

The Pandemic within the Pandemic

Darius McDaniel ,MSPH

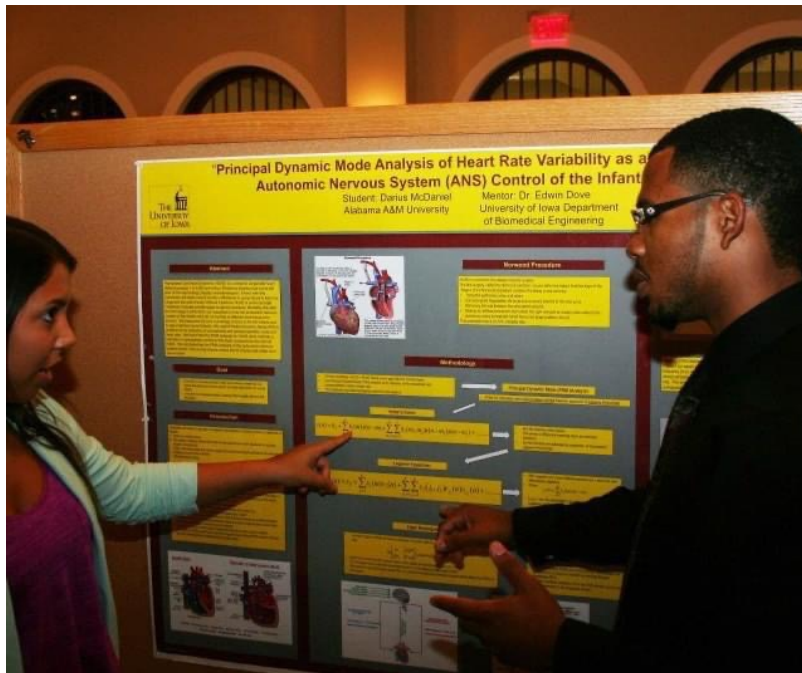
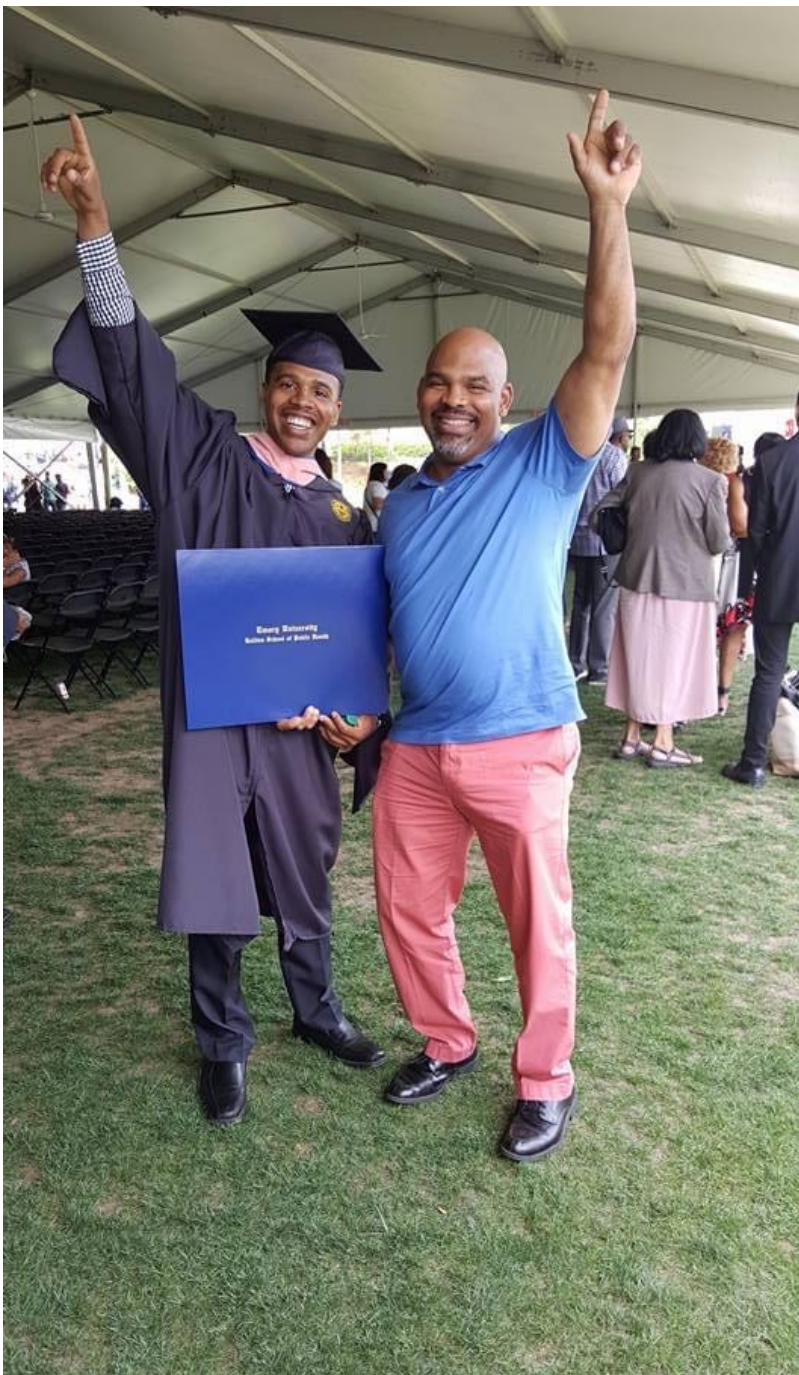
MSRI Workshop on Mathematics and Racial Justice

“Of all the forms of inequality, injustice in health care is the most shocking and inhumane”

Dr. Martin Luther King Jr

Family







Outline

- History
- Research Areas
- Mathematical and Data Misuse
- Discussion & Summary





History

"[Harriet A. Washington] has unearthed an enormous amount of shocking information and shaped it into a riveting, carefully documented book."

—NEW YORK TIMES

MEDICAL APARTHEID

The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present

HARRIET A.
WASHINGTON



History

- Some highlights:
 - Immunity belief
 - Malaria, yellow fever, smallpox, typhoid, heat exhaustion and more
 - Physical and emotional pain
 - Justified torture, brandings, beatings and painful medical procedures

Marion Sims

- Experimented on:
 - Black children including puncturing bones and moving them into new positions
 - Black women pre and post-natal, with no anesthesia
- Sims's believed that Black people didn't experience pain like White people
- Developmental differences between African Americans and Caucasian Americans
 - that African American "skulls grew too quickly around their brain"



Statue of J. Marion Sims stood across from the New York Academy of Medicine in Central Park from the 1890s until 2018.
SPENCER PLATT, Getty Images

History of Distrust



Tuskegee Syphilis Study

- Sick men tracked until death ensure autopsy
- Study went on for 40 years during which men were denied treatment
- Became iconic symbol of racialized medical abuse and a source of the fear of medical treatment



History of Distrust

Henrietta Lacks

- went to Johns Hopkins Hospital seeking treatment for a tumor on her cervix in January 1951 later that year died
- Cells from her tumor were harvested without her consent and have been used in biomedical research ever since
- For decades family was unaware her cell known as “Hela” was being used



NOVEMBER 5, 2020

Beloved Doctors Childbirth Death Reminder of a Tragic Trend for Black Moms

HILARY POWELL



Article origination WFYI-FM

As a pediatric chief resident at Indiana University's medical school, Dr. Chaniece Wallace had a list of blessings. This fall, the 30-year-old was interviewing for jobs around the country — and preparing for the birth of her first child.

On Oct. 20, baby Charlotte was born a month premature. Days later, the new mom died.

Her death shook the maternal health care community and has left a "heaviness in our hearts," says pediatric chief resident Dr. Amalia Lehmann. She's reminded of her "beloved" friend and coworker when she passes a new empty chair in her office



The death of Dr. Chaniece Wallace highlights a stark racial disparity in maternal mortality rates. Nationwide, Black women are at least twice as likely to die in pregnancy, childbirth or within a year of pregnancy as white women.

IU Health



Recent History of Inequity

Inequity cont.

Dr. Susan Moore and COVID-19

- Documented her final days of life in raw, emotional Facebook posts.
- Indiana physician claimed fellow physicians ignored her COVID-19 symptoms and threatened to send her home.
- “You have to show proof that something is wrong with you for you to get the medicine,” Dr. Moore said in a video. “I put forward and I maintain, if I was white I wouldn’t have to go through that.”
- The COVID-19 pandemic exposed America’s long history of unequal medical treatment for Black patients and has killed more at higher rates



A Pandemic on a Pandemic: Racism and COVID-19 in Blacks

Cato T. Laurencin and Joanne M. Walker

[Additional article information](#)

Abstract

Racism and COVID-19 represent a pandemic on a pandemic for Blacks. The pandemics find themselves synergized to the detriment of Blacks and their health. The complexity of the combination of these pandemics are evident when examining the interplay between racist policing practices and health.

The Coronavirus Crisis

CDC Director Declares Racism A 'Serious Public Health Threat'

April 8, 2021 - 6:41 PM ET



CDC Director Dr. Rochelle Walensky, seen last week at FEMA mass vaccination site in Boston, said Thursday that the CDC is taking steps to address the impact of racism on public health. Erin Clark/Getty Images



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Date created: May 29, 2020

'We Are Living in a Racism Pandemic,' Says APA President

Racism, Bias, and Discrimination

High-profile racial incidents taking heavy psychological toll

Editor's Choice

Racism: the other pandemic

BMJ 2020 ; 369 doi:

<https://doi.org/10.1136/bmj.m2303> (Published 11 June 2020)

Cite this as: *BMJ* 2020;369:m2303

Fauci says pandemic exposed 'undeniable effects of racism'

May 16, 2021



ATLANTA (AP) — The immunologist who leads the COVID-19 response in the United States said Sunday that “the undeniable effects of racism” have led to unacceptable health disparities that especially hurt African Americans, Hispanics and




Research Areas

HIV and TB experiences in South Africa

- Working in South Africa allowed for me to see the disparities and devastating effects of Apartheid
- Visiting the Apartheid museum
- Seeing infectious diseases run wild
- While there I was also reading Medical Apartheid

Original Paper | Published: 02 May 2019

The Impacts of Residential Location on the Risk of HIV Virologic Failure Among ART Users in Durban, South Africa

[Yi-No Chen](#) , [Daniella Coker](#), [Michael R. Kramer](#), [Brent A. Johnson](#), [Kristin M. Wall](#), [Claudia E. Ordóñez](#), [Darius McDaniel](#), [Alex Edwards](#), [Anna Q. Hare](#), [Henry Sunpath](#) & [Vincent C. Marconi](#)

AIDS and Behavior **23**, 2558–2575 (2019) | [Cite this article](#)

498 Accesses | 3 Citations | 2 Altmetric | [Metrics](#)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transmission of Extensively Drug-Resistant Tuberculosis in South Africa



Mary Ann Liebert, Inc. publishers

AIDS RESEARCH AND HUMAN
RETROVIRUSES

Journals

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Alerts

AIDS Res Hum Retroviruses. 2016 Apr 1; 32(4): 357–363.

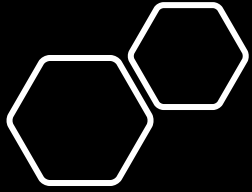
doi: [10.1089/aid.2015.0227](https://doi.org/10.1089/aid.2015.0227)

PMCID: PMC4817593

PMID: [26559521](https://pubmed.ncbi.nlm.nih.gov/26559521/)

Novel Predictors of Poor Retention Following a Down-Referral from a Hospital-Based Antiretroviral Therapy Program in South Africa

[Jonathan Colson](#)¹ , [Darius McDaniel](#)², [Brent Johnson](#)³, [Carlos del Rio](#)¹, [Henry Sunpath](#)⁴ and [Vincent C. Marconi](#)¹



Alzheimer's

This Issue

Views **8,302** | Citations **48** | Altmetric **525**

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Original Investigation

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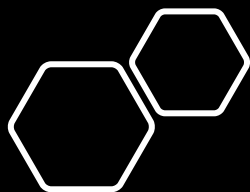
January 7, 2019

Assessment of Racial Disparities in Biomarkers for Alzheimer Disease

John C. Morris, MD^{1,2}; Suzanne E. Schindler, MD, PhD^{1,2}; Lena M. McCue, PhD^{2,3}; [et al](#)

[» Author Affiliations](#) | [Article Information](#)

JAMA Neurol. 2019;76(3):264-273. doi:10.1001/jamaneurol.2018.4249



Alzheimer's

Original Investigation | Neurology



December 13, 2019

Racial Disparity in Cerebrospinal Fluid Amyloid and Tau Biomarkers and Associated Cutoffs for Mild Cognitive Impairment

Stephanie L. Garrett, MD¹; Darius McDaniel, MSPH²; Malik Obideen, MD²; [et al](#)

[» Author Affiliations](#) | [Article Information](#)

JAMA Netw Open. 2019;2(12):e1917363. doi:10.1001/jamanetworkopen.2019.17363

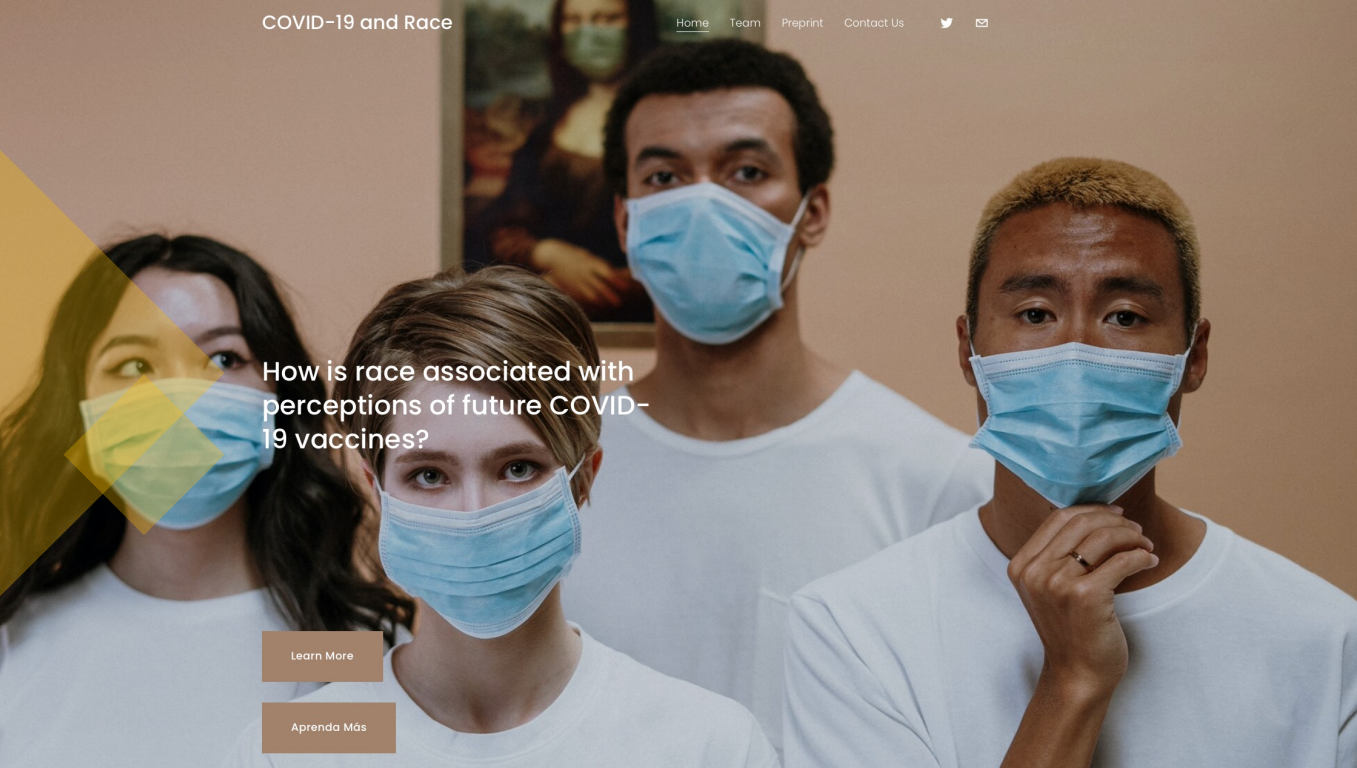
[> J Alzheimers Dis.](#) 2020;77(2):843-853. doi: 10.3233/JAD-200089.

Perceived Stress is Associated with Alzheimer's Disease Cerebrospinal Fluid Biomarkers in African Americans with Mild Cognitive Impairment

[Antoine R Trammell](#)¹, [Darius J McDaniel](#)², [Malik Obideen](#)², [Maureen Okafor](#)², [Tiffany L Thomas](#)², [Felicia C Goldstein](#)², [Leslie M Shaw](#)³, [Ihab M Hajjar](#)⁴

Affiliations + expand

PMID: 32741810 DOI: [10.3233/JAD-200089](#)



How is race associated with perceptions of future COVID-19 vaccines?

[Learn More](#)

[Aprenda Más](#)

Intragroup differences in COVID-19 vaccine attitudes among Black Americans

Charles R. Senteio^{1,2*}, Christie Newton³, Gordon Pennycook³, David G. Rand¹

¹Sloan School of Management, Massachusetts Institute of Technology, ²Rutgers University School of Communication and Information, ³University of Regina, Hill/Levene Schools of Business

Keywords: COVID-19 Racial Inequity, COVID-19 Perceptions, COVID-19 Vaccination, African American Acculturation

Covid and Race

- Diverse team of health researchers from MIT, Rutgers and Emory
- Looking to provide novel insights on how racial/ethnic acculturation may influence COVID-19 vaccination, treatment, and contact tracing.
- Understanding disparities in COVID-19 perceptions and intentions and informing solutions.



Mathematical and Data misuse

Weapons of Math Destruction (WMD)

- Discusses understanding the impact of mathematical sciences and data misuse
- Models being used to help judges sentence fairly but ended up creating more bias
- Bias in algorithms behind:
 - employment application screeners
 - policing and sentencing
 - workplace wellness programs
 - credit scores
- WMDs can encode racism into an algorithm or enable predatory companies to advertise selectively to vulnerable people
- Disarming models

WEAPONS OF MATH DESTRUCTION



HOW BIG DATA INCREASES INEQUALITY
AND THREATENS DEMOCRACY

CATHY O'NEIL

Weapons of Math Destruction

- Due to racist policing practices such as stop and frisk, people of color have encounter with police much earlier than white people

O'Neil writes,

“Many WMDs create feedback loops that perpetuate injustice. Recidivism models and predictive policing algorithms—programs that send officers to patrol certain locations based on crime data—are rife with the potential for harmful feedback loops. For example, a recidivism model may ask about the person’s first encounter with law enforcement. Due to racist policing practices such as stop and frisk, black people are likely to have that first encounter earlier than white people. If the model takes this measure into account, it will probably deem a black person more likely and assigned a high risk score”

WSJ

DIGITS

Google Mistakenly Tags Black People as 'Gorillas,' Showing Limits of Algorithms

By [Alistair Barr](#)
Updated July 1, 2015 3:41 pm ET

SHARE TEXT

Google is a leader in artificial intelligence and machine learning. But the company's computers still have a lot to learn, judging by a major blunder by its Photos app this week.

MIT News
ON CAMPUS AND AROUND THE WORLD

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Study finds gender and skin-type bias in commercial artificial-intelligence systems

Examination of facial-analysis software shows error rate of 0.8 percent for light-skinned men, 34.7 percent for dark-skinned women.

Watch Video

Larry Hardesty | MIT News Office
February 11, 2018

PRESS INQUIRIES



Joy Buolamwini, a researcher in the MIT Media Lab's Civic Media group
Photo: Bryce Vickmark

Examples

- Google algorithm
- MIT study on facial recognition
- Demonstrates underlying bias in data being used AI algorithms

Discussion and Summary



Discussion & Summary

- Is data being used correctly?
- How do we disarm mathematical models used in incorrect ways causing cycles of discrimination?
- Evaluate our teaching structures in the mathematical sciences that don't address the incorrect uses of models and the effects they can have
- Advocate for new research into existing models and data being used that is perpetuating racism and prejudices
- Take into consideration that all data collection and analyses should have an equity and ethical lens

Thank You



***Organizing committee
for opportunity***



***Mentors paving the
way***



***Everyone fighting for equity
and against disparities
everywhere***