



Public Health, Energy & Climate Change

A Maryland Statewide Survey | Fall 2016



Investigators:

Karen Akerlof, PhD
George Mason University
Center for Climate Change Communication
4400 University Dr., MS 6A8
Fairfax, VA 22030
kakerlof@gmu.edu

Cindy Parker, MD, MPH
Peter Winch, MD, MPH
Johns Hopkins Bloomberg
School of Public Health
615 North Wolfe Street
Baltimore, MD 21205

Survey execution and report preparation:

With offices in both Washington, DC and Princeton, NJ, Princeton Survey Research Associates International (PSRAI) is an independent firm dedicated to high-quality research providing reliable, valid results for clients in the United States and around the world.

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Executive Summary

Climate change jeopardizes public health both directly and indirectly, whether from extreme weather events like extended periods of high heat, flooding, and storms, or as a result of related environmental changes such as the transmission of disease and decreased air quality. As climate change continues to reshape human environments around the world, communities throughout Maryland may find themselves battling both intensified existing health issues and new crises.

Continuing a research partnership that began during the 2015 study, George Mason University (GMU) once again teamed up with the Johns Hopkins Bloomberg School of Public Health to get Marylanders' opinions on climate change, public health and energy sources, and their attitudes towards current or proposed policies that relate to these topics.

Below are some of the findings from the 2016 survey of Maryland residents, the fourth installment of an annual study dating back to 2013.

Key Findings

1. Many residents currently deal with chronic health issues and periods of stress.
 - Fifty-two percent of Maryland adults report having a chronic condition. Nearly one-quarter, 24 percent, suffer from hypertension. Two in ten have arthritis. One in ten have been medically diagnosed with asthma, diabetes or cancer.
 - Six in ten report at least one prolonged period of stress in the last twelve months, including 14 percent who describe being under constant stress during the last year.
 - Millennials report being under the most stress of any generation. Thirty-six percent of Millennials say they have experienced more than one period of prolonged stress and 20 percent were under constant stress over the last year.
2. Eight in ten say that climate change poses a risk to their personal health and well-being.
 - A quarter say their health is at major risk because of climate change. Another third (32%) rate it as a moderate risk and 23 percent a minor risk. Fourteen percent say their health is at no risk due to climate change.
 - Overwhelming majorities report that their personal health and wellness are at least at minor risk because of other related effects from climate change: air pollution, extreme heat, severe storms, polluted drinking water or local bodies of water, food- or insect-borne illnesses, flooding and sea level rise.

3. Marylanders are most likely to say their health was harmed by air pollution and extreme heat in the past year.
 - In the last twelve months, forty-eight percent have been at least slightly harmed by poor outdoor air quality from air pollution, including almost two in ten who have been moderately or severely harmed.
 - Four in ten have been at least slightly harmed by extreme heat in the last year. Three in ten report their health has been harmed by severe storms.
 - Food and water supplies have also taken a hit for some residents. Three in ten have been harmed by food-borne illnesses. Sixteen percent have suffered at least slightly from water-borne illnesses.
4. Most Marylanders say others in the state are feeling the health effects of climate change.
 - Forty-four percent of Marylanders say they personally are currently moderately or greatly harmed by climate change.
 - Forty-seven percent say members of their community are being harmed by climate change now. The largest share, 54 percent, say Marylanders statewide are feeling the health effects of these environmental changes.
5. Seven in ten agree their home energy choices affect their health and environment, and majorities want the state to use less fossil fuel energy in the future.
 - More than half say Maryland should use less coal and petroleum to generate electricity.
 - Two-thirds or more say that coal and petroleum are harmful to people's health.
 - Solar and wind energy is rated the least harmful.
6. Most view gasoline and diesel vehicles as a public health threat.
 - Thirty-seven percent strongly agree that pollution from these cars and trucks contain chemicals that harm people's health, including toxins that cause cancer. Another 35 percent somewhat agree with that statement.
 - Nearly two-thirds, 64 percent, disagree with the notion that living or working near a highway or major roadway has little to no effect on people's health.
7. Majorities say that reducing air pollution and rates of respiratory illnesses like asthma should be a high priority for the General Assembly and Governor.

- The state's air quality is a concern. Seven in ten Marylanders want the government to reduce air pollution.
 - More than half consider lowering rates of asthma and respiratory disease a high or very high priority.
8. Community social capital contributes to individual health and well-being. Residents report that communities have the necessary services and resources to care for people but many find some aspects of communication to be lacking. There is distrust of public officials.
- Fifty-seven percent say people in their community are able to get the services they need and nearly as many, 54 percent, agree that their community has the resources to take care of its residents, including sufficient money and technology.
 - However, fewer Marylanders, 41 percent, say they get information that helps with their home or work lives from their communities.
 - One-third say community members trust public officials, with just seven percent strongly agreeing with that opinion.

These are just some of the findings from the 2016 survey, executed by Princeton Survey Research Associates International (PSRAI). Results are based on mail interviews in English with 907 adults ages 18 or older who live in the state of Maryland. Data collection, administered by the Scantron Corporation, ran from May 21 to August 1, 2016.

The margin of sampling error for the complete set of weighted data is ± 4.3 percentage points. For more details on the design, execution and analysis of the survey, please see the full methodological report, which can be found in Appendix 2 of this report.

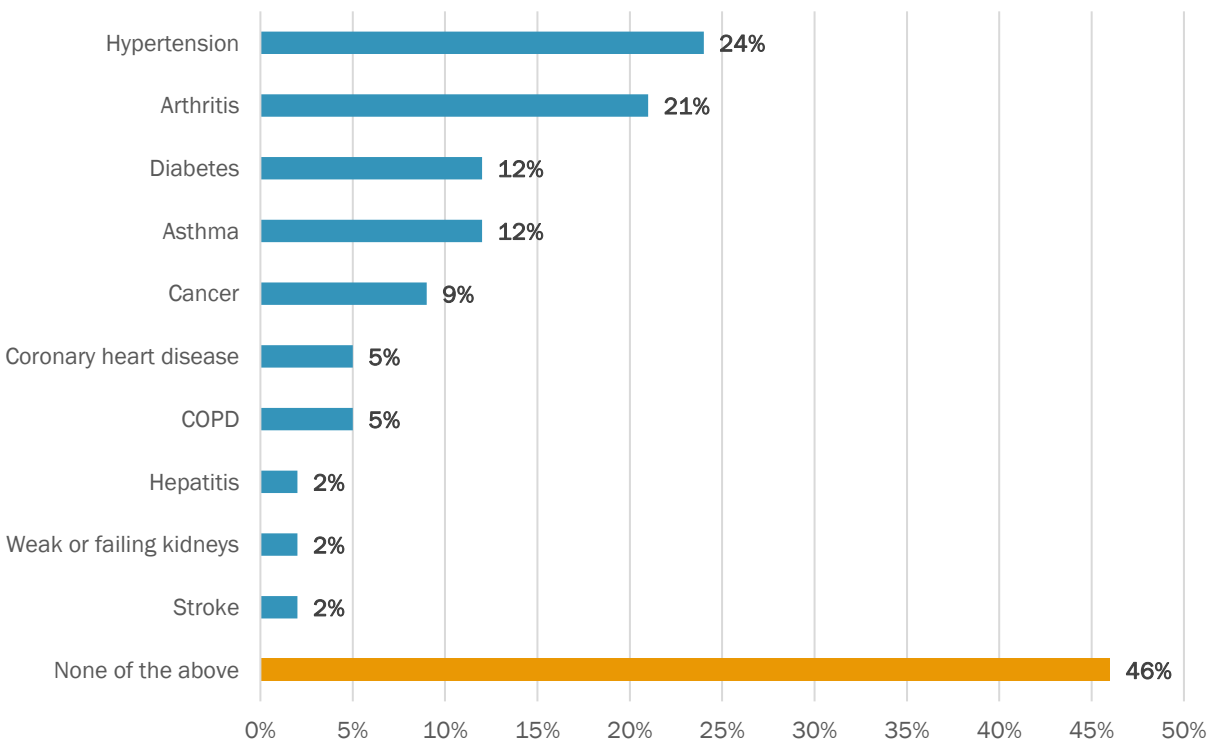
Chapter 1: Many deal with chronic health issues and stress

Many residents currently deal with chronic health issues. Fifty-two percent of Maryland adults report having at least one chronic condition, including one-quarter who say they cope with two or more chronic health problems.

Twenty-four percent suffer from hypertension. Two in ten have arthritis. One in ten have been medically diagnosed with asthma, diabetes or cancer.

Five percent of Maryland’s adult population say they have heart disease or chronic obstructive pulmonary disease (COPD). Two percent each have hepatitis, poor kidneys or stroke.

Figure 1: Have you ever been told by a doctor or health care provider that you have one or more of these conditions?



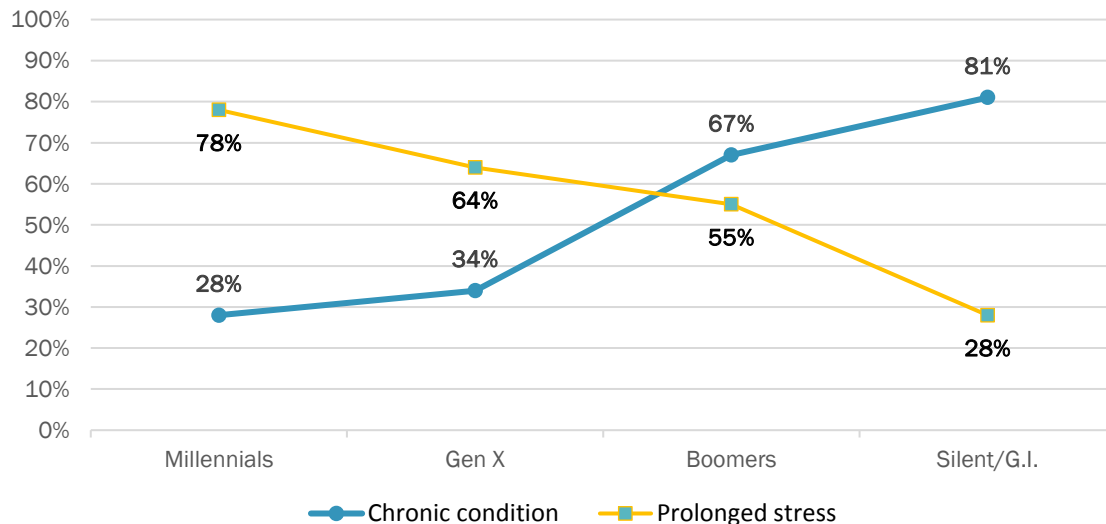
From family to work, personal finances to relationships, everyday life means responsibility and with responsibility often comes stress. Stress can manifest itself in feelings of anxiety, nervousness, fear, irritability, or tension or disrupt one’s ability to sleep. Stress can also exacerbate symptoms related to chronic health conditions. Like millions of adults across the country, a majority of Marylanders also find themselves dealing with prolonged stress.

Six in ten report at least one prolonged period of stress in the last twelve months, where a prolonged period of stress is a duration of one month or longer. One quarter say they have had more than one period of prolonged stress and 14 percent describe being under constant stress during the last year.

Millennials experience the most prolonged stress

Millennials (ages 18-35) have a lot of life yet to live and milestones yet to face. Many are still in school, just entering the workforce or establishing their careers, and have younger children to support. And despite being the least likely to suffer from chronic health problems, Millennials report being under the most stress of any other generation.

Figure 2: Chronic conditions and stress levels by generation



Seventy-eight percent of Millennials say they have experienced at least one prolonged period of stress in the last twelve months, an astonishing 50 percentage points more than the oldest adults, or the Silent or Greatest Generations (ages 71 or older). Perhaps even more alarming is that 36 percent of Millennials say they have experienced more than one period of stress and 20 percent were under constant stress over the last year.

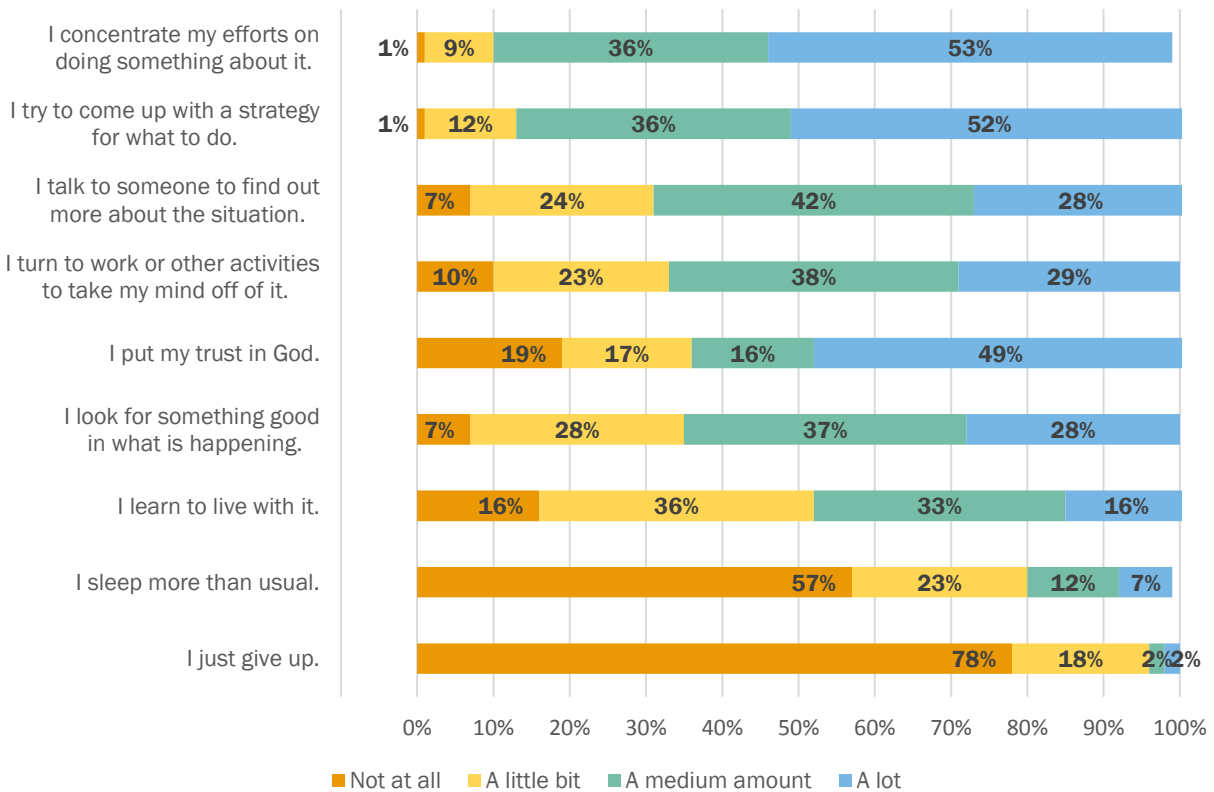
Many tackle stress head-on, and some find solace in religion

How much control people feel like they have over their lives can affect how they respond to stress. Most survey respondents report feeling in control of events. Eighty-seven percent of Marylanders say they are responsible for their own successes, and seventy-seven percent hold themselves accountable for their own failures.

People have different coping styles when problems occur — some may have more active styles, while others may be more disengaged or fatalistic. When they experience stress, more than half of residents say they concentrate a lot on doing something about it. Thirty-six percent say they focus a medium amount of effort on addressing the causes of stress.

Similarly, more than half of adults say that a lot of the time, they try to come up with a strategy for what to do about their stressful experiences. Thirty-six percent say they do this a medium amount.

Figure 3: Typically, when you experience stress, what do you do?



Many also turn to other activities as a distraction, talk to others to find out more about the situation, or simply look for something good in what is happening.

A large percentage of Marylanders also turn to religion. Nearly half, 49 percent, express they put a lot of trust in God during stressful times. Sixteen percent do this a medium amount.

Barely any residents say they just give up.

Chapter 2: Common belief that climate change affects health

Stress from everyday life is just one of many health threats to Marylanders. With the exceptions of flooding and sea level rise, half or more of state residents say their personal health is at moderate or major risk from each of thirteen potential threats presented to them in this year's survey.

Exposure to chemicals, air pollution are the biggest threats

Nearly all Marylanders say that air pollution and exposure to chemicals, including pesticides in food or other products, put their health at least at minor risk. In fact, eight in ten say that air pollution (81%) and chemicals (79%) pose a moderate or major risk to their well-being.

Since 2013, air pollution and chemicals are rated as the top threats to Marylanders' health. Though findings in this year's study have remained steady since 2014, we have seen a dramatic spike from 2013 in the amount of residents who consider these two potential risks as moderate or major threats to their health.

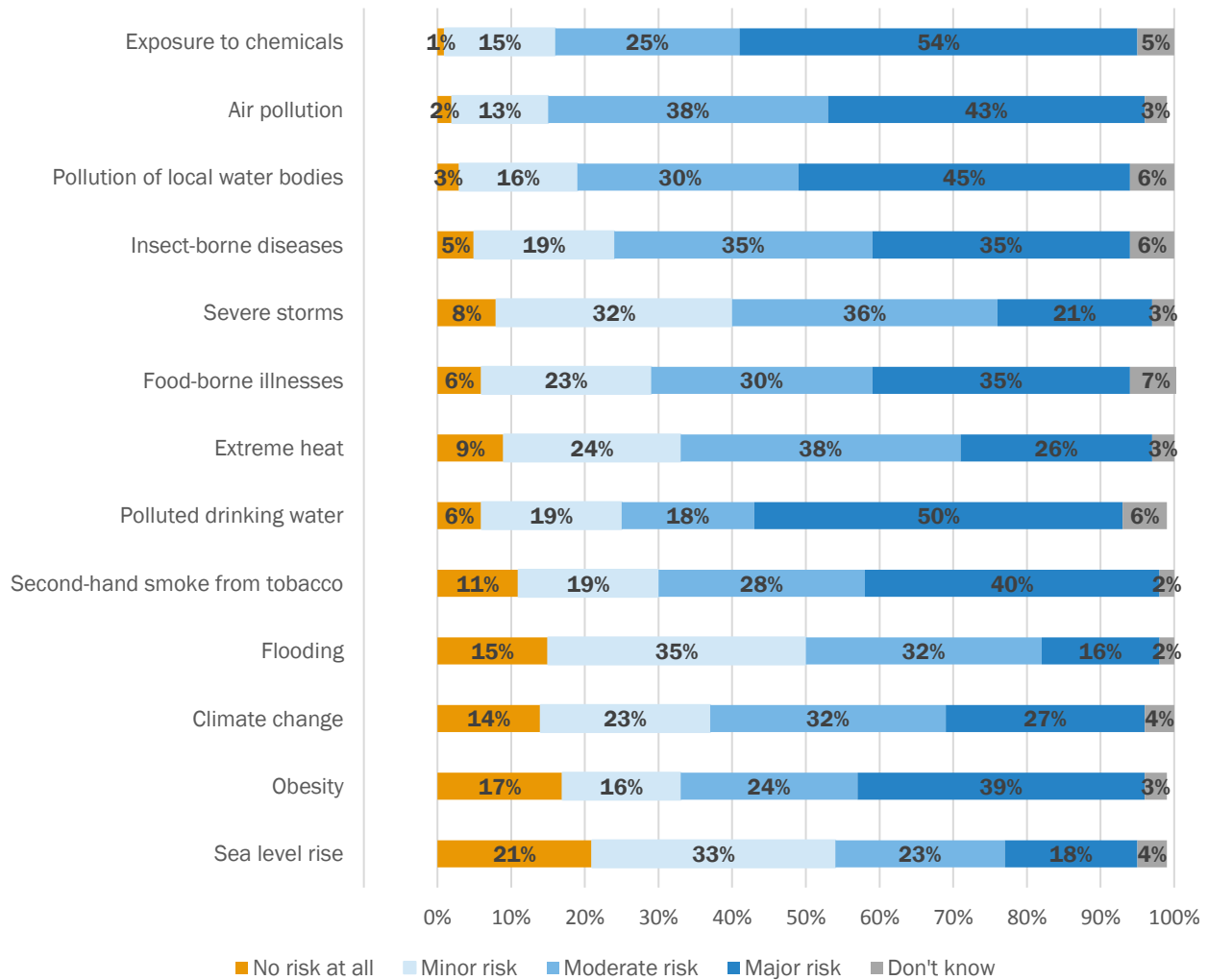
	2016	2015	2014	2013
Air pollution	81%	82%	83%	70%
Exposure to chemicals	79%	80%	83%	67%

Most consider climate change a danger to their health

When asked about climate change overall, eight in ten say that climate change poses at least a minor risk to their health and well-being. A quarter say their health is at major risk because of climate change. Another third (32%) rate it as a moderate risk and 23 percent a minor risk. Fourteen percent say their health is at no risk due to climate change.

Interestingly, overwhelming majorities report feeling their personal health and wellness are threatened in at least a minor way because of other related effects from climate change. In addition to air pollution, many feel their health is potentially affected by conditions like extreme heat, severe storms, polluted drinking water or local bodies of water, or food- or insect-borne illnesses.

Figure 4: How much of a risk do you feel each of the following poses to your health and well-being?



Residents are worried about the increased pollution of local bodies of water and what that means for their own wellness. Three-quarters say water pollution puts their health at moderate or major risk. Moreover, sixty-eight percent identify polluted drinking water as a moderate or major health risk, including fully one-half who label contaminated drinking water as a major risk.

Exposure to chemicals like pesticides or polluted water are not the only potential risks, according to respondents in this year’s study. Residents also take stock of how these issues affect their food supplies. Two-thirds say that food-borne illnesses are a moderate or major risk, with over a third saying ailments from tainted food is a major potential health threat.

As climate change continues to result in warmer weather, Marylanders find themselves faced with more days of extreme heat than ever before. With extreme heat comes increased chance of heat exhaustion, dehydration, wildfires and harsher droughts. Sixty-four percent of residents consider extreme heat a moderate or major risk, up 11 percentage points since 2015.

Table 2: Moderate/Major risk to personal well-being				
	2016	2015	2014	2013
Air pollution	81%	82%	83%	70%
Exposure to chemicals	79%	80%	83%	67%
Polluted drinking water	68%	71%	74%	53%
Second-hand smoke from tobacco	68%	64%	64%	51%
Extreme heat	64%	53%	56%	52%
Obesity	63%	61%	63%	56%
Climate change	59%	63%	62%	52%
Severe storms	57%	58%	64%	54%
Flooding	48%	48%	51%	32%
Sea level rise	41%	43%	n/a	n/a

Fluctuations in climate can also bring forth more severe storms and changes in the ranges and prevalence of insect-borne diseases like Lyme disease or the West Nile virus. Fifty-seven percent of Marylanders perceive severe storms to be a moderate or major risk to their health. An even larger share, 70 percent, say their health is potentially threatened by insect-borne ailments.

Though just 15 percent report water damage to their home caused by heavy rains or flooding, just under half (48%) consider flooding to pose a moderate or major risk to their health, an increase of 16 percentage points since 2013.

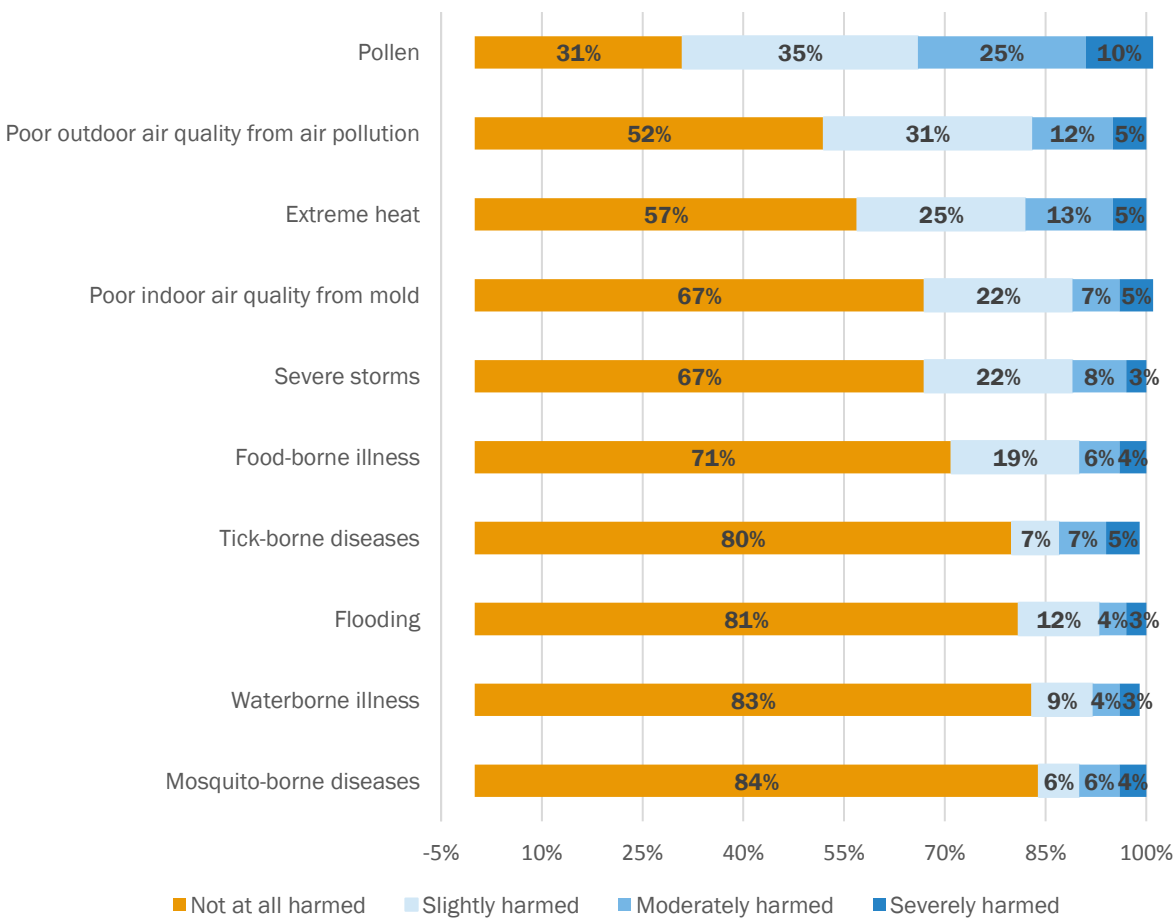
Chapter 3: Pollen and heat are the top identified health scourges

The most commonly reported afflictions by survey respondents are respiratory ones, including problems caused by pollen. Climate change is believed to affect respiratory health through increased pollen counts, decreased air quality, and in even in some cases, heightened exposure to indoor mold. Moreover, it can also affect a range of other environmental health concerns, from flooding incidents to vector-borne disease, waterborne disease and food poisoning.

Seven in ten Maryland residents say their health was at least slightly harmed by pollen in the past year, including 35 percent who were moderately or severely impaired.

In the last twelve months, forty-eight percent have been at least slightly harmed by poor outdoor air quality from air pollution, including almost two in ten who have been moderately or severely harmed.

Figure 5: In the last 12 months, how much as your health been harmed by the following?



Four in ten Marylanders say extreme heat has affected their health in the last year. Half of them, 18 percent, were moderately or severely impacted by extreme heat.

Three in ten report their health has been harmed by severe storms, with 11 percent indicating severe storms moderately or severely harmed their well-being in some way.

Food and water supplies have also taken a hit for some residents. Three in ten have been harmed by food-borne illnesses. Sixteen percent have suffered at least slightly from water-borne illnesses, with just a handful (7%) who were more aggressively harmed.

About equal shares of residents have come down with a tick- or mosquito-borne disease. The vast majority, over eight in ten, have not.

Chronically ill are more likely to report health was harmed

Compared with healthier individuals, those who have a chronic health condition are more likely to report their health has been harmed in various ways in the last twelve months. People who have chronic medical conditions are more likely to be at risk from the health effects of climate change.

Table 3: Health severely/moderately/slightly harmed by...		
	Have a chronic condition	No chronic condition
Pollen	74%	63%
Poor outdoor air quality from air pollution	55%	40%
Extreme heat	52%	33%
Poor indoor air quality from mold	38%	27%
Severe storms	38%	25%
Flooding	23%	15%

Fifty-five percent of chronically-ill residents have been at least slightly harmed by poor outdoor air quality, 15-percentage points higher than those without a chronic condition.

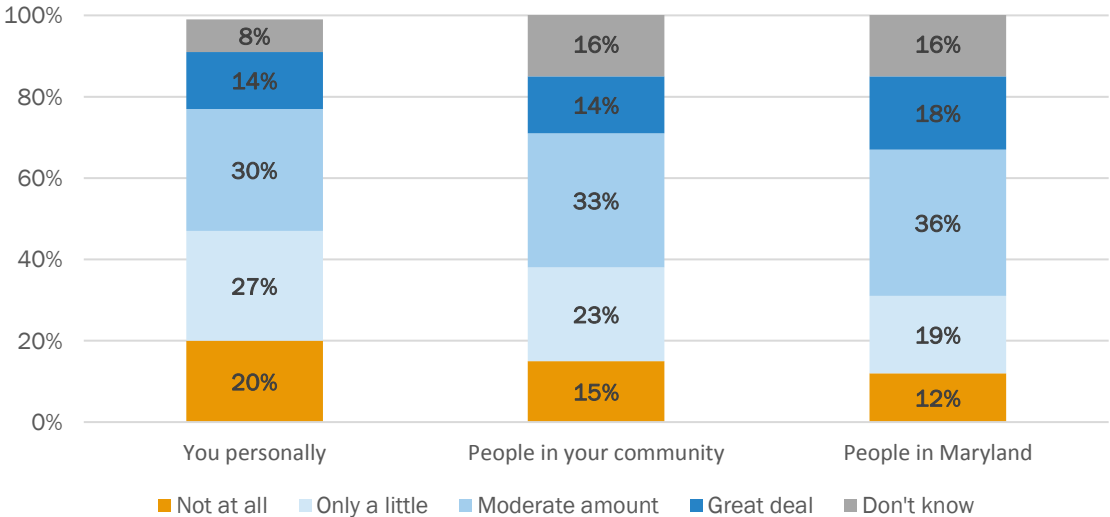
Fifty-two percent of chronically-ill residents have suffered from extreme heat, compared with one-third of their healthier counterparts.

Chapter 4: Residents say Marylanders' health is at risk from climate change

More than half of Marylanders say that the state's residents are currently being harmed by climate change. They are slightly less likely to say the same for themselves or their own communities.

Forty-four percent of Marylanders say they personally are moderately or greatly harmed by climate change. Just over a quarter, 27 percent, say they are only a little harmed and 20 percent feel they are not at all harmed.

Figure 6: How much do you think climate change is currently harming...?



As residents think more broadly, slightly more, 47 percent say, members of their community are being harmed by climate change now. Two in ten report that people in their community are currently only a little hurt and 15 percent not at all hurt. Another 16 percent do not know enough about the effects of climate change on other residents in their community to provide an opinion.

The largest share, 54 percent, think Marylanders statewide are feeling the effects of these environmental changes, including almost two in ten who say Marylanders as a whole are being greatly harmed by climate change.

These findings and patterns remain unchanged from one year ago.

Ideological divide in perceptions of harm

Greater numbers of liberals say that state residents are currently being harmed by climate change than conservatives. In fact, a majority of liberals feel that residents – themselves and across the state – face moderate or great harm from climate change.

Table 4: How much do you think climate change is currently harming...?			
	Conservative	Moderate	Liberal
You personally			
Moderate/Great harm	35%	47%	53%
Little/No harm	55%	44%	43%
People in your community			
Moderate/Great harm	32%	50%	58%
Little/No harm	47%	34%	33%
People in Maryland			
Moderate/Great harm	37%	56%	71%
Little/No harm	43%	27%	20%

In contrast, conservative Marylanders are more likely than moderates or liberals to say that little or no harm has come to pass due to climate change.

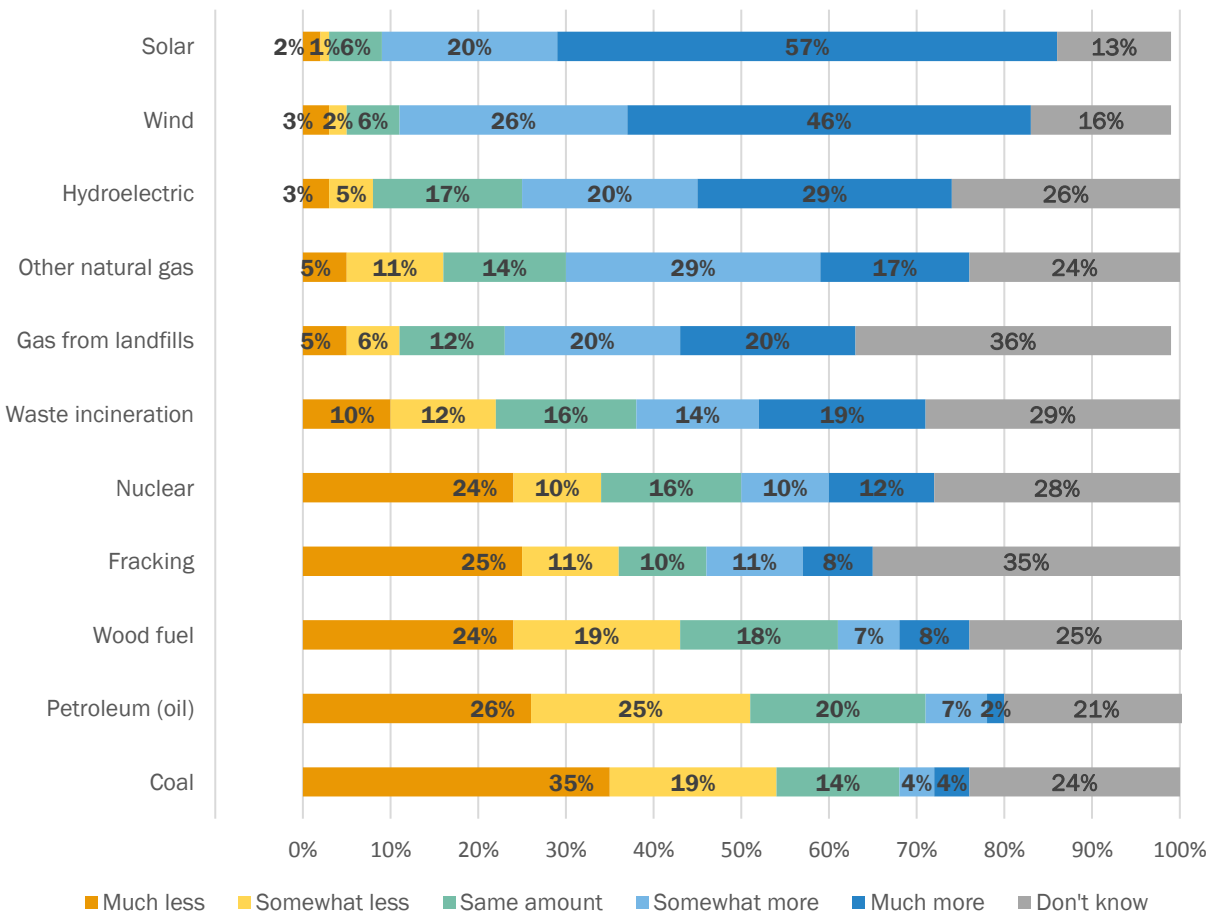
Chapter 5: Marylanders consider fossil fuel to be harmful

Seven in ten agree their home energy choices affect their health and environment. And because residents understand that some energy sources are better for public consumption and have more limited negative impact on the environment, they speak up about what they think would be best for the Old Line State. Majorities want the state to use less fossil fuel energy and more sustainable and renewable energy in the future.

Maryland should use less coal and petroleum

More than half of Marylanders think that the state should use less fossil fuel over the next several years as electrical energy sources. Very few say the state should use more of these conventional energy sources, such as coal, with a small handful saying much more should be used in Maryland. As a side note, very little oil is currently used to fuel the state's electricity; some households use oil to heat their homes, however.

Figure 7: Over the next several years, do you think Maryland should use less, more or about the same amount of each of these sources of electrical energy?



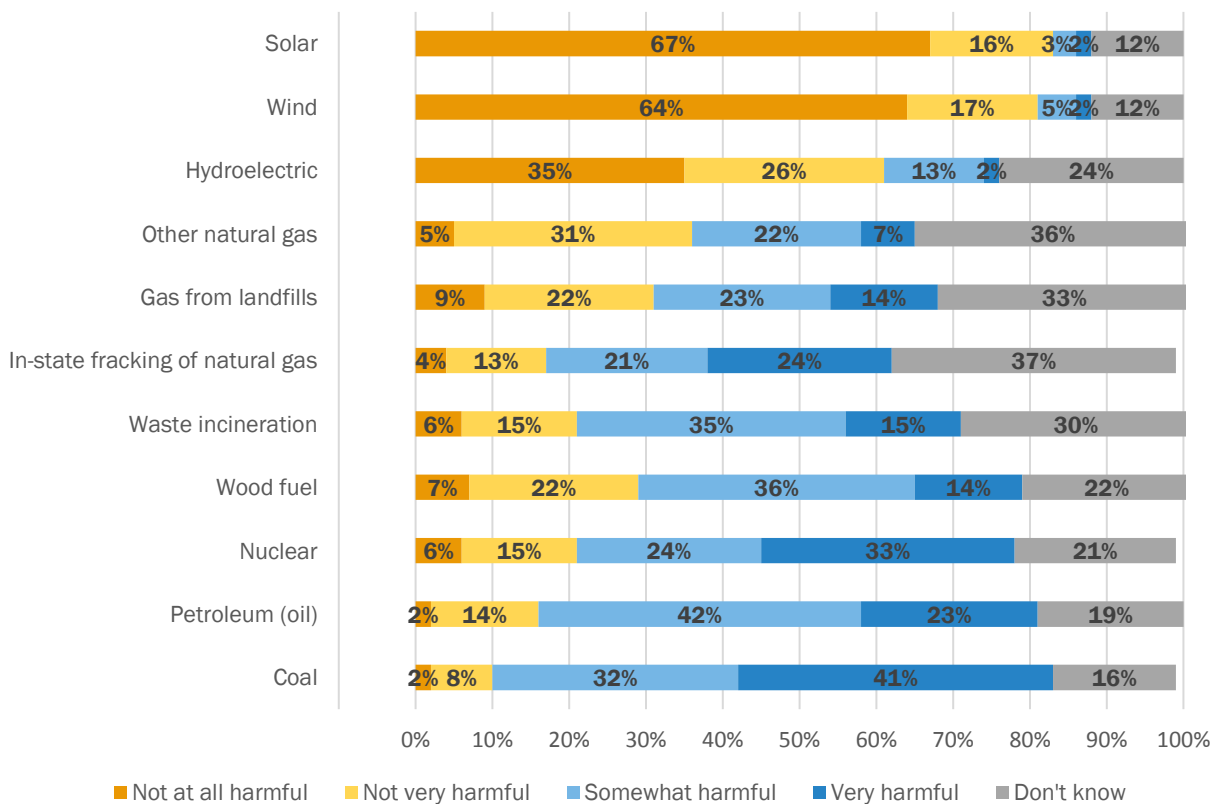
Fifty-four percent want to see the state use less coal for electrical energy, including more than one-third (35%) who say much less coal should be used. One in seven are fine with the same amount of coal being used and just eight percent say more coal should be used.

Petroleum, or oil, fares about the same as coal. Fifty-one percent say oil energy should be used less in Maryland, with equal shares saying somewhat less or much less. One in five say about the same amount of petroleum should be used as an electrical energy source in the years to come. Nine percent would like to see more oil used to fuel their homes and Maryland overall.

Coal and petroleum viewed as biggest energy threat to public health

Conventional fossil fuels are considered the most hazardous to people's health. Seventy-three percent say coal is harmful, including 41 percent rating it as very harmful and 32 percent somewhat harmful. Oil energy receives poor marks from two-thirds of Marylanders, with the largest share, 42 percent, saying it has a somewhat harmful impact on people's well-being.

Figure 8: Please rate each of the following sources of electrical energy in terms of how harmful they are to people's health.



A majority of residents also rate nuclear energy (57%) and wood fuel (50%) to be harmful. Another two in ten are unable to provide an opinion.

Solar and wind energy are viewed as the safest energy choices for public health, while many are uncertain about biomass options

Solid majorities consider solar and wind to be the least hazardous to people's health. Eight in ten residents say solar and wind energy are not harmful, including over six in ten who say they are not at all harmful to people's health. Only a handful report solar- or wind- generated electricity is unsafe for people, with a trivial two percent saying each is very harmful.

At least three in ten adults are also unsure about the health impacts that might arise from electrical energy generated from landfill gases, fracking, other non-fracking natural gas sources and incineration of waste, demonstrating an opportunity for elected officials and energy experts to communicate with the public about potential energy alternatives.

More residents today view coal, oil and wood fuel as harmful

Compared with twelve months ago, more residents today say that electrical energy produced by coal, petroleum and wood fuel negatively affect public health. In particular, wood fuel has seen a more dramatic uptick in those who rate it as harmful to people's health: up four points since 2015, 19-points since 2014 and 16-points since 2013.

Table 5: Energy sources that are harmful to people's health				
	2016	2015	2014	2013
Coal	73%	69%	72%	68%
Petroleum	65%	62%	64%	59%
Nuclear	57%	57%	58%	58%
Wood fuel	50%	46%	31%	34%
In-state "fracking" of natural gas	45%	44%	46%	44%
Other natural gas (not in-state "fracking")	29%	26%	29%	29%
Hydroelectric	15%	13%	10%	12%
Wind	7%	3%	4%	5%
Solar	5%	4%	4%	7%

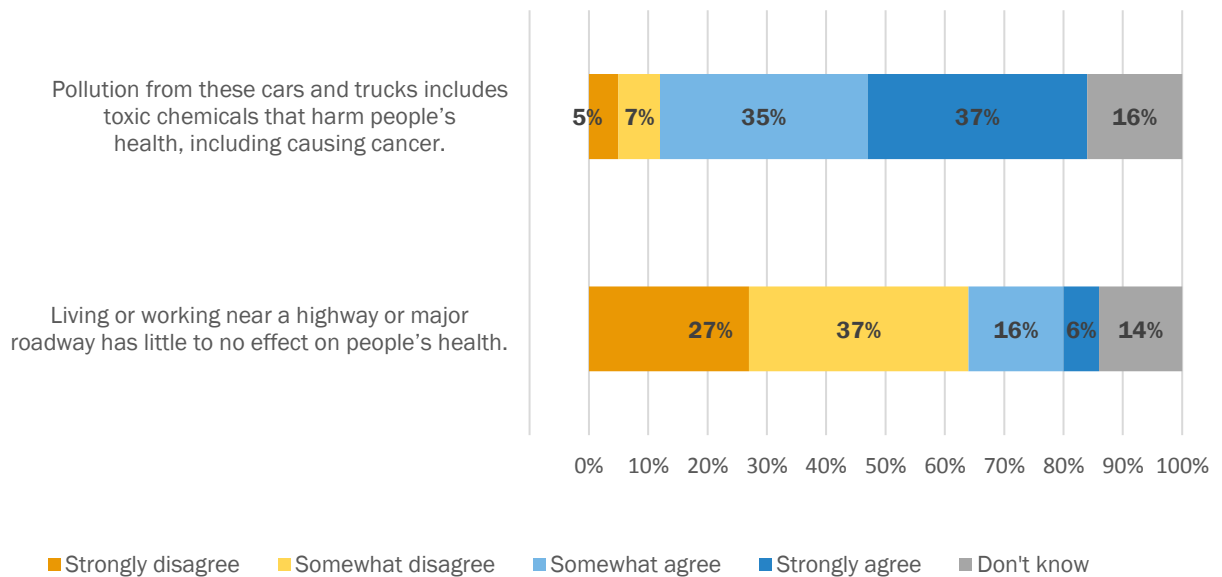
Electrical energy generated from solar, wind and hydroelectric sources continue to be rated by Marylanders as the least harmful to public health.

Chapter 6: Most view gasoline and diesel vehicles as a public health threat

Marylanders recognize the threat that gas and diesel vehicles pose to public health and the environment. Thirty-seven percent strongly agree that pollution from these cars and trucks contain chemicals that harm people's health, including toxins that cause cancer. Another 35 percent somewhat agree with that statement. About one in ten disagree and 16 percent do not know.

Nearly two-thirds, 64 percent, disagree with the notion that living or working near a highway or major roadway has little to no effect on people's health. One in five agree that proximity to busy roadways has minimal impact on people's health. One in seven are unsure.

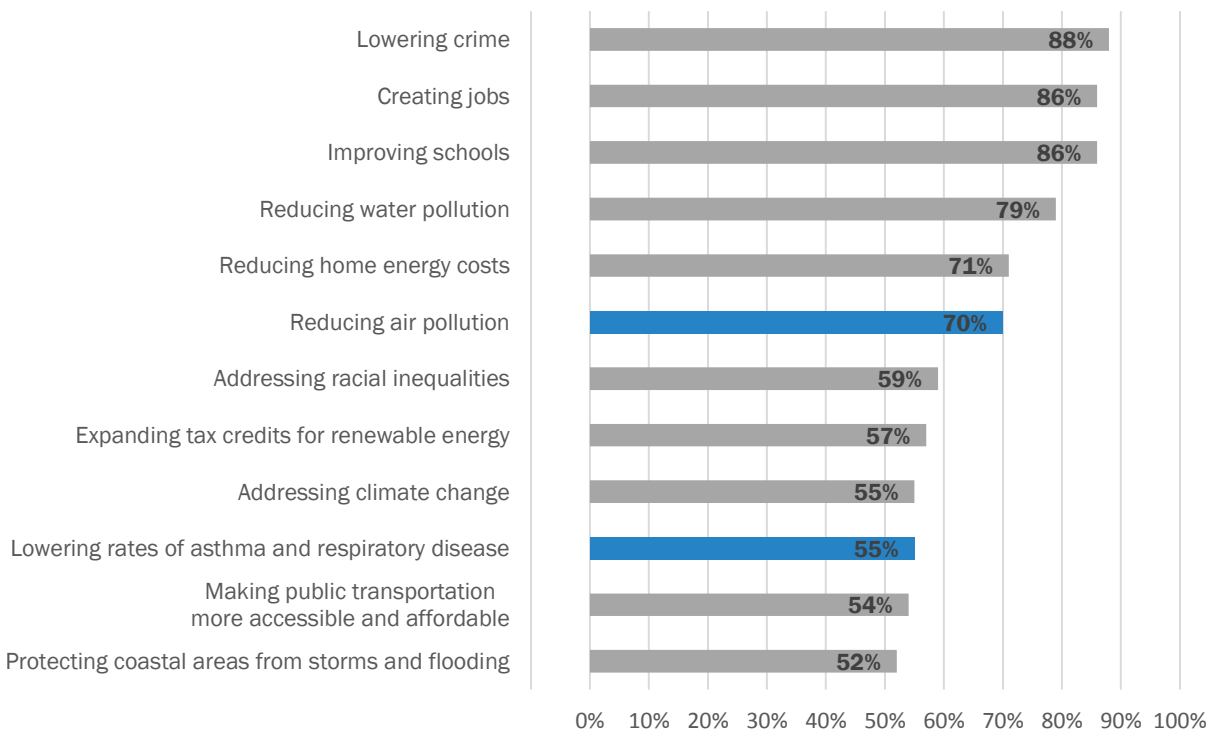
Figure 9: How strongly do you disagree or agree with the following statements?



Chapter 7: Majorities say reducing air pollution and respiratory illnesses should be important priorities for the state

Seventy percent of Marylanders say that reducing air pollution should be a high or very high priority for the state government, including nearly four in ten (38%) who rate it as a very high priority. A majority of survey respondents, 55 percent, would like to see the General Assembly and Governor work on lowering rates of asthma and respiratory disease, including 26 percent who say the state should consider this topic a very high priority.

Figure 10: How much of a priority should these topics be for Maryland's General Assembly and the Governor?
(Rated as a "High" or "Very high" Priority)



Reducing air pollution is rated as a high or very high priority by a majority of residents across key demographics. However, some groups of Marylanders are more likely than others to consider this topic to be an important priority. For instance, more women than men want the state government to prioritize air pollution (74% women v. 64% men). Race is also a factor. Seventy-nine percent of black Marylanders say reducing air pollution should be a high or very high priority, compared with 64 percent of whites. Income too plays a role: lower-income residents (less than \$50,000 per year) are more likely to rate this topic as a high or very high priority compared with higher-income residents (\$50,000 per year or more), by a 74 percent v. 66 percent margin.

Trends from the Centers for Disease Control and Prevention (CDC) indicate these groups (women, blacks, lower-income) are also more prone to asthma.¹ When it comes to prioritizing reductions in respiratory illnesses like asthma, the gap in opinions between women and men closes, while racial and income differences remain. Three-quarters of blacks say that state government should make it a high or very high priority to lower rates of asthma and other respiratory illnesses, compared with less than half of whites (47%). In terms of income, 71 percent of those with annual household incomes of under \$50,000 consider this a high or very high priority, fully 25 percentage points higher than those with annual incomes of \$50,000 or more (46%).

¹ CDC, <http://www.cdc.gov/nchs/products/databriefs/db94.htm>

Chapter 8: Residents point to community social capital, but low trust in public officials

Changes in the environment often mean changes in the health and well-being of local communities, who must negotiate providing the resources, services and information that residents need to navigate both the exacerbation of current threats – like air pollution – and the emergence of new ones – such as vector-borne diseases.

Access to resources and communication within communities are two aspects that can contribute to how resilient groups of people are likely to be in responding to hazards. Most residents surveyed say that their community has the resources – money, information, technology, tools, raw materials and service – it needs to take care of problems that the community may face. Two in ten strongly agree with this statement and another 35 percent somewhat agree. About one-quarter disagree that their community resources are sufficient. Twenty-one percent are neutral on the subject.

And the good news continues: two-thirds agree that their community keeps people informed about issues that are relevant to them, through media, phone or word of mouth. Fifty-seven percent also say people in their community are able to get the services they need.

However, fewer Marylanders, 41 percent, say they get information that helps with their home or work lives from their communities. About three in ten disagree with that notion and another three in ten are agnostic.

Intercommunity involvement also has some room for improvement. Forty-seven percent say their community works with organizations and agencies outside of their community to get things done. Seventeen percent say that is not the case for their community, and 36 percent are unable to say one way or the other.

The biggest issue seems to be split level of trust in the leaders elected or appointed to serve the public. One-third say members of their community trust public officials, with just seven percent strongly agreeing with that opinion. A similar share, 35 percent, disagree. Another third, 32 percent, neither agree nor disagree.

Appendices

Appendix 1: Topline Results

HEALTHY PEOPLE, HEALTHY PLACES:
A SURVEY OF MARYLANDERS ON PUBLIC HEALTH, ENERGY, AND THEIR ENVIRONMENT

PRINCETON SURVEY RESEARCH ASSOCIATES INTERNATIONAL FOR
GEORGE MASON UNIVERSITY AND
THE JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

TOPLINE RESULTS
AUGUST 31, 2016

Total N=907 Maryland adults ages 18 or older
Margins of Error: ± 4.3 percentage points for results based on Total [N=907]
Mail data collection dates: May 21-August 1, 2016
Questionnaire language: English only

*Topline notes: Unless otherwise indicated, percentages are based on Total answering.
Because percentages are rounded, they may not total 100%.
An asterisk (*) indicates less than 0.5%.*

INTRODUCTION

Dear Fellow Marylander,

The Johns Hopkins Bloomberg School of Public Health, in cooperation with George Mason University, welcomes a select number of households in Maryland, yours among them, to take this 15-20 minute survey about our health, environment and the energy we use.

Please have an adult in your household fill out the questionnaire. If there is more than one adult in your household we ask that the person who has had the **most recent birthday** fill out the survey, if possible. This method will provide us with a random sample of participants from the state of Maryland and each of its four regions. Answers to the questionnaire will help organizations in the state, like non-profits and local and state government agencies, better provide services to improve the health and well-being of our communities.

Thanks for taking the time to help us protect, and improve, our quality of life here in Maryland.

Sincerely,
Peter Winch, MD, MPH
Johns Hopkins Bloomberg School of Public Health

STUDY INFORMATION

Research procedures: This research is being conducted to inform the work of local and state government agencies, universities, and non-profit organizations in promoting healthy people and places in Maryland. No state funds are being used in this project; it is being funded by the Town Creek Foundation of Easton, Maryland. If you agree to participate, this questionnaire will take about 15-20 minutes to complete.

Benefits: There are no benefits to you as a participant in completing this survey other than to further understanding of Marylanders' beliefs about public health, energy and the environment.

Confidentiality: Your information will be kept completely confidential. Only the George Mason University research investigators will have access to the surveys; these will be kept in a locked cabinet on the university's Fairfax campus. Both Mason and Johns Hopkins researchers will have access to the final electronic database with the survey information, in which all personal identifiers have been removed (such as addresses and contact information). Other researchers may apply to the George Mason research team to obtain access to the information.

Participation: Your participation is voluntary. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party. A \$2 thank you has been included with this survey.

Risks: There are no risks to you from participating in this research.

Contact: For more information, contact Karen Akerlof at (XXX) XXX-XXXX or XXXXXXXX@XXX.XXX. If you have questions regarding your rights as a research participant, please contact the George Mason University Office of Research Integrity & Assurance at (XXX) XXX-XXXX, or the Institutional Review Board for Johns Hopkins Bloomberg School of Public Health at (XXX) XX-XXXX.

This research has been reviewed according to George Mason University procedures governing your participation in this research.

1. How much of a priority should these topics be for Maryland's General Assembly and the Governor?

	Not a priority	Low	Medium	High	Very high	Unwt. N ²
a. Making public transportation more accessible and affordable	7	8	30	26	28	(896)
b. Lowering rates of asthma and respiratory disease	5	13	26	29	26	(893)
c. Reducing home energy costs	1	6	23	31	40	(897)
d. Creating jobs	*	3	11	30	56	(899)
e. Improving schools	*	2	11	30	56	(897)
f. Lowering crime	*	1	11	26	62	(895)
g. Reducing water pollution	1	3	17	33	46	(895)
h. Addressing racial inequalities	8	12	22	26	33	(891)
i. Protecting coastal areas from storms and flooding	3	15	30	29	23	(889)
j. Reducing air pollution	2	7	22	32	38	(897)
k. Addressing climate change	10	13	22	29	26	(892)
l. Expanding tax credits for renewable energy	4	11	28	28	29	(892)

2. Below is a list of potential risks to people's health and well-being. How much of a risk do you feel each of the following poses to your health and well-being?

	No risk at all	Minor risk	Moderate risk	Major risk	Don't know	Unwt. N
a. Second-hand smoke from tobacco	11	19	28	40	2	(899)
b. Exposure to chemicals, including pesticides, in food and other products	1	15	25	54	5	(903)
c. Air pollution	2	13	38	43	3	(900)
d. Extreme heat	9	24	38	26	3	(901)
e. Severe storms	8	32	36	21	3	(898)
f. Obesity	17	16	24	39	3	(896)
g. Polluted drinking water	6	19	18	50	6	(901)
h. Food-borne illnesses	6	23	30	35	7	(899)
i. Climate change	14	23	32	27	4	(899)
j. Insect-borne diseases	5	19	35	35	6	(902)
k. Flooding	15	35	32	16	2	(899)
l. Sea level rise	21	33	23	18	4	(901)
m. Pollution of local streams, rivers, and other water bodies	3	16	30	45	6	(900)

² "Unwt. N" reflects the unweighted N, or the number of respondents who provided an answer.

3. In the last 12 months, how much has your health been harmed by the following?

	Not at all harmed	Slightly harmed	Moderately harmed	Severely harmed	Unwt. N
a. Pollen	31	35	25	10	(896)
b. Extreme heat	57	25	13	5	(895)
c. Severe storm(s)	67	22	8	3	(892)
d. Tick-borne disease, such as Lyme disease	80	7	7	5	(896)
e. Mosquito-borne disease, such as West Nile virus	84	6	6	4	(894)
f. Flooding	81	12	4	3	(897)
g. Poor outdoor air quality from air pollution	52	31	12	5	(895)
h. Waterborne illness	83	9	4	3	(896)
i. Food-borne illness	71	19	6	4	(895)
j. Poor indoor air quality from mold	67	22	7	5	(895)

4. In the last 12 months, have you experienced one or more of the following?

UNWEIGHTED N=907

	% Yes
a. Water damage of your home caused by heavy rains or flooding	15
b. Impassable roads due to flooding or storm damage	17
c. Sewage overflows after strong rains or storms	6
d. Septic system failure due to higher groundwater or flooding	3
e. A storm-related power outage	45
f. No household water	8
g. No household heat (when needed)	8
h. No household air conditioning (when needed)	11
i. Lack of access to transportation	10
j. Lack of access to medical care	6
k. Lack of access to high quality/nutritious food	7
l. Insufficient financial resources to cover bills if unable to work for 1-2 weeks	21
m. None of the above	28
None selected	3

5. The following statements are possible descriptions of your community. How strongly do you disagree or agree?

	Strongly disagree	Some-what disagree	Neither disagree nor agree	Some-what agree	Strongly agree	Unwt. N
a. My community has the resources it needs to take care of community problems (resources include money, information, technology, tools, raw materials, and services).	11	13	21	35	19	(894)
b. People in my community are able to get the services they need.	9	15	20	37	20	(896)
c. My community works with organizations and agencies outside the community to get things done.	9	8	36	31	16	(895)

6. The next statements are possible descriptions of communication in your community. How strongly do you disagree or agree?

	Strongly disagree	Some-what disagree	Neither disagree nor agree	Some-what agree	Strongly agree	Unwt. N
a. My community keeps people informed (for example, via television, radio, newspaper, Internet, phone, neighbors) about issues that are relevant to them.	9	11	15	38	28	(895)
b. I get information/communication through my community to help with my home and work life.	16	13	29	28	13	(891)
c. People in my community trust public officials.	17	18	32	26	7	(892)

People's responses to life events may differ. Below are some statements that people have made.

7. For each of the following, how strongly do you disagree or agree?

	Strongly disagree	Some-what disagree	Neither disagree nor agree	Some-what agree	Strongly agree	Unwt. N
a. There is no sense in planning a lot—if something good is going to happen, it will.	41	25	17	13	3	(894)
b. I am responsible for my own successes.	3	5	5	33	54	(894)
c. I have little control over the bad things that happen to me.	18	32	21	23	6	(897)
d. I am responsible for my failures.	2	10	12	41	36	(895)

8. People deal with difficult events in different ways. Typically, when you experience stress, what do you do?

	Not at all	A little bit	A medium amount	A lot	Unwt. N
a. I concentrate my efforts on doing something about it.	1	9	36	53	(891)
b. I turn to work or other activities to take my mind off of it.	10	23	38	29	(887)
c. I try to come up with a strategy for what to do.	1	12	36	52	(890)
d. I just give up.	78	18	2	2	(889)
e. I talk to someone to find out more about the situation.	7	24	42	28	(892)
f. I sleep more than usual.	57	23	12	7	(889)
g. I look for something good in what is happening.	7	28	37	28	(888)
h. I learn to live with it.	16	36	33	16	(887)
i. I put my trust in God.	19	17	16	49	(888)

The next questions address new options in Maryland for managing our generation and use of electricity.

9. Have you ever heard the term, “Smart Grid,” in referring to new ways to generate and manage electricity?

UNWEIGHTED N=894

No	39
Yes	48
Don't know	13

10. Do you have a Smart Meter installed at your home? Smart Meters digitally monitor energy usage, convey the information wirelessly to your energy utility, and provide it to you online. They are installed for free by your electric utility.

UNWEIGHTED N=893

No	42
Yes	42
Don't know	16

11. Smart Grids will mean some changes for consumers. How likely would you be to...

	Very unlikely	Some-what unlikely	Some-what likely	Very likely	Already done	Not applicable	Unwt. N
a. welcome installation of a Smart Meter.	10	9	18	22	33	8	(881)
b. change the timing of activities that use a lot of electricity, like clothes drying, to take advantage of lower electricity costs at night.	9	11	25	36	16	3	(886)
c. buy “smart appliances” that automatically reduce energy use during high demand.	5	10	24	36	20	6	(888)
d. install solar panels either for your home or within your community and sell energy back to the utility.	27	17	19	21	4	12	(886)
e. volunteer to automatically lower energy use during high demand in return for lower bills.	9	11	27	31	17	4	(883)

12. How strongly do you disagree or agree with the following statements?

	Strongly disagree	Some-what disagree	Some-what agree	Strongly agree	Don't know	Unwt. N
a. My home energy choices affect our health and environment.	8	10	42	31	10	(890)
b. I am worried that Smart Meters threaten people’s privacy.	24	18	25	10	23	(882)
c. I am worried that Smart Meters may be harmful.	35	20	11	7	28	(885)
d. Variable electricity rates at different times of day will help me lower my energy bills.	6	8	44	23	19	(887)
e. I can’t afford to install solar panels even if I could sell the electricity back to the utility.	11	11	20	37	21	(884)
f. Generating my own energy is appealing to me.	9	8	31	37	16	(889)

The next questions address the choices about energy sources we make as a state and in our own homes.

13. Over the next several years, do you think Maryland should use less, more, or about the same amount of each of these sources of electrical energy? (Please note, no hydraulic fracturing of natural gas is currently occurring in Maryland.)

	Much less	Some-what less	Same amount	Some-what more	Much more	Don't know	Unwt. N
a. Coal	35	19	14	4	4	24	(884)
b. Petroleum (oil)	26	25	20	7	2	21	(880)
c. Natural gas extracted by hydraulic fracturing ("fracking") in Maryland	25	11	10	11	8	35	(872)
d. Other sources of natural gas	5	11	14	29	17	24	(868)
e. Wind	3	2	6	26	46	16	(884)
f. Nuclear	24	10	16	10	12	28	(879)
g. Solar	2	1	6	20	57	13	(882)
h. Hydroelectric (including dams)	3	5	17	20	29	26	(873)
i. Wood fuel	24	19	18	7	8	25	(878)
j. Incineration of waste	10	12	16	14	19	29	(880)
k. Gas from landfills	5	6	12	20	20	36	(885)

14. Please rate each of the following sources of electrical energy in terms of how harmful they are to people's health.

	Not at all harmful	Not very harmful	Somewhat harmful	Very harmful	Don't know	Unwt. N
a. Coal	2	8	32	41	16	(889)
b. Petroleum (oil)	2	14	42	23	19	(885)
c. Natural gas extracted by hydraulic fracturing ("fracking") in Maryland	4	13	21	24	37	(880)
d. Other sources of natural gas	5	31	22	7	36	(876)
e. Wind	64	17	5	2	12	(888)
f. Nuclear	6	15	24	33	21	(879)
g. Solar	67	16	3	2	12	(887)
h. Hydroelectric (including dams)	35	26	13	2	24	(882)
i. Wood fuel	7	22	36	14	22	(885)
j. Incineration of waste	6	15	35	15	30	(887)
k. Gas from landfills	9	22	23	14	33	(885)

15. How much more would you be willing to pay each month on your electricity bill to purchase 100% of your electricity from these fuel sources?

	Not willing to pay more	\$1-5	\$6-10	\$11-15	\$16-20	More than \$20 a month	Unwt. N
a. Wind	50	17	14	7	7	6	(876)
b. Solar	48	17	14	8	8	6	(878)

Maryland has the longest average commute time in the United States. The questions below ask about your driving habits and transportation preferences.

16. How frequently do you use the following forms of transportation to get to work, school, or other primary daily activity?

	Never	Some- times	Most of the time	Almost always	Not applicabl e	Unwt. N
a. Drive car or truck (single occupant)	5	11	10	67	6	(889)
b. Carpool with others	53	27	3	4	12	(881)
c. Take the Metro, subway, or light rail	55	24	2	6	12	(886)
d. Ride a bus	62	20	2	6	10	(888)
e. Bike	71	14	1	2	12	(887)
f. Walk	44	35	6	6	9	(887)

17. How long is your average daily commute to work, school, or other primary daily activity?

UNWEIGHTED N=880

10 minutes or less	14
11-20 minutes	21
21-30 minutes	15
31-40 minutes	10
41-50 minutes	10
51-60 minutes	7
More than 1 hour	7
Not applicable	15

18. Please answer two questions for each of the items below. Is it hard or easy for you to take the following actions? And, are they actions you would dislike or like doing, whether or not they are feasible?

	Is it hard or easy for you to take this action?			Would you dislike or like doing this?		
	Hard/No t feasible	Easy	Unwt. N	Dislike	Like	Unwt. N
a. Working from home	57	43	(825)	26	74	(774)
b. Biking or walking instead of driving for primary daily activities (work, school, etc.)	81	19	(836)	48	52	(785)
c. Using public transportation	71	29	(830)	63	37	(783)
d. Purchasing or leasing a fuel-efficient car or truck	55	45	(821)	27	73	(792)
e. Purchasing or leasing a plug-in electric vehicle, such as the Nissan Leaf or Chevy Volt	73	27	(819)	48	52	(792)

19. How strongly do you disagree or agree with the following statements?

	Strongly disagree	Some-what disagree	Some-what agree	Strongly agree	Don't know	Unwt. N
a. Driving gasoline- or diesel-fueled cars and trucks is a minimal source of air pollution.	25	28	28	12	7	(887)
b. The tailpipes of gasoline- or diesel-fueled motor vehicles release pollution that contributes to climate change.	5	9	31	43	13	(888)
c. Pollution from these cars and trucks end up in our waterways, where they become a significant source of pollutants in the Chesapeake Bay.	5	13	32	34	16	(888)
d. Pollution from these cars and trucks includes toxic chemicals that harm people's health, including causing cancer.	5	7	35	37	16	(885)
e. Living or working near a highway or major roadway has little to no effect on people's health.	27	37	16	6	14	(882)
f. Plug-in electric vehicles pollute the air less than gasoline- or diesel-fueled vehicles.	4	4	27	48	16	(886)
g. Over the lifetime of the car, it is cheaper to own and operate a plug-in electric vehicle than one powered by gasoline or diesel fuel.	6	12	14	16	52	(887)

20. Maryland has begun implementing policies to alleviate road congestion on highways and improve air quality. For each of the following policies, please answer two questions: Have you heard of this policy? How much do you support or oppose this policy?

	Heard of this policy			Your support for this policy					Unwt. N
	Yes	No	Unwt. N	Strongly oppose	Some-what oppose	Neither	Some-what support	Strongly support	
a. Requiring new cars and other vehicles in Maryland to be less polluting	51	49	(872)	3	6	17	31	43	(878)
b. Variable express lane fees based on road congestion	52	48	(854)	18	13	28	24	17	(877)
c. Extending tax credits and other incentives for purchases or leases of plug-in electric vehicles and charging equipment	44	56	(843)	7	8	25	31	28	(878)
d. Making improvements to bike and pedestrian road access	58	42	(839)	3	3	17	27	50	(877)
e. Promotion of public transportation	59	41	(829)	2	3	24	31	40	(877)

21. Maryland has begun implementing policies to promote new sources of energy and use energy more efficiently. For each of the following policies, please answer two questions: Have you heard of this policy? How much do you support or oppose this policy?

	Heard of this policy			Your support for this policy					Unwt. N
	Yes	No	Unwt. N	Strongly oppose	Some-what oppose	Neither	Some-what support	Strongly support	
a. Expanding rebates to help people purchase energy-efficient lighting and appliances	51	49	(867)	4	2	12	28	55	(873)
b. Updating state and local building codes to increase energy efficiency and enable electric vehicle charging	32	68	(863)	3	4	24	33	36	(871)
c. Encouraging the development of more homes with better access to public transportation, as a means to reduce sprawl, and preserve forests and farmland	29	71	(857)	4	7	22	23	44	(871)
d. Funding energy efficiency and conservation projects that serve low- to middle-income Marylanders	32	68	(856)	4	5	19	25	48	(868)
e. Requiring that Maryland's electricity suppliers provide a percentage of their total electricity from renewable energy sources	37	63	(851)	4	4	18	28	47	(869)
f. Continuing financial incentives for the generation of renewable energy (such as solar and wind)	49	51	(846)	4	3	15	27	51	(872)
g. Modernizing Maryland's electricity grid to better integrate renewable energy and incentivize efficiency	31	69	(847)	2	2	18	28	49	(870)

22. Maryland is required to evaluate the economic impacts, including to jobs and industry, of its energy and greenhouse gas reduction policies that are collectively called the “Greenhouse Gas Reduction Plan.” How likely do you think it is that these policies will accomplish the following?

	Very unlikely	Some-what unlikely	Some-what likely	Very likely	Don't know	Unwt. N
a. The policies will generate between \$2.5 billion and \$3.5 billion in total economic benefits by 2020.	13	17	21	5	44	(880)
b. The policies will create or maintain 26,000 to 33,000 jobs by 2020.	11	16	24	7	42	(880)
c. There will be no projected impacts from these policies on Maryland’s manufacturing industries.	14	18	18	7	43	(881)

23. How much do you disagree or agree with the following? Stricter environmental laws in Maryland...

	Strongly disagree	Some-what disagree	Some-what agree	Strongly agree	Don't know	Unwt. N
a. cost jobs and hurt the economy.	20	21	22	12	25	(882)
b. are worth the cost because of the public health benefits.	5	9	35	33	17	(882)
c. are worth the cost because of the environmental benefits.	6	7	34	35	18	(883)
d. can fuel economic and jobs growth.	7	11	33	21	28	(884)

We are interested in your opinion of how climate change may, or may not be, affecting your community.

24. Do you think that climate change is currently happening?

UNWEIGHTED N=895

Yes	77
No	10
Don't know	13

25. If you answered either yes or no, how sure are you?

	UNWEIGHTED N=676 Climate change is happening	UNWEIGHTED N=107 Climate change is not happening
I'm not at all sure	2	14
I'm somewhat sure	27	40
I'm very sure	41	27
I'm extremely sure	30	19

26. If you think climate change is currently happening, what do you think is causing it?

UNWEIGHTED N=843

Caused entirely by human activities	14
Caused mostly by human activities	31
Caused about equally by human activities and natural changes in the environment	30
Caused mostly by natural changes in the environment	9
Caused entirely by natural changes in the environment	2
I don't think climate change is happening	5
Don't know	9

27. To the best of your knowledge, what percentage of the following people think climate change is happening?

	0 to 20%	21 to 40%	41 to 60%	61 to 80%	81 to 100%	Don't know	Unwt. N
a. People in my region of Maryland (Western, Central, Southern, Eastern counties)	6	14	23	18	10	30	(888)
b. Maryland residents (statewide)	4	11	24	20	8	32	(886)
c. People in the United States	3	14	30	18	9	26	(885)
d. Climate scientists	3	4	6	12	53	22	(885)

28. How much do you think climate change is currently harming...?

	Not at all	Only a little	A moderate amount	A great deal	Don't know	Unwt. N
a. you personally	20	27	30	14	8	(888)
b. people in your community	15	23	33	14	16	(887)
c. people in Maryland	12	19	36	18	16	(893)

29. Which of the following do you think is likely to occur in your community as a result of climate change over the next 10-20 years?

UNWEIGHTED N=907

	% Yes
a. Hotter weather	72
b. Colder weather	46
c. Heavier rains	52
d. More frequent droughts	36
e. Wildfires	23
f. Increased air pollution	53
g. Warming of cold-water streams	35
h. Longer growing season	18
i. More severe storms	63
j. Rising coastal sea levels	47
k. Increased water pollution	46
l. Increased harmful bacteria and toxins with warmer waters	53
m. There are no likely effects from climate change	9
None selected	4

30. Which of the following resources in your community do you think may be harmed by climate change in the next several years?

UNWEIGHTED N=907

	% Yes
a. Public water supplies	53
b. Public sewer systems	33
c. People's health	59
d. Transportation/roads/bridges	31
e. Historical sites	20
f. Coastlines	54
g. Wetlands	46
h. Forests	42
i. Wildlife	51
j. Chesapeake Bay	60
k. Aquatic life, such as fish and crabs	57
l. Agriculture	53
m. Fishing/seafood industry	57
n. Private wells/septic systems	33
o. Privately owned land/buildings	22
p. There are no local risks from climate change	11
None selected	4

31. How much do you support or oppose state and local governments taking action to protect your community against harm caused by climate change (if any)?

UNWEIGHTED N=856

Strongly oppose	7
Somewhat oppose	7
Somewhat support	28
Strongly support	47
Don't know	12

The information below will be used to ensure that the survey is representative of people in Maryland.

32. Are you:

UNWEIGHTED N=885

Male	44
Female	56

33. How old are you?³

UNWEIGHTED N=790

18-29	15
30-49	36
50-64	29
65 or older	20

34. Do you rent or own your home?

UNWEIGHTED N=871

Rent	28
Own	68
Other (specify)	3

35. Are any children living in your household?

UNWEIGHTED N=892

Yes	35
No	60
Not applicable	5

36. What is the age of the youngest child?

UNWEIGHTED N=730

Less than 1 year	4
1-6 years	16
7-12 years	8
13-18 years	15
No children	57

³ Respondents were asked to write in their exact age. Ages have been grouped into categories in this topline.

37. What is the highest degree or level of school that you have completed?

UNWEIGHTED N=895	
Less than high school	4
High school or GED	26
Some college, no degree	22
Associate's degree	8
Bachelor's degree	17
Advanced degree beyond a bachelor's degree	22

38. Which of the following broad categories describes your household's total approximate annual income before taxes?

UNWEIGHTED N=839	
Less than \$10,000	5
\$10,000 – \$14,999	5
\$15,000 – \$24,999	9
\$25,000 – \$34,999	7
\$35,000 – \$49,999	12
\$50,000 – \$74,999	18
\$75,000 – \$99,999	13
\$100,000 – \$149,999	18
\$150,000 or more	13

39A/B. Think of this ladder as representing where people stand in their communities. People define community in different ways, please define it in whatever way is most meaningful to you. Where would you place yourself on this ladder, first for your community, and then for Maryland?

	UNWEIGHTED N=846 Q39A Your standing in your community	UNWEIGHTED N=841 Q39B Your standing in Maryland
10 - Highest standing	6	5
9	6	5
8	14	12
7	18	15
6	13	15
5	19	18
4	7	8
3	9	6
2	4	8
1 - Lowest standing	4	7

40. Generally speaking, do you think of yourself as politically...

UNWEIGHTED N=888	
Very conservative	11
Somewhat conservative	22
Moderate, middle of the road	39
Somewhat liberal	20
Very liberal	9

41. Do you happen to know where people who live in your neighborhood go to vote?

UNWEIGHTED N=896

No	6
Yes	80
Don't know	14

42. How often would you say you vote?

UNWEIGHTED N=898

Never	9
Seldom	6
Part of the time	10
Nearly always	25
Always	48
Don't know	2

43. What ethnicity do you consider yourself?

UNWEIGHTED N=858

Hispanic or Latino	7
Not Hispanic or Latino	93

44. What is your race?⁴

UNWEIGHTED N=877

White	62
Black or African American	27
Asian	4
American Indian or Alaska Native	*
Native Hawaiian or other Pacific Islander	*
Other	5
Mixed race	2

Race/Ethnicity Summary table

43. What ethnicity do you consider yourself?

44. What is your race?

UNWEIGHTED N=878

White, non-Hispanic	59
Black or African American, non-Hispanic	26
Hispanic	7
Other/Mixed race, non-Hispanic	8

⁴ Respondents were allowed to select 1 or more races. Those who selected more than one are coded as "Mixed race."

45. How would you describe your primary current occupation, or former occupation, if retired?

UNWEIGHTED N=886

Blue collar or service industry	22
Clerical	7
Managerial or professional	44
Student	4
Homemaker	7
Other/not applicable	15

46. In the last 12 months, have you personally experienced one or more prolonged periods of stress of 1 month or longer in relation to circumstances in everyday life, such as work, health, or a family situation? (Stress refers to feelings of irritability, tension, nervousness, fear, anxiety, or sleep disturbances.)

UNWEIGHTED N=885

I have not experienced a prolonged period of stress	41
One period of prolonged stress	20
More than one period of prolonged stress	26
Constant stress	14

47. Have you ever been told by a doctor or health care provider that you have one or more of these conditions?

UNWEIGHTED N=907

	% Yes
a. Asthma	12
b. COPD	5
c. Hypertension	24
d. Coronary heart disease	5
e. Stroke	2
f. Diabetes	12
g. Cancer	9
h. Weak or failing kidneys	2
i. Arthritis	21
j. Hepatitis	2
k. None of the above	46
None selected	3

Please provide any additional comments for us below.

UNWEIGHTED N=907

Wrote comment	17
No comment	83

INFO1. Would you like any additional information about some of the topics in the survey? If so, please mark the topics of interest...

UNWEIGHTED N=907

	% Yes
a. Home energy efficiency	13
b. Flooding protection	5
c. Protection against heat waves	7
d. Energy bill assistance	12
e. Energy fuel choices and health	10
f. Home and community renewable energy generation	10
g. Smart grid	13

Thank you for completing the survey!

Please use the enclosed postage-paid envelope to return this survey.

**GEORGE MASON UNIVERSITY AND
THE JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC
HEALTH**

**HEALTHY PEOPLE, HEALTHY PLACES:
A SURVEY OF MARYLANDERS ON PUBLIC HEALTH,
ENERGY, AND THEIR ENVIRONMENT**

METHODOLOGICAL REPORT

**PREPARED BY:
PRINCETON SURVEY RESEARCH ASSOCIATES INTL.**

Princeton Office
600 Alexander Road, Suite 3-2
Princeton, NJ 08540
(609) 924-9204

Washington Office
1211 Connecticut Ave NW, Suite 305
Washington, DC 20036
(202) 293-4710

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SUMMARY

The Healthy People, Healthy Places Survey, jointly sponsored by the Center For Climate Change Communication at George Mason University (GMU) and the Johns Hopkins Bloomberg School of Public Health, obtained interviews with a sample of 907 households in the state of Maryland. The survey was conducted by Princeton Survey Research Associates International (PSRAI). Data were collected by postal mail by the Scantron Corporation from May 21 to August 1, 2016.

Details on the design, execution and analysis of the survey are discussed below.

DESIGN AND DATA COLLECTION PROCEDURES

Sample and Questionnaire Design

A sample of 4,201 Maryland households were randomly selected from Survey Sampling International's household address databases, based primarily on U.S. Postal Service delivery route information. In contrast to the previous waves of this study where sampling took place at the regional level, sampling for the 2016 study was a simple random selection of households at the state level. Sample was provided to PSRAI by GMU.

In addition to sample design, George Mason University also developed all mailing materials including the mail questionnaire. Prior to printing or mailing any materials, GMU submitted and received approval for all mailing materials from Johns Hopkins' IRB. The Scantron Corporation, with a location based out of Columbia, PA, supplied, printed and distributed all mailings, developed the scannable questionnaire form, and processed and scanned all returned questionnaires into an electronic data format in accordance with an approved data codebook. PSRAI coordinated the mailings and data collection with Scantron, cleaned, processed and weighted the survey data, and produced the reporting and analysis.

Contact Procedures

Data were collected by mail from May 21 to August 1, 2016. Requests for participation were sent to a total of 4,201 Maryland households. Each household was sent up to four mailings. All mailings were freighted to Maryland and distributed by a local Maryland post office. Progress was monitored regularly throughout the data collection period.

On April 20, 2016, advanced letters on Johns Hopkins letterhead were mailed to all 4,201 sampled households. The letter was signed by Dr. Peter Winch, a Professor in the Social and Behavioral Interventions Program in the Department of International Health at the Johns Hopkins Bloomberg School of Public Health. The letter explained that a survey about public health, energy and Maryland's environment would be arriving soon and encouraged the household's participation. *(All letters can be found in the Appendix.)*

On May 21, 2016, the initial survey mailings on Johns Hopkins letterhead were mailed to 4,200 sampled households.⁵ Each packet contained a questionnaire booklet, a postage paid return envelope, a \$2 bill, and a cover letter signed by Dr. Peter Winch. This cover letter explained the survey and encouraged participation by an adult member of the household, age 18 or older. If there was more than one adult in the household, instructions indicated that the person in the household who has had the most recent birthday should complete the enclosed questionnaire.

On June 16, 2016, postcard reminders to non-responders were mailed to 3,626 households. Excluded from the postcard mailing were households that had already completed the survey, refused to participate, or had both previous mailings returned as undeliverable.

On June 29, 2016, a follow-up survey mailing on Johns Hopkins letterhead was mailed to 3,589 households. Excluded from the follow-up survey mailing were households that had already completed the survey, refused to participate, or had the first two mailings returned as undeliverable. Each packet contained a questionnaire booklet, a postage paid return envelope, and a cover letter signed by Dr. Peter Winch. Affixed to each cover letter was a sticky note indicating a study deadline of July 15 and offering participants a chance to be entered into a raffle for a gift card.

WEIGHTING AND ANALYSIS

Weighting is generally used in survey analysis to compensate for sample designs and patterns of non-response that might bias results. The sample was weighted to match Maryland adult general population parameters.

The weighting adjusted sample demographics to known population parameters. The sample was balanced to match parameters for sex, age, education, race/ethnicity, region and population density. The basic weighting parameters came from an analysis of the U.S. Census Bureau's 2014 American Community Survey data. The population density parameter was derived from Census 2010 data at the county level.

Weighting was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure. Weights were trimmed to prevent individual interviews from having too much influence on the final results. The use of these weights in statistical analysis ensures that the demographic characteristics of the sample closely approximate the demographic characteristics of the national population. Table 1 compares weighted and unweighted sample distributions to population parameters.

⁵ Upon receiving the advance letter, one household indicated they are part-time residents and were removed from further mailings for this study.

Table 1: Sample Demographics

	<u>Parameter</u>	<u>Unweighted</u>	<u>Weighted</u>
	<u>Gender</u>		
	Male	47.4	32.9
	Female	52.6	64.7
	missing	2.4	2.7
	<u>Age</u>		
	18-34	30.1	11.4
	35-44	16.8	9.9
	45-54	19.0	12.7
	55-64	16.7	20.7
	65+	17.4	32.4
	missing	12.9	14.3
	<u>Education</u>		
	HS Grad or less	36.2	16.0
	Some College/Assoc Degree	28.4	26.1
	College Graduate	35.4	56.6
	missing	1.3	1.5
	<u>Race/Ethnicity</u>		
	White/not Hispanic	55.0	69.8
	Black/not Hispanic	28.4	15.4
	Hispanic	8.2	3.9
	Other/not Hispanic	8.4	7.7
	missing	3.2	3.6
	<u>Region</u>		
	Capital	35.9	31.9
	Central	46.2	51.6
	Southern	5.7	4.2
	Eastern shore	7.8	7.2
	Western	4.4	5.2
	<u>County Pop. Density</u>		
	1 - Lowest	2.5	2.8
	2	14.0	12.6
	3	12.7	16.3
	4	60.0	57.3
	5 - Highest	10.8	11.0

Effects of Sample Design on Statistical Inference

Post-data collection statistical adjustments require analysis procedures that reflect departures from simple random sampling. PSRAI calculates the effects of these design features so that an appropriate adjustment can be incorporated into tests of statistical significance when using these data. The so-called "design effect" or *deff* represents the loss in statistical efficiency that results from unequal weights. The total sample design effect for this survey is 1.71.

PSRAI calculates the composite design effect for a sample of size n , with each case having a weight, w_i as:

$$deff = \frac{n \sum_{i=1}^n w_i^2}{\left(\sum_{i=1}^n w_i \right)^2} \quad \text{formula 1}$$

In a wide range of situations, the adjusted *standard error* of a statistic should be calculated by multiplying the usual formula by the square root of the design effect (\sqrt{deff}). Thus, the formula for computing the 95% confidence interval around a percentage is:

$$\hat{p} \pm \left(\sqrt{deff} \times 1.96 \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \right) \quad \text{formula 2}$$

where \hat{p} is the sample estimate and n is the unweighted number of sample cases in the group being considered.

The survey's margin of error is the largest 95% confidence interval for any estimated proportion based on the total sample—the one around 50%. For example, the margin of error for the entire sample is ± 4.3 percentage points. This means that in 95 out every 100 samples drawn using the same methodology, estimated proportions based on the entire sample will be no more than 4.3 percentage points away from their true values in the population. It is important to remember that sampling fluctuations are only one possible source of error in a survey estimate. Other sources, such as respondent selection bias, questionnaire wording and reporting inaccuracy, may contribute additional error of greater or lesser magnitude.

Response rate

Table 2 reports the disposition of all sample records released. The response rate estimates the fraction of all eligible sample that was ultimately interviewed. The response rate is based on AAPOR response rate #3 as set forth by the American Association for Public Opinion Research. Thus the response rate for the sample was 24 percent.

Total Sample Released	4201
Non-response, unknown eligibility U	3178
Refused R	23
Ineligible IN	93
Completed I	907
e= estimated eligibility $(I+R)/(I+R+IN)$	90.9%
Response Rate $I/[I+R+(e*U)]$	23.7%

CODING AND EDITING

The completed questionnaires were returned to Scantron and scanned into an electronic data file. All handwritten open-end question responses were recorded verbatim by Scantron coders and entered into the electronic data file. PSRAI thoroughly examined completed questionnaires to ensure proper completion and checked to ensure the data responses matched the responses in the questionnaire booklets. Any notes from respondents, problems or inconsistencies were dealt with by PSRAI staff. Problems were reconciled whenever possible and cleaned in the data file.

- If there are multiple response to a question that should only have one response and that question has no 'other specify' option, the question was recoded as 'No answer' in the data if there is not some indication of which answer is right (e.g. one crossed out and the second circled multiple times).
- If there are multiple response to a question that should only have one response and that question has an 'other specify' option, the question was recoded as 'other' and the responses entered into the specify field in the data.
- If applicable, 'other specify' responses were back-edited if they fit into the existing answer categories/codes.

In addition to open-end response categories for specific questions, respondents also had the opportunity to make any additional comments at the end of the survey.

DATA ENTRY AND VERIFICATION

The data were entered, verified, and cleaned to correct for any scanning entry errors, appropriate question sequence (i.e., skip patterns), valid response ranges, and other logical inconsistencies.

[DATE]

[Name of city] Resident
[Address1], [Address2]
[City], [State] [Zip]-[Zip4]

Dear [Name of city] Resident:

The Johns Hopkins Bloomberg School of Public Health, as part of a research project with George Mason University, is requesting your help with an important study being conducted about public health, energy and Maryland's environment. Your household was selected at random from among all residents in Maryland. In the next few days you will receive an envelope containing our questionnaire. We hope you will participate.

We would like to make it as easy and enjoyable as possible for you to participate in the study. I am writing in advance because sometimes people like to know ahead of time that they will be asked to fill out a questionnaire. The success of this study will rely on the generous help of people like you who are willing to take about 15-20 minutes of their time to answer our questions.

As a token of our appreciation, we will be sending you \$2 in the envelope containing the questionnaire. Please keep your eyes open for that envelope in the mail; it should arrive in the next several days. This project is funded by the Town Creek Foundation of Easton, Maryland; no state funds are being used. You are not under any obligation to participate, but I hope you will be willing to help us. Most of all, I hope that you enjoy taking the survey and the opportunity to tell us about your views on the health of Maryland's people and environment.

Best wishes,



Peter Winch, MD, MPH
Johns Hopkins Bloomberg School of Public Health

Princeton Survey Research Associates International (PSRAI), a national polling firm, will conduct this survey for us, with data collection provided by Scantron. If you have any questions, you may contact XXXXXXXXXXXX of PSRAI at XXXXXXXXXXXXXXX@psrai.com. You may also contact Project Director XXXXXXXXXXXX at (703) XXX-XXXX or XXXXXXXXXXX@gmu.edu at George Mason University.

Appendix 2b: Cover letter for initial survey mailing

[DATE]

[Name of city] Resident
[Address1], [Address2]
[City], [State] [Zip]-[Zip4]

Dear [Name of city] Resident:

I am writing to request your help with an important study being conducted about public health, energy and Maryland's environment. One important way for us to learn about these issues is to ask people who live in the state to share their thoughts with us. Your household is one of 4,200 homes that have been randomly selected for this study being conducted by the Johns Hopkins Bloomberg School of Public Health and George Mason University, and funded by the Town Creek Foundation in Easton, Maryland.

Please have an adult (age 18 or over) fill out the survey. If there is more than one adult in your household, please have the person in your household who has had **the most recent birthday** complete the enclosed questionnaire if possible. This ensures we hear from a random sample of people who live in the state.

The questions should only take about 15-20 minutes to answer. By taking this time to share your thoughts, you will help us understand how to better develop future public health services for Marylanders, such as programs that assist communities during heat waves and other extreme weather events. As a way of saying thank you for participating, we have enclosed a small token of appreciation. No state funds are being used in this project. You are not under any obligation to participate, but I hope that you will consider participating, and will enjoy taking the survey.

I look forward to hearing your thoughts. Thanks for taking this time to help us better protect our quality of life here in Maryland.

Best wishes,



Peter Winch, MD, MPH
Johns Hopkins Bloomberg School of Public Health

Princeton Survey Research Associates International (PSRAI), a national polling firm, will conduct this survey for us, with data collection provided by Scantron. If you have any questions, you may contact XXXXXXXXXXXX of PSRAI at XXXXXXXXXXXXXXXXXXXX@psrai.com. You may also contact Project Director XXXXXXXXXXXX at (703) XXX-XXXX or XXXXXXXXXXX@gmu.edu at George Mason University.

Appendix 2c: Postcard reminder

Last week a questionnaire was mailed to you because your household was chosen for a study of Marylanders' opinions about public health, energy and our state's environment.

If someone at your address has already completed and returned the questionnaire, we thank you. If not, please have the adult in your household who has had the **most recent birthday** do so right away. This method aids us in obtaining a random sample of state residents.

I am very grateful for your help in this study.



Peter Winch, MD, MPH



[DATE]

[Name of city] Resident
[Address1], [Address2]
[City], [State] [Zip]-[Zip4]

Dear [Name of city] Resident:

In April we sent a letter inviting you to complete a questionnaire on the health and wellbeing of Maryland's people and environment. While you are not under any obligation to participate, to the best of our knowledge, we have not received it yet, and wanted to be sure that it had not been lost in the mail.

We are writing again because of the importance that your questionnaire has in helping us to get accurate results that truly represent the state's residents. Therefore, we hope that the adult in your household who has had **the most recent birthday** will fill out the questionnaire (another copy of which is enclosed) and return it to us soon. This will help ensure that we hear from a random sample of adults in every household.

The questions should only take about 15-20 minutes to complete. We hope that you enjoy answering the questions and sharing your thoughts with us. We look forward to hearing your opinion on these important issues.

Best wishes,



Peter Winch, MD, MPH
Johns Hopkins Bloomberg School of Public Health

Princeton Survey Research Associates International (PSRAI), a national polling firm, will conduct this survey for us, with data collection provided by Scantron. If you have any questions, you may contact XXXXXXXXXXXX of PSRAI at XXXXXXXXXXXXXXX@psrai.com. You may also contact Project Director XXXXXXXXXXXX at (703) XXX-XXXX or XXXXXXXXXXX@gmu.edu at George Mason University.

