Gasping for Support

Implementation of Tougher Air Quality Standards Will Require New Funds for State Agencies

Center for
EFFECTIVE
GOVERNMENT

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About the Center for Effective Government

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EXECUTIVE SUMMARY

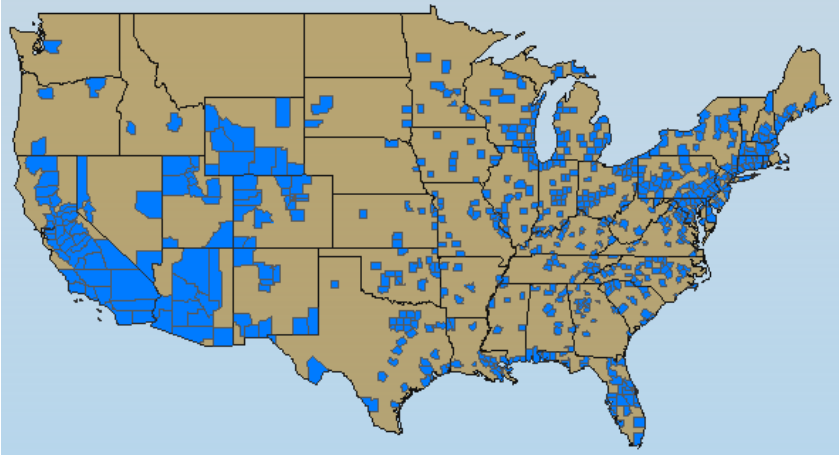
Although we have been making progress in reducing air pollution since Congress passed the Clean Air Act in 1970, there are still far too many days when pollution levels are high enough in many parts of the country that the U.S. Environmental Protection Agency (EPA) declares them "red alert" or "orange alert" days to warn the public that breathing the air could hurt their health.

Continued advances in science have shown that even low levels of pollutants like ozone and small particles can damage our health. They can cause permanent respiratory system damage, hurt people with heart disease and chronic obstructive pulmonary disease (COPD), and cause severe, sometimes life-threatening asthma attacks in people with the disease. Breathing dirty air can also increase cancer risks and result in early death.

These dangers can affect anyone, but certain groups are especially vulnerable, including children, the elderly, those with lung and heart disease, the poor, certain minorities, and pregnant women.

While all air pollutants pose health risks, this report and our related interactive map focus on ground-level ozone because it is so dangerous to human health and is one of the most common forms of air pollution in the United States. Ozone pollution will worsen as average temperatures rise because of climate change, bringing more health problems, deaths, and increased costs to the economy.

Readers can use our interactive map to search for county-level data about the number of people protected by different ozone standards, two of which the EPA is currently considering as it finalizes its revisions to the national air quality standard for ozone. The map includes the number of people in certain vulnerable groups – children, people over the age of 65, people with asthma, COPD, and heart disease, and people living in poverty – who would be protected at different ozone levels.



KEY FINDINGS

- An ozone standard of 60 parts per billion (ppb) would have vast benefits. Reducing ozone pollution to this level would mean 206 million Americans would have cleaner, healthier air to breathe; 106 million more people would be protected compared to the current allowable level of ozone.

  Compared to current allowable levels, an ozone standard of 60 ppb would prevent up to 5,800 premature deaths, 2,100 hospital admissions for breathing problems, 6,600 asthma-related visits to the emergency room, and 1.7 million asthma attacks in children every year. This would save between $12-20 billion in health costs annually by 2025. And these estimates do not even include the additional $2.1-3.6 billion in benefits from areas in California, which would have longer to meet the stricter standard.

- Residents of Florida, California, New York, Pennsylvania, Massachusetts, North Carolina, Texas, Illinois, Indiana, Ohio, and Georgia would benefit the most from a fully implemented ozone standard set at 60 ppb.

- Over the last ten years, federal assistance to state air quality programs has fallen by 21 percent, in inflation-adjusted dollars. This is a serious problem because states are primarily responsible for developing, implementing, and enforcing clean air programs, and they have been unwilling or unable to compensate for the significant drop in federal support. States need substantially more funding, not less, to protect their residents from ozone and other air pollutants.

RECOMMENDATIONS

- EPA can protect an additional 106 million Americans by adopting the 60 parts per billion ozone standard, which current science indicates is necessary to adequately protect public health.

- Congress should fund state and local air quality agencies at the 60 percent match level allowed by the Clean Air Act. This would provide over $600 million more per year for states to develop and implement programs necessary to meet air quality standards, expand their air pollution monitoring networks, tackle climate change, and step up enforcement of air quality requirements.

- Congress can also prioritize cleaner air for all Americans by increasing funding to the EPA. Beyond allowing the agency to increase its financial support to state air quality agencies, these resources would allow EPA to provide more technical assistance and conduct essential research into the health impacts of air pollution.

Protecting our health cannot be done on the cheap, and the costs of inaction are clear. Failing to make investments in stricter air quality standards and advanced pollution control technologies now will mean higher health costs, more pain and suffering, and more illnesses and deaths from air pollution later. These are things that we can prevent by taking a smart, proactive approach to cleaning up our air. We owe it to everyone suffering from asthma, COPD, and heart disease, as well as future generations of Americans, to take action now.

> ***"EPA can protect an additional 106 million Americans by adopting the 60 parts per billion ozone standard.***

THE IMPACT OF DIRTY AIR ON HUMAN HEALTH

Polluting our environment impacts the health of our nation, and air pollution has some of the most devastating effects on the American people. Some of these effects are immediately apparent: a child suffering a severe asthma attack or an adult with emphysema being rushed to the emergency room because they can't breathe. Other impacts are longer-term but no less insidious, including certain types of cancer and impaired brain function.

Since passage of the Clean Air Act almost 45 years ago, the United States has made substantial progress in reducing some of the most widespread pollutants in our air. However, continuing scientific advances have shown that the levels of air pollutants we previously believed were safe for human health are, in fact, dangerous.

Children with asthma are especially vulnerable to the harmful effects of breathing dirty air.

Currently allowable levels of ozone (sometimes referred to as smog), for example, can cause serious damage to our health. Even relatively low levels of ozone can result in serious, permanent lung damage in children and worsen the condition of those with heart and lung disease, resulting in early death. The more recently recognized health impacts of ozone pollution create an imperative for a tougher clean air standard.

Moreover, the American Lung Association estimates that more than 138 million people – four of every ten Americans – live in areas with ozone or particle pollution levels that *exceed* current national air quality standards.[1] Given the emerging scientific consensus that the current ozone standard is too weak to adequately protect the public's health,[2] this means the number of people breathing unhealthy air is substantially higher. The U.S. Environmental Protection Agency (EPA) estimates that breathing ozone and small particle pollution causes hundreds of thousands of illnesses each year[3,4] and tens of thousands of "excess" deaths annually.[5,6]

The EPA estimates that exposure to dirty air has increased the lifetime risk of cancer for the entire U.S. population to one in 100,000 (at 2005 pollution levels, the data used in the agency's analysis). About 14 million people lived in areas that were so polluted that their cancer risk is one in 10,000. EPA wants to reduce the cancer risk to *one in one million* for the general public.[7]

While breathing dirty air is a health risk for everyone, certain groups – children, the elderly, and people with lung and heart disease – are especially vulnerable to its effects. And recent research shows that air pollution can also harm developing fetuses, people with diabetes, and individuals struggling with obesity. African Americans, Puerto Ricans, and Native Americans/Alaskan Natives have higher rates of asthma than the general population and so are more vulnerable to air pollution. Conditions associated with poverty also appear to exacerbate the effects of air pollution.

MICHAEL'S STORY

Clean air matters to Michael, my 11-year-old son and me. Michael was diagnosed with asthma two years ago and it's been an uphill battle ever since. While other moms spend their Saturdays cheering on their son at a soccer game, I've spent countless weekends the last two years in emergency rooms. Although he keeps his inhaler with him at all times, external conditions, such as humidity, frigid weather and air pollution, can trigger a life-threatening asthma attack for Michael. Any mother with a sick child can agree that there is no worse feeling than watching your child suffer.[8]

OZONE LEVELS AND HUMAN HEALTH

Ozone is one of the six most widespread air pollutants. In the upper atmosphere, it protects us from the sun's ultraviolet radiation, but at ground level, it is harmful to human health.

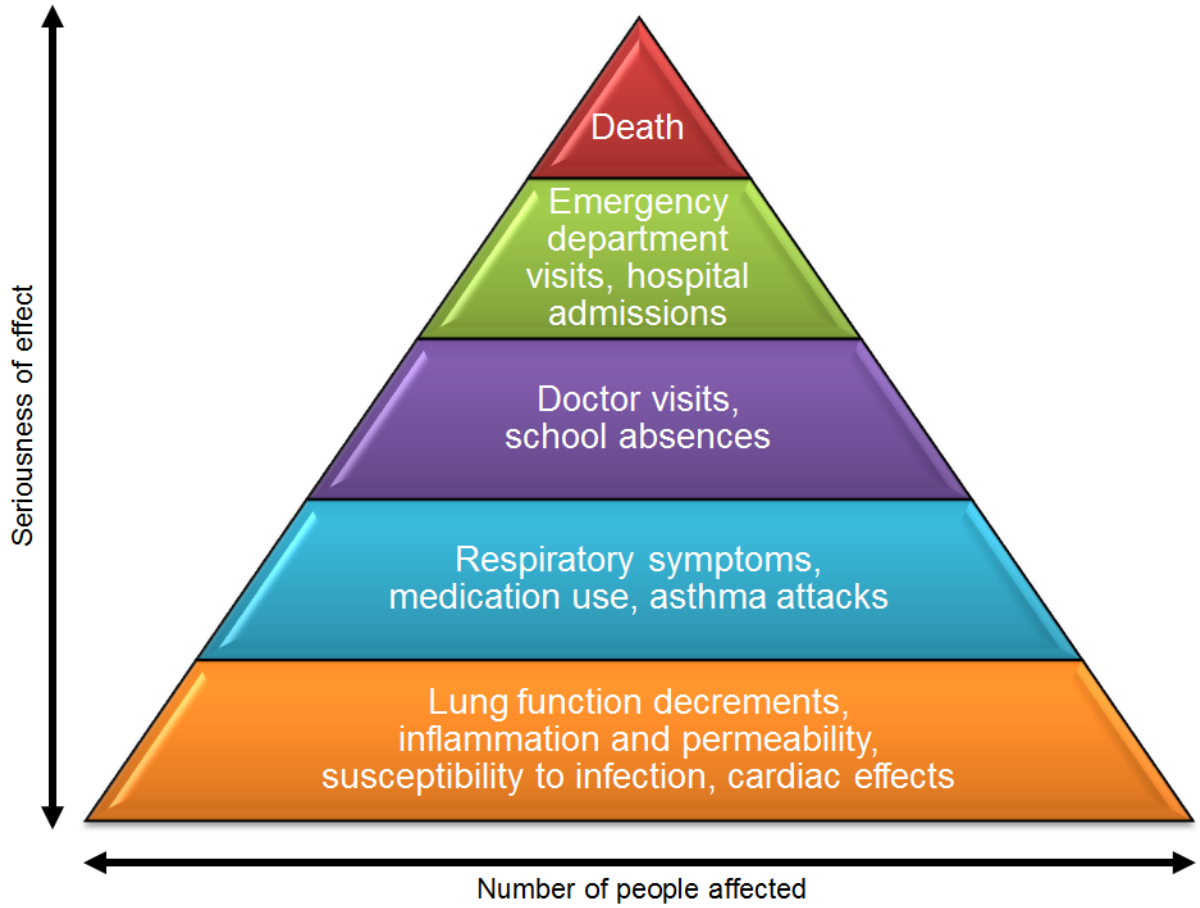
Ozone develops from gases that are produced when fossil fuels are burned or when some chemicals evaporate. These include nitrogen oxides, hydrocarbons known as volatile organic compounds, and carbon monoxide.[9] When these gases come in contact with sunlight and heat, they react and form ozone. Places with lots of sunshine, vehicles, and industrial pollution have the highest amounts of ozone. Because the reaction takes place high up in the atmosphere, ozone levels are often higher downwind of the sources of the original gases, and winds can carry ozone far from where it is produced. Dirty air cannot be geographically contained.

Breathing ozone causes inflammation in the respiratory system, which results in a kind of "sunburn" in the lungs. Especially during the summer months, ozone is frequently found across the nation at high levels. The potential health effects of breathing ozone include:

- Shortness of breath and chest pain;
- Wheezing and coughing;
- Inflammation of the lining of the lungs;
- Increased susceptibility to respiratory infections;
- Increased risk of asthma attacks;
- Increased need for medical treatment and hospitalization for people with lung diseases, such as asthma or chronic obstructive pulmonary disease (or COPD, which includes emphysema and chronic bronchitis), and for people with heart disease; and
- Premature death.

In 2011, the Union of Concerned Scientists[10] warned that by 2020, rising temperatures due to global warming would increase ozone levels, resulting in almost 3 million more occurrences of asthma attacks, shortness of breath, coughing, wheezing, and chest tightness; 1,200 additional asthma-related emergency room visits; about 3,700 additional respiratory-related hospital admissions for the elderly and about 1,400 more such admissions for infants; and about 500 additional early deaths annually. The estimated annual costs of the additional health problems brought on by higher ozone levels were approximately $6 billion (in today's dollars).

The EPA estimates that if emissions of global warming pollution continue at current levels until 2050, the number of unhealthy ozone pollution days (based on the current standard) would increase by 68 percent in the 50 largest eastern U.S. cities.[11]



Source: EPA

Five groups of people are especially vulnerable to ozone's effects:

- Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Children regularly exposed to high levels of ozone may face reduced lung capacity in adulthood, which can affect their ability to breathe, and they may have a greater risk of developing asthma. Reduced lung function increases the risk of respiratory disease, cardiovascular disease, and premature death later in life. Children with asthma (asthma occurs at higher rates in children than in adults) are at special risk.

- Individuals over 65 years old are also at risk since aging reduces breathing capacity and the strength of the immune system. Ozone can further reduce the ability of older adults to breathe and fight infections. Older people have significantly higher rates of lung and heart disease than younger people, which increase their risk of suffering health effects from breathing ozone.

- For individuals with existing lung diseases, such as asthma and chronic obstructive pulmonary disease, ozone aggravates their condition, causing them to use more medication and seek medical treatment, as well as forcing more hospitalizations. Asthma disproportionately affects African Americans, Puerto Ricans, and Native Americans/Alaska Natives.

- For those with heart disease, exposure to high ozone levels can increase the risk of abnormal heart beats, which in turn increases the risk of stroke and early death. High ozone levels can cause heart attacks in people without heart disease, too.

- People who work or exercise outdoors for long periods of time when ozone pollution is high may also be at risk since breathing harder during work or exercise substantially increases the amount of inhaled ozone and the damage it does.

Studies have also found that the effects of ozone are greater in children living in poverty. This includes a greater risk of asthma-related hospital admissions when exposed to high ozone levels over the long term.[12] Possible factors contributing to this increased risk include the fact that high levels of ozone may worsen the effect of asthma triggers, such as cockroach and rodent droppings found in poor quality housing, as well as dust mites. In addition, poor nutrition may lower the ability to fend off breathing difficulties caused by ozone. Lack of access to health care, increased stress due to crime

and other community problems, and long-term exposure to higher levels of air pollution are also potential contributing factors to the increased risk of health impacts from ozone for disadvantaged communities.

Although ozone is just one of six common air pollutants, because of its impact on public health, this report focuses specifically on efforts to regulate and reduce ozone emissions.

Nationally, we've made progress in reducing ozone pollution over the past three decades, with average ozone levels dropping by one-third between 1980 and 2013.[13] However, about 129 million people today live in an area with ozone levels above current (too weak) allowable levels.[14]

> ***"Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure.***

THE CLEAN AIR STANDARDS WE NEED TO PROTECT HUMAN HEALTH

The Clean Air Act of 1970 was enacted to reduce dangerous air pollution in order to protect human health and the environment. The act required the newly formed EPA to establish two sets of air quality standards. The "primary standards" are set at a level that will protect public health, with an "adequate margin of safety" to account for uncertainties and provide a reasonable degree of protection against hazards that research has not yet identified.[15] These standards were clearly intended to protect especially vulnerable groups (individuals with lung disease, children, and the elderly). In other words, public health standards were supposed to err on the side of caution to ensure that even Americans with special health problems are protected. The EPA was also charged with setting "secondary standards" to protect soil, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate from air pollution.

Importantly, when setting clean air standards, EPA is *not* to consider the costs to business of complying with requirements; health concerns are the sole basis for these standards. This part of the law was reaffirmed by the U.S. Supreme Court in 2001.[16] However, costs are considered in developing the air pollution control strategies needed to meet the standards.

The Clean Air Act requires the EPA to review existing national air quality standards every five years to determine whether new scientific evidence demands a new limit on pollution to protect public health and provide the required margin of safety.[17] EPA's scientists and professional staff engage in a rigorous multi-year process, compiling and analyzing hundreds of scientific studies and assessing the public health implications from those studies in preparation for the five-year review. Their findings undergo an in-depth review by a panel of independent scientific experts. After this extensive process, the EPA administrator then decides whether or not to revise the air quality standard.

The Clean Air Act requires the EPA to review existing national air quality standards every five years to determine whether new scientific evidence demands a new limit on pollution to protect public health and provide the required margin of safety.

THE NATIONAL OZONE STANDARD: HOW MUCH IS ALLOWED?

Air quality standards consist of the amount of a pollutant allowable in the air over a certain amount of time (called the "averaging time"). The national air quality standard for ozone has been revised three times since it was first established in 1971.[18] The most recent revision was completed in 2008, when the Bush administration set the allowable pollution level at 75 parts per billion (ppb). At that time, EPA's scientific advisory committee determined that the acceptable range for ozone in the air was lower, between 60 and 70 ppb.[19]

When the Obama administration took office in 2009, it characterized the Bush administration ozone standard as legally indefensible[20] and initiated an expedited review of that standard. By early 2010, EPA proposed a revised standard in the range suggested by the science advisors,[21] but the White House Office of Management and Budget, responding to pressure from business lobbyists and trade associations,[22] stopped the accelerated review in September 2011.[23]

Environmental groups sued and with a court-ordered deadline looming, EPA announced in November 2014 that it would propose to reduce the allowable ozone level to between 65 and 70 ppb and that it would take comments on a standard of 60 ppb.[24] (EPA's science advisors have indicated that a standard set at 70 ppb will not provide the margin of safety required by the Clean Air Act.[25]) EPA's Children's Health Protection Advisory Committee, and public health, environmental, and public interest organizations (including the Center for Effective Government), have urged the EPA to set the revised standard at the 60 ppb level to ensure the health of all Americans is protected.[26,27] Under the court order, EPA must finalize its review of the ozone standard by Oct. 1, 2015.[28]

WHO WILL BENEFIT FROM TOUGHER OZONE STANDARDS?

Using population and disease prevalence statistics and air quality monitoring data collected by the EPA, staff at the Center for Effective Government estimated the number of individuals protected by four different ozone limits. The results are displayed in Table 1. **Results for individual states and counties can be found on an interactive map at http://arcg.is/1bjzc7q.**

Our analysis only included areas with air quality monitoring information and identified counties with levels above each standard based on a three-year average of ozone pollution, so these estimates are conservative.[29]

The first column on the table below shows the individuals that live in counties *with ozone levels above the current standard of 75 ppb.* Almost 100 million people currently breathe unacceptably dirty air, including 2.3 million children with asthma; 36.6 million people in areas with ozone above this level are children or elderly.

Table 1. Individuals and Groups Protected Under Four Ozone Standards

	Current Standard	Proposed Standards		Safe Standard
	75 ppb	**70 ppb**	**65 ppb**	**60 ppb**
Total Population:	99,669,713	148,914,758	184,921,364	206,201,394
Total Adult Population:	74,940,976	112,493,423	140,001,988	156,493,726
with Asthma	6,698,951	10,142,825	12,630,835	14,082,637
with COPD	4,527,204	6,965,792	8,828,638	9,950,258
with Coronary Heart Disease	4,871,162	7,312,072	9,100,137	10,172,100
Total Population under 18:	24,728,737	36,421,335	44,919,376	49,707,668
with Asthma	2,277,971	3,338,268	4,069,518	4,474,386
Black Children	635,189	897,507	1,068,207	1,172,666
Total Elderly Population:	11,850,474	18,226,401	23,040,540	26,218,725
Population Living in Poverty:	15,176,284	22,575,356	27,630,336	30,897,912

Data sources: Environmental Protection Agency, Centers for Disease Control and Prevention, American Community Survey

Center for Effective Government

AIR POLLUTION AND LUNG DISEASE: A PERSONAL STORY

I am 63 and was diagnosed 4 years ago with COPD. I have never smoked, nor worked in an environment that would cause lung disease. For the past 22 years, I've lived in a county that has consistently earned an "F" on its annual air-quality report cards…..

It's difficult to live a normal life with COPD. Days go by when you're rather lifeless and tired when you haven't done anything. There are also days when you suffer with exacerbations and can't catch your breath. You live with a rescue inhaler in your home, car, purse and everywhere you go. In addition, the medications are grossly expensive.[30]

A 70 ppb standard, one of two that the EPA is considering, would protect the health of 49.2 million more people than the current standard. Overall, 11.7 million more children, including 1.1 million more children with asthma, and 6.4 million more elderly would see improved air quality.

A 65 ppb standard, which EPA is also considering, would protect the health of 85.3 million more people than the current standard. At this level, 20.2 million more children, including 1.8 million children with asthma, and 11.2 million more elderly would have their air quality improved.

EPA has calculated that reducing the acceptable level of ozone from 75 ppb to between 65 and 70 ppb by 2025 will prevent:

- 880 to 3,100 premature deaths;
- 300,000 to 910,000 asthma attacks in children;
- 360 to 1,100 hospital admissions for respiratory problems; and
- 1,100 to 3,500 asthma-related emergency room visits each year.

These estimates exclude health benefits in California. Due to its severe ozone problems, the state will have an extra seven to 12 years to meet the new standard. Once areas in California meet a standard between 65 and 70 ppb, an additional 325 to 790 premature deaths, 97,000 to 210,000 asthma attacks in children, 120 to 260 hospital admissions for respiratory problems, and 320 to 690 more asthma-related emergency department visits will be avoided each year.

Investing in clean air is not only the right thing to do, it also makes economic sense. For instance, this somewhat stricter standard will save between $2 billion and $11 billion in health costs each year, with an additional $660 million to $2.4 billion in annual health savings once California meets the new standard.

On an individual level, the EPA estimates that avoiding a hospital admission due to air pollution exposure saves between $16,000 and $44,000 per admission (depending on the medical condition), and avoiding an asthma-related emergency room visit saves $440.[31] And while these costs include lost wages as well as direct medical costs, they don't consider the value of avoiding the pain and suffering related to these health impacts.

A SCIENCE-BASED OZONE STANDARD WOULD PROTECT THE MOST AMERICANS

While the modest strengthening EPA is proposing for the ozone standard would result in a significant reduction in health problems and health care costs in areas most affected by ozone pollution, an ozone level of 60 ppb is required to adequately protect people from respiratory damage and other related illnesses.

A MOTHER'S STORY

Both my daughters have severe asthma. I've had to call 9-1-1 so many times when they couldn't breathe that when the fire trucks came to school for a special event, the paramedics knew their names.

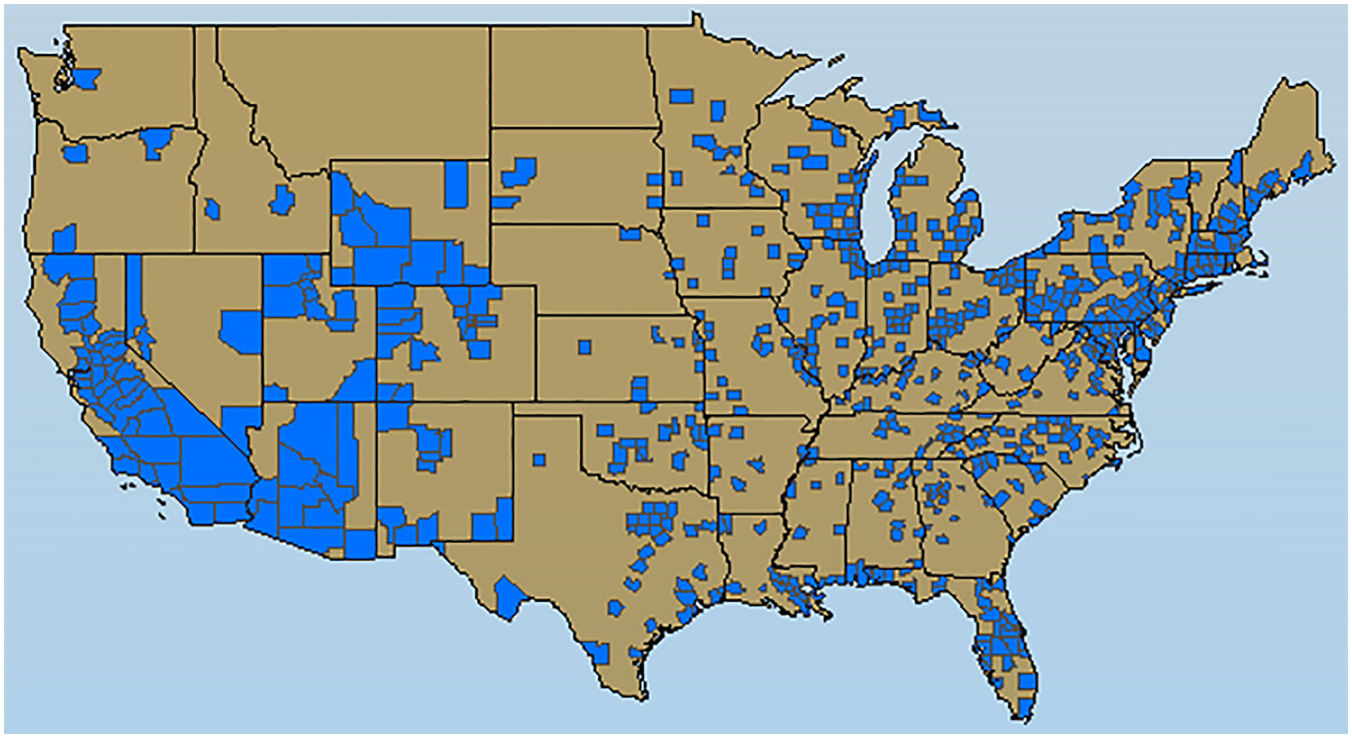
We live just outside a big city with all the air pollution you'd expect from traffic-related car exhaust and industrial smokestacks. I can do my best to control anything that might trigger the girls' asthma inside our home, but I can't control the quality of the air they breathe outside.

As a concerned mother, I believe it is time for our representatives at both the state and national level to support legislation to clean up the air we breathe. It is our right to breathe healthy air.

As Table 1 above shows, a safe ozone standard would improve air quality for more than twice as many people as the current standard attempts to help: almost two-thirds of the American people – 206 million – would see the ozone in the air they breathe reduced over time. Of the 106 million new people covered by a health-protective ozone standard, over 14 million elderly people and 25 million children, including 2.2 million asthmatic children, would have cleaner air to breathe.

EPA estimates that when compared to the current ozone level, a 60 ppb standard would prevent up to 5,800 premature deaths, 2,100 hospital admissions for respiratory problems, 6,600 asthma-related emergency room visits, and 1.7 million asthma attacks in children each year, among other benefits. (See Table 2 below.) EPA calculates that avoiding these health effects would save between $12 billion and $20 billion each year. Achieving the 60 ppb standard in California would prevent an additional 1,050 to 1,190 premature deaths, 390 hospital admissions for breathing problems, 1,000 emergency room visits, and 310,000 asthma attacks in children each year, among other benefits. These additional health benefits amount to added savings of $2.1 billion to $3.6 billion each year.[32]

206 Million People in the U.S. Would Breathe Cleaner Air Under an Ozone Standard of 60 ppb



Only 100 Million People in the U.S. Would Breathe Cleaner Air if the Current Ozone Standard of 75 ppb Was Met

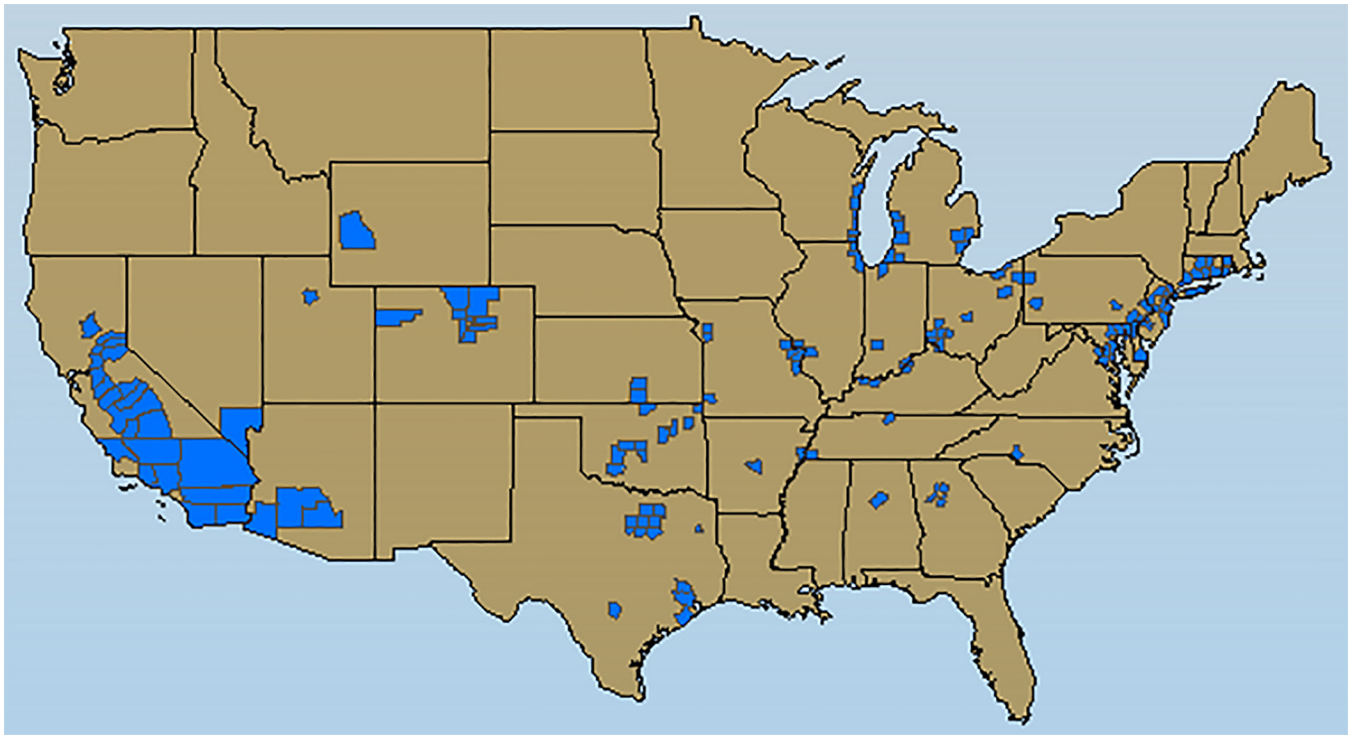


Table 2. Health Effects Avoided Nationally Under Alternative Ozone Standards in 2025*

	70 ppb	65 ppb	60 ppb
Deaths, both short- and long-term	880 to 1,020	2,730 to 3,100	5,000 to 5,800
equivalent implications for California post-2025	*325 to 370*	*700 to 790*	*1,050 to 1,190*
Hospital Admissions for Breathing Difficulties, ages 65+	360	1,100	2,100
	120	*260*	*390*
Emergency Room Visits for Asthma, all ages	1,100	3,500	6,600
	320	*690*	*1,000*
Asthma Attacks, ages 6-18	300,000	910,000	1,700,000
	97,000	*210,000*	*310,000*

*Excludes California effects, which are listed in italics.

Source: Environmental Protection Agency Center for Effective Government

STATES WITH THE GREATEST BENEFITS FROM A SAFE OZONE STANDARD (60 PPB)

Weather conditions, population density, and industry emissions vary widely across the United States, so ozone levels and the number of people breathing dirty air also varies dramatically. Florida, California, New York, Massachusetts, North Carolina, Texas, Indiana, Ohio, and Pennsylvania are among the states that would see the largest increases in the number of vulnerable populations protected by adoption of a 60 ppb standard, as the figures below show.

However, for the potential benefits of a health-protective ozone standard to actually reach the residents of these states, state and local governments will have to achieve the new standard.

Figure 1

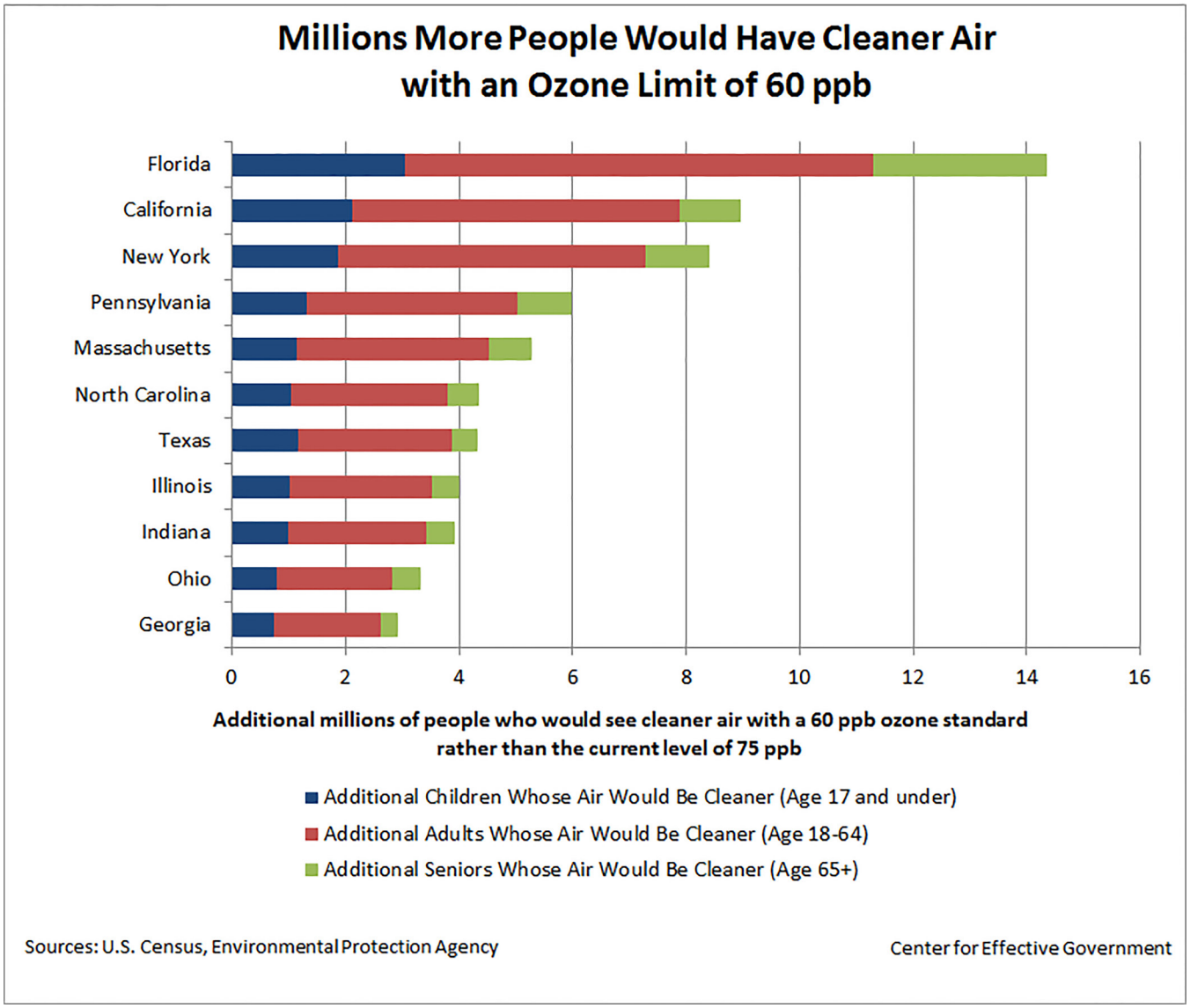

Millions More People Would Have Cleaner Air with an Ozone Limit of 60 ppb
Florida
California
New York
Pennsylvania
Massachusetts
North Carolina
Texas
Illinois
Indiana
Ohio
Georgia
0
2
4
6
8
10
12
14
16
Additional millions of people who would see cleaner air with a 60 ppb ozone standard rather than the current level of 75 ppb
Additional Children Whose Air Would Be Cleaner (Age 17 and under)
Additional Adults Whose Air Would Be Cleaner (Age 18-64)
Additional Seniors Whose Air Would Be Cleaner (Age 65+)
Sources: U.S. Census, Environmental Protection Agency
Center for Effective Government

Figure 2

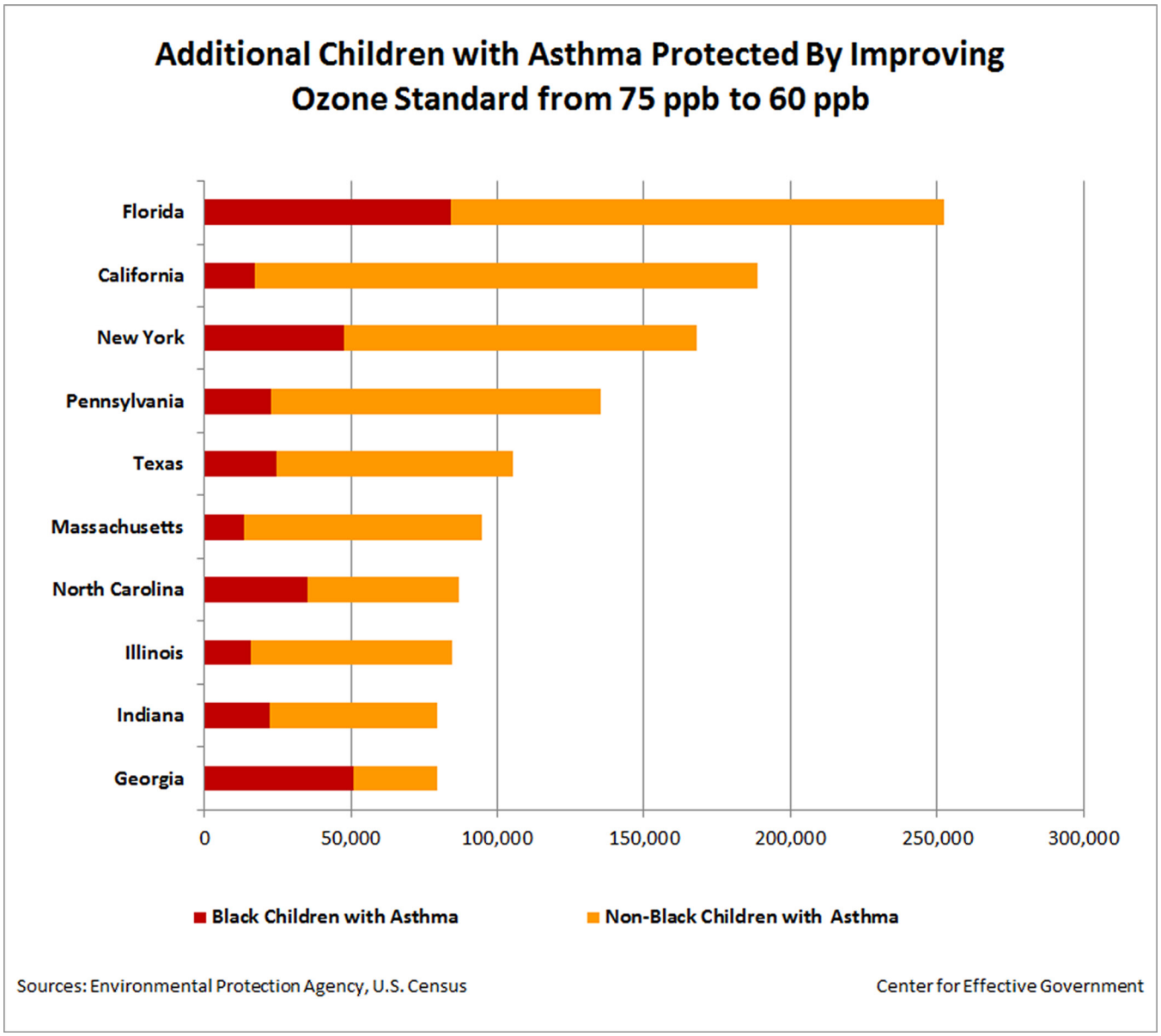
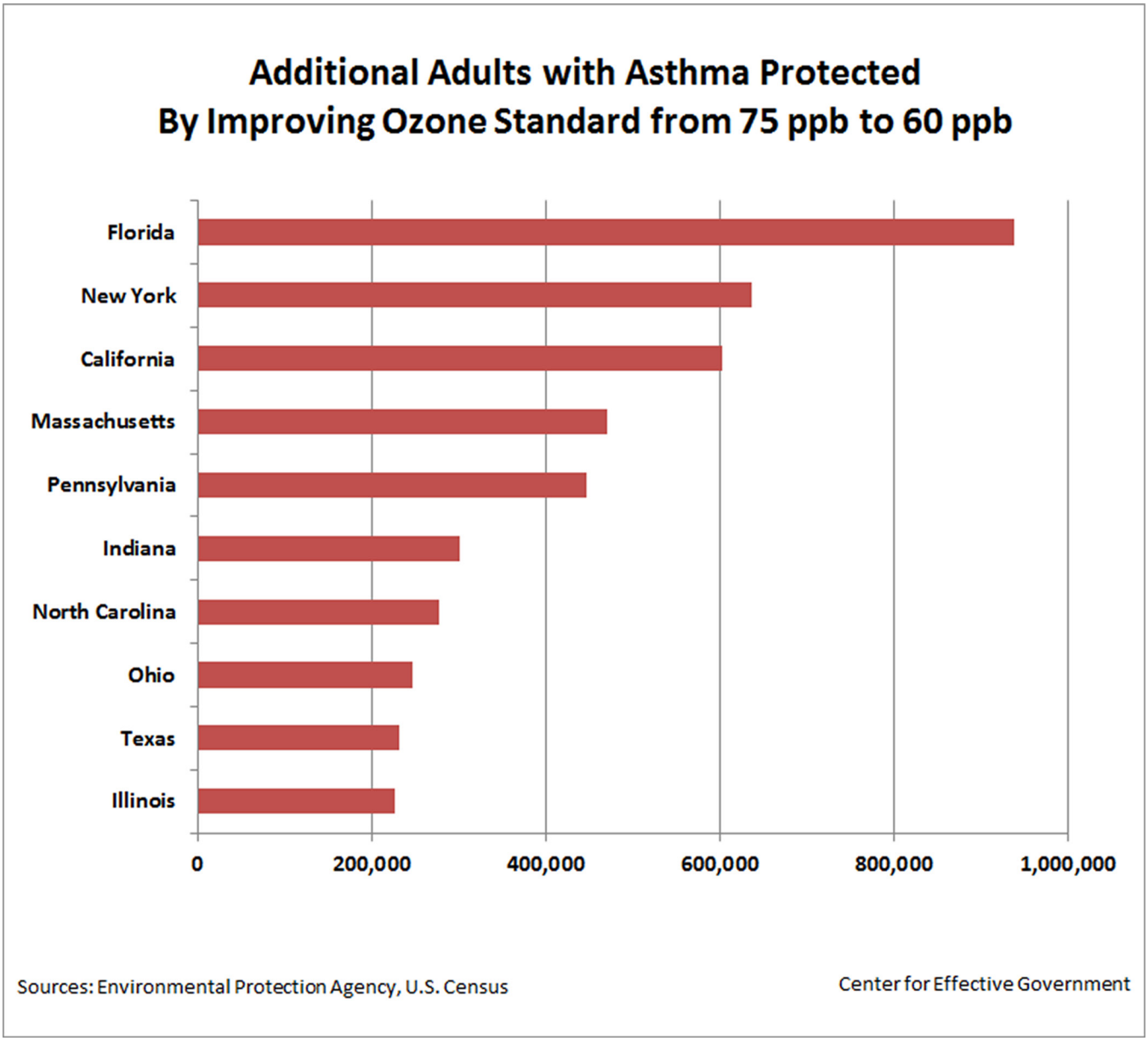

Additional Children with Asthma Protected By Improving Ozone Standard from 75 ppb to 60 ppb
Florida
California
New York
Pennsylvania
Texas
Massachusetts
North Carolina
Illinois
Indiana
Georgia
0
50,000
100,000
150,000
200,000
250,000
300,000
Black Children with Asthma
Non-Black Children with Asthma
Sources: Environmental Protection Agency, U.S. Census
Center for Effective Government

Figure 3


Additional Adults with Asthma Protected
By Improving Ozone Standard from 75 ppb to 60 ppb
Florida
New York
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Massachusetts
Pennsylvania
Indiana
North Carolina
Ohio
Texas
Illinois
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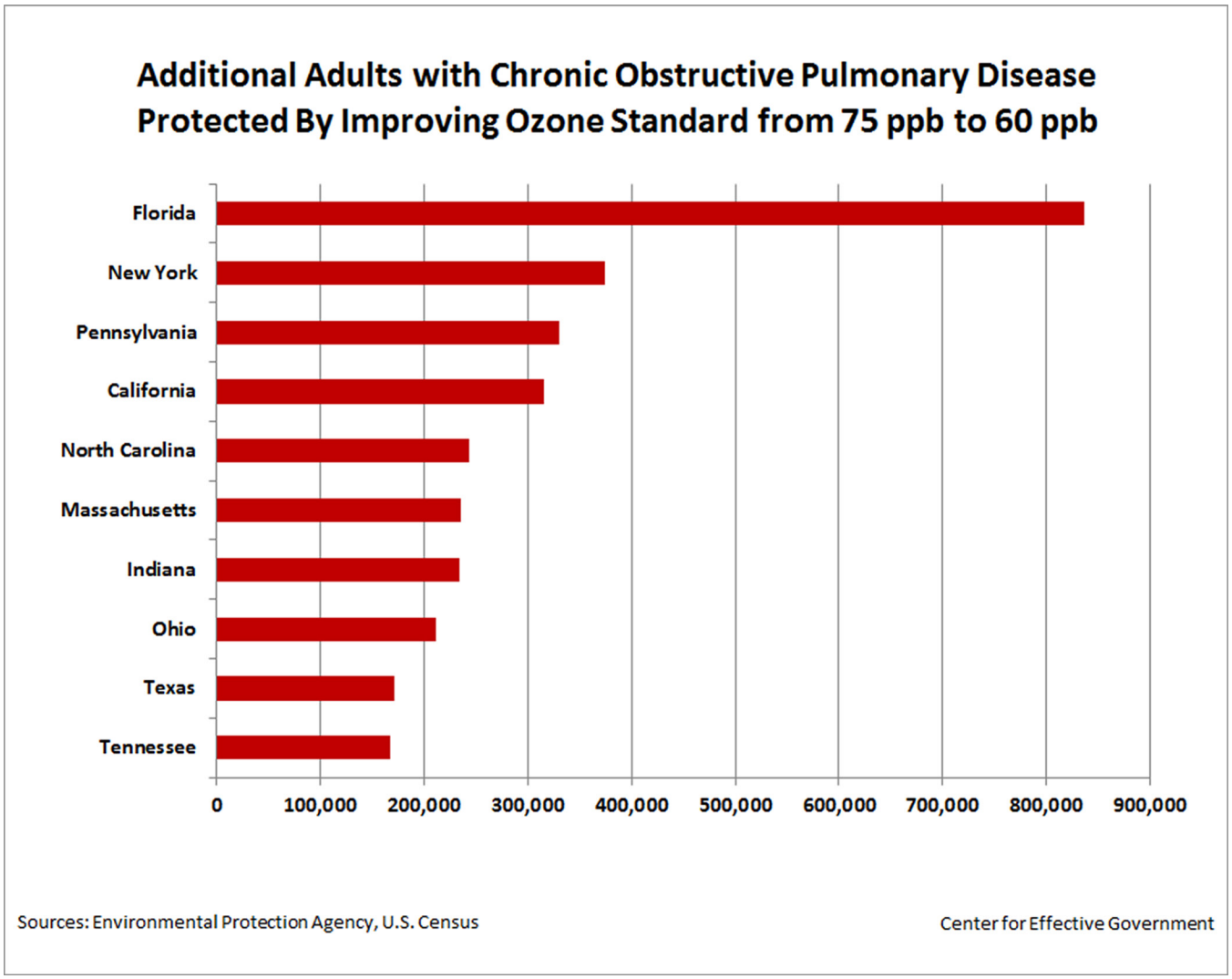
200,000
400,000
600,000
800,000
1,000,000
Sources: Environmental Protection Agency, U.S. Census
Center for Effective Government

Figure 4


Additional Adults with Chronic Obstructive Pulmonary Disease Protected By Improving Ozone Standard from 75 ppb to 60 ppb
Florida
New York
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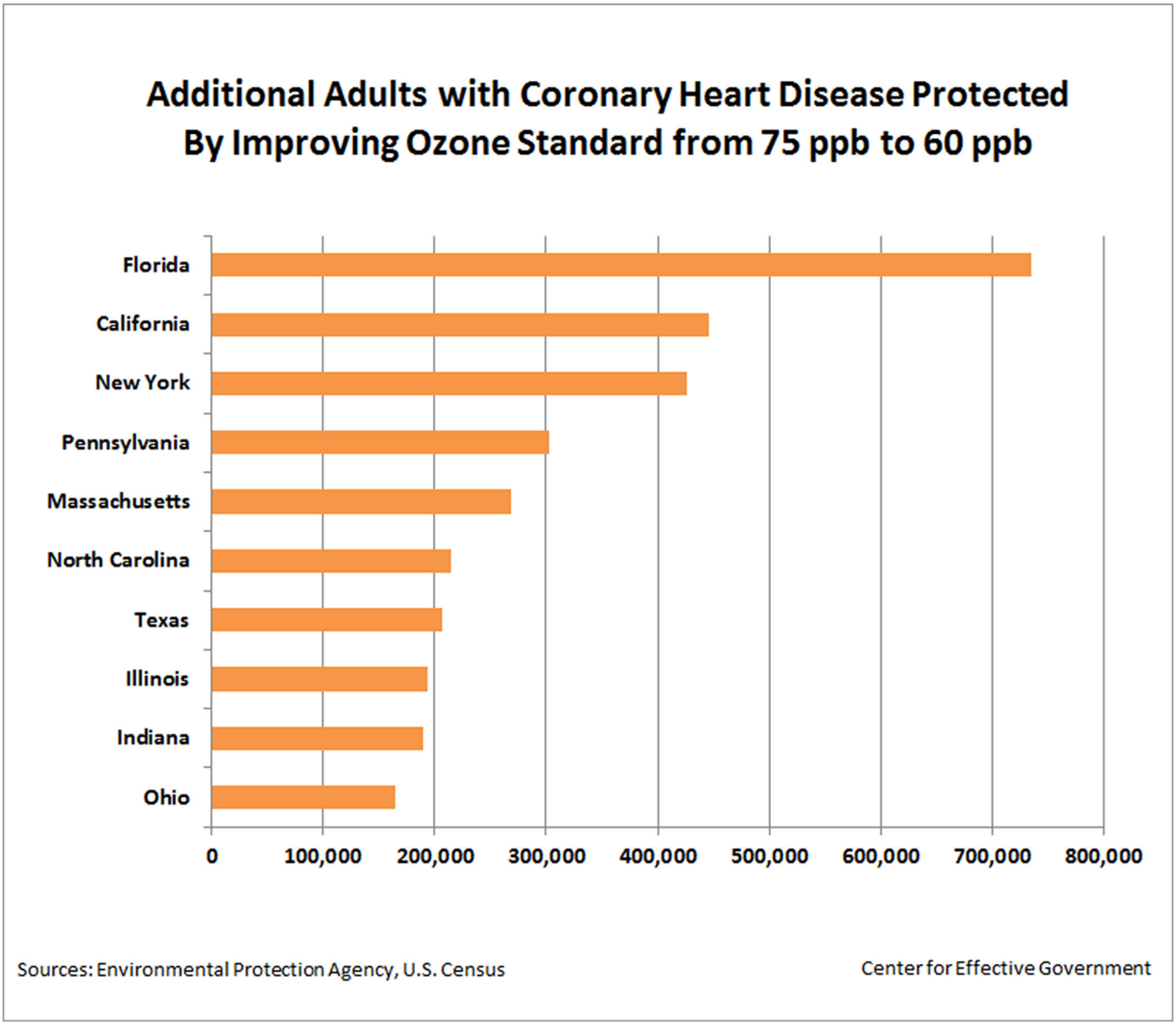
North Carolina
Massachusetts
Indiana
Ohio
Texas
Tennessee
0
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
900,000
Sources: Environmental Protection Agency, U.S. Census
Center for Effective Government

Figure 5


Additional Adults with Coronary Heart Disease Protected
By Improving Ozone Standard from 75 ppb to 60 ppb
Florida
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Massachusetts
North Carolina
Texas
Illinois
Indiana
Ohio
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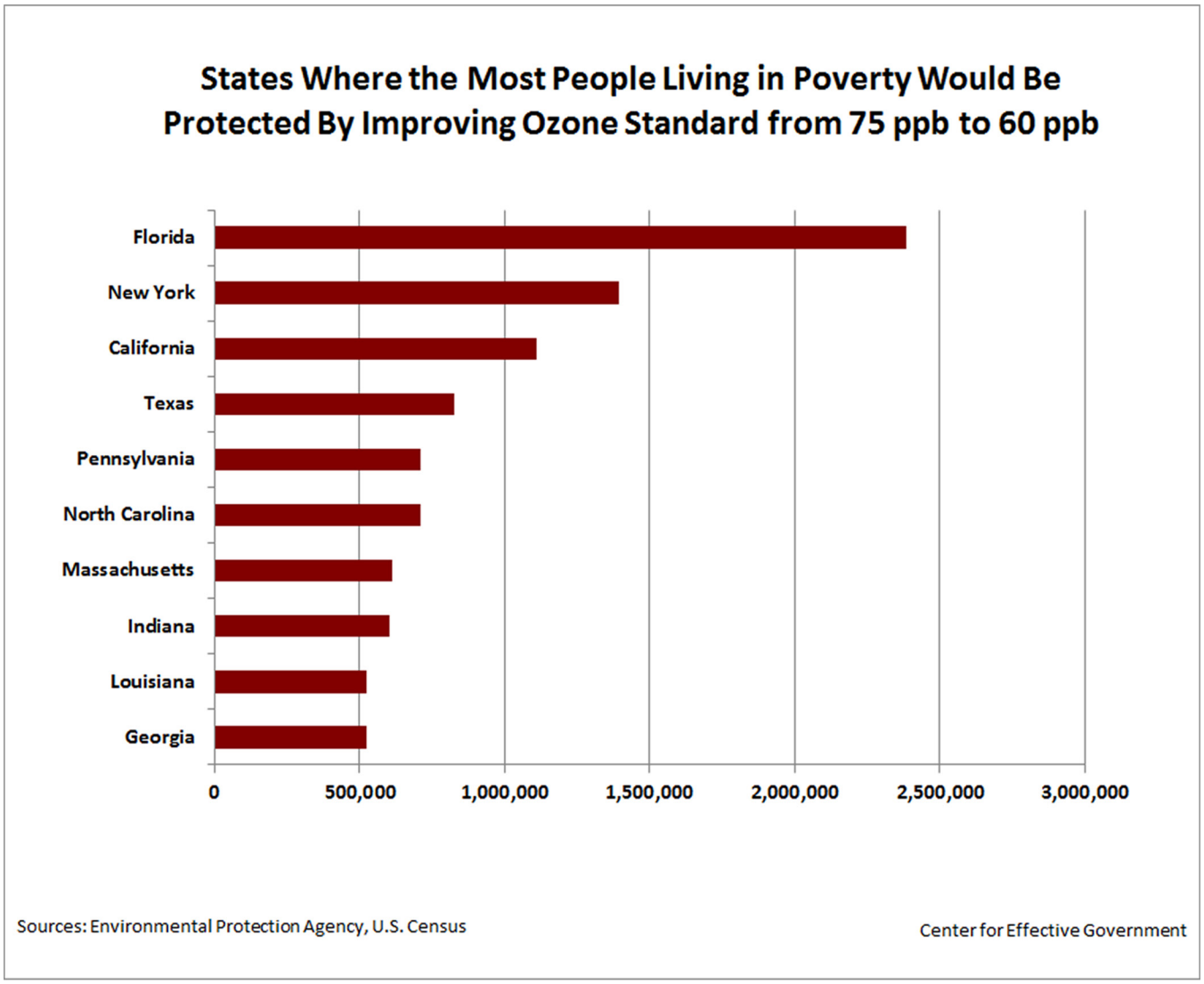
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
Sources: Environmental Protection Agency, U.S. Census
Center for Effective Government

Figure 6


States Where the Most People Living in Poverty Would Be Protected By Improving Ozone Standard from 75 ppb to 60 ppb
Florida
New York
California
Texas
Pennsylvania
North Carolina
Massachusetts
Indiana
Louisiana
Georgia
0
500,000
1,000,000
1,500,000
2,000,000
2,500,000
3,000,000
Sources: Environmental Protection Agency, U.S. Census
Center for Effective Government

THE ROLE OF STATE AND LOCAL GOVERNMENTS IN ENSURING CLEAN AIR

The federal Clean Air Act gives primary responsibility for implementing our clean air programs to state and local air pollution control agencies.[33] These agencies are responsible for: measuring and analyzing the amount of pollution in the air; compiling information on the specific sources of air pollution emissions in the state/city, which can range from heavy industry to small industrial operations to car and truck traffic; and conducting complex modeling to develop a plan to ensure all these entities reduce their emissions enough for the state and/or locality to meet and maintain air quality standards.

State and local air pollution control agencies adopt rules on emissions for the various air pollution sources, which require a public comment process, and they issue permits to sources that limit the amount of pollution each can emit. They also inspect industrial facilities to ensure they are complying with air quality rules and laws.

As new research shows the need for stronger standards, the demands on state and local agencies have significantly increased. State and local air pollution control agencies are still developing programs to meet the revised national air quality standard for particulate matter (particle pollution) adopted in 2012, as well as revised standards on nitrogen dioxide and sulfur dioxide adopted in 2010. Now they will need to implement a new ozone air quality standard, likely to be adopted in 2015.

In addition, these agencies will need to implement programs to limit emissions of carbon dioxide from power plants and continue to reduce emissions of toxic air pollution that cause cancer and other serious diseases. The rapid expansion of hydraulic fracturing operations to release oil and natural gas ("fracking"), which produces substantial amounts of air pollution in Pennsylvania, North Dakota, Texas, Arkansas, Oklahoma, Ohio, Colorado, Wyoming, and West Virginia (among others), also requires the attention of state and local air pollution control agencies.

STATE AGENCIES ENFORCE CLEAN AIR STANDARDS

The U.S. Environmental Protection Agency (EPA) relies on multi-state, state-level, and local-level environmental agencies to carry out its mission of protecting public health and the environment. Grants to states, localities, and tribal authorities are used to provide resources to a variety of programs, categorized by function. The categorical grant for state and local air quality management provides crucial foundational funding for their efforts to control air pollution emissions and maintain air quality standards.

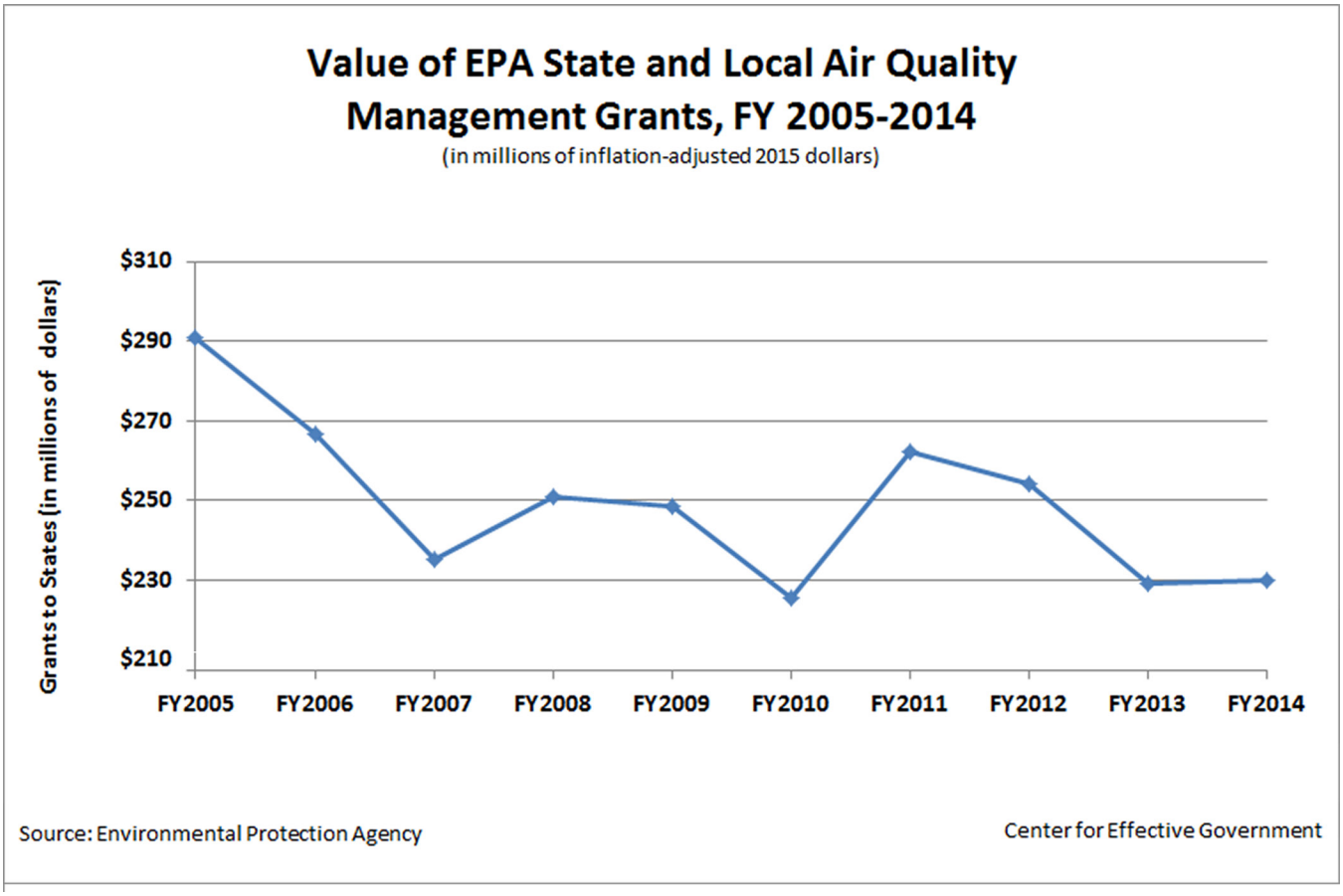
The Clean Air Act provides two separate funding sources for state and local air quality programs. Funds provided under Section 103 of the law are funded completely by the federal government with no state or local match required. These funds are to be used by EPA to fund research, experiments, surveying, and training related to air quality. This money typically provides funding for monitoring technology used to measure current air quality.

Section 105 of the Clean Air Act authorizes EPA to provide states and localities with funding that supports the core functions of these agencies. Section 105 funding is partially state-funded and partially federally funded. The Clean Air Act allows the federal government provide up to 60 percent of the cost of Section 105 activities to a state, assuming the state contributes the remaining 40 percent. Unfortunately, this language sets a maximum level for federal funding of state programs, not a minimum. States have historically received much less than 60 percent of funding for Section 105 activities from the federal government, which has provided only about a quarter of state funding for air quality according to congressional testimony from the National Association of Clean Air Agencies.[34] A separate 2009 study by the association found that state and local agencies were funding 77 percent of their air quality budgets (excluding income from permit fees collected from large industrial sources of pollution (power plants, factories, etc.)).[35]

FEDERAL FUNDING TO IMPROVE AIR QUALITY HAS DECLINED

Over the past decade, EPA's overall budget has fallen 15 percent, after accounting for inflation.[36] EPA funds for state and local air quality management grants have dropped even more – by almost $6 million between fiscal year 2005 and fiscal year 2014,[37] a decline of 21 percent after inflation (see Figure 7).

Figure 7



States have been unable or unwilling to compensate for this significant drop in federal grant support. Information on state funding for air quality is decentralized and difficult to compare, but a 2013 GAO report examined trends in total air quality program funding or spending in ten states between fiscal years 2004 (for some states, 2008) and 2012. State funding or spending had stagnated or declined in nine out of the ten states.[38]

Given their responsibility for carrying out existing air quality improvement programs, as well as the various new standards and rules they are responsible for implementing, state agencies have advocated for increased funding but with little effect to date.[39] The funding for Section 103 and 105 grants is largely based on a funding formula developed by the EPA, which results in some striking disparities in support between states. The formula takes into account population, ongoing and potential air pollution problems, financial needs of state and local agencies, and the relative amounts given to other states. In addition, the EPA administrator has the ability to award a portion of the grants competitively.

Table 3 in Appendix B provides information on the inflation-adjusted change in EPA air quality program grant funds for each state. The following states have seen the largest drops in funding over the course of the past decade:

Figure 8

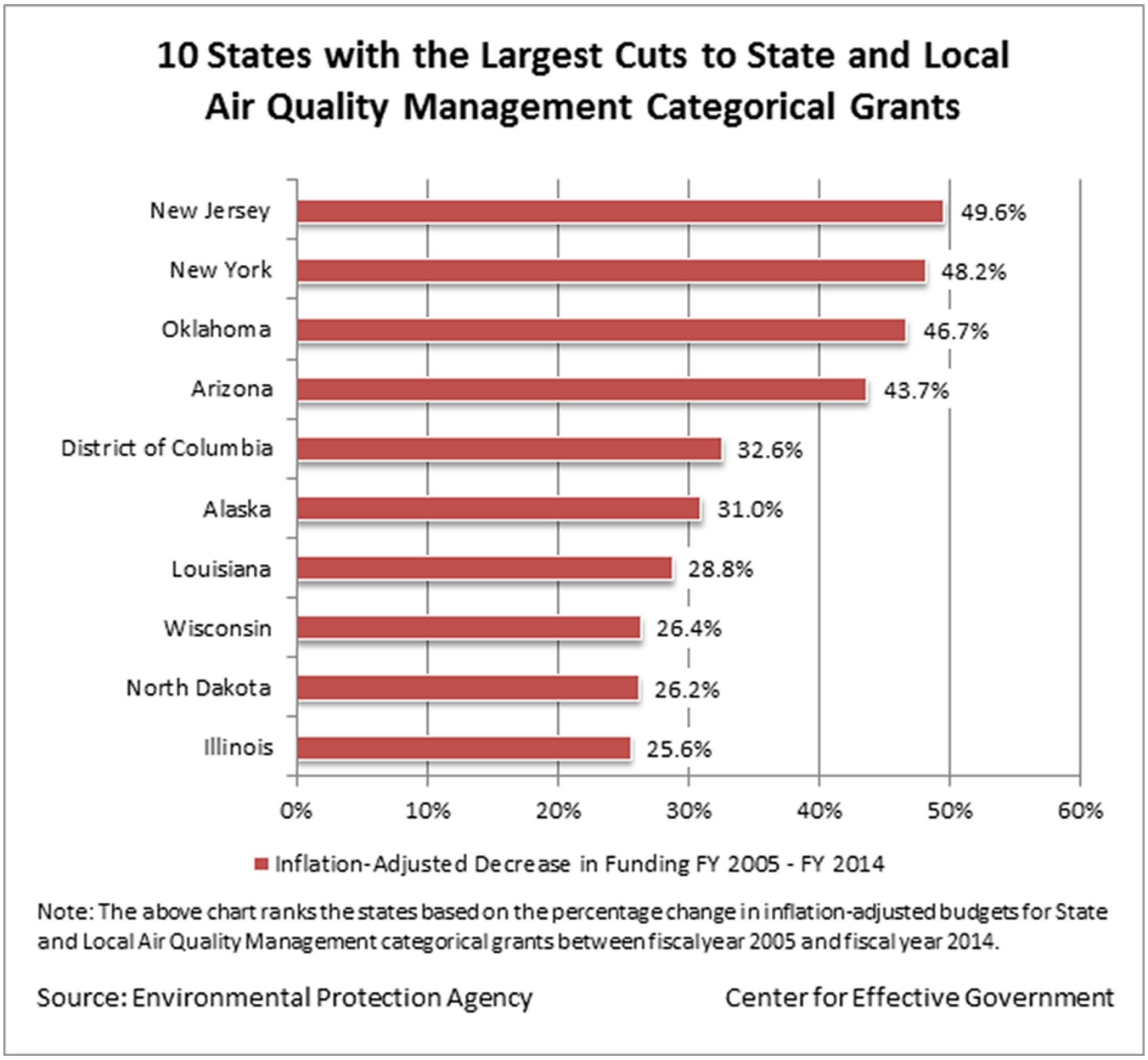


Figure 8 shows declines in federal funding of 26 to 50 percent in states with historically high ozone pollution levels[40] and high population densities (New Jersey, New York), as well as states with emerging air pollution problems (North Dakota, Oklahoma). These states face their own unique challenges to air quality improvements, including reducing unhealthy levels of ozone pollution.

- **New Jersey**: New Jersey is one of only 12 states where ozone concentrations are above 65 parts per billion (ppb) in every county in the state,[41] and approximately 82 percent of state residents breathe air with ozone above 60 ppb. The 84 ppb recorded in Gloucester County, NJ, located just across the Delaware River from Philadelphia, represents one of the highest ozone levels in the entire Northeast U.S. Air pollution from the Midwest and Pennsylvania contribute to New Jersey's air pollution problems.

- **New York**: With one exception, every county in New York where ozone is monitored experienced ozone levels above 60 ppb. These counties represent two-thirds of the state's population. Only 22 percent of New York's residents are in counties with ozone levels higher than the current acceptable limit (75 ppb). Suffolk County, making up the eastern portion of Long Island, had the highest level of ozone pollution in the state (81 parts per billion). Air pollution from Pennsylvania and New Jersey contribute to New York's ozone problem.

- **Oklahoma**: Oklahoma residents face significant ozone pollution problems, with levels above 70 parts per billion in every county where ozone is measured, representing 60 percent of the state's population.[42] The state has experienced a rapid expansion in oil and gas fracking operations, which produces substantial amounts of the pollutants that form ozone and are also toxic to health.[43] Oklahoma is also home to one of the nation's major points of intersection for crude oil pipelines. Air pollution from the nexus of these pipelines is being examined closely.[44]

- **Arizona**: Every monitored county in Arizona had ozone pollution concentrations above 68 parts per billion, exposing almost 95 percent of the state's population to unhealthy air quality. Only about 69 percent of the state's population is covered by areas that exceed the current 75 ppb standard. Maricopa County, which includes Phoenix, has the worst air pollution in the state, with average ozone levels at 81 ppb — well above the current inadequate standard.

- **Louisiana**: Every monitored county in Louisiana experienced ozone levels above 60 ppb, exposing two-thirds of the state's population to unhealthy air quality, and all but one county had levels above 65 ppb. East Baton Rouge and Iberville parishes, adjacent to Baton Rouge, both had ozone levels of 75 parts per billion, the highest in the state. Baton Rouge is home to one of the largest oil refineries in the world. Approximately half a million barrels of oil pass through ExxonMobil's Baton Rouge location every day.[45] In the past, accidents at the downtown plant have released millions of pounds of pollution into the air, sickening residents.[46]

- **Wisconsin**: With ozone levels of 85 ppb, Sheboygan County (about 60 miles north of Milwaukee) has one of the highest ozone levels in the Midwest. Kenosha County, just north of the Illinois border, is also near the top of the list with 82 ppb of ozone. Every monitored Wisconsin county except one (Ashland County) experienced ozone levels above 60 ppb, exposing 69 percent of the state's population to unhealthy air.

- **North Dakota**: Historically, North Dakota has had exceptional air quality. However, the rapidly growing fracking industry in the state poses a threat to future air quality there. Fracking activities release methane, non-methane hydrocarbons, and nitrogen oxides into the atmosphere. These pollutants have the potential to increase ozone concentrations, as well as the presence of fine particles.[47]

- **Illinois**: Three counties in Illinois (Cook, Madison, and Lake counties), representing 49 percent of the state population, experienced ozone levels of 80 ppb, substantially exceeding the current standard. All but one county that monitored ozone registered ozone levels above 60 ppb, which exposed more than 80 percent of the state population to dirty air.

The drop in federal grant funding for state and local air agencies poses significant challenges as they are being asked to take on a wider range of responsibilities, in addition to ongoing work. When surveyed in 2009, state and local agencies said addressing climate change was the most significant area where increased funding was needed,[48] but meeting ozone and other air quality standards are also integral to achieving clean air. States will be required to submit plans to EPA by June 2016 indicating how they intend to comply with the Clean Power Plant rule to address greenhouse gas emissions from existing power plants.[49] Very limited federal funding dedicated to addressing climate change has been provided to states to date.

If the federal government actually provided 60 percent of the costs of state and local air quality programs as envisioned by the Clean Air Act, an additional $610 million to $638 million would be available to these agencies each year.[50] State and local agencies report that additional funding could improve small business compliance assistance, staff retention, and allow staff to more closely monitor pollution emissions from smaller sources.[51] Additional funding for state and local air agencies would allow staff to invest more in collecting data on toxic emissions, expand monitoring networks, inspect more facilities, and enforce regulations. Most agencies need more staff and technical resources to keep up with their growing responsibilities.

CONCLUSION

Over the past decade, a new scientific consensus has emerged: allowing ozone in the air at levels higher than 60 parts per billion is damaging to human health, puts children and the elderly at special risk, and seriously threatens the health of those with respiratory and heart diseases. The Clean Air Act requires that this research inform the review of standards every five years.

Only an ozone level of 60 ppb provides the "margin of safety" required by the Clean Air Act. Adoption of a revised ozone standard at this level could improve the quality of air for almost two-thirds of Americans over the next two decades. Failure to establish a truly safe ozone standard now is an opportunity lost.

Over the past decade, federal funding for the U.S. Environmental Protection Agency's critical work of protecting our health from air pollution has significantly declined while new major threats have emerged. State and local air pollution programs that serve as the primary mechanism for improving air quality continue to be grossly underfunded. Total federal support for these essential public programs has declined by 21 percent over the past decade while the need continues to increase.

Substantial increases in funding for state and local air pollution control agencies will be necessary if states and cities are going to effectively respond to current and new programmatic responsibilities that can ensure our air is safe to breathe. A first step would be for the federal government to actually provide the 60 percent match for state agencies that the Clean Air Act established. The more than $600 million a year this represents would be more than offset by savings from avoided emergency room visits, hospitalizations, and early deaths that occur as a result of dirty air.

Adequately protecting the health of Americans cannot be done on the cheap. As our knowledge of the health risks of dirty air increases, the costs of inaction are clear. Failing to make investments in clean air now means we'll pay more later – in increased health care costs and a declining quality of life for everyone. We owe it to the health of the American public and future generations to make the right choice now.

APPENDIX A: HISTORY OF OZONE STANDARD REVIEWS

Final Rule/ Decision	Primary/ Secondary	Pollutant	Compliance Averaging Time	Level	Compliance Form
1971	Primary and Secondary	Total photochemical oxidants	1-hour	80 ppb	Not to be exceeded more than one hour per year
1979	Primary and Secondary	Ozone	1-hour	120 ppb	Not to be exceeded more than one hour per year
1993	EPA decided not to revise the standard				
1997	Primary and Secondary	Ozone	8-hour	84 ppb	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
2008	Primary and Secondary	Ozone	8-hour	75 ppb	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years

APPENDIX B: DATA TABLES

Table 1: State Residents Covered by Current vs. Safe Ozone Standard*

State	% of State Population Breathing Air Above Current Ozone Standard (75 ppb)	% of State Population Breathing Unhealthy Air (above 60 ppb)	Additional Residents Protected by Improving Standard (from 75 ppb to 60 ppb)
Alabama	13.76%	54.60%	1,912,160
Alaska	0.00%	0.00%	0
Arizona	69.21%	94.42%	1,596,477
Arkansas	15.09%	23.83%	248,970
California	66.13%	90.45%	8,975,584
Colorado	53.95%	84.45%	1,525,489
Connecticut	91.38%	100.00%	299,432
Delaware	81.88%	100.00%	160,007
District of Columbia	100.00%	100.00%	0
Florida	0.00%	76.80%	14,346,672
Georgia	21.25%	51.97%	2,932,193
Hawaii	0.00%	0.00%	0
Idaho	0.00%	25.54%	396,501
Illinois	48.63%	80.54%	4,004,351
Indiana	5.05%	67.10%	3,920,030
Iowa	0.00%	35.15%	1,041,453
Kansas	18.59%	55.40%	1,025,008
Kentucky	24.01%	50.96%	1,139,936
Louisiana	0.00%	66.01%	2,929,785
Maine	0.00%	63.39%	819,830
Maryland	48.68%	86.90%	2,176,111
Massachusetts	0.00%	82.73%	5,274,341
Michigan	47.20%	72.31%	2,426,394
Minnesota	0.00%	19.87%	1,037,905
Mississippi	0.00%	33.74%	972,007
Missouri	39.03%	50.82%	687,008

Montana	0.00%	0.00%	0
Nebraska	0.00%	29.17%	521,459
Nevada	72.56%	90.37%	479,407
New Hampshire	0.00%	77.46%	990,336
New Jersey	62.44%	81.53%	1,652,420
New Mexico	0.00%	74.49%	1,511,097
New York	21.95%	66.35%	8,425,357
North Carolina	9.92%	56.14%	4,343,990
North Dakota	0.00%	0.00%	0
Ohio	47.23%	76.76%	3,316,332
Oklahoma	54.80%	60.01%	191,319
Oregon	0.00%	17.21%	652,911
Pennsylvania	37.13%	85.68%	5,979,970
Rhode Island	71.33%	87.55%	163,926
South Carolina	0.00%	53.11%	2,409,797
South Dakota	0.00%	28.94%	230,422
Tennessee	17.24%	53.68%	2,274,874
Texas	51.86%	69.18%	4,336,682
Utah	37.37%	90.48%	1,469,564
Vermont	0.00%	30.55%	183,689
Virginia	16.60%	46.39%	2,339,893
Washington	0.00%	29.10%	1,945,421
West Virginia	0.00%	37.58%	676,628
Wisconsin	28.06%	69.04%	2,276,520
Wyoming	1.82%	57.92%	312,023
Total:	32.82%	67.84%	106,531,681

*Based on 2011-2013 ozone air pollution levels published by EPA.

Table 2: Additional Total and Vulnerable Populations Protected by 60 ppb Ozone Standard Compared to Current Ozone Standard (75 ppb)

State	Total Population	Children	Elderly	Adults with Asthma	Children with Asthma	Black Children with Asthma	Individuals with Coronary Heart Disease (CHD)	Individuals with Chronic Obstructive Pulmonary Disease (COPD)	Individuals Living in Poverty
Alabama	1,912,160	465,058	260,142	123,004	38,600	18,299	94,062	150,498	312,636
Alaska**	0	0	0	0	0	0	0	0	0
Arizona	1,596,477	362,612	278,872	109,814	39,525	277	80,201	87,605	314,550
Arkansas	248,970	62,846	28,944	15,448	5,216	486	12,098	16,752	53,070
California	8,975,584	2,119,527	1,098,897	603,333	188,638	17,324	445,644	315,377	1,107,599
Colorado	1,525,489	362,473	168,138	101,182	30,085	3,498	75,596	53,499	235,137
Connecticut	299,432	64,086	44,993	23,064	6,280	110	15,297	13,886	24,915
Delaware	160,007	39,800	22,642	12,742	3,303	1,462	7,813	7,212	20,720
D.C.***	0	0	0	0	0	0	0	0	0
Florida	14,346,672	3,040,682	3,040,682	938,397	252,377	84,205	734,889	836,644	2,385,242
Georgia	2,932,193	736,214	301,868	184,462	79,511	50,819	142,738	142,738	523,429
Hawaii**	0	0	0	0	0	0	0	0	0
Idaho	396,501	103,874	43,914	25,166	8,622	177	19,021	13,168	51,993
Illinois	4,004,351	1,017,159	474,825	227,027	84,424	15,683	194,169	149,359	463,318
Indiana	3,920,030	994,350	485,673	301,345	79,548	22,215	190,169	234,055	601,752
Iowa	1,041,453	254,697	129,876	61,367	21,140	2,398	51,139	49,567	126,497
Kansas	1,025,008	264,031	118,530	67,727	24,555	3,288	49,464	47,180	126,297
Kentucky	1,139,936	271,684	146,075	82,484	22,550	3,228	56,438	94,639	203,590
Louisiana	2,929,785	713,042	352,895	172,906	56,330	34,140	144,089	166,258	523,575
Maine	819,830	169,600	129,581	77,377	16,621	677	42,265	46,166	97,679
Maryland	2,176,111	506,382	272,377	156,955	54,689	20,700	108,533	90,165	258,329
Massachusetts	5,274,341	1,140,109	737,204	471,302	94,629	13,637	268,725	235,650	612,177
Michigan	2,426,394	569,283	316,209	213,568	62,052	11,053	120,713	163,426	421,445
Minnesota	1,037,905	269,012	120,340	59,205	22,328	1,642	49,979	33,062	90,118
Mississippi	972,007	250,581	118,467	59,157	29,318	18,077	46,894	62,763	190,524
Missouri	687,008	154,981	94,436	57,459	11,934	767	34,583	40,434	114,479
Montana**	0	0	0	0	0	0	0	0	0
Nebraska	521,459	135,297	56,436	28,190	8,930	1,638	25,100	20,466	74,439
Nevada	479,407	111,498	63,935	27,961	8,808	635	23,913	24,651	72,091
New Hampshire	990,336	218,674	133,387	84,883	23,179	1,354	50,159	55,559	80,442
New Jersey	1,652,420	377,450	199,038	114,747	32,838	7,539	82,873	75,225	260,019
New Mexico	1,511,097	376,547	200,708	104,379	30,877	512	73,745	66,937	292,208

State	Total Population	Children	Elderly	Adults with Asthma	Children with Asthma	Black Children with Asthma	Individuals with Coronary Heart Disease (CHD)	Individuals with Chronic Obstructive Pulmonary Disease (COPD)	Individuals Living in Poverty
New York	8,425,357	1,865,046	1,149,750	636,350	167,854	47,778	426,420	373,940	1,393,199
North Carolina	4,343,990	1,048,966	544,901	276,782	87,064	35,145	214,178	243,830	708,217
North Dakota**	0	0	0	0	0	0	0	0	0
Ohio	3,316,332	777,284	483,604	246,288	75,397	14,150	165,038	210,742	498,005
Oklahoma	191,319	47,651	28,734	12,930	5,242	114	9,338	11,207	37,712
Oregon	652,911	150,825	100,464	57,238	12,669	297	32,635	32,635	83,857
Pennsylvania	5,979,970	1,324,445	957,969	446,930	135,093	22,784	302,611	330,542	710,256
Rhode Island	163,926	32,981	25,828	15,713	3,859	79	8,511	9,690	14,228
South Carolina	2,409,797	570,486	314,630	156,341	47,350	22,439	119,555	148,986	412,486
South Dakota	230,422	56,341	26,729	13,752	4,676	387	11,315	7,834	27,169
Tennessee	2,274,874	511,048	311,882	125,232	42,928	11,263	114,650	167,563	354,568
Texas	4,336,682	1,157,827	461,562	232,056	105,362	24,435	206,627	171,657	827,900
Utah	1,469,564	488,274	135,051	88,316	29,785	435	63,785	39,252	184,355
Vermont	183,689	37,412	24,728	16,529	4,115	220	9,508	8,337	21,572
Virginia	2,339,893	604,781	260,495	150,955	50,197	16,218	112,783	114,516	184,944
Washington	1,945,421	413,432	217,532	151,667	28,527	3,459	99,579	85,791	222,813
West Virginia	676,628	137,982	105,409	48,478	12,004	581	35,011	57,096	114,928
Wisconsin	2,276,520	526,034	304,884	182,051	41,031	1,734	113,780	99,778	247,404
Wyoming	312,023	76,567	33,109	21,426	6,355	119	15,305	16,717	39,745
Total	106,531,681	24,978,931	14,368,251	7,383,686	2,196,416	537,477	5,300,938	5,423,054	15,721,628

*Note: Based on 2011-2013 ozone air pollution levels published by EPA. Sub-group population numbers are not intended to be summed, as residents may fall into more than one of the above categories.

** All counties in this state currently have ozone levels below 60 ppb; no additional populations would be protected by a 60 ppb standard.

*** All of Washington, DC exceeds the current ozone level of 75 ppb and would be above a 60 ppb standard; therefore, no additional populations would be protected by a 60 ppb standard.

Table 3: Change in EPA State and Local Air Quality Management Grants, FY 2005 - FY 2014

State	FY 2005 Actual Obligation*	FY 2014 Actual Obligation*	% Change Inflation Adjusted
Alabama	3,187.3	3,325.5	4.33%
Alaska	2,236.9	1,544.2	-30.97%
Arizona	10,505.3	5,909.9	-43.74%
Arkansas	1,862.3	1,473.6	-20.87%
California	28,782.7	25,622.9	-10.98%
Colorado	3,665.9	3,366.2	-8.18%
Connecticut	4,716.1	4,183.9	-11.28%
Delaware	1,782.0	1,435.1	-19.47%
D.C.	1,610.6	1,085.1	-32.63%
Florida	5,734.7	5,489.8	-4.27%
Georgia	4,560.1	4,922.5	7.95%
Hawaii	1,237.0	958.5	-22.51%
Idaho	2,057.0	1,817.5	-11.64%
Illinois	12,093.7	8,991.5	-25.65%
Indiana	5,854.9	4,491.5	-23.29%
Iowa	2,004.7	1,717.7	-14.32%
Kansas	1,715.2	1,562.8	-8.89%
Kentucky	3,013.3	2,601.4	-13.67%
Louisiana	4,209.1	2,995.5	-28.83%
Maine	1,979.8	1,659.8	-16.16%
Maryland	5,497.6	4,163.3	-24.27%
Massachusetts	6,923.1	5,772.6	-16.62%
Michigan	7,314.7	5,797.8	-20.74%
Minnesota	3,088.2	3,126.6	1.24%
Mississippi	1,711.7	1,482.6	-13.39%
Missouri	3,970.2	3,559.5	-10.35%
Montana	1,817.9	1,637.4	-9.93%
Nebraska	1,368.1	1,177.1	-13.96%
Nevada	2,836.0	2,922.7	3.06%
New Hampshire	1,967.1	1,701.5	-13.50%

New Jersey	10,059.3	5,065.6	-49.64%
New Mexico	3,289.9	2,496.9	-24.10%
New York	17,757.7	9,198.0	-48.20%
North Carolina	4,726.9	4,251.8	-10.05%
North Dakota	1,252.8	924.0	-26.24%
Ohio	8,477.6	7,402.2	-12.68%
Oklahoma	5,022.2	2,676.6	-46.71%
Oregon	4,500.7	3,908.6	-13.16%
Pennsylvania	11,862.7	10,142.9	-14.50%
Rhode Island	2,160.0	1,879.3	-12.99%
South Carolina	2,625.6	2,101.6	-19.96%
South Dakota	1,044.9	1,110.2	6.25%
Tennessee	4,017.3	3,693.2	-8.07%
Texas	11,543.6	11,183.2	-3.12%
Utah	3,137.0	3,004.6	-4.22%
Vermont	1,573.6	1,243.7	-20.97%
Virginia	4,350.2	3,708.0	-14.76%
Washington	5,673.8	4,473.4	-21.16%
West Virginia	2,264.1	1,858.7	-17.91%
Wisconsin	5,278.4	3,885.0	-26.40%
Wyoming	940.4	1,050.1	11.66%
Total[52]	290,814.5	229,785.7	-20.99%

*Dollars in thousands of FY 2015 dollars

APPENDIX C: METHODOLOGY

OZONE POLLUTION

Information on counties that would violate the current and alternative ozone air quality standards are based on 2011-2013 ozone air pollution levels published by the U.S. Environmental Protection Agency (EPA).[53] Should EPA revise the ozone standard as proposed, determinations regarding which areas violate the standard will be based on 2012-2014 air quality data, which may vary from the data used in this report.

POPULATIONS AT RISK

The county-level estimates of the populations at particular risk from health consequences from exposure to unhealthy ozone levels are based on population data from the 2013 American Community Survey (5-year estimates), conducted by the U.S. Census.[54] This information included: the number of children age 18 and under, adults age 65 and older, the number of households and individuals living in poverty, and the size of the black or African American population.

State-level prevalence data was obtained from the U.S. Centers for Disease Control and Prevention's 2013 Behavioral Risk Factor Surveillance System (BRFSS),[55] wherever available, and supplemented by National Health Interview Survey (NHIS) data for national prevalence rates as needed. Data on the number of adults with asthma[56] and chronic obstructive pulmonary disease (COPD)[57] was entirely available through the BRFSS. Data for the number of children with asthma was provided by the BRFSS for 32 states;[58] for the remaining states, the national NHIS prevalence rate for children with asthma was applied.[59] Similarly, for 32 states, state-level BRFSS estimates of pediatric asthma among black children were available.[60] For the remaining states, NHIS national prevalence rates were relied upon.[61] For coronary heart disease, only national prevalence data from the NHIS was available.[62]

Our use of BRFSS state-level data, supplemented by NHIS data for national prevalence rates as needed, mirrors the methodology used by the American Lung Association in its *Estimated Prevalence and Incidence of Lung Disease* report released in May 2014.[63]

The estimates of the number of people with medical conditions who are particularly at risk from ozone pollution are based on applying state prevalence rates where available, and national prevalence

rates where necessary, to county levels. Estimates of county populations were added together to provide state totals. These estimates represent the stationary populations with these health conditions projected as residing in each county as of 2013. Applying national and state prevalence rates to county populations provides an estimate of the size of this population and is subject to error. The ozone levels of the counties do not imply responsibility for the disease status of their populations.

Since there is overlap between at-risk population categories, sub-group population-at-risk estimates should be quoted individually and not added together to produce totals.

ENDNOTES

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17 Clean Air Act, *Op. Cit.*
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