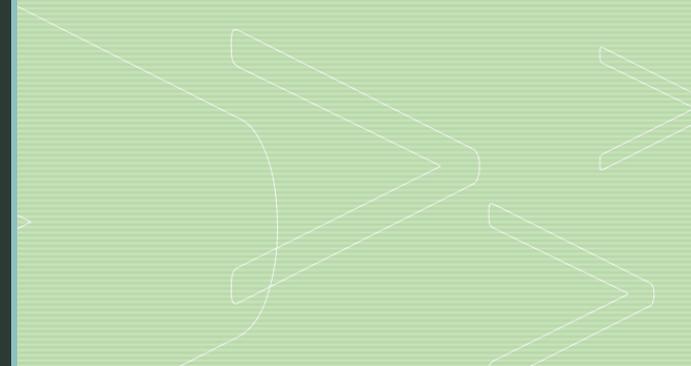


# CLIMATE CHANGE, COVID-19 and AA Mortality

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# FACULTY DISCLOSURE

- In compliance with ACCME Guidelines, I hereby declare:
- I do not have financial or other relationships with the manufacturer(s) of any commercial services(s) discussed in this educational activity.

# OVERVIEW

## Climate Change, Health & Disparities

- **Demographics**
- **Extreme Heat, Flooding**
- **Air Pollution**
- **Social Determinants of Health**
- **Pandemics**
- **Mental Health**



# COVID-19 RISK FACTOR & DEMOGRAPHICS

- Age/Gender
- Race/Ethnicity
- Chronic Diseases
- Polluted Neighborhood
- Essential Worker
- Underinsured & Uninsured
- Healthcare Access



# RACE/ETHNICITY DEMOGRAPHICS

STATE	TOTAL CASES	DEATHS	AA DEATHS / %	% POPULTION	LATINX DEATH	% POP
NY	404,006	32,427	28%	22%	34%	29%
NJ	176,278	15,634				
MA	112,347	8,368				
IL	157,825	7,427	72%			
CA	353,563	7,352				
PA	102,269	6,957				
MI	78,913	6,330	40%	14%		
FL	301,810	4,521				
TX	289,808	3,488			%	
AZ	131,354	2,434			%	
MD	75,016	3,341				
LA	84,131	3,341				

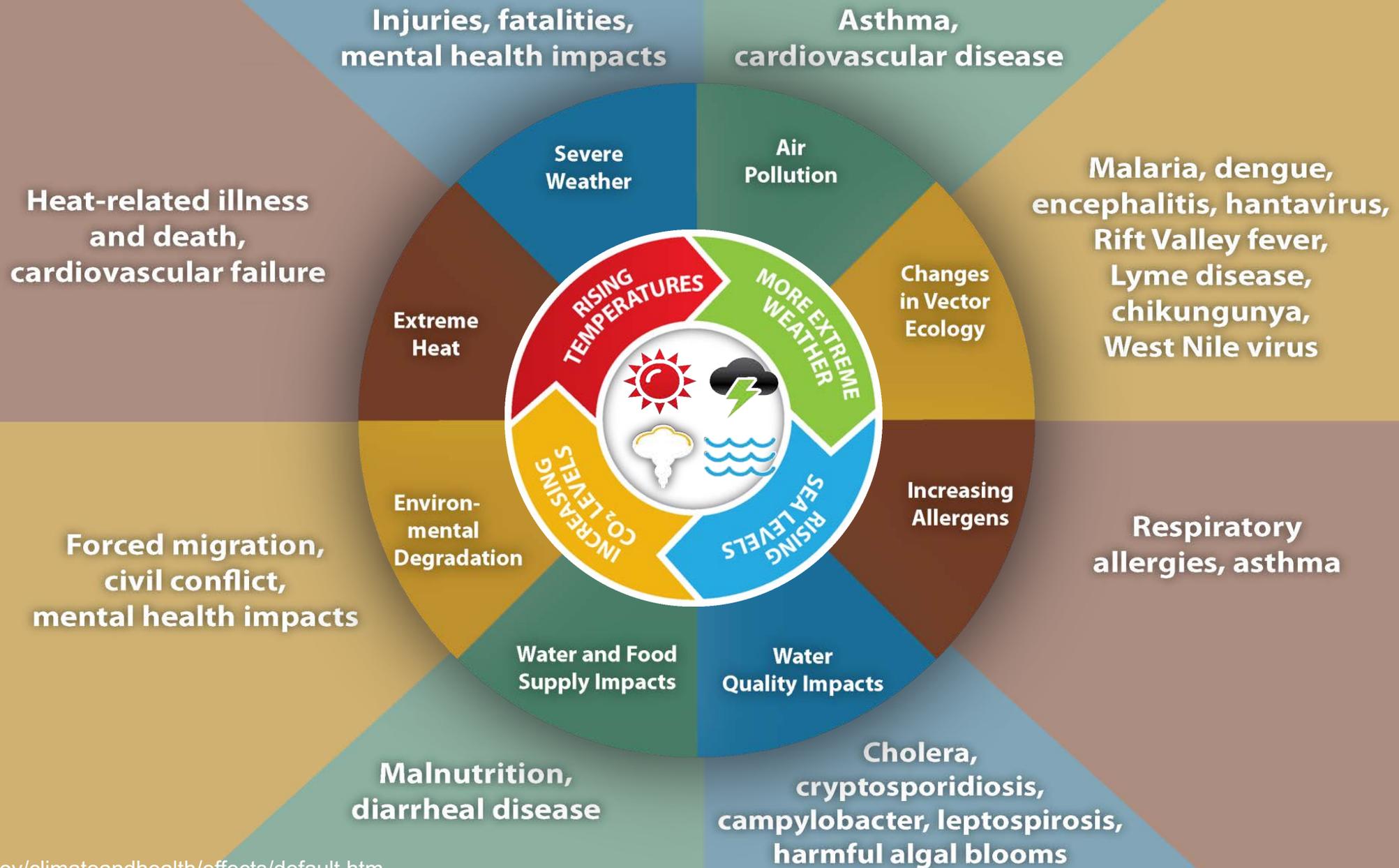
**CDC 7/15/20. U.S. Total cases - 3,495,536 and 137,358 Deaths.**  
**AA -27%; Asian - 5%; AI/AN - 1.2%; Hispanic - 28%; NH/PI- 0.3%; W -52%; Multi - 14%**



**Evidence of Climate  
Change comes from many  
different sources.**



# Impact of Climate Change on Human Health



# THOSE MOST AFFECTED BY EXTREME TEMPERATURE

- Extremes of age - children and elderly
- Those with an underlying chronic disease
- Living in a temperate climate
- Lack of air conditioning
- Mental illness, living alone

Braga et al. Environ Health Persp 2002; Basu Environ Mealth 2009  
Kovats Annu Rev Public Health 2008; Semenza et al. Am J Prev Med 1999

# CLEAN AIR ACT: TOP 6 MAJOR AIR POLLUTANTS\*

- Particulate Matter
- Ozone
- Sulfur dioxide
- Carbon Monoxide
- Nitrogen dioxide
- Lead

\*Regulated based on health effects in sensitive populations

# HEALTH EFFECTS OF AIR POLLUTION

- Overall Mortality
- Emergency Department Visits
- Hospitalizations
- Cardiac and Respiratory exacerbations
  - ❖ Myocardial Infarction
  - ❖ Heart Failure
  - ❖ COPD
  - ❖ Asthma
  - ❖ Respiratory Infections

# Covid Mortality Exacerbated by PM<sub>2.5</sub>

- Study on Current Smokers and COPD with Covid-19
  - Meta-analysis of 15 studies with COVID-19 (n= 2,473)
  - COPD - higher risk of more severe disease (risk of severity = 63%) vs patients without COPD (33.4%),
  - Higher mortality risk for COPD vs those without COPD (60% vs 55%)
  - <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0233147>  
SOURCE: PLOS One. London Study

## Effects of term exposure to PM and Covid on mortality

- Small increase exposure to PM<sub>2.5</sub> leads to large increase in COVID-19 death rate
- Magnitude of increase 20 times that observed for PM<sub>2.5</sub> and all cause mortality
- Pre-existing conditions for Covid-19 are the same as for PM<sub>2.5</sub> exposure
- Xiao Wu, Rachel C. Nethery, et.al. Harvard Chan School of PH. US Study



# Characteristics for the Study Cohort

Variable	Entire Cohort (3080 counties)	Exclude NY State (3018 counties)	Exclude County < 10 Cases (1047 counties)
Number of deaths	7,054	4,662	6,968
Number of hospital beds	827,799	770,716	706,051
PM2.5 ( $\mu\text{g}/\text{m}^3$ ) (SD, standard deviation)	8.4 (2.5)	8.4 (2.5)	9.5 (2.3)
% Ever smoked	47.0 (9.2)	47.0 (9.2)	45.9 (8.0)
Mean BMI ( $\text{kg}/\text{m}^2$ )	28.1 (1.3)	28.1 (1.3)	27.9 (1.1)
% Hispanic	7.7 (12.3)	7.7 (12.4)	8.6 (11.3)
% Black	8.2 (14.2)	8.3 (14.3)	12.1 (15.4)
% older than 65 year-old	15.9 (4.1)	16.0 (4.1)	13.7 (3.6)

Xaio Wu, Rachel C. Nethery, et.al. Harvard Chan School of PH. US Study

# HEALTH, ECONOMIC AND SOCIAL IMPACT

- ❖ Covid 19 PANDEMIC requires action NOW to mitigate climate changes
- ❖ Prepare for future impacts:
  - Extreme heat
  - Storms
  - Floods
  - Fires (and their accompanying health harms)
  - Changing transmission of mosquito and tick-borne diseases
  - Food and clean drinking water supply

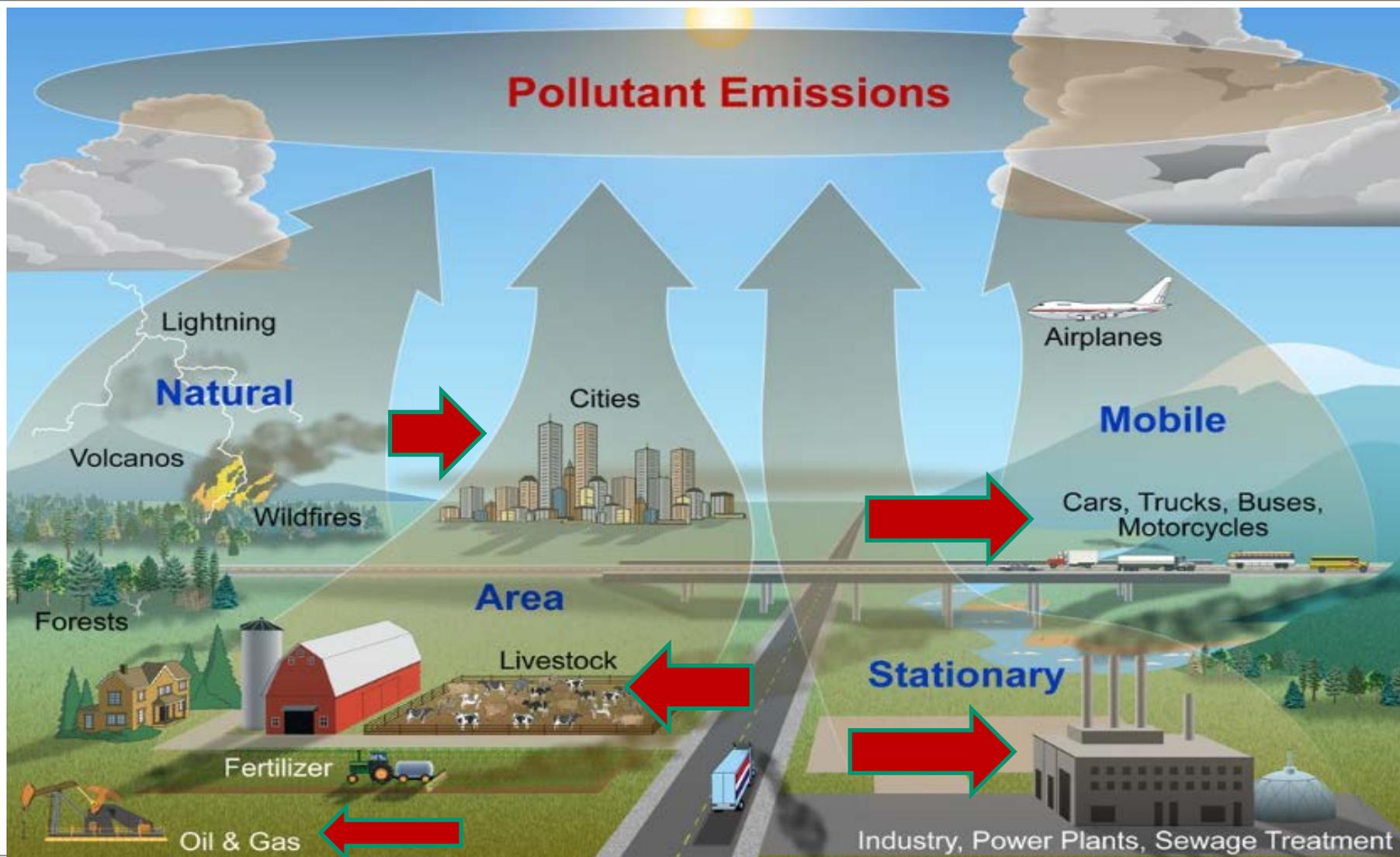
# CLIMATE, HEALTH & EQUITY ACTION AGENDA

- Climate change - “greatest public health challenge of the 21st century”
- Action to reduce climate change can improve health
- Equity must be central to climate action
- Making health integral to climate policymaking
- Vision is for healthy people in healthy places on a healthy planet

# WHAT CAN BE DONE?

- Admit that climate change is everyone's problem. No agency, government, or scientist can "fix it" for us. We are all in this together
- We got here because of our lifestyle, so our lifestyle has to change
- Conserve heat and cooling
- Conserve hot water, 17% of energy is used to heat water in the average home
- Conserve in our cars, use less gas
- Conserve electricity
- Reduce waste

# Making the Switch to Clean Energy – Good for climate, Good for health



# TAKE HOME MESSAGE

- The impact of climate change on air quality has significant respiratory health consequences
- Scientific evidence has informed policy that has led to pollution reduction
- Improved air quality has proven health benefits
- Reduction of motor vehicle emissions and industrial emissions through regulation and adoption of low emission vehicles and clean power sources are needed to protect our air

# What Can I Do???

## Work

Work to promote medical educational opportunities regarding the effects of climate change on the environment and Covid health.

## Seek

Seek ways to reduce the carbon and environmental footprint of health facilities, including hospitals, medical offices, and transport services.

## Use

Use existing guidance as a framework for discussing climate change and Covid-19 impact with individuals and families.

## Educate

Educate children, families, and communities on emergency and disaster readiness,

## Advocate

Advocate for local, national, and international policies that reduce greenhouse gas emissions and for adaptation strategies that improve preparedness for anticipated climate-associated effects.

## Help

Help to build a broader coalition across disciplines to address climate change at the local and national levels.

Global Climate Change and Children's Health

Samantha Ahdoot, Susan E. Pacheco and THE COUNCIL ON ENVIRONMENTAL HEALTH

Pediatrics November 2015, 136 (5) e1468-e1484; DOI: <https://doi.org/10.1542/peds.2015-3233>

CDC. Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 Pandemic, July 2020.



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CARE FOR THE PLANET LIKE OUR HEALTH  
DEPENDS ON IT



There's no place like home...



...and there may never be again. Do your part.

Thank You

