



National Institutes of Health
Office of Data Science Strategy

Charge for Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD) Council of Councils Working Group

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Director, Office of Data Science Strategy

Council of Councils Meeting

April 5, 2024

Tactics to Implement AI in Biomedical Research

NIH has launched several initiatives to expand the development and use of AI in biomedical, clinical, and behavioral research.

ODSS Administrative Supplements to catalyze new opportunities in AI/ML and data science

ICOs Funding Opportunities to develop and implement AI/ML technologies in biomedical research domain

NIH high-profile AI initiatives
AIM-AHEAD
Bridge2AI
ScHARe



The Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD)

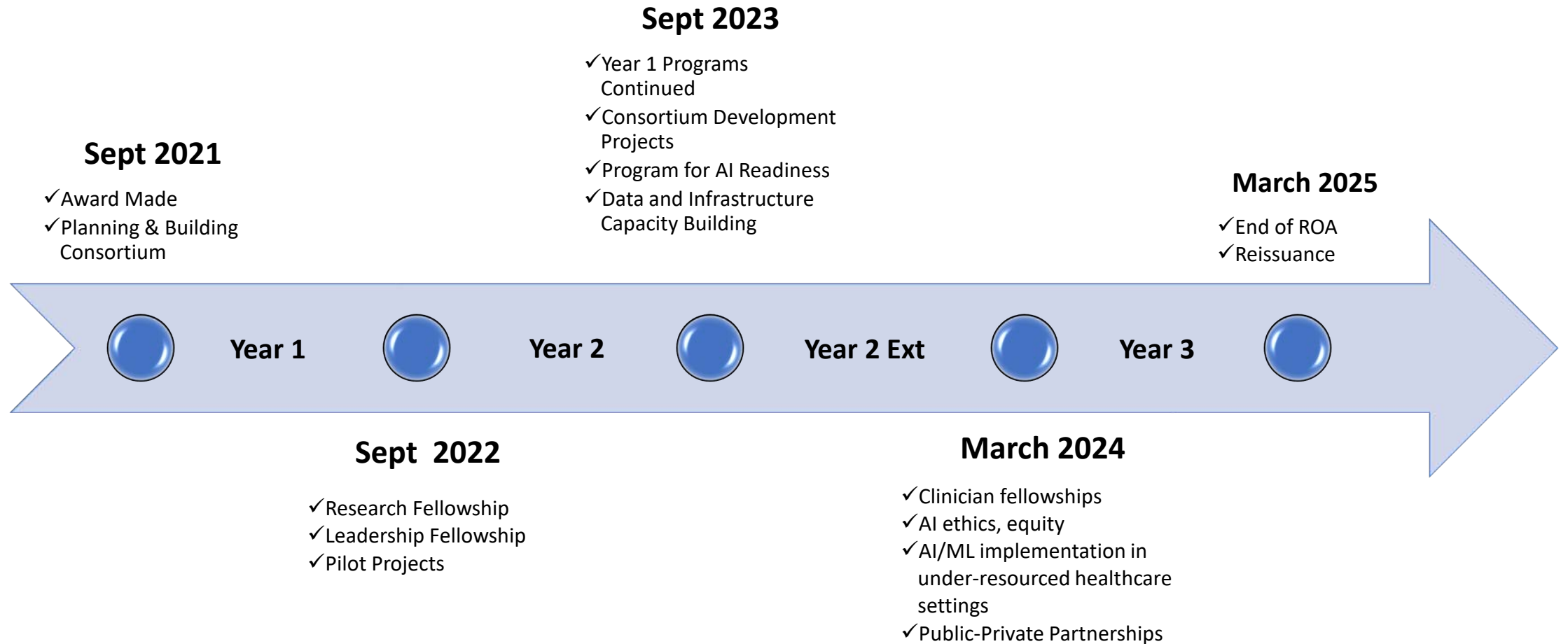


Goals

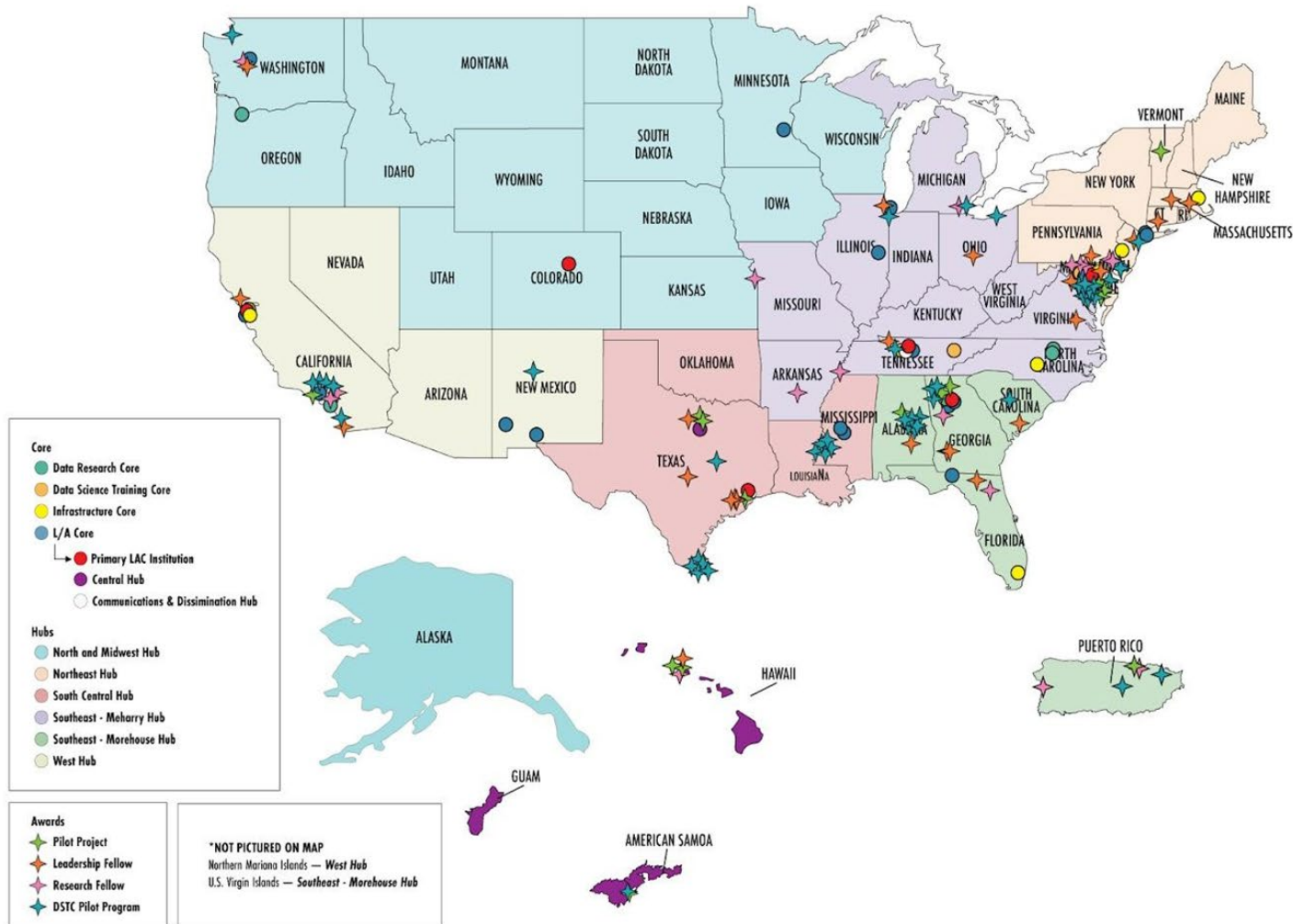
- Enhance the **participation** and **representation** of researchers and communities — currently underrepresented in the development of AI
- Address health disparities** and inequities using AI/ML
- Improve the capabilities** of this emerging technology

<https://aim-ahead.net/>

AIM-AHEAD Timeline



AIM-AHEAD as a Consortium



Cores

Leadership: Lead, recruit, and coordinate the AIM-AHEAD Consortium

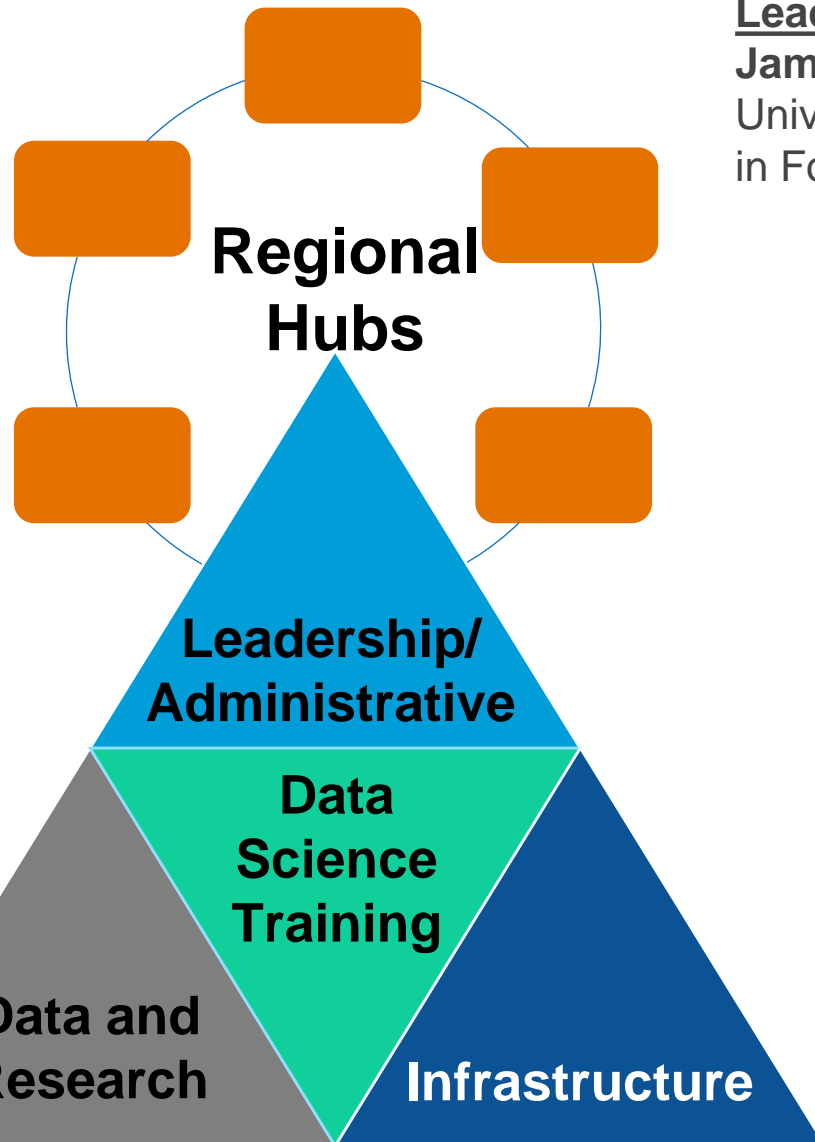
Research: Address research priorities and needs to form an inclusive basis for AI/ML

Training: Assess, develop, and implement data science training curriculum

Infrastructure: Assess data, computing, and software infrastructure to facilitate AI/ML and health disparities research

<https://aim-ahead.net/>

The AIM-AHEAD Coordinating Center



Leadership Core

Jamboor K. Vishwanatha, Ph.D.

University of North Texas Health Science Center
in Fort Worth

Regional Hubs

Toufeeq Ahmed, Ph.D.

Vanderbilt University Medical Center

Bettina Beech, Dr.P.H.

University of Houston

Harlan P. Jones, Ph.D.

University of North Texas Health Science Center in
Fort Worth

Spero Manson, Ph.D.

University of Colorado-Anschutz Medical Center in
Aurora

Keith Norris, M.D., Ph.D.

University of California, Los Angeles

Anil Shanker, Ph.D.

Meharry Medical College in Nashville, Tennessee

Herman Taylor, M.D.

Morehouse School of Medicine in Atlanta, Georgia

Roland J. Thorpe, Jr., Ph.D.

Johns Hopkins University in Baltimore, Maryland

Data Science Training Core

Legand L. Burge, Ph.D.

Howard University in
Washington, D.C.

Infrastructure Core

Alex J. Carlisle, Ph.D.

National Alliance Against
Disparities in Patient Health in
Woodbridge, Virginia

Paul Avillach, M.D., Ph.D.

Harvard Medical School in
Boston, Massachusetts

Bradley A. Malin, Ph.D.

Vanderbilt University Medical
Center in Nashville, Tennessee

Data and Research Core

Keith C. Norris, M.D

University of California, Los
Angeles

<https://aim-ahead.net/>



AIM-AHEAD Impact | Year 1 & 2 awards

AIM-AHEAD supported over **274** awards to increase researcher diversity, address data & AI biases, engage underserved communities, and build institutional capacity.



Training Programs

Leadership Fellowship (50)

Research Fellowship (47)



Community Engagement

Hub Pilot Projects (35)



AI Health Equity Research

Pilot Projects (21)

Consortium Projects (21)



Institutional Capacity Building

Program for Artificial Intelligence Readiness (15)

Data and Infrastructure Capacity Building (13)



Joint training to increase researcher diversity in AI/ML by leveraging *All of Us* and N3C datasets, infrastructure, and training components.



212 Applications
25 trainees



National
COVID
Cohort
Collaborative

120 Applications
55 trainees

Impact *as of January 5, 2024*

3,904+ Total Members

2,234 Mentees

1,048 Mentors

1,156 Institutions

**AIM-AHEAD Named
in White House
Executive Order**

Example: AIM-AHEAD Supports Diverse Researchers and Projects



Leveraging AI/ML to address intersex under-diagnosis/under-recognition

Alex Stokes, University of Hawaii at Manoa



Identify reference intervals of cardiometabolic-related Laboratory tests for Hispanic Populations using Machine Learning (ML) Methods.

Abiel Roche-Lima, University of Puerto Rico



Developing explainable machine learning and computational methods for identifying geographic and racial disparities in end-stage renal disease

Semhar Michael, South Dakota State University

**SCIENTIFIC
REPORTS**
nature research

[Sci Rep.](#) 2023; 13: 17198.

Published online 2023 Oct 11. doi: [10.1038/s41598-023-43830-3](https://doi.org/10.1038/s41598-023-43830-3)

PMCID: PMC10567761

PMID: [37821500](https://pubmed.ncbi.nlm.nih.gov/37821500/)

Unsupervised machine learning method for indirect estimation of reference intervals for chronic kidney disease in the Puerto Rican population

[Julian Velev](#),^{1,2} [Jack LeBien](#),² and [Abiel Roche-Lima](#)³

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AIM-AHEAD Publications

To date, over **10** AIM-AHEAD-supported publications have appeared in high-impact journals, including ***Nature Communication, Scientific Report, Journal of Medical Internet Research AI, PLOS One, Journal of Clinical Oncology, Proceedings of the 17th International Multi Conference on Society, Cybernetics and Informatics.***

Proceedings of the 17th International Multi-Conference on Society, Cybernetics and Informatics (IMSCI 2023)

Teaching Health Informatics in Middle School: Experience from an NIH AIM-AHEAD pilot

Gregory TARDIEU
Alexandria City Public Schools
Alexandria, VA 22314, USA

Senait TEKLE
Biomedical Informatics Center, The George Washington University
Washington, D.C. 20037, USA

Linda ZANIN
Alexandria City Public Schools

[nature](#) > [nature communications](#) > [articles](#) > article

Article | [Open access](#) | Published: 09 December 2022

A Multifaceted benchmarking of synthetic electronic health record generation models

[Chao Yan](#), [Yao Yan](#), [Zhiyu Wan](#), [Ziqi Zhang](#), [Larsson Omberg](#), [Justin Guinney](#), [Sean D. Mooney](#) & [Bradley A. Malin](#)

Nature Communications **13**, Article number: 7609 (2022) | [Cite this article](#)

6911 Accesses | 13 Citations | 19 Altmetric | [Metrics](#)

Abstract

OPEN ACCESS | ORIGINAL REPORTS | January 10, 2023



Derivation and Validation of a Clinical Risk Assessment Model for Cancer-Associated Thrombosis in Two Unique US Health Care Systems

Authors: [Ang Li, MD, MS](#), [Jennifer La, PhD](#), [Sarah B. May, MS](#), [Danielle Guffey, MS](#), [Wilson L. da Costa Jr, PhD](#), [Christopher I. Amos, PhD](#), [Raka Bandyo, MS](#), ... [SHOW ALL](#) ... and [Nathanael R. Fillmore, PhD](#) | [AUTHORS INFO & AFFILIATIONS](#)

Publication: *Journal of Clinical Oncology* • Volume 41, Number 16 • <https://doi.org/10.1200/JCO.22.01542>

AIM-AHEAD's Bridge the Gap Initiative

The AIM-AHEAD) engaged and empowered the Birmingham, AL community through the Bridge the Gap Initiative in partnership with a local company Acclinate. Participants presented their ideas for how AI/ML could be used to positively impact health topics of their choice.

[Click here to watch a video recap.](#)



“I came to learn about heart disease, **hypertension** because it runs in my family...and **cancer**.

It’s been beneficial working with other people, learning to take responsibility for my health.... and **how AI can help me** with that.” - **Participant**



Impact

- **Improved** participant understanding of AI/ML
- **Helped** identify opportunities where AI/ML could impact individual and community health outcomes
- **Increased** understanding of ethical challenges and biases that can occur within the field of AI/ML
- **Enabled** underrepresented communities to contribute to the conversation on AI/ML and health care

AIM-AHEAD: Looking Ahead

AIM-AHAD program envisions renewed emphases and approaches to:

- **Strengthen the network** across the consortium with a focus on community-engaged research in partnerships with federally qualified health centers (FQHCs), community health centers (CHCs), and public and private stakeholders
- **Deliver scalable data and computing infrastructure** that leverages diverse EHR, connects social determinates of health, and other data, to support grand challenge applications of AI in **health promotion, disease prevention, intervention, and implementation strategies**
- Develop and implement strategies **to overcome AI ethics and equity challenges** within underserved communities
- **Strengthen the capabilities of underrepresented researchers and communities** through curriculum development and training to increase the diversity of the AI/ML workforce that resembles the communities that they serve

AIM-AHEAD Working Group Rationale

The program has resulted in enhancing researcher diversity and participation of underrepresented communities, addressing AI biases, and building AI health equity capacity at low-resource institutions.

- **Generated** a wealth of mentorship opportunities and **increased** researcher diversity in AI/ML
- **Supported** research projects addressing biases and health disparities aimed at historically underserved and underrepresented communities
- **Developed** ethics and equity principles to build equity in biomedical research, and best practices for working with underrepresented stakeholders
- **Engaged** underrepresented communities to contribute to the conversation on AI/ML and healthcare
- **Supported** capacity building in AI health equity lab and data and infrastructure at lower-resource institutions

AIM-AHEAD Working Group Charge

The charge of the AIM-AHEAD Working Group of the Council of Councils is to provide an assessment of the AIM-AHEAD's progress to date and to provide recommendations for the future of this initiative, specifically:

- Review the current scope and goals of the AIM-AHEAD as well as progress to date;
- Based on the progress, provide recommendations to enhance the future of the AIM-AHEAD program objectives and goals, with renewed emphases on building partnerships with community organizations, FQHCs, and CHCs to co-design ethical AI approaches to advancing health equity in underserved communities.
- Provide recommendations on potential-success measures for the AIM-AHEAD program.

Vote

Vote to establish a Council of Councils Working Group to review the objectives and progress of the Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD) Program and recommend future directions.