Introduction and Charge of the Working Group

The Office of Data Science Strategy (ODSS) leads and coordinates the NIH Strategic Plan for Data Science implementation. This Strategic Plan for Data Science will prepare the NIH to face the acceleration of sophisticated new technologies and address the rapid rise in the quantity and diversity of data by accomplishing five overarching goals:

Goal 1: Capabilities to Sustain the NIH Data Management and Sharing Policy

Goal 2: Programs to Enhance Human Derived Data for Research

Goal 3: New Opportunities in Software, Computational Methods, and Artificial Intelligence

Goal 4: Support for a Federated Biomedical Research Data Infrastructure

Goal 5: Strengthen a Broader Community of Data Science

In support of the strategic plan for data science, NIH has launched several initiatives to expand the development and use of Artificial Intelligence and Machine learning (AI/ML) in biomedical, clinical, and behavioral research. However, access to the benefits and advancement of AI/ML are not equitably available to all. Many challenges hinder the widespread use and deployment of AI/ML capabilities. AI/ML algorithms need vast and diverse datasets. However, underrepresented communities, which are often disproportionately affected by diseases and health conditions, have a long history of being absent or misrepresented in biomedical and behavioral datasets, including clinical, observational, and data generated in the course of care. Additionally, a lack of diversity in AI/ML workforce skills and experiences can erode trust in equity underlying AI models. Furthermore, social determinants of health (SDOH) are the person's lived experiences and environment that influence health outcomes and healthcare access, and they are not being fully collected or integrated into AI models, which can create biases in the underlying algorithms. Finally, underrepresented communities have untapped potential to contribute expertise, data, diverse recruitment strategies, and cutting-edge science and to inform the field on the most urgent research questions but may lack financial, and infrastructure, and data science training capacity to apply AI/ML approaches to research questions of interest to them. These gaps contribute to harmful biases in how AI/ML is used, how algorithms are developed and trained, and how findings are interpreted, ultimately leading to continued health disparities and inequities.

Recognizing these challenges, NIH launched the Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD) in 2021. The initiative was developed to redress the lack of diversity among AI/ML researchers and the lack of representative clinical and healthcare data in AI training. The AIM-AHEAD has three goals.

1. To enhance the **participation** and **representation** of researchers and communities currently underrepresented in the development of AI
2. To **address health disparities** and inequities using AI/ML
3. to **improve the capabilities** of this emerging technology

To advance health equity and researcher diversity in AI/M, the AIM-AHEAD Coordinating Center (A-CC) was then developed, including institutions and organizations with a core mission to serve minorities and other underrepresented or underserved groups impacted by health disparities.

A-CC was initially awarded as the two-year planning of assessment and capacity building to identify priority research aims in health equity and AI/ML, as well as the training and infrastructure needed to support these. In the last two years, the A-CC team worked with local communities and stakeholders to identify priority health disparity areas, known as the [AIM-AHEAD North Stars.](#) The A-CC has supported several programs focused on AI health equity research, training programs, small-scale community-engaged research projects, and institutional capacity building. In addition, the program developed joint traineeships with NIH-supported programs to democratize data access and increase researcher diversity in AI/ML by leveraging All of Us and N3C datasets, infrastructure, and training components**.**

Since its inception in 2021, the program has significantly contributed to enhancing researcher diversity in AI/ML, supporting research projects to address data and AI biases, engaging underrepresented communities, and building AI health equity research and infrastructure capacity at low-resource institutions: Impactful outputs include:

- **Generated** a wealth of mentorship opportunities and **created** a virtual hub platform called AIM-AHEAD Connect for networking, matching mentors, and mentees, and interacting at the intersection of AI/ML and health equity.
- **Increased** the number of mid- and early-career researchers trained in AI/ML and health disparities research from diverse backgrounds and lower-resource institutions.
- **Supported** innovative AI/ML research projects directly aimed at historically underserved and underrepresented communities to address AI and data biases and incorporate SDOH to improve the understanding of health outcomes.
- **Developed** a set of core ethics and equity principles to build equity in training and 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 research and data and infrastructure at lower resource institutions.

In addition, the AIM-AHEAD program was acknowledged by President Joe Biden in the recent Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence, with a call to accelerate AIM-AHEAD grants and highlight activities in underserved communities. As a result, the program will increase awards to advance AI Ethics and Equity, implement AI/ML approaches for improving care quality, utilization, and access for patients from medically underserved areas as well as develop a Federated Research Network to advance responsible AI. Overall, the AIM-AHEAD stands at the forefront of addressing the health disparities affecting underrepresented and underserved communities and is one of the most important NIH flagship programs that promotes equity within the AI/ML portfolio.

NIH plans to reissue the AIM-AHAD program with renewed emphases and approaches based on prior progress. Reissuance of the program will: 1) **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. 2) **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.** 3) Develop and implement strategies **to overcome AI ethics and equity challenges** within underserved communities. 4) **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.

Charge of the Working Group

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. NIH expects to use these recommendations to guide the future focus of the initiative.

Specifically, the charge for the Working Group will be to:

- 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 promotion and disease prevention in underserved communities.
- Provide recommendations on potential future success measures for the AIM-AHEAD program.