



Air Quality in America

A Does of Reality on Air Pollution Levels, Trends, and Health Risks

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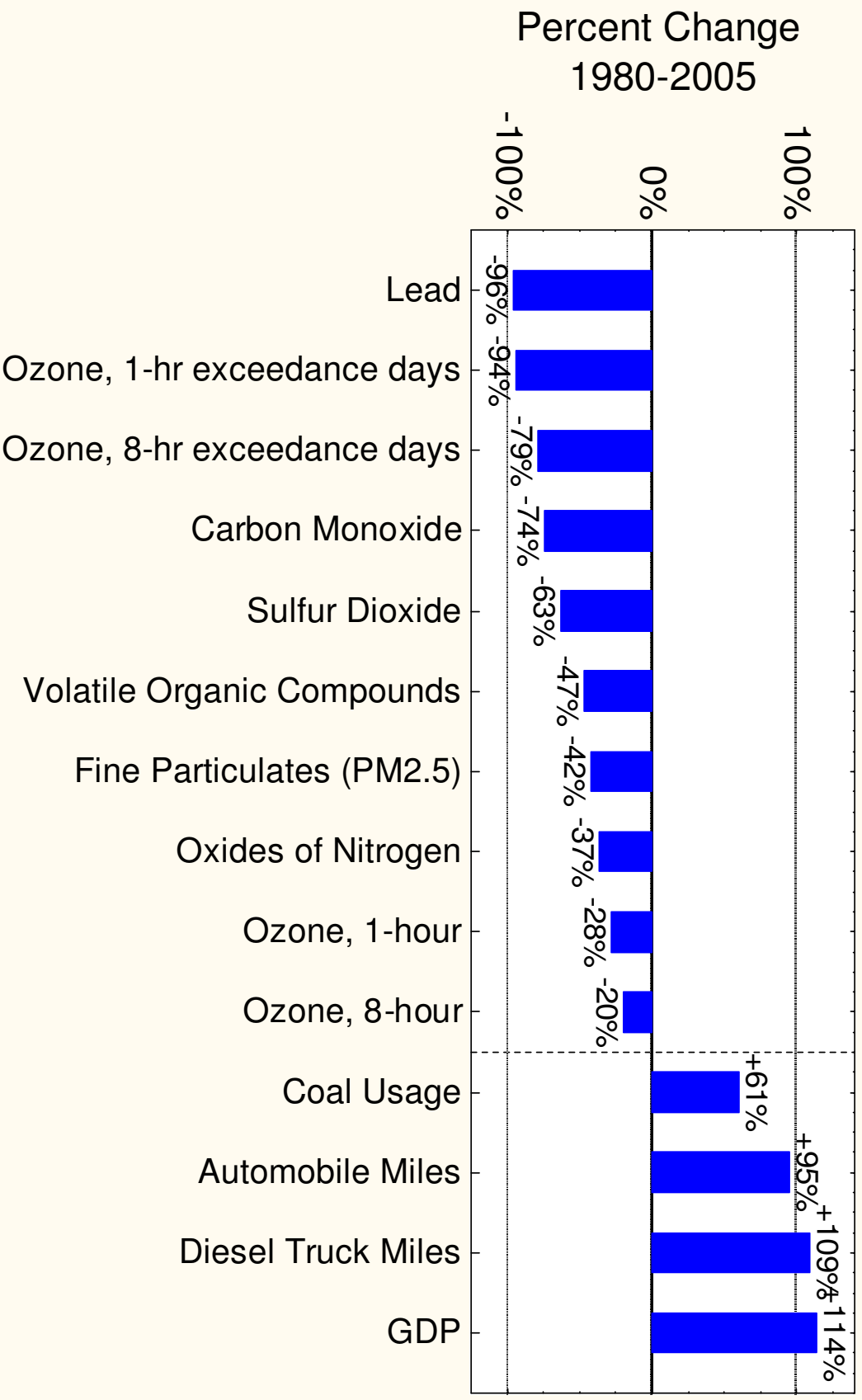
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February 13, 2008

More Driving, More Energy...Less Air Pollution

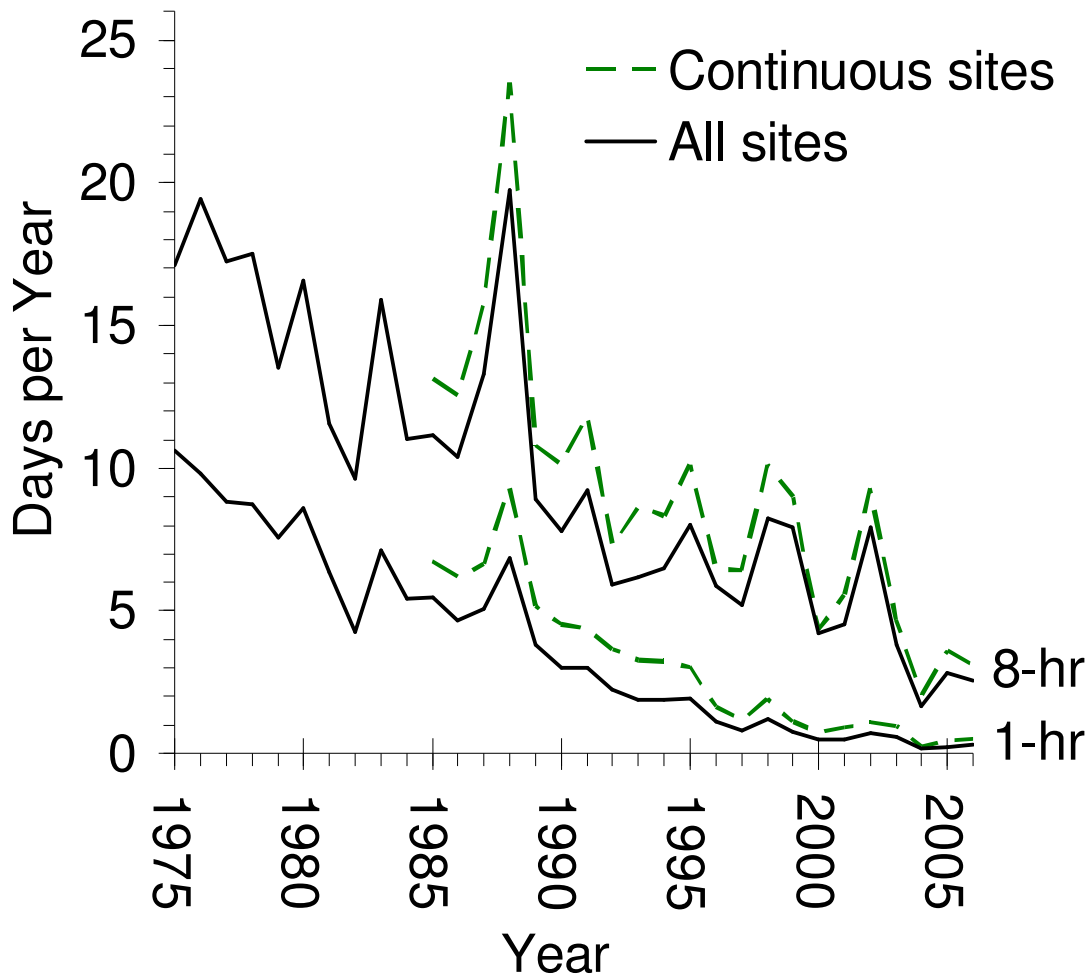
Change in National Air Pollution vs. Change in "Polluting" Activities, 1980-2005



Most Americans don't know about nation's progress on air quality

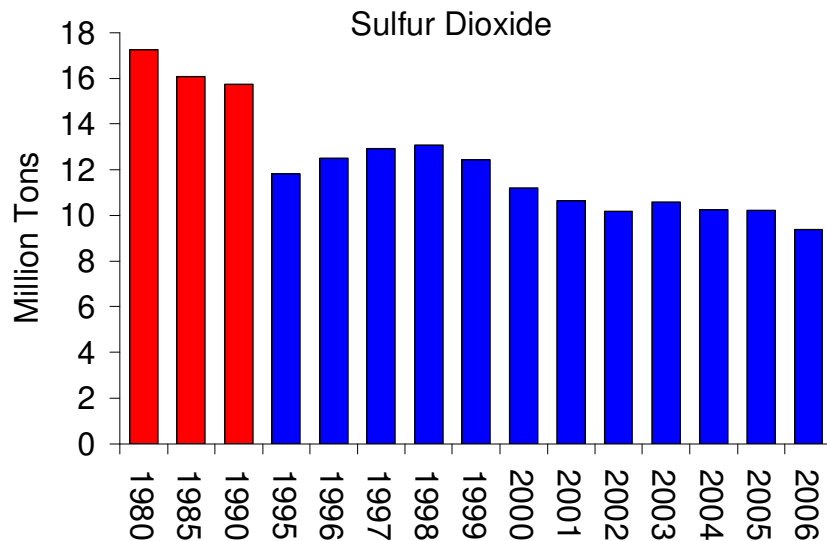
- Two-thirds or more say air pollution
 - Has stayed the same or increased during the last few decades
 - Will increase in the future
 - Is still a serious threat to health
- Activists, regulators, journalists, and even health scientists exaggerate air pollution levels and risks and obscure positive trends
 - Most of what people “know” about air pollution is the opposite of reality
 - Public fear of recent, historically low air pollution is out of all proportion to the minor actual risks

Ozone exceedance days, 1975-2006



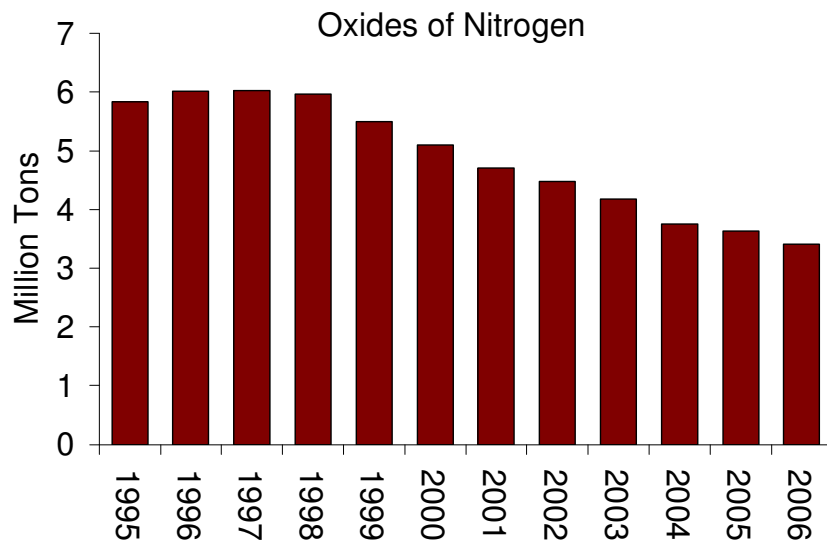
- “Smog is out of control in almost all of our major cities,”
Sierra Club, *Clearing the Air with Transit Spending*, 2001
- “Ozone pollution has declined **slightly** over the past 30 years,”
Washington Post, 4/29/04
- *More highways, More Pollution*,
Surface Transportation Policy Project, 2004

Power Plant Emission Trends



Emissions going down, but activists and journalists claim they're going up.

- *Darkening Skies: Trends Toward Increasing Power Plant Emissions*, Public Interest Research Group, 2002
- "President Bush has spent the last two years rolling back laws and regulations that have long guarded the nation's air," *New York Times* editorial, 1/31/2003
- "The Clean Air Act is seriously at risk," American Lung Association, *State of the Air* 2004
- "Changing All the Rules," *NY Times Mag*, Claims air pollution is increasing due to "The White House's reversal of clean-air gains," 4/4/2004

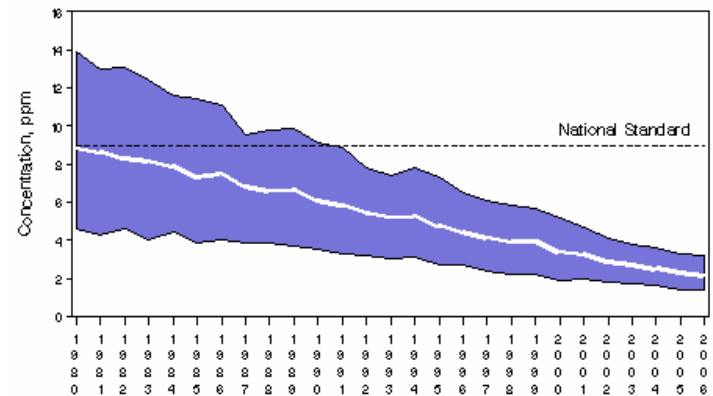


False claims followed proposed changes to New Source Review. No mention that declining caps ensured continuing declines in total emissions.

Motor Vehicle Emission Trends

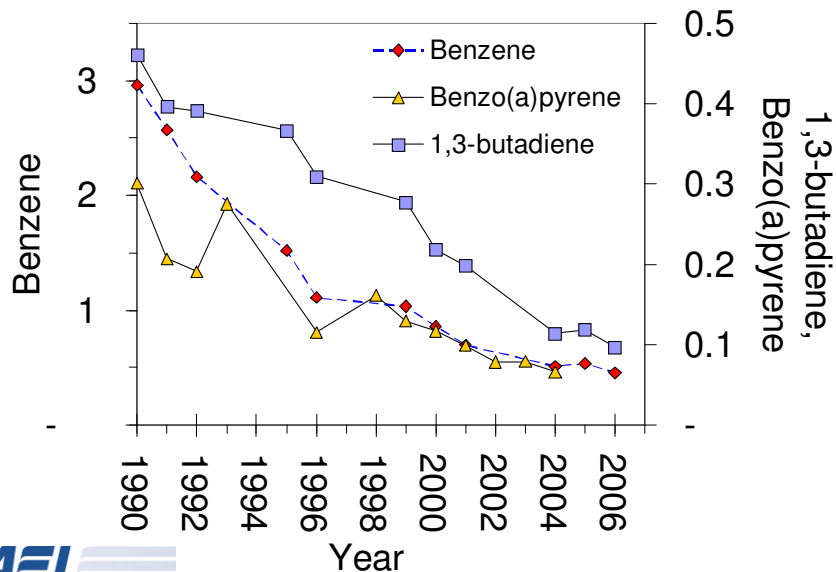
- “Sprawl and higher-emitting SUVs are proliferating faster than technological fixes can keep up,” *Smart-Growth America, Atlanta Journal-Constitution, 9/1/2003*
- “Americans are driving more miles than they did in the 1980s. And they’re driving vehicles that give off more pollution than the cars they drove in the '80s,” *USA Today, 10/16/2003*

CO Air Quality, 1980 – 2006
(Based on Annual 2nd Maximum 8-hour Average)
National Trend based on 144 Sites

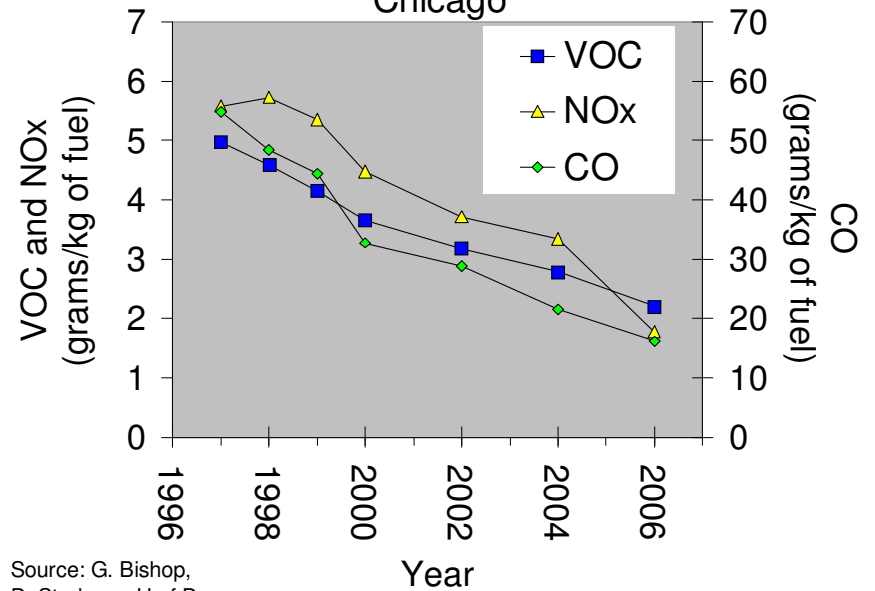


1980 to 2006 : 75% decrease in National Average

Trend in Ambient Motor-Vehicle Pollution, California



Emissions of Average Automobile, Chicago



Source: G. Bishop,
D. Stedman, U of Denver

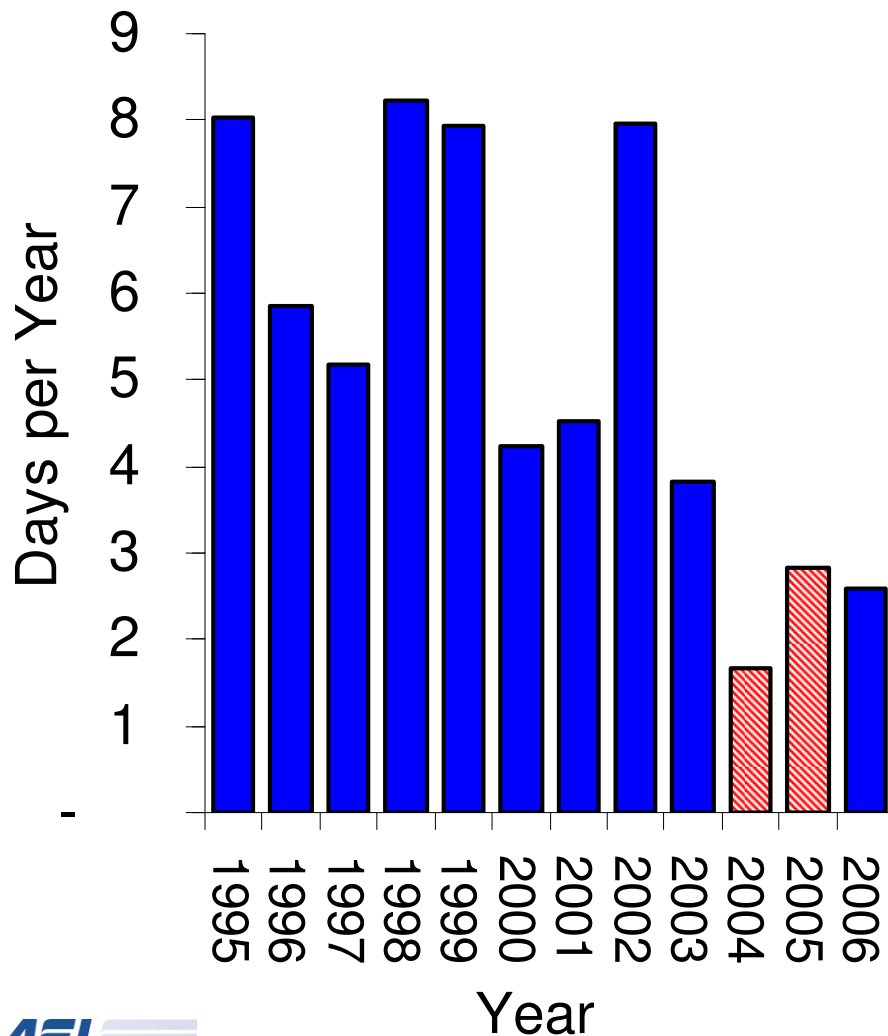


Existing Requirements Will Eliminate Most Remaining Emissions

- Standards for new cars, trucks, and off-road diesels will eliminate more than 80% of NO_x, VOC, and soot, even after accounting for growth in driving
- Clean Air Interstate Rule (CAIR) will eliminate 70% of SO₂ and mercury, and more than 50% of NO_x during the next 15 years
- CAA “Hazardous Air Pollutant” rules will eliminate most emissions of about 180 different pollutants from a wide range of industrial and commercial sources
- Overall, existing requirements will eliminate at least 70%-80% of remaining pollutant emissions during the next 20 years or so

Turning Real Success into Fake Failure

National-Average 8-hour Ozone Exceedance Days



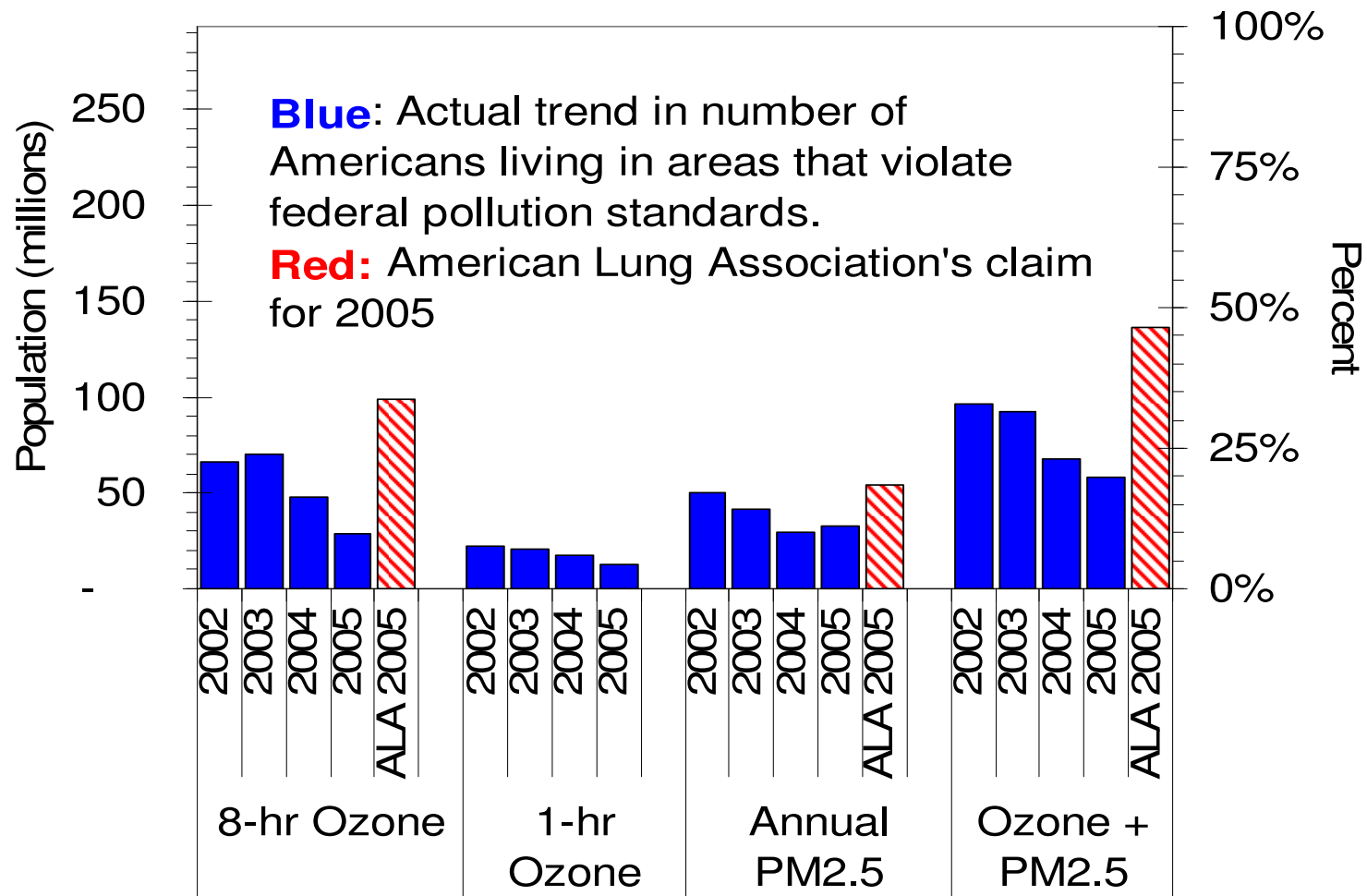
- “Smog Problems Nearly Double in 2005,”
Clean Air Watch, 11/10/05
- “Number of Ozone Action Days Up from Last Year.”
PA Dept. of Environmental Protection, 9/28/05
- “A Hot Summer Meant More Smog,”
New York Times, 10/2/05
- “New England Experienced More Smog Days During Recent Summer,”
EPA Region 1, 9/26/05

Substantial Increase in Stringency of Particulate Standards Passed Off as No Change at All

- EPA tightened 24-hour particulate matter (PM) standard from 65 ug/m³ to 35 ug/m³, but no change in annual standard (15 ug/m³)
 - Increased violation rate from 15% to 22% of metro areas
- Activists' and journalists' headlines
 - "EPA Proposes 'Status Quo' Revisions to PM NAAQS [Standards]," American Lung Association press release, 12/21/05
 - "President Bush Gives Early Christmas Present to Smokestack Industries," Clean Air Watch, 12/20/05
 - "EPA barely budges on soot; Health advice disregarded," *Atlanta Journal-Constitution*, 12/21/05

Exaggerating air pollution exposure; obscuring unprecedented improvements

- Number and percent of Americans living in areas that violate one or more EPA air pollution standards

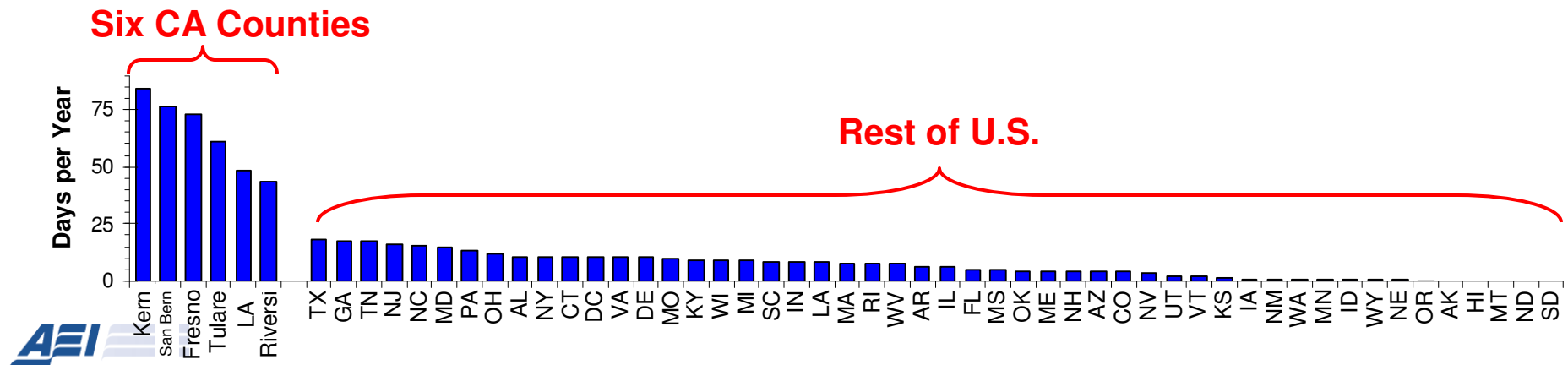


Does every city have “some of the worst air pollution”?

- Northeastern cities “have **some of the worst air pollution**,” *New York Times*
- New Jersey has “**some of the worst air pollution** in the country,” *Bergen County Record*
- “Air pollution in New Jersey is **among the worst** in the country,” *Philadelphia Inquirer*
- North Carolina “has **some of the nation’s worst air**,” *Winston-Salem Journal*
- York County, Pennsylvania, has “**some of the worst air** in the country,” *York Dispatch*
- Anne Arundel County has “**some of the nation’s dirtiest air**,” *Annapolis Capital*
- Chicago, has “**some of the worst air pollution** in the nation,” *Chicago Sun-Times*
- Toledo has “**some of the worst ozone pollution** readings in the nation,” *Toledo Blade*
- The Dallas-Fort Worth area has “**some of the country’s worst air**,” *Fort Worth Star-Telegram*
- Baltimore has “**some of the worst air pollution** in the country”; Maryland is “faced with **some of the worst air pollution** in the country,” *Baltimore Sun*
- The New York metro area has “**some of the country’s dirtiest air**,” *Westchester Journal News*
- Atlanta has “**some of the worst air pollution** in the country,” *Atlanta Journal-Constitution*
- “Tennessee has **some of the worst air pollution** in the country,” *Knoxville News Sentinel*

Reality: Only California has “some of the worst air pollution” in the nation

Ozone exceedance days/year at worst location in state or county, 1999-2004



Journalists repeat false claims from environmentalists with little or no critical review

Five separate AP stories

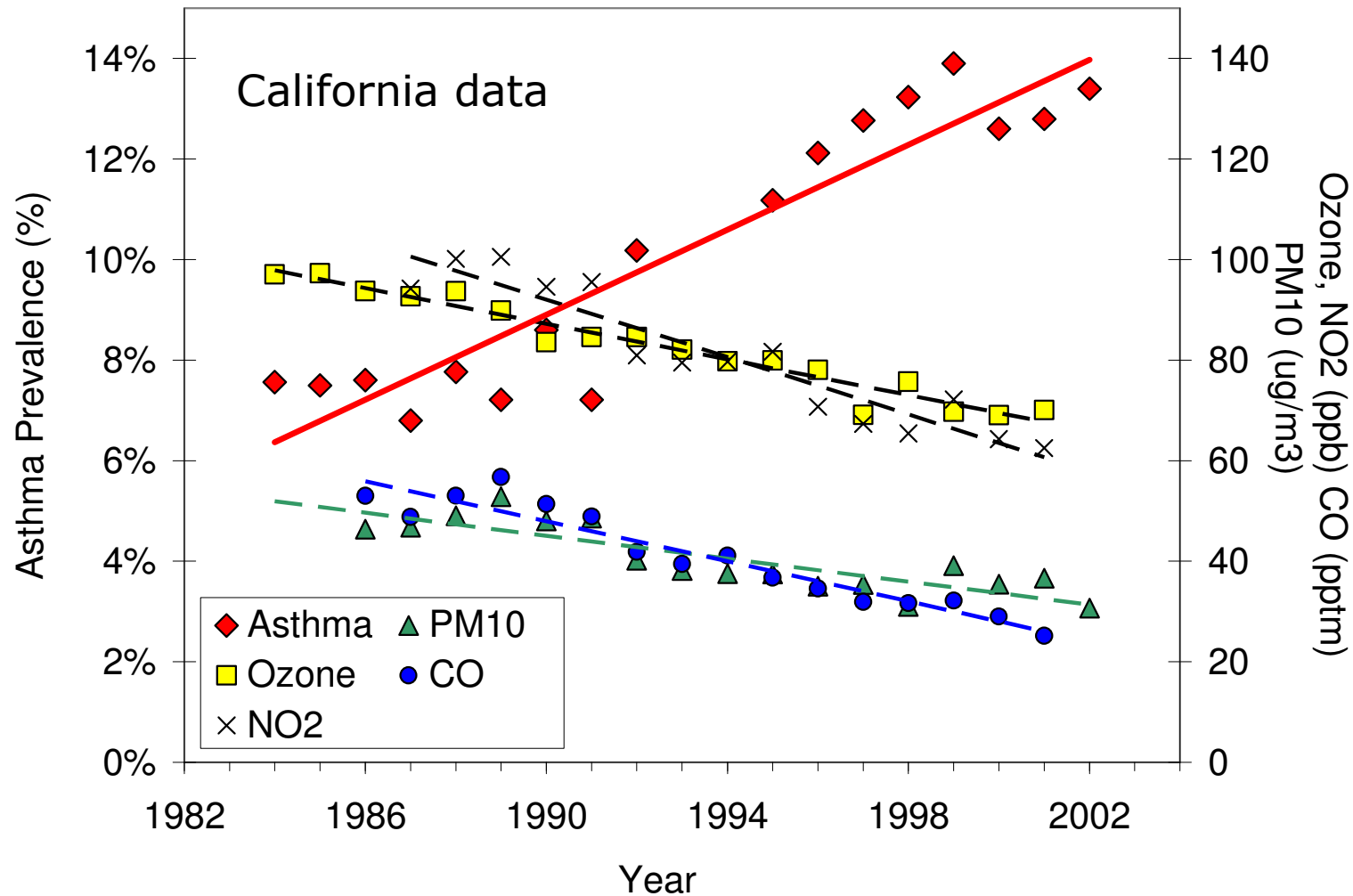
- Maryland has “some of the worst smog in the country,”
Associated Press, May 1, 2001
- Connecticut has “some of the worst smog in the country,”
Associated Press, May 1, 2001
- New Jersey has “some of the nation’s dirtiest air,”
Associated Press, May 1, 2001
- Eleven southern cities are “among nation’s most polluted,”
Associated Press, May 1, 2001
- “Some of the country’s worst air can be found in the San Joaquin Valley,”
Associated Press, May 1, 2001

All five stories covered the American Lung Association’s annual *State of the Air* report, but only the San Joaquin Valley story was correct

Is air pollution a significant health threat?

- Even with improving air quality, tens of millions of people still live in areas that violate either or both the ozone and PM2.5 standards. What does this mean for health?
- Just as with air pollution levels and trends, environmentalists, regulators, journalists, and even many scientists create a false appearance of serious harm, even from today's historically low air pollution, through exaggeration, misrepresentation, and omission of contrary evidence.
- Air pollution is low enough to be a minor factor in people's health.

Declining Air Pollution, Rising Asthma



“And growing numbers of residents are plainly suffering from all the smog. The [San Joaquin] valley has some of the nation's highest rates of childhood asthma.” *Washington Post*, 2/16/03

Scientists, Regulators Create A Fake Asthma Scare

- Children's Health Study (CHS): Funded by California Air Resources Board (CARB); performed by USC Scientists, published in the *Lancet*, 2/02
- Press conference claims by USC scientists & CARB staff
 - 3 times greater asthma risk in high-ozone communities for children who played 3+ team sports (8% of children)
 - Results relevant for ozone levels all over country
- Reality:
 - Didn't mention that asthma risk was 30% *lower* overall in the high-ozone communities, and that other air pollutants (PM, NO₂) were also associated with lower asthma risk
 - No area of U.S. has *ever* had ozone levels as high as CHS high-ozone communities (59 1-hr, 89 8-hr exceedance days/year)
 - By the time the study was released, it didn't even apply to the high-ozone communities where it was performed (1994-97 data vs. 2002 release)

Other scientists make false claims about the study's implications

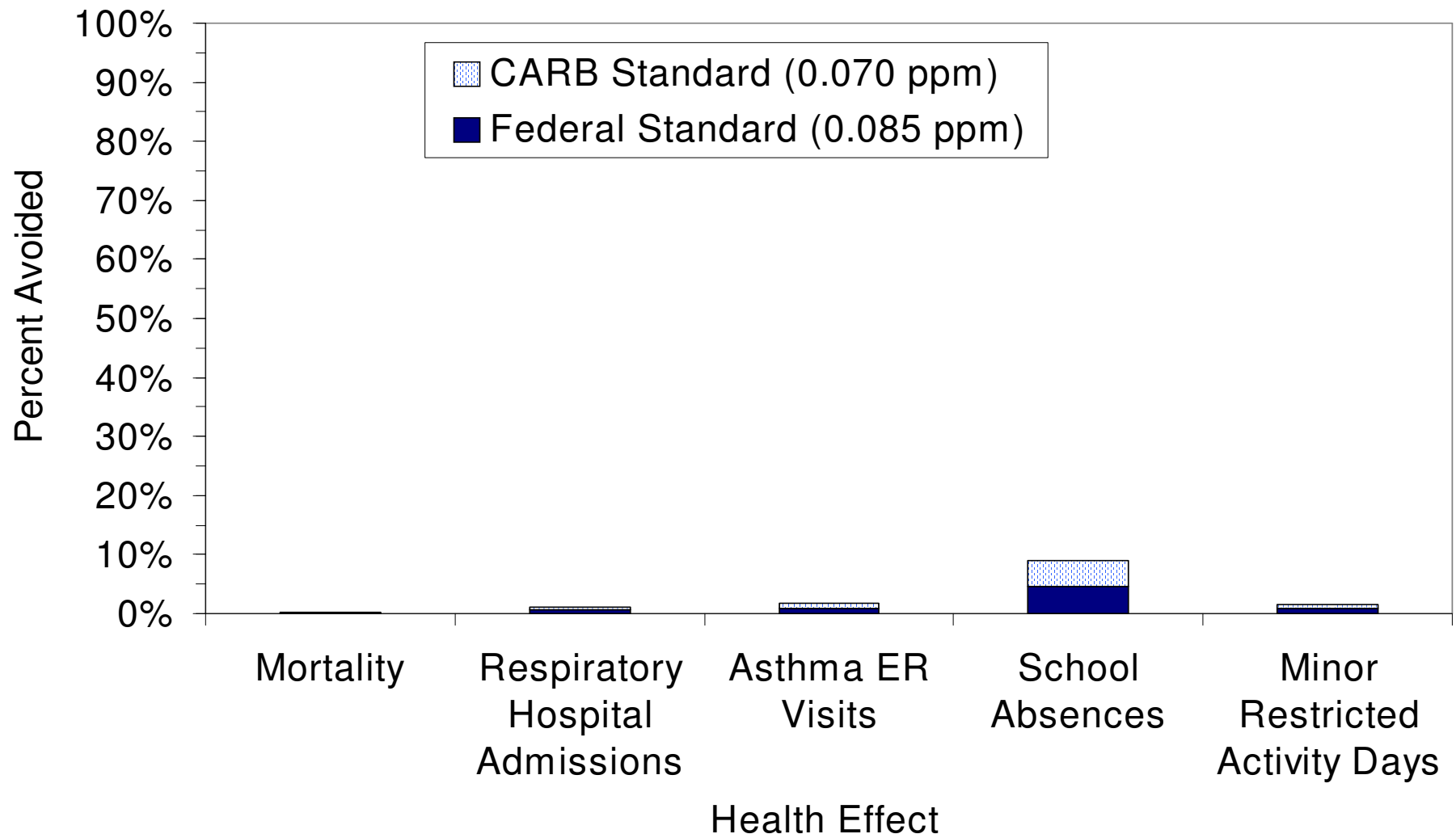
- “Sacramento is a very high ozone area, so this [study] is going to be very relevant to us,” Jesse Joad, Director of UC Davis pediatric asthma program (*Sac. Bee*, 2/1/02)
- “This is not just a southern California problem. There are communities across the nation that have high ozone.” Norman Edelman, SUNY Stony Brook professor, and now ALA’s medical director (*Phila. Inquirer*, 2/1/02)
- Incredibly, the CHS asthma study is cited as evidence that air pollution causes asthma
 - “Some evidence suggests that air pollution may have contributed to the increasing prevalence of asthma,” G. Thurston and D. Bates, *JAMA*, 2003
 - “Smog and Asthma: The Link—and Threat—Are Real” *Sacramento Bee* editorial, May 6, 2003

Misleading fear-mongering is common in air pollution health studies

- NIEHS Press Release: “Ozone Can Affect Heavier People More,” 11/27/07 (*Inhalation Tox.*, 11/07)
 - Marked publication of study by NIEHS, EPA, and UNC scientists reporting that ozone has a larger effect on heavier people
 - No mention that ozone exposure level was 0.42 ppm; more than 3x greater than old 1-hour standard, and more than twice the ozone level during the worst hour at the worst location in the U.S.
- UC Davis Press release: “Primate Research Shows Link between Ozone Pollution, Asthma,” 10/13/00
 - Exposed monkeys to 0.5 ppm ozone for 40 days (8 hrs each day) over a period of nearly four months. This is many times greater than real-world ozone levels
 - But press release claimed the study “mimic[ked] the effect of exposure to occasional ozone smog—for example as it occurs in the Sacramento area.”
- NIEHS Press Release: “Test results with laboratory mice show a direct cause-and-effect link between exposure to fine particle air pollution and the development of atherosclerosis,” 12/22/05 (*JAMA*, 2005)
 - No mention that the mice were genetically engineered to have 14 times the cholesterol levels of normal mice. (For comparison, only 1-in-500 men has cholesterol at least two times greater than average.)

Does air pollution exacerbate respiratory disease?

California Air Resources Board's (implicit) estimate of percent of acute health effects avoided by attaining ozone standards



Even these small effects are an exaggeration

○ Omission of contrary evidence

- Kaiser Central Valley study: *higher* ozone associated with *fewer* hospital visits. EPA omitted study from ozone criteria document; CA Air Resources Board (CARB) from ozone staff report
 - This wasn't an innocent oversight. *CARB funded the study.*
- Two of three CHS analyses reported no association of ozone and school absences. CARB cites only the “positive” study.
- Emergency room visits for asthma are lowest in July and August, when ozone is highest. This is true all over the U.S., and it's true in high, medium, and low ozone areas.

○ Implausible results

- Based on CARB's estimates, ozone is 20 times more effective in causing school absences than in causing asthma ER visits or “minor restricted activity days”
- School absence study: ozone from one or two weeks ago has larger effect on absences than ozone from one or two days ago

Does Air Pollution Kill?

- No question that high levels can kill: “London Fog” of December 1952 is believed to have killed about 4,000 people
 - Smoke and SO₂ soared to tens of times current peak levels
- But can current, historically low air pollution kill?
- Controlled animal studies suggest answer is “no”
 - “It remains the case that no form of ambient PM—other than viruses, bacteria, and biochemical antigens—has been shown, experimentally or clinically, to cause disease or death at concentrations remotely close to US ambient levels.” Green and Armstrong, *Regulatory Tox. and Pharm.* 2003
- Controlled Human Studies: little evidence of harm
 - Sulfate and nitrate PM are not toxic
 - 100 ug/m³ diesel PM: little or no inflammatory effects
 - 200 ug/m³ PM_{2.5}: No changes in symptoms or lung function
 - Ozone: no evidence of harm at realistic exposures

So what are the air pollution-death claims based on?

- “Observational epidemiology”: regression analyses of air pollution levels vs. daily or long-term mortality in non-randomly selected groups of people with non-randomly assigned exposures
 - Hundreds of studies; most report small correlations between air pollution and risk of death (relative risks on the order of 1.005 – 1.1) across the range of ambient pollution levels
- Implicit assumption is that after you’ve controlled for known non-pollution factors, any residual correlation between pollution levels and mortality risk represents a real causal effect
 - Several lines of evidence show this assumption is false
 - Direct evidence from randomized studies with animals and human volunteers
 - Vast majority of observational studies are contradicted when tested in randomized, controlled trials
 - Publication bias, data mining, unmeasured confounding

Many observational epidemiology results fall apart under scrutiny

- American Cancer Society study: key basis for annual PM2.5 standard
 - PM kills men but not women; those with a HS education or less but not those with some college; the moderately active but not the very active or sedentary
 - Adding migration to statistical model eliminated PM association: suggests apparent PM effect was really due to healthier people leaving areas that were in economic decline (i.e., Midwest “rustbelt” cities)
- NMMAPS study: key EPA basis for 24-hour PM2.5 standard and tougher ozone standard
 - Ozone and particulates appeared to *protect* against death in one-third of cities.
- Accounting for heat stress eliminates statistical association between air pollution and premature mortality
 - Keatinge and Donaldson, "Heat Acclimatization and Sunshine Cause False Indications of Mortality Due to Ozone," *Environmental Research*, 2006

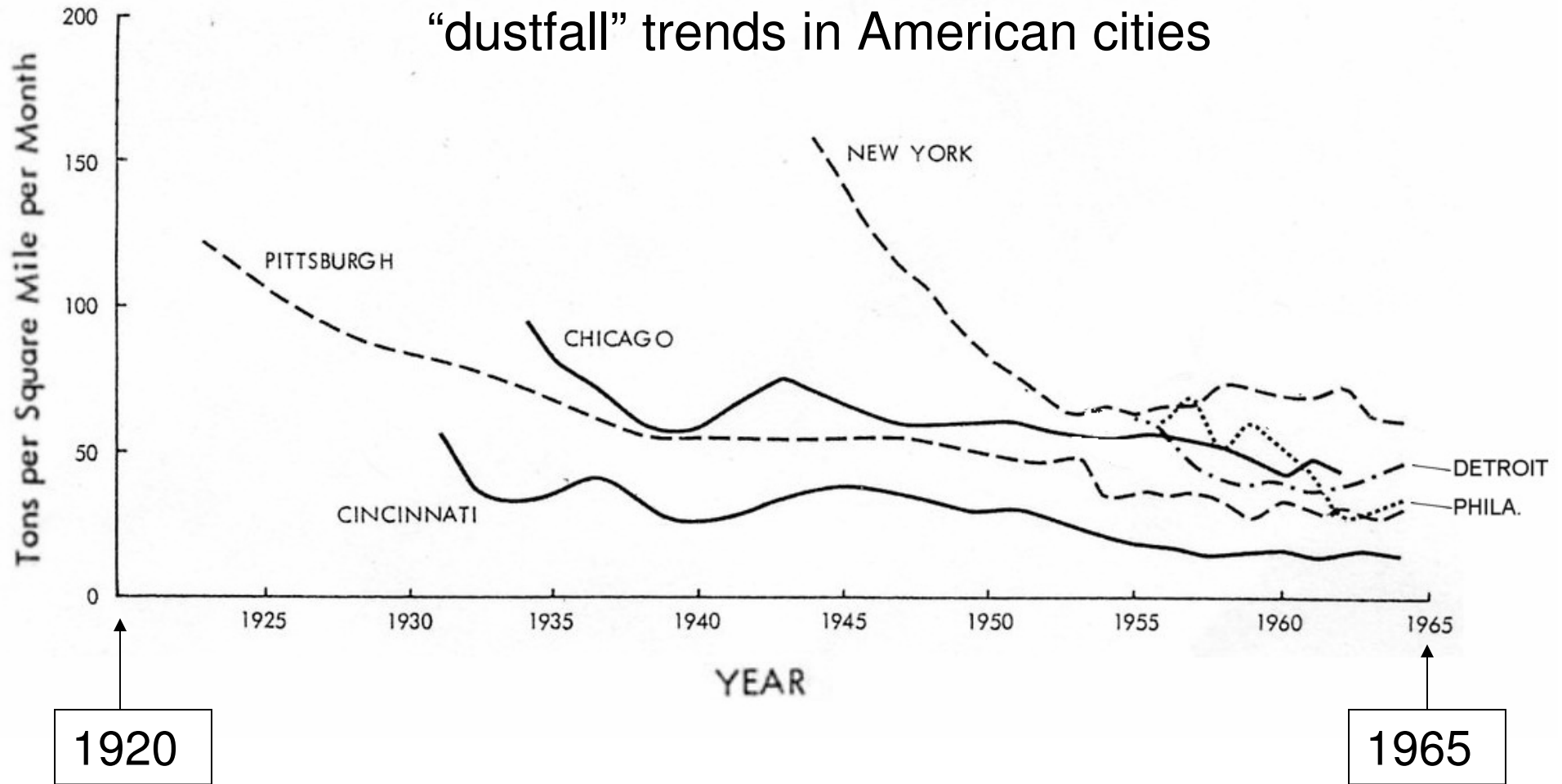
Do Power Plants Kill?

- Regulators and environmentalists claim power plant particulates are killing thousands of Americans each year, and sickening hundreds of thousands
- Power plant particulates are mainly ammonium sulfate plus small amounts of ammonium nitrate
- Sulfate and nitrate PM are not toxic in controlled animal and human studies, even at concentrations tens of times greater than ever occur in the air
 - Ammonium sulfate is used as an “inert control” in health studies
 - “The objective of this study was...to investigate the response of asthmatic subjects who were 60 to 75 y of age to inhaled sulfuric acid...Each subject was exposed to clean air, **an inert ammonium sulfate aerosol**, or 70 ug/m³ sulfuric acid.”
J. Koenig et al., “Respiratory effects of inhaled sulfuric acid on senior asthmatics and nonasthmatics,” *Arch Environ Health*, 1993, 48(3), 171-175
- So what is the “evidence” for power plant death claims?
 - Observational epidemiology studies

Air quality is good and getting better? So what's the problem?

- Air quality was improving at about the same pace for decades before the Clean Air Act
 - (just as automobile and workplace safety and other risks were also improving at about the same pace before the feds took over)
- But the CAA added a great deal of collateral damage
 - Process-focused, rather than results focused
 - Favors unnecessarily expensive, ineffective, and/or counterproductive measures
 - Pursuing other agendas under pretext of improving air quality
 - Keeping people in a constant state of fear
 - Creation and expansion of regulatory bureaucracies with incentives and interests often at odds with Americans' welfare
 - Ever more stringent standards mean increasing compliance costs, higher prices, and reduced choices in exchange for tinier and tinier health benefits
 - False impression that centralized, micromanagement is necessary to deliver clean air

Pollution Was Declining Long Before the Clean Air Act



Conflicts of Interest in Air Regulation

- Clean Air Act gives federal and state environmental bureaucracies the power to keep expanding their power
 - There is no stopping point—all feedbacks are toward ever-tougher standards
- Regulators jobs, budgets, and powers depend on a continued public perception that there is a serious and urgent problem to solve. But those same regulators decide when their job is finished, because they set the air pollution standards.
 - EPA is a like a company that gets to decide how much of its products consumers must buy.
- Regulators are major funders of the health research intended to justify the need for more regulation.
 - Regulators decide what questions are asked, who is funded to answer them, and how results are portrayed in official reports.
 - EPA picks the (often EPA-funded) scientists who sit on advisory panels that give the agency “independent” advice
 - Many environmental health scientists have explicitly aligned themselves with environmental groups and causes
- Regulators provide millions of dollars a year to environmental groups that lobby for greater regulatory powers and foment public fear.
- These conflicts of interest go a long way toward explaining the relentless exaggeration of environmental risks

What would improve regulatory policy?

Pie in the sky changes that would make a difference

- Prevent delegation of lawmaking authority to administrative agencies. Require elected legislators to impose the requirements.
 - Reduce legislators' incentive for growing the administrative state
- Move environmental decisions down to the state and local level, except the few cases that are truly interstate issues
 - Create competition among jurisdictions. Under the centralized system, we're all stuck with EPA's requirements.
 - Legislators making the rules would be closer to the people who have to comply with them.
- Use common law principles in environmental regulation
 - Remedies should redress real harms, rather than impose penalties merely for violation of administrative requirements