NATIONAL CFRP
20 YEARS
Center for Fatality Review & Prevention

THE EFFECTS OF CLIMATE CHANGE ON PREGNANCY AND REPRODUCTIVE HEALTH

Telling Stories to Save Lives

KEY FUNDING PARTNER

FEDERAL ACKNOWLEDGEMENT

The National Center is funded in part by Cooperative Agreement Number 2 UG7MC28482-08-00 from the US Department of Health and Human Services (HHS), Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB) as part of an award totaling $2,400,997 annually with 0 percent financed with non-governmental sources. Its contents are solely the responsibility of the authors and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

HOUSEKEEPING

Before we get started

- This webinar is being recorded and will be available on the National Center's webpage (URL: www.ncfrp.org).
- Participants are muted. Use the question-and-answer box to ask questions.
- Due to the large number of participants, the speakers may be unable to answer all questions. Unanswered questions will be answered and posted with the recording.
- Contact the National Center (email: info@ncfrp.org) for any tech problems.

EVALUATION

https://www.surveymonkey.com/r/32BRMMX

Diane Pilkey, RN, MPH

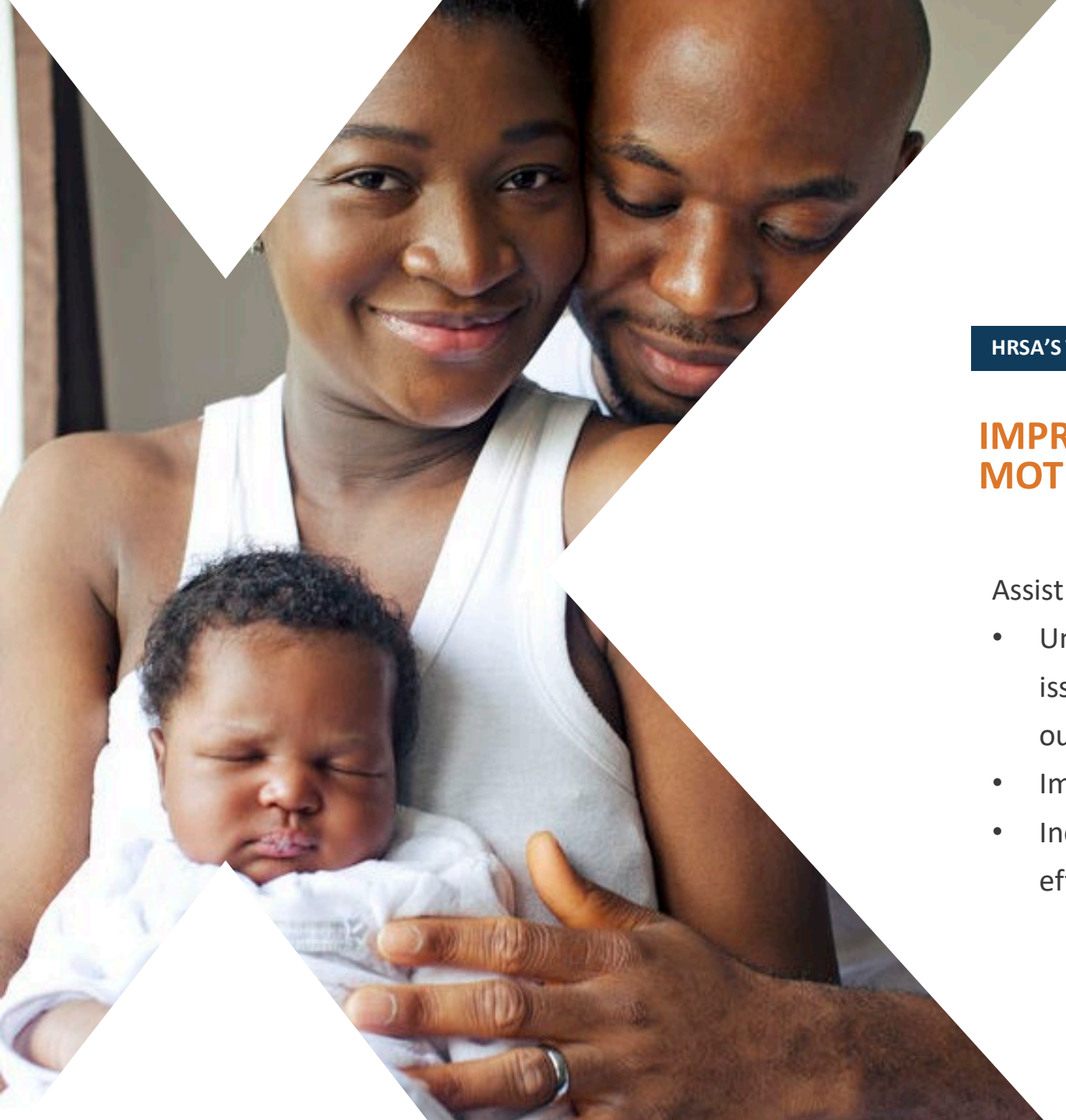
Welcome and Introductions

Senior Nurse Consultant

Division of Child, Adolescent and Family Health

Maternal and Child Health Bureau

Health Resources and Service Administration



HRSA'S VISION FOR THE NATIONAL CENTER

IMPROVING SYSTEMS OF CARE AND OUTCOMES FOR MOTHERS, INFANTS, CHILDREN, AND FAMILIES

Assist state and community programs in:

- Understanding how CDR and FIMR reviews can be used to address issues related to adverse maternal, infant, child, and adolescent outcomes
- Improving the quality and effectiveness of CDR/FIMR processes
- Increasing the availability and use of data to inform prevention efforts and for national dissemination

PRESENTATION OBJECTIVES

- Describe how climate change effects pregnancy, pregnancy outcomes, and reproductive health.
- Discuss the impact of disasters, in particular high heat, on preterm birth and stillbirth.
- Identify the ways that climate change contributes to disparities with potential action/solutions for fatality review teams.
- Bring to light the challenges and concerns these emerging problems are posing to families and to maternal and newborn health.

Speakers

Marya Zlatnik, MD
University of California San Francisco, School of Medicine

Esther McCant, BS
Birth Doula
Founder of Metro Mommy Agency

UCSF
University of California
San Francisco

Climate Change & Reproduction

National Center for Fatality Review January 31, 2023

Marya G. Zlatnik, MD, MMS
Professor, Maternal Fetal Medicine
Program in Reproductive Health & the Environment, UCSF
Associate Director, Maternal Fetal Health & the Environment, UCSF-Western States Pediatric Environmental Health Specialty Unit

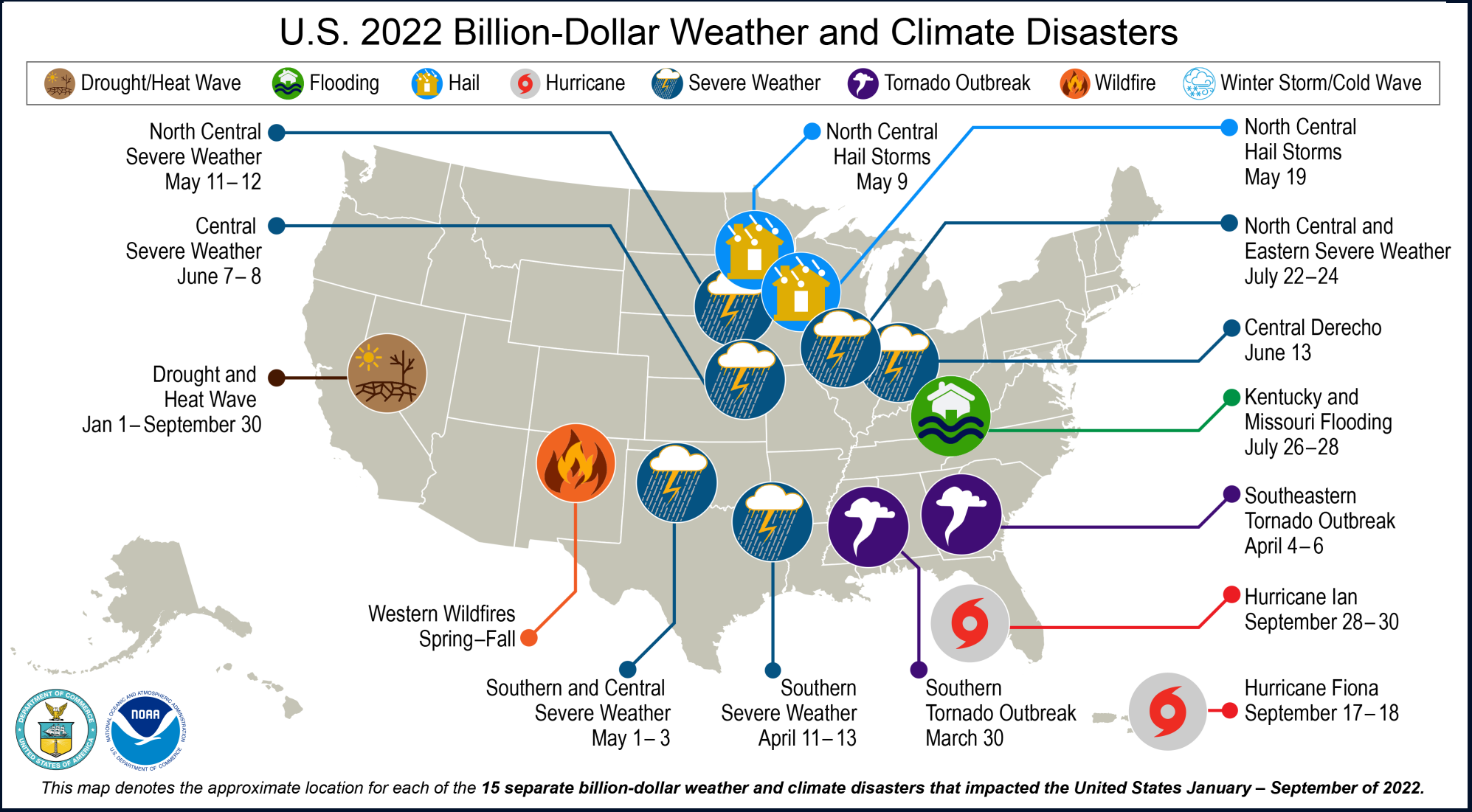
No disclosures

Acknowledgements:
Funding for this work comes in part from the National Institute of Environmental Health Sciences (ESO22841), U.S. EPA STAR grant (RD83543301), & by the cooperative agreement award number 1 U61TS000237-01 from the Agency for Toxic Substances & Disease Registry (ATSDR). Its contents are the responsibility of the authors & do not necessarily represent the official views of the Agency for Toxic Substances & Disease Registry (ATSDR). The U.S. Environmental Protection Agency (EPA) supports the PEHSU by providing partial funding to ATSDR under Inter-Agency Agreement number DW-75-95877701. Neither EPA nor ATSDR endorse the purchase of any commercial products or services mentioned in PEHSU publications. U.S. Environmental Protection Agency U.S. EPA (award number 83543301). National Institutes of Health/National Institute of Environmental Health Sciences (award number PO1ES022841). Support for this research was provided by core center grant P30-ES030284 from the National Institute of Environmental Health Sciences, National Institutes of Health.

Objectives

- Physiology of pregnancy
- Discuss impacts of climate change on reproduction
  - Mosquitos, floods, sea level rise, extreme heat, forest fires
  - Discuss impacts of air pollution on reproduction
  - How fossil fuels feed both climate change & chemical production
  - Define environmental injustice
- What we can do
  - Advice for pregnant people & disasters
  - Solutions we can employ

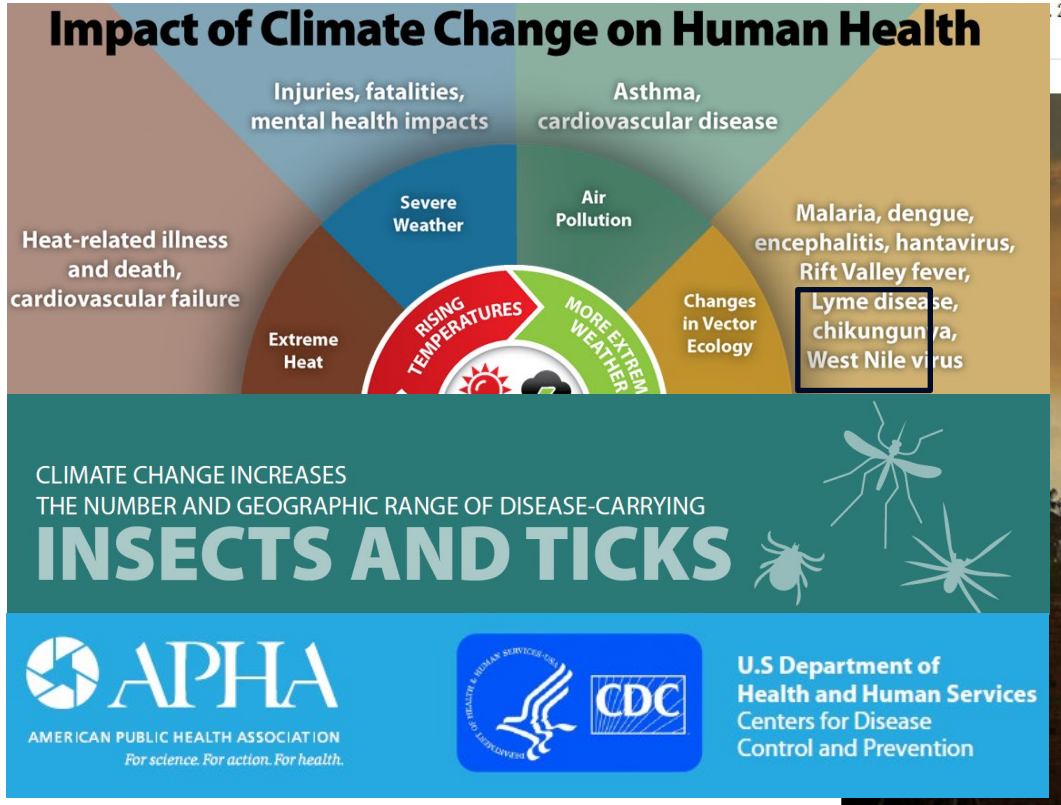
2022 Billion Dollar Disasters



NOAA.gov: Through Sept 2022

UCSF

2016



IOME SEARCH The New York Times

SCIENCE

In Zika Epidemic, a Warning on Climate Change

, 20, 2016

[PDF] KEY MESSAGES – **ZIKA** VIRUS DISEASE

www.cdc.gov/zika/pdfs/zika-key-messages.pdf

KEY MESSAGES – **ZIKA** VIRUS DISEASE ... Changes in the environment caused by **climate** change can influence the spread of mosquitoes. o These changes can ...

IJGO

International Journal of GYNECOLOGY & OBSTETRICS

Editor: Michael Geary

Impact factor (2021): 4.447

Journal Citation Reports (Clarivate, 2022): 17/85 (Obstetrics & Gynecology)

Online ISSN: 1879-3479

Volume 160, Issue 2

Pages: e1-e4, 363-725

February 2023

SPECIAL SECTION: THE IMPACT OF GLOBAL WARMING ON WOMEN'S HEALTH

EDITORIALS

Free Access

Code OB: We need urgent action on climate change and toxic chemicals

Tracey J. Woodruff, Annemarie Charlesworth, Marya G. Zlatnik, Santosh Pandipati, Nathaniel DeNicola, Iftikhar Latif

Pages: 363-365 | First Published: 17 January 2023

IJGO Special publication: "The Impact of Global Warming on Women's Health"
1.17.23

UCSF

Pregnancy and Fetal/Neonatal Outcomes

- Preterm birth (PTB) → neonatal death/disability
- Fetal growth restriction/small for gestational age (SGA) → stillbirth/neonatal death/disability
- Preeclampsia/gestational hypertension → PTB, placental insufficiency/SGA/stillbirth

Quick Review of Pregnancy Physiology: Goals of Maternal Adaptation

- Mass effect:

5L abdominal mass

- Hemodynamic:

perfusion of 4kg additional tissue

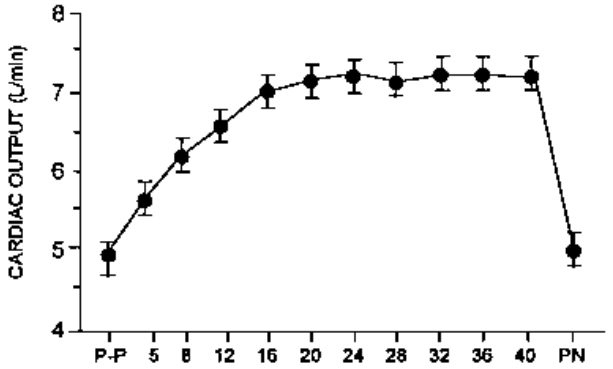
- Metabolic/Hormonal:

O_2 & nutrients for woman & fetus

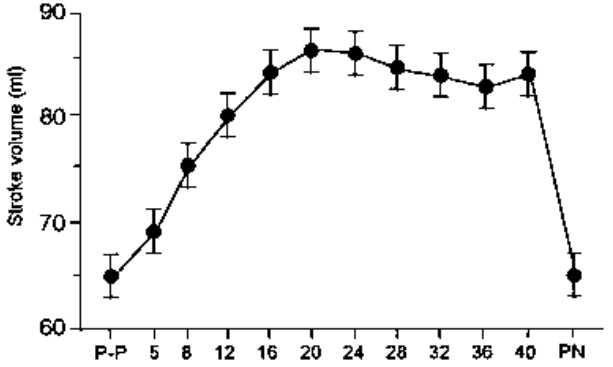
Quick Review of Pregnancy Physiology: Increased Cardiac Output

- Cardiac output increased by 150%
- Increase starts early in pregnancy
- Initial increase in CO from increase in stroke volume
- As pregnancy progresses, increased HR

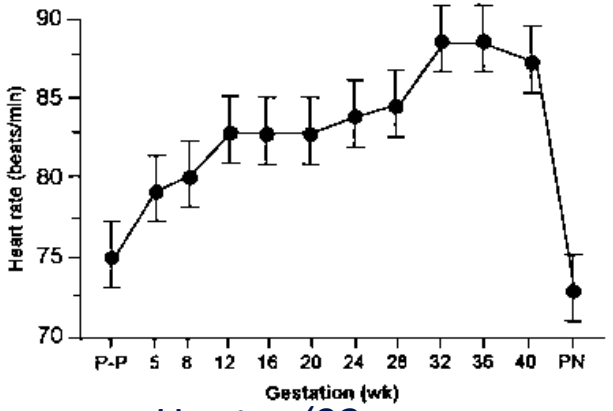
CO



SV

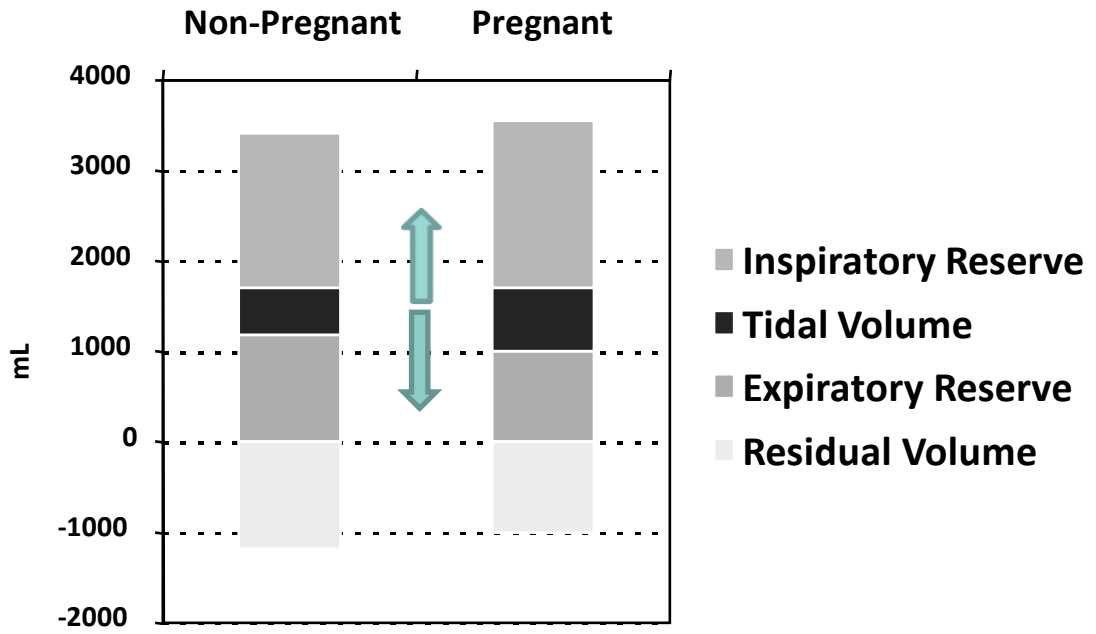


HR



Hunter '92

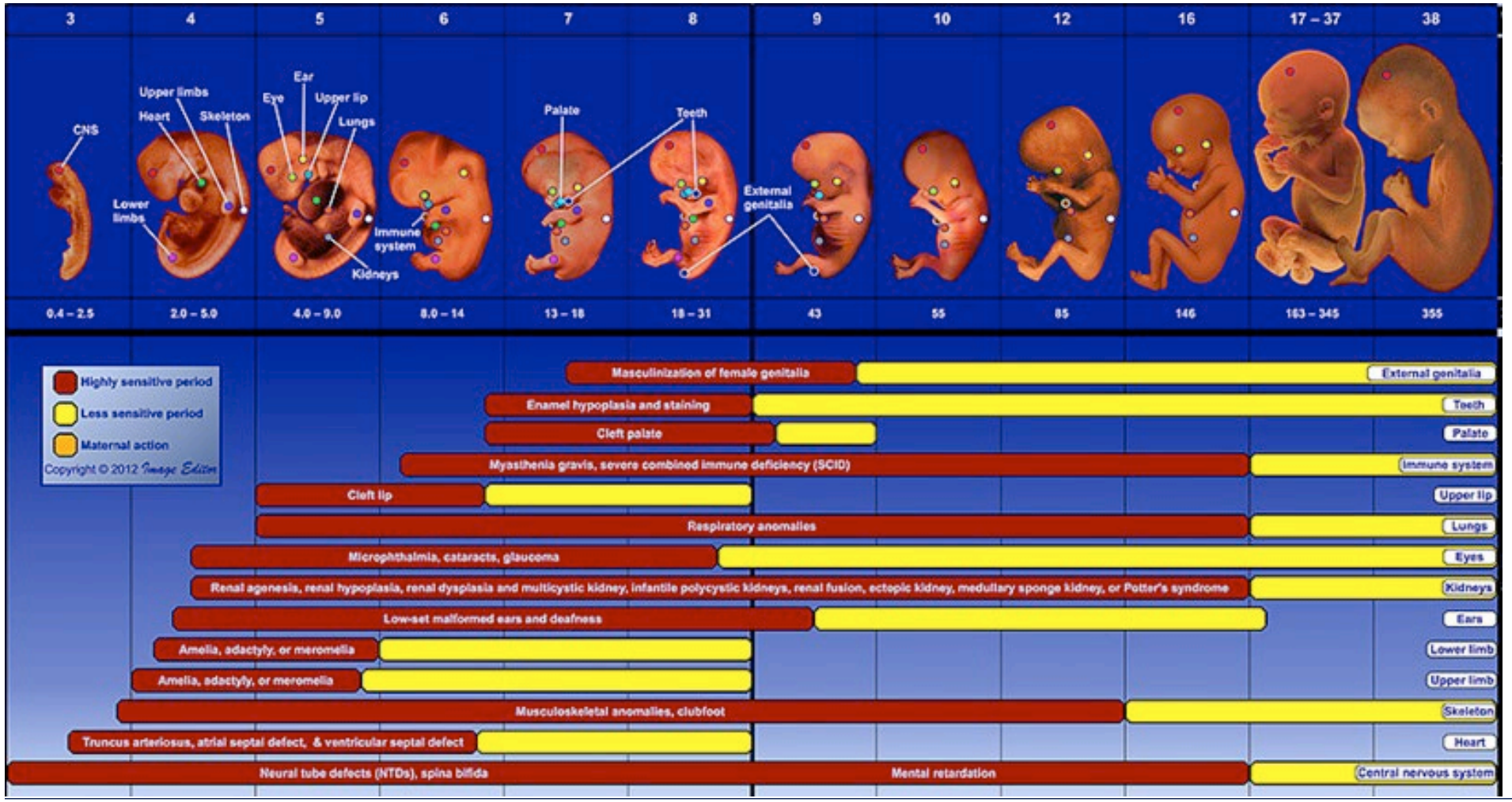
Quick Review of Pregnancy Physiology: Lung Volumes



Tidal Volume	↑ 40%
Respiratory rate	No change
Minute ventilation (TV x RR)	↑ 40%

Review: Timeline of Fetal Development

Weeks after fertilization (add 2w to = GA by LMP); 1st tri:4-13, 2nd tri:14-26, 3rd tri 27-40wks



Weeks from conception, Modified from, "Critical or sensitive stages in human prenatal development," by Image Editor

CLIMATE CHANGE

- Women & children **14x more likely to die** than men in natural disasters
- Migration & movement → risk
- Gender-based violence increases in disasters
- Changing distribution of pollutants: mercury, lead, & other toxins
- Expanding vectors: ZIKA, Dengue, Malaria
- Pregnancy-specific risks

Climate Change and Pregnancy: Floods

- Floods
  - Disruption of services
  - Barriers to medical care
  - Stress
  - Decreased birth weight
  - Neurodevelopmental impacts
  - Maternal & neonatal morbidity increased

•Flooding in Gilroy California, USA February 22, 2017. water from San Felipe lake and its surrounding sloughs and creeks flood agricultural fields outside of Gilroy, California. Planet Labs, Inc. https://www.planet.com/gallery/gilroy-flooding/

Hilmert CJ Health Psychol. 2016; Laplante DP Early Hum Dev. 2018; Guo C, Chen G Lancet Planet Health. 2020

Climate Change and Pregnancy: Sea level rise

- Increased water source salinity & preeclampsia in Bangladesh *(a result of sea level rise)*

Table 6. Association of (pre)eclampsia and/or gestational hypertension with water source.

Water Source	Cases (n = 202)	Controls (n = 1,006)	Crude Odds ratio (OR) (95% CI)	OR Adjusted by age, parity, SES, mid-upper arm circumference (95% CI)
Rain+another[1]	10 (5.26)	234 (25.7)	1.00	1.00
Filter[2]	25 (13.2)	117 (12.8)	4.99 (2.32–10.8)	5.32 (2.41–11.7)
Pond	47 (24.7)	251 (27.5)	4.38 (2.16–8.87)	5.31 (2.60–10.9)
Tube-well	108 (56.8)	310 (34.0)	8.15 (4.17–15.9)	8.30 (4.20–16.4)

1. 'Rain' has been combined with any other water source because of small numbers in the rainwater only group.
2. For brevity we refer to filtered pond water as 'filter'.

doi:10.1371/journal.pone.0108715.t006

Khan Plos ONE 2015

Pregnant Women + High Heat Don't Mix

40% increase
Volume of air inhaled/exhaled per minute

20% increase
Oxygen consumption

50% increase
Cardiac output

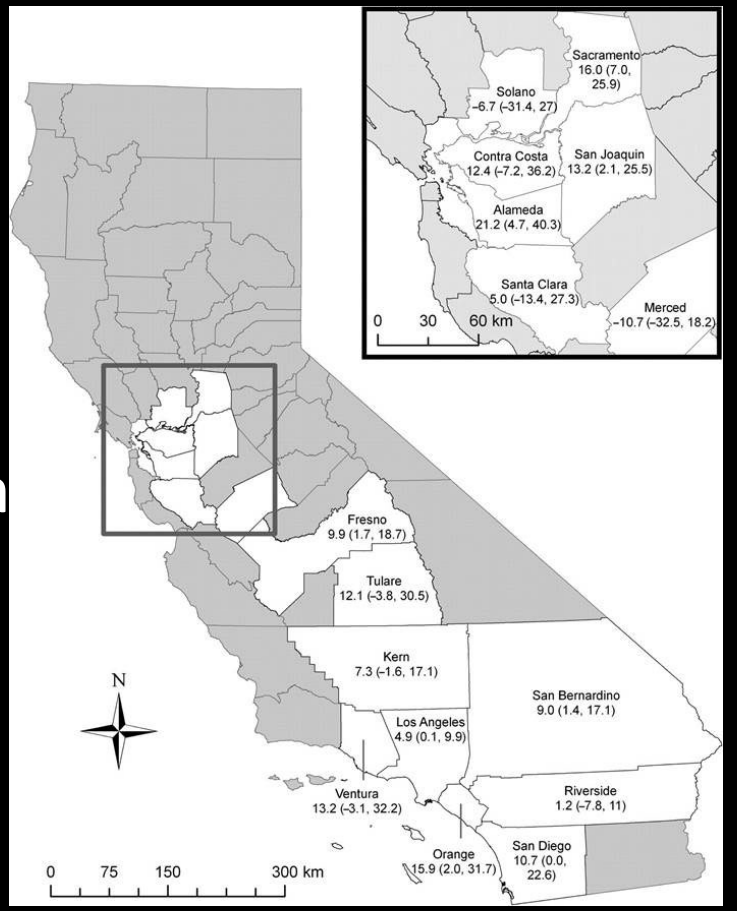
Physical changes in pregnancy make women more susceptible to high heat

Fetus generates heat

Keuhn, McCormick *Int J Environ Res Public Health 2017;14:853*

Climate Change & Pregnancy: Heat

- Extreme heat associated w/ shorter gestation
  Barcelona 2001-2005
- Higher temperatures associated w/ PTB
  - Bay Area: 5-20% increase in PTB for 10F increase in tem
  - California 2010
- (assume NCFR doesn't need a review of PTB/fatality)
- Increase in some birth defects
  - New York



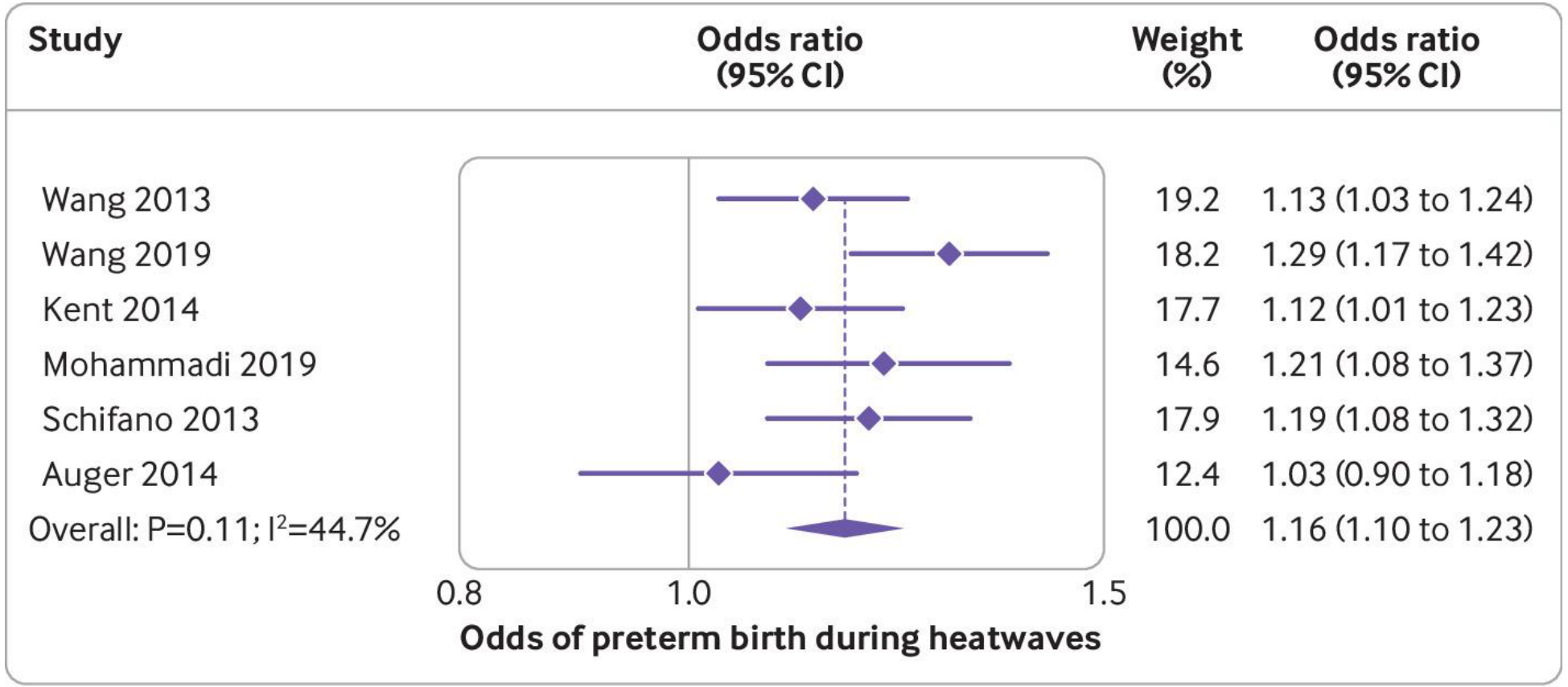
Dadvand 2011, Basu 2010, Van Zutphen 2012, 2014

WESTERN STATES PEHSU Pediatric Environmental Health Specialty Units

Program on Reproductive Health and the Environment

UCSF

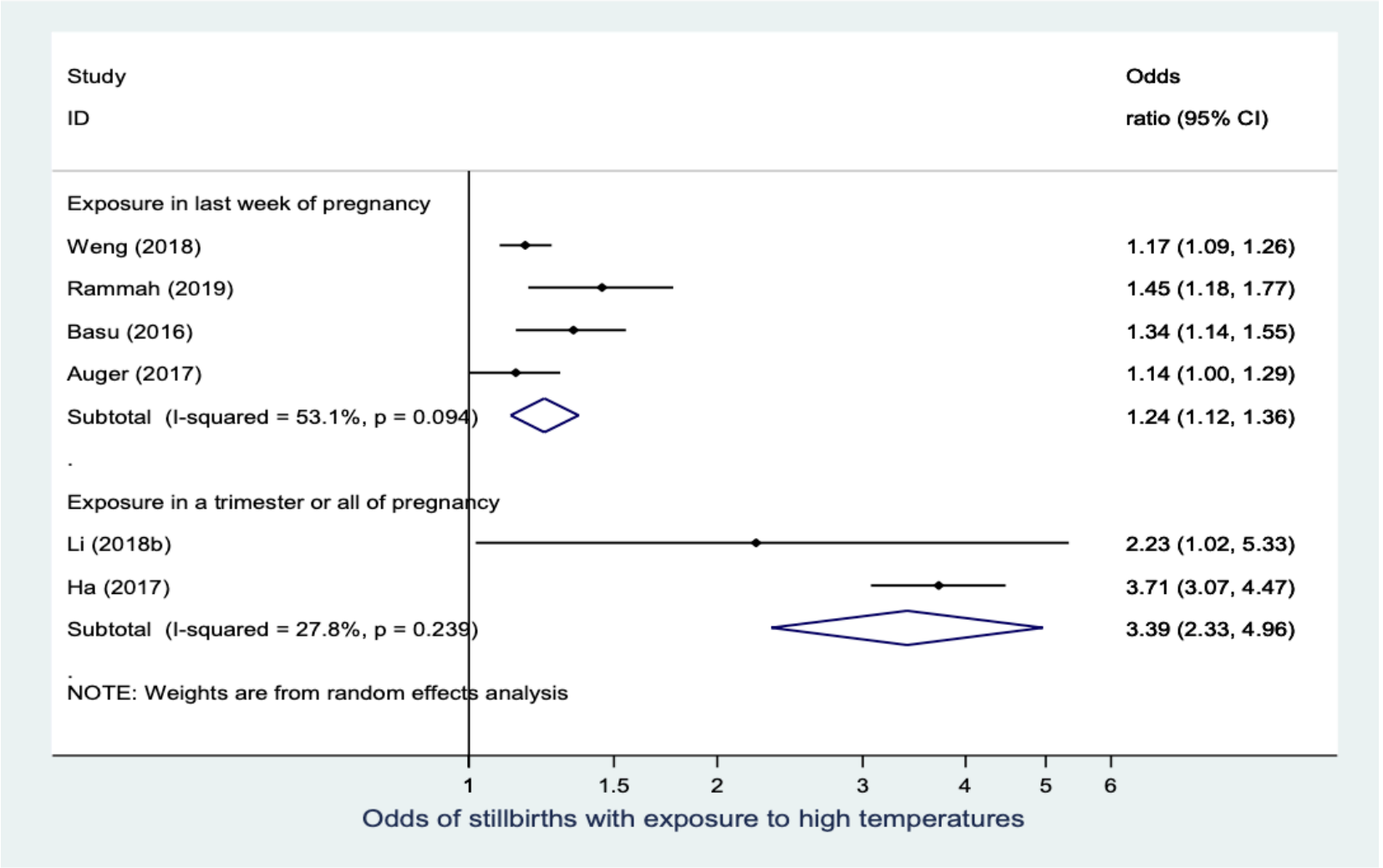
Odds of preterm birth during heatwaves.



Note: Weights are from random effects analysis

Matthew Francis Chersich et al. BMJ 2020;371:bmj.m3811

Odds of stillbirth during high heat

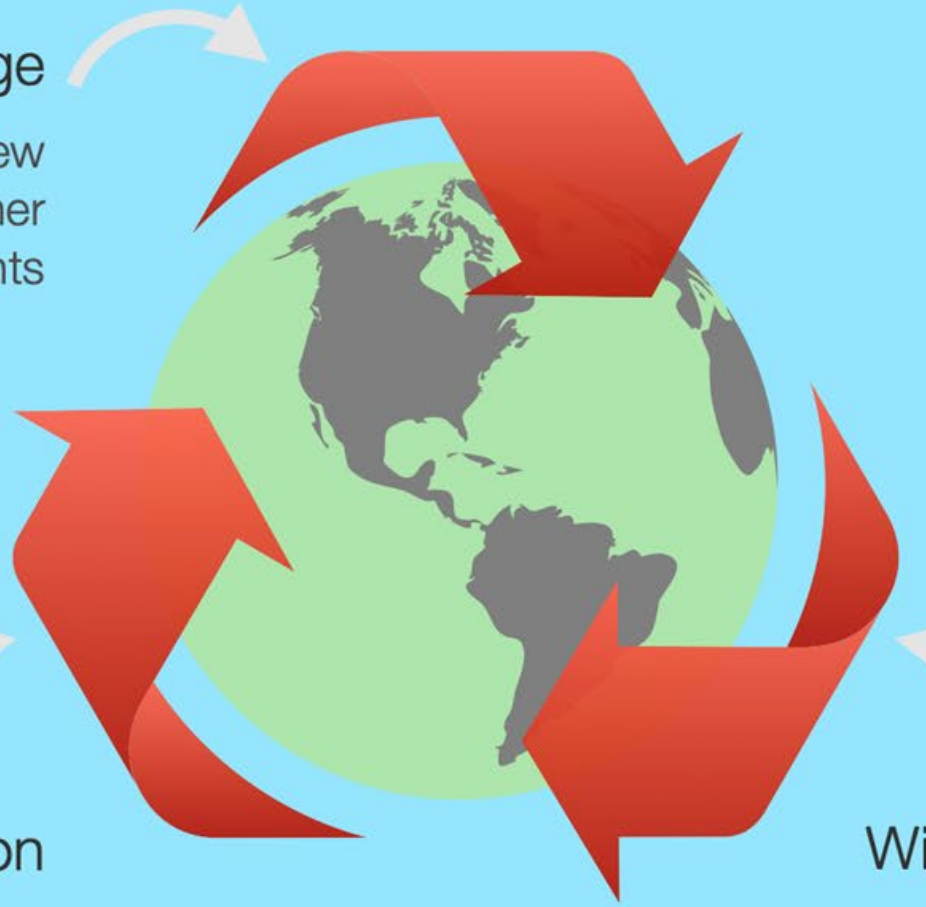


Matthew Francis Chersich et al. BMJ 2020;371:bmj.m3811

Climate Change-Pollution Cycle

Climate Change

Climate change results in new weather patterns, higher temperatures, longer droughts



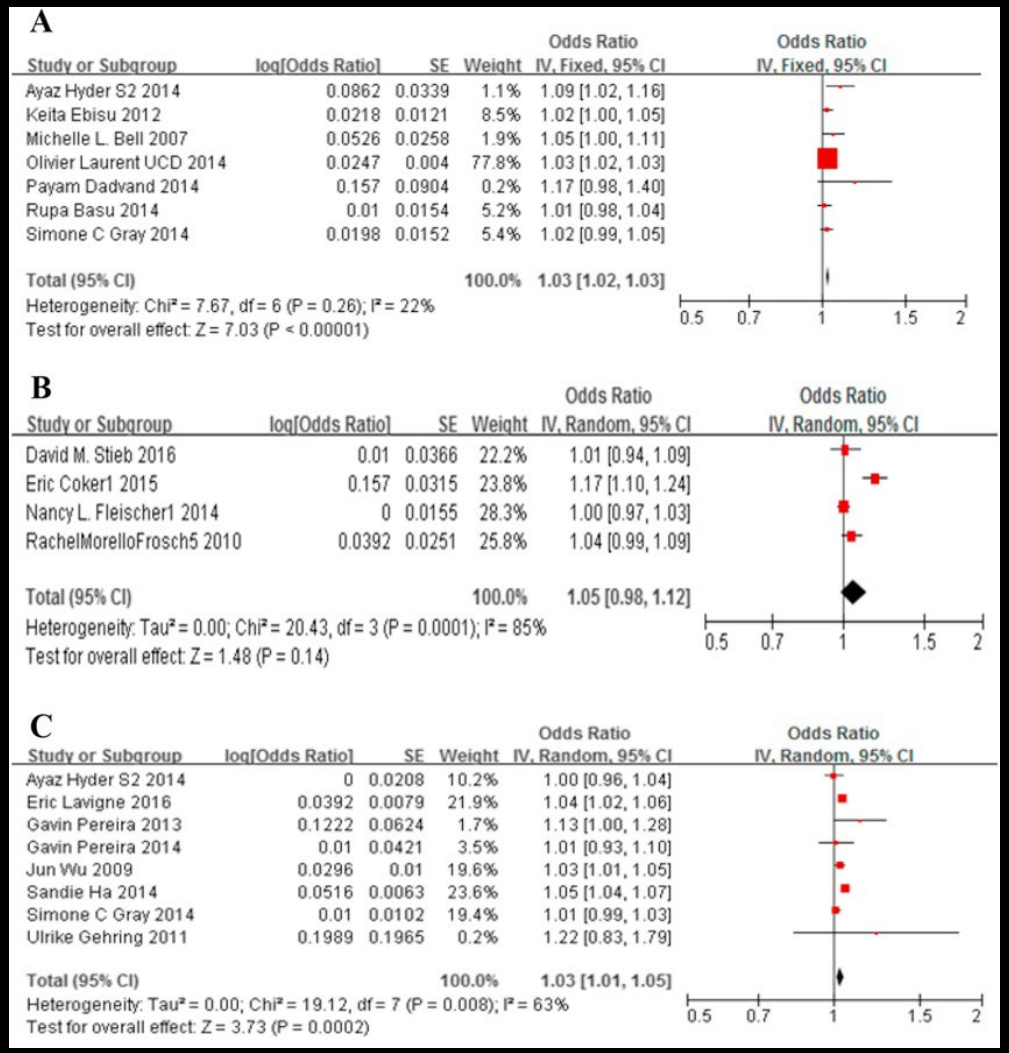
Air Pollution

Pollution from wildfires, wood stoves, industrial sources, traps heat from sun

Wildfires

Drier forests are more likely to catch fire and burn hotter. If close to houses risks people.

Prenatal Air Pollution & LBW & PTB



Forest plot: risks of $PM_{2.5}$ exposure & adverse birth outcomes during entire gestation.

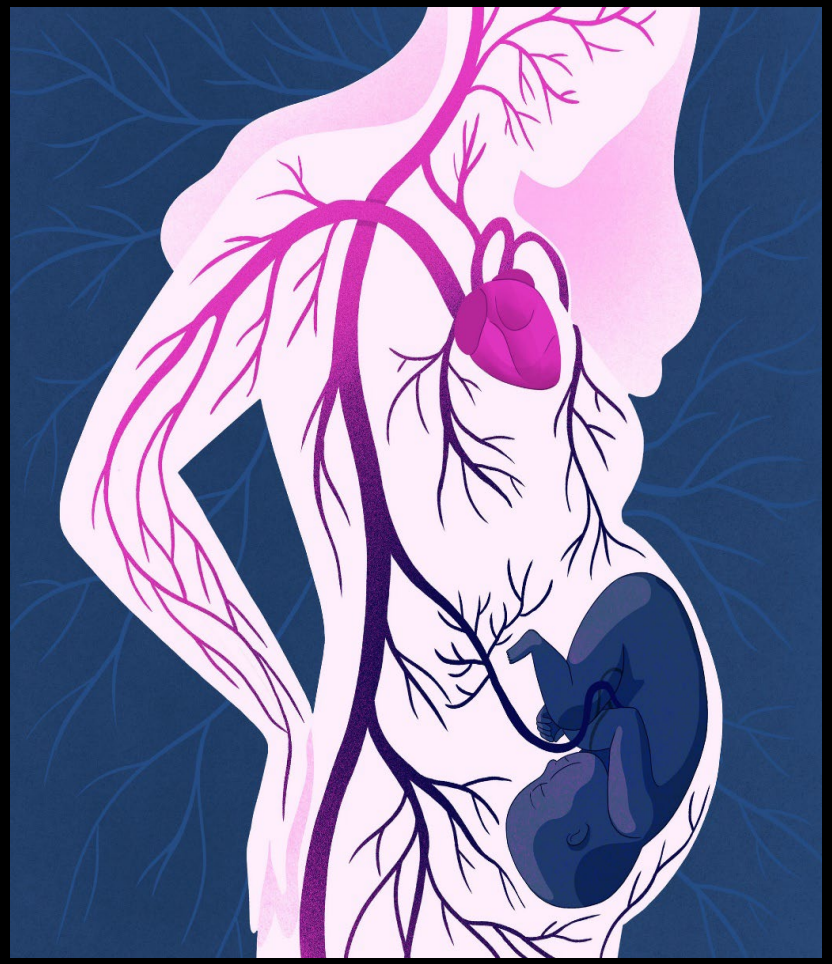
A: $PM_{2.5}$ (per IQR incr) & term LBW;

B: $PM_{2.5}$ (per 10 g/m^3 incr) & term LBW;

C: $PM_{2.5}$ (per IQR incr) & PTB

Li X., et al. 2017 https://doi.org/10.1016/j.envpol.2017.03.055

Maternal Risks : Hypertension



Air pollution linked to **preeclampsia** & **hypertension** in pregnancy

- *Systematic review & meta-analysis*

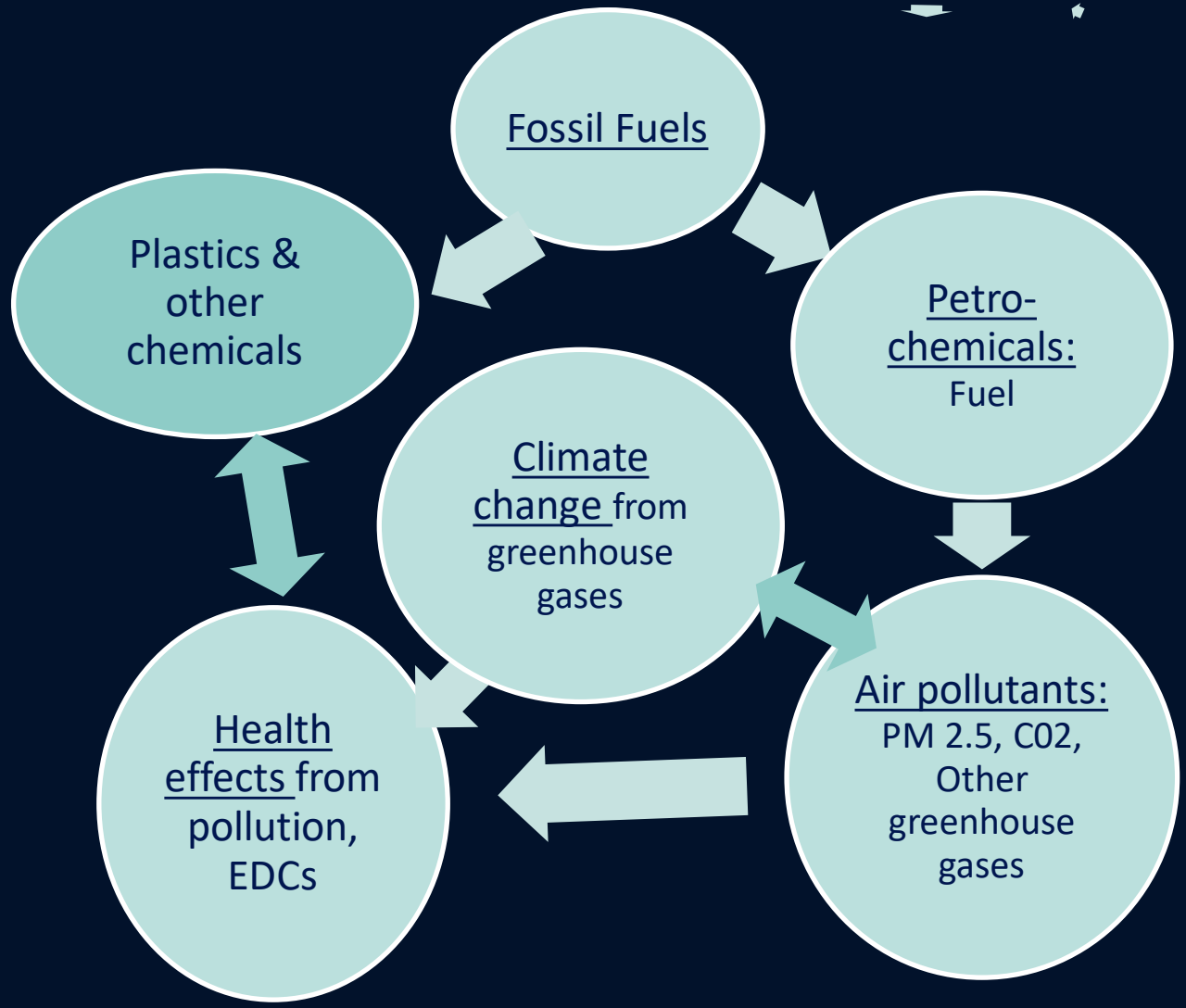
  HTN in pregnancy associated with:

- $PM_{2.5}$: OR 1.6 [95% CI 1.26–1.96] (for 5 µg/m^3 increment)
- NO_2: OR 1.2 [95% CI 1.00–1.44] (for 10-µg/m^3 increase)
- PM_{10}: OR 1.1 [95% CI 1.02– 1.26] (for 10-µg/m^3 increase)

Pedersen M, et al., Ambient air pollution & pregnancy- induced hypertensive disorders: Hypertension. 2014;64:494.
See also: Koman et al., World Med Health Policy. 2018; 10: 7–54. doi:10.1002/wmh3.257.

Climate change & Plastics & Health

- Fossil fuel extraction
  - Fuel use→ air pollution, greenhouse gases
  - Petrochemicals → plastics →endocrine disruption (EDCs) → diabetes, obesity, PTB, gHTN, etc



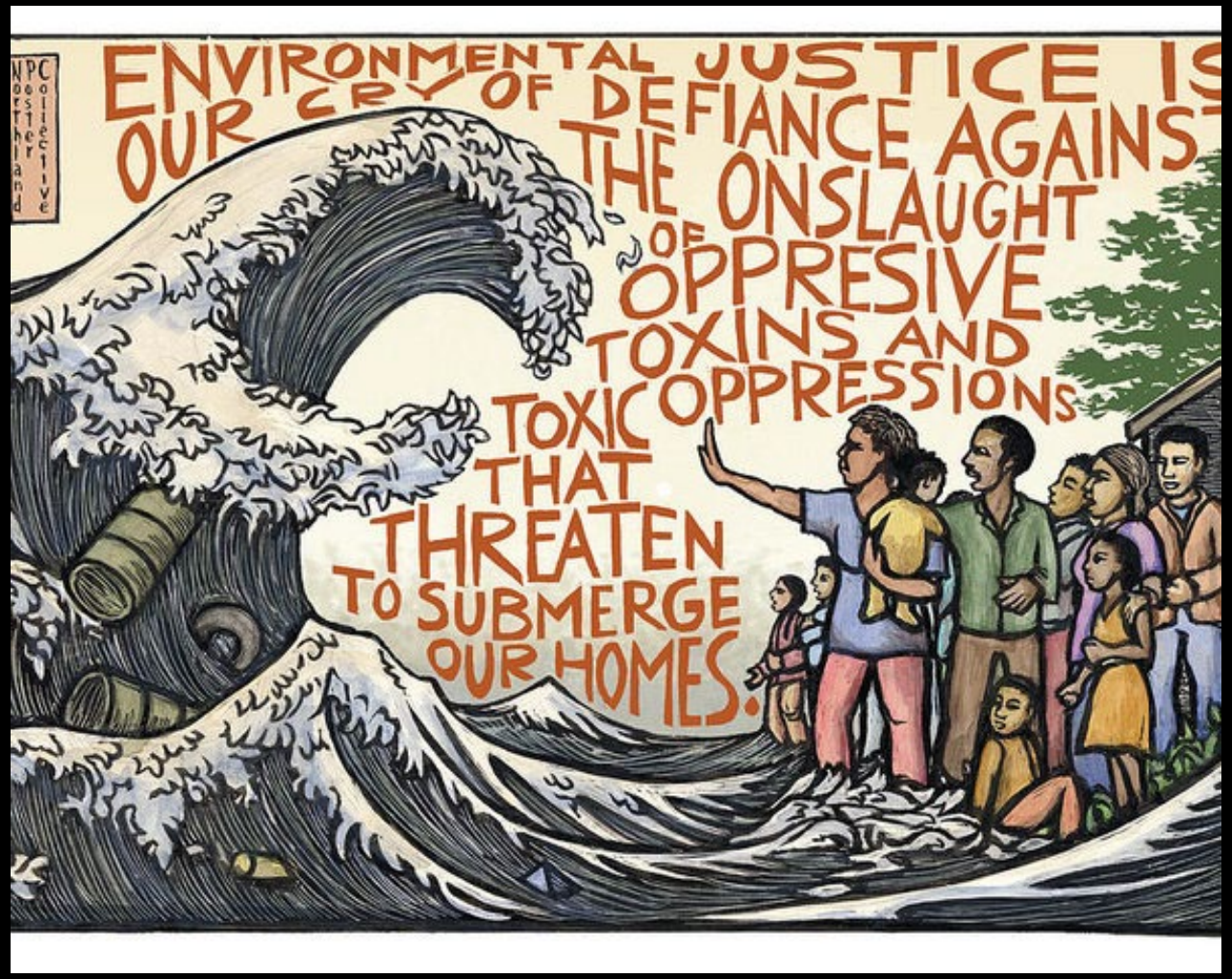


Photo: FINEARTAMERICA
https://www.redefy.org/stories/environmental-injustice-is-a-silent-killer-heres-why

Environmental Justice: (EJ) refers to policy & advocacy intended to achieve equitable protection from environmental harms & access to benefits across demographic groups.

vs. Environmental Racism

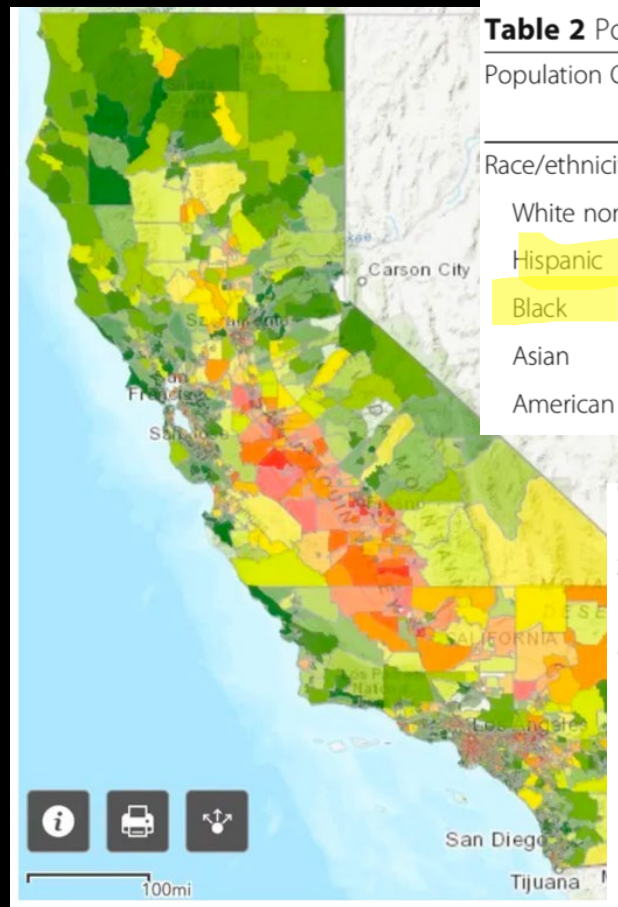
Association of Air Pollution and Heat Exposure With Preterm Birth, Low Birth Weight, and Stillbirth in the US: A Systematic Review

Exposure and outcome	Studies an asso No./tot	Increased risk, median (range), %[a]	Studies findin racial disparity No./total No.	Notable findings[b]
Air pollution				
Preterm birth	19/24	11.5 (2.0-19.0)[c]	10/19	Preterm birth risk increased 52% for asthmatic mothers
Low birth weight	25/29	10.8 (2.0-36.0)[c]	13/25	Low birth weight risk increased 3% for each 5-km proximity to a solid waste plant
Stillbirth	4/5	14.5 (6.0-23.0)[c]	1/4	Stillbirth risk increased 42% with high third-trimester exposure
Heat				
Preterm birth	4/5	15.8 (9.0-22.0)[d]	2/4	Preterm birth risk increased 11.6% per 5.6 °C increase
Low birth weight	3/3	31.0 (13.0-49.0)[d]	1/3	Term birth weight decreased 16 g per IQR temperature increase
Stillbirth	2/2	NA[e]	2/2	Stillbirth risk increased 6% per 1 °C increase the week before delivery during the warm season

Summary of Evidence Key Questions 1 Through 6

JAMA Netw Open. 2020;3(6):e208243. doi:10.1001/jamanetworkopen.2020.8243

What causes so much preterm birth in Fresno County?



CalEnviroScreen Scores of Pollution Burden by County in Californi
pollution; Green is less pollution)

Table 2 Population characteristics in Fresno County, 2009–2012 ($N = 53,843$)

Population Characteristics	*n* (%)	Pollution Burden Quintile				
		1st	2nd	3rd	4th	5th
Race/ethnicity						
White non-Hispanic	10,620 (19.7)	139 (35.0)	583 (53.5)	2042 (38.3)	4113 (20.0)	3665 (14.0)
Hispanic	32,302 (60.0)	212 (53.4)	357 (32.8)	2186 (41.0)	12,314 (59.7)	17,210 (65.5)
Black	3095 (5.8)	*	17 (1.6)	226 (4.2)	1159 (5.6)	1689 (6.4)
Asian	5675 (10.5)	*	100 (9.2)	512 (9.6)	2141 (10.4)	2899 (11.0)
American Indian/Alaska native	546 (1.0)	19 (4.8)	*	70 (1.3)	201 (1.0)	245 (0.9)

Table 4 Crude and adjusted odds ratio of preterm birth across quintiles of CalEnviroScreen indicators and scores in Fresno County, 2009–2012 ($N = 53,843$)

Type of Preterm Birth	< 37 weeks ($N = 4560$)	≥37 weeks ($N = 49,283$)		
Environmental exposure	*N* (%)	*N* (%)	cOR (95% CI)	aOR[a] (95% CI)
Exposures Score				
0 – 19th percentile	17 (0.4)	380 (0.8)	Reference	Reference
20 – 39th percentile	74 (1.6)	863 (1.8)	1.84 (1.09, 3.12)	1.73 (1.01, 2.97)
40 – 59th percentile	151 (3.3)	1834 (3.7)	1.78 (1.08, 2.93)	1.85 (1.12, 3.06)
60 – 79th percentile	673 (14.8)	8666 (17.6)	1.68 (1.04, 2.72)	1.64 (1.01, 2.65)
80 – 100th percentile	3633 (79.7)	37,428 (76.0)	2.07 (1.28, 3.33)	2.00 (1.25, 3.23)

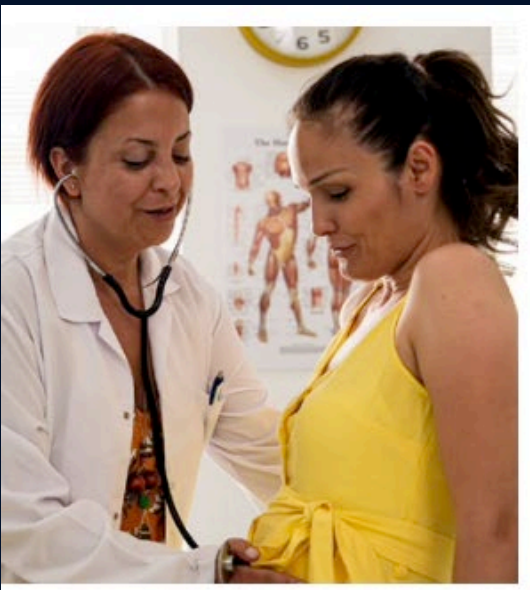
Padula et al EHP 2018

https://prheucsf.blog/2018/12/06/what-causes-so-much-preterm-birth-in-fresno-county/

WESTERN STATES PEHSU Pediatric Environmental Health Specialty Units

Program on Reproductive Health and the Environment

UCSF



Guidance from the Western States Pediatric Environmental Health Specialty Unit

Climate Change and Pregnancy

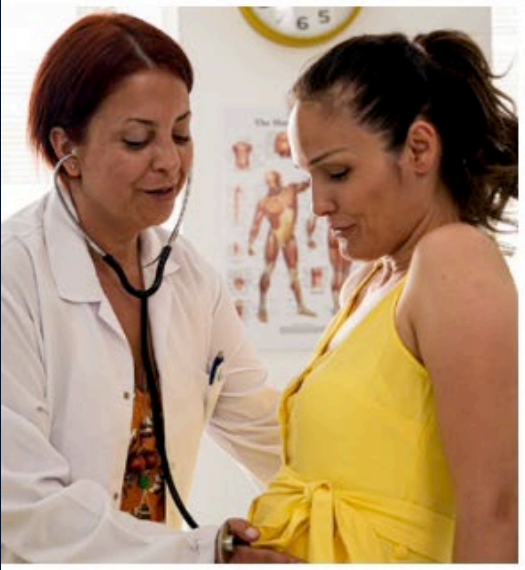
WESTERN STATES PEHSU
Pediatric Environmental Health Specialty Unit

wspehsu.ucsf.edu

twitter.com/wspehsu

https://wspehsu.ucsf.edu/main-resources/environmental-health-topics/climate-change/

- Encourage pregnant people to: *
  - Know local risks
  - Make a family emergency plan (https://www.redcross.org/get-help/how-to-prepare-for-emergencies/make-a-plan.html)
  - Prepare Go-bag (incl Rx)
  - Map area hospitals
  - Foster relationships: group prenatal care, doulas



Guidance from the Western States Pediatric Environmental Health Specialty Unit

Climate Change and Pregnancy

High/extreme heat

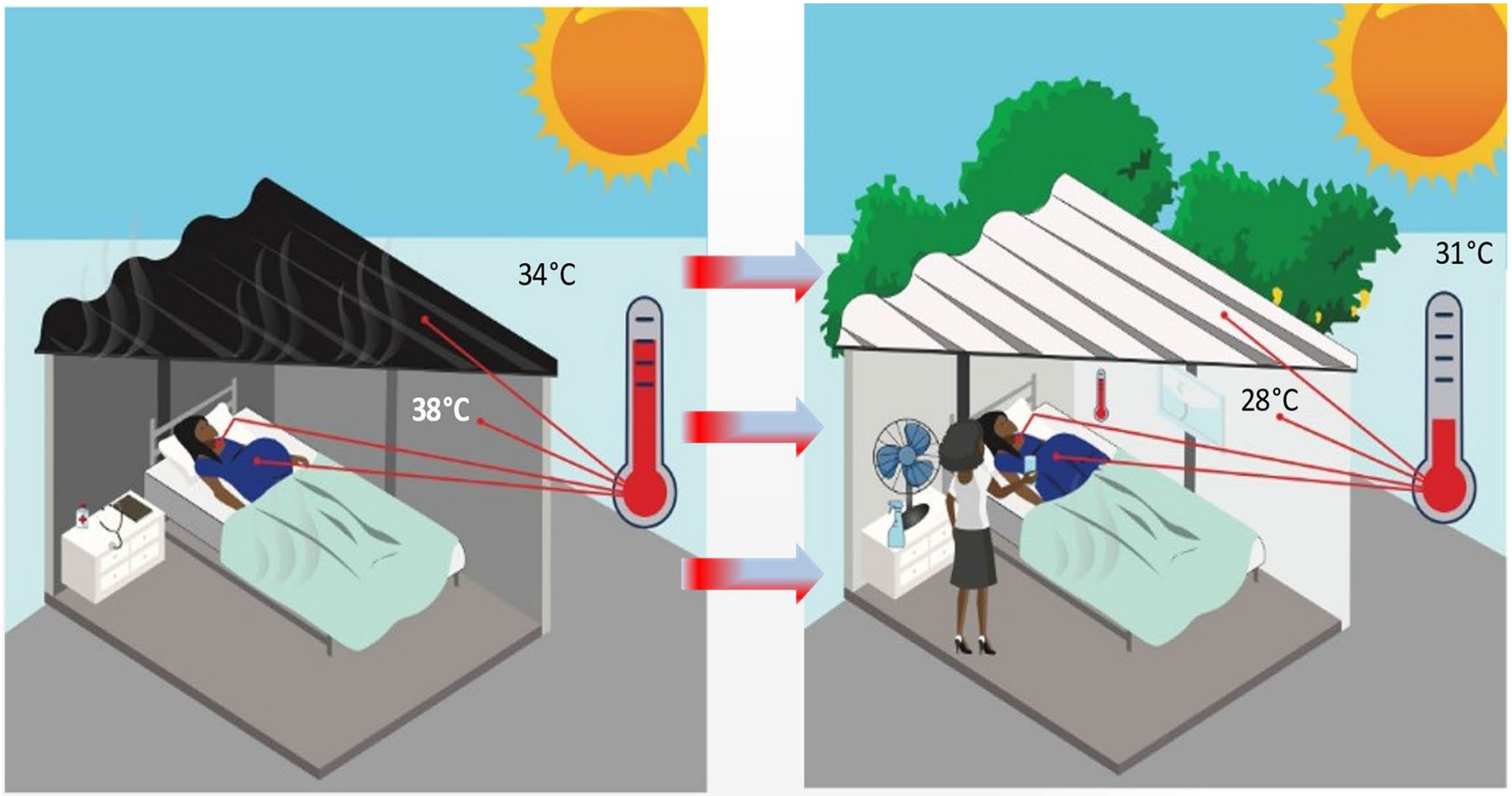
WESTERN STATES PEHSU
Pediatric Environmental Health Specialty Unit

wspehsu.ucsf.edu

twitter.com/wspehsu

https://wspehsu.ucsf.edu/main-resources/environmental-health-topics/climate-change/

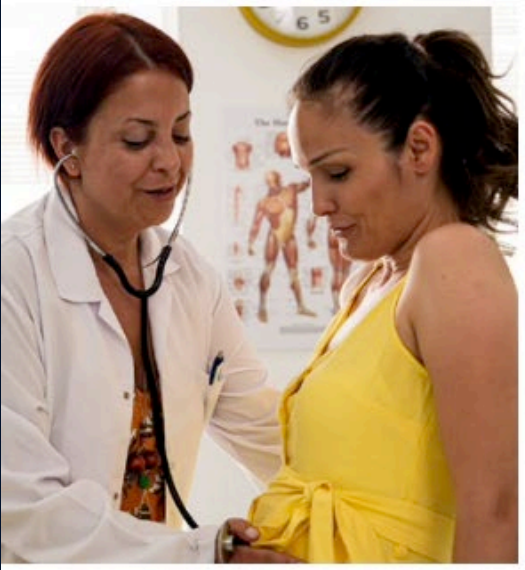
- Limit outdoor activities to cooler times. Seek shade, take breaks, drink H2O https://nihhis.cpo.noaa.gov/Planning-Preparing
- Educate patients on s/sx of dehydration
- Access A/C (e.g. cooling center or mall) to reduce risk for heatstroke
- Fans should vent warmer air out or bring cooler air in. Fans may provide comfort, but when temperature >90s, will not prevent heat-related illness. Taking a cool shower/bath or moving to A/C'd place much better way to cool off.
- https://www. cdc.gov/disasters/extremeheat/heattips.html



Increasing global temperatures threaten gains in maternal and newborn health in Africa: A review of impacts and an adaptation framework

Intl J Gynecology & Obste, Volume: 160, Issue: 2, Pages: 421-429, First published: 30 July 2022, DOI: 10.1002/ijgo.14381

UCSF



Guidance from the Western States Pediatric Environmental Health Specialty Unit

Climate Change and Pregnancy

Tornados & Floods

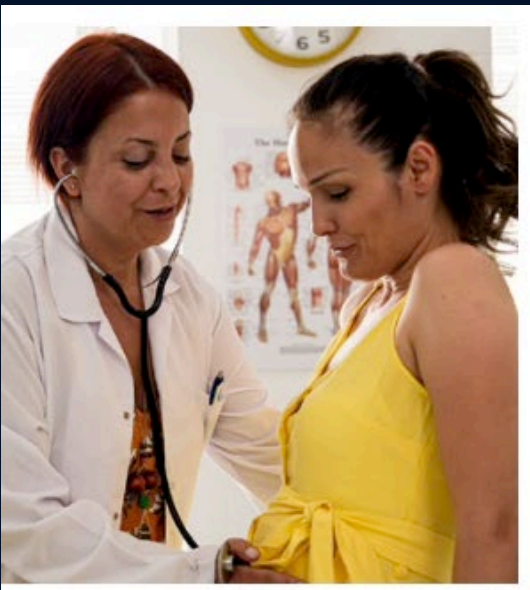
WESTERN STATES PEHSU
Pediatric Environmental Health Specialty Unit

wspehsu.ucsf.edu

twitter.com/wspehsu

- Be aware of tornado warning signs, including dark or greenish skies; large, dark, low-lying clouds; a loud roar; large hail; or a visible, rotating funnel.
- Pregnant people should avoid entering areas before cleaned & made safe. The CDC has guidance for returning to a home impacted by mold here: https://www.cdc.gov/disasters/mold/index.html

https://wspehsu.ucsf.edu/main-resources/environmental-health-topics/climate-change/



Guidance from the Western States Pediatric Environmental Health Specialty Unit

Climate Change and Pregnancy

WESTERN STATES PEHSU
Pediatric Environmental Health Specialty Unit

wspehsu.ucsf.edu

twitter.com/wspehsu

Air pollution

https://wspehsu.ucsf.edu/main-resources/environmental-health-topics/climate-change/

Keep the indoor air as clean as possible:

- Avoid smoking & vaping
- Avoid using gas, propane, wood-burning stoves, fireplaces, or candles
- Avoid ozone-generating air cleaners
- Avoid using unnecessary chemical products
- Avoid frying or broiling meat

Air Quality apps

EPA AIRNow

United States Environmental Protection Agency (USEPA)

OPEN

338 RATINGS	AGE	CHART	DEV
3.0 ★★★☆☆	12+ Years Old	#86 Weather	United

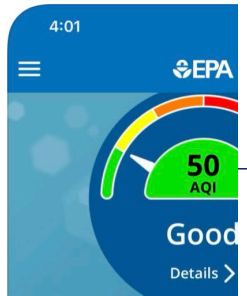
What's New

Version History

Version 2.1.0 — 1y ago

Updates to EPA's AirNow App increase public access to information about air quality all year, including during wildfires. more

Preview



Air Quality | AirVisual

IQAir AG Weather

Everyone

You don't have any devices.

Add to Wishlist

Millbrae, USA

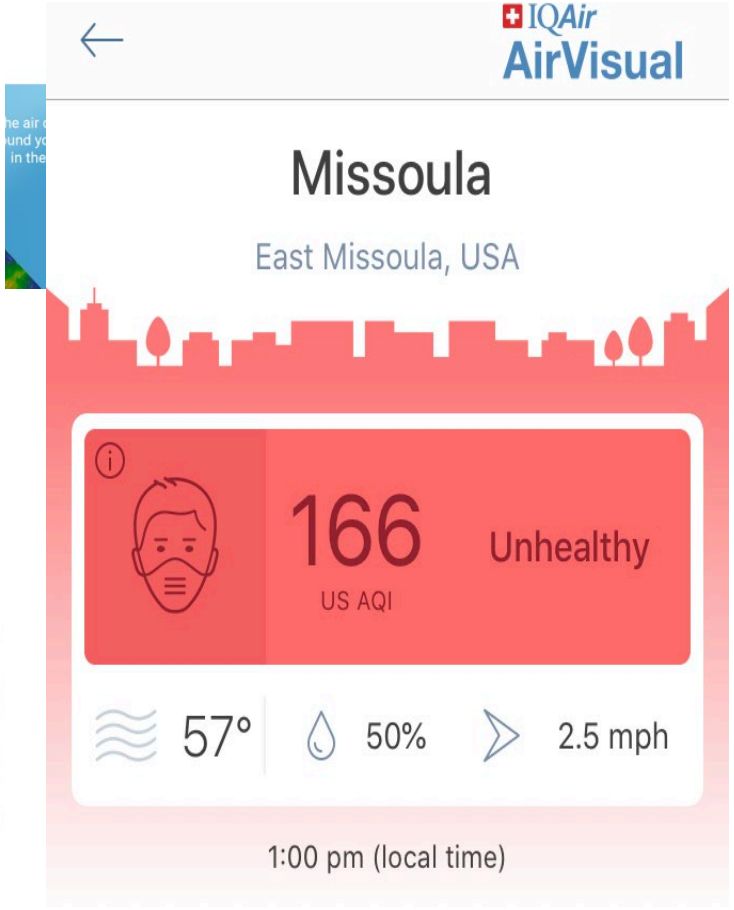
216 US AQI Very Unhealthy

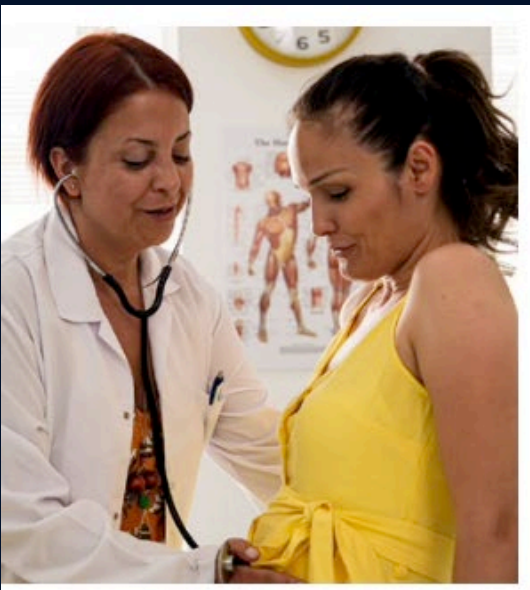
69° 73% 4.7 mph

3:00 pm

Friday Saturday Sunday

3:00 pm	5:00 pm	8:00 pm	11:00 pm	2:00
201-300	151-200	101-150	51-100	51-
69°	66°	59°	57°	57





Guidance from the Western States Pediatric Environmental Health Specialty Unit

Climate Change and Pregnancy

Air pollution

WESTERN STATES PEHSU Pediatric Environmental Health Specialty Unit

wspehsu.ucsf.edu

twitter.com/wspehsu

https://wspehsu.ucsf.edu/main-resources/environmental-health-topics/climate-change/

- Invest in an air purifier or home air filter if in an area with air pollution or wildfire risk.
- A less expensive Do-It-Yourself alternative Filter-Fan can be made at home.
  - https://www.epa.gov/coronavirus/air-cleaners- hvac-filters-and-coronavirus-covid-19
  - Video https://www.youtube.com/ watch?v=aEn2xzlvrdo

UCSF CARBON NEUTRALITY BY 2025

How to Reduce Wildfire Smoke Exposure For Kids*

* & pregnant people

▼ ≤ 100%

Go Somewhere Without Smoke

▼ ~50-80%

Go inside with
(1) HVAC & MERV 13 filter
or
(2) a portable HEPA air cleaner

▼ ~30%

Go Inside and Shut Windows

DO NOT spend unnecessary time outside if the AQI is in the unhealthy ranges.

Cloth face coverings (like those for COVID) DO NOT reliably filter out small smoke particles.

For Short Periods of Time:

▼ ~80%

Recirculate the air in your car

▼ ~80%

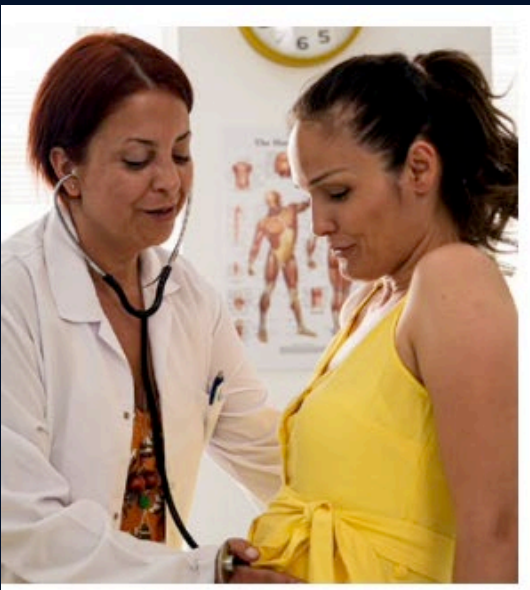
Wear a small size NIOSH N95 Mask *correctly*

▼ ~20%

Wear a medical mask *correctly*

WESTERN STATES PEHSU
Pediatric Environmental Health Specialty Unit

More resources: wspehsu.ucsf.edu



Guidance from the Western States Pediatric Environmental Health Specialty Unit

Climate Change and Pregnancy

Wildfire

WESTERN STATES PEHSU
Pediatric Environmental Health Specialty Unit

wspehsu.ucsf.edu

twitter.com/wspehsu

https://wspehsu.ucsf.edu/main-resources/environmental-health-topics/climate-change/

- Especially important for people living in the “wildland-urban interface”
- Wildfire evacuation checklist: (https://ucanr.edu/sites/fire/files/294649.pdf)
- Wildfire smoke and pregnancy advice from the CDC: https://www.cdc.gov/air/wildfire-smoke/ pregnancy.htm
- Follow the air pollution recommendations above

Climate disasters & Hospitals

NC Clinicians for Climate Action
@ClimateHealthNC

Florida hospitals evacuate patients as Hurricane Ian causes hospitals to lose running water.
🏥 US hospitals need:
1. Flood/hurricane resilience investments
2. Decarbonization plans because #climatechange is making stronger hurricanes more frequent

chiefhealthcareexecutive.com
Hurricane Ian's aftermath: Florida hospitals evacua
Lee Health has transferred hundreds of patients be
there's no running water. Patients are being moved

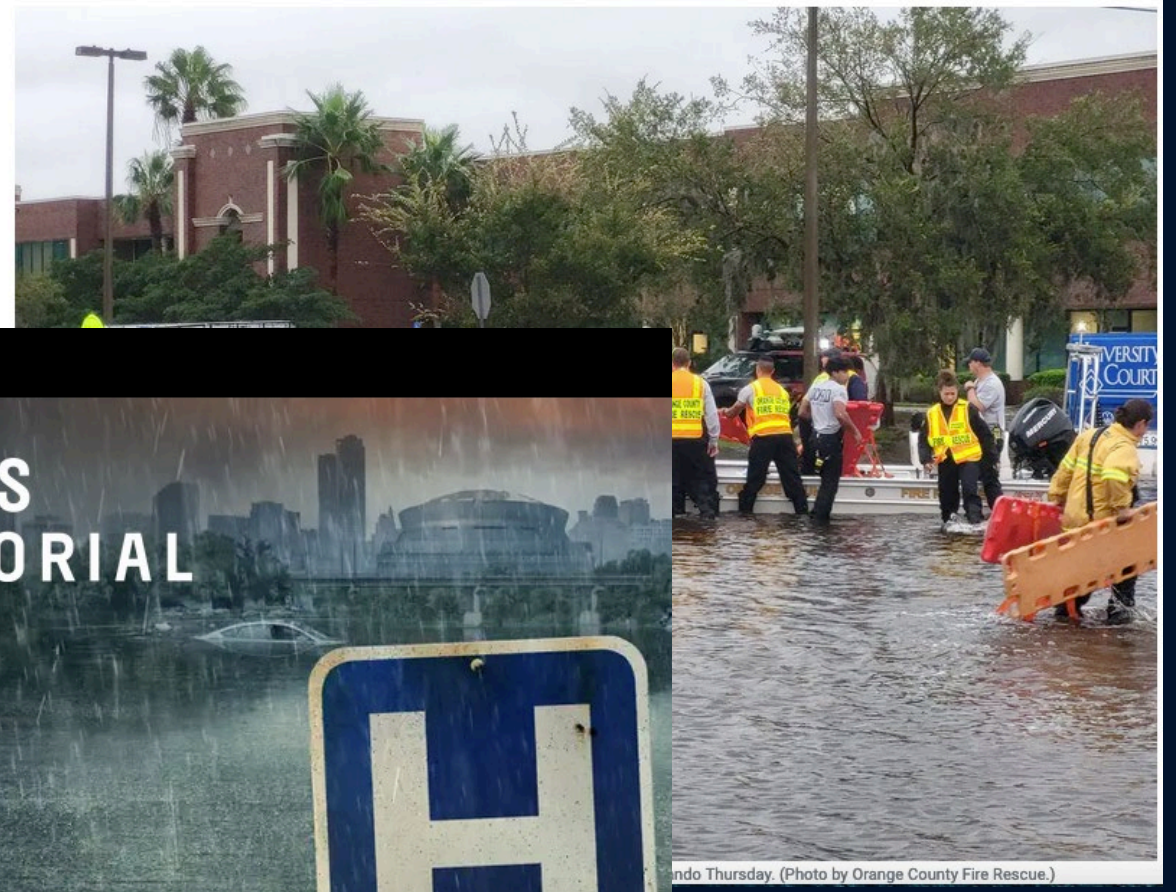
2:30 PM · Oct 1, 2022 · Twitter for Android

CHIEF HEALTHCARE EXECUTIVE NEWS MEDIA BRAND INSIGHTS CONFERENCES RESOURCES SUBSCRIBE

Hurricane Ian rips part of roof off Florida hospital

September 29, 2022
Ron Southwick

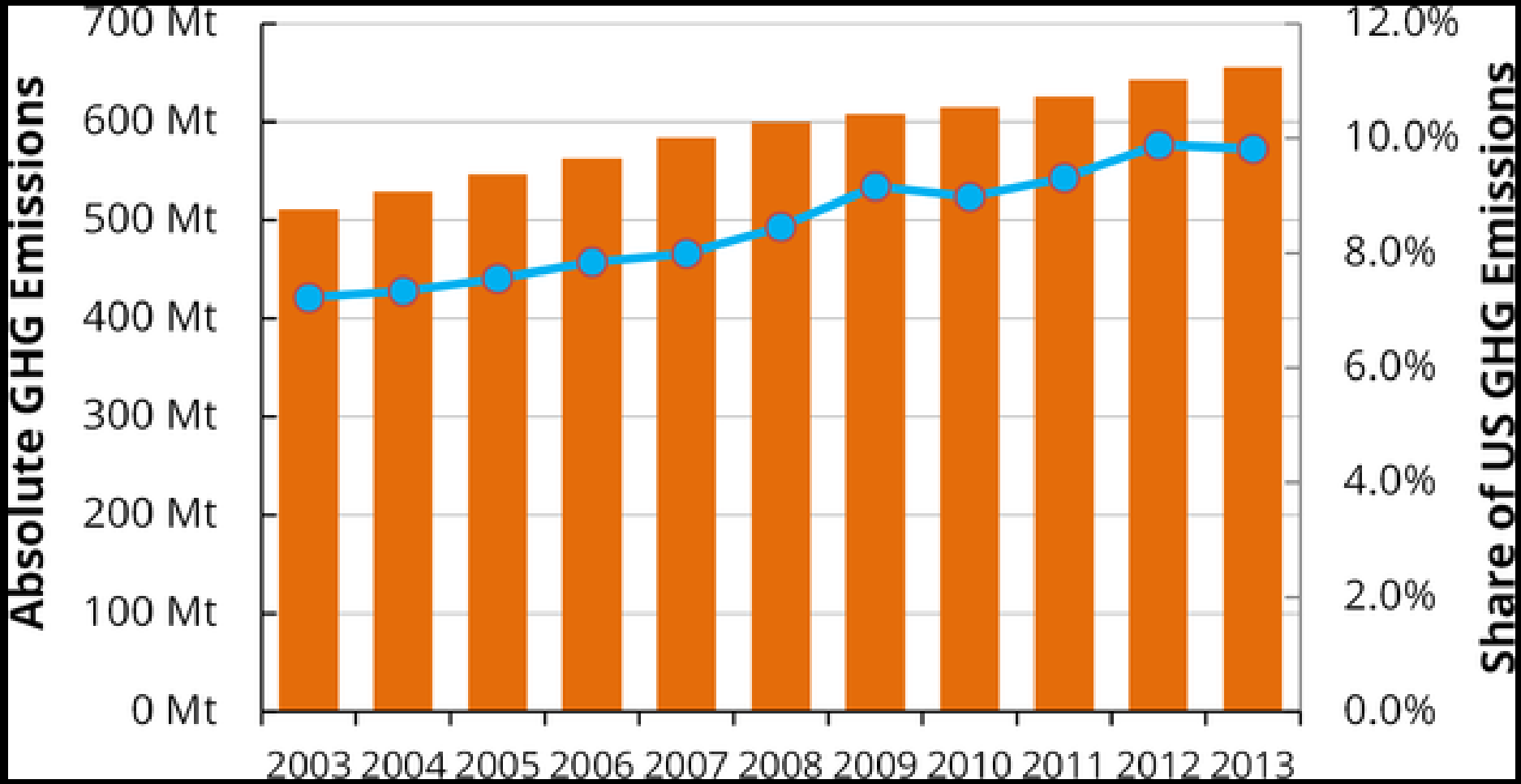
An HCA Healthcare hospital closed and transferred patients after losing a layer of roofing in high winds. Hospitals and nursing homes across Florida evacuated patients.



ndo Thursday. (Photo by Orange County Fire Rescue.)

UCSF

Greenhouse Gas (GHG) emissions from US health care



Eckelman MJ, Sherman J (2016) Environmental Impacts of the U.S. Health Care System and Effects on Public Health. PLOS ONE 11(6): e0157014. https://doi.org/10.1371/journal.pone.0157014 https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0157014

PLOS ONE | WESTERN STATES PEHSU Pediatric Environmental Health Specialty Units | Program on Reproductive Health and the Environment | UCSF

Source: Health Care Without Harm Climate Action Playbook

What health care providers can do:

- Care wisely

Choosing Wisely
An initiative of the ABIM Foundation

The American College of Obstetricians and Gynecologists

Nine Things Physicians and Patients Should Question

Choosing Wisely
An initiative of the ABIM Foundation

Society for Maternal-Fetal Medicine

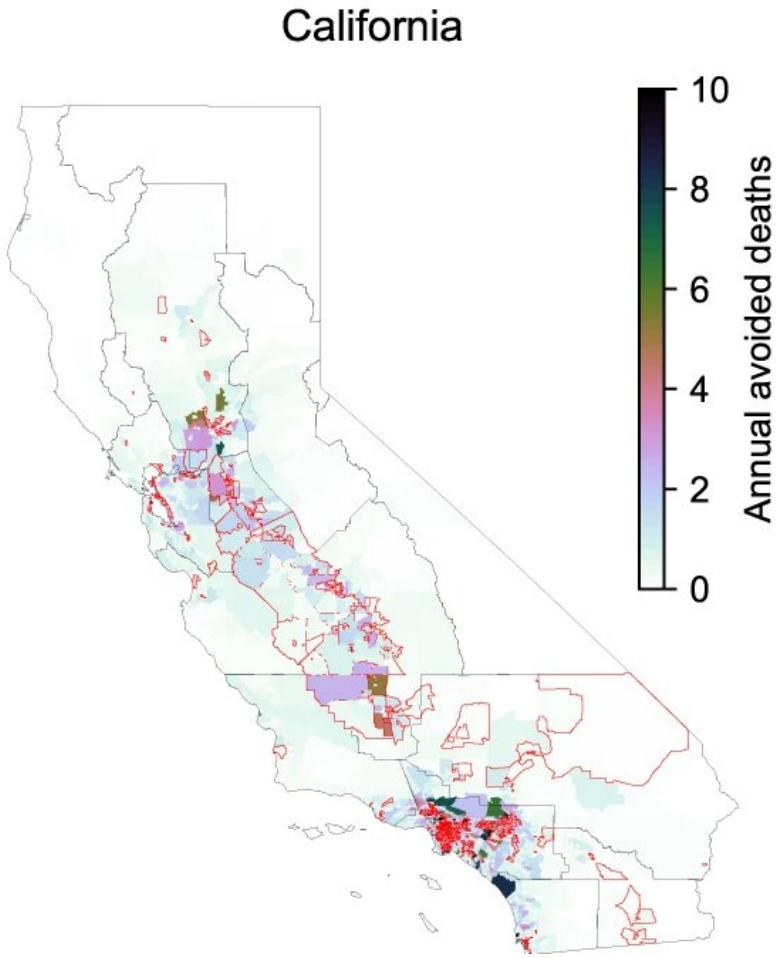
Twenty Things Physicians and Patients Should Question

  - Don't order unnecessary imaging, labs, drugs
- ADVOCATE!
  - Ask your hospital café to serve less meat
- Plant a tree

UCSF

Decarbonization can improve health

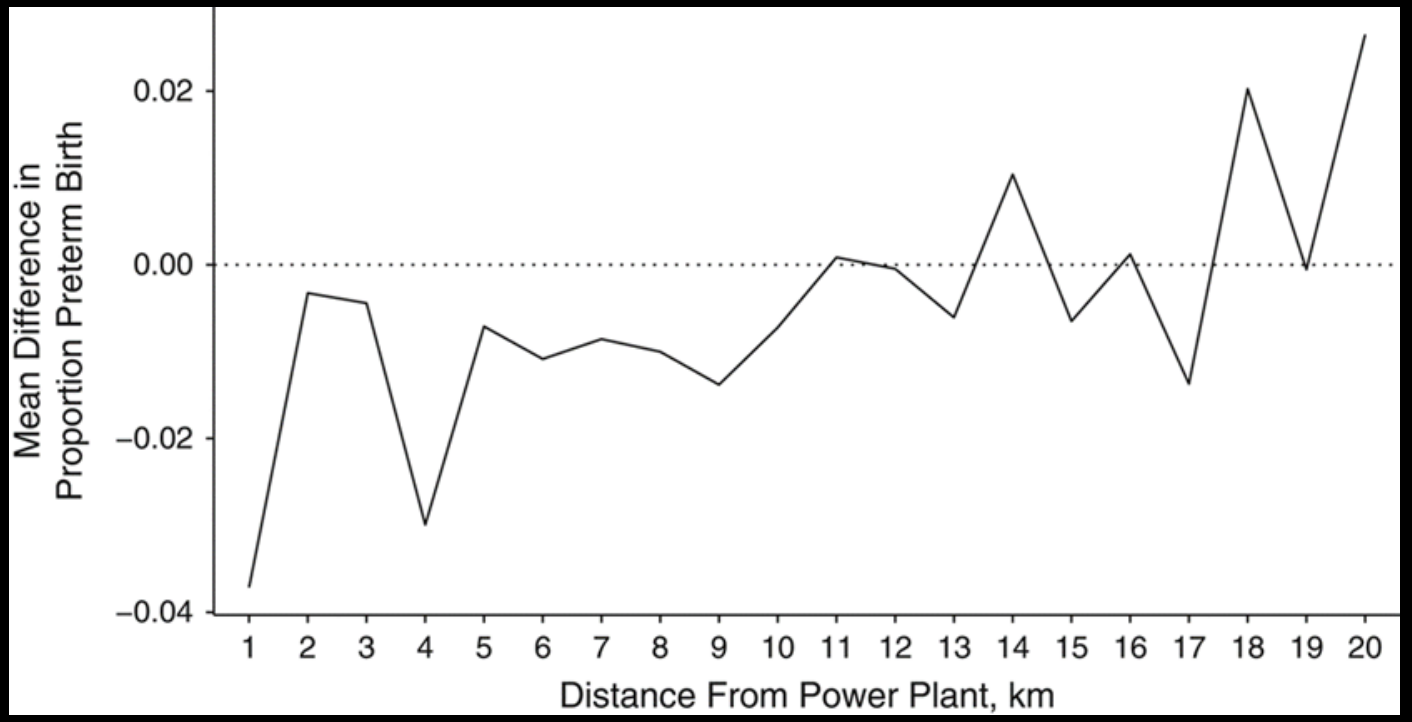
- Building electrification or vehicle electrification
  - Decreases GHG emissions
  - Decreases air pollution (PM2.5) resulting in health co-benefits
  - Decreases mortality
  - The most disadvantaged census tracts expected to receive more health benefits



Annual avoided deaths per census tract with building electrification

Zhu, S., Mac Kinnon, M., Carlos-Carlos, A. *et al.* Decarbonization will lead to more equitable air quality in California. *Nat Commun* **13**, 5738 (2022). https://doi.org/10.1038

Coal & oil power plant closures in CA → reduced PTB nearby



For 0-5 km areas, this = reduction in preterm birth from 7% to 5%

Exposed mothers: LMP in the year-long period two years prior to power plant retirement

Unexposed mothers: LMP in year after power plant retirement.

Casey JA, Karasek D, Ogburn EL, Goin DE, Dang K, Braveman PA, Morello-Frosch R. *American Journal of Epidemiology*. 2018. kwy110
https://doi.org/10.1093/aje/kwy110

WESTERN STATES PEHSU Pediatric Environmental Health Specialty Units

Program on Reproductive Health and the Environment

UCSF

Conclusions

- Vulnerabilities of women and pregnant people to climate change
- Risks of preterm birth, small for gestational age, stillbirth
- Link between contributors to climate change & air & chemical pollution
- Suggestions to decrease risks and increase resilience
- We need health care providers to advocate on behalf of their patients

Placeholder for Esther McCant’s slides

QUESTIONS

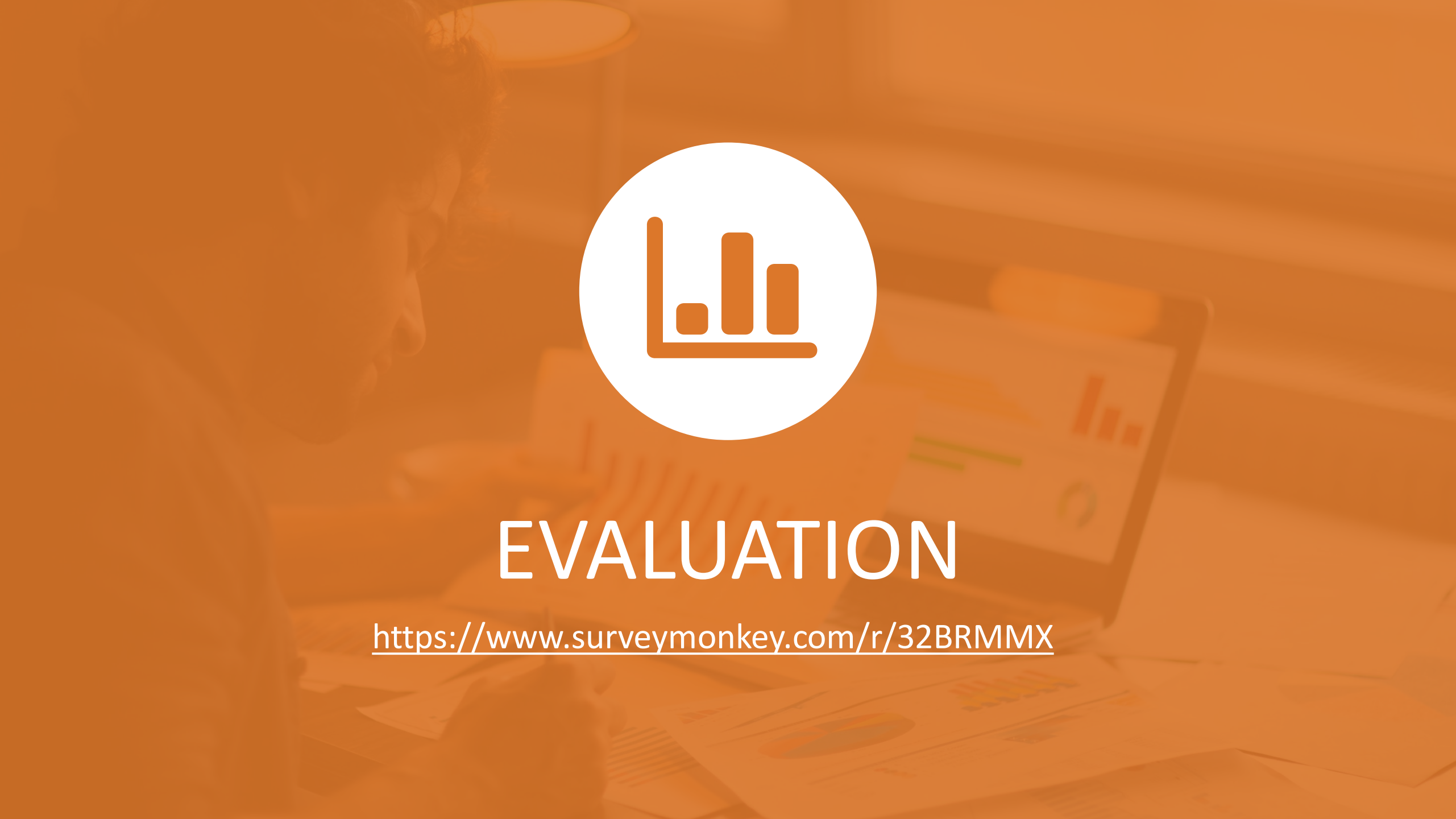
WHAT ADDITIONAL INFORMATION WOULD BE HELPFUL?

USE THE QUESTION-AND-ANSWER BOX

The box is located at the bottom of the screen

UNANSWERED QUESTIONS

All unanswered questions will be answered and posted on the National Center's website (URL: www.ncfrp.org).



EVALUATION

https://www.surveymonkey.com/r/32BRMMX

UPCOMING WEBINARS

Join the National Center and Our Partners

THE ROLE OF EPILEPSY IN CHILD FATALITIES

Tuesday, February 14, 2023

2:00-3:00 PM ET

CELEBRATING SAFE SLEEP SUCCESS STORIES: Stories from Fatality Review Teams

Wednesday, February 22, 2023

12:00-1:00 PM ET

BUILDING RELATIONSHIPS BETWEEN FATALITY REVIEW TEAMS & SCHOOLS

Wednesday, March 15, 2023

2:00-3:00 PM ET

CONTACT INFORMATION

2395 Jolly Rd., Suite 120
Okemos, MI 48864

Phone: 800-656-2434

info@ncfrp.org

www.ncfrp.org


THANK YOU FOR YOUR TIME!
www.ncfrp.org