Artificial Intelligence/Machine Learning Consortium to Advance Health Equity And Researcher Diversity

AIM-AHEAD *All of Us* Training Program

Cohort II

Informational Webinar

October 31, 2024, 1:00pm Central

AIM-AHEAD Coordinating Center is funded by NIH, Agreement No.: 1OT2OD032581

Welcome to AIM-AHEAD

Introduction

The Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Research Diversity (AIM-AHEAD) program was established by the National Institutes of Health (NIH).

Purpose

The purpose of AIM-AHEAD is to enhance diversity in the field of artificial intelligence and machine learning (AI/ML), with emphasis on reducing health disparities and promoting health equity. This will be achieved by engaging in a fair, equitable, and transparent process of building a consortium of AI/ML partners to promote health equity and an inclusive and diverse workforce.

Consortium Building

Many communities have untapped potential to contribute new expertise, data, recruitment strategies, and cutting-edge science to the AI/ML field. The AIM-AHEAD Coordinating Center (A-CC) was created to increase participation and engagement through mutually beneficial partnerships, stakeholder engagement, and outreach to advance health equity.

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The AIM-AHEAD Coordinating Center

Introduction

The A-CC consists of four cores, focused on various initiatives to achieve AIM-AHEAD's mission. The cores include institutions and organizations that have a mission to serve underrepresented or underserved groups impacted by health disparities.

Leadership Core

Lead, recruit, and coordinate the AIM-AHEAD Consortium

Data Science Training Core

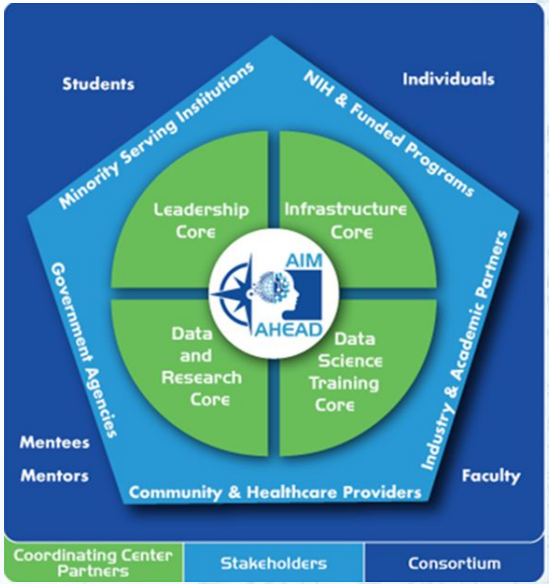
Assess, develop, and implement data science training curriculum

Data and Research Core

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

Infrastructure Core

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



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NIH Leadership Team

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Program Directors

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Program Purpose

Purpose

The central goal of the AIM-AHEAD *All of Us* Training Program is to increase researcher diversity in AI/ML by training individuals from diverse backgrounds who are committed to gaining proficiency in AI/ML data analysis and applying their expertise to benefit communities underrepresented in biomedical research.

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Program Partnership

Partnership

The AIM-AHEAD consortium (Data Science Training Core and Communications Hub), *All of Us*, and RTI International are partnering to offer AIM-AHEAD stakeholders, trainees, mentees, and consortium partners a training opportunity designed to increase researcher diversity in AI/ML by leveraging the *All of Us* data and infrastructure (Researcher Workbench).

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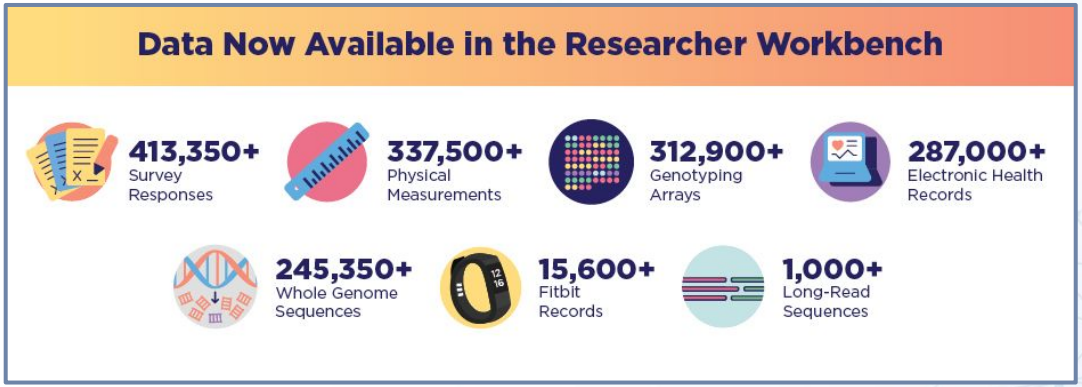
Researcher Workbench

All of Us RESEARCHER WORKBENCH

The Researcher Workbench is a cloud-based platform where registered researchers access Registered and Controlled Tier data. It provides tools for data analysis, storage, and collaboration, allowing high-powered queries using R or Python within the integrated Jupyter Notebook environment.



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Training Overview

Trainees will learn to use tools available in the Researcher Workbench to access data within the *All of Us* database.

Trainees will complete courses and receive support on using R, Python, and Jupyter Notebook. Additionally, trainees will complete data use case cases to support model development for *All of Us* data subsets. Data use case training will include:

- **Validating models**
- **Building a supervised model**
- **Merging/validating data across *All of Us* sources**
- **Splitting data into subsets for model training and testing**
- **Considering biases that may be present and detected or missed by the model**

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Program Trainee Objectives

Objective 1

Analyze

The trainee will apply R, Python, and/or Jupyter Notebook to analyze *All of Us* datasets from diverse and underrepresented communities.

Objective 2

Hypothesize

The trainee will formulate hypotheses testable by applying AI/ML and advanced data analyses to *All of Us* data.

Objective 3

Present

The trainee will present their project at the AIM-AHEAD Annual Meeting 2025.

Outcome

After completing advanced training in coding, model development, hypothesis testing, and data analysis, trainees will be equipped to apply AI/ML approaches to analyze complex datasets. They will join a committed community of professionals dedicated to extending AI/ML benefits to underrepresented communities in biomedical research.

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Program Benefits

Stipend

- An $8,000 stipend upon successful completion of trainee milestones
- A $2,000 allowance to attend the AIM-AHEAD Annual Meeting 2025

Support

- Support and guidance from an experienced AIM-AHEAD mentor
- Support from the AIM-AHEAD Data Science Training Core
- Direct 1:1 guidance, virtual office hours, AIM-AHEAD HelpDesk support, and concierge services
- Support from RTI Workbench and ML Coaches

Training

Training on:

- Use and applications of R, Python, and Jupyter Notebook
- Hypothesis development for testing by analysis of *All of Us* data
- Data analysis using *All of Us* Researcher Workbench
- Model building, data merging, and validation across *All of Us* sources
- Data splitting methods for model training vs. testing
- Detecting and addressing biases in model development

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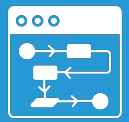
AIM-AHEAD Mentorship Process

Each trainee will be matched with a mentor who will provide ongoing support throughout the training program. Mentors are matched with mentees using the Connect Platform. Mentorship matches are made using:

AIM-AHEAD CONNECT



AI Algorithm

Administrative Matching

Mentor Pool Search

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Applicant Eligibility

Institution

Higher Education Institutions
Public, Private, HSIs, HBCUs, TCUs, AANAPISI, or NAH Serving Institutions

Mission Requirement
Educate underrepresented groups for biomedical careers or engage in health disparity research

Non-Academic Organizations
Nonprofits with or without 501(c)(3) status, Tribally derived institutions, or For-Profit Businesses

Data Use and Registration Agreement (DURA)
Must hold an active DURA or obtain one within a month of award

Applicant

Citizenship

Must be a U.S. Citizen, Permanent Resident, or Non-Citizen U.S. National

Education

Post-baccalaureate and graduate students, early-career investigators, or employees with a Bachelor's degree in a related field

Skills & Experience

Prior programming experience and statistics knowledge

Experience in R/Python coding, data management, and coursework in statistics is ***strongly recommended.***

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Application Process

Applications must be submitted between October 18, 2024 and November 18, 2024

Note: Please use Chrome, Firefox, or Edge browsers.

- Familiarize yourself with the program requirements outlined in the call for applications
- Create an account on AIM-AHEAD Connect and register as a “mentee/learner”
- Gather all of the required application materials
- Submit application for review using the InfoReady platform

25 trainees will be selected

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Application Requirements

Submission Deadline: November 18, 2024 by 11:59 PM EST

- **Profile Information**: Name, organization, department, position, research area, and contact.
- **Letters of Support:** A supervisor's letter confirming training time and contact info is required, along with one faculty recommendation attesting to the applicant's skills and readiness for advanced data analytics.
- **Transcripts:** Official or photocopy of undergraduate and graduate (if applicable).
- **NIH Biosketch:** Max 5 pages.
- **Statement of Rationale**: Max 900 words—goals, research question, coding plan, relevant experience, and long-term objectives.

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Program Timeline

Funding Cycle	2024-2025
Release Date	October 18, 2024
Application Deadline	November 18, 2024 by 11:59 PM EST
Notice of Award	January 6, 2025
Program Start Date	January 15, 2025
AIM-AHEAD Annual Meeting 2025	July 2025
Program Length	8 month program

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Resources

Application Resources

(Items linked)

- **CFA Link** (QR code on last slide)
- **InfoReady**
- **AIM-AHEAD Connect**
- **NIH biosketch sample**

Data Use and Registration Agreement (DURA)

(Items linked)

- **List of institutions with active DURAs**
- **DURA Request Form**

NOTE: If a DURA is not currently held by your institution, one must be obtained within 30 days of the program start date in order to remain in the program.

Assessing Research Topic Viability for *All of Us*

(Items linked)

***All of Us* Data Repository**: Comprehensive details on the entirety of the *All of Us* data repository

***All of Us* Data Dictionaries**: What data fields are available?

***All of Us* Data Browser**: What survey data, health conditions, and other data types are available?

Research Projects: conducted using the *All of Us* data

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Cohort I Metrics

96%
PROGRAM COMPLETION

KEY OUTCOMES

95%
CONFIDENT IN EXPLAINING AI/ML CONCEPTS TO OTHERS
(19/20 TRAINEES)

95%
PROFICIENT IN DRAWING INSIGHT FROM COMPLEX DATA SETS
(19/20 TRAINEES)

70%
CAPABLE OF USING AI/ML TO UNDERSTAND COMMUNITY HEALTH DISPARITIES
(14/20 TRAINEES)

82%*
CONFIDENT IN REAL-WORLD APPLICATION
(47/57 RESPONSES)

*AVERAGE BASED ON 3 COURSE EVALUATIONS WITH 57 TOTAL TRAINEE RESPONSES

100% COURSE COMPLETION

96% PROGRAM GOALS COMPLETED ON THE CONNECT PLATFORM

PROGRAM REFLECTIONS

"I ENJOYED THE HANDS-ON INTERACTION WITH THE NOTEBOOKS AND THE CHALLENGES AT THE END, WHICH ENCOURAGED ME TO PUT WHAT I REVIEWED INTO PRACTICE."

"THE FLOW OF THE PYTHON COURSE WAS VERY WELL STRUCTURED, AND THE JUPYTER NOTEBOOK MADE FOLLOWING THE VIDEOS EASY."

"THE COURSE WAS CONCISE AND EACH STEP WELL EXPLAINED."

"THE EXAMPLES GIVEN TO DEMONSTRATE R WERE AWESOME."

+110
SUCCESSFUL MENTOR ENGAGEMENTS

83%
ATTENDED 2024 AIM-AHEAD ANNUAL MEETING

74%
PRESENTED AT 2024 AIHES POSTER SESSION

TRAINEE MILESTONE COMPLETION

100%	100%	87%	87%	96%
RESEARCH QUESTION	ANALYSIS PLAN	PRELIMINARY ANALYSIS	DRAFT ABSTRACT	FINAL ABSTRACT

DATA USE CASE TRAININGS

87%	96%	96%	87%
OF TRAINEES ATTENDED	OF TRAINEES ATTENDED	OF TRAINEES ATTENDED	OF TRAINEES ATTENDED
DIABETES	SICKLE CELL	BREAST CANCER (SCORING)	BREAST CANCER (SDOH)

ACHIEVEMENT METRICS

80%
FEEL EQUIPPED TO CONDUCT ANALYSES USING THE RESEARCHER WORKBENCH
(16/20 TRAINEES)

100%
INCREASED ACUMEN OF PYTHON KEY CONCEPTS
(19/19 TRAINEES)

90%
BELIEVE DATA SCIENCE TRAINING WILL HELP THEM SUCCEED IN THEIR CAREERS
(18/20 TRAINEES)

This report provides a comprehensive snapshot of key metrics from the AIM-AHEAD *All of Us* Training Program for Cohort 1, comprised of 23 trainees. It highlights participation, feedback, task completion, and overall progress toward the program's goals. (Some metrics may vary based on trainee evaluation response totals; variations have been indicated below).

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Questions?

SCAN ME

Please feel free to submit a Help Desk Ticket
Training Program Help Desk:

LINK

Use the QR code above to access the AIM-AHEAD *All of Us* Training Program Call for Applications

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