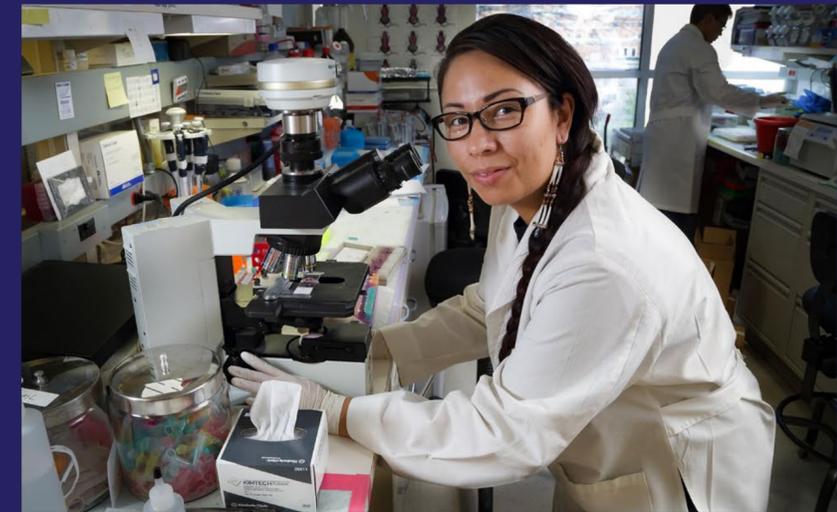


Session 4: Data and Partnerships in *All of Us*

All
of **Us**
RESEARCH PROGRAM

June 27, 2023



Welcome and Introduction

Dr. Karriem Watson

Chief Engagement Officer, *All of Us*

Logistics

- Links and resources will be posted in the chat
- Please pose questions in the chat
- Please keep yourself on mute - at the end of the program, we'll address questions in the chat and open up for live questions
- The Questions and Discussion section will be recorded for our notes but not posted online
- Slides and a recording will be posted online afterwards
- Contact the Tribal Engagement team at AOUTribal@nih.gov

Roadmap and Recap

Presentation Roadmap

1. RECAP



**2. AI/AN
PARTICIPANTS**



**3. DATA TIERS &
INFORMATION**



**4. IDENTIFIABILITY
& PRIVACY
CONTROLS**



**5. QUESTIONS &
DISCUSSION**



Brief Recap of Previous Sessions

Session 1: *All of Us* Research Program Overview and Tribal Engagement

- Precision medicine and scientific framework
- History and set-up of *All of Us*
- Milestones of *All of Us* Consultation & Tribal Engagement

Session 2: How Researchers Access and Use *All of Us* Data

- Important Considerations for Policy-Making and Data Governance Principles
- Database Compilation and Structure, Data Access Process, and Privacy and Security Measures
- Data governance policies, Education, Accountability, and Oversight

Recordings will be made available at
[Allofus.nih.gov/TribalEngagement](https://allofus.nih.gov/TribalEngagement)

**Session 3 Recap: Describing Self-Identified
American Indian and Alaska Native (AI/AN)
Participants in *All of Us* Data**

Self-Identified AI/AN Participants in *All of Us*

Which categories describe you? *Select all that apply.*

Note, you may select more than one group.

American Indian or Alaska Native

(For example: Aztec, Blackfeet Tribe, Mayan, Navajo Nation, Native Village of Barrow (Utqiagvik) Inupiat Traditional Government, Nome Eskimo Community, etc.)

Branching Logic: when “American Indian or Alaska Native” selected, then:

American Indian

Alaska Native

Central or South American Indian

None of these fully describe me

Branching Logic: when subcategory selected, then:

Provide the name of the tribe in which you are enrolled or affiliated or your tribal descent:

(display optional free text)

People who identify as American Indian and Alaska Native (AI/AN) include:

- Members of federally-recognized tribes*
- Members of state-recognized tribes*
- Members of a tribe not recognized by either federal or state governments*
- Central and South American Indians
- First Nations peoples (Canada)
- People with AI/AN ancestry but no tribal affiliation

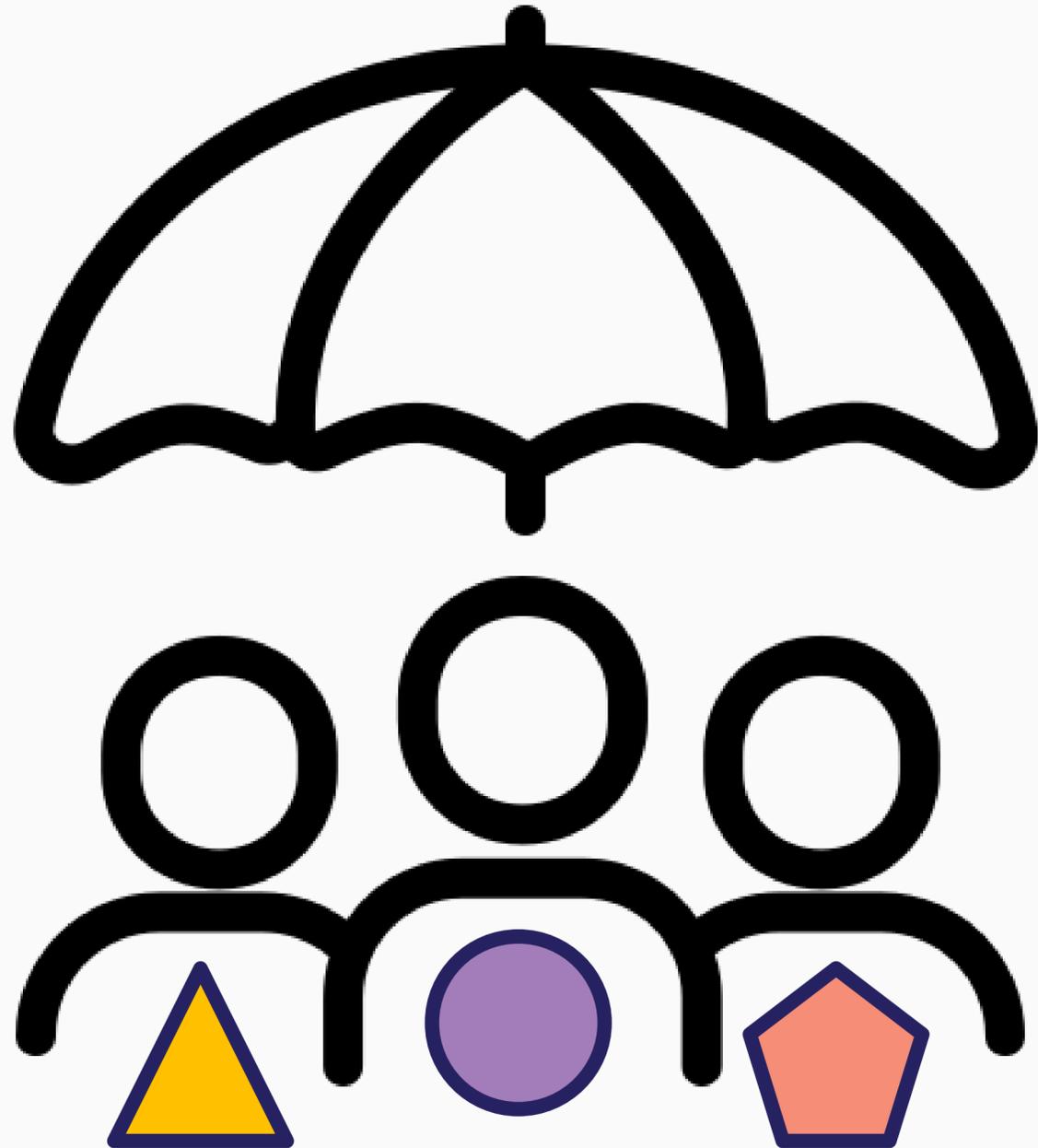
People may identify as AI/AN alone, or in combination with other races, too.

**and their descendants*

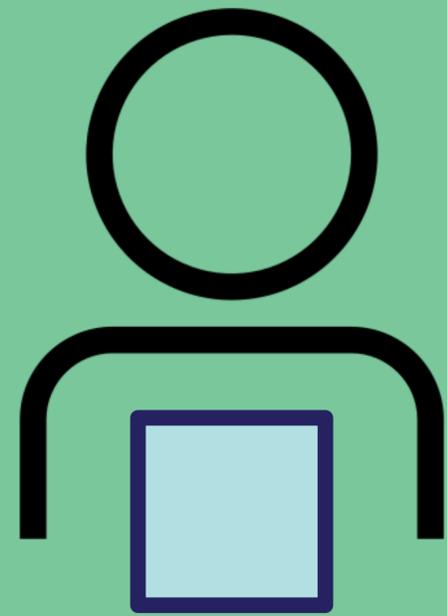
Self-Identified AI/AN Participants and Tribal Sovereignty

Type	Likely to be Enrolled in a Federally Recognized Or State Recognized Tribe	Description
 Tribal Land/ Reservation	✓	<ul style="list-style-type: none">• Likely enrolled in a Tribal Nation• Residing within their Nation's land-based jurisdiction
 Urban	✓	<ul style="list-style-type: none">• Likely enrolled in a Tribal Nation• Residing in a setting outside of their Nation's land-based jurisdiction
 Ancestry	X	<ul style="list-style-type: none">• Asserts ancestry to a Tribal Nation• Most likely to reside off of their Nation of ancestry's land
 Central and South American Indian	X	<ul style="list-style-type: none">• Asserts Central or South American Indigenous ancestry• Resides within the U.S.

AI/AN Data: Responsibility and Representation



- *All of Us* has waited on introducing AI/AN data in the Researcher Workbench
- Participants are currently grouped dependent on if they select one or multiple race categories:
 - AI/AN only
 - More than one race
- Difference between AI/AN as a population descriptor and as a political designation for sovereign Tribal Nations



Session 4: Data and Partnerships in *All of Us*

Supplemental Information: Responsible Management and Sharing of American Indian/Alaska Native Participant Data

- Supplemental Information intended to assist researchers in developing appropriate DMS Plans when proposing research with Tribes
- Goals
 - Promote an understanding of Tribal sovereignty
 - Recognize the historic harms to Tribes in relation to inappropriate data use and misuse and participant risks
 - Provide best practices to mitigate potential risks (e.g., group harm, stigmatization, and privacy vulnerabilities) to Tribes
 - Facilitate respectful, sustained, mutually beneficial, and equitable partnerships
 - May also be useful for researchers partnering with urban AI/AN communities, non-Federally recognized Tribes (e.g., state recognized Tribes), communities (e.g., Native Hawaiians), and Indigenous peoples outside the United States

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Thank you to the Office of Science Policy for the content on this slide

Considerations for Researchers Working with Tribes

Tribal Sovereignty

Ability to govern and to protect and enhance the health, safety, and welfare of Tribal citizens within Tribal jurisdiction

Tribal Research Laws

Tribal sovereignty includes right of Tribes to establish and enforce their own laws; may go beyond Common Rule requirements

Historical Awareness

Researchers' awareness of past research abuses perpetrated against Tribes is critical for understanding Tribes' perspective on research

Health Disparities

Sufficient inclusion of Tribes in research remains a challenge

Thank you to the Office of Science Policy for the content on this slide

Best Practices for Responsible Management and Sharing of AI/AN Participant Data

Understand

Understand Tribal sovereignty and laws, regulations, policies, and preferences

Engage

Engage early with Tribes when developing a Data Management and Sharing Plan, before research begins, and continue throughout research

Establish

Establish mutually beneficial partnerships

Agree

Agree who will manage data (e.g., Tribe, researcher, trusted 3rd party)

Consider

Consider additional protections, as necessary

Thank you to the Office of Science Policy for the content on this slide

Building Tribal Partnerships into *All of Us*

- Respecting Sovereignty and Autonomy
- Addressing Underrepresentation
- Building Trust
- Improving Research Quality and Relevance
- Promoting Tribal Data Governance
- Improving Health

All of Us doesn't currently have any active partnerships with Tribes



A Framework for Tribal Partnerships and Data Use Agreements



- What We Mean by Data Use Agreements (DUAs)
- Why DUAs are Essential
- Legal and Regulatory Frameworks
- Benefits to AI/AN Communities

Designing Effective Data Use Agreements

Some Key Elements of Agreements

- Engagement and Enrollment Protocols
- Data Access
- Researcher Education
- Data Management
- Biospecimen Collection and Management
- IRB Representation
- Data Governance
- Reviewing Research Projects and Publications
- Withdrawal Procedures



Establishing Tribal Partnerships and Negotiating Data Use Agreements



- Partnerships center on negotiating tailored data use agreements.
- Trust and shared decision-making guide our negotiation process.
- Negotiations manifest in mutually-beneficial, community-driven outcomes.
- Agreements focus on Tribal preferences for research regulation including protocols, access, and use.

Resources for Tribal Partnerships and Data Use Agreements



THE UNIVERSITY OF ARIZONA

NATIVE NATIONS INSTITUTE

Founded by the Udall Foundation
& the University of Arizona

Strengthening Indigenous Governance



NCAI Policy Research Center

Improving Outcomes for Indian Country with Research



Please note: None of the groups on this slide are affiliated with *All of Us*, but they do have great resources

Challenges and Opportunities

- Impact of Participant Numbers
- Balancing Data Access and Protection
- Understanding Statistical Significance

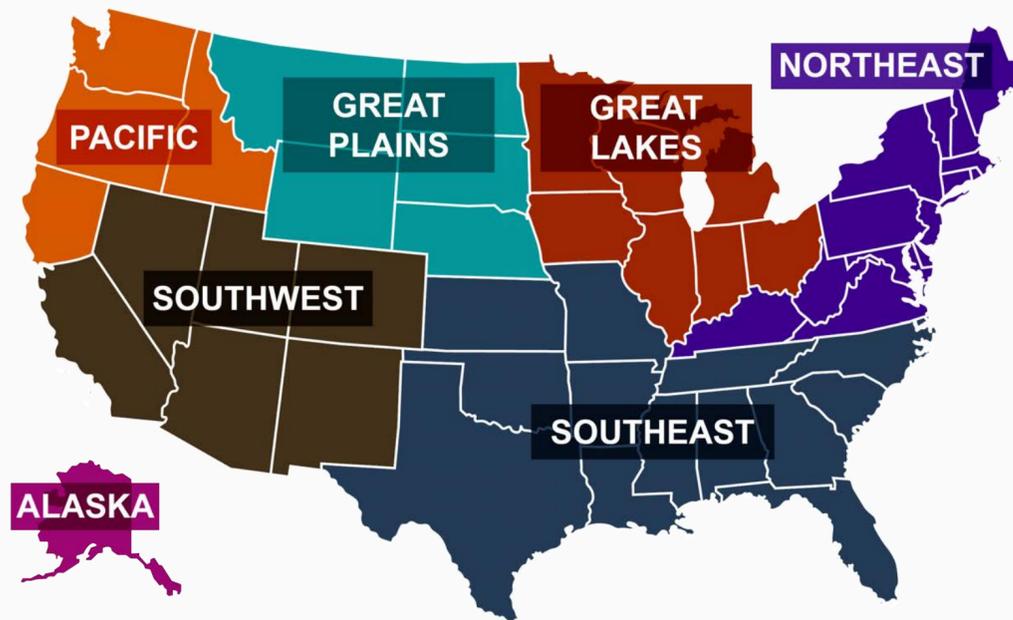


What Could Tribal Partnerships Look Like?

1 : 1

Individual Tribes

National or Intertribal Organizations



Geographic or IHS Regions



Cultural Affiliation

Tribal Epidemiology Centers

Purpose of the ROA

Area of Interest 1: Participant Engagement and Enrollment

- Task 1:** Participant outreach and engagement
- Task 2:** Enrollment and retention
- Task 3:** Pediatric outreach and engagement
- Task 4:** Computer access
- Task 5:** Healthcare provider outreach and engagement

Area of Interest 2: Researcher Engagement

- Task 1:** Researcher Hub awareness and researcher engagement
- Task 2:** Building research capacity
- Task 3:** Promote team science

Area of Interest 3: Tribal Nations, American Indian and Alaska Native populations, and Indigenous Communities

- Task 1:** Outreach and engagement
- Task 2:** Training and career development
- Task 3:** Education and culturally appropriate resource development
- Task 4:** Research infrastructure and capacity building

Area of Interest 4: Participant as Partners

- Task 1:** Oversight of consortium participant partner related activities
- Task 2:** Full integration of participants and advocates
- Task 3:** Facilitation of ongoing input from participant representatives
- Task 4:** Assess the impact of participant engagement

Area of Interest 3: Engagement with Tribal Nations, American Indian and Alaska Native Populations, and Indigenous Communities

The *All of Us* Research Program initiated **tribal consultation in 2019** to engage Tribal Nations about the inclusion of AI/AN populations in this research program. The information received during consultation has been used to guide our work with AI/AN communities and Tribes.

Technical Objectives

- **Outreach and engagement** to AI/AN and Indigenous communities
- **Training and career development** in research as it relates to precision medicine
- **Education and culturally appropriate resource development** for AI/AN populations and partners
- **Research infrastructure and capacity building** within AI/AN and Indigenous communities ensuring sustainability of precision medicine research

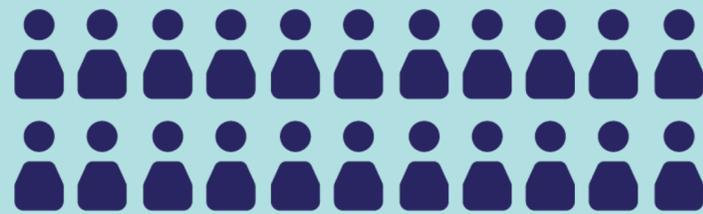


[Review SAM.gov for full submission requirements](#)

Ancillary Studies and Pediatrics

COVID-19 Participant Experience (COPE) Survey

COPE Survey Data Currently Available in the Researcher Workbench



More than **100,200** participants responded to



one or more of the **six** COPE surveys administered between May 2020 and February 2021

Topics Covered



Social Distancing Experiences



COVID-19 Related Impact



Mood



Substance Use



COVID-19 Related Symptoms



General Well-Being



Stress



Resilience



COVID-19 Related Testing



Social Support



Physical Activity



Discrimination



COVID-19 Related Treatment



Anxiety



Loneliness



Vaccine Perceptions

Mental Health

The COPE data represents the biggest infusion of mental health data into the Researcher Workbench so far. Insights include:



62%

felt bothered by sleeping problems



53%

felt nervous and anxious



94%

have someone to love and make them feel wanted



95%

have someone to have a good time with

Embedded in the survey were resources for participants struggling with emotional distress, including suicide prevention tools.

Participants could select multiple symptoms.

Data as of April 2023

Nutrition for Precision Health: Overview



**Nutrition
for Precision
Health**

**All of Us
RESEARCH PROGRAM**

1



Examine baseline diet and physiological responses to nutrition by participants monitoring and reporting what they eat

10,000 *All of Us* participants

2



Examine responses to 3 short-term intervention diets in community-dwelling controlled feeding studies

1,500 Module 1 participants

3



Examine responses to 3 short-term intervention diets in live-in controlled feeding studies

500 Module 1 participants

In all 3 modules

- Collect microbiome, physiological, metabolic, behavioral, cognitive, and environmental data, and leverage existing genomic, EHR, and survey data, and conduct mixed meal challenges to model the impact of diet and dietary patterns on physiological responses
- Use machine learning and artificial intelligence to develop algorithms that predict individual responses to foods and dietary patterns

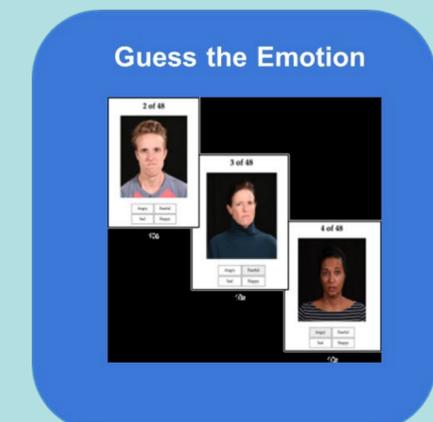
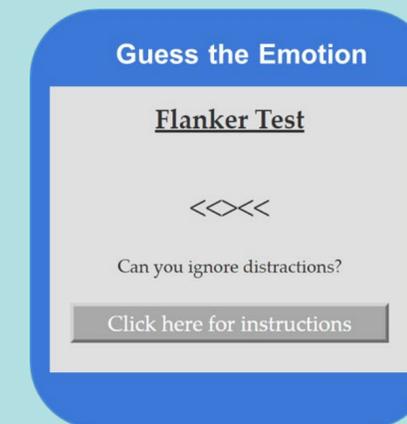
Exploring the Mind: Overview

All of Us and the National Institute of Mental Health (NIMH) worked together to co-design the one of AoU's first ancillary studies:

- NIMH selected research tasks that assess cognitive performance on visual attention, cognitive control, visual reward learning, reward valuation over time, and facial emotion recognition, while still being fun and engaging to participants.
- These tasks underwent pilot testing at AoU from December 2022 to May 2023.
- Evaluation of the pilot performance led the program to select four tasks to launch to all participants (estimated to become available August 2023).
- Each task is available using web or mobile devices, available in English and Spanish, and takes 2-8 minutes to complete.
- Researchers can examine this data longitudinally to understand connections between cognitive performance and health outcomes and/or events (e.g., progression of neurodegenerative disease, environmental exposures, presence of mental disorder) over the lifetime.

Four tasks will launch to all eligible participants (estimated August 2023)

*eligible participants are those who have completed the program's first three surveys (PPIs 1-3)



AOU AI/AN Demo Project

AOU Demonstration Projects will replicate known, previously published findings, and will not aim to discover new disease classifications, relationships, or risk associations – **our role is to support the community's use of data, not to make first discoveries.**

Characterization of the quality and utility of AI/AN data in AOU

- Does the AI/AN cohort in AOU reflect the rich diversity of the AI/AN population in the U.S through analysis of demographic and survey data? If not, what are the gaps to be prioritized and addressed in future recruitment for AOU?
- Descriptive statistics on demographic, anthropomorphic, laboratory, and disease status data.

Replicate known health disparities in disease in AI/AN communities in AOU to compare collected measures in other AI/AN population studies

- Diseases of focus: T2D, obesity, hyperlipidemia, hypertension, myocardial infarction, stroke, heart failure, lung cancer, colon cancer, kidney cancer, breast cancer (women), prostate cancer (men).



Inclusion of American Indian and Alaska Native Children in *All of Us*

Thank you for the opportunity to discuss pediatrics with you today

Hometown

- Winona, MN

Training

- Undergrad at University of Minnesota
- M.D./Ph.D. at Mayo Clinic
- Residency, Chief Residency & Clinical Pharmacology Fellowship at Vanderbilt (mentor, Dan Roden)

Early Career

- Physician-scientist studying pharmacogenetics and precision medicine for children
- Clinical practice in general pediatrics and genomics & therapeutics clinics

Now

- Director of Pediatrics for *All of Us* Research Program since October 23, 2022



Sara Van Driest, Director of Pediatrics
All of Us Research Program

What We Hope to Accomplish Today

SHARE

- Background on Inclusion of Children into *All of Us*
- Pediatric Vision for *All of Us*

DESCRIBE

- *All of Us* Mission for Infants, Children, and Adolescents

DISCUSS

- Future inclusion of AI/AN children in the *All of Us* Research Program



Inclusion of Children in the *All of Us* Research Program

Background on Inclusion of Children

- Inclusion of children in research is an important advancement and has been an important goal of the program since its inception
- Pediatric work was started and paused to ensure the program first scale up our diverse adult enrollment successfully.
- The program approach to inclusion will be a phased approach with intentional engagement with Tribal Nations and communities.

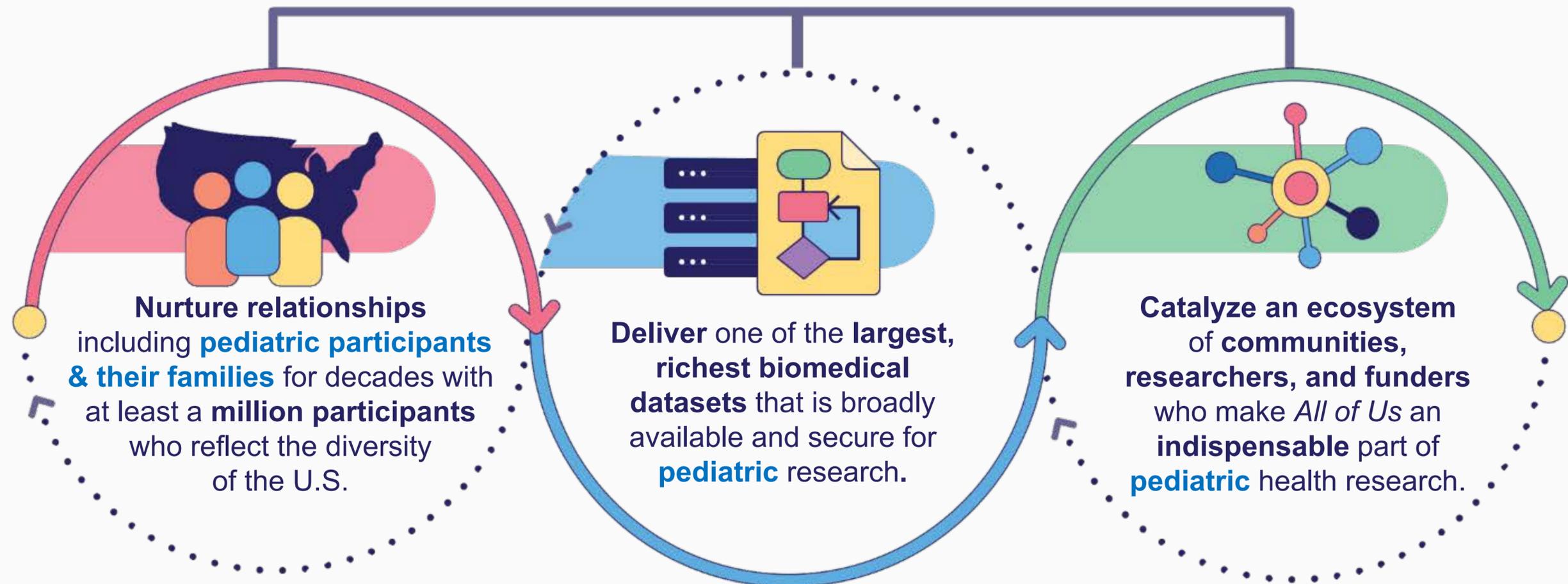
Pediatric Vision for *All of Us*

- Plans are to use primarily a family-based approach
- Have a supplemental protocol that incorporates the pediatric populations unique characteristics
- Develop outreach strategies to incorporate youth and AI/AN voices into our governance and advisory bodies

Long term goal: Achieve the **All of Us Mission** for infants, children, and adolescents

Our Mission

Accelerate health research and medical breakthroughs, enabling individualized prevention, treatment, and care for all of us.



Made possible by a team that maintains a culture built around the program's core values

Long term goal: Fulfill the **All of Us Core Values** for infants, children, and adolescents

Participation is **open** to all.

Participants reflect the rich **diversity** of the U.S.

Participants are **partners**.

Trust will be earned through **transparency**.

Participants have **access** to their information.

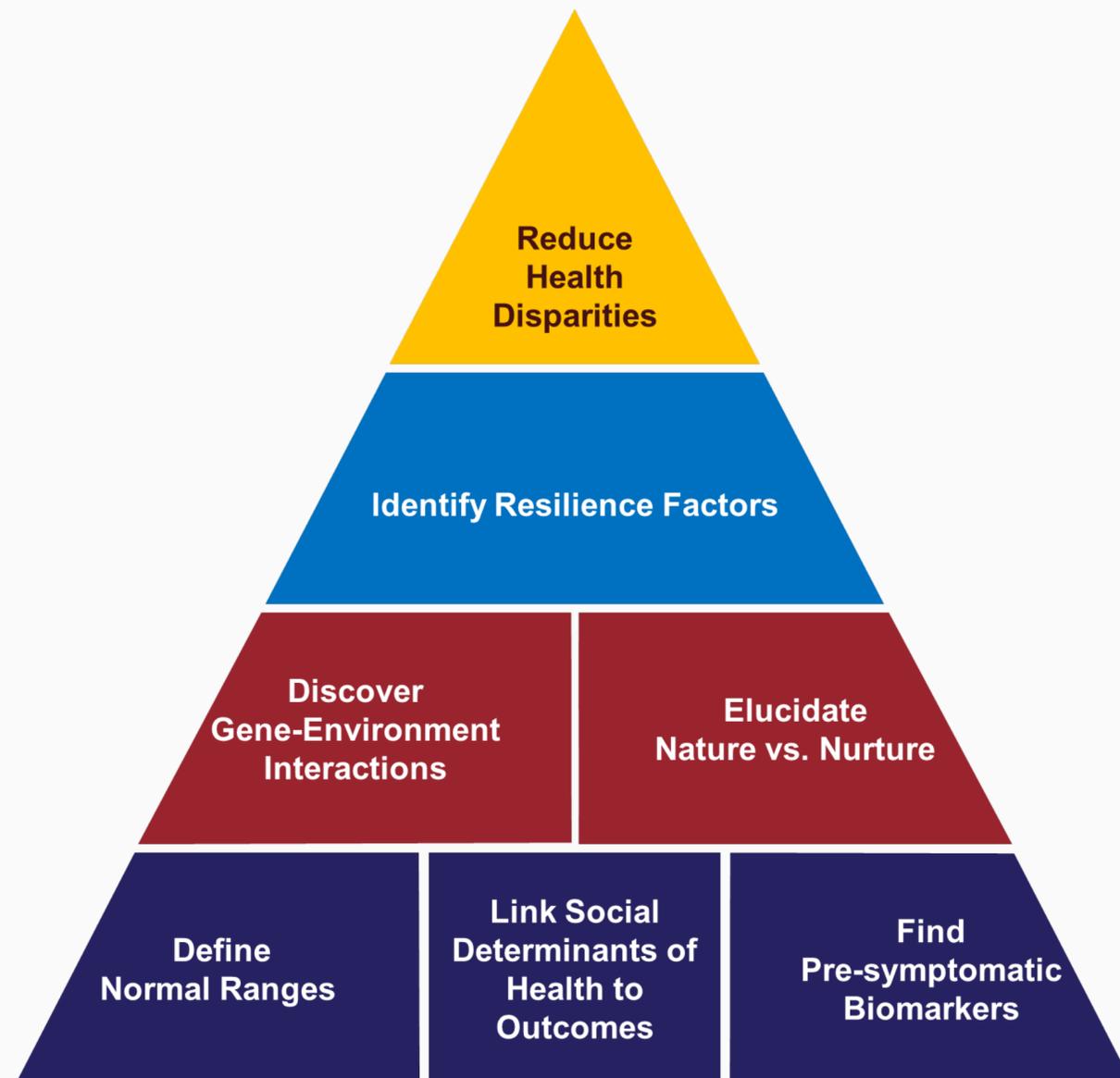
Data will be accessed **broadly** for research purposes.

Security and privacy will be of highest importance.

The program will be a catalyst for **positive change** in research.

This scientific program will support advancement across multiple areas of opportunity

Selected scientific areas of opportunity*



Example research questions

What is associated with optimal outcomes for children at risk for common conditions? Rare diseases?

How do genetic predictors differ across ancestry groups for monogenic and polygenic diseases?

What exposures in childhood (or before birth) are associated with risk for or resilience to later onset conditions?

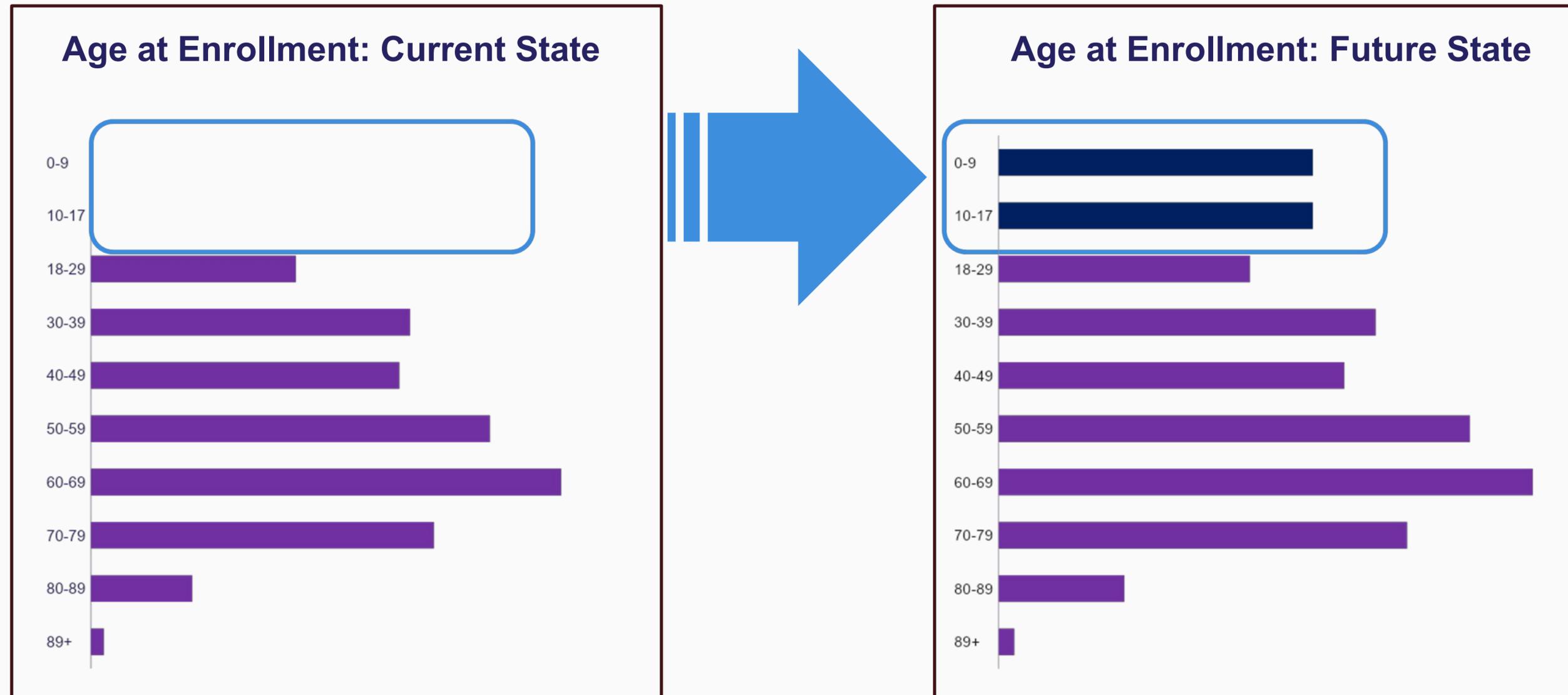
What biomarkers predict therapeutic (or adverse) drug outcomes?

What is the prevalence and impact of health inequities experienced by families, infants, children, and adolescents?

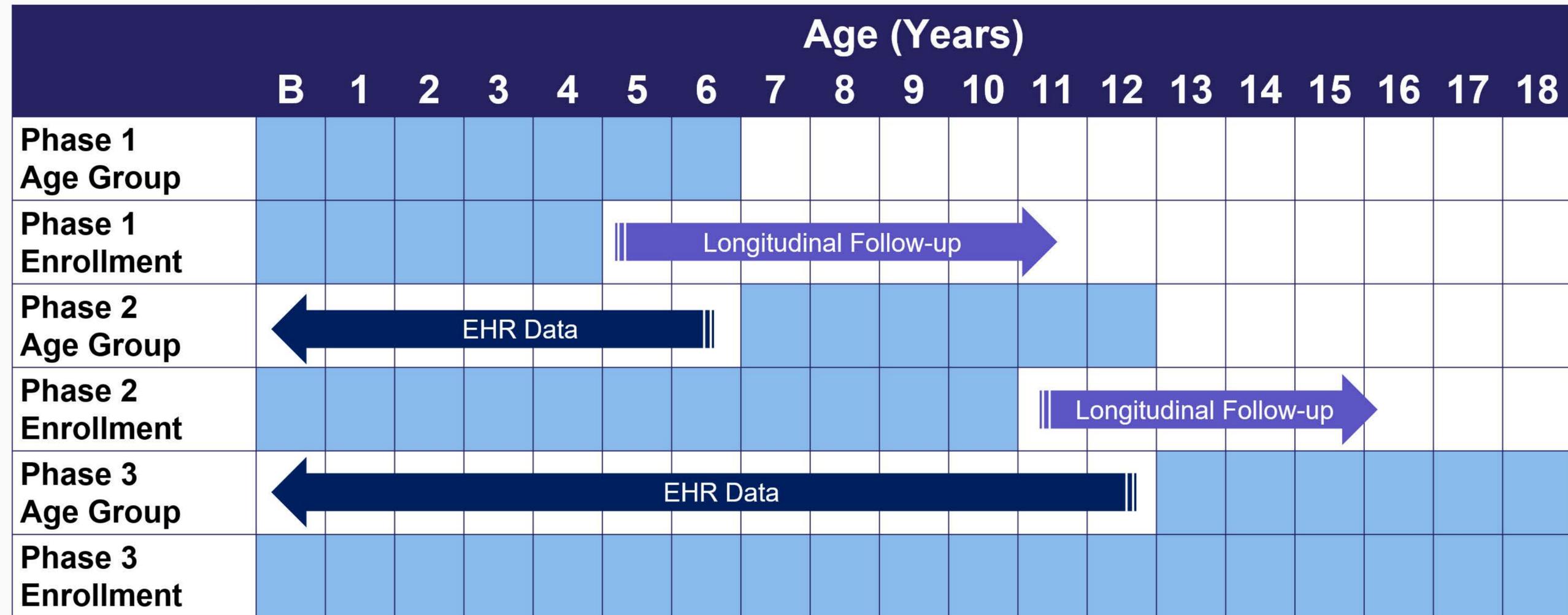
How can pediatric researchers build cohorts that reflect and serve our diverse patients?

*Adapted from Child Enrollment Scientific Vision Working Group Report, December 2017

A current focus of *All of Us* is to close the age gap, enabling participation at all ages (birth through adulthood)



Expected design approach: Phased launch, beginning with the youngest age group, enrolling children of current participants

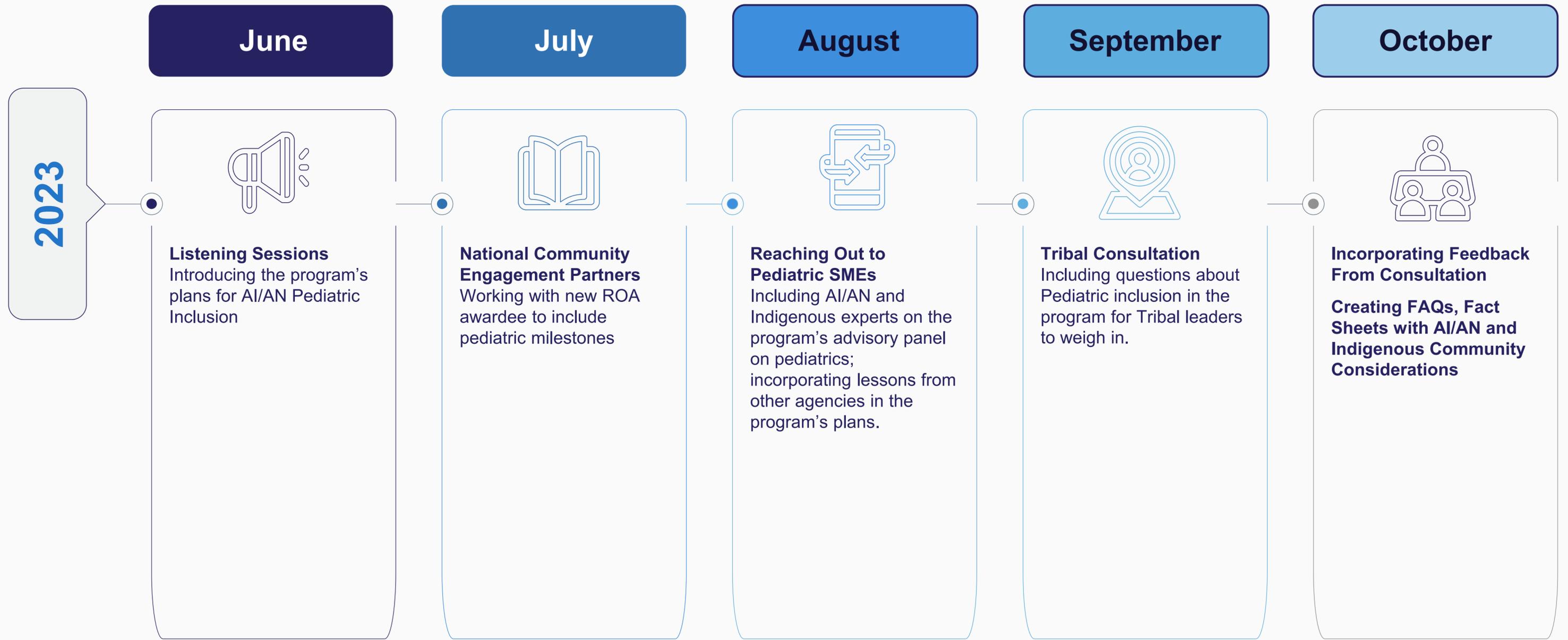


LINKAGE of data from parent of participant will extend exposure data to prenatal and preconception time frames

Design principle: Carefully examine the entire current protocol and adapt to support pediatric and family participation

Area	Matches Current	Planned Peds Adaptation
Participant Portal	Each participants has an account	Peds accounts are linked to adult accounts
Consent	Overall framework for experience	Parent provides permission; age 7 years and older provide assent
Participant Provided Information	Survey format (for now)	Revised questions
EHR Data	Requested for each participant	Parent provides authorization
Biospecimens	Blood preferred; saliva optional	Smaller volume for blood
Return of DNA Results	CONSIDERING return of traits, ancestry, health-related results	Pediatric participant assent to DNA results is required for return
Physical Measurements	Height & weight/length required with additional measurements	Revisions based on age
Compensation	At enrollment for time and travel to parent	Add small gifts of appreciation based on age

Tribal Engagement (Pediatric Planning) Activities



Future Inclusion of AI/AN Children in the *All of Us* Research Program

Upcoming Tribal Consultation on September 28, 2023

- **Future inclusion of children in the *All of Us* Research Program**

- What unique considerations are there for the future inclusion of AI/AN infants, children, and adolescents as participants in the program, given that a child's parent or legal guardian must be a current participant?
- What unique considerations are there for family-based enrollment in the research program (e.g., parent or legal guardian participating with their child)?
- What specific factors should be taken into account when enrolling families in the research program, considering the possibility of kinship caregivers or non-traditional child care arrangements for the child?



Research and Opportunities with *All of Us*

All of Us Research Hub | Who is using the data now?

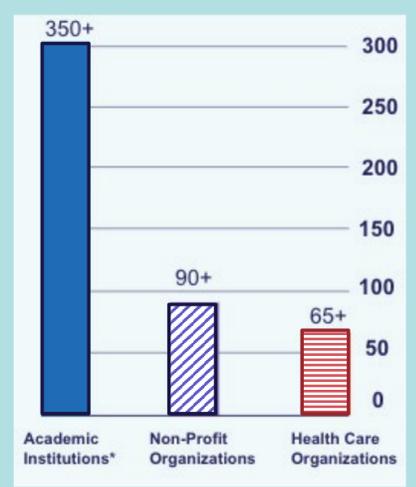


5,700+
Registered
Researchers

Comparing registered researchers	2/2022	6/2023
Total Registered Researchers	1,015	5,705
Researchers from UBW communities SGM, race/ethnicity, disability status, & career stage	56%	72%
Researchers from UBW communities By race/ethnicity alone	14.3%	28%



530
Institutions



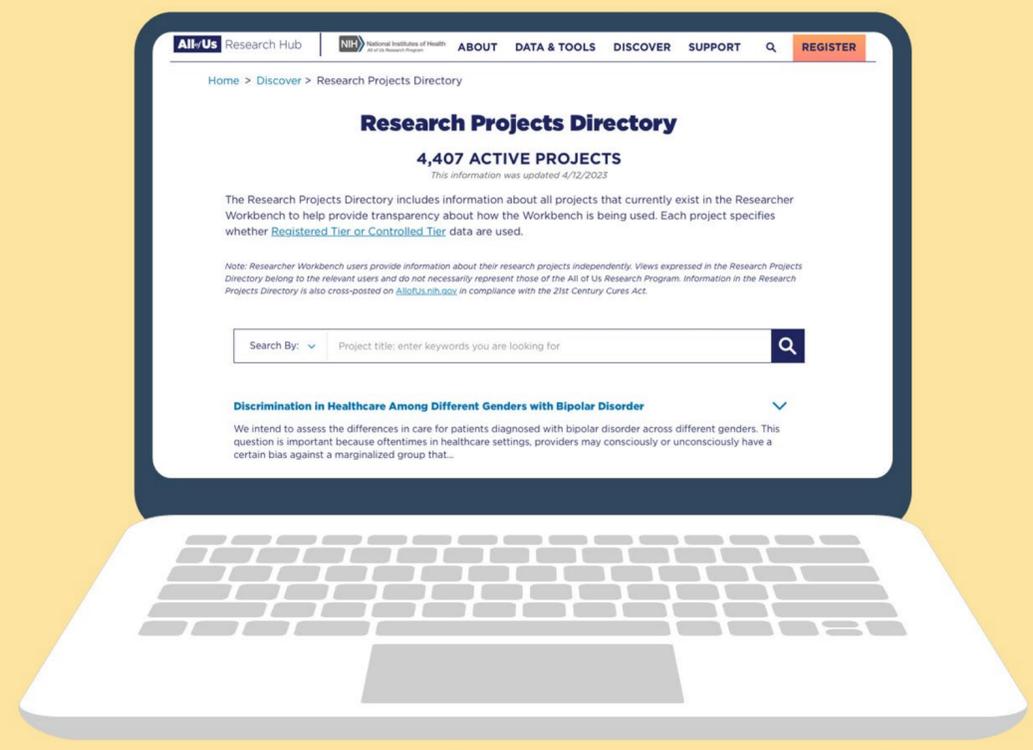
5,300+
Active projects



160
Publications in
peer-reviewed
journals

Top conditions being studied

- Cardiovascular disease
- Hypertension
- Mental Health
- Cancer
- Diabetes



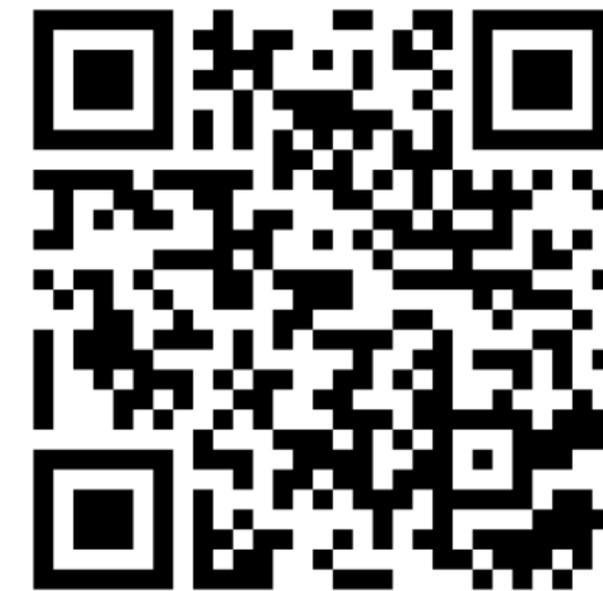
See the research currently underway by visiting researchallofus.org/research-projects-directory

Stay in touch to learn more

Sign up for our bimonthly newsletter

Subscribe to Research Roundup

Stay up-to-date on the latest news and insights from the *All of Us* Research Hub through our bimonthly email newsletter.



allof-us.org/RRSignup



Create an *All of Us* account

Register to be an *All of Us* Researcher



LEARN MORE ABOUT THE
DATA AVAILABLE



CHECK FOR YOUR
INSTITUTION'S AGREEMENT



REGISTER AS A RESEARCHER



VERIFY YOUR IDENTITY



COMPLETE *ALL OF US*
RESPONSIBLE CONDUCT OF
RESEARCH TRAINING



SIGN DATA USER CODE OF
CONDUCT



[Allof-us.org/Register](https://allof-us.org/Register)

Thank You to Our Participants and Partners

All of Us Community and Provider Partner Network (as of April 2023)



Note: These are not approved lockups and should not be repurposed on assets.

All of Us Consortium Members (as of April 2023)

The Participant Center



Communications & Engagement



HPO Network

(Health Care Provider Organizations)

HPO Lite



RMCs

All of Us California



Illinois Precision Medicine Consortium



All of Us New England



Trans America Consortium



New York City Consortium



All of Us Southern Network



All of Us Southeast Enrollment Center



All of Us Wisconsin



All of Us Pennsylvania



University of Arizona and Banner Health



FQHCs (Federally Qualified Health Centers)



VA Medical Centers



Nutrition for Precision health (NPH)



All of Us Puerto Rico



Participant Technology Systems Center (PTSC)



Biobank



Data & Research Center (DRC)



Genomics Partners



Making Health Discoveries Possible

The *All of Us* Program wouldn't be possible without the generosity of our participants and the dedication of our researchers to enable health discoveries.



@AllofUsResearch
@AllofUsCEO
#JoinAllofUs



Questions and Discussion

Carolina Cerrone

Health Science Policy Analyst

Dr. Karriem Watson

Chief Engagement Officer, *All of Us*

Informational Presentation and Discussion Schedule

Session 1: *All of Us* Research Program Overview and Tribal Engagement

Tuesday, June 6, 2023, 1:00 - 3:00 pm ET

Session 2: How Researchers Access and Use *All of Us* Data

Tuesday, June 13, 2023, 1:00 - 3:00 pm ET

Session 3: Describing Self-Identified AI/AN Participants in *All of Us* Data

Tuesday, June 20, 2023, 1:00 - 3:00 pm ET

Session 4: Data and Partnerships in *All of Us*

Tuesday, June 27, 2023, 1:00 - 3:00 pm ET

***All of Us* Tribal Consultation**

Thursday, September 28, 1:00 - 3:00 pm ET

Recordings will be made available at
[Allofus.nih.gov/TribalEngagement](https://allofus.nih.gov/TribalEngagement)



Thank you!

Social media:
[@AllofUsResearch](#)
[@AllofUsCEO](#)
[#JoinAllofUs](#)

Websites:
AllofUs.NIH.gov
JoinAllofUs.org
ResearchAllofUs.org

Icons for Facebook, Instagram, YouTube, and Twitter.

Thank you to our 628,000+ participants!