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result. What do you think? Do you think that climate change is happening?
 - Yes
 - No
 - Don't Know

[Ask if q2 = yes]

3. How sure are you that climate change is happening?
 - Not at all sure
 - Somewhat sure
 - Very sure
 - Extremely sure

[Ask if q2 = no]

4. How sure are you that climate change is not happening?
 - Not at all sure
 - Somewhat sure
 - Very sure
 - Extremely sure
5. Assuming climate change is happening, do you think it is ...
 - Caused mostly by human activities
 - Caused mostly by natural changes in the environment
 - Other
 - None of the above because climate change isn't happening

6. When do you think climate change will begin to harm people in the U.S.?

- They are being harmed now
- In 10 years
- In 25 years
- In 50 years
- In 100 years
- Never

7. How much do you agree or disagree with the following statements?

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Don't Know
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- a) My jurisdiction has experienced climate change in the *past 20 years*.
- b) My jurisdiction will experience climate change in the *next 20 years*.
- c) In the *next 20 years*, it is likely that my jurisdiction will experience one or more serious public health problems as a result of climate change.
- d) I am worried about the impact of climate change on the health and well-being of people in my jurisdiction.
- e) My health department currently has ample expertise to assess the potential public health impacts associated with climate change that could occur in my jurisdiction.
- f) Preparing to deal with the public health effects of climate change is an important priority for my health department.

8. How much do you agree or disagree with the following statements?

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Don't Know
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- a) I am knowledgeable about the potential public health impacts of climate change.
- b) The other relevant senior managers in my health department are knowledgeable about the potential public health impacts of climate change.
- c) My health department currently has ample expertise to create an effective plan to protect local residents from the health impacts of climate change.
- d) My state health department currently has ample expertise to help us create an effective plan in this jurisdiction to protect residents from the health impacts of climate change.
- e) My health department currently has sufficient resources to effectively protect local residents from the health impacts of climate change.

9. Below is a list of health issues that climate change may affect. For each of these health issues, please answer “Yes” if the health issue is *currently* an area of programmatic activity *for your department*.

(Please answer “No” if a department *other than* the health department performs this activity OR if no department in your jurisdiction performs this activity.)

Yes	No	Don't know
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- a) Heat waves and heat-related illnesses
- b) Storms (including hurricanes) and floods
- c) Droughts, forest fires, or brush fires
- d) Vector-borne infectious diseases
- e) Water- and food-borne diseases
- f) Anxiety, depression, or other mental health conditions
- g) Quality or quantity of fresh water available to your jurisdiction
- h) Quality of the air, including air pollution, in your jurisdiction
- i) Unsafe or ineffective sewage and septic system operation
- j) Food safety and security
- k) Housing for residents displaced by extreme weather events
- l) Need for healthcare services for people with chronic conditions during service disruptions, such as extreme weather events

10. Do you think climate change has affected each of the following in your jurisdiction?

Increased	No change	Decreased
-----------	-----------	-----------

- a) Heat waves and heat-related illnesses
- b) Storms (including hurricanes) and floods
- c) Droughts, forest fires, or brush fires
- d) Vector-borne infectious diseases
- e) Water- and food-borne diseases
- f) Anxiety, depression, or other mental health conditions
- g) Quality or quantity of fresh water available to your jurisdiction
- h) Quality of the air, including air pollution, in your jurisdiction
- i) Unsafe or ineffective sewage and septic system operation
- j) Food safety and security
- k) Housing needs for residents displaced by extreme weather events
- l) Need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)

11. Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

Much more common or severe	Somewhat more common or severe	No change	Somewhat less common or severe	Much less common or severe	Don't know
----------------------------	--------------------------------	-----------	--------------------------------	----------------------------	------------

- a) Heat waves and heat-related illnesses
- b) Storms (including hurricanes) and floods
- c) Droughts, forest fires, or brush fires
- d) Vector-borne infectious diseases
- e) Water- and food-borne diseases
- f) Anxiety, depression, or other mental health conditions
- g) Quality or quantity of fresh water available to your jurisdiction
- h) Quality of the air, including air pollution, in your jurisdiction
- i) Unsafe or ineffective sewage and septic system operation
- j) Food safety and security
- k) Housing needs for residents displaced by extreme weather events
- l) Need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)

12. Is your health department *changing its activities* in any of the following areas, *in response to changes in the climate* ?

Increasing activities	Changing activities for reasons unrelated to climate change	No changes to activities in response to climate change
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- a) Heat waves and heat-related illnesses
- b) Storms (including hurricanes) and floods
- c) Droughts, forest fires, or brush fires
- d) Vector-borne infectious diseases
- e) Water- and food-borne diseases
- f) Anxiety, depression, or other mental health conditions
- g) Quality or quantity of fresh water available to your jurisdiction
- h) Quality of the air, including air pollution, in your jurisdiction
- i) Unsafe or ineffective sewage and septic system operation
- j) Food safety and security
- a) Housing for residents displaced by extreme weather events
- b) Need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)

13. Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

Current Program	Planned Program	No Current or Planned Program
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- a) Encourage or help people to use active transportation, such as walking and cycling
- b) Encourage or help people to use mass transportation
- c) Encourage or help people to change the way they purchase foods such as buying locally-grown foods, organic foods, or plant-based foods
- d) Educate the public about climate change and its potential impact on health
- e) Reduce fossil fuel use or conserve energy in the operation of the health department
- f) Help residents of your jurisdiction reduce their fossil fuel use or conserve energy

14. We would like to contact the Director of Environmental Health Services at your public health department to ask a few additional questions about resources your department may be using to protect people in your jurisdiction from the impacts of climate change (such as vulnerability assessments). Please write the name and email address of the individual at your department who is responsible for environmental health:

Name: _____

Email: _____

Thank you for taking the time to complete this survey!

15. Would you like to receive a summary report of the results?

- No
- Yes

16. When we release this report we would like to have some survey participants who are willing to provide quotations for our report or to speak to the press. These people would be identified as having participated in the survey and would be contacted later with a more specific request.

Would you be willing to provide quotations for the report?

- Yes—quotations for report
- Yes—speak to the press
- No thanks

Appendix B: Tables 11–56

Table 11 | My jurisdiction has experienced climate change in the past 20 years.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		18.4	47.5	8.9	12.0	13.3	158
2012 results by...							
Belief in Climate Change	Yes	23.4	54.0	5.6	3.2	13.7	124
	No	0.0	5.9	23.5	64.7	5.9	17
	Don't Know	0.0	41.2	17.6	23.5	17.6	17
Region	Northeast	25.0	37.5	6.3	6.3	25.0	32
	Midwest	15.4	51.3	10.3	12.8	10.3	39
	South	17.5	47.5	7.5	17.5	10.0	40
	West	17.2	51.7	13.8	6.9	10.3	29
Budget	\$1M<	19.0	42.9	9.5	12.7	15.9	63
	\$1–4.99M	15.0	42.5	7.5	20.0	15.0	40
	\$5M+	20.0	56.4	9.1	5.5	9.1	55

Table 12 | My jurisdiction will experience climate change in the next 20 years.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		39.2	37.3	6.3	9.5	7.6	158
2012 results by...							
Belief in Climate Change	Yes	50.0	38.7	3.2	1.6	6.5	124
	No	0	5.9	17.6	64.7	11.8	17
	Don't Know	0	58.8	17.6	11.8	11.8	17
Region	Northeast	59.4	25.0	3.1	6.3	6.3	32
	Midwest	35.9	41.0	2.6	10.3	10.3	39
	South	35.0	35.0	5.0	15.0	10.0	40
	West	34.5	44.8	13.8	3.4	3.4	29
Budget	\$1M<	39.7	36.5	6.3	11.1	6.3	63
	\$1–4.99M	30.0	35.0	10.0	15.0	10.0	40
	\$5M+	45.5	40.0	3.6	3.6	7.3	55

Table 13 | In the next 20 years, it is likely that my jurisdiction will experience one or more serious public health problems as a result of climate change.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		29.1	32.3	13.3	10.8	14.6	158
2012 results by...							
Belief in Climate Change	<i>Yes</i>	36.3	37.1	8.9	3.2	14.5	124
	<i>No</i>	0.0	0.0	23.5	64.7	11.8	17
	<i>Don't Know</i>	5.9	29.4	35.3	11.8	17.6	17
Region	<i>Northeast</i>	40.6	34.4	6.3	6.3	12.5	32
	<i>Midwest</i>	25.6	33.3	12.8	12.8	15.4	39
	<i>South</i>	27.5	32.5	17.5	12.5	10.0	40
	<i>West</i>	34.5	31.0	13.8	10.3	10.3	29
Budget	<i>\$1M<</i>	28.6	36.5	12.7	12.7	9.5	63
	<i>\$1-4.99M</i>	22.5	27.5	17.5	15.0	17.5	40
	<i>\$5M+</i>	34.5	30.9	10.9	5.5	18.2	55

Table 14 | I am worried about the impact of climate change on the health and well-being of people in my jurisdiction.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		31.8	35.7	12.7	14.6	5.1	157
2012 results by...							
Belief in Climate Change	<i>Yes</i>	40.7	39.0	8.1	6.5	5.7	123
	<i>No</i>	0.0	17.6	11.8	70.6	0.0	17
	<i>Don't Know</i>	0.0	29.4	47.1	17.6	5.9	17
Region	<i>Northeast</i>	41.9	32.3	6.5	9.7	9.7	31
	<i>Midwest</i>	28.2	33.3	15.4	15.4	7.7	39
	<i>South</i>	30.0	32.5	20.0	17.5	0.0	40
	<i>West</i>	31.0	41.4	6.9	17.2	3.4	29
Budget	<i>\$1M<</i>	27.4	32.3	16.1	17.7	6.5	62
	<i>\$1-4.99M</i>	22.5	40.0	12.5	20.0	5.0	40
	<i>\$5M+</i>	43.6	36.4	9.1	7.3	3.6	55

Table 15 | My health department currently has ample expertise to assess the potential public health impacts associated with climate change that could occur in my jurisdiction.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		5.1	13.9	29.1	46.8	5.1	158
2012 results by...							
Belief in Climate Change	Yes	3.2	14.5	30.6	47.6	4.0	124
	No	23.5	5.9	23.5	47.1	0.0	17
	Don't Know	0.0	17.6	23.5	41.2	17.6	17
Region	Northeast	6.3	9.4	31.3	46.9	6.3	32
	Midwest	2.6	15.4	20.5	53.8	7.7	39
	South	7.5	12.5	40.0	37.5	2.5	40
	West	6.9	13.8	37.9	37.9	3.4	29
Budget	\$1M<	4.8	4.8	31.7	55.6	3.2	63
	\$1-4.99M	5.0	15.0	27.5	42.5	10.0	40
	\$5M+	5.5	23.6	27.3	40.0	3.6	55

Table 16 | Preparing to deal with the public health effects of climate change is an important priority for my health department.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		16.5	24.7	24.7	28.5	5.7	158
2012 results by...							
Belief in Climate Change	Yes	21.0	28.2	25.0	21.0	4.8	124
	No	0.0	11.8	23.5	64.7	0.0	17
	Don't Know	0.0	11.8	23.5	47.1	17.6	17
Region	Northeast	18.8	25.0	18.8	31.3	6.3	32
	Midwest	20.5	15.4	20.5	35.9	7.7	39
	South	12.5	25.0	35.0	25.0	2.5	40
	West	13.8	34.5	27.6	24.1	0.0	29
Budget	\$1M<	17.5	25.4	19.0	28.6	9.5	63
	\$1-4.99M	5.0	22.5	27.5	42.5	2.5	40
	\$5M+	23.6	25.5	29.1	18.2	3.6	55

Table 17 | I am knowledgeable about the potential public health impacts of climate change.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		14.7	44.2	19.9	19.2	1.9	156
2012 results by...							
Belief in Climate Change	Yes	16.3	45.5	21.1	15.4	1.6	123
	No	17.6	41.2	5.9	29.4	5.9	17
	Don't Know	0.0	37.5	25.0	37.5	0.0	16
Region	Northeast	15.6	40.6	25.0	15.6	3.1	32
	Midwest	12.8	38.5	17.9	25.6	5.1	39
	South	20.5	51.3	17.9	10.3	0.0	39
	West	17.2	48.3	24.1	10.3	0.0	29
Budget	\$1M<	8.1	40.3	22.6	29.0	0.0	62
	\$1-4.99M	7.7	48.7	25.6	12.8	5.1	39
	\$5M+	27.3	45.5	12.7	12.7	1.8	55

Table 18 | The other relevant senior managers in my health department are knowledgeable about the potential public health impacts of climate change.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		6.4	29.5	30.8	28.2	5.1	156
2012 results by...							
Belief in Climate Change	Yes	5.7	31.7	32.5	25.2	4.9	123
	No	17.6	11.8	29.4	35.3	5.9	17
	Don't Know	0.0	31.3	18.8	43.8	6.3	16
Region	Northeast	3.1	34.4	31.3	28.1	3.1	32
	Midwest	5.1	28.2	17.9	41.0	7.7	39
	South	15.4	23.1	41.0	12.8	7.7	39
	West	3.4	37.9	34.5	24.1	0.0	29
Budget	\$1M<	6.5	19.4	24.2	46.8	3.2	62
	\$1-4.99M	5.1	25.6	43.6	17.9	7.7	39
	\$5M+	7.3	43.6	29.1	14.5	5.5	55

Table 19 | My health department currently has ample expertise to create an effective plan to protect local residents from the health impacts of climate change.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		4.5	12.3	34.4	45.5	3.2	154
2012 results by...							
Belief in Climate Change	Yes	3.3	11.5	35.2	47.5	2.5	122
	No	18.8	6.3	31.3	37.5	6.3	16
	Don't Know	0.0	25.0	31.3	37.5	6.3	16
Region	Northeast	3.1	12.5	40.6	40.6	3.1	32
	Midwest	5.1	10.3	17.9	61.5	5.1	39
	South	10.5	10.5	42.1	34.2	2.6	38
	West	0.0	14.3	50.0	35.7	0.0	28
Budget	\$1M<	3.2	8.1	32.3	54.8	1.6	62
	\$1-4.99M	5.1	10.3	35.9	43.6	5.1	39
	\$5M+	5.7	18.9	35.8	35.8	3.8	53

Table 20 | My state health department currently has ample expertise to help us create an effective plan in this jurisdiction to protect residents from the health impacts of climate change.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		5.2	16.1	29.7	34.8	14.2	155
2012 results by...							
Belief in Climate Change	Yes	4.9	17.9	26.8	34.1	16.3	123
	No	12.5	6.3	25.0	50.0	6.3	16
	Don't Know	0.0	12.5	56.3	25.0	6.3	16
Region	Northeast	3.1	15.6	31.3	37.5	12.5	32
	Midwest	5.1	7.7	25.6	41.0	20.5	39
	South	7.9	18.4	34.2	26.3	13.2	38
	West	6.9	24.1	34.5	27.6	6.9	29
Budget	\$1M<	4.8	8.1	25.8	45.2	16.1	62
	\$1-4.99M	2.6	12.8	38.5	33.3	12.8	39
	\$5M+	7.4	27.8	27.8	24.1	13.0	53

Table 21 | My health department currently has sufficient resources to effectively protect local residents from the health impacts of climate change.

		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know	N
2012 Totals		1.3	7.1	28.6	58.4	4.5	154
2012 results by...							
Belief in Climate Change	Yes	0.0	5.7	30.1	60.2	4.1	123
	No	13.3	6.7	20.0	53.3	6.7	15
	Don't Know	0.0	18.8	25.0	50.0	6.3	16
Region	Northeast	0.0	3.1	28.1	59.4	9.4	32
	Midwest	0.0	12.8	15.4	66.7	5.1	39
	South	5.4	5.4	43.2	43.2	2.7	37
	West	0.0	6.9	37.9	55.2	0.0	29
Budget	\$1M<	1.6	8.2	18.0	70.5	1.6	62
	\$1-4.99M	2.6	2.6	33.3	53.8	7.7	39
	\$5M+	0.0	9.3	37.0	48.1	5.6	54

TABLE 22 | Perceived Local Impacts of Climate Change: Heat Waves, Storms, Droughts, and Vector-Borne Diseases

<i>Do you think climate change has affected each of the following in your jurisdiction?</i>							
		Heat waves and heat-related illness	Storms (including hurricanes) and floods	Droughts, forest fires, or brush fires	Vector-borne infectious diseases	N	
2012 Totals		53.6	56.3	42.4	32	151	
2012 results by...							
Belief in Climate Change	Yes	65.8	67.5	51.7	40.3	120	
	No	0.0	0.0	0.0	0.0	16	
	Don't Know	13.3	26.7	13.3	0.0	15	
Region	Northeast	56.7	70.0	20.0	43.3	30	
	Midwest	60.5	65.8	42.1	40.5	38	
	South	62.2	56.8	56.8	24.3	37	
	West	39.3	42.9	57.1	17.9	28	
Budget	\$1M<	47.5	59.0	44.3	31.7	61	
	\$1-4.99M	50.0	47.4	31.6	18.4	38	
	\$5M+	63.5	59.6	48.1	42.3	52	

TABLE 23 | Perceived Local Impacts of Climate Change: Water- and Food-Borne Diseases, Mental Health Conditions, Fresh Water Availability, and Air Quality

Do you think climate change has affected each of the following in your jurisdiction?

		Water- and food-borne diseases	Anxiety, depression, or other mental health conditions	Quality or quantity of fresh water available to your jurisdiction	Quality of the air, including air pollution, in your jurisdiction	<i>N</i>
2012 Totals		25.8	25.8	23.2	40.4	151
2012 results by...						
Belief in Climate Change	<i>Yes</i>	32.5	29.2	29.2	49.2	120
	<i>No</i>	0.0	6.3	0.0	6.3	16
	<i>Don't Know</i>	0.0	20.0	0.0	6.7	15
Region	<i>Northeast</i>	23.3	16.7	20.0	36.7	30
	<i>Midwest</i>	36.8	34.2	15.8	34.2	38
	<i>South</i>	24.3	35.1	37.8	43.2	37
	<i>West</i>	21.4	17.9	25.0	53.6	28
Budget	<i>\$1M<</i>	26.2	21.3	21.3	34.4	61
	<i>\$1–4.99M</i>	21.1	31.6	21.1	26.3	38
	<i>\$5M+</i>	28.8	26.9	26.9	57.7	52

TABLE 24 | Perceived Local Impacts of Climate Change: Sewage and Septic System Operation, Food Safety, Housing during Extreme Weather and Healthcare during Service Disruptions

Do you think climate change has affected each of the following in your jurisdiction?

		Unsafe or ineffective sewage and septic system operation	Food safety and security	Housing needs for residents displaced by extreme weather events	Need for healthcare services for people with chronic conditions during service disruptions (such as extreme weather events)	Mean number of perceived impacts (12 possible)	N
2012 Totals		11.3	17.9	24.5	30.2	3.32	151
2012 results by...							
Belief in Climate Change	Yes	13.3	22.5	30.8	37.3	4.32	120
	No	6.3	0.0	0.0	0.0	0.16	16
	Don't Know	0.0	0.0	0.0	6.7	0.62 ^a	15
Region	Northeast	13.3	20.0	26.7	33.3	3.08	30
	Midwest	13.2	18.4	23.7	27.8	3.63	38
	South	10.8	16.2	29.7	37.8	3.83	37
	West	7.1	14.3	17.9	32.1	2.85 ^b	28
Budget	\$1M<	14.8	21.3	19.7	25.0	3.38	61
	\$1–4.99M	5.3	7.9	23.7	29.7	2.64	38
	\$5M+	11.5	21.2	30.8	36.5	4.00 ^c	52

^aF = 23.99, p < .001

^bF = .54, n.s.

^cF = 1.89, n.s.

TABLE 25 | Anticipated Local Impacts of Climate Change: Heat Waves and Heat-Related Illness

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		26.5	47.0	18.5	7.9	0.0	0.0	151
2012 results by...								
Belief in Climate Change	Yes	33.1	53.7	8.3	5.0	0.0	0.0	121
	No	0.0	0.0	86.7	13.3	0.0	0.0	15
	Don't Know	0.0	40.0	33.3	26.7	0.0	0.0	15
Region	Northeast	36.7	40.0	13.3	10.0	0.0	0.0	30
	Midwest	29.7	48.6	13.5	8.1	0.0	0.0	37
	South	26.3	44.7	23.7	5.3	0.0	0.0	38
	West	21.4	50.0	25.0	3.6	0.0	0.0	28
Budget	\$1M<	27.1	42.4	22.0	8.5	0.0	0.0	59
	\$1-4.99M	15.8	44.7	28.9	10.5	0.0	0.0	38
	\$5M+	33.3	53.7	7.4	5.6	0.0	0.0	54

TABLE 26 | Anticipated Local Impacts of Climate Change: Storms (Including Hurricanes) and Floods

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		28.5	39.7	21.9	1.3	0.7	7.9	151
2012 results by...								
Belief in Climate Change	Yes	34.7	45.5	12.4	1.7	0.8	5.0	121
	No	0.0	6.7	80.0	0.0	0.0	13.3	15
	Don't Know	6.7	26.7	40.0	0.0	0.0	26.7	15
Region	Northeast	46.7	33.3	10.0	3.3	0.0	6.7	30
	Midwest	29.7	45.9	16.2	0.0	0.0	8.1	37
	South	31.6	31.6	28.9	0.0	2.6	5.3	38
	West	14.3	50.0	32.1	0.0	0.0	3.6	28
Budget	\$1M<	35.6	32.2	22.0	3.4	0.0	6.8	59
	\$1-4.99M	18.4	36.8	31.6	0.0	2.6	10.5	38
	\$5M+	27.8	50.0	14.8	0.0	0.0	7.4	54

TABLE 27 | Anticipated Local Impacts of Climate Change: Droughts, Forest Fires, or Brush Fires

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		24.5	38.4	27.2	1.3	0.0	8.6	151.0
2012 results by...								
Belief in Climate Change	Yes	29.8	44.6	18.2	1.7	0.0	5.8	121
	No	0.0	0.0	86.7	0.0	0.0	13.3	15
	Don't Know	6.7	26.7	40.0	0.0	0.0	26.7	15
Region	Northeast	26.7	33.3	30.0	3.3	0.0	6.7	30
	Midwest	24.3	37.8	29.7	0.0	0.0	8.1	37
	South	23.7	39.5	28.9	0.0	0.0	7.9	38
	West	28.6	50.0	17.9	0.0	0.0	3.6	28
Budget	\$1M<	25.4	37.3	27.1	1.7	0.0	8.5	59
	\$1-4.99M	18.4	36.8	31.6	2.6	0.0	10.5	38
	\$5M+	27.8	40.7	24.1	0.0	0.0	7.4	54

TABLE 28 | Anticipated Local Impacts of Climate Change: Vector-Borne Infectious Diseases

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		13.2	39.7	33.1	0.7	0.7	12.6	151
2012 results by...								
Belief in Climate Change	Yes	16.5	47.9	24.0	0.0	0.8	10.7	121
	No	0.0	6.7	86.7	0.0	0.0	6.7	15
	Don't Know	0.0	6.7	53.3	6.7	0.0	33.3	15
Region	Northeast	23.3	43.3	26.7	0.0	0.0	6.7	30
	Midwest	16.2	37.8	35.1	0.0	0.0	10.8	37
	South	10.5	34.2	42.1	0.0	2.6	10.5	38
	West	3.6	46.4	32.1	3.6	0.0	14.3	28
Budget	\$1M<	16.9	40.7	30.5	1.7	0.0	10.2	59
	\$1-4.99M	10.5	23.7	50.0	0.0	2.6	13.2	38
	\$5M+	11.1	50.0	24.1	0.0	0.0	14.8	54

TABLE 29 | Anticipated Local Impacts of Climate Change: Water- and Food-Borne Diseases

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		11.3	33.1	41.7	0.0	0.7	13.2	
2012 results by...								
Belief in Climate Change	Yes	14.0	39.7	33.9	0.0	0.8	11.6	121
	No	0.0	6.7	86.7	0.0	0.0	6.7	15
	Don't Know	0.0	6.7	60.0	0.0	0.0	33.3	15
Region	Northeast	20.0	36.7	36.7	0.0	0.0	6.7	30
	Midwest	13.5	27.0	48.6	0.0	0.0	10.8	37
	South	10.5	28.9	44.7	0.0	2.6	13.2	38
	West	3.6	35.7	46.4	0.0	0.0	14.3	28
Budget	\$1M<	13.6	39.0	37.3	0.0	0.0	10.2	59
	\$1-4.99M	10.5	15.8	55.3	0.0	2.6	15.8	38
	\$5M+	9.3	38.9	37.0	0.0	0.0	14.8	54

TABLE 30 | Anticipated Local Impacts of Climate Change: Anxiety, Depression, or Other Mental Health Conditions

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		8.6	40.4	25.2	0.0	0.0	25.8	151
2012 results by...								
Belief in Climate Change	Yes	9.9	44.6	19.8	0.0	0.0	25.6	121
	No	0.0	13.3	66.7	0.0	0.0	20.0	15
	Don't Know	6.7	33.3	26.7	0.0	0.0	33.3	15
Region	Northeast	6.7	46.7	26.7	0.0	0.0	20.0	30
	Midwest	10.8	43.2	24.3	0.0	0.0	21.6	37
	South	13.2	44.7	21.1	0.0	0.0	21.1	38
	West	7.1	35.7	28.6	0.0	0.0	28.6	28
Budget	\$1M<	6.8	35.6	28.8	0.0	0.0	28.8	59
	\$1-4.99M	13.2	36.8	28.9	0.0	0.0	21.1	38
	\$5M+	7.4	48.1	18.5	0.0	0.0	25.9	54

TABLE 31 | Anticipated Local Impacts of Climate Change: Quality or Quantity of Fresh Water Available to Your Jurisdiction

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		13.9	35.8	34.4	0.7	0.0	15.2	151
2012 results by...								
Belief in Climate Change	Yes	17.4	40.5	28.1	0.8	0.0	13.2	121
	No	0.0	0.0	86.7	0.0	0.0	13.3	15
	Don't Know	0.0	33.3	33.3	0.0	0.0	33.3	15
Region	Northeast	20.0	30.0	36.7	0.0	0.0	13.3	30
	Midwest	13.5	29.7	40.5	2.7	0.0	13.5	37
	South	15.8	36.8	31.6	0.0	0.0	15.8	38
	West	10.7	57.1	25.0	0.0	0.0	7.1	28
Budget	\$1M<	15.3	32.2	39.0	0.0	0.0	13.6	59
	\$1-4.99M	7.9	39.5	31.6	2.6	0.0	18.4	38
	\$5M+	16.7	37.0	31.5	0.0	0.0	14.8	54

TABLE 32 | Anticipated Local Impacts of Climate Change: Quality of the Air, Including Air Pollution, in Your Jurisdiction

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem will remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		15.2	39.1	29.8	1.3	0.0	14.6	151
2012 results by...								
Belief in Climate Change	Yes	19.0	45.5	21.5	1.7	0.0	12.4	121
	No	0.0	0.0	86.7	0.0	0.0	13.3	15
	Don't Know	0.0	26.7	40.0	0.0	0.0	33.3	15
Region	Northeast	23.3	26.7	33.3	0.0	0.0	16.7	30
	Midwest	13.5	40.5	29.7	2.7	0.0	13.5	37
	South	13.2	36.8	36.8	0.0	0.0	13.2	38
	West	10.7	60.7	21.4	3.6	0.0	3.6	28
Budget	\$1M<	15.3	30.5	39.0	0.0	0.0	15.3	59
	\$1-4.99M	2.6	31.6	42.1	2.6	0.0	21.1	38
	\$5M+	24.1	53.7	11.1	1.9	0.0	9.3	54

TABLE 33 | Anticipated Local Impacts of Climate Change: Unsafe or Ineffective Sewage and Septic System Operation

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem will remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		4.6	21.9	53.6	2.6	0.7	16.6	151
2012 results by...								
Belief in Climate Change	Yes	5.8	25.6	48.8	2.5	0.8	16.5	121
	No	0.0	0.0	86.7	6.7	0.0	6.7	15
	Don't Know	0.0	13.3	60.0	0.0	0.0	26.7	15
Region	Northeast	6.7	23.3	60.0	0.0	0.0	10.0	30
	Midwest	8.1	18.9	54.1	2.7	0.0	16.2	37
	South	2.6	26.3	50.0	7.9	2.6	10.5	38
	West	0.0	25.0	57.1	0.0	0.0	17.9	28
Budget	\$1M<	5.1	25.4	52.5	1.7	0.0	15.3	59
	\$1-4.99M	2.6	15.8	57.9	5.3	2.6	15.8	38
	\$5M+	5.6	22.2	51.9	1.9	0.0	18.5	54

TABLE 34 | Anticipated Local Impacts of Climate Change: Food Safety and Security

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem will remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		9.3	32.7	42.0	1.3	0.0	14.7	150
2012 results by...								
Belief in Climate Change	Yes	11.7	35.8	37.5	1.7	0.0	13.3	121
	No	0.0	13.3	80.0	0.0	0.0	6.7	15
	Don't Know	0.0	26.7	40.0	0.0	0.0	33.3	15
Region	Northeast	13.3	33.3	43.3	0.0	0.0	10.0	30
	Midwest	8.1	32.4	40.5	2.7	0.0	16.2	37
	South	8.1	37.8	40.5	2.7	0.0	10.8	37
	West	7.1	28.6	53.6	0.0	0.0	10.7	28
Budget	\$1M<	10.3	34.5	41.4	0.0	0.0	13.8	58
	\$1-4.99M	7.9	26.3	47.4	2.6	0.0	15.8	38
	\$5M+	9.3	35.2	38.9	1.9	0.0	14.8	54

TABLE 35 | Anticipated Local Impacts of Climate Change: Housing Needs for Residents Displaced by Extreme Weather Events

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem will remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	N
2012 Totals		13.9	40.4	31.8	0.0	0.0	13.9	151
2012 results by...								
Belief in Climate Change	Yes	17.4	46.3	23.1	0.0	0.0	13.2	121
	No	0.0	0.0	93.3	0.0	0.0	6.7	15
	Don't Know	0.0	33.3	40.0	0.0	0.0	26.7	15
Region	Northeast	16.7	46.7	26.7	0.0	0.0	10.0	30
	Midwest	10.8	43.2	35.1	0.0	0.0	10.8	37
	South	21.1	34.2	31.6	0.0	0.0	13.2	38
	West	7.1	42.9	35.7	0.0	0.0	14.3	28
Budget	\$1M<	10.2	35.6	39.0	0.0	0.0	15.3	59
	\$1-4.99M	13.2	34.2	42.1	0.0	0.0	10.5	38
	\$5M+	18.5	50.0	16.7	0.0	0.0	14.8	54

TABLE 36 | Anticipated Local Impacts of Climate Change: Need for Healthcare Services for People with Chronic Conditions during Service Disruptions (such as Extreme Weather Events)

Over the next 20 years, do you think climate change will make these problems more common or severe, less common or severe, or will the problem remain the same in your jurisdiction?

		Much more common	More common	No change	Less common	Much less common	Don't know	Mean number of anticipated impacts	N
2012 Totals		15.9	45.0	25.2	0.0	0.0	13.9	5.54	151
2012 results by...									
Belief in Climate Change	Yes	19.8	50.4	16.5	0.0	0.0	13.2	6.97	121
	No	0.0	0.0	93.3	0.0	0.0	6.7	0.37	15
	Don't Know	0.0	46.7	26.7	0.0	0.0	26.7	2.43a	15
Region	Northeast	20.0	50.0	23.3	0.0	0.0	6.7	5.70	30
	Midwest	10.8	48.6	29.7	0.0	0.0	10.8	5.53	37
	South	23.7	31.6	28.9	0.0	0.0	15.8	5.80	38
	West	14.3	60.7	17.9	0.0	0.0	7.1	5.52b	28
Budget	\$1M<	13.6	39.0	32.2	0.0	0.0	15.3	5.53	59
	\$1-4.99M	15.8	42.1	28.9	0.0	0.0	13.2	4.40	38
	\$5M+	18.5	53.7	14.8	0.0	0.0	13.0	6.80c	54

^aF = 33.90, p<.001

^bF = .03, n.s.

^cF = 3.85, p<.05

TABLE 37 | Current Activity and Changes to Programs in Climate Change-Related Areas: Heat Waves and Heat-Related Illness

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		56.2	21.2	10.6	68.2	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	55.7	24.8	9.1	66.1	122
	<i>No</i>	43.8	0.0	20.0	80.0	16
	<i>Don't Know</i>	73.3	13.3	13.3	73.3	15
Region	<i>Northeast</i>	50.0	23.3	13.3	63.3	30
	<i>Midwest</i>	63.2	18.9	5.4	75.7	38
	<i>South</i>	63.2	31.6	7.9	60.5	38
	<i>West</i>	51.7	17.9	14.3	67.9	29
Budget	<i>\$1M<</i>	42.6	13.6	5.1	81.4	61
	<i>\$1–4.99M</i>	50.0	15.8	7.9	76.3	38
	<i>\$5M+</i>	75.9	33.3	18.5	48.1	54

TABLE 38 | Current Activity and Changes to Programs in Climate Change-Related Areas: Storms (Including Hurricanes) and Floods

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		71.9	20.5	13.9	65.6	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	68.9	24.8	10.7	64.5	122
	<i>No</i>	75.0	0.0	33.3	66.7	16
	<i>Don't Know</i>	93.3	6.7	20.0	73.3	15
Region	<i>Northeast</i>	73.3	30.0	23.3	46.7	30
	<i>Midwest</i>	63.2	18.9	2.7	78.4	38
	<i>South</i>	86.8	26.3	7.9	65.8	38
	<i>West</i>	62.1	14.3	14.3	71.4	29
Budget	<i>\$1M<</i>	68.9	18.6	10.2	71.2	61
	<i>\$1–4.99M</i>	76.3	15.8	15.8	68.4	38
	<i>\$5M+</i>	72.2	25.9	16.7	57.4	54

TABLE 39 | Current Activity and Changes to Programs in Climate Change-Related Areas: Droughts, Forest Fires, or Brush Fires

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		30.7	9.3	9.3	81.5	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	32.0	11.6	7.4	81.0	122
	<i>No</i>	6.3	0.0	13.3	86.7	16
	<i>Don't Know</i>	46.7	0.0	20.0	80.0	15
Region	<i>Northeast</i>	10.0	3.3	6.7	90.0	30
	<i>Midwest</i>	21.1	5.4	8.1	86.5	38
	<i>South</i>	42.1	18.4	7.9	73.7	38
	<i>West</i>	58.6	7.1	14.3	78.6	29
Budget	<i>\$1M<</i>	23.0	8.5	6.8	84.7	61
	<i>\$1-4.99M</i>	26.3	7.9	7.9	84.2	38
	<i>\$5M+</i>	42.6	11.1	13.0	75.9	54

TABLE 40 | Current Activity and Changes to Programs in Climate Change-Related Areas: Vector-Borne Infectious Disease

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		88.9	7.9	17.9	94.7	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	88.5	9.9	14.0	76.0	122
	<i>No</i>	93.8	0.0	40.0	60.0	16
	<i>Don't Know</i>	86.7	0.0	26.7	73.3	15
Region	<i>Northeast</i>	90.0	10.0	26.7	63.3	30
	<i>Midwest</i>	92.1	8.1	10.8	81.1	38
	<i>South</i>	89.5	10.5	13.2	76.3	38
	<i>West</i>	79.3	3.6	25.0	71.4	29
Budget	<i>\$1M<</i>	91.8	8.5	13.6	78.0	61
	<i>\$1-4.99M</i>	84.2	5.3	21.1	73.7	38
	<i>\$5M+</i>	88.9	9.3	20.4	70.4	54

TABLE 41 | Current Activity and Changes to Programs in Climate Change-Related Areas: Water- and Food-Borne Diseases

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		92.1	6.0	18.5	75.5	152
2012 results by...						
Belief in Climate Change	<i>Yes</i>	91.7	7.4	15.7	76.9	121
	<i>No</i>	93.8	0.0	33.3	66.7	16
	<i>Don't Know</i>	93.3	0.0	26.7	73.3	15
Region	<i>Northeast</i>	93.3	6.7	26.7	66.7	30
	<i>Midwest</i>	89.5	5.4	13.5	81.1	37
	<i>South</i>	94.6	7.9	13.2	78.9	38
	<i>West</i>	89.7	0.0	25.0	75.0	29
Budget	<i>\$1M<</i>	90.0	6.8	13.6	79.7	60
	<i>\$1-4.99M</i>	89.5	2.6	21.1	76.3	38
	<i>\$5M+</i>	96.3	7.4	22.2	70.4	54

TABLE 42 | Current Activity and Changes to Programs in Climate Change-Related Areas: Anxiety, Depression, or Other Mental Health Conditions

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		21.1	1.3	14	84.7	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	19.0	1.7	13.3	85.0	121
	<i>No</i>	25.0	0.0	20.0	80.0	16
	<i>Don't Know</i>	33.3	0.0	13.3	86.7	15
Region	<i>Northeast</i>	23.3	0.0	13.3	86.7	30
	<i>Midwest</i>	23.7	2.7	16.2	81.1	38
	<i>South</i>	21.1	2.6	10.5	86.8	38
	<i>West</i>	20.7	0.0	10.7	89.3	29
Budget	<i>\$1M<</i>	11.5	1.7	8.6	89.7	61
	<i>\$1-4.99M</i>	18.4	2.6	15.8	81.6	38
	<i>\$5M+</i>	34.0	0.0	18.5	81.5	53

TABLE 43 | Current Activity and Changes to Programs in Climate Change-Related Areas: Quality or Quantity of Fresh Water Available to Your Jurisdiction

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		46.4	7.3	9.9	82.8	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	45.9	9.1	8.3	82.6	122
	<i>No</i>	37.5	0.0	13.3	86.7	16
	<i>Don't Know</i>	60.0	0.0	20.0	80.0	15
Region	<i>Northeast</i>	50.0	6.7	13.3	80.0	30
	<i>Midwest</i>	50.0	2.7	10.8	86.5	38
	<i>South</i>	47.4	13.2	7.9	78.9	38
	<i>West</i>	51.7	3.6	10.7	85.7	29
Budget	<i>\$1M<</i>	37.7	8.5	5.1	86.4	61
	<i>\$1-4.99M</i>	44.7	7.9	13.2	78.9	38
	<i>\$5M+</i>	57.4	5.6	13.0	81.5	54

TABLE 44 | Current Activity and Changes to Programs in Climate Change-Related Areas: Quality of the Air, Including Air Pollution, in Your Jurisdiction

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		34.9	5.3	13.9	80.8	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	36.4	6.6	13.2	80.2	121
	<i>No</i>	31.3	0.0	20.0	80.0	16
	<i>Don't Know</i>	26.7	0.0	13.3	86.7	15
Region	<i>Northeast</i>	41.4	3.3	23.3	73.3	29
	<i>Midwest</i>	18.4	2.7	13.5	83.8	38
	<i>South</i>	34.2	10.5	5.3	84.2	38
	<i>West</i>	55.2	3.6	17.9	78.6	29
Budget	<i>\$1M<</i>	30.0	3.4	13.6	83.1	60
	<i>\$1-4.99M</i>	23.7	0.0	13.2	86.8	38
	<i>\$5M+</i>	48.1	11.1	14.8	74.1	54

TABLE 45 | Current Activity and Changes to Programs in Climate Change-Related Areas: Unsafe or Ineffective Sewage and Septic System Operation

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		70.6	4.6	14.6	80.8	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	68.9	5.0	12.4	82.6	122
	<i>No</i>	87.5	0.0	33.3	66.7	16
	<i>Don't Know</i>	66.7	6.7	13.3	80.0	15
Region	<i>Northeast</i>	73.3	6.7	10.0	83.3	30
	<i>Midwest</i>	76.3	5.4	10.8	83.8	38
	<i>South</i>	78.9	7.9	15.8	76.3	38
	<i>West</i>	58.6	0.0	14.3	85.7	29
Budget	<i>\$1M<</i>	63.9	5.1	8.5	86.4	61
	<i>\$1-4.99M</i>	76.3	2.6	21.1	76.3	38
	<i>\$5M+</i>	74.1	5.6	16.7	77.8	54

TABLE 46 | Current Activity and Changes to Programs in Climate Change-Related Areas: Food Safety and Security

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		75.0	6.0	17.9	76.2	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	74.4	6.6	16.5	76.9	121
	<i>No</i>	87.5	0.0	26.7	73.3	16
	<i>Don't Know</i>	66.7	6.7	20.0	73.3	15
Region	<i>Northeast</i>	73.3	10.0	10.0	80.0	30
	<i>Midwest</i>	89.2	5.4	13.5	81.1	37
	<i>South</i>	81.6	7.9	15.8	76.3	38
	<i>West</i>	62.1	3.6	32.1	64.3	29
Budget	<i>\$1M<</i>	66.7	6.8	10.2	83.1	60
	<i>\$1-4.99M</i>	81.6	2.6	26.3	71.1	38
	<i>\$5M+</i>	79.6	7.4	20.4	72.2	54

TABLE 47 | Current Activity and Changes to Programs in Climate Change-Related Areas: Housing for Residents Displaced by Extreme Weather Events

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		26.3	6.6	12.6	80.8	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	24.8	7.4	10.7	81.8	122
	<i>No</i>	12.5	0.0	20.0	80.0	16
	<i>Don't Know</i>	53.3	6.7	20.0	73.3	15
Region	<i>Northeast</i>	20.0	10.0	13.3	76.7	30
	<i>Midwest</i>	24.3	5.4	8.1	86.5	37
	<i>South</i>	28.9	10.5	5.3	84.2	38
	<i>West</i>	27.6	3.6	17.9	78.6	29
Budget	<i>\$1M<</i>	18.0	8.5	8.5	83.1	61
	<i>\$1–4.99M</i>	29.7	2.6	15.8	81.6	37
	<i>\$5M+</i>	33.3	7.4	14.8	77.8	54

TABLE 48 | Current Activity and Changes to Programs in Climate Change-Related Areas: Lack of Healthcare Services for People with Chronic Conditions during Service Disruptions (such as Extreme Weather Events)

		Current area of activity	Increasing activities in response to climate change	Changing activities for reasons unrelated to climate change	No changes to activities	N
2012 Totals		50.7	7.3	16.7	76.0	153
2012 results by...						
Belief in Climate Change	<i>Yes</i>	49.2	9.2	15.0	75.8	121
	<i>No</i>	37.5	0.0	20.0	80.0	16
	<i>Don't Know</i>	78.6	0.0	26.7	73.3	15
Region	<i>Northeast</i>	23.3	13.3	16.7	70.0	30
	<i>Midwest</i>	55.3	2.7	16.2	81.1	38
	<i>South</i>	47.4	13.2	5.3	81.6	38
	<i>West</i>	65.5	3.7	25.9	70.4	29
Budget	<i>\$1M<</i>	36.7	8.6	12.1	79.3	60
	<i>\$1–4.99M</i>	47.4	0.0	18.4	81.6	38
	<i>\$5M+</i>	68.5	11.1	20.4	68.5	54

TABLE 49 | Current Activity and Changes to Programs in Climate Change-Related Areas: Mean Number of Current and Changing Adaptation Programs

		Mean number of current activities	Mean number of activities increased due to climate change	Mean number of activities changing for other reasons	N
2012 Totals		5.83	0.9	1.47	153
2012 results by...					
Belief in Climate Change	Yes	6.13	1.15	1.36	122
	No	5.32	0.00	2.32	16
	Don't Know	5.52 ^a	0.29 ^b	1.67 ^c	15
Region	Northeast	5.03	1.00	1.59	30
	Midwest	5.86	0.72	1.12	38
	South	6.61	1.49	1.07	38
	West	5.82 ^d	0.50 ^e	1.82 ^f	29
Budget	\$1M<	5.33	0.88	1.03	61
	\$1-4.99M	5.47	0.56	1.67	38
	\$5M+	7.05 ^g	1.24 ^h	1.92 ⁱ	54

TABLE 50 | Mitigation Programs: Encourage or Help People to Use Active Transportation, such as Walking and Cycling

Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

		Current program	Planned program	No current or planned program	N
2012 Totals		37.5	19.7	42.8	151
2012 results by...					
Belief in Climate Change	Yes	40.5	20.7	38.8	121
	No	13.3	20.0	66.7	15
	Don't Know	33.3	13.3	53.3	15
Region	Northeast	35.5	16.1	48.4	31
	Midwest	29.7	35.1	35.1	37
	South	44.7	7.9	47.4	38
	West	39.3	25.0	35.7	28
Budget	\$1M<	25.4	25.4	49.2	59
	\$1-4.99M	21.1	18.4	60.5	38
	\$5M+	61.1	14.8	24.1	34

TABLE 51 | Mitigation Programs by Group: Encourage or Help People to Use Mass Transportation

Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

		Current program	Planned program	No current or planned program	N
2012 Totals		15.1	7.9	77.0	151
2012 results by...					
Belief in Climate Change	Yes	16.5	8.3	75.2	121
	No	6.7	0.0	93.3	15
	Don't Know	13.3	13.3	73.3	15
Region	Northeast	9.7	16.1	74.2	31
	Midwest	8.1	8.1	83.8	37
	South	13.2	7.9	78.9	38
	West	28.6	3.6	67.9	28
Budget	\$1M<	5.1	6.8	88.1	59
	\$1-4.99M	7.9	5.3	86.8	38
	\$5M+	31.5	11.1	57.4	34

TABLE 52 | Mitigation Programs: Encourage or Help People to Change the Way They Purchase Foods such as Buying Locally Grown Foods, Organic Foods, or Plant-Based Foods

Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

		Current program	Planned program	No current or planned program	N
2012 Totals		36.2	3.9	43.4	151
2012 results by...					
Belief in Climate Change	Yes	37.2	19.8	43.0	121
	No	26.7	13.3	60.0	15
	Don't Know	33.3	33.3	33.3	15
Region	Northeast	29.0	12.9	58.1	31
	Midwest	35.1	27.0	37.8	37
	South	42.1	21.1	36.8	38
	West	42.9	17.9	39.3	28
Budget	\$1M<	23.7	22.0	54.2	59
	\$1-4.99M	34.2	21.1	44.7	38
	\$5M+	50.0	18.5	31.5	34

TABLE 53 | Mitigation Programs: Educate the Public about Climate Change and Its Potential Impact on Health

Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

		Current program	Planned program	No current or planned program	N
2012 Totals		3.9	15.8	80.3	151
2012 results by...					
Belief in Climate Change	Yes	5.0	19.0	76.0	121
	No	0.0	0.0	100.0	15
	Don't Know	0.0	6.7	93.3	15
Region	Northeast	3.2	16.1	80.6	31
	Midwest	2.7	18.9	78.4	37
	South	2.6	13.2	84.2	38
	West	10.7	17.9	71.4	28
Budget	\$1M<	3.4	10.2	86.4	59
	\$1-4.99M	0.0	2.6	97.4	38
	\$5M+	7.4	31.5	61.1	34

TABLE 54 | Mitigation Programs: Reduce Fossil Fuel Use or Conserve Energy in the Operation of the Health Department

Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

		Current program	Planned program	No current or planned program	N
2012 Totals		18.5	13.9	67.5	151
2012 results by...					
Belief in Climate Change	Yes	21.7	13.3	65.0	120
	No	0.0	20.0	80.0	15
	Don't Know	13.3	13.3	73.3	15
Region	Northeast	9.7	6.5	83.9	31
	Midwest	22.2	19.4	58.3	36
	South	13.2	13.2	73.7	38
	West	28.6	17.9	53.6	28
Budget	\$1M<	5.2	12.1	82.8	58
	\$1-4.99M	10.5	13.2	76.3	38
	\$5M+	38.9	16.7	44.4	34

TABLE 55 | Mitigation Programs: Help Residents of Your Jurisdiction Reduce Their Fossil Fuel Use or Conserve Energy

Some public health programs may help to reduce future climate change. Please indicate whether your department has a current or planned program to...

		Current program	Planned program	No current or planned program	N
2012 Totals		5.3	7.9	86.8	151
2012 results by...					
Belief in Climate Change	Yes	5.8	9.1	85.1	121
	No	0.0	0.0	100.0	15
	Don't Know	6.7	6.7	86.7	15
Region	Northeast	0.0	6.5	93.5	31
	Midwest	2.7	10.8	86.5	37
	South	2.6	5.3	92.1	38
	West	14.3	10.7	75.0	28
Budget	\$1M<	3.4	6.8	89.8	59
	\$1-4.99M	0.0	2.6	97.4	38
	\$5M+	11.1	13.0	75.9	34

TABLE 56 | Mitigation Programs: Number of Current and Planned Mitigation Programs

		Mean number of...		N	
		Current programs	Planned programs		
2012 Totals		1.02	0.75	151	
2012 results by...					
Belief in Climate Change	Yes	1.18	0.84	121	
	No	0.37	0.42	15	
	Don't Know	0.71 ^a	0.62 ^b	15	
Region	Northeast	0.73	0.62	31	
	Midwest	0.86	1.02	37	
	South	1.10	0.63	38	
	West	1.35 ^c	0.76 ^d	28	
Budget	\$1M<	0.59	0.74	59	
	\$1-4.99M	0.62	0.53	38	
	\$5M+	1.83 ^e	0.97 ^f	34	

^aF = 3.45, p < .05; ^bF = 1.22, n.s.

^cF = 1.38, n.s.; ^dF = 1.01, n.s.

^eF = 16.77, p < .001; ^fF = 1.74, n.s.