



Climate, Pollution, and Prenatal and Child Health

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and the Environment



PRHE

Information for Families

Resources to help your family reduce their environmental exposures



Clinical Practice

Resources for health care professionals to promote environmental health



Research

Targeted research to inform clinical decision making and public policy



Policy

Resources to advance science-based policy solutions.



Mission: To create a healthier environment for human reproduction and development by advancing scientific inquiry, clinical care, and health policies that prevent exposures to harmful chemicals in our environment



UCSF
University of California
San Francisco

Nothing to Disclose

Except.....Thank You

Drs. Linda Giudice & Marya Zlatnik





**~48% Electricity
Production
& Industry – Coal &
Natural Gas**



~30% Transportation



Air Pollution



Emissions increases
Ozone and **Particulate
Matter** in the
atmosphere
which can also contribute
to warming effects

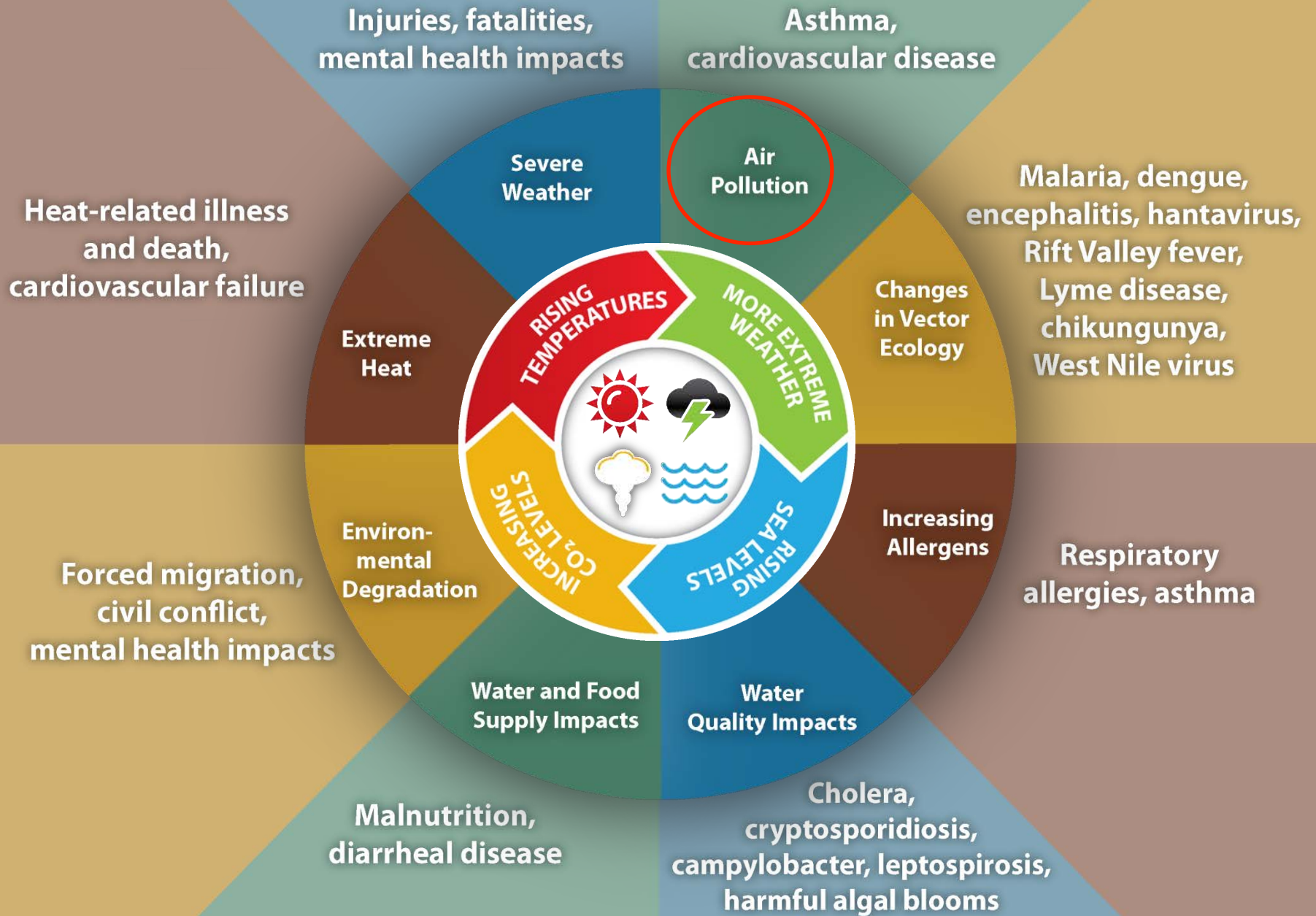


Global Warming



High atmospheric temperatures traps **ozone**
at ground level, exacerbating effects of air
pollution

Impact of Climate Change on Human Health



PREGNANCY and CLIMATE CHANGE



The PROBLEM

Climate change worsens air pollution and extreme weather which can have severe impacts on health during and after pregnancy including:



PRETERM BIRTH



LOW BIRTHWEIGHT



STILL BIRTH



EFFECTS ON BRAIN
DEVELOPMENT

What WE CAN DO

Advocate for public policies that lead to:



GLOBAL REDUCTION IN
AIR POLLUTION EMISSIONS



STEADY DIVESTMENT FROM
FOSSIL FUELS

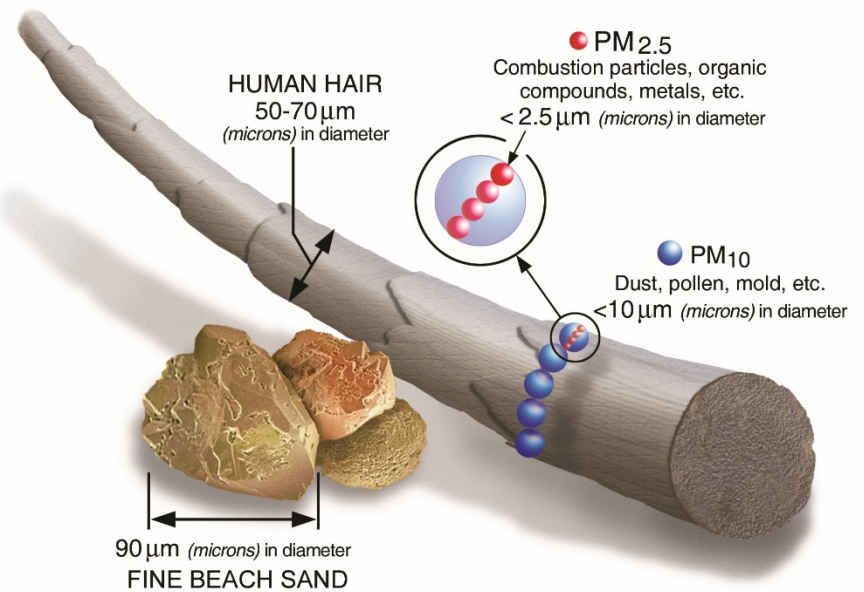
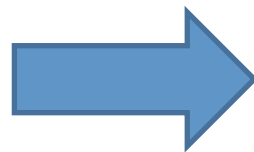


REDUCING TOXIC EXPOSURES

"The health impacts of our global climate crisis on maternal and child health can no longer be ignored."

International Federation of Gynecology and Obstetrics (FIGO)





PM2.5 air pollution mostly forms in the atmosphere from pollutants emitted from power plants, industries and automobiles.

Prenatal exposure to air pollutants (PM_{2.5} and ozone) can increase the risk of **preterm birth, low birthweight, and stillbirth**



2015

Differences in Birth Weight Associated with the 2008 Beijing Olympics Air Pollution Reduction: Results from a Natural Experiment

David Q. Rich,^{1*} Kaibo Liu,^{2*} Jinliang Zhang,³ Sally W. Thurston,⁴ Timothy P. Stevens,⁵ Ying Pan,² Cathleen Kane,¹ Barry Weinberger,⁶ Pamela Ohman-Strickland,⁷ Tracey J. Woodruff,⁸ Xiaoli Duan,³ Vanessa Assibey-Mensah,¹ and Junfeng Zhang^{9,10}

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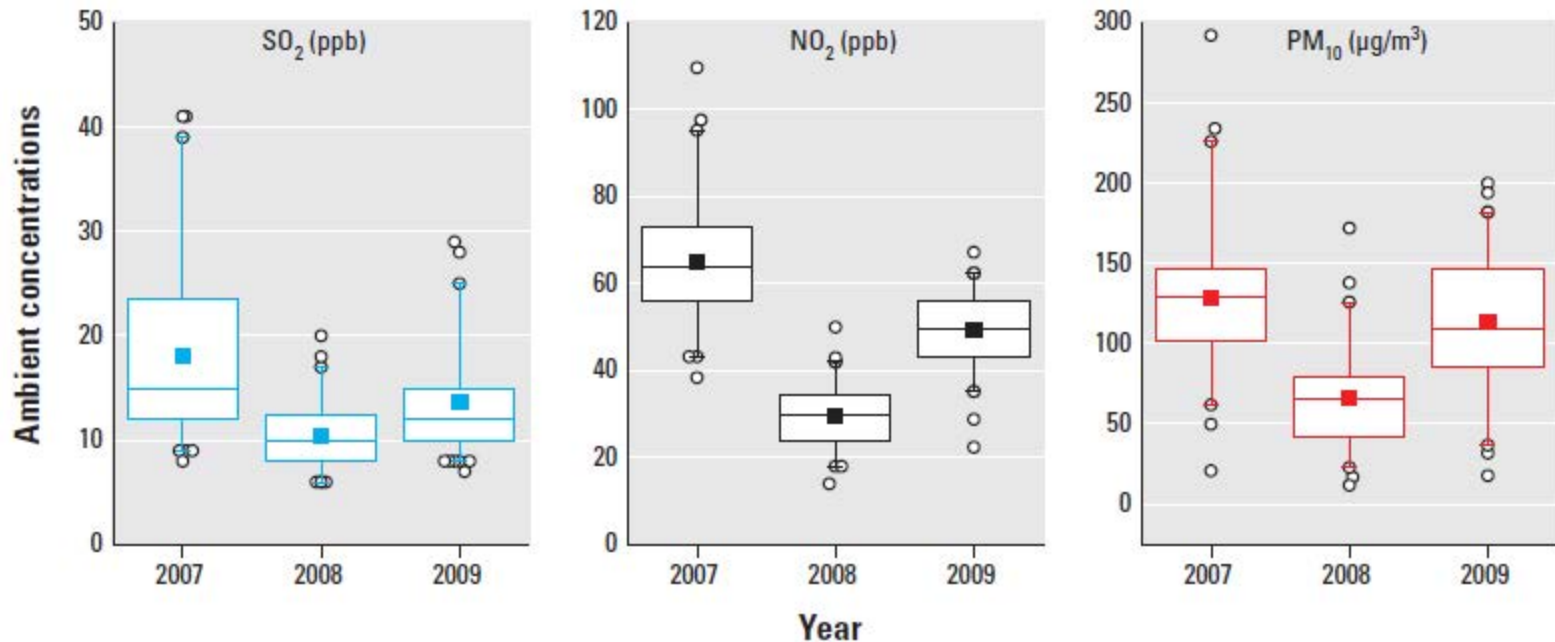


Figure 1. Distributions of daily mean SO₂, NO₂, and PM₁₀ concentrations across Beijing from 8 August to 24 September 2007, 2008, and 2009. Boxes extend from the 25th to the 75th percentile, horizontal bars represent the median, whiskers indicate the 5th and 95th percentiles, squares indicate the mean, and circles represent outliers.

20 ug/m³ increase in PM_{2.5} -> 18 g (95% CI: -32 g, 3 g), decreases in birth weight among term births..’.

Air Pollution & Preterm Birth



Environment International

Available online 10 February 2017

In Press, Corrected Proof — Note to users



Preterm birth associated with maternal fine particulate matter exposure: A global, regional and national assessment

Christopher S. Malley^a,  , Johan C.I. Kuylenstierna^a, Harry W. Vallack^a, Daven K. Henze^b, Hannah Blencowe^c, Mike R. Ashmore^a

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<http://dx.doi.org/10.1016/j.envint.2017.01.023>

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Highlights

- Ambient fine particulate matter (PM_{2.5}) exposure is a possible risk factor for preterm birth.
- We estimate 2.7–3.4 million preterm births may be associated with PM_{2.5} exposure in 2010 globally.
- South/East Asia, North Africa/Middle East and West sub-Saharan Africa had largest burdens.

Globally, in 2010, the number of PM_{2.5}-associated PTBs was estimated as **2.7 million, 18% of total PTBs globally**



FIGO

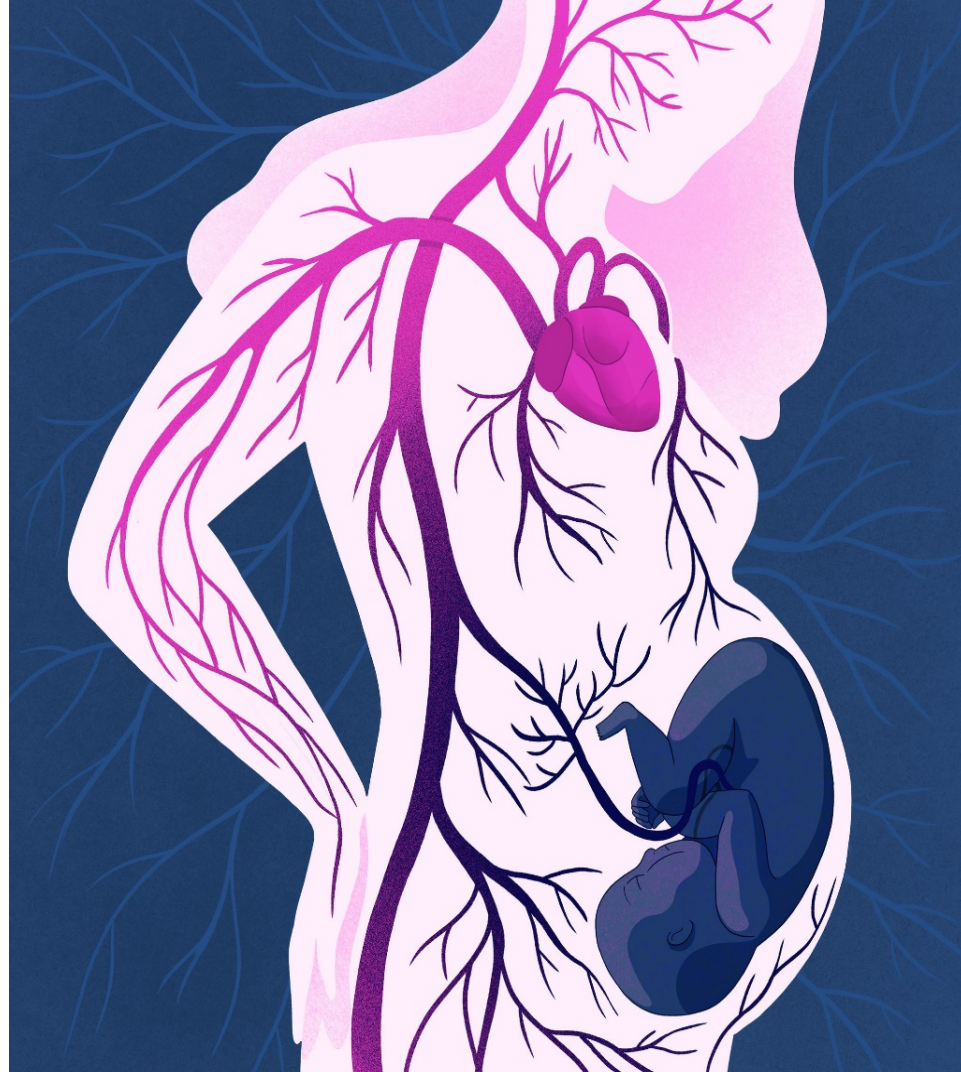
INTERNATIONAL FEDERATION
OF
GYNECOLOGY & OBSTETRICS

ACOG

THE AMERICAN CONGRESS
OF OBSTETRICIANS
AND GYNECOLOGISTS

Air pollution is associated with **heart birth defects, autism, and neurodevelopmental delays**





Air pollution is linked to **pre-eclampsia** and **hypertension** during pregnancy, a leading cause of ***maternal death***

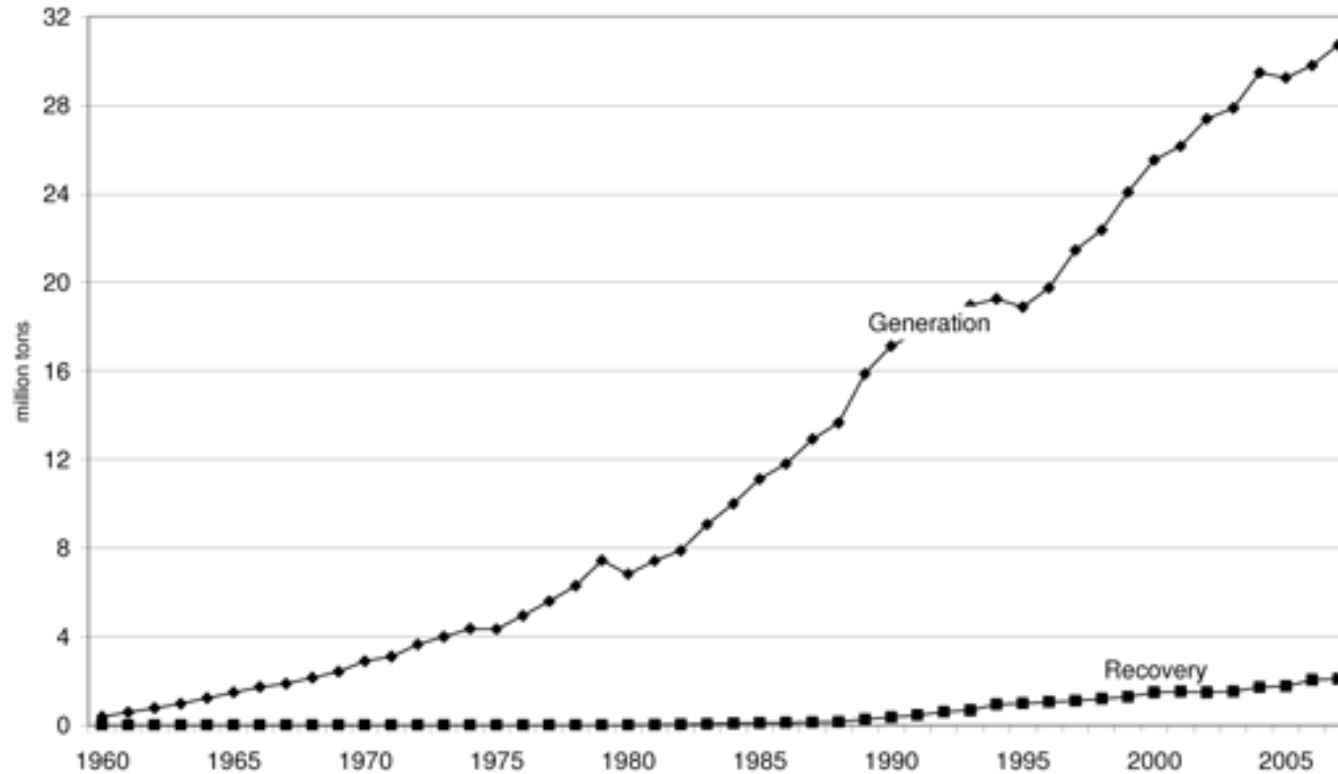


Fueling Plastics

**How Fracked Gas,
Cheap Oil, and
Unburnable Coal
are Driving the
Plastics Boom**



Plastics generation and recovery in the US has been increasing since 1960s



<https://archive.epa.gov/epawaste/nonhaz/municipal/web/pdf/msw07-rpt.pdf>



Plastic Supply Chain

ETHYLENE CHAIN





Contains:

Phthalates



Some health effects linked to phthalates

- Male reproductive health effects (e.g. sperm effects)
- Reduced fertility
- Learning and behavior effects
- Obesity and diabetes

These chronic diseases are on the rise

~30,000 lbs of industrial chemicals produced for each person in the U.S. each year



Most chemicals in the marketplace have not been tested for safety



“to a disturbing extent

babies
are born

‘pre-polluted’”





INTERNATIONAL FEDERATION OF GYNECOLOGY & OBSTETRICS

Recommendations for Preventing Exposure to Toxic Chemicals

Recommendation 1: Advocate for policies to prevent exposure to toxic environmental chemicals

Recommendation 2: Work to ensure a healthy food system for all

Advocate for policies to prevent exposure to toxic environmental chemicals

Work to ensure a healthy food system for all

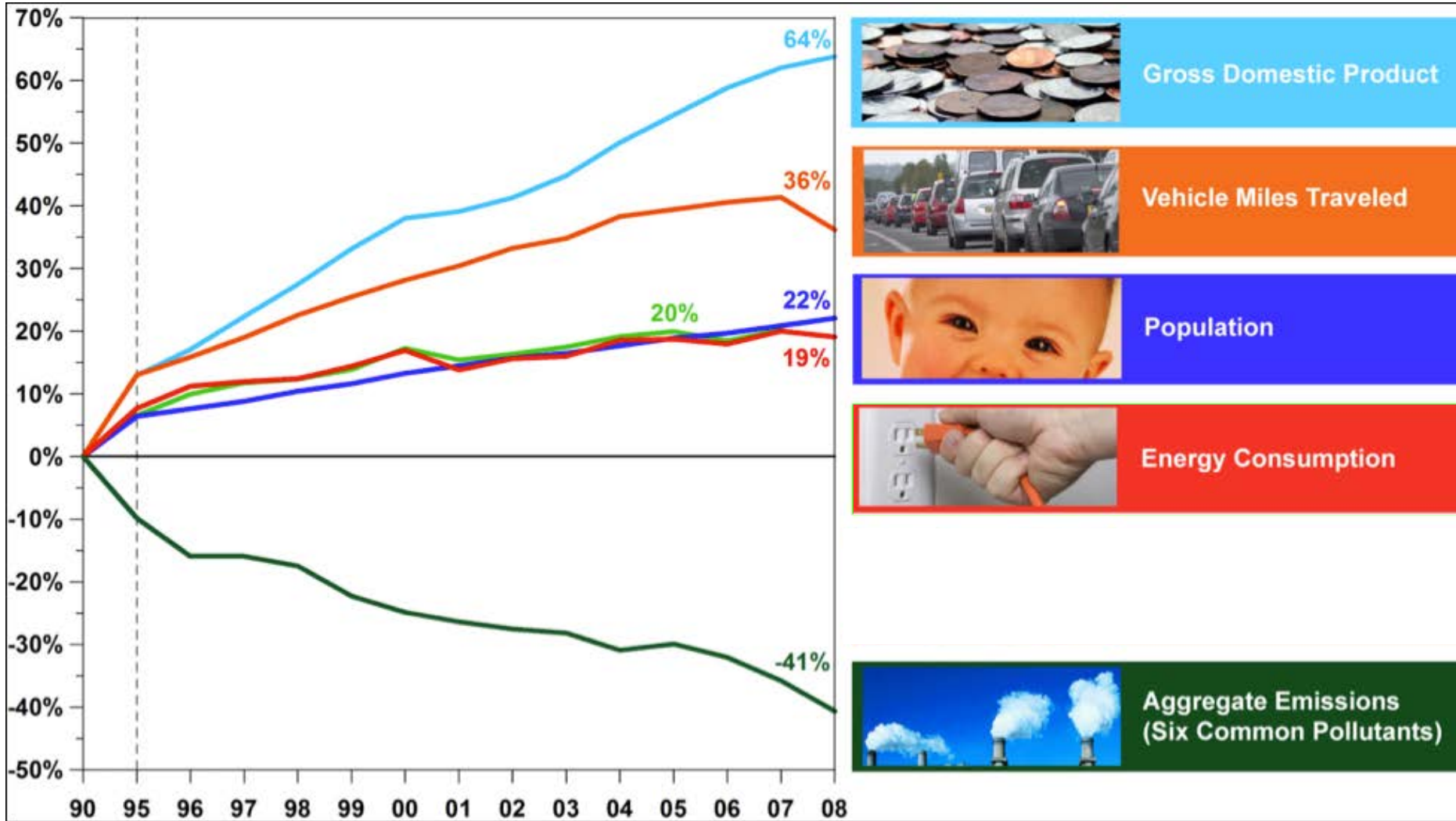
Make environmental health part of health care

Champion environmental justice

Recommendation 3: Make environmental health part of health care

Recommendation 4: Champion environmental justice

Societal Change is Possible: Recent Past



Conclusions

- Link between contributors to climate change and air and chemical pollution
- We are all exposed and it can impact maternal and child health
- We need health care providers to be prepared and advocate on behalf of their patients
- Public policy is necessary to create lasting and fair solutions for all





Program on
Reproductive Health
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Thank you!



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<https://prheucsf.blog/>