



Teaching Climate Change in Medical School: A Whole-Institution Approach

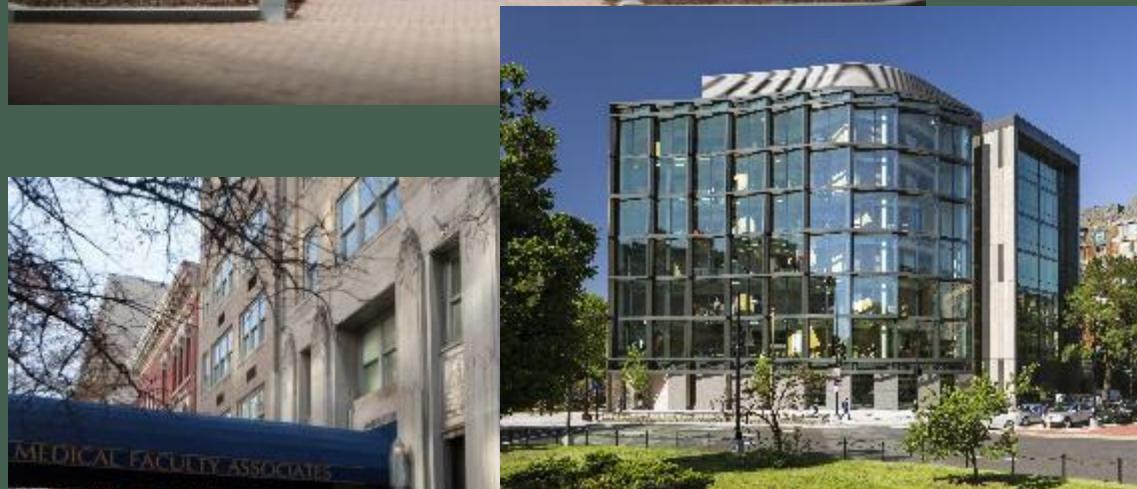
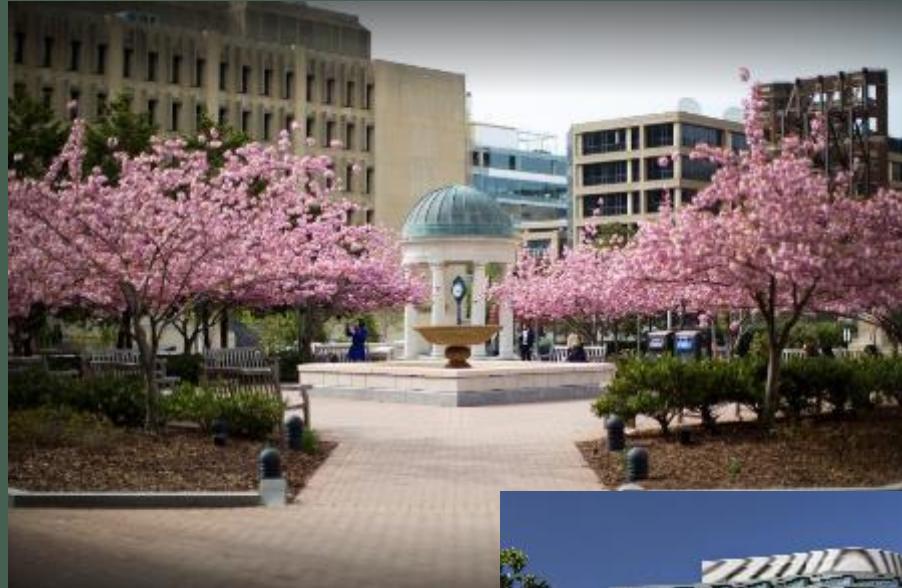
Hana Akselrod
George Washington University
School of Medicine and Health Sciences
hakselrod@gwu.edu

OR

“A Green New Deal for Academic Medicine

Disclosures

- No financial COI
- Will discuss work at GWU
- Will mention COVID-19
(But not a lot)
- Not speaking for my entire institution or my federal employer



GW School of Medicine & Health Sciences

Case Presentation



GW Medical Faculty Associates

Find a Provider Specialties Patients & Visitors Locations Clinical Trials News ▾ About Contact
COVID-19 Vaccine Update | COVID-19 Resources | COVID-19 Testing | Visitor Guidelines

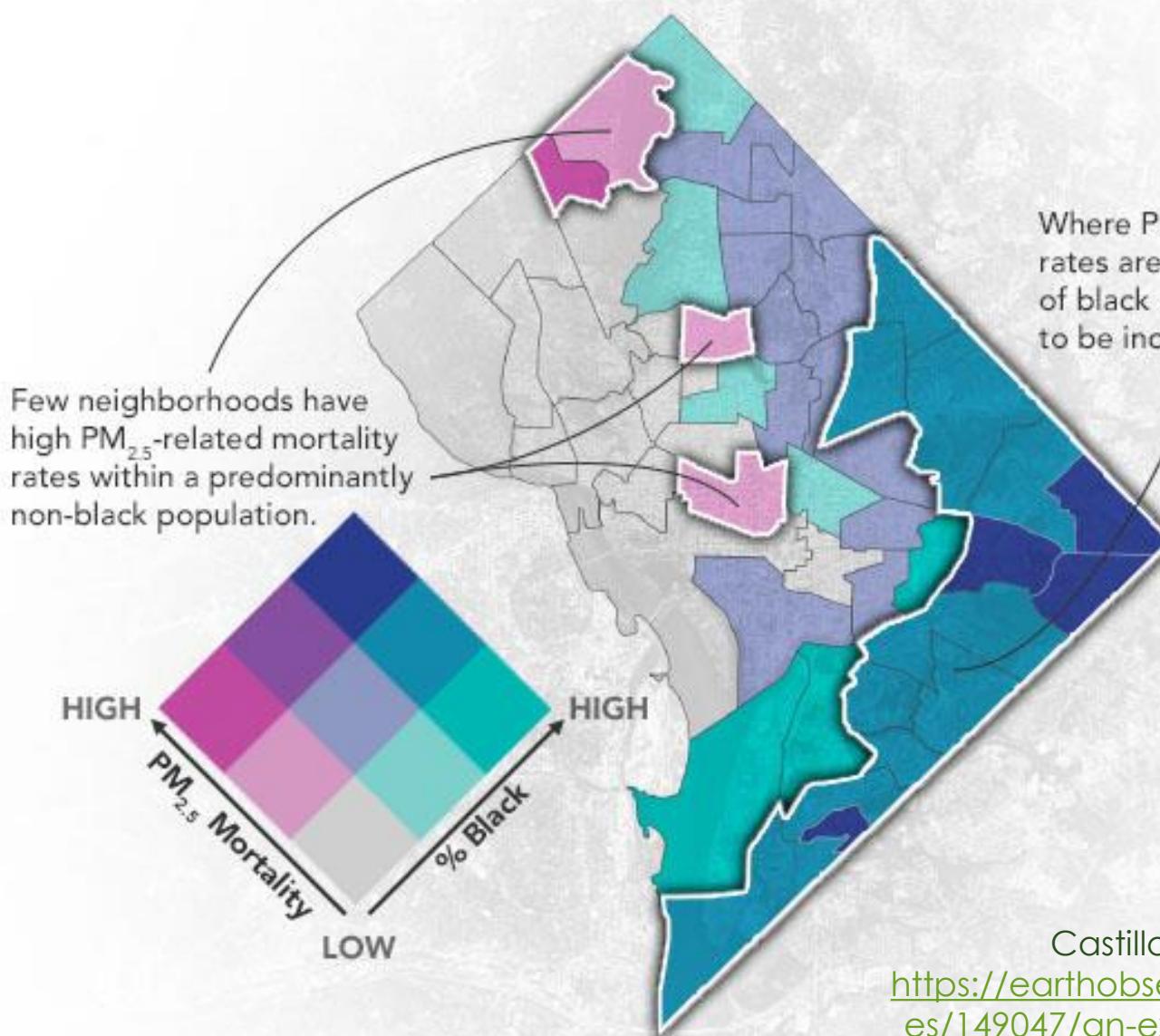
[Home](#) / [Specialties](#) / [Primary Care](#) / Primary Care: COVID-19 Recovery Clinic

Primary Care: COVID-19 Recovery Clinic



Multi-Disciplinary Clinic Offering Specialized Treatment for Patients Recovering from COVID-19

<https://gwdocs.com/specialties/primary-care/covid-19-recovery-clinic>



Castillo et al., GeoHealth, 2021
<https://earthobservatory.nasa.gov/images/149047/an-extra-air-pollution-burden>

OR

What is my role?

And how did I get here?



Rockland, Maine, 2014

Studies Show Climate Change Could Cause Maine's Lobster Population To Crash

By NORA FLAHERTY • OCT 25, 2019

PROGRAM
[All Things Considered with Nora Flaherty](#)

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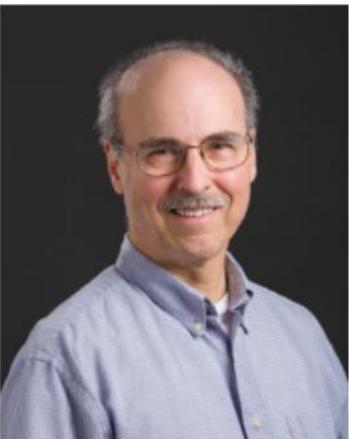
<https://www.mainepublic.org/post/studies-show-climate-change-could-cause-maine-s-lobster-population-crash>

YALE SCHOOL OF PUBLIC HEALTH

Climate Change and Health



Kathryn Conlon, PhD



Robert Dubrow, MD, PhD



Connie Roser-Renouf, PhD

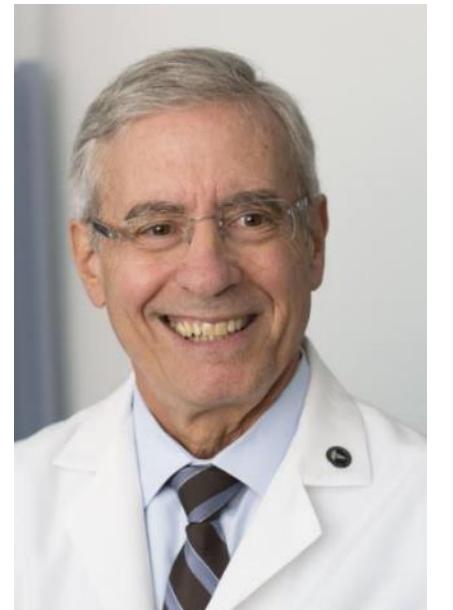


School of Medicine
& Health Sciences

The Department of Medicine



Gary Simon, MD, PhD



Alan Wasserman, MD

GLOBAL CLIMATE CHANGE:



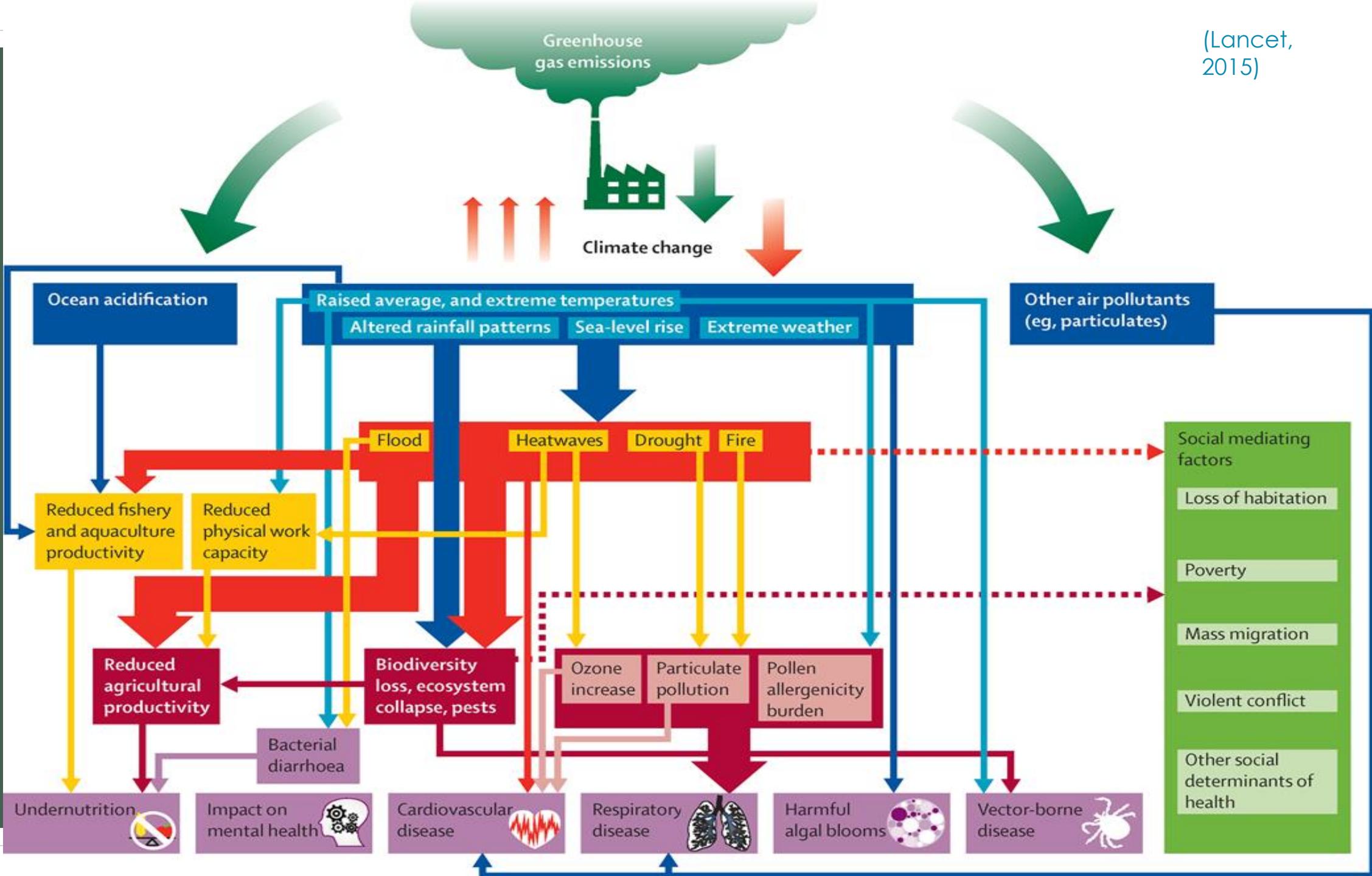
Understanding and Responding to Impacts on Health

Hana Akselrod MD MPH

GW MFA Division of Infectious Diseases

Summary Slide

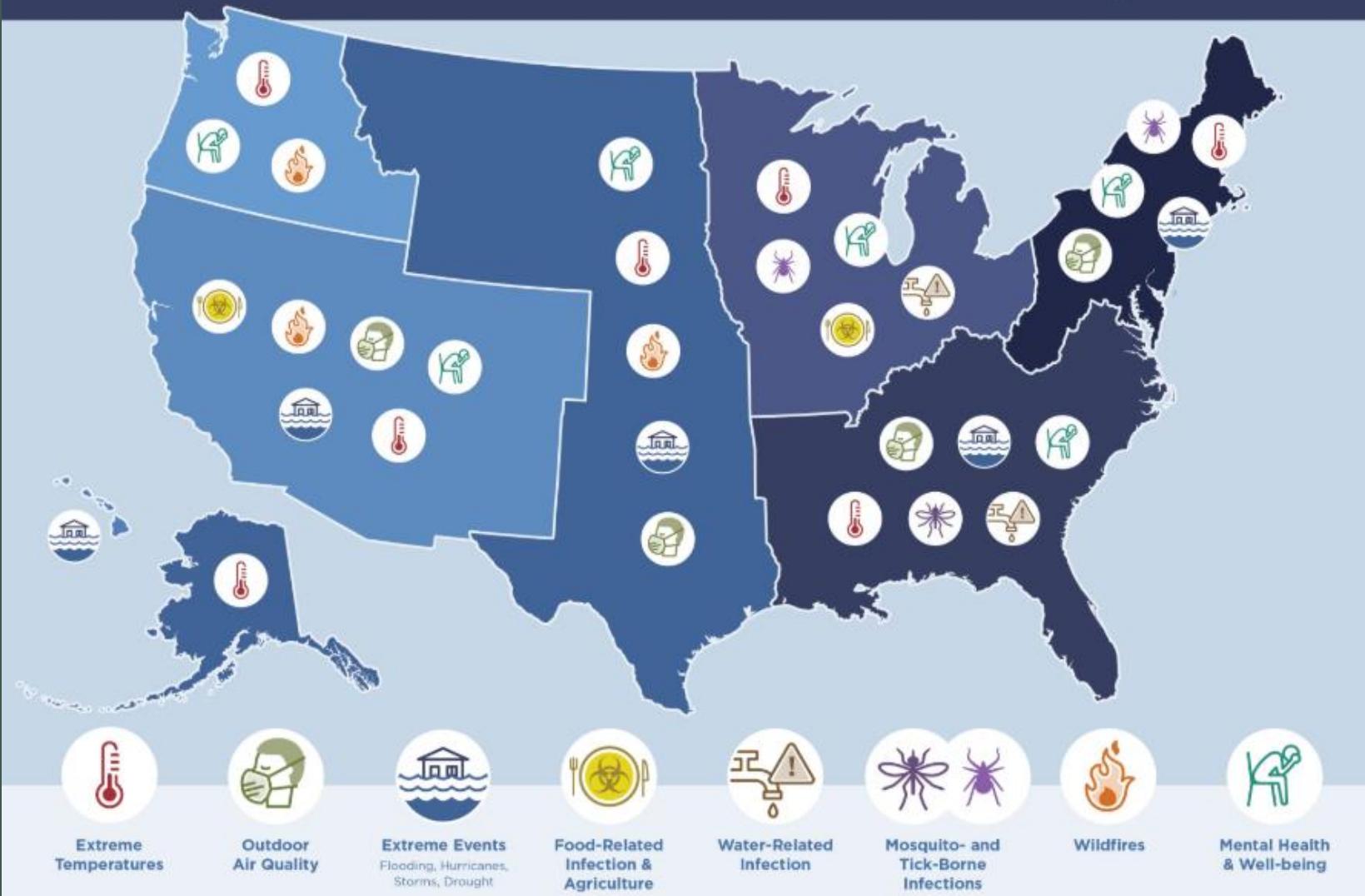
- Global climate change is ongoing and unavoidable; the question is of extent and specific impacts
- Medical professional societies endorse physician response, leadership, and research on adaptation and mitigation strategies
- GW is uniquely positioned to be a regional leader in this area
- High-impact areas for study and intervention likely include:
 - Cardiovascular events in heat emergencies
 - Exacerbations in respiratory & allergic disease
 - Changing epidemiology of water- and vector-borne infections
 - More profound impacts on vulnerable populations





Four Horsemen of the Apocalypse (Viktor Vasnetsov, 1887)

How Our Health is Harmed by Climate Change: Impacts Differ by Geographic Region



This graphic illustrates key impacts of climate change on health and is based on reports from the U.S. Global Change Research Program. For more information, visit www.globalchange.gov.

“I spend my time teaching my patients not to catastrophize life situations.

But what if the situation truly is catastrophic?”

– 35 yo therapist being treated for Lyme disease in November 2021





The Center for
Public Integrity



DONATE

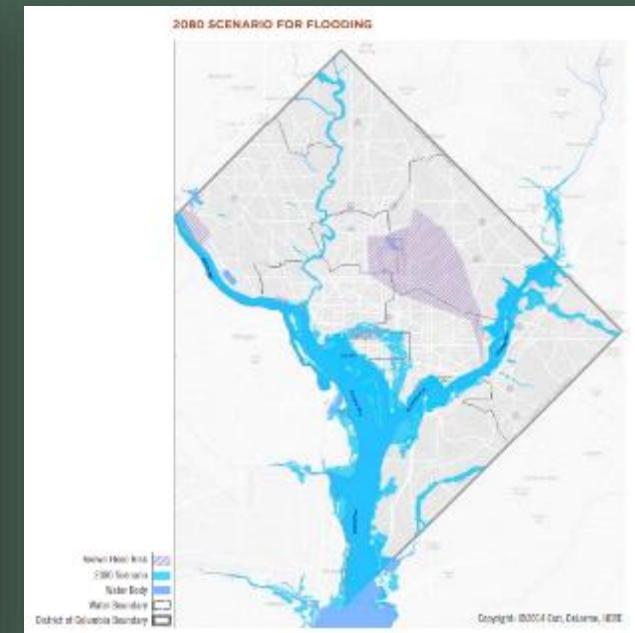
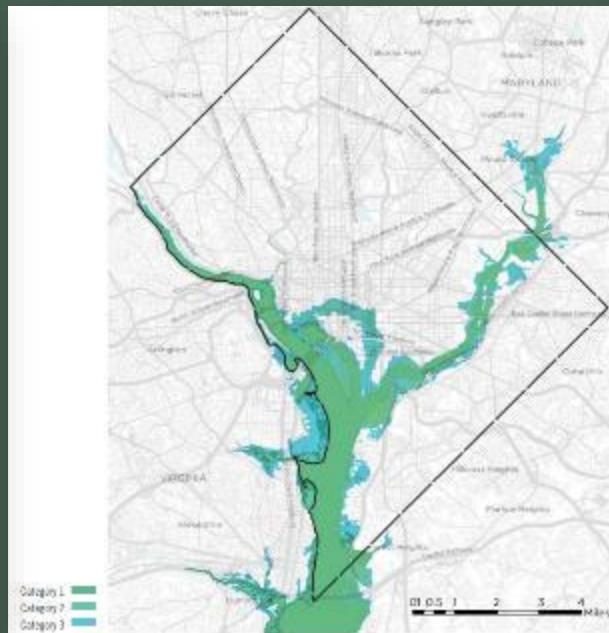
UPDATES

MENU

HIDDEN EPIDEMICS

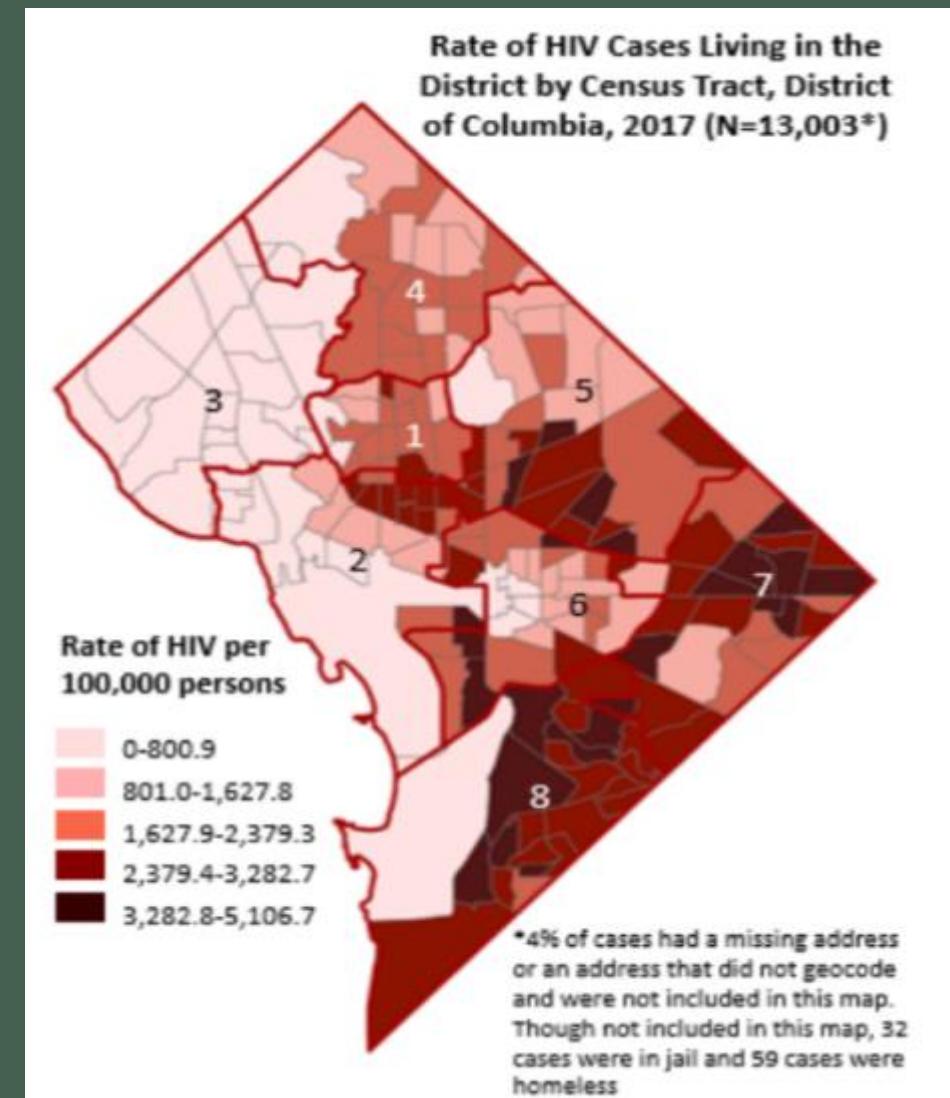
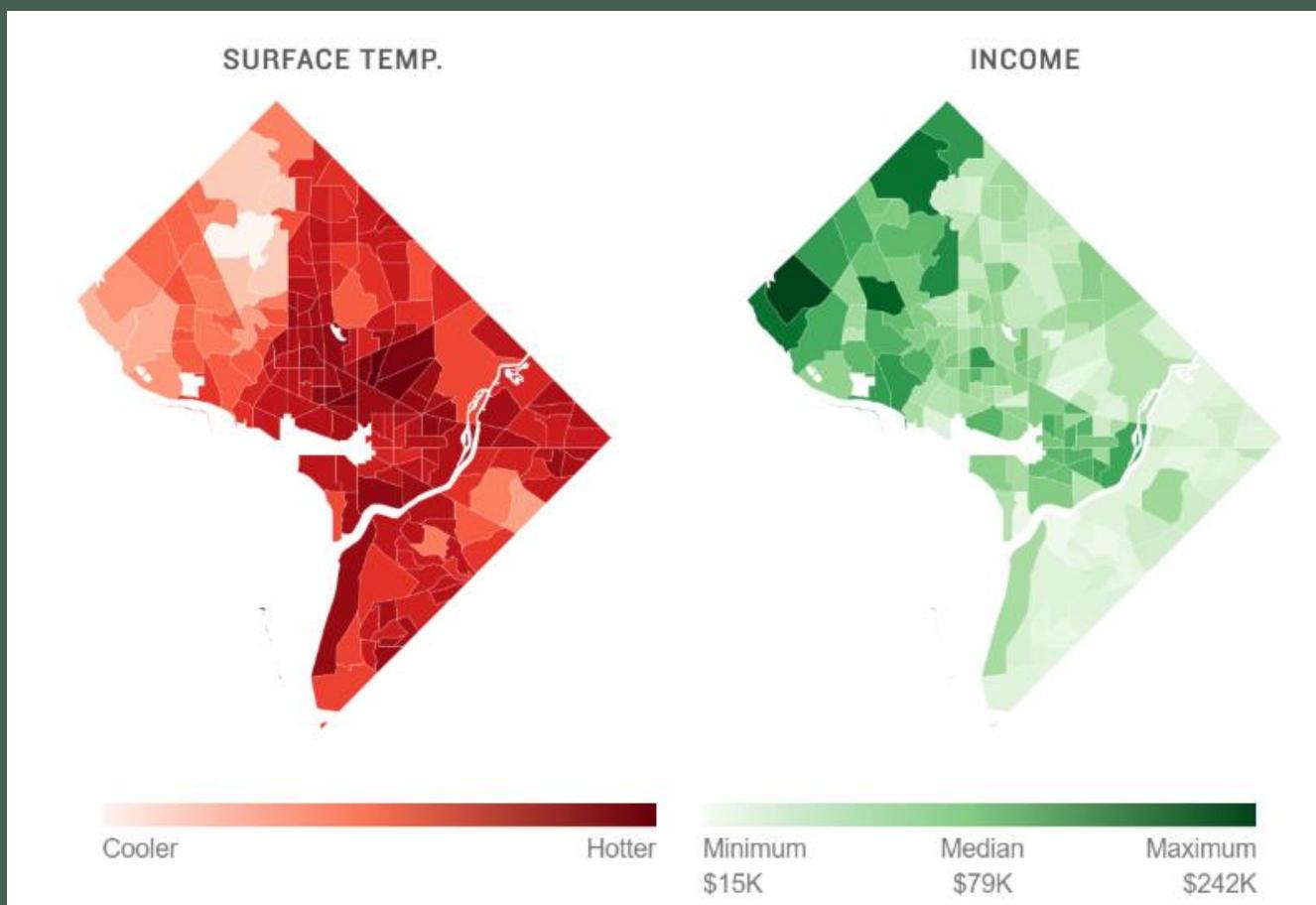
Published — October 20, 2020

DEADLY BACTERIA LURK IN COASTAL WATERS. CLIMATE CHANGE INCREASES THE RISKS.



<https://www.climatecentral.org/news/urban-heat-islands-threaten-us-health-17919>

<https://doee.dc.gov/climateready>



EDITORIAL

Call for Emergency Action to Limit Global Temperature Increases, Restore Biodiversity, and Protect Health

Lukoye Atwoli, Abdullah H. Baqui, Thomas Benfield, Raffaella Bosurgi, Fiona Godlee, Stephen Hancock, Richard Horton, Laurie Laybourn-Langton, Carlos Augusto Monteiro, Ian Norman, Kirsten Patrick, Nigel Praities, [et al.](#)

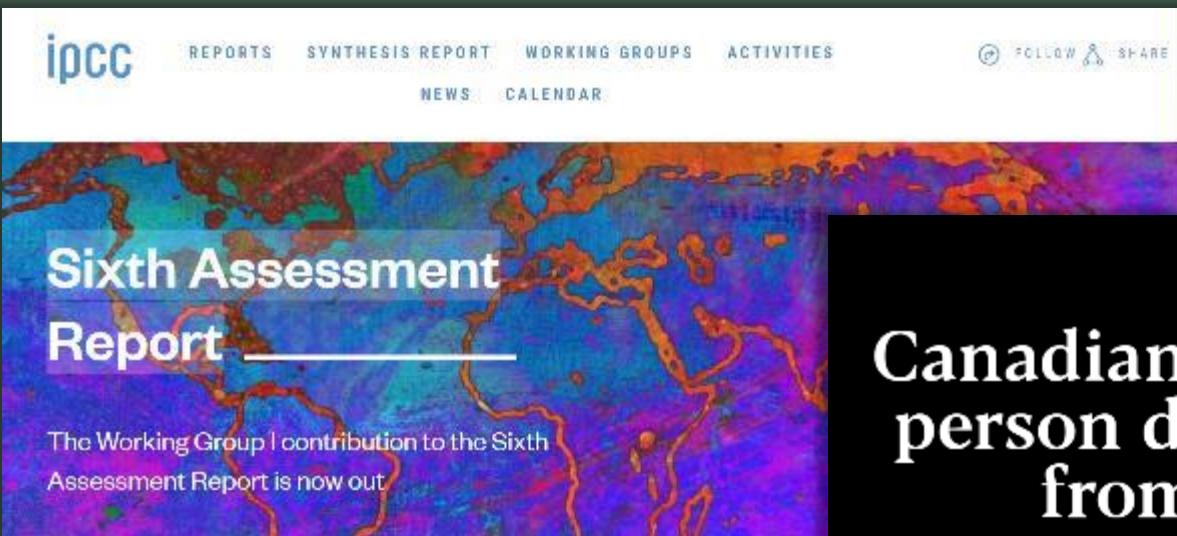
Article

Metrics

September 16, 2021

N Engl J Med 2021; 385:1134-7

DOI: 10.1056/NEJM2113200



Sustainability > Climate Change

Canadian woman becomes first person diagnosed as suffering from 'climate change'

"If we're not looking at the underlying cause, and we're just treating the symptoms, we're just gonna keep falling further and further behind," the doctor responsible for the diagnosis said.

By Brooke Miggan | Nov. 8, 2021



Health Care Ethics and Professionalism in the Era of Climate Change

"Climate change is the greatest threat to global health in the 21st century"—that is the World Health Organization's web-based dispatch for immediate action. The WHO's director-general adds, "The evidence is overwhelming: climate change endangers human health. Solutions exist and we need to act decisively to change this trajectory." Expected consequences include the spread of disease, drought, and forced migration due to expected weather events and trends. Despite the gravity and relevance to health of these phenomena, roles of health care professionals in responding to and roles of organizations and governments in implementing policies and action plans have neither been clarified nor, by some, considered. This month's issue will explore clinical and ethical questions about domestic and global health consequences of climate change and the nature and scope of the obligations that clinicians, organizations, and governments have to address them.

Volume 19, Number 12: 1151-1240

[Full Issue PDF](#)

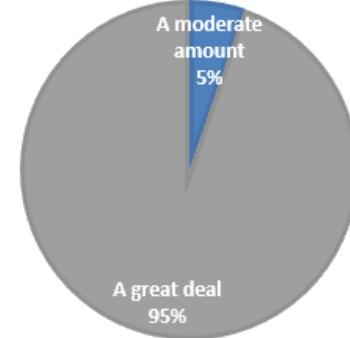
Grand Rounds

- **GW Dept. of Medicine, 11/2019**
- **Attendance:** N = 38 surveys filled
 - 29 attending physicians, 9 trainees
 - Internal Medicine + sub-specialties
- **Objectives:**
 1. Identify the mechanisms by which global climate change impacts the health of patients and populations
 2. Describe specific diseases and at-risk populations which are disproportionately affected by climate change
 3. Describe opportunities for physicians to be involved with adaptation and mitigation

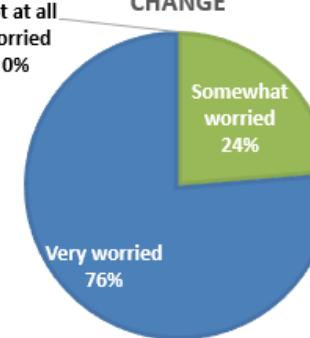
BASELINE PERCEPTIONS

53% of participants identified the issue of climate change as being “extremely important” to them

EFFECT ON FUTURE GENERATIONS

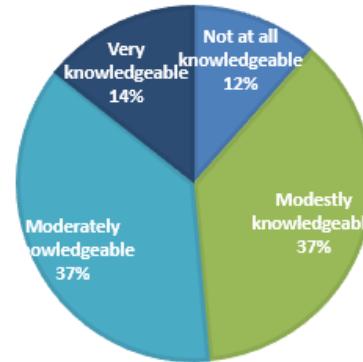


HOW WORRIED ARE YOU ABOUT CLIMATE CHANGE

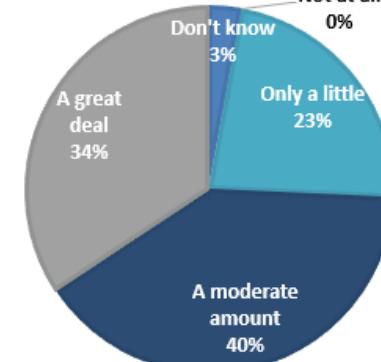


CLIMATE CHANGE & HEALTH

IMPACT OF CLIMATE CHANGE ON HEALTH



RELEVANCE TO DIRECT PATIENT CARE



LIVE

ze
ro

HEALTHCARE COVID-19

Vote For Health



If your allergies are more severe, more expensive and last longer, blame climate change

My patients feel the burden of global warming and longer growing seasons. Without better climate policies, how far from reality is year-round pollen?

Dr. Neelu Tummala Opinion contributor

Published 5:00 a.m. ET March 2, 2021 | Updated 7:46 a.m. ET March 2, 2021

Dr. Anjeni Keswani, the Director of the Allergy and Sinus Center at The George Washington Medical Faculty Associates, describes how her practice management has changed in recognizing the shift in ragweed pollen symptoms in her patients, with symptoms both starting earlier in the year and lasting longer. Because of these seasonal variations, she has found it necessary to adjust recommendations regarding starting and stopping allergy medications.



I #VOTEKIDS

Jerome Paulson
@envirohealthdoc Follows you

pediatrician with focus on environmental health, climate change and advocacy; husband: grandparent; supporter of the arts. views and opinions my own

Alexandria, VA envirohealthdoctor.com Joined June 2015



Susan Anenberg, PhD
@SusanAnenberg Follows you

Assoc. prof. of environmental health @GWpublichealth. Director @gwclimatehealth. Secretary/Editor @AGUGeoHealth. I study climate, air quality, health & policy.



Climate Change and Health at GW SMHS: First Class

- **Medical students request education on CCH**
 - Harleen Marwah discusses with Sr. Asst. Dean Deyton
- **Develop module w/in Clinical Public Health curriculum**
 - Developed in Fall 2019
 - Faculty: Akselrod (ID), Lalit Narayan (IM), Sonal Batra (EM)
 - Student leaders: Harleen Marwah, Emily Youner
 - “Beta test” lecture: 4 residents (2 IM, 2 EM)
- **Initial CCH module: 1 hour lecture + 1 hour panel**
 - Medical Society Consortium on Climate and Health resources
 - Panel: physician, public health researcher, science communication educator, journalist, moderator
 - Last session of MS2 fall semester... they still attended



“Thinking about climate change and how it’s going to affect my patients is essential to being a good physician,” explains Marwah, a fourth-year medical student at George Washington University, in Washington, D.C., who was inspired in part by her experience as a youth delegate at international climate meetings in Peru and Paris in 2014 and 2015.

“Part of the oath I’ll take when I graduate next year is to do no harm,” she says. Doing no harm inherently implies thinking about this broader responsibility and this broader duty.”

Marill M.C.,
“Pressured By Students, Medical Schools Grapple With Climate Change”
in
Health Affairs,
Dec 2020;
39(12):2050-2055.

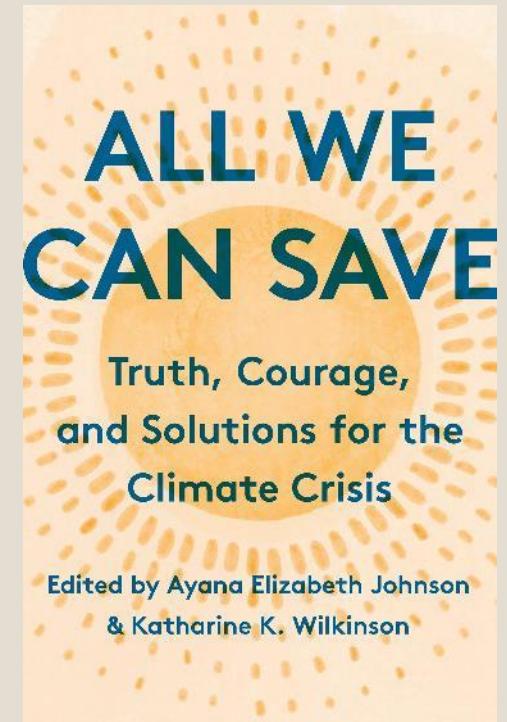
HealthAffairs
JOURNAL

“Young activists around the world are doing whatever it takes to make our voices heard on the climate crisis.

Beyond protests and civil disobedience, we are lobbying political leaders for climate action.

We are engaging our local governments, civic leaders, teachers, and school administrations. We are demanding climate action in our communities and climate education in our schools.”

Alexandria Villaseñor,
“**A Letter to Adults**”
in
All We Can Save



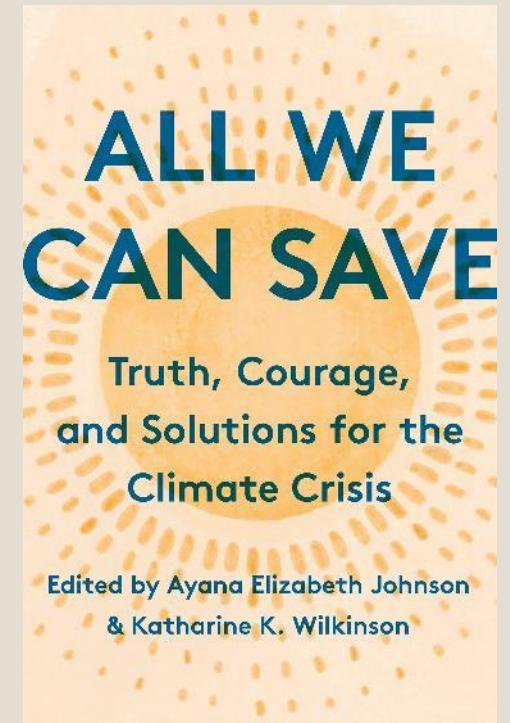
“The biggest reason why people don’t act:
They don’t know about or understand the
climate crisis.

My generation needs to know the unique risks
and vulnerabilities we are facing; that must
be a part of our education.

Since schools generally aren’t doing this, I
started Earth Uprising, a nonprofit that focuses
on peer-to-peer climate education.

Until you grown-ups get it together to improve
school curricula, young people can teach
one another what’s happening to our
planet.”

Alexandria Villaseñor,
“A Letter to Adults”
in
All We Can Save



“Without preparation through undergraduate and graduate medical education, we cannot serve as effective climate justice messengers. Ignoring the health implications of environmental racism and climate change not only hurts our BIPOC patients but also our health systems and communities.

Our training should alert us to the warning signs of these crises. Our rapid response is long overdue.”

Marwah H., Nood S.,
“Calling a Rapid Response on Environmental Racism: Medical Students Sound the Alarm”
in
Academic Medicine, Jul 2021; 96(7):932-933



A GUIDE TO

CLIMATE & HEALTH CURRICULUM REFORM IN MEDICAL SCHOOLS

Medical Students for a
Sustainable Future

CONNECT WITH US



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2



Leadership
Buy-In

Student
Advocacy

Extramural
Resources

Institutional
Change

Faculty
Development

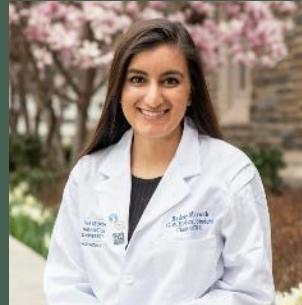
Cross-Campus
Partnerships



School of Medicine
& Health Sciences

Leadership
Buy-In

Student
Advocacy



Institutional
Change

Faculty
Development



Extramural
Resources

Cross-Campus
Partnerships

Clinical Public Health @ GWU SMHS



"The US health care system is changing dramatically. Clinicians have an obligation to serve as trusted leaders to assure that changes in health care delivery systems promote individual well-being and community health. That obligation is in our oath."

Lawrence Deyton

Senior Associate Dean for Clinical Public Health
Murdock Head Professor of Medicine and Health Policy

<https://smhs.gwu.edu/academics/md-program/curriculum/clinical-public-health>

Clinical Public Health @ GWU SMHS

STRUCTURE

- Established 2014
- Dedicated faculty and admin support
- Integrates public health and population health concepts and skills throughout students' four-year medical education
- Patients, Populations, and Systems
- Clinical Public Health Summits
- Learning Labs on COVID-19
- Community service
- MD MPH option

CONTENT AREAS

- Social determinants of health
- Community and population health
- Health system organization
- Prevention and health promotion
- Community service and engagement
- Evidence-based practice
- Interprofessional teamwork
- Clinician advocacy
- Leadership skills
- Health policy

Model: HIV @ GW

The screenshot shows the homepage of the District of Columbia Center for AIDS Research (DC CFAR). At the top left is the DC CFAR logo, which includes a stylized Capitol building icon and the text "DC CFAR" in large letters, followed by "District of Columbia Center for AIDS Research". To the right of the logo is a section featuring logos of various partner institutions: The George Washington University (Washington, DC), Georgetown University (Georgetown University Medical Center), Howard University, American University (Washington, DC), Washington DC Veterans Affairs Medical Center (Capitol Excellence), Children's National, and DC|HEALTH. Below these logos is a statement: "The DC CFAR mission is to intensify our multi-institutional effort to promote and support research that contributes to ending the HIV epidemic in Washington, DC and beyond in partnership with government and community."

<https://smhs.gwu.edu/news/smhs-students-participate-2017-clinical-public-health-summit-hiv/aids>

SMHS Students Participate in 2017 Clinical Public Health Summit on HIV/AIDS

January 29, 2018

FEATURED NEWS



First CCH Module Student Feedback

“The panel was dope.”



GW 2020 Planetary Health Report Card

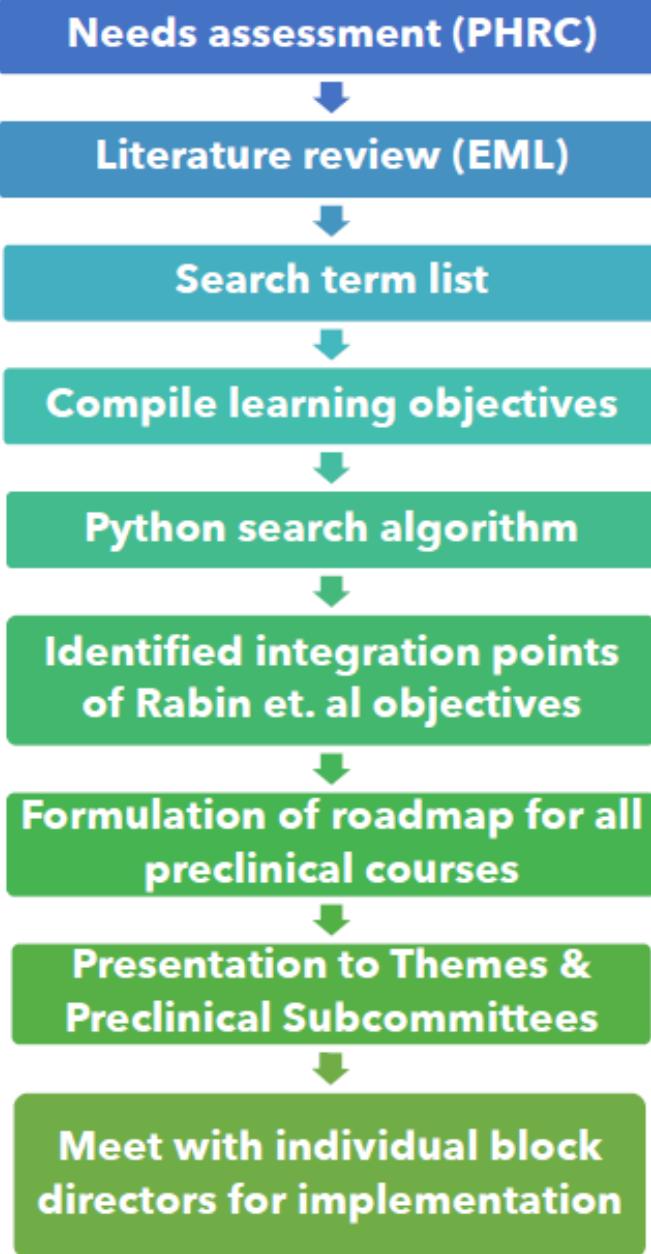
- MS2 Samuel Duffy
- Method: Searched objectives of existing curriculum components
- Strengths: support for students, core curriculum addresses social determinants and some domains (e.g. infectious disease), MS2 lecture
- Weakness: material not integrated throughout the curriculum, many domains missing

Section	Raw Score	Grade
Planetary Health Curriculum	15 / 28 = 53%	C
Interdisciplinary Research in Health and Environment	9 / 10 = 90%	A
Community Outreach and Advocacy in Environment and Health	8 / 13 = 62%	B-
University Support for Student-led Planetary Health Initiatives	8 / 10 = 80%	A-
Institutional Grade	Average of four scores above= 71%	B

<https://phreportcard.org/school-specific-report-cards-united-states/>

Eco-Medical Literacy Model

- “The ability to access, understand, integrate and use information about the health-related ecological effects of climate change to deliver and improve medical services.” (Bell, *BMC Med Educ*, 2010)
- Mapping relevant domains in GW curriculum
 - Immunohematology & Infection
 - Cardiology, Pulmonary, & Renal
 - GI & Liver
 - Brain & Behavior
 - Reproduction & Endocrinology
 - Applied Population Health
 - Practice of Medicine



Eco-Medical Literacy @ GWU SMHS

Potarazu et al., Feb. 2022, presented at *Protecting Health in a Changing Climate: Addressing Climate-Related Health Inequities*

High-Yield Areas

- 1) Cardiovascular diseases
- 2) Respiratory diseases
- 3) Infectious diseases
- 4) Mental Health
- 5) Nutrition and Development
- 6) Social Determinants of Health
- 7) Physician Professionalism & Advocacy

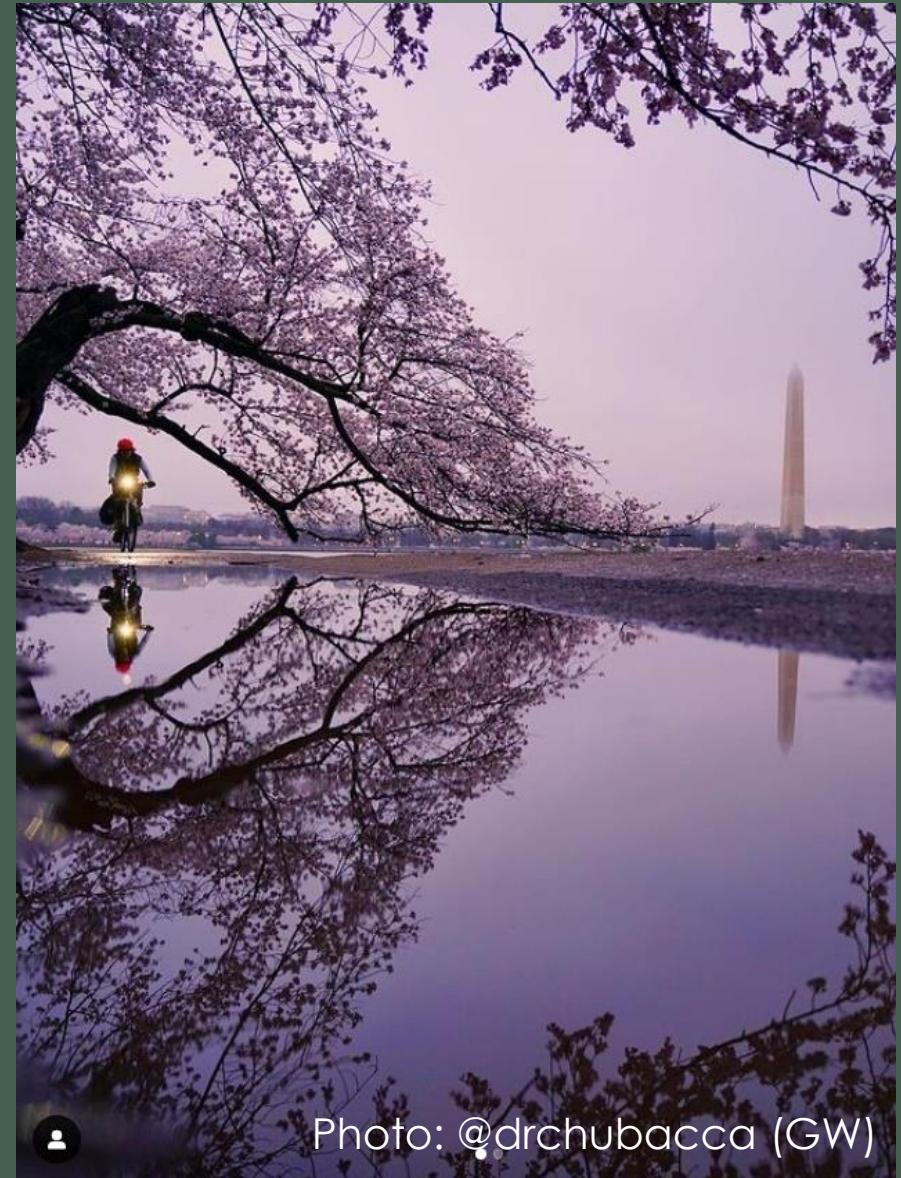
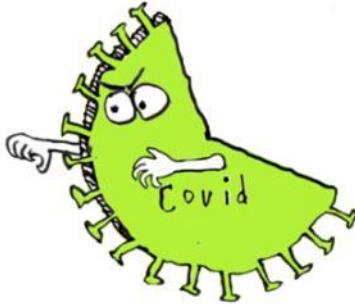
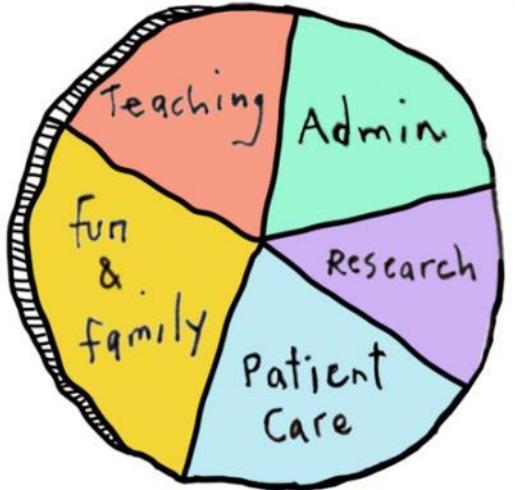


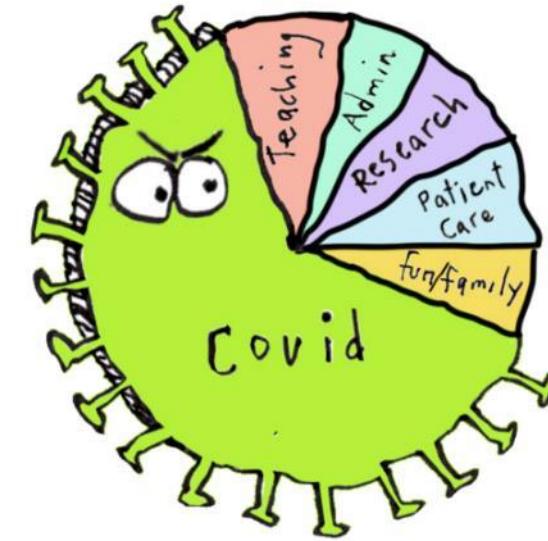
Photo: @drchubacca (GW)

GW Curriculum Development Timeline

- **12/2019:** Advocacy by Harleen Marwah; MS2 lecture + panel
- **Spring-Summer 2020:** Planetary Health Report Card completed
- **12/2020:** MS2 lecture + panel, integrated with environmental health module of CPH
- **Spring-Summer 2021:** Eco-Medical Education proposal by Savita Potarazu & team
- **Fall 2021:** Presented to Curriculum Themes Committee
- **11/2021:** MS3 intersession, clinical cases (with Scott Cohen @ VAMC)
- **12/2021:** MS2 lecture + panel, integrated with environmental health module of CPH
- **Spring 2022:** Curriculum review, meeting with course directors
- **Next steps:** Plan faculty development (with Anjeni Keswani, Neelu Tummala)



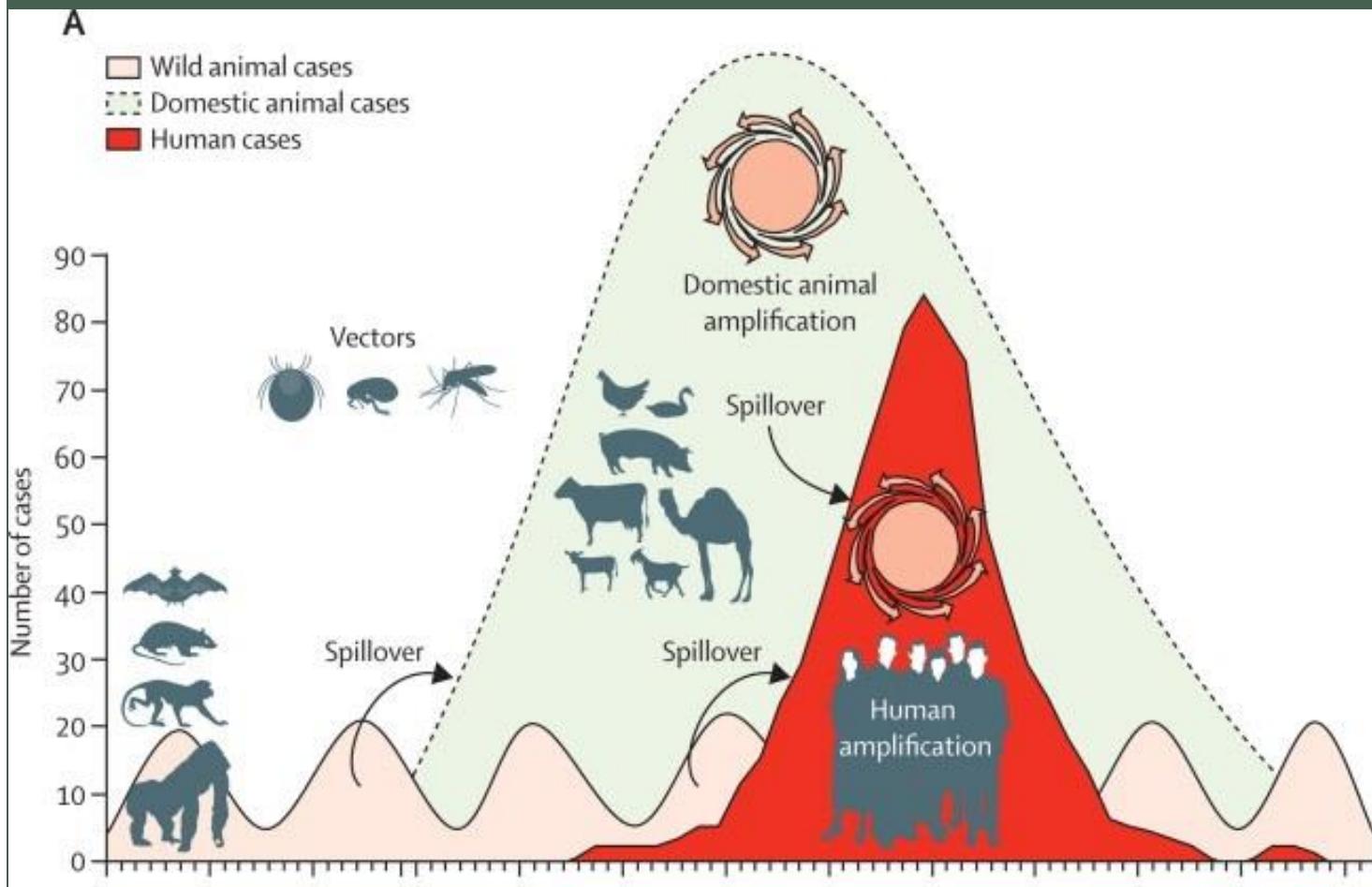
Early 2020



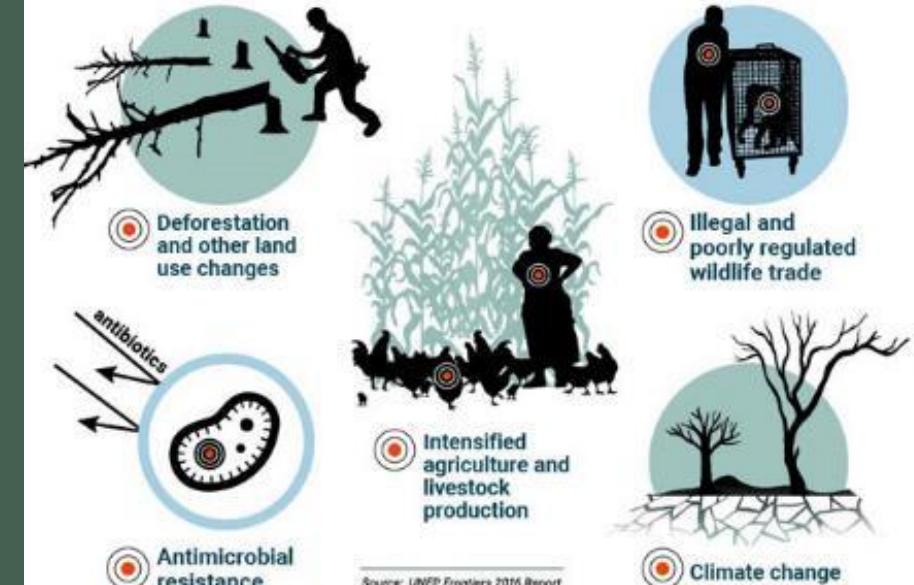
Ever Since Then

Where Do New Diseases Come From?

A



What factors are increasing zoonosis emergence?
(Diseases transmitted from animals to humans)



#COVID19

UN
environment
programme

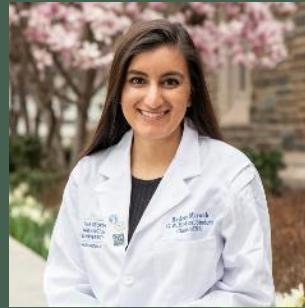


School of Medicine
& Health Sciences

Leadership Buy-In



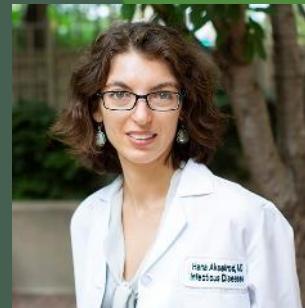
Student Advocacy



Institutional Change

Extramural Resources

Faculty Development



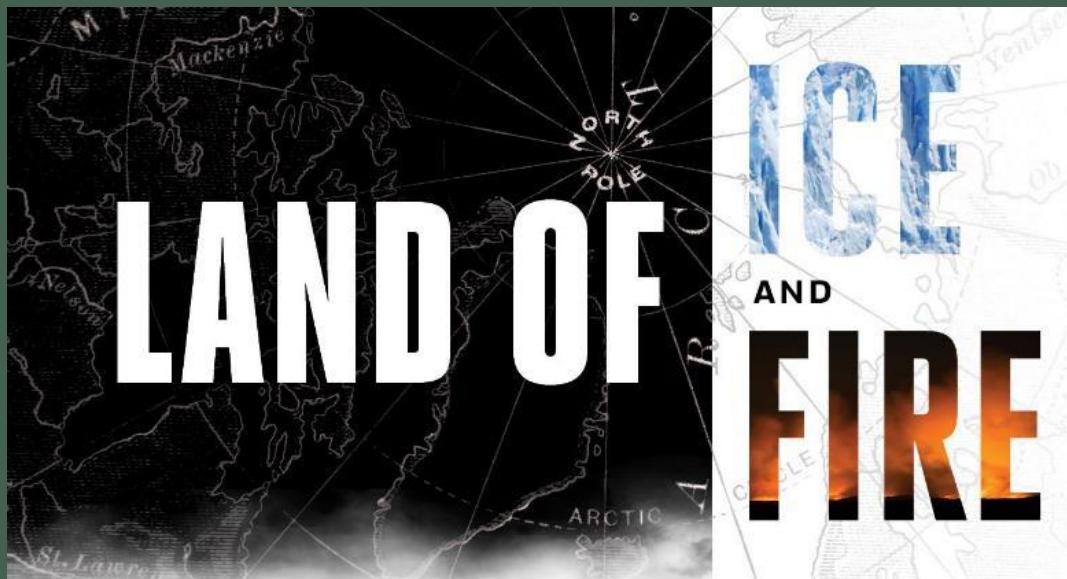
Cross-Campus Partnerships



Climate and Health Institute

At the intersection of climate change, human health and equity.

From extreme drought to longer wildfire and pollen seasons, climate change is having a profound impact on human health. In addition, the health burden caused by climate change and its drivers is disproportionate, with some populations more at risk of respiratory and heat-related illnesses, water and food insecurity, disease, forced migration and other consequences of planetary neglect. GW's Climate & Health Institute seeks new solutions to global health and equity challenges associated with climate change and is addressing those challenges through cross-disciplinary research, training and action.



<https://magazine.gwu.edu/land-ice-and-fire>





Mendenhall Glacier, Juneau, AK, May 2021

News & Events



[Humans Are Driving Climate Change But They Can Also Fight Against It](#)

PANELISTS:

Kevin Cromar DIRECTOR, HEALTH-ENVIRONMENT POLICY PROGRAM, MARRON INSTITUTE OF URBAN MANAGEMENT	Noah Scovronick PROFESSOR OF ENVIRONMENTAL HEALTH, EMORY UNIVERSITY	Tamara Carleton PROFESSOR OF ECONOMICS, UNIVERSITY OF CALIFORNIA, SANTA BARBARA

INTRODUCTORY REMARKS FROM:

Susan Anenberg DIRECTOR, CLIMATE AND HEALTH INSTITUTE	Jay Shambaugh DIRECTOR, INSTITUTE FOR INTERNATIONAL ECONOMIC SECURITY

[Health In The Social Cost Of Carbon: Recent Advances To Fill A Critical Gap](#)

Concentrations



MPH@GW Concentration in Climate and Health - Coming Fall 2022!

<https://climatehealth.gwu.edu/education>



United States
Environmental
Protection Agency

EPA 620-S-21-001 | June 2021 | www.epa.gov/research



Public Health and Health Care Partner Workshop

SUMMARY REPORT

SUMMER 2020

Office of Research and Development
Office of Science Advisor, Policy and Engagement

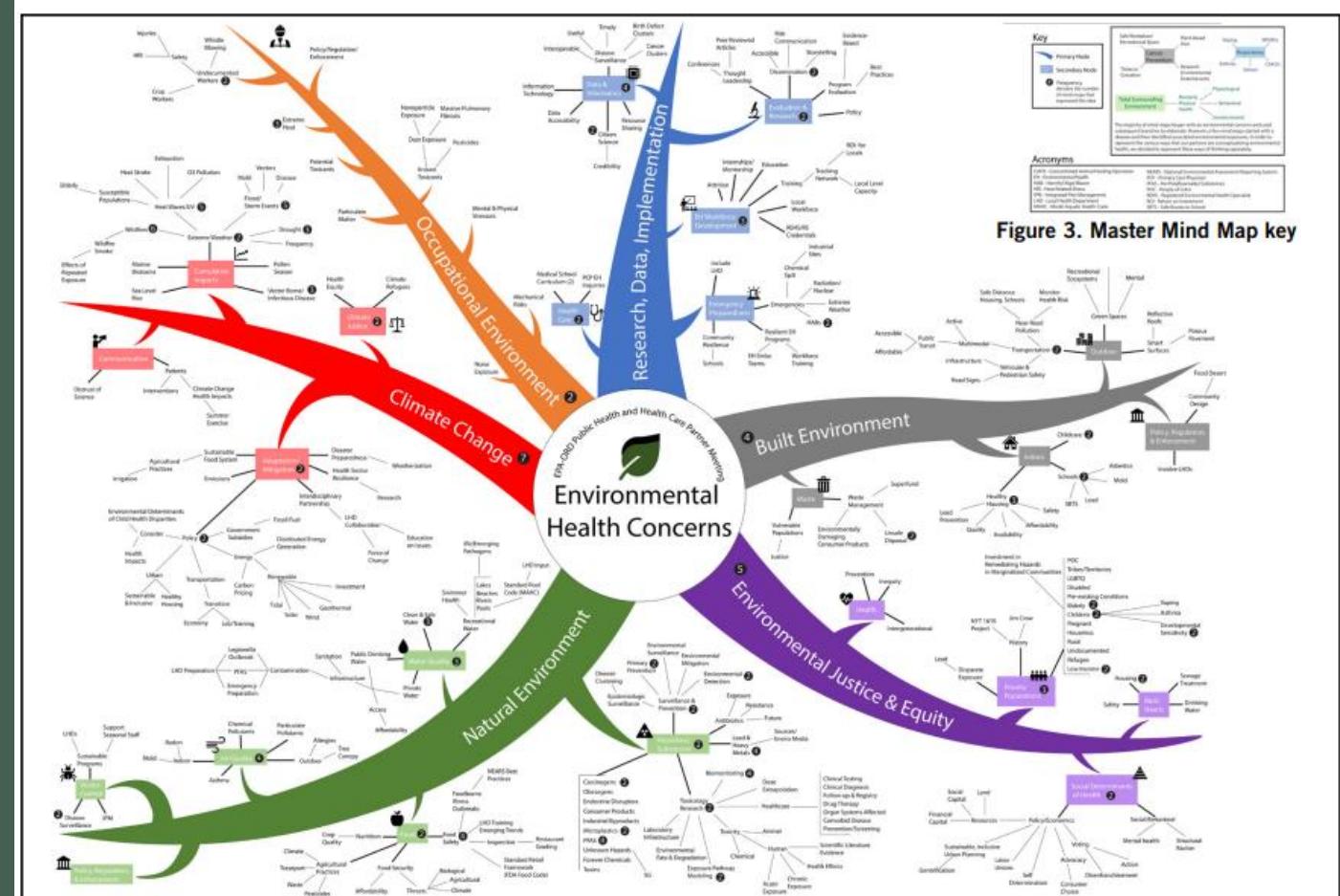
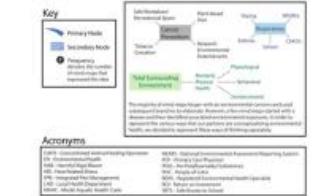


Figure 2. Master Mind Map

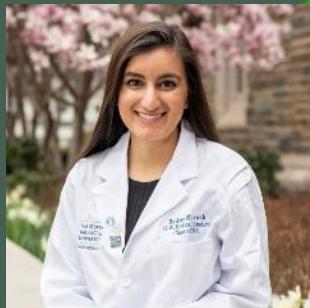
Figure 3. Master Mind Map key



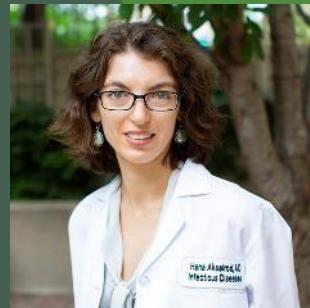


School of Medicine & Health Sciences

Student Advocacy



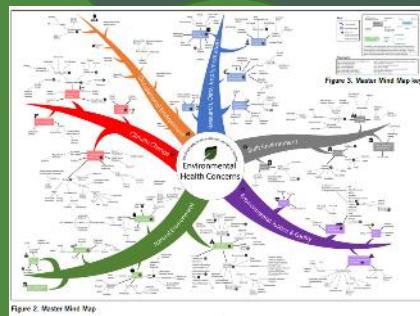
Faculty Development



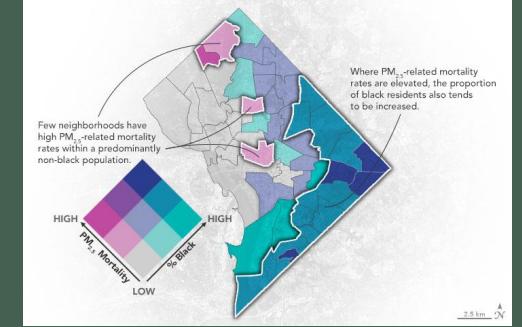
Leadership Buy-In



Institutional Change



Cross-Campus Partnerships

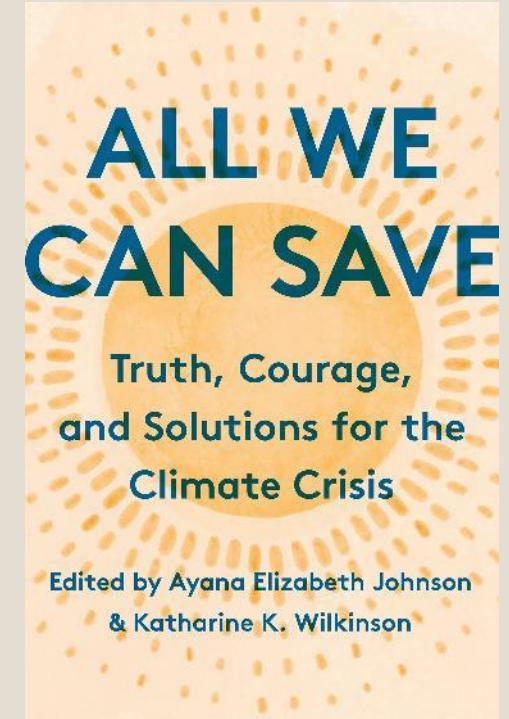


City & Community

Extramural Resources

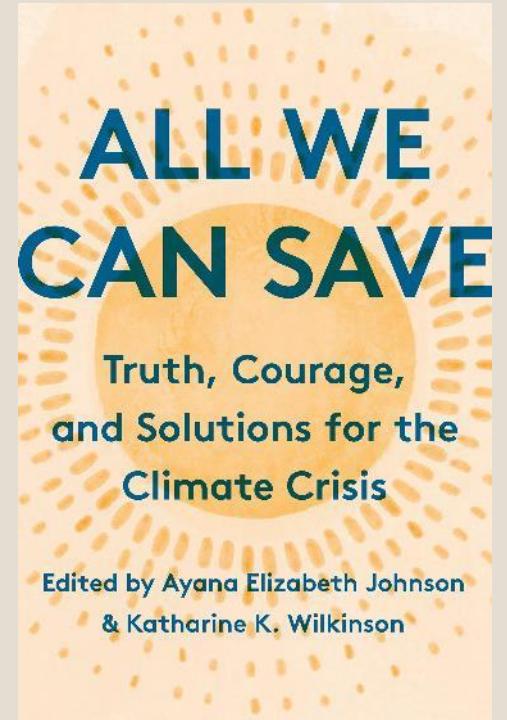
“The climate crisis is a much larger conversation than reducing carbon dioxide emissions, and it is a very different conversation from just extreme weather. We’re facing a shift in every aspect of our global reality.”

Colette Pichon Battle,
“An Offering from the Bayou”
in
All We Can Save



“The climate crisis is the largest challenge humans have ever faced. We young people are doing everything we can so please join us. We need your help.”

Alexandria Villaseñor,
“**A Letter to Adults**”
in
All We Can Save





HOWARD UNIVERSITY COLLEGE OF ARTS AND SCIENCES PRESENTS

DC CLIMATE CONVERGENCE

APRIL 1, 2022 | CRAMTON AUDITORIUM 3-5PM

FEATURING KEYNOTE SPEAKERS:



Kari Fulton
Climate Justice Advocate



Bill McKibben
Founder, Third Act

LEARN MORE

College of Arts and Sciences

QR CODE

THE ROLE OF CLIMATE CHANGE IN MEDICAL EDUCATION

With climate change a growing public health emergency, the importance of integrating the health impacts of climate change into clinician education has never been greater. In this panel discussion, we will hear three clinicians discuss how they have incorporated climate change awareness and environmental injustice into their work and into medical education.

PANELISTS:



PEDIATRICIAN, CLINICAL CONSULTANT AND GLOBAL HEALTH TRACK DIRECTOR, EMORY GLOBAL HEALTH INSTITUTE, ASSISTANT PROFESSOR, EMORY SCHOOL OF MEDICINE



PRIMARY CARE PHYSICIAN, CO-DIRECTOR OF THE CENTER FOR HEALTH EQUITY EDUCATION AND ADVOCACY, CAMBRIDGE HEALTH ALLIANCE, HARVARD EQUITY FELLOW HARVARD CHANGE, INSTRUCTOR, HARVARD MEDICAL SCHOOL



EMERGENCY MEDICINE PHYSICIAN, DIRECTOR, GLOBAL CONSORTIUM ON CLIMATE AND HEALTH EDUCATION AT COLUMBIA UNIVERSITY, ASSOCIATE PROFESSOR, DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES, MAILMAN SCHOOL OF PUBLIC HEALTH, ASSOCIATE PROFESSOR, DEPARTMENT OF EMERGENCY MEDICINE, COLUMBIA UNIVERSITY IRVING MEDICAL CENTER

INTRODUCTORY REMARKS FROM:



ENT SURGEON, CO-DIRECTOR, CLIMATE AND HEALTH INSTITUTE

Climate & Health Institute

THE GEORGE WASHINGTON UNIVERSITY

GW Department of Environmental and Occupational Health

School of Medicine & Health Sciences

THE GEORGE WASHINGTON UNIVERSITY

REGISTER HERE

**April 8, 2022
12:00-1:00 PM EST**

<https://climatehealth.gwu.edu/schedule>