



# EXTREME WEATHER AND CLIMATE CHANGE IN THE AMERICAN MIND

## SEPTEMBER 2012

YALE PROJECT ON CLIMATE CHANGE COMMUNICATION

GEORGE MASON UNIVERSITY CENTER FOR CLIMATE CHANGE COMMUNICATION





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## Introduction

This report is based on findings from a nationally representative survey – *Climate Change in the American Mind* – conducted by the Yale Project on Climate Change Communication and the George Mason University Center for Climate Change Communication. Interview dates: August 31, 2012 – September, 2012. Interviews: 1,061 Adults (18+) Total average margin of error: +/- 3 percentage points at the 95% confidence level. It was funded by the Surdna Foundation, the 11th Hour Project, and the Grantham Foundation.

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## Executive Summary

- A large and growing majority of Americans (74%, up 5 points since our last national survey in March 2012) say “global warming is affecting weather in the United States.”
- Asked about six recent extreme weather events in the United States, majorities say global warming made each event “worse.” Americans were most likely to connect global warming to the record high temperatures in the summer of 2012 (73%).
- Americans increasingly say weather in the U.S. has been getting worse over the past several years (61%, up 9 percentage points since March).
- A majority of Southerners (56%) say the weather in their local area has been getting worse over the past few years. Half of Midwesterners (50%) say this as well.
- Half of Americans recall unusual weather events in their local area over the past year (52%).
- Six in ten Americans (61%) recall unusual weather events occurring elsewhere in the United States in the past year (other than their own local area), perhaps reflecting extensive media attention to the record-setting drought, high temperatures, and strong storms in the summer of 2012, as well as the unusually warm winter of 2011-2012.
- Half of Americans (51%) say that droughts have become more common in their local area over the past few decades, an increase of 5 points since last spring. This national change was driven primarily by a major shift of opinions in the Midwest (66%, up 25 points since March), which was hit hardest by the summer drought.
- A majority of Americans (58%) say that heat waves have become more common in their local area over the past few decades, up 5 points since March, with especially large increases in the Northeast and Midwest (+12 and +15, respectively).
- More than twice as many Midwesterners say they personally experienced an extreme heat wave (83%, up 48 points since March) or drought (81%, up 55 points) in the past year.
- Northeasterners are more likely to say they personally experienced an extreme heat wave (52%, up 10 points since March) or drought in the past year (23%, up 6 points).
- Southerners who say they personally experienced an extreme heat wave increased to 61 percent, from 50 percent in March.
- An increasing number of Americans in the West say they experienced either an extreme heat wave (49%, up 13 points since March) or drought (41%, up 10 points).
- One in five Americans (20%) says they suffered harm to their health, property, and/or finances from an extreme heat wave in the past year, a 6 point increase since March. In addition, 15 percent say they suffered harm from a drought in the past year, up 4 points.

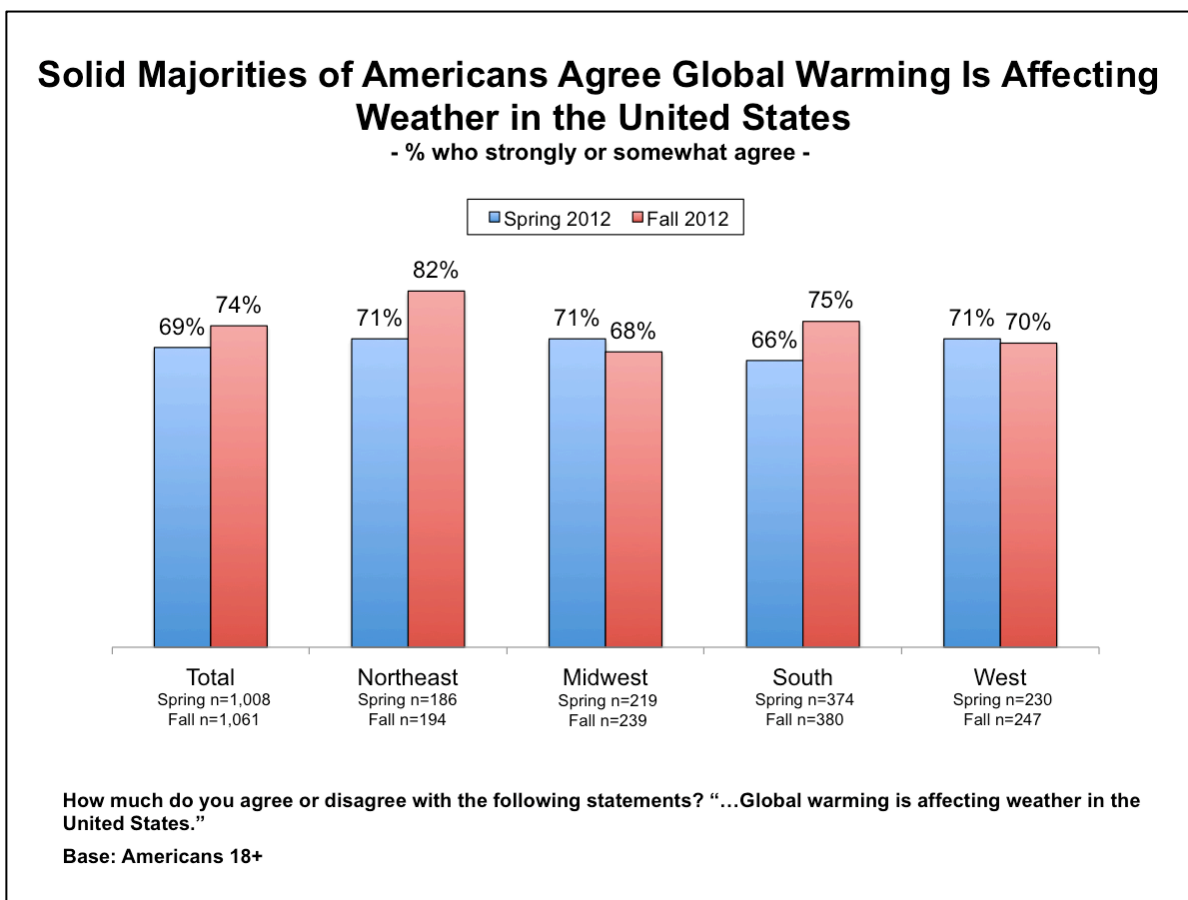
## 1. Global Warming and Extreme Weather Events

### Growing Belief that Climate Change is Affecting Weather in the United States

A large and growing majority of Americans (74%) say “global warming is affecting weather in the United States.”

This percentage has increased 5 points since our last national survey in March 2012, driven primarily by the changing beliefs of residents in the Northeast (82%, up 11 points) and the South (75%, up 9 points).

Opinions on the impact of climate change on weather in the U.S. have not changed significantly since March in either the Midwest or West.

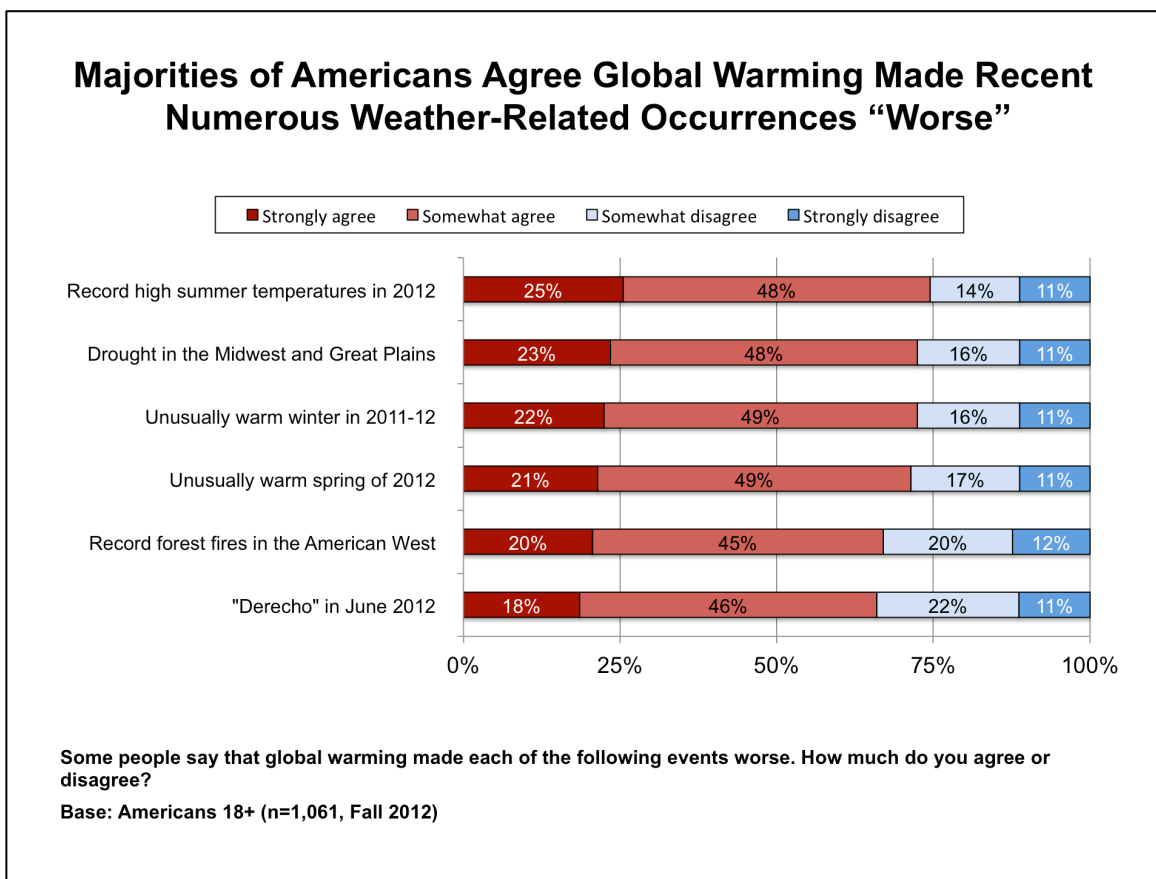


## Americans Say Global Warming is Making Extreme Weather Events Worse

Asked about six recent extreme weather events in the United States, majorities of Americans say global warming made the events “worse.”

Americans are most likely to connect global warming to the record high temperatures in the summer of 2012 (73%). They were the least likely to connect global warming with the derecho of June 2012 (a fast moving band of thunderstorms which traveled from Indiana to Virginia, causing massive power outages and damage). Nonetheless, a majority say global warming made those storms worse (64%).

Americans also say that global warming exacerbated several other extreme events, including drought in the Midwest and Great Plains (71%), the unusually warm winter of 2011-2012 (71%), the unusually warm spring of 2012 (70%), and record forest fires in the American West (65%).

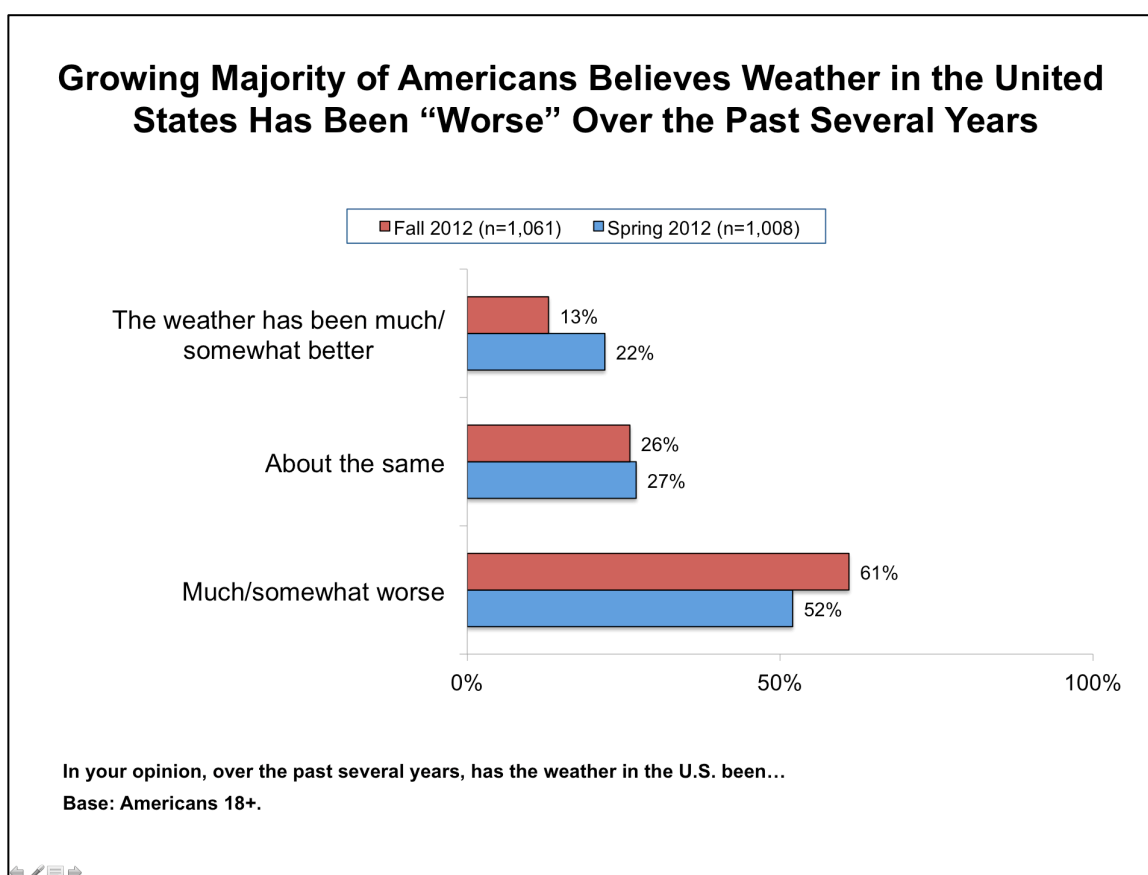


## 2. Observations and Perceptions of Weather in the United States

### Americans More Likely to Perceive U.S. Weather as Getting “Worse”

Americans increasingly say weather in the U.S. has been getting worse over the past several years (61%, up 9 percentage points since March).

At the same time, fewer believe the weather is getting better (13%, down 9 points since March).

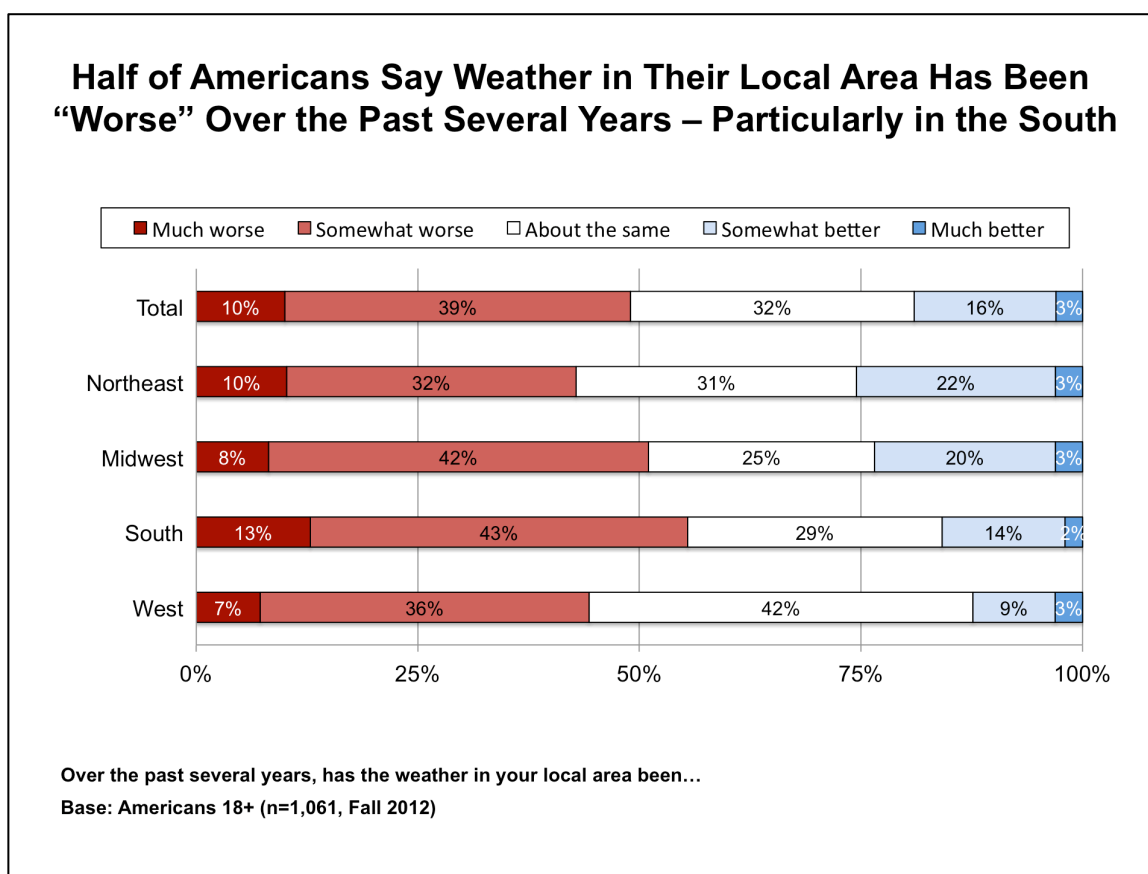


## Many Americans Say the Weather in their Local Area is Getting Worse

A majority of Americans in the South (56%) say the weather in their local area has been getting much or somewhat worse over the past few years. Half of Midwesterners (50%) say this as well.

Pluralities of Americans in the West (43%) and the Northeast (42%) also say the weather in their area is getting worse.

Relatively few Americans say weather in their area is getting better (at most 25%, in the Northeast).



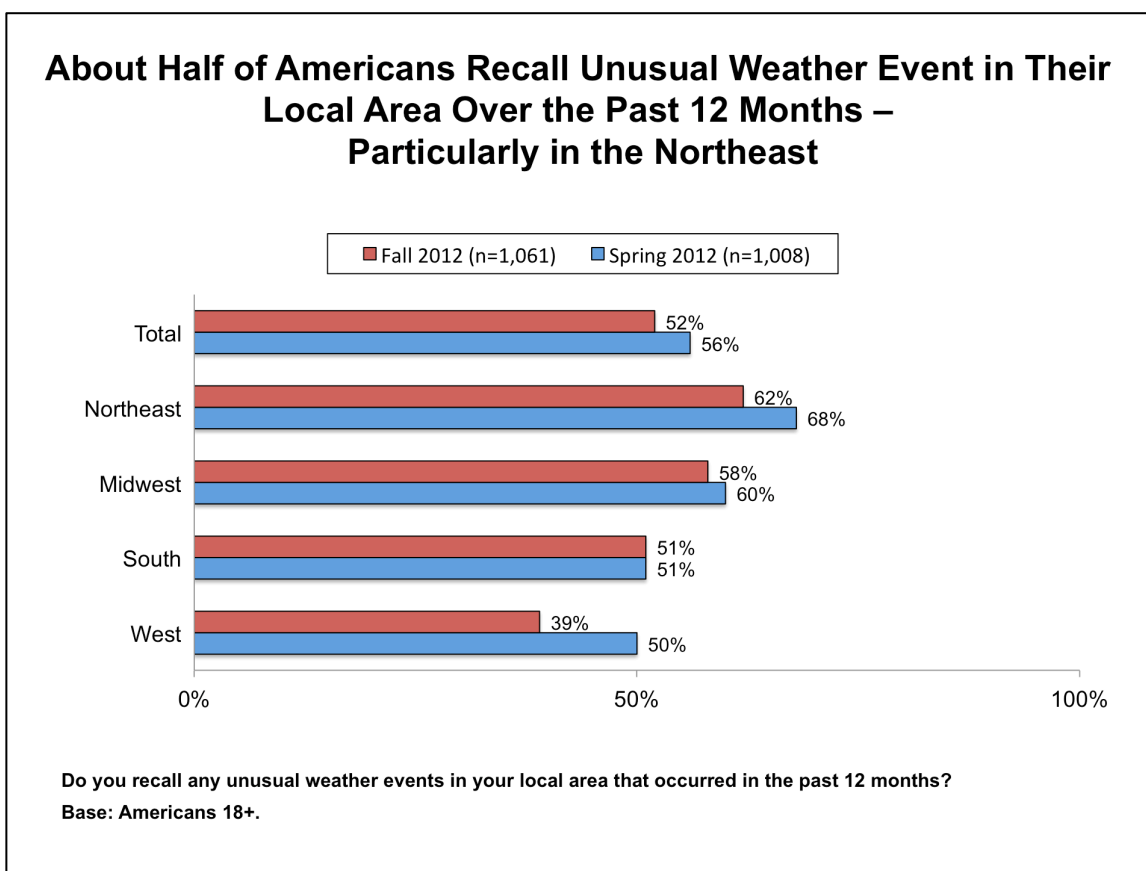


## Many Americans Recall Local Unusual Weather Events over the Past Year

About half of Americans say they recall unusual weather events in their local area over the past year (52%).

There are interesting differences by region:

- In the Northeast and Midwest, over half recall unusual weather events (62% and 58% respectively), likely due to the record heat wave during the summer and the drought in the Midwest.
- In the South, half recall unusual weather events (51%), whereas in the West, only four in ten (39%, down 11 points since March) remember such events. The decline in the West may be due to the fact that most of the population resides in the coastal states, which enjoyed relatively mild weather this past summer.

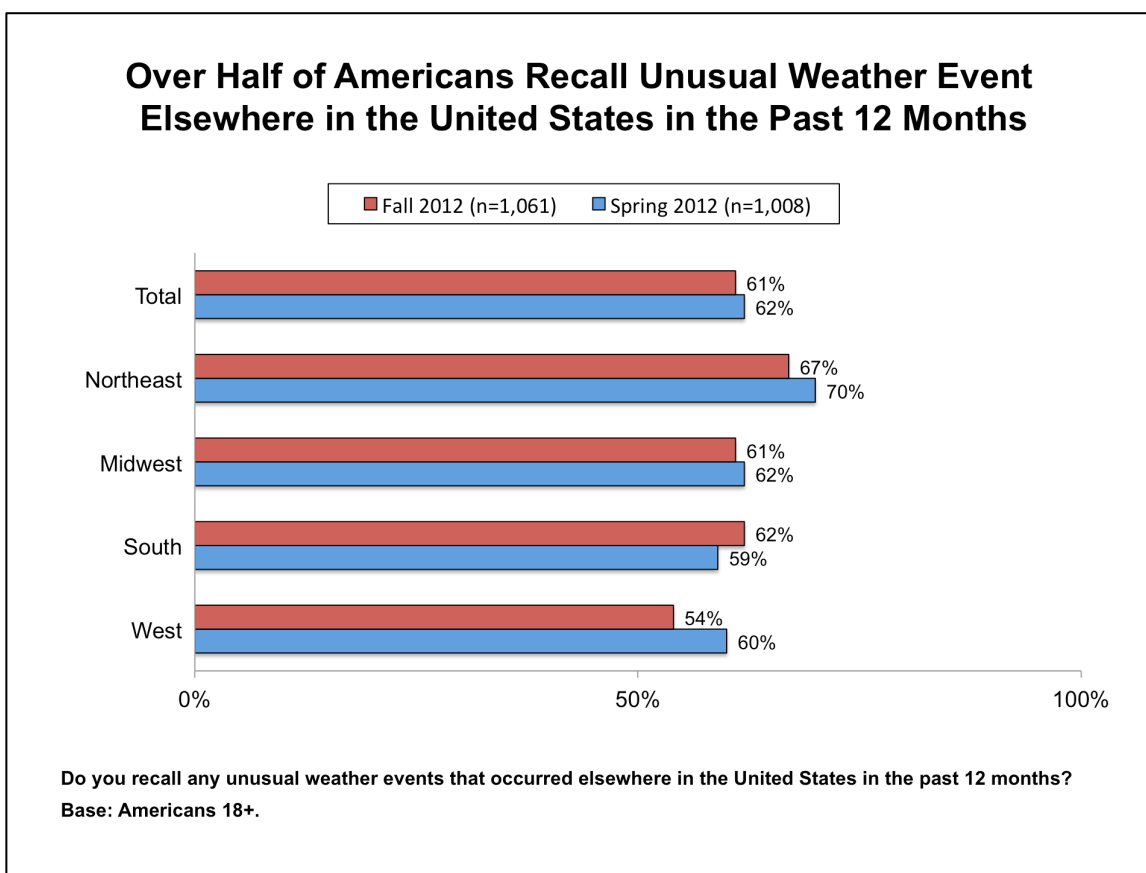


## Majority of Americans Recall Unusual Weather Events elsewhere in the U.S.

Six in ten Americans (61%) recall unusual weather events occurring elsewhere in the United States in the past year (other than their own local area), perhaps reflecting extensive media attention to the record-setting drought, high temperatures, and strong storms in the summer of 2012, as well as the unusually warm winter of 2011-2012.

Those in the Northeast were particularly likely to recall at least one event (67%), followed by those in the South (62%), Midwest (61%), and the West (54%).

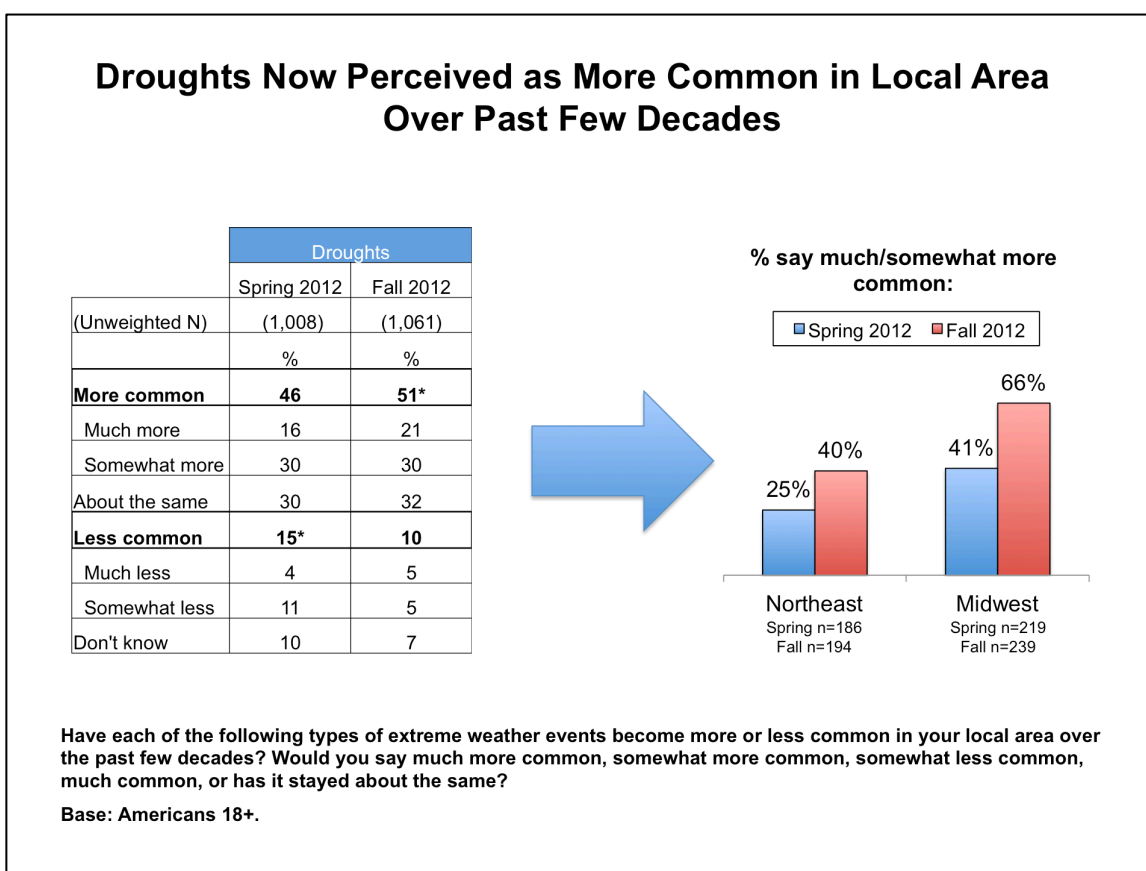
These findings are essentially the same as those observed in March of 2012.



## Drought Perceived as More Common

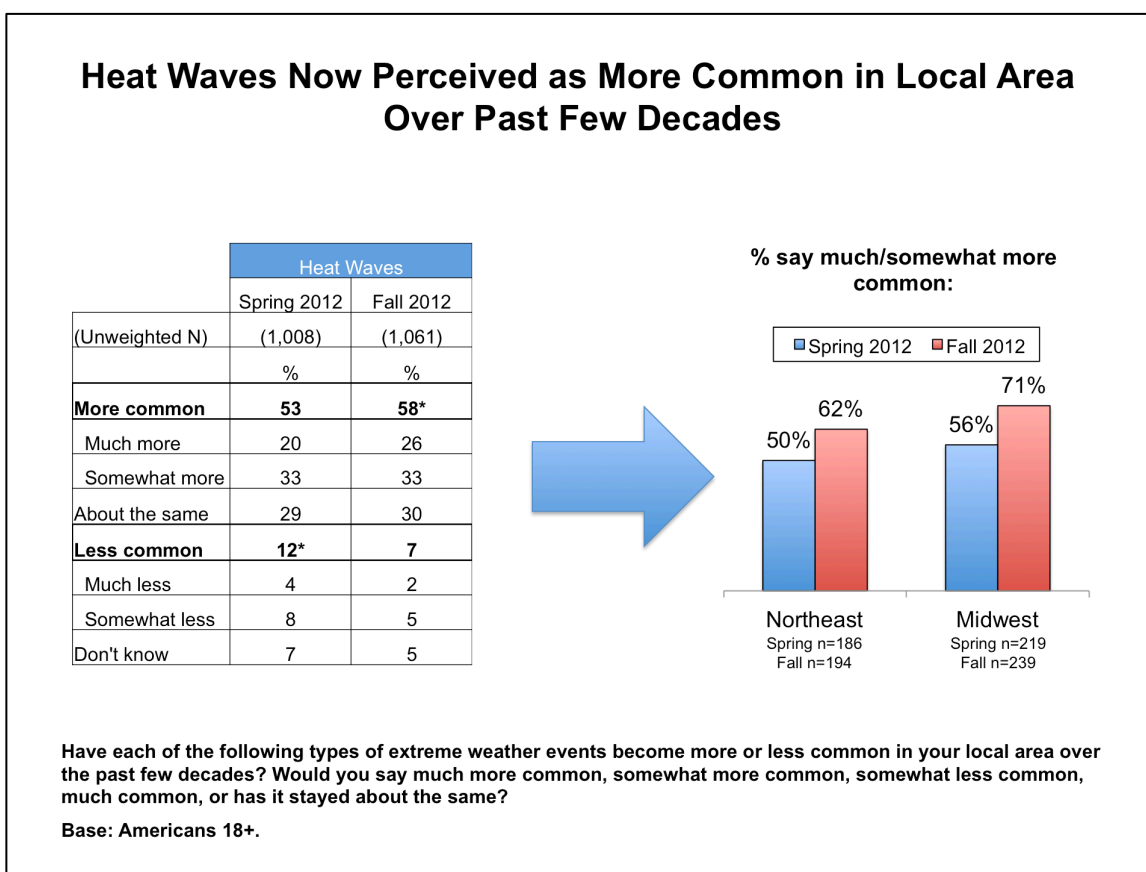
Over 60 percent of the contiguous U.S. was affected by moderate to exceptional drought by the end of August 2012. As of September 2012, half of Americans (51%) say that droughts have become more common in their local area over the past few decades, an increase of 5 points since last spring. This national shift was driven primarily by a major shift of opinions in the Midwest (66%, up 25 points since March), which was hit hardest by the drought of 2012.

In the Northeast, there has also been an increase in the proportion that say droughts have become more common locally (40%, up 15 points).



## Heat Waves Perceived as More Common

A majority of Americans (58%) say that heat waves have become more common in their local area over the past few decades, up 5 points since the spring, with especially large increases in the Northeast and Midwest (+12 and +15 points, respectively).





## Heavy Rain Storms Perceived as Less Common

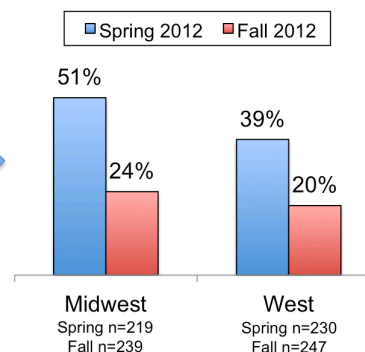
Fewer Americans say that very heavy rainstorms have become more common in their own local area (-11 points since March). This trend is particularly pronounced in the Midwest, where only 24 percent say very heavy rainstorms are more common, down from 51 percent last March. Americans in the Western states are also less likely to say very heavy rainstorms are more common (20%, down from 39%).

### Heavy Rainstorms Now Perceived as Less Common in Local Area Over Past Few Decades

	Very Heavy Rainstorms	
	Spring 2012	Fall 2012
(Unweighted N)	(1,008)	(1,061)
	%	%
<b>More common</b>	<b>43*</b>	<b>32</b>
Much more	14	11
Somewhat more	29	22
About the same	32	40
<b>Less common</b>	<b>18</b>	<b>23*</b>
Much less	7	7
Somewhat less	11	17
Don't know	7	5



% say much/somewhat more common:



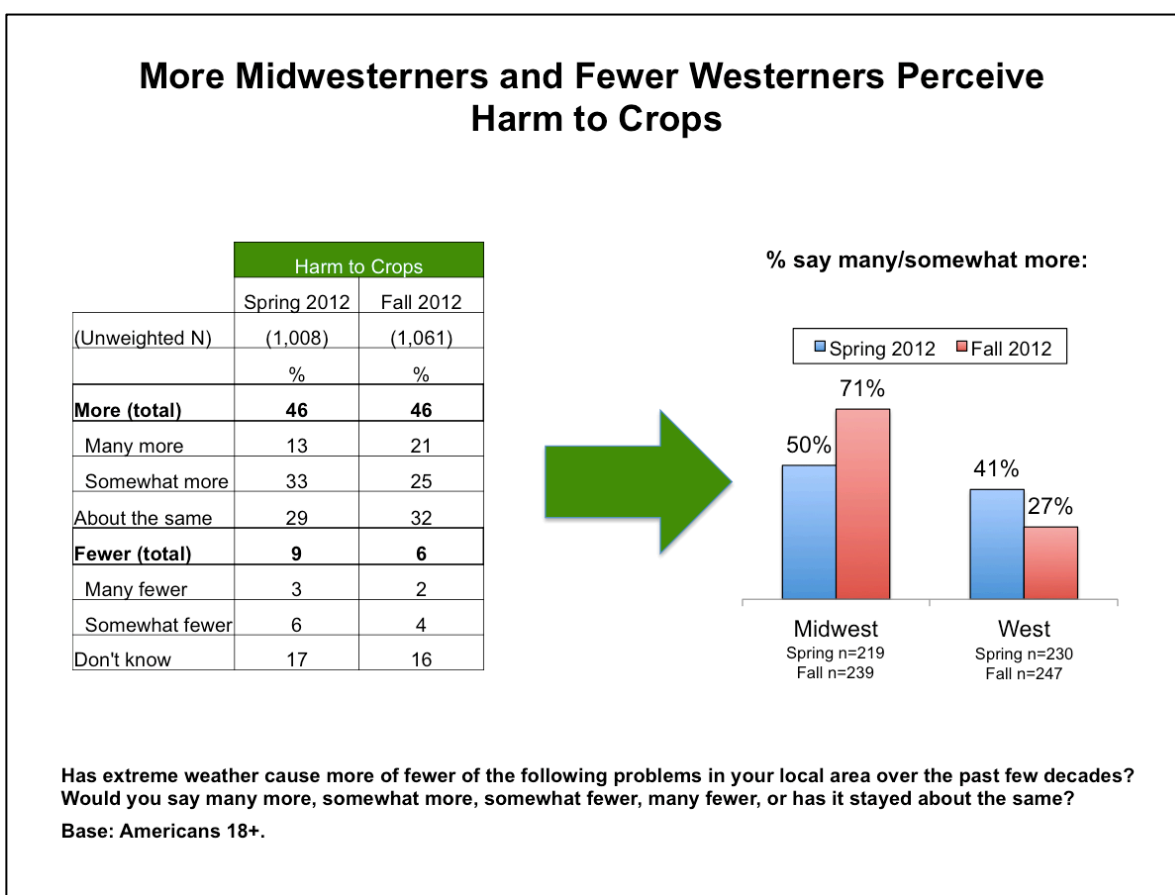
Have each of the following types of extreme weather events become more or less common in your local area over the past few decades? Would you say much more common, somewhat more common, somewhat less common, much common, or has it stayed about the same?

Base: Americans 18+.

## More Midwesterners and Fewer Westerners Perceive Harm to Local Crops

With the Midwest and Great Plains drought came extensive crop damage, and this was clearly observed by Midwesterners. Seven in ten say extreme weather has caused more harm to crops in their local area over the past few decades (71%, up 21 points since the spring).

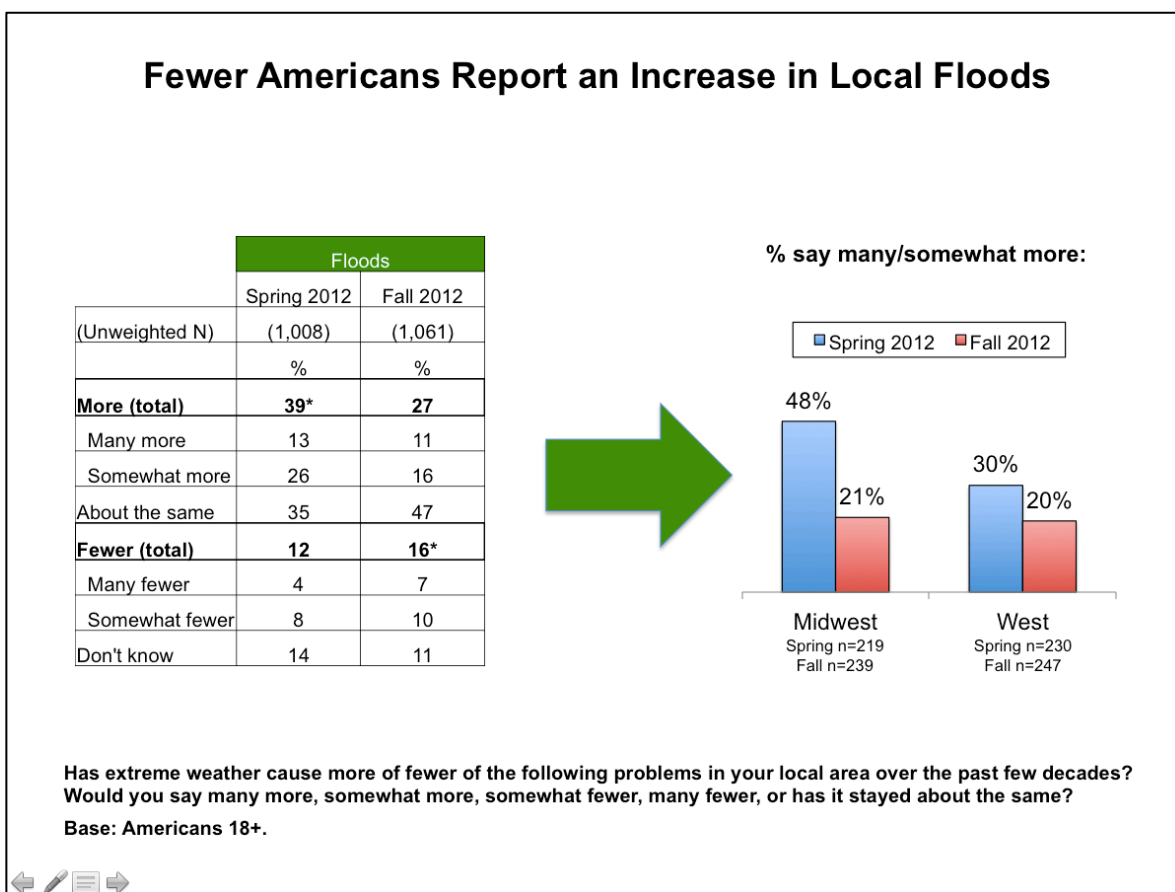
In the West, however, the perception that harm to crops is becoming a bigger problem *fell* from 41 percent in the spring to 28 percent today, perhaps due to the relatively mild weather along the Pacific coast in summer 2012, which had also experienced unusually wet and cool weather the previous summer.



## Fewer Americans Report an Increase in Local Floods

After the extreme lack of rainfall in America's Midwest and Great Plains this summer, fewer Americans in the Midwest and the West say that extreme weather has caused more floods in their local area over the past few decades:

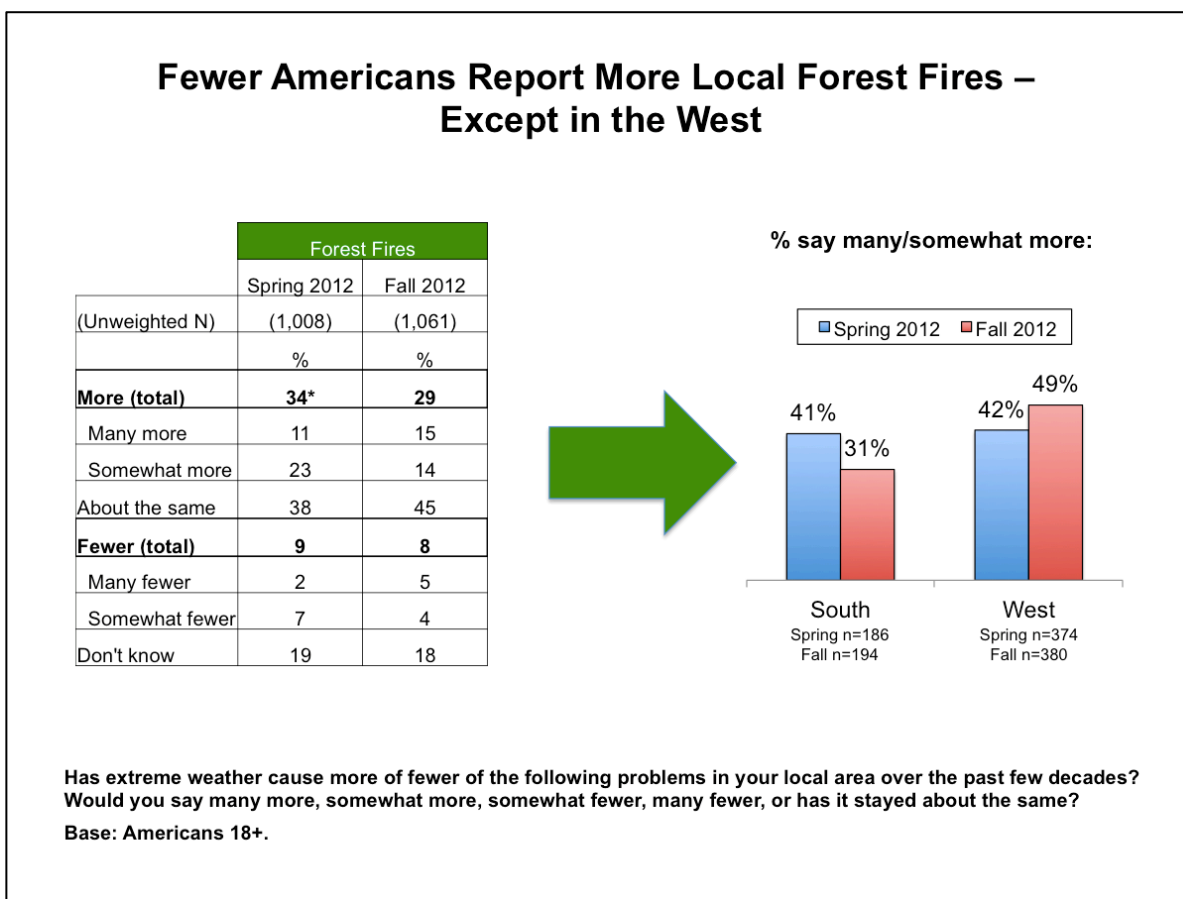
- One in five in the Midwest (21%, down 27 points since the spring)
- One in five in the West (20%, down 10 points since the spring)



## Fewer Americans Report More Local Forest Fires – Except in the West

Since March, more Americans say that extreme weather has caused about the same number of forest fires in their local area over the past few decades (45%, up 7 points since the spring). Fewer Southerners say that extreme weather has caused more forest fires in their local area (31%, down 10 points since the spring).

More Americans in the West, however, say that extreme weather has caused more forest fires in their local area over the past few decades (49%, up 7 points since the spring), probably reflecting the record-setting wildfires in the West during the summer of 2012.



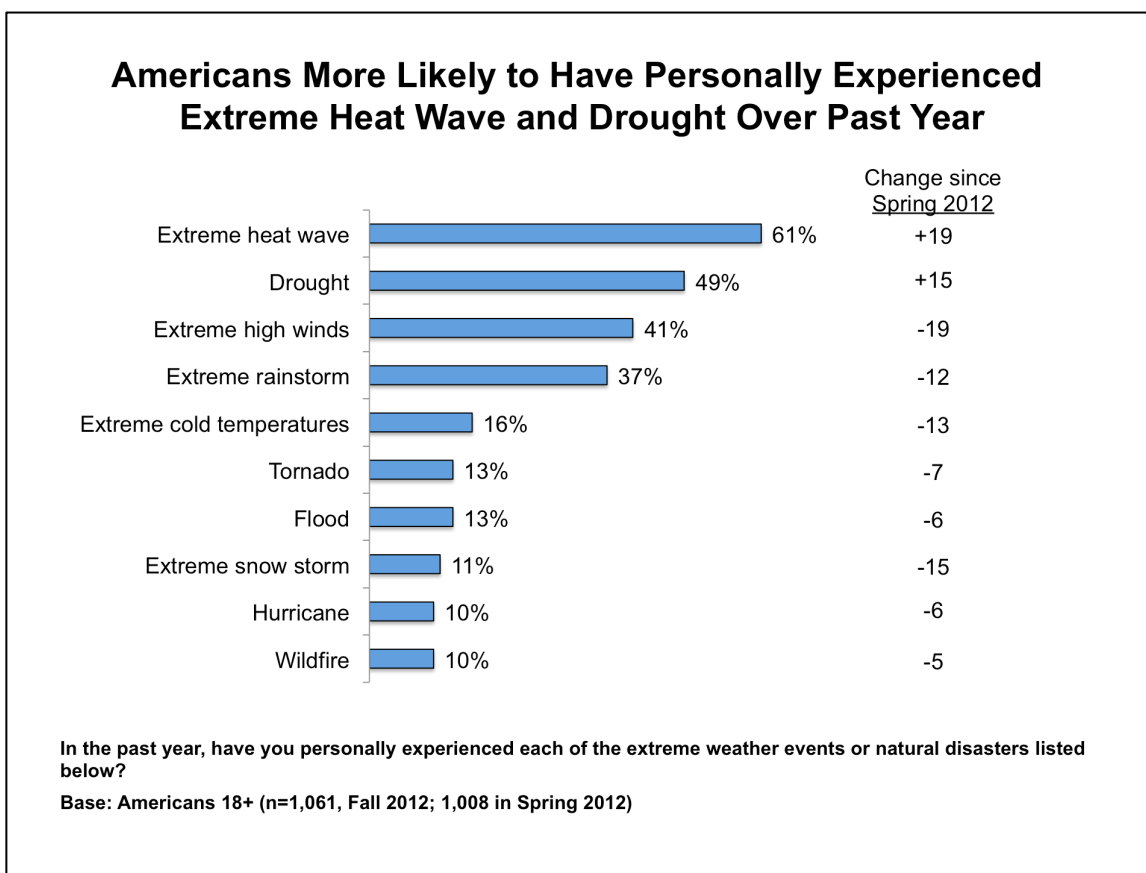


### 3. Experiences With Extreme Weather

#### More Americans Report Experiencing an Extreme Heat Wave or Drought

Half or more Americans say they personally experienced an extreme heat wave (61%, up 19 points since March) and/or drought (49%, up 15 points) in the past year.

Americans are less likely to say they experienced all other types of weather events asked about, including extreme high winds (41%, down 19 points) and extreme rainstorms (37%, down 12 points).



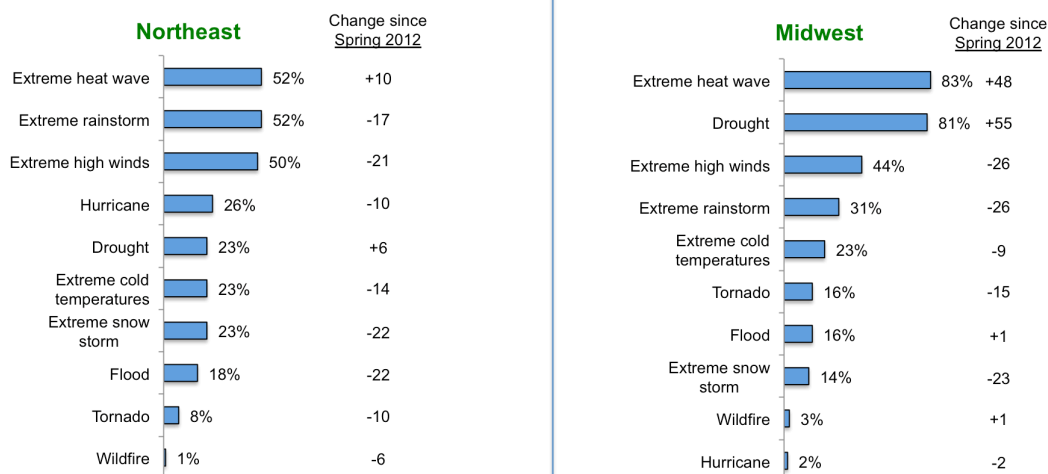
## More in the Midwest and Northeast Report Experiencing an Extreme Heat Wave or Drought

Different regions of the country experienced different kinds of extreme weather over the past year, and this is reflected in the events reported by Americans across the country.

The Midwest was plagued by drought for much of the summer and Midwesterners' reported experience of drought over the past year more than doubled (81%, up 55 points). Reported experience of an extreme heat wave also doubled (83%, up 48 points). Fewer, however, report having experienced an extreme snow storm over the past year (14%, down 23 points).

About half of Northeasters say they experienced an extreme heat wave (52%, up 10 points since March), extreme rainstorm (52%, down 17 points), or extreme high winds (50%, down 21 points). Fewer, however, report having experienced an extreme snow storm over the past year (23%, down 22 points).

### Extreme Weather Personally Experienced in the Northeast and Midwest Over the Past Year



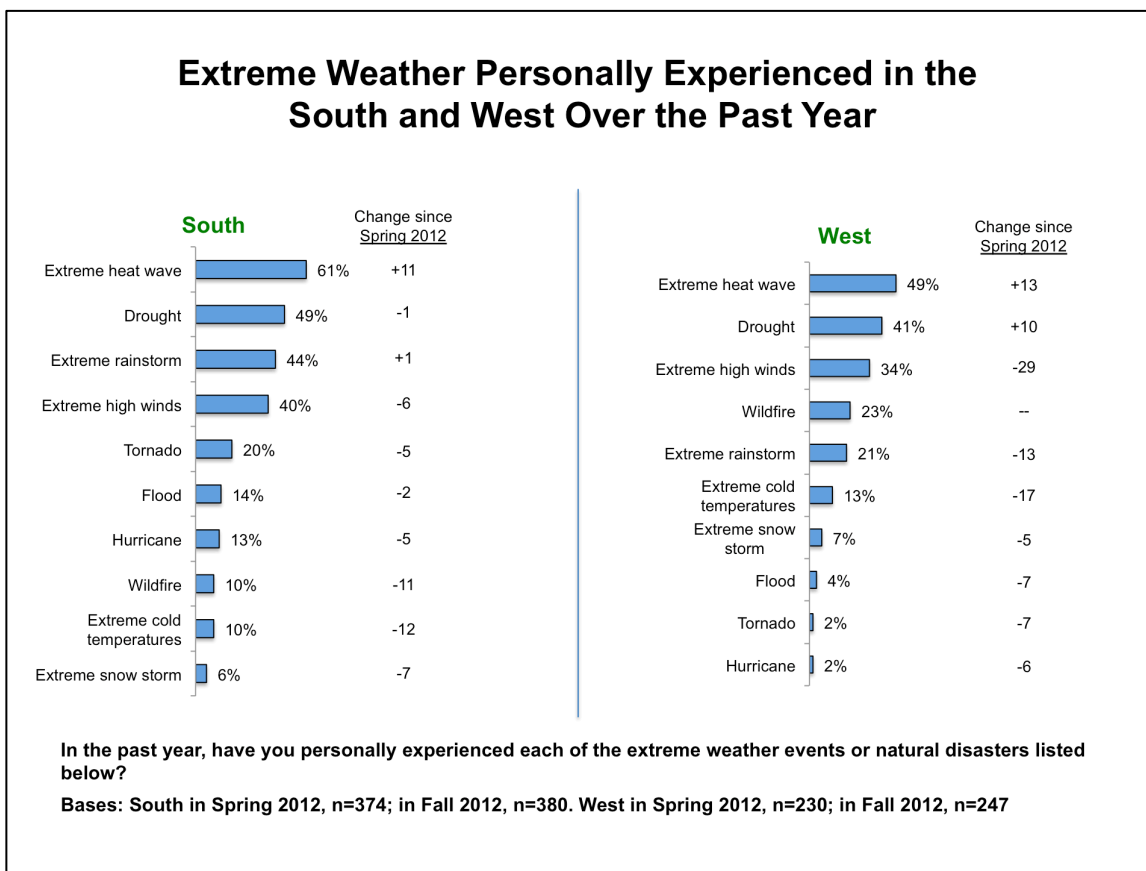
In the past year, have you personally experienced each of the extreme weather events or natural disasters listed below?

Bases: Northeast in Spring 2012, n=186; in Fall 2012, n=194. Midwest in Spring 2012, n=219; in Fall 2012, n=239

## More in the South and West Report Experiencing an Extreme Heat Wave; Experience with Drought up in the West

Compared to March 2012, more Southerners report having experienced an extreme heat wave over the past year (61%, up 11 points since the spring). Southerners reported fewer experiences of other types of extreme weather than they did in the spring (particularly wildfires and extreme cold temperatures).

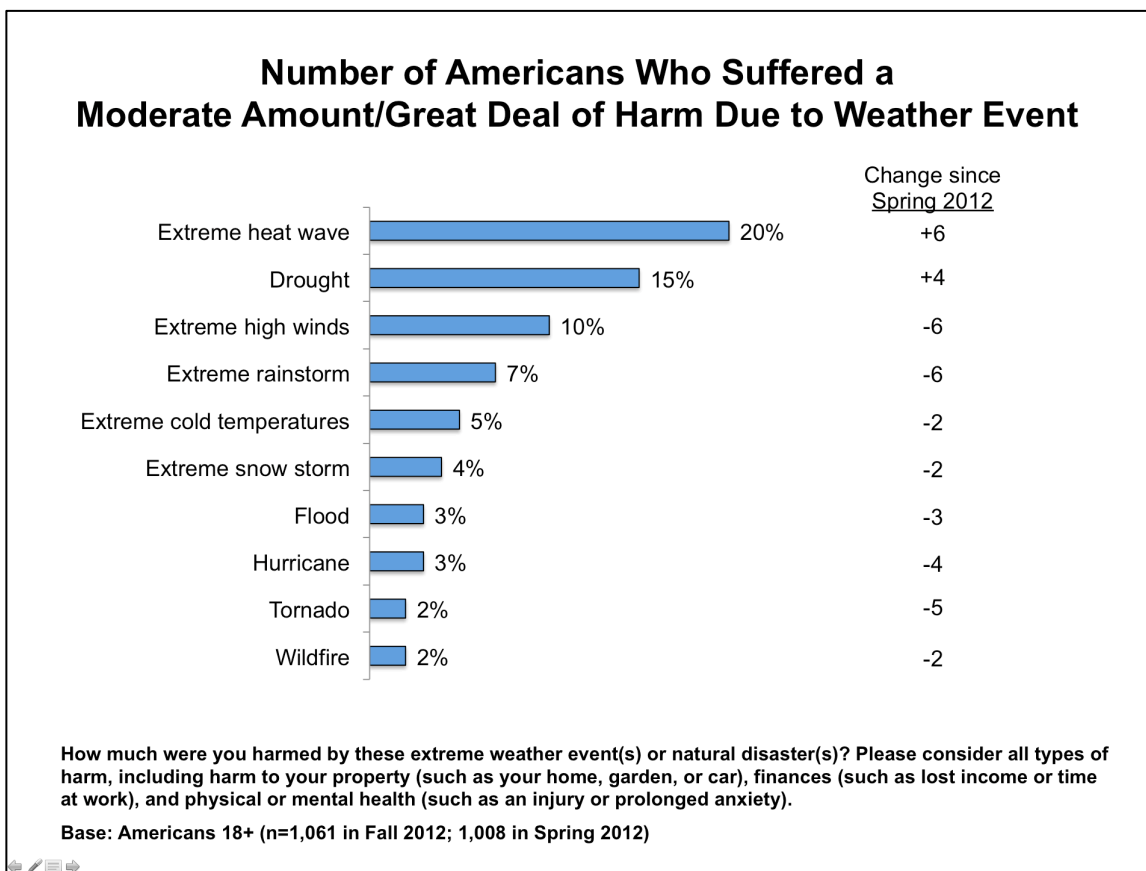
Compared to March 2012, more Americans in the West say they experienced an extreme heat wave (49%, up 13 points) and/or drought (41%, up 10 points) over the past year. Fewer say they experienced extreme high winds (34%, down 29 points), an extreme rainstorm (21%, down 13 points), or extreme cold temperatures (13%, down 17 points), among other events.



## More Americans Report Suffering Harm from Heat and Drought

Not only did more Americans personally experience a heat wave or drought in the summer of 2012, but more also report being harmed by these extreme weather events.

One in five Americans (20%) says they suffered harm to their health, property, and/or finances due to an extreme heat wave, a 6-point increase since the spring. Moreover, 15 percent say they suffered harm from a drought, up 4 points.





## Appendix I: Data Tables

Statistically significant differences at the 95% confidence level are noted with an “a,” “b,” “c,” or “d” following proportions that are significantly higher than the corresponding proportion in the column falling under the letter heading.

(Base: Americans 18+, n=1,061)

In your opinion, over the past several years, has the weather in the U.S. been...

	<u>Total</u> (1,061)	<u>NE</u> (186)	<u>MW</u> (219)	<u>S</u> (374)	<u>W</u> (230)
(Unweighted base)		a	b	c	d
	%	%	%	%	%
<b>Worse</b>	<b>61</b>	<b>57</b>	<b>54</b>	<b>65<sup>b</sup></b>	<b>64<sup>b</sup></b>
Much worse	15	10	11	19 <sup>ab</sup>	15
Somewhat worse	46	47	43	47	48
About the same	26	25	26	24	31
<b>Better</b>	<b>13</b>	<b>18<sup>cd</sup></b>	<b>20<sup>cd</sup></b>	<b>11<sup>d</sup></b>	<b>5</b>
Somewhat better	10	16 <sup>c</sup>	14 <sup>cd</sup>	9 <sup>d</sup>	4
Much better	3	2	6 <sup>cd</sup>	2	1

(Base: Americans 18+, n=1,061)

Over the past several years, has the weather in *your local area* been...

	<u>Total</u> (1,061)	<u>NE</u> (186)	<u>MW</u> (219)	<u>S</u> (374)	<u>W</u> (230)
(Unweighted base)		a	b	c	d
	%	%	%	%	%
<b>Worse</b>	<b>49</b>	<b>42</b>	<b>50</b>	<b>56</b>	<b>42</b>
Much worse	10	10	8	13	7
Somewhat worse	39	32	42	43	36
About the same	32	31	25	29	42 <sup>ab</sup>
<b>Better</b>	<b>19</b>	<b>25</b>	<b>23</b>	<b>16</b>	<b>12</b>
Somewhat better	16	22 <sup>cd</sup>	20 <sup>d</sup>	14	9
Much better	3	3	3	2	3

(Base: Americans 18+, n=1,061)

Do you recall any unusual weather events in *your local area* that occurred in the past 12 months?

Do you recall any unusual weather events that occurred *elsewhere in the United States* in the past 12 months?

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
	a	b	c	d	
	%	%	%	%	%
Yes, elsewhere in the U.S.	61	67 <sup>cd</sup>	61	62	54
Yes, in local area	52	62 <sup>cd</sup>	58	51	39

(Base: Americans 18+, n=1,061)

Have each of the following types of extreme weather events become more or less common in your local area over the past few decades? Would you say much more common, somewhat more common, somewhat less common, much less common, or has it stayed about the same?

### Very heavy rainstorms

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
		a	b	c	d
	%	%	%	%	%
<b>More common</b>	<b>32</b>	<b>51<sup>bcd</sup></b>	<b>24</b>	<b>36<sup>bd</sup></b>	<b>20</b>
Much more common	11	15 <sup>bd</sup>	7	14 <sup>bd</sup>	4
Somewhat more common	22	35 <sup>bcd</sup>	17	21	16
Stayed about the same	40	37	37	29	46
<b>Less common</b>	<b>23</b>	<b>7</b>	<b>37<sup>ac</sup></b>	<b>20<sup>a</sup></b>	<b>29<sup>ac</sup></b>
Somewhat less common	17	6	29 <sup>acd</sup>	15 <sup>a</sup>	18 <sup>a</sup>
Much less common	7	1	8 <sup>a</sup>	6 <sup>a</sup>	12 <sup>ac</sup>
Don't know	5	6	3	5	5

### Droughts

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
		a	b	c	d
	%	%	%	%	%
<b>More common</b>	<b>51</b>	<b>40</b>	<b>66<sup>acd</sup></b>	<b>53<sup>a</sup></b>	<b>45</b>
Much more common	21	8	29 <sup>ad</sup>	27 <sup>ad</sup>	16 <sup>a</sup>
Somewhat more common	30	32	37 <sup>c</sup>	26	28
Stayed about the same	32	44 <sup>bc</sup>	21	29 <sup>b</sup>	37 <sup>bc</sup>
<b>Less common</b>	<b>10</b>	<b>10</b>	<b>7</b>	<b>10</b>	<b>12</b>
Somewhat less common	5	6	4	4	6
Much less common	5	4	3	6	6
Don't know	7	6	7	9	7

### Heat waves

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
		a	b	c	d
	%	%	%	%	%
<b>More common</b>	<b>58</b>	<b>62<sup>d</sup></b>	<b>71<sup>cd</sup></b>	<b>57<sup>d</sup></b>	<b>46</b>
Much more common	26	22	28	29 <sup>d</sup>	21
Somewhat more common	33	40 <sup>cd</sup>	43 <sup>cd</sup>	28	25
Stayed about the same	30	30 <sup>b</sup>	18	30 <sup>b</sup>	39 <sup>bc</sup>
<b>Less common</b>	<b>7</b>	<b>4</b>	<b>7</b>	<b>8</b>	<b>9</b>
Somewhat less common	5	4	6	4	8 <sup>c</sup>
Much less common	2	1	1	5 <sup>abd</sup>	1
Don't know	5	3	5	4	6

(Base: Americans 18+, n=1,061)

Has extreme weather caused more or fewer of the following problems in your local area over the past few decades? Would you say many more, somewhat more, somewhat fewer, many fewer, or has it stayed about the same?

### Forest fires

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
		a	b	c	d
	%	%	%	%	%
<b>More problems</b>	<b>29</b>	<b>14</b>	<b>16</b>	<b>31<sup>ab</sup></b>	<b>49<sup>abc</sup></b>
Many more	15	8	9	15 <sup>ab</sup>	24 <sup>abc</sup>
Somewhat more	14	6	7	15 <sup>ab</sup>	25 <sup>abc</sup>
Stayed about the same	45	52 <sup>cd</sup>	53 <sup>cd</sup>	42	40
<b>Fewer problems</b>	<b>8</b>	<b>10<sup>d</sup></b>	<b>6</b>	<b>11<sup>bd</sup></b>	<b>5</b>
Somewhat fewer	4	4	3	5	3
Many fewer	5	6 <sup>d</sup>	4	6 <sup>d</sup>	2
Don't know	18	24 <sup>cd</sup>	26 <sup>cd</sup>	17 <sup>d</sup>	7

### Floods

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
		a	b	c	d
	%	%	%	%	%
<b>More problems</b>	<b>27</b>	<b>43<sup>bcd</sup></b>	<b>21</b>	<b>27</b>	<b>20</b>
Many more	11	18 <sup>bd</sup>	7	12	8
Somewhat more	16	41	14	14	12
Stayed about the same	47	41	46	48	50
<b>Fewer problems</b>	<b>16</b>	<b>6</b>	<b>21<sup>a</sup></b>	<b>16<sup>a</sup></b>	<b>20<sup>a</sup></b>
Somewhat fewer	10	4	15 <sup>ac</sup>	9 <sup>a</sup>	11 <sup>a</sup>
Many fewer	7	2	6	8 <sup>a</sup>	9 <sup>a</sup>
Don't know	11	10	12	10	11

### Harm to crops

	<u>Total</u>	<u>NE</u>	<u>MW</u>	<u>S</u>	<u>W</u>
(Unweighted base)	(1,061)	(186)	(219)	(374)	(230)
		a	b	c	d
	%	%	%	%	%
<b>More problems</b>	<b>46</b>	<b>39<sup>d</sup></b>	<b>71<sup>acd</sup></b>	<b>46<sup>d</sup></b>	<b>28</b>
Many more	21	14	32 <sup>acd</sup>	24 <sup>ad</sup>	14
Somewhat more	25	25 <sup>d</sup>	40 <sup>acd</sup>	23 <sup>d</sup>	13
Stayed about the same	32	38 <sup>bc</sup>	19	28 <sup>b</sup>	46 <sup>bc</sup>
<b>Fewer problems</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>8<sup>ab</sup></b>	<b>6</b>
Somewhat fewer	4	2	2	6 <sup>b</sup>	3
Many fewer	2	1	—	2 <sup>b</sup>	3 <sup>b</sup>
Don't know	17	20 <sup>b</sup>	8	17 <sup>b</sup>	21 <sup>b</sup>



(Base: Americans 18+, n=1,061)

In the past year, have *you personally* experienced each of the extreme weather events or natural disasters listed below? (% who say “yes”)

(Unweighted base)	<u>Total</u> (1,061)	<u>NE</u> (186)	<u>MW</u> (219)	<u>S</u> (374)	<u>W</u> (230)
		a	b	c	d
		%	%	%	%
Extreme heat wave	61	52	83 <sup>acd</sup>	61 <sup>d</sup>	49
Drought	49	23	81 <sup>acd</sup>	49 <sup>a</sup>	41 <sup>a</sup>
Extreme high winds	41	50 <sup>cd</sup>	44 <sup>d</sup>	40	34
Extreme rainstorm	37	51 <sup>bc</sup>	31 <sup>d</sup>	44 <sup>bd</sup>	21
Extreme cold temperatures	16	23 <sup>cd</sup>	23 <sup>cd</sup>	10	13
Flood	13	18 <sup>d</sup>	16 <sup>d</sup>	14 <sup>d</sup>	4
Tornado	13	8 <sup>d</sup>	16 <sup>ad</sup>	20 <sup>ad</sup>	2
Extreme snow storm	11	23 <sup>cd</sup>	14 <sup>c</sup>	6	7
Wildfire	10	1	3	10 <sup>ab</sup>	23 <sup>abc</sup>
Hurricane	10	26 <sup>bcd</sup>	2	13 <sup>bd</sup>	2

(Base: Americans 18+, n=1,061)

How much were you harmed by these extreme weather event(s) or natural disaster(s)? Please consider all types of harm, including harm to your property (such as your home, garden, or car), finances (such as lost income or time at work), and physical or mental health (such as an injury or prolonged anxiety).

	<u>Not at all</u>	<u>Only a little</u>	<u>A moderate amount</u>	<u>A great deal</u>
	%	%	%	%
Extreme snow storm	4	3	2	1
Extreme cold temperatures	7	4	3	3
Extreme high winds	14	17	7	2
Extreme rainstorm	18	12	5	2
Extreme heat wave	21	20	13	7
Flood	4	6	2	1
Wildfire	6	1	2	1
Hurricane	3	4	2	—
Drought	17	17	11	5
Tornado	7	4	2	1

(Base: Americans 18+, n=1,061)

How much do you agree or disagree with the following statements: “Global warming is affecting weather in the United States”

(Unweighted base)	<u>Total</u> (1,061)	<u>NE</u> (186)	<u>MW</u> (219)	<u>S</u> (374)	<u>W</u> (230)
		a	b	c	d
	%	%	%	%	%
<b>Agree</b>	<b>74</b>	<b>82<sup>cd</sup></b>	<b>69</b>	<b>75</b>	<b>70</b>
Strongly agree	28	32 <sup>b</sup>	19	29 <sup>b</sup>	30 <sup>b</sup>
Somewhat agree	46	50	50	46	40
<b>Disagree</b>	<b>24</b>	<b>17</b>	<b>29<sup>a</sup></b>	<b>23</b>	<b>27</b>
Somewhat disagree	15	13	19	12	17
Strongly disagree	10	4	10	12 <sup>a</sup>	11
Don't know/no answer	2	1	2	1	3

(Base: Americans 18+, n=1,061)

Some people say that global warming made each of the following events worse. How much do you agree or disagree?

	<u>Strongly disagree</u> %	<u>Somewhat disagree</u> %	<u>Somewhat agree</u> %	<u>Strongly agree</u> %
The current drought in the Midwest and the Great Plains	11	16	48	23
The severe storm (known as a “derecho”) that knocked down trees and power lines from Indiana to Washington D.C. in June of 2012	11	22	46	18
This year’s record forest fires in Colorado and elsewhere in the American West	12	20	45	20
Record high Summer temperatures in the U.S. in 2012	11	14	48	25
The unusually warm Spring across the United States in 2012	11	17	49	21
The unusually warm Winter across the United States in 2011-2012	11	16	49	22

## Appendix II: Survey Method

The data in this report are based on a nationally representative survey of 1,061 American adults, aged 18 and older, conducted from August 31 – September 12, 2012. All questionnaires were self-administered by respondents in a web-based environment. The survey took, on average, about 25 minutes to complete.

The sample was drawn from Knowledge Networks's KnowledgePanel<sup>®</sup>, an online panel of members drawn using probability sampling methods. Prospective members are recruited using a combination of random digit dial and address-based sampling techniques that cover virtually all (non-institutional) resident phone numbers and addresses in the United States. Those contacted who would choose to join the panel but do not have access to the Internet are loaned computers and given Internet access so they may participate.

The sample therefore includes a representative cross-section of American adults – irrespective of whether they have Internet access, use only a cell phone, etc. Key demographic variables were weighted, post survey, to match US Census Bureau norms.

The survey instrument was designed by Anthony Leiserowitz and Geoff Feinberg of Yale University, and Edward Maibach and Connie Roser-Renouf of George Mason University.

### Margins of error

All samples are subject to some degree of sampling error—that is, statistical results obtained from a sample can be expected to differ somewhat from results that would be obtained if every member of the target population was interviewed.

Average margins of error for the Fall 2012 data, at the 95% confidence level, are as follows:

- Total (n=1,061): +/- 3 percentage points
- Northeast (n=194): +/- 7 percentage points
- Midwest (n=239): +/- 6 percentage points
- South (n=380): +/- 5 percentage points
- West (n=247): +/- 6 percentage points

### Rounding error

For tabulation purposes, percentage points are rounded off to the nearest whole number. As a result, percentages in a given chart may total slightly higher or lower than 100%.

The states included in each region are as follows:

**Northeast**

Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

**Midwest**

Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

**South**

Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington DC, West Virginia

**West**

Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

### Appendix III: Sample Demographics

	N (unweighted)	% (weighted)
<b>Total</b>	<b>1,061</b>	<b>100</b>
<b>Sex</b>		
Men	547	48
Women	514	52
<b>Age</b>		
Generation Y (18-29)	165	21
Generation X (30-47)	285	30
Baby Boomers (48-66)	420	35
WWII (67+)	10	15
<b>Education</b>		
Less than high school	73	12
High school graduate	302	30
Some college/tech	319	29
College graduate	219	18
Post graduate	148	11
<b>Household Income</b>		
<\$25K	163	19
\$25K - <\$50K	245	23
\$50K - <\$75K	217	19
\$75K - <\$100K	165	15
\$100K - <\$175K	226	19
\$175K+	45	4
<b>Hispanic</b>		
Yes	152	14
<b>Race/Ethnicity</b>		
White, non-Hispanic	707	67
Black, African-American non-Hispanic	123	12
Other non-Hispanic	65	6
<b>Region</b>		
Northeast	194	18
Midwest	239	21
South	380	36
West	248	23

