

# Providers, Patients, and the Public: Climate change affects us all

Perry Sheffield, MD, MPH

Delaware Climate and Health  
Conference, June 6, 2017



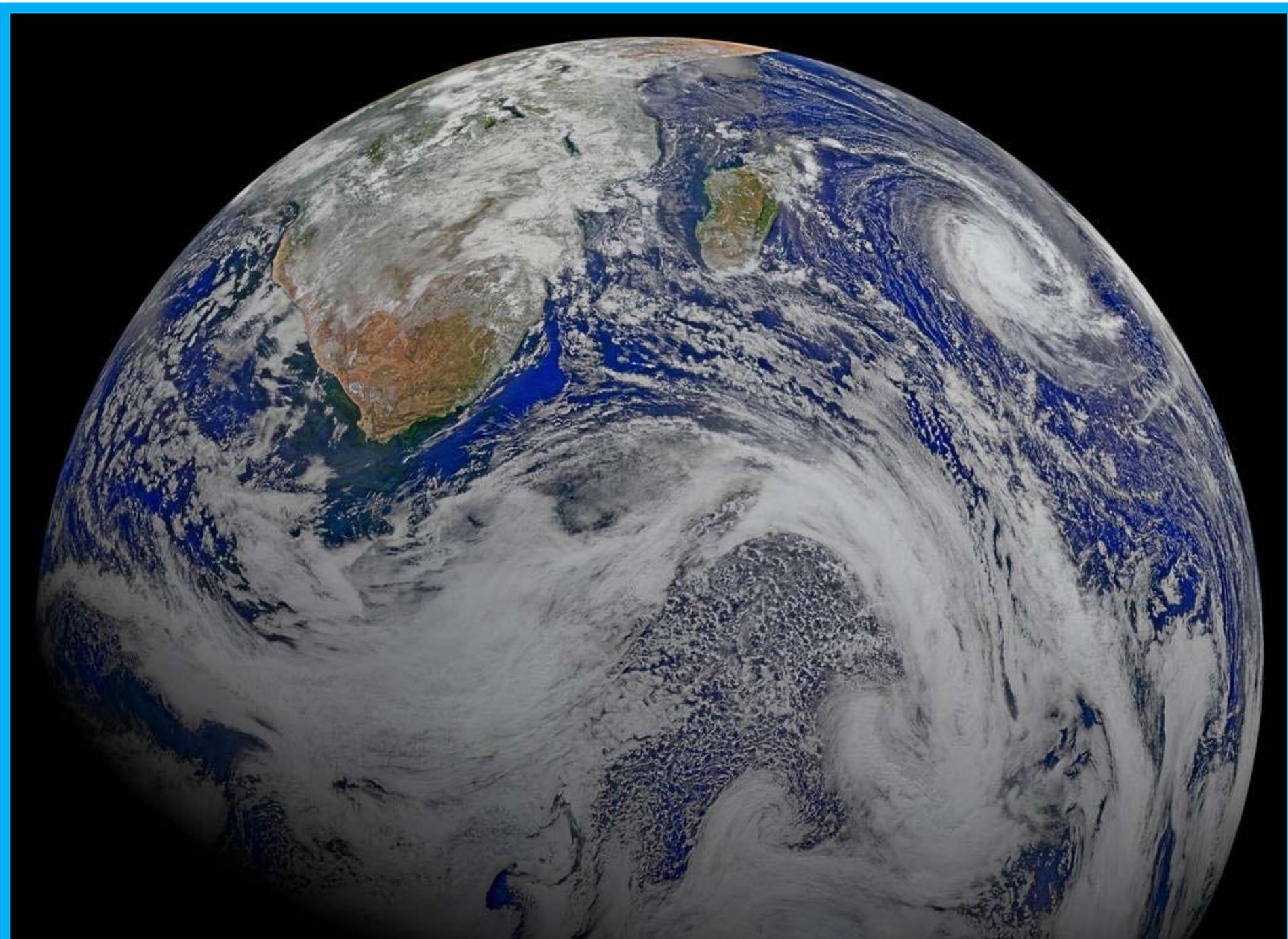
Icahn  
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Medicine at  
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Sinai

# What to know about climate change

1. It's real.
2. It impacts people's health, and children's health will be the most affected.
3. Its health effects can be prevented.

**Climate change is real:**

**The public**



Slide credit: NASA



Earth's atmosphere. Slide credit: NASA

**Climate change impacts  
people's health, and children's  
will be the most affected:**

**The patients**



# THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH

IN THE UNITED STATES:  
A SCIENTIFIC ASSESSMENT

Report released Spring 2016



U.S. Global Change  
Research Program

[Health2016.globalchange.gov](http://Health2016.globalchange.gov)

# THE LANCET

Volume 373 · Number 9676 · Pages 1659-1734 · May 16-22, 2009

"Climate change is the biggest global health threat of the 21st century."

See The Lancet Commissions page 1693

# THE LANCET

June, 2015

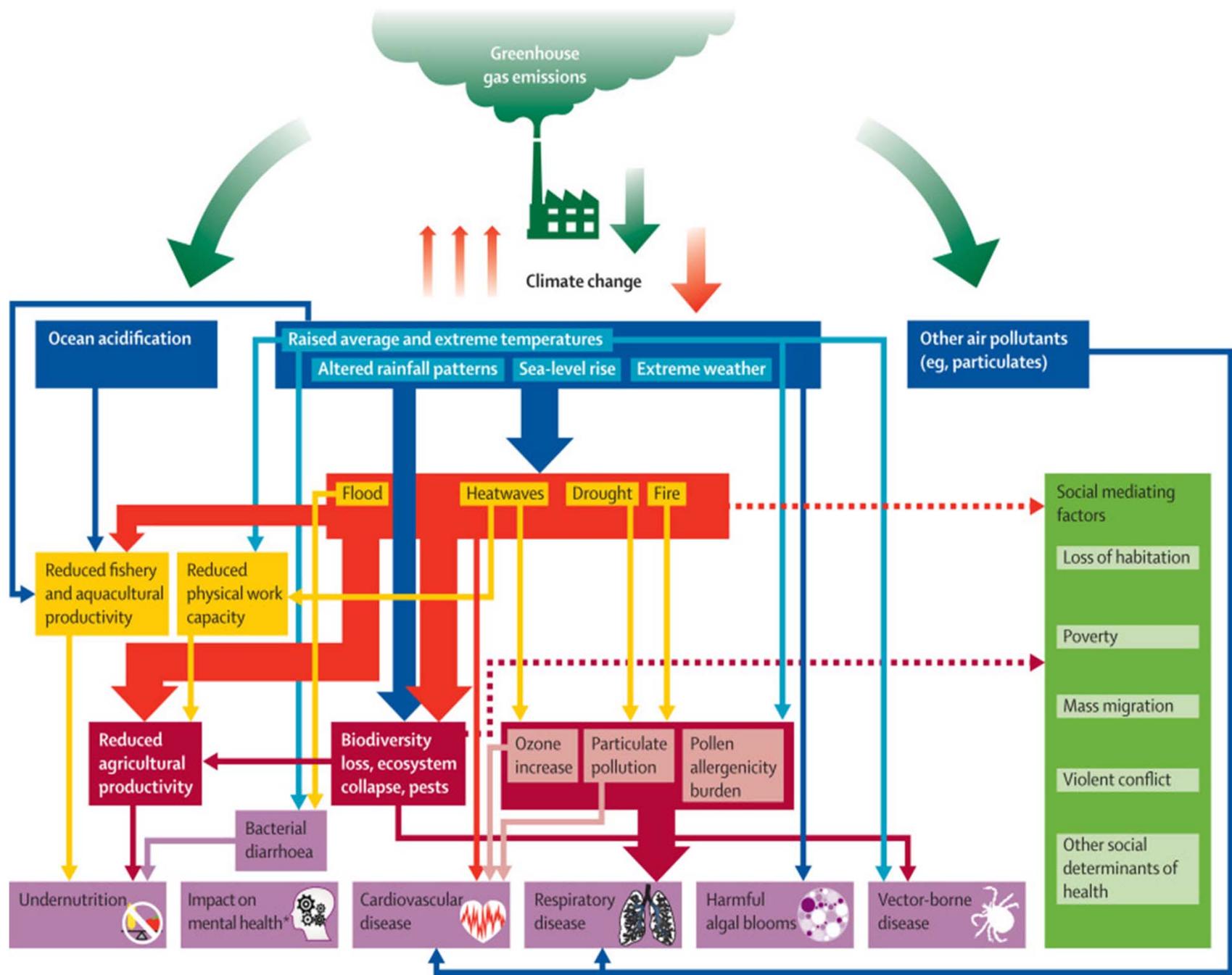
[www.thelancet.com](http://www.thelancet.com)

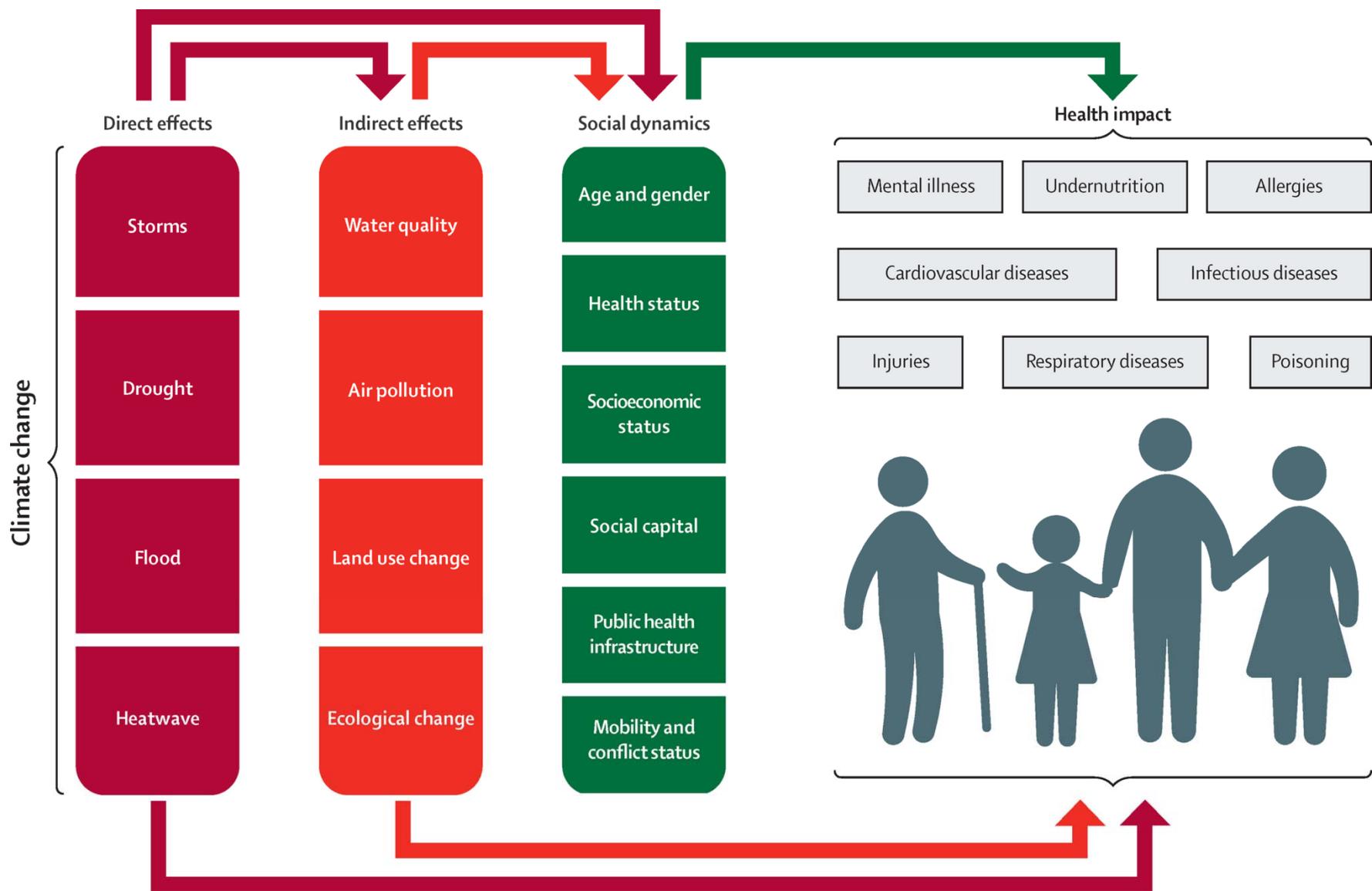
## Health and climate change



"Tackling climate change could be the greatest global health opportunity of the 21st century."

A Commission by The Lancet







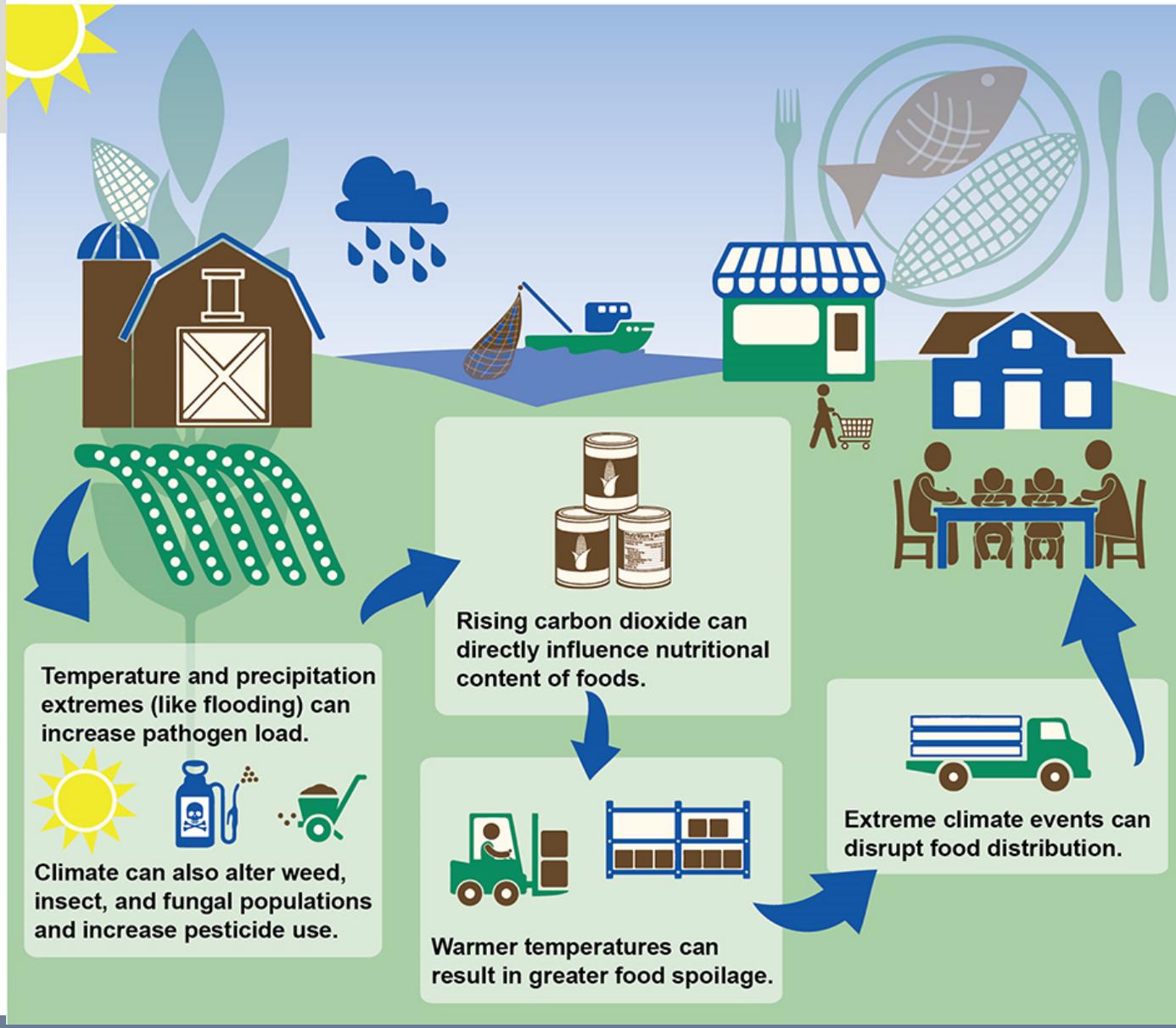
# TABLE OF CONTENTS

## CHAPTERS

Executive Summary .....	1
<b>1.</b> Introduction: Climate Change and Human Health .....	25
<b>2.</b> Temperature-Related Death and Illness .....	43
<b>3.</b> Air Quality Impacts .....	69
<b>4.</b> Impacts of Extreme Events on Human Health.....	99
<b>5.</b> Vector-Borne Diseases .....	129
<b>6.</b> Climate Impacts on Water-Related Illness .....	157
<b>7.</b> Food Safety, Nutrition, and Distribution.....	189
<b>8.</b> Mental Health and Well-Being.....	217
<b>9.</b> Populations of Concern .....	247

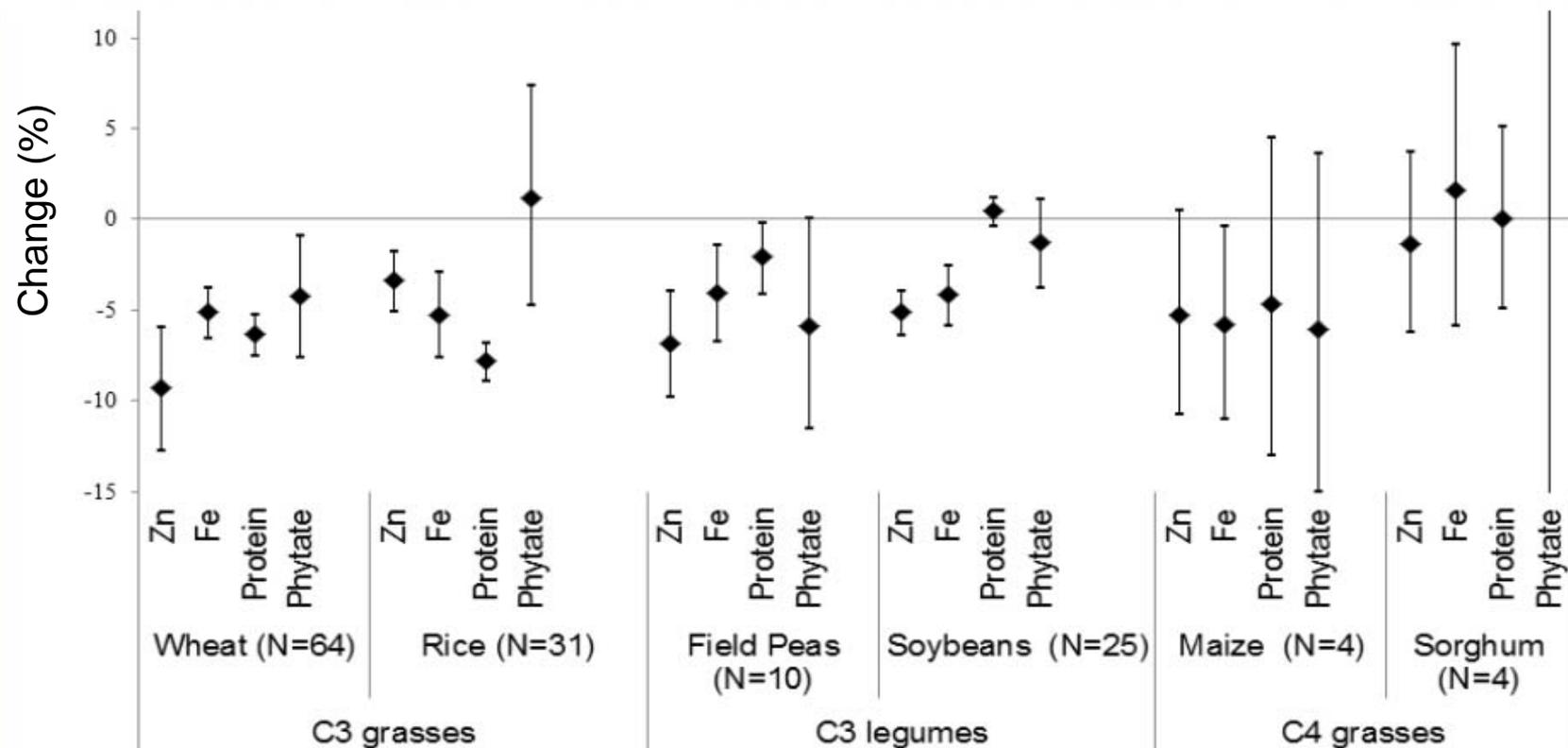


# The Potential Interactions of Rising CO<sub>2</sub> and Climate Change on Food Safety and Nutrition



## Increasing CO<sub>2</sub> threatens human nutrition

Samuel S. Myers<sup>1,2</sup>, Antonella Zanobetti<sup>1</sup>, Itai Kloog<sup>3</sup>, Peter Huybers<sup>4</sup>, Andrew D. B. Leakey<sup>5</sup>, Arnold J. Bloom<sup>6</sup>, Eli Carlisle<sup>6</sup>, Lee H. Dietterich<sup>7</sup>, Glenn Fitzgerald<sup>8</sup>, Toshihiro Hasegawa<sup>9</sup>, N. Michele Holbrook<sup>10</sup>, Randall L. Nelson<sup>11</sup>, Michael J. Ottman<sup>12</sup>, Victor Raboy<sup>13</sup>, Hidemitsu Sakai<sup>9</sup>, Karla A. Sartor<sup>14</sup>, Joel Schwartz<sup>1</sup>, Saman Seneweera<sup>15</sup>, Michael Tausz<sup>16</sup> & Yasuhiro Usui<sup>9</sup>





← Rice, Japan



← Wheat, Australia



← Soybean, Illinois



→ Field Peas, Australia



→ Sorghum, Arizona



→ Maize, Illinois

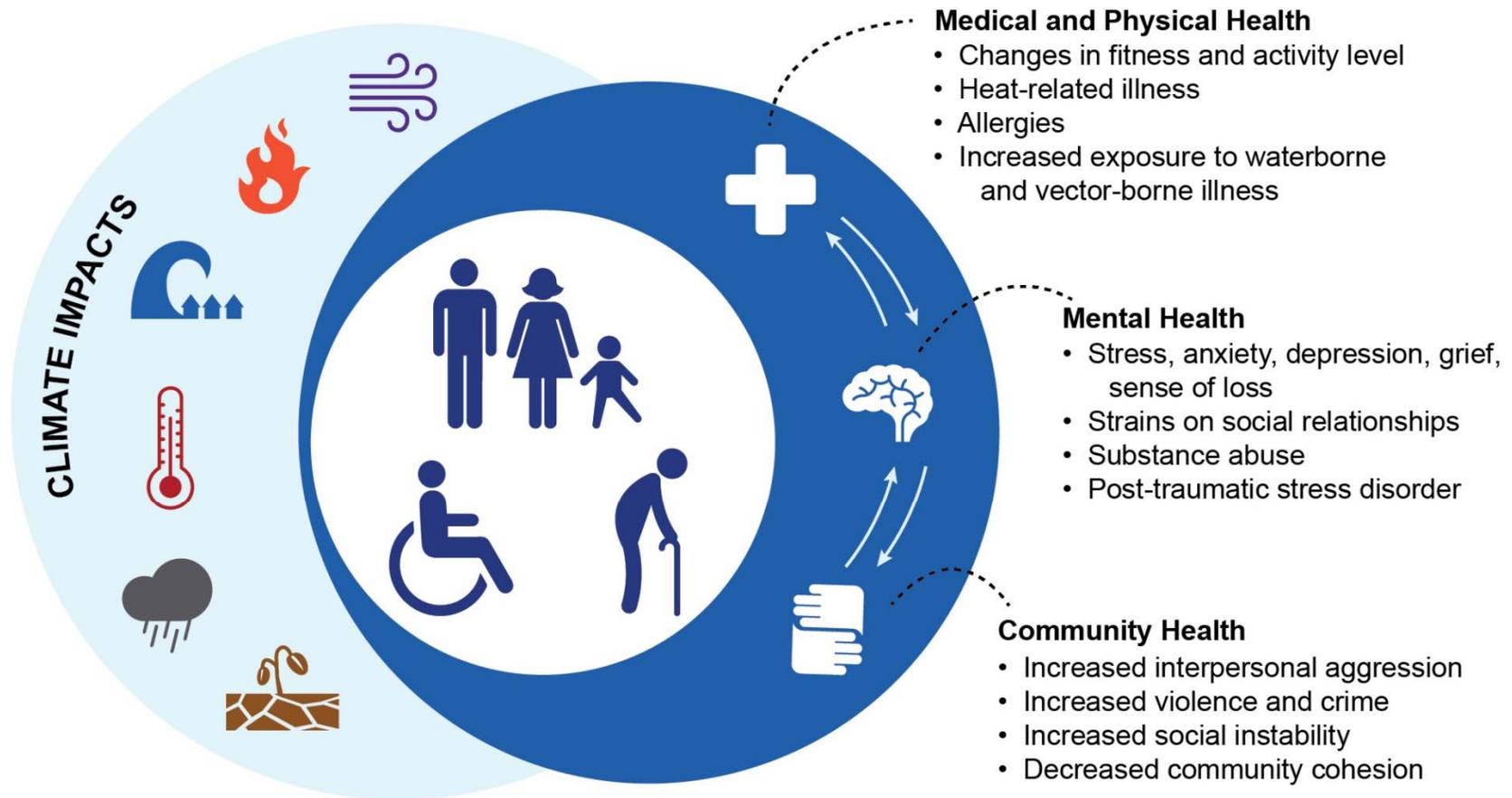
- All  $C_3$  crops show significant reductions in iron and zinc
- $C_3$  grains show significant reductions in protein
- $C_4$  crops less affected
- Roughly 2.75 billion people living in 50 countries receive at least 70% of their dietary zinc and/or iron from  $C_3$  crops and will be placed at significant risk
- Baseline of 2 billion deficient 63 million LY lost





# MENTAL HEALTH AND WELL-BEING

Impact of Climate Change on Physical, Mental, and Community Health





AMERICAN  
PSYCHOLOGICAL  
ASSOCIATION



CLIMATE  
*for* HEALTH.

ecoAmerica  
*building climate leadership*

# MENTAL HEALTH AND OUR CHANGING CLIMATE:

IMPACTS, IMPLICATIONS, AND GUIDANCE

March 2017



Artist: Charlotte Sullivan , age 13. Source: the Guardian/UNEP 2008.

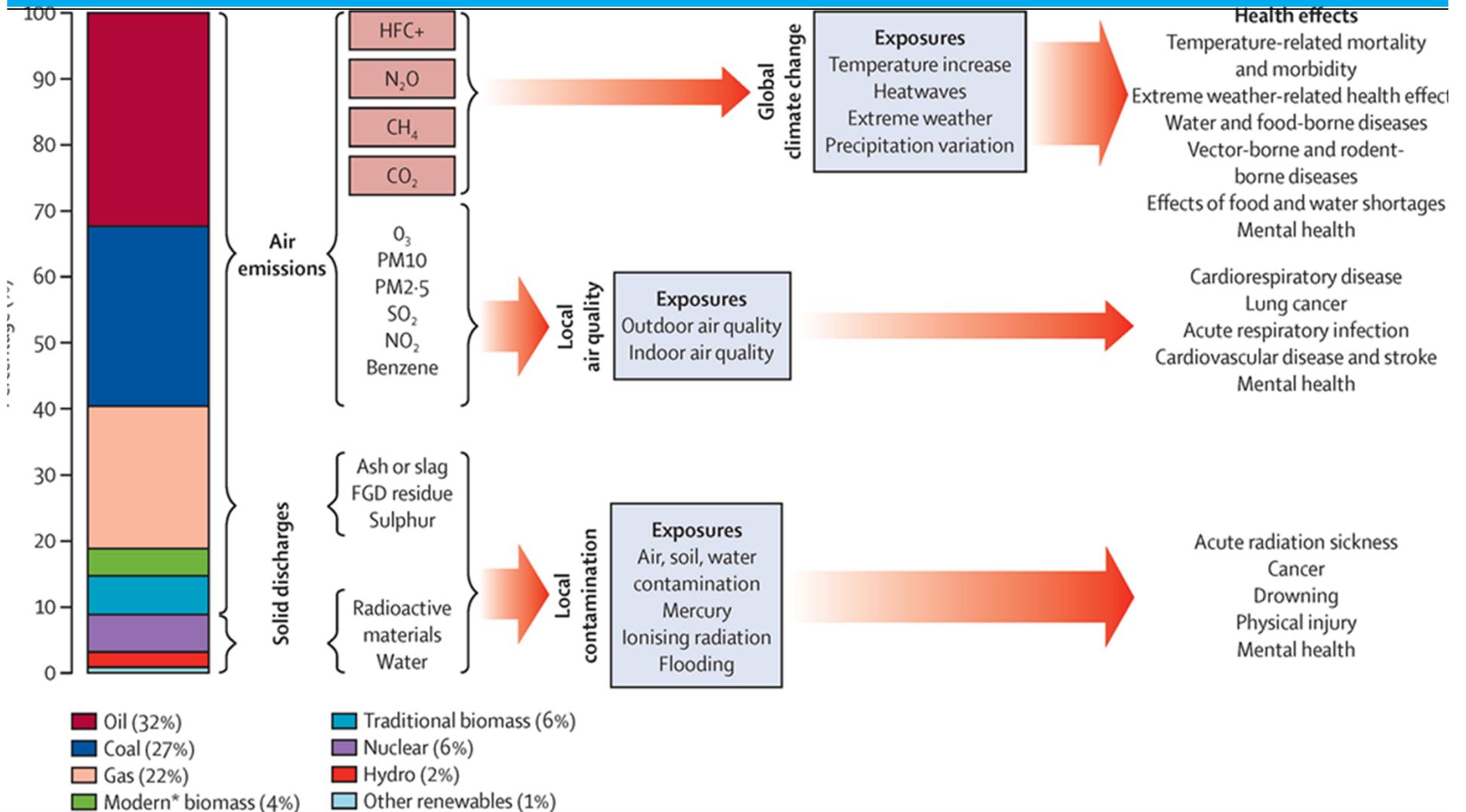


Source: [nytimes.com/2016/05/03/us/resettling-the-first-american-climate-refugees.html](https://www.nytimes.com/2016/05/03/us/resettling-the-first-american-climate-refugees.html)

**The health effects of climate change can be prevented:**

**The providers**

# Connections between the global energy system and health impacts

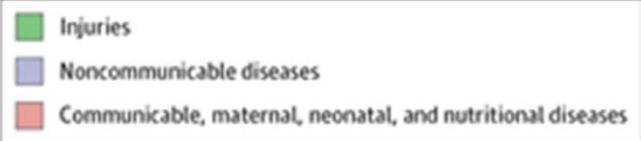


# **Resilience**

**For public health, it's not just the best we can do, it's the best there is.**



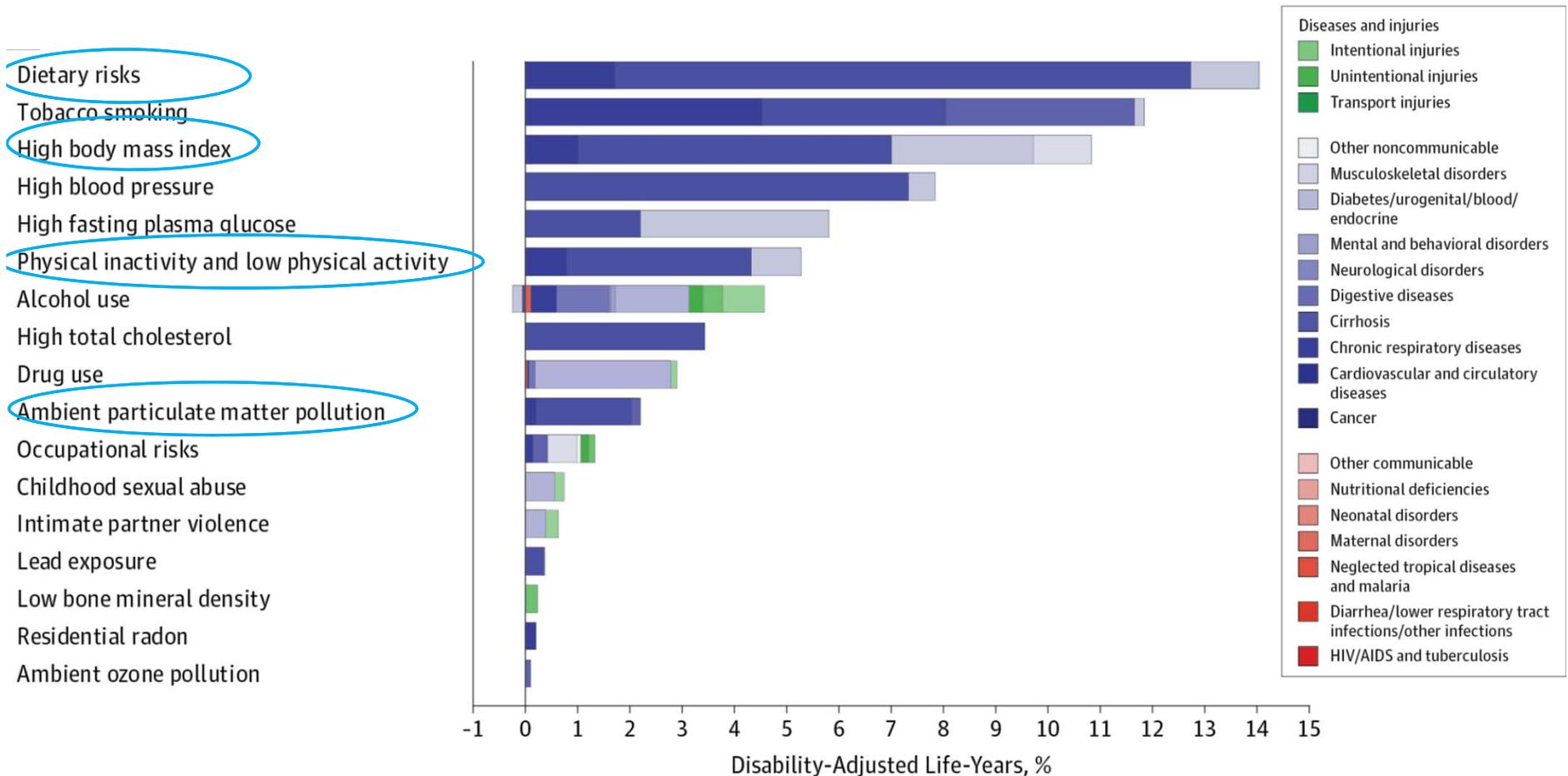
# Disability-Adjusted Life-Year Ranks for the Top 30 Diseases and Injuries in the U.S.



Mean rank (95% UI)			Mean rank (95% UI)	Median change, % (95% UI)
	1	Ischemic heart disease		
1.0 (1-1)	1	Ischemic heart disease	1.0 (1-1)	-19 (-23 to -7)
2.8 (2-6)	2	Chronic obstructive pulmonary disease	2.5 (2-4)	34 (19 to 52)
3.9 (2-7)	3	Low back pain	4.4 (2-10)	25 (14 to 38)
4.2 (2-7)	4	Lung cancer	4.4 (2-8)	4 (-6 to 18)
4.9 (2-7)	5	Major depressive disorder	4.9 (2-10)	43 (9 to 83)
5.1 (2-8)	6	Other musculoskeletal	5.5 (3-8)	34 (24 to 45)
7.2 (3-11)	7	Stroke	7.3 (5-10)	0 (-8 to 7)
7.5 (6-9)	8	Diabetes	7.4 (4-10)	58 (43 to 71)
10.3 (8-14)	9	Road injury	9.8 (7-13)	-16 (-24 to -1)
10.8 (7-17)	10	Breast cancer	10.4 (6-13)	85 (37 to 129)
11.4 (9-14)	11	Congenital anomalies	10.5 (6-14)	29 (17 to 41)
11.9 (7-18)	12	Cirrhosis	11.3 (8-14)	159 (84 to 229)
13.6 (9-21)	13	Alcohol use disorders	12.1 (8-15)	21 (5 to 40)
13.6 (9-19)	14	Lower respiratory tract infections	14.6 (12-21)	6 (-13 to 18)
14.0 (10-18)	15	Breast cancer	17.0 (14-24)	58 (29 to 84)
15.9 (13-19)	16	Interpersonal violence	17.0 (14-25)	38 (10 to 50)
17.2 (11-22)	17	Preterm birth complications	18.0 (15-23)	69 (45 to 86)
18.5 (16-22)	18	Asthma	19.3 (14-24)	3 (-6 to 42)
18.8 (17-21)	19	Asthma	20.0 (14-27)	26 (-1 to 59)
20.0 (16-24)	20	Osteoarthritis	20.7 (15-25)	-13 (-24 to 9)
21.8 (18-25)	21	Other cardiovascular and circulatory	21.9 (18-26)	-2 (-9 to 7)
22.4 (16-29)	22	Other cardiovascular and circulatory	22.0 (14-28)	-26 (-35 to 3)
22.9 (15-33)	23	Schizophrenia	22.7 (16-27)	-25 (-40 to -2)
24.8 (20-30)	24	Migraine	22.7 (14-34)	14 (6 to 24)
25.4 (21-31)	25	Alzheimer disease	23.9 (15-34)	56 (28 to 88)
25.7 (23-29)	26	Chronic kidney disease	24.2 (19-28)	27 (16 to 40)
28.0 (24-31)	27	Chronic kidney disease	28.4 (10-23)	30 (17 to 43)
29.2 (22-38)	28	Migraine		

Source: JAMA. 2013;310(6):591-606

# Disability-Adjusted Life-Years Related to the Leading Risk Factors in the United States

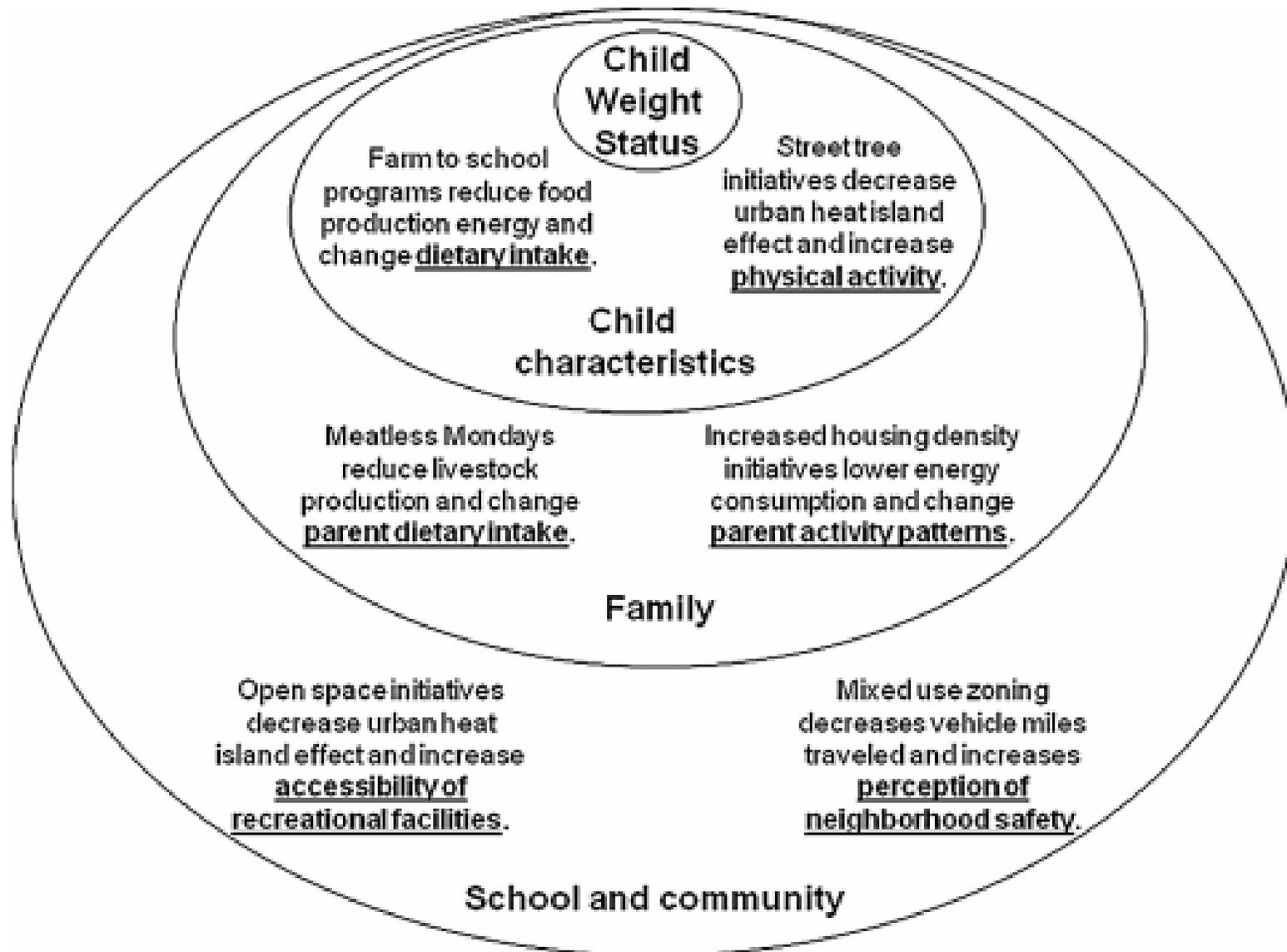


Source: JAMA. 2013;310(6):591-606

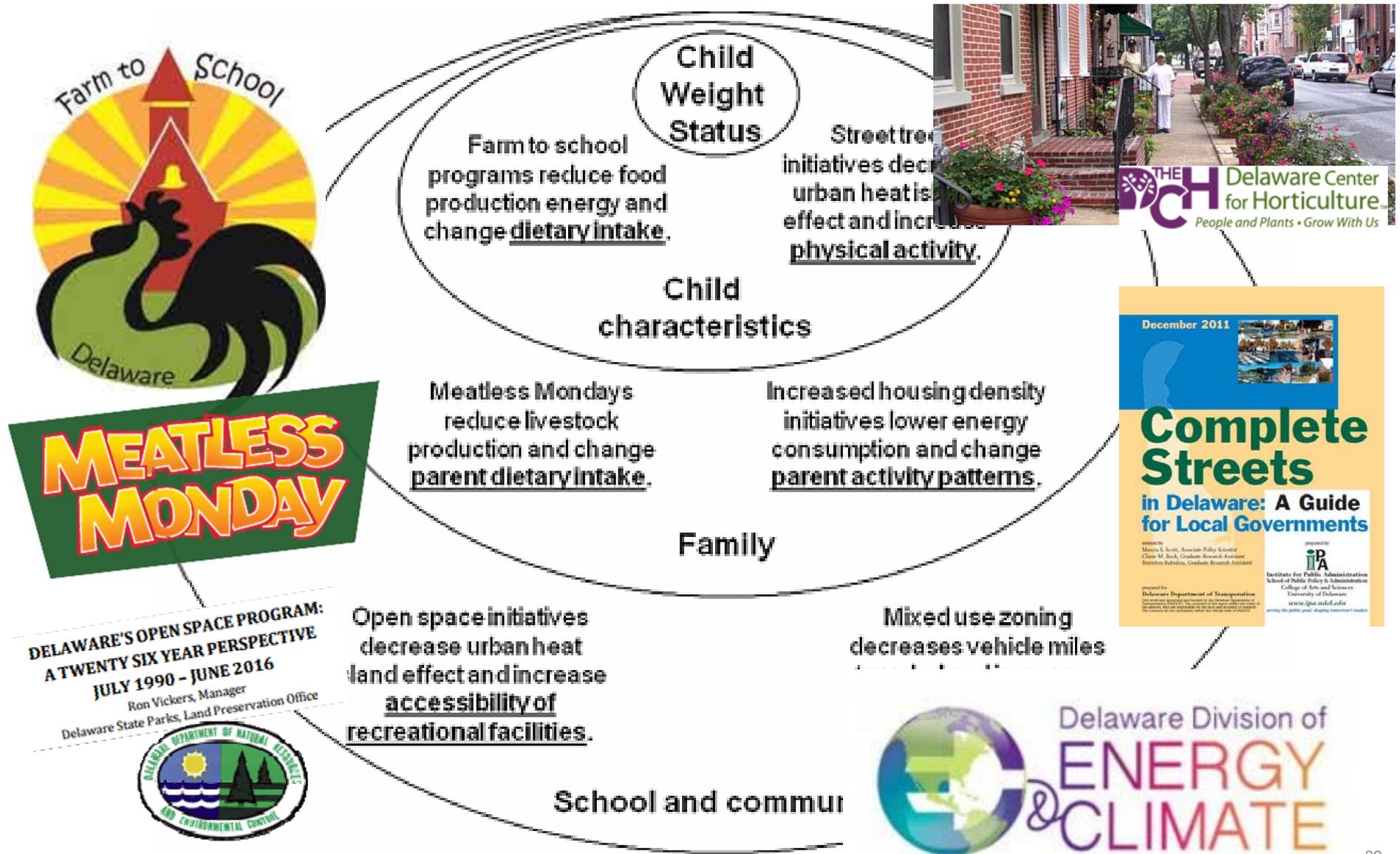
# **Modifiable risk factors for depression**

**Chronic illness**  
**Lack of social support**  
**Elevated BMI**  
**Substance abuse**  
**Traumatic events**  
**Unemployment**

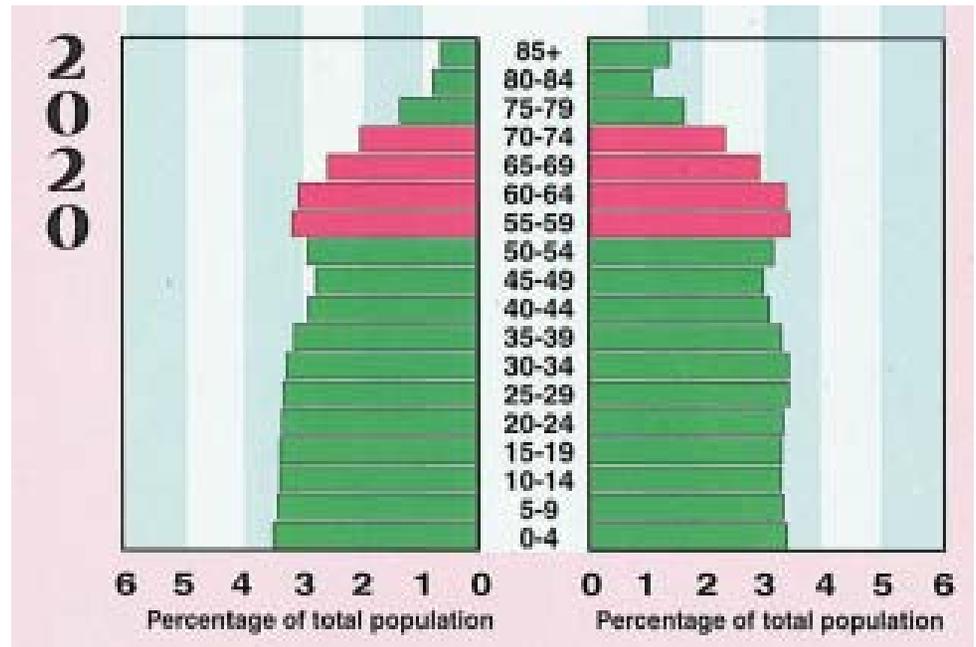
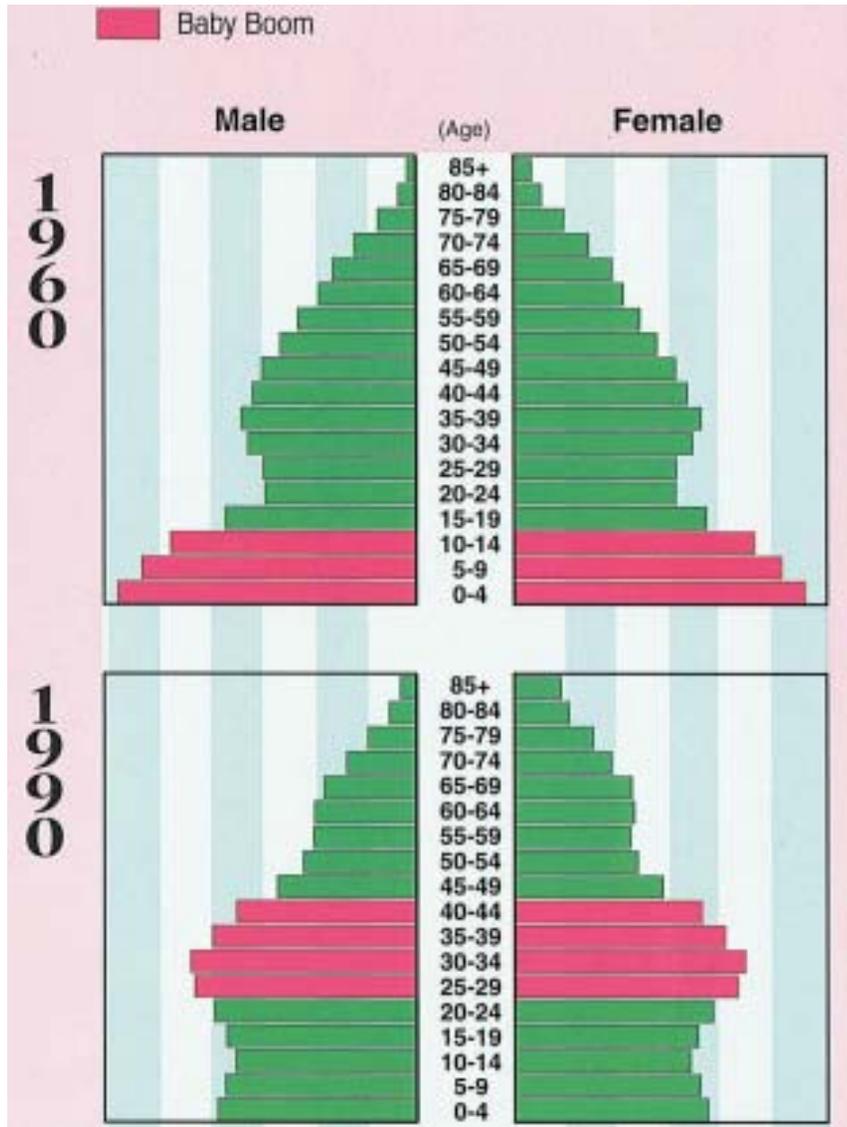
# Climate change interventions with potential impacts on childhood obesity at different levels



# Climate change interventions with potential impacts on childhood obesity at different levels



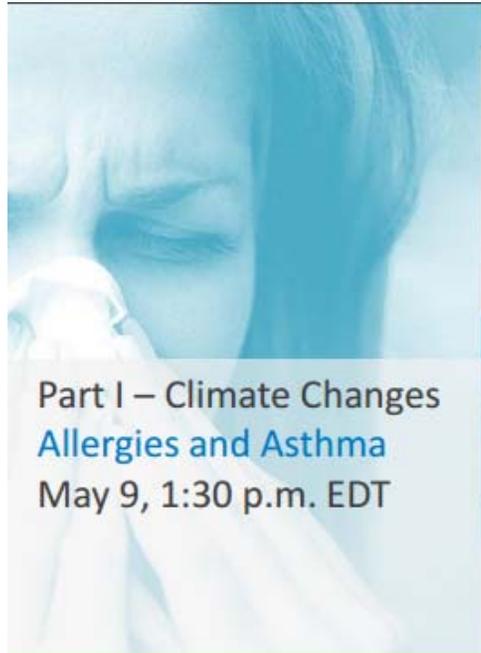
# U.S. Population Age Structure: 1960 - 2020



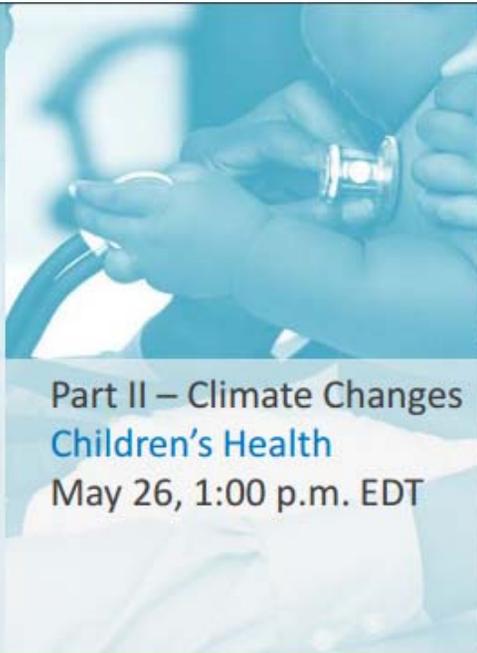
Source: U.S. Bureau of the Census



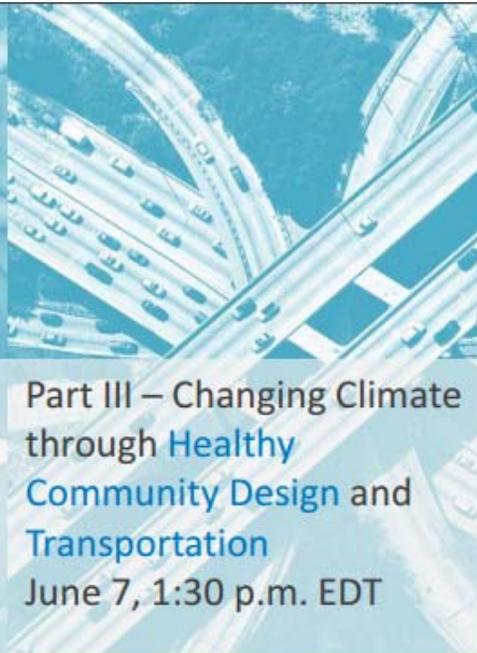
Source: abcnews.go.com, 2015. Film: Present Perfect by Evan Briggs



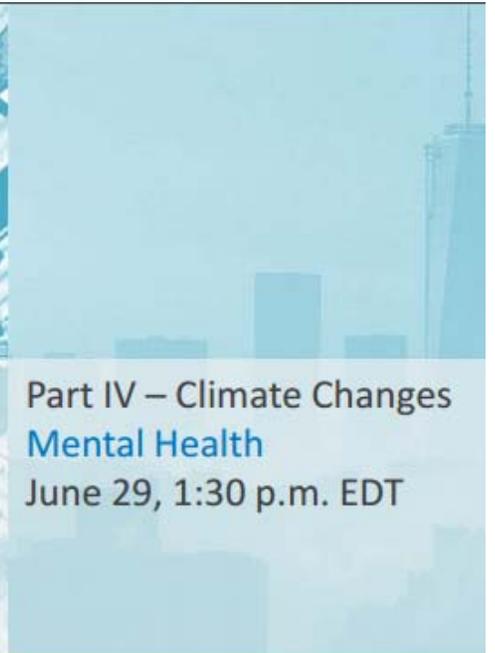
Part I – Climate Changes  
Allergies and Asthma  
May 9, 1:30 p.m. EDT



Part II – Climate Changes  
Children's Health  
May 26, 1:00 p.m. EDT



Part III – Changing Climate  
through Healthy  
Community Design and  
Transportation  
June 7, 1:30 p.m. EDT



Part IV – Climate Changes  
Mental Health  
June 29, 1:30 p.m. EDT

Making the Connection:

# Climate Changes Health

webinar series

For more info, visit [www.apha.org/climate-changes-health](http://www.apha.org/climate-changes-health)



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3. Its health effects can be prevented.



## Resources and meetings

1. US Global Change Research Program, Climate and Health Assessment. <https://health2016.globalchange.gov>
2. Lancet Commission on Health and Climate Change, 2015.
3. American Academy of Pediatrics – Global Climate Change and Children’s Health. Policy Statement and Technical Report, 2015.
4. American College of Physicians – Climate Change and Health.
5. American Public Health Association Annual Meeting “Creating the Healthiest Nation: Climate Changes Health” in Atlanta, Nov 4-8, 2017
6. U.S. 4th National Climate Assessment – 2018



Photo: Maida Galvez, 2014

**Thank you.**  
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