

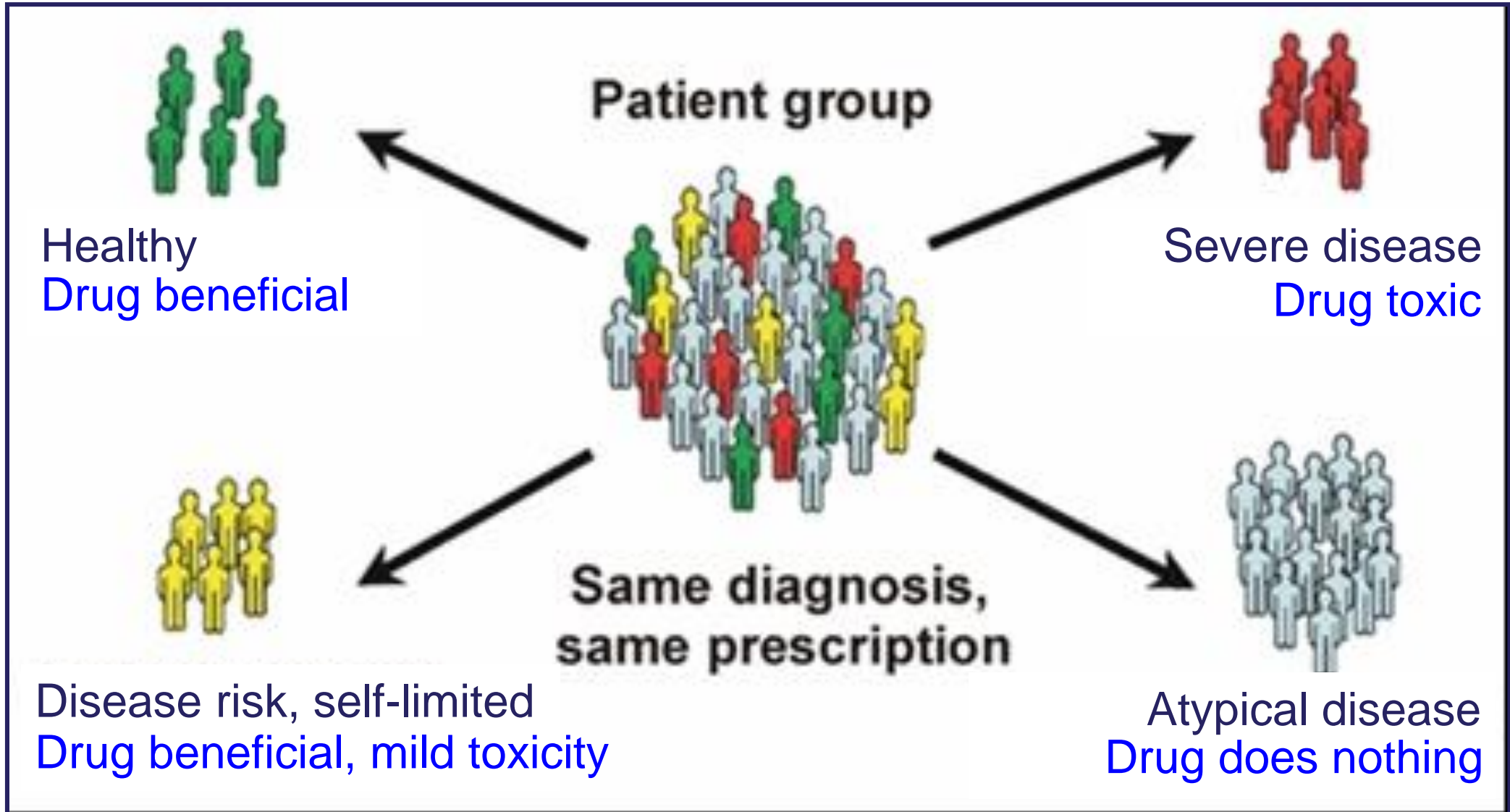
The *All of Us* Research Program – Program Overview

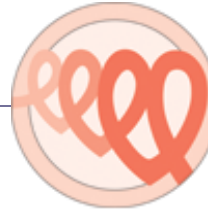
NIH Collaboratory Grand Rounds
Feb 2, 2018

Josh Denny, MD, MS
Professor of Biomedical Informatics and Medicine
Vanderbilt University Medical Center



People have different disease risk and variable drug response





Framingham Heart Study

Factors of Risk in the Development of Coronary Heart Disease— Six-Year Follow-up Experience

The Framingham Study

WILLIAM B. KANNEL, M.D., THOMAS R. DAWBER, M.D., F.A.C.P.,
ABRAHAM KAGAN, M.D., F.A.C.P., NICHOLAS REVOTSKIE, M.D.,
AND JOSEPH STOKES, III, M.D.
Framingham, Massachusetts

INCREASINGLY RELIABLE ESTIMATES of the prevalence and incidence of coronary heart disease (CHD) emphasize the importance of this disease as a contemporary health hazard. Cardiovascular disease is now the leading cause of death, with coronary heart disease accounting for two-thirds of all heart disease deaths. In the diagnosis and treatment of CHD have been made in the past decade, no important morbidity and mortality have been averted. This is apparent from the slight increase in life expectancy which has been achieved in the past decades, while life expectancy has been substantially prolonged.

Because coronary heart disease is manifested as sudden "silent" infarction and mortality in those surviving, the best therapeutic effort is still distressing. The best preventive program

Received for publication from the Heart Disease Epidemiology Institute, Framingham, Mass., and the National Institutes of Health, U. S. Department of Health, Education and Welfare, Washington, D. C. Presented at the Forty-third Annual Meeting of the American College of Cardiology, Miami Beach, Fla., 1961.

Requests for reprints: Thomas R. Dawber, M.D., Director, Heart Disease Epidemiology Institute, 78 State Street, Framingham, Mass.

Since it has been established that coronary atherosclerosis is present for many years prior to the development of symptomatic CHD, it seems evident that efforts at prevention must begin many years before the appearance of clinical CHD. A knowledge of the epidemiology of the disease is highly

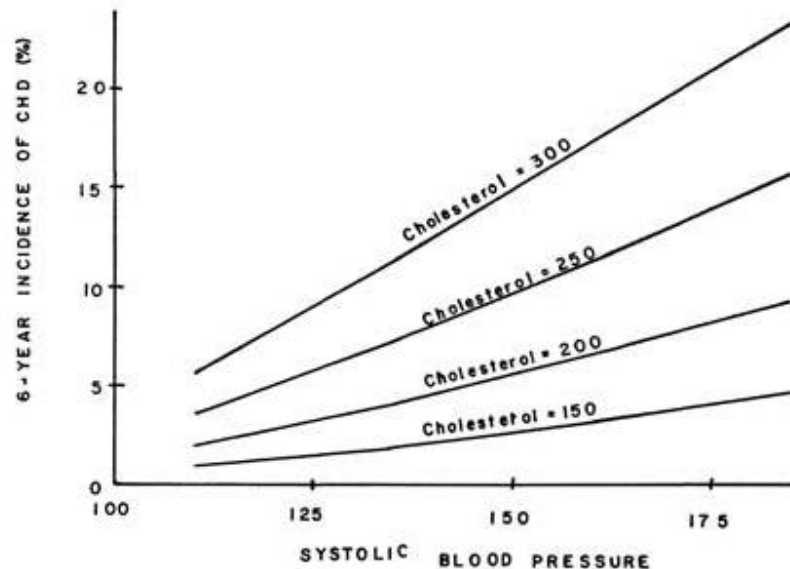


FIGURE 2. Six-year incidence of coronary heart disease according to level of systolic blood pressure at specified serum cholesterol levels (men 45 to 62 years). For explanation, see legends for Figure 1.

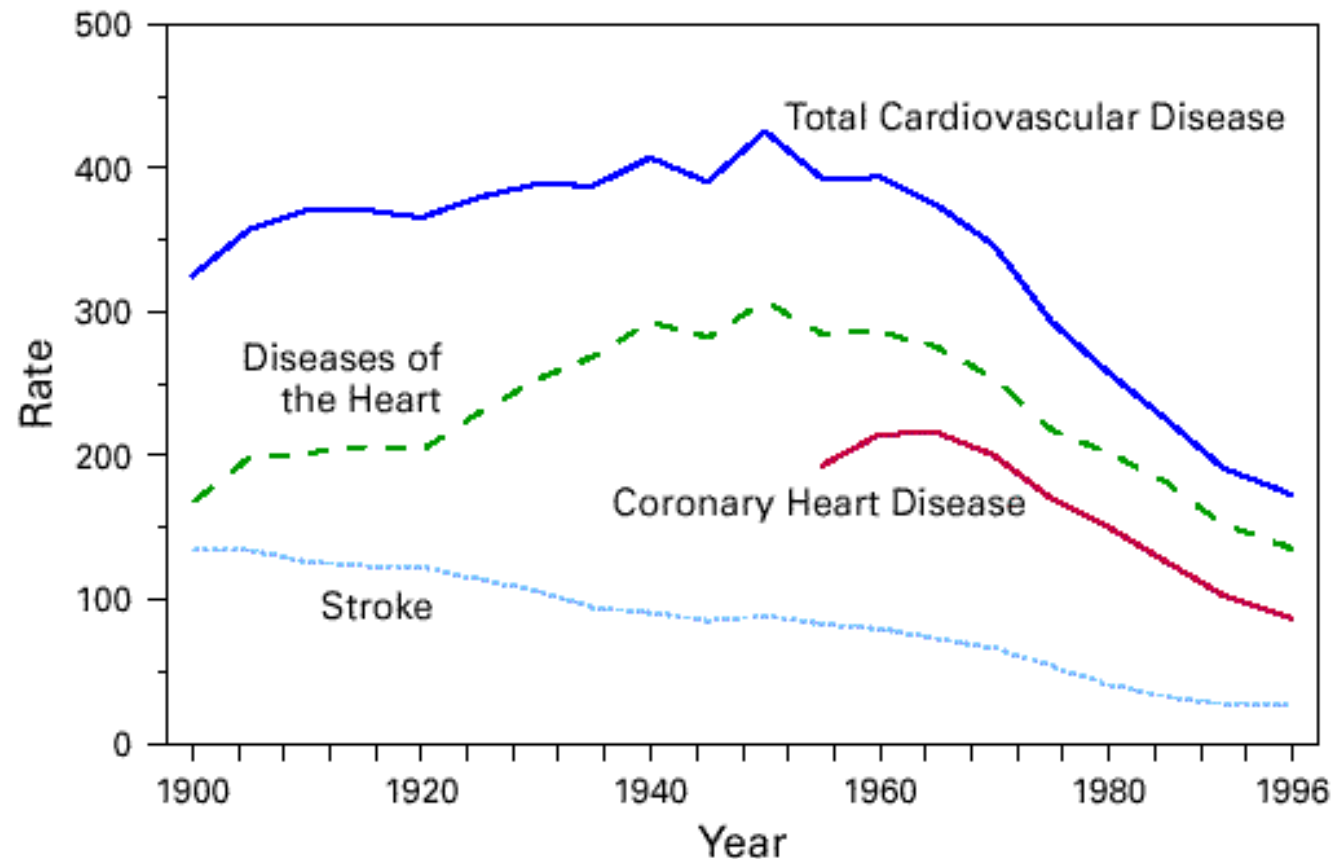
Enrolled 5209 men and women in 1948

Some Framingham early discoveries:

- 1960 – Cigarettes increase heart disease
- 1961 – cholesterol, blood pressure increase heart disease
- 1967 – exercise decreases risk of heart disease; obesity increases it
- 1970 – high blood pressure and atrial fibrillation cause stroke

The impact of Framingham (and similar cohorts) has been dramatic

FIGURE 1. Age-adjusted death rates* for total cardiovascular disease, diseases of the heart, coronary heart disease, and stroke,† by year — United States, 1900–1996



Finding solutions on a national scale: the *All of Us* Research Program

Funding:

\$130M in FY2016

\$230M in FY2017

21st Century Cures Act provides additional \$1.45B over 10 years

All of Us
THE FUTURE OF HEALTH BEGINS WITH YOU

The
Precision
Medicine
Initiative

“I want the country that eliminated polio and mapped the human genome to lead a new era of medicine ...”

- PRESIDENT BARACK OBAMA

State of the Union Address, Jan. 20, 2015

Core goals for the *All of Us* Research Program



The Precision Medicine Initiative Cohort Program – Building a Research Foundation for 21st Century Medicine

Precision Medicine Initiative (PMI) Working Group Report to the Advisory Committee to the Director, NIH

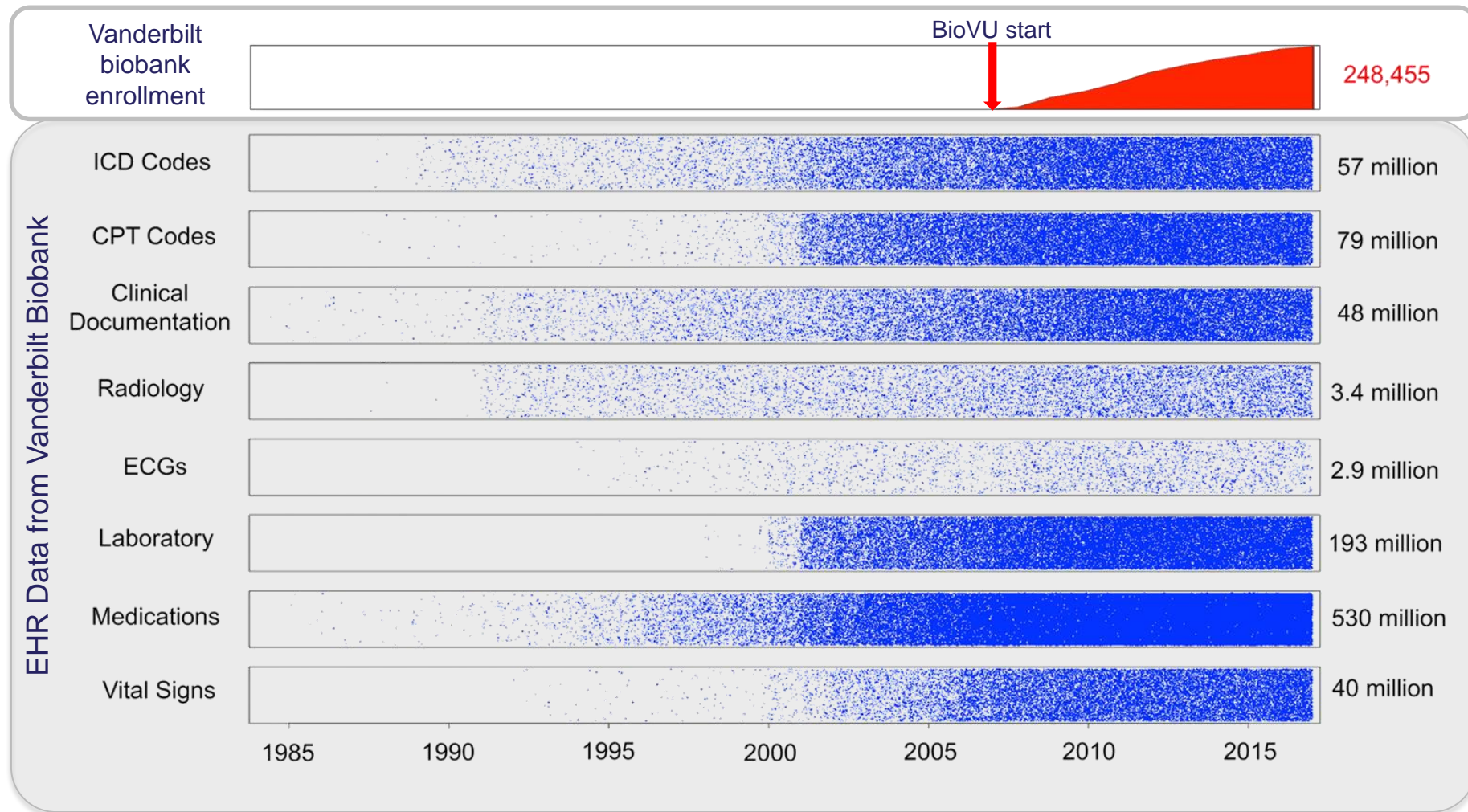
September 17, 2015

- **1 million or more**
- **Longitudinal, recontactable**
- **EHR data**, biospecimens, baseline evaluations, and health surveys
- **Focus on engagement**
- **Focus on diversity**

- **Network formed – July 2016**

<https://www.nih.gov/sites/default/files/research-training/initiatives/pmi/pmi-working-group-report-20150917-2.pdf>
<https://allofus.nih.gov/news-events-and-media/announcements/all-us-research-program-initial-protocol>

EHR data are dense and efficient for discovery: Vanderbilt's experience (BioVU)



All of Us Research Program - Mission and Objectives

1. Nurture relationships

with **one million** or more participant partners, from all walks of life, for decades, reflecting the **broad diversity** of the U.S, especially those **underrepresented in biomedical research**

3. Catalyze a robust ecosystem

of researchers and funders to use and support the **rich, longitudinal resource** of deep clinical, **environmental, lifestyle, & genetic** data.



Our mission
To accelerate health research and medical breakthroughs, enabling individualized prevention, treatment, and care for all of us

2. Deliver the largest, richest, and most accessible biomedical dataset

providing the **tools & capabilities** that make it easy for researchers, participants, and citizen scientists to make discoveries

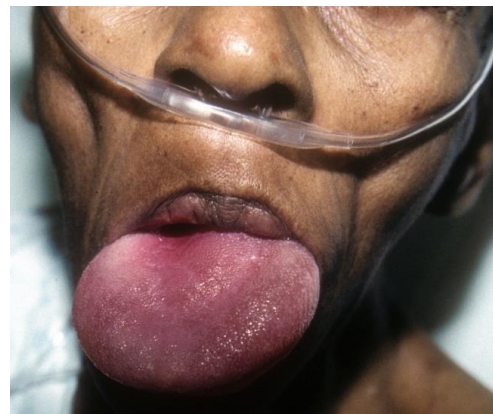
Some of the *All of Us* research goals

Studying exposures and habits



New biomarkers (and their interactions)

Machine learning on Big Data

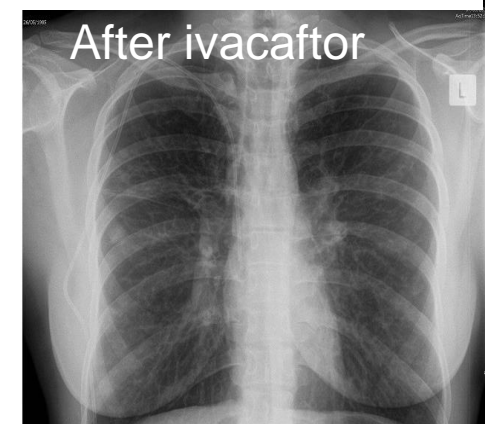
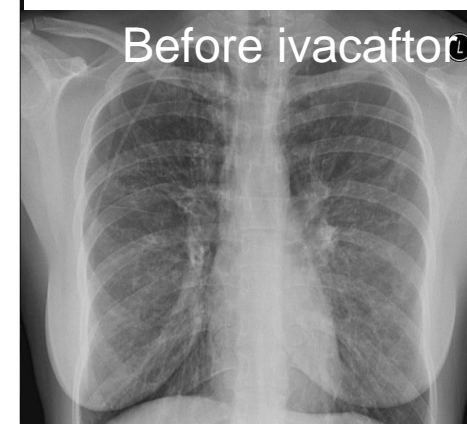


Improving drug action



Engaging diverse participants

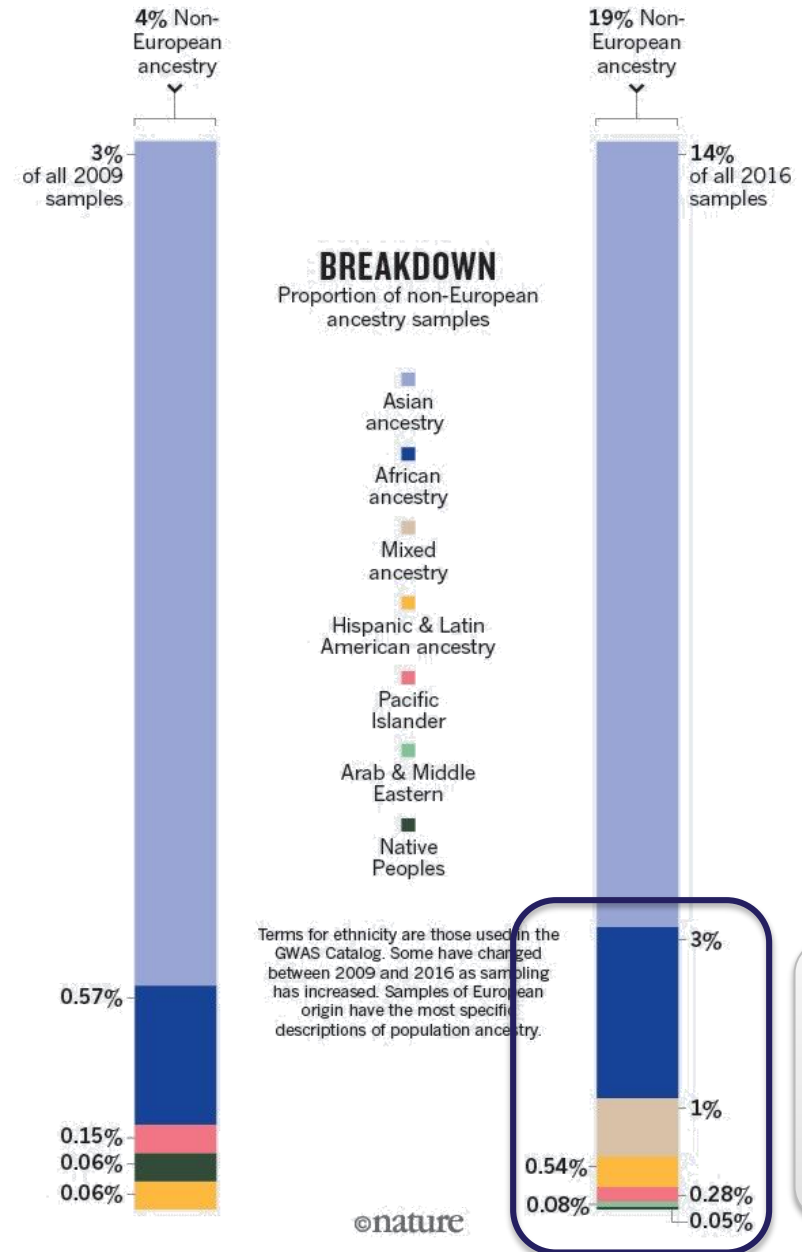
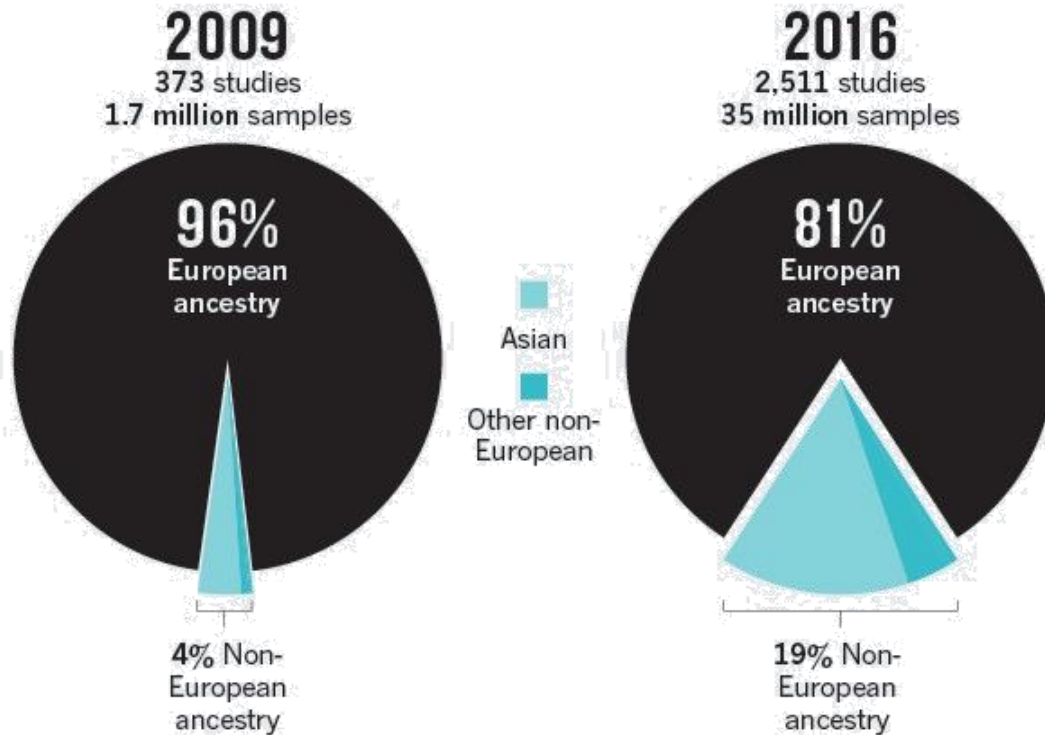
New precision therapies & targeted clinical trials



Why Diversity?

PERSISTENT BIAS

Over the past seven years, the proportion of participants in genome-wide association studies (GWAS) that are of Asian ancestry has increased. Groups of other ancestries continue to be very poorly represented.



4% GWAS represents ~1/3 of US population

Major Building Blocks of the Research Program

DATA AND RESEARCH CENTER (DRC)

Big data capture, cleaning, curation, & sharing in secure environment

Vanderbilt, Verily, Broad Institute

BIOBANK

Repository for processing, storing, & sharing biosamples

Mayo Clinic

PARTICIPANT CENTER

Direct volunteer participant enrollment, digital engagement innovation, & consumer health technologies

*Scripps Research Institute
(with multiple partners)*

PARTICIPANT TECHNOLOGY SYSTEMS CENTER

Web & phone-based platforms for participants

Vibrent Health

HEALTH CARE PROVIDER ORGS (HPOs)

Clinical & scientific expertise network, enrollment & retention of participants

20+ regional med centers, FQHCs, VA, future awards to grow network

COMMUNICATIONS & ENGAGEMENT

Comms, marketing, & design expertise; Engagement coordination & community partners network

Wondros, HCM, future awards to grow network of community partners

National Network of Inaugural Partners

National Partners

Regional Medical Centers

FQHCs



Community Engagement Studios

- **77** Studios; **654** community members; Avg **8-9** community members/studio; **46%** self-identified as a racial/ethnic minority
- Studios in **17 cities** including Nashville, Los Angeles, Rochester, NY, **Chicago**, Sioux Falls, SD, Miami, New Orleans, San Diego, Appalachian Mountains
- 15 engagement studios on Return of Value



Community Engagement Partners – led by Dara Richardson-Heron

- **American Academy of Family Physicians**, Leawood, Kansas
- **American Academy of HIV Medicine**, Washington, D.C.
- **American Association of Colleges of Nursing**, Washington, D.C.
- **American Medical Association**, Chicago, Illinois
- **Arab Community Center for Economic and Social Services**, Dearborn, Michigan
- **Asian & Pacific Islander American Health Forum**, Oakland, California
- **Association of Nurses in AIDS Care**, Uniontown, Ohio
- **Black Women’s Health Imperative**, Washington, D.C.
- **Cobb Institute (W. Montague Cobb/National Medical Association Health Institute)**, Washington, D.C.
- **Delta Research and Educational Foundation**, Washington, D.C.
- **FiftyForward**, Nashville, Tennessee
- **League of United Latin American Citizens**, Washington, D.C.
- **National Alliance for Hispanic Health**, Washington, D.C.
- **National Baptist Convention**, Nashville, Tennessee
- **National Hispanic Medical Association**, Washington, D.C.
- **National Minority Quality Forum**, Washington, D.C.
- **National Network of Libraries of Medicine**, Bethesda, Maryland
- **San Francisco General Hospital Foundation**, San Francisco, California
- **UnidosUS**, Washington, D.C.

Summary of the approach and protocol



**Direct
Volunteers**



**Health Care Provider
Organizations**



**Enroll,
Consent,
EHR sharing**



**Health
Surveys**



**Baseline
measurements**



**Bio-
specimens**



**Smartphones
& Wearables**

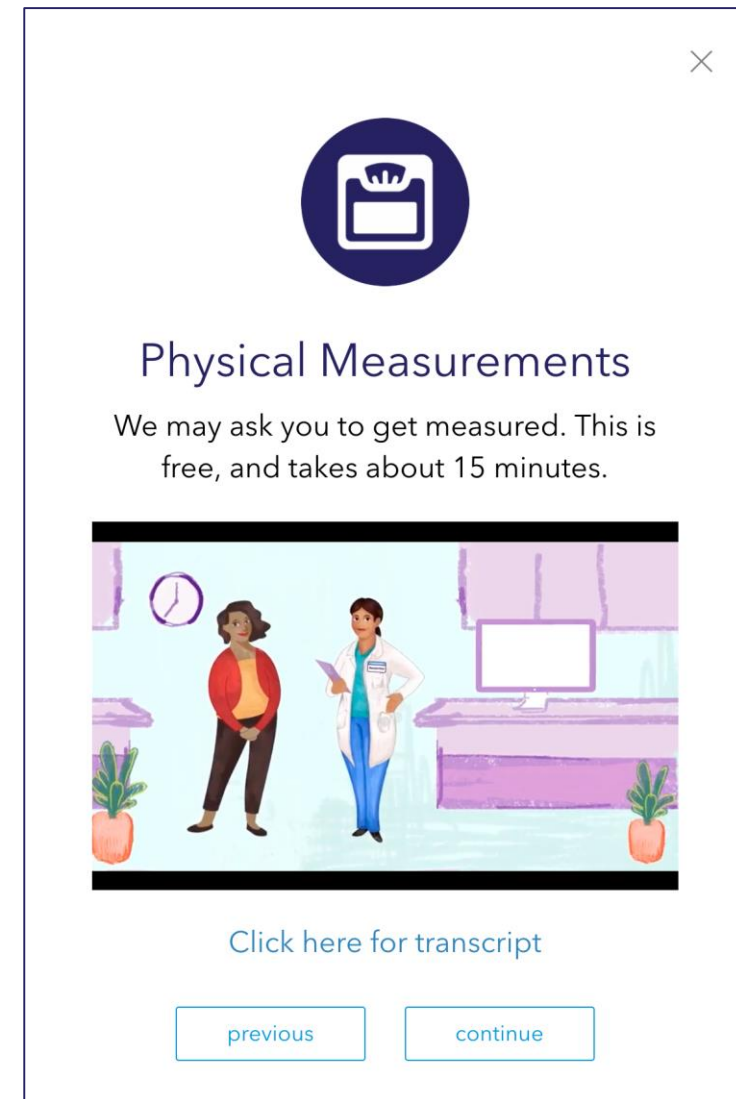
Build direct volunteer capacity

- **Vision:** Make it possible for anyone, anywhere in the country to participate in biomedical research.
- **Where we are:**
 - Built a network of partners
 - 3 DV locations online now, with more coming online regularly
 - Reach of 37,000 facilities or providers covering 97% of US ...but we cannot fully staff all at once.



Consent / e-Consent

- Recruit 18+ years old initially; working on pediatrics plan
- eConsent (paper long-form being developed)
- 6th grade reading level; English & Spanish
- eConsent process includes modules on:
 - Participant Provided Info (PPI) + Linkage + Re-contact
 - Physical Measurements (PM) + Biospecimen
 - Sensors or wearable devices
 - EHR
 - Genetic information
- Videos expand on key concepts
- Separate opt-in & signature for some modules, including EHR and genetics (state laws)



The screenshot shows a digital consent interface. At the top right is a close button (X). Below it is a dark blue circular icon containing a white medical clipboard with a crown on top. The main heading is "Physical Measurements" in a dark blue font. Below the heading is a paragraph of text: "We may ask you to get measured. This is free, and takes about 15 minutes." Underneath the text is a video player showing an illustration of a doctor in a white coat and blue scrubs talking to a patient in a red jacket in a clinical setting. Below the video player is a link that says "Click here for transcript". At the bottom are two buttons: "previous" and "continue", both in a light blue color.

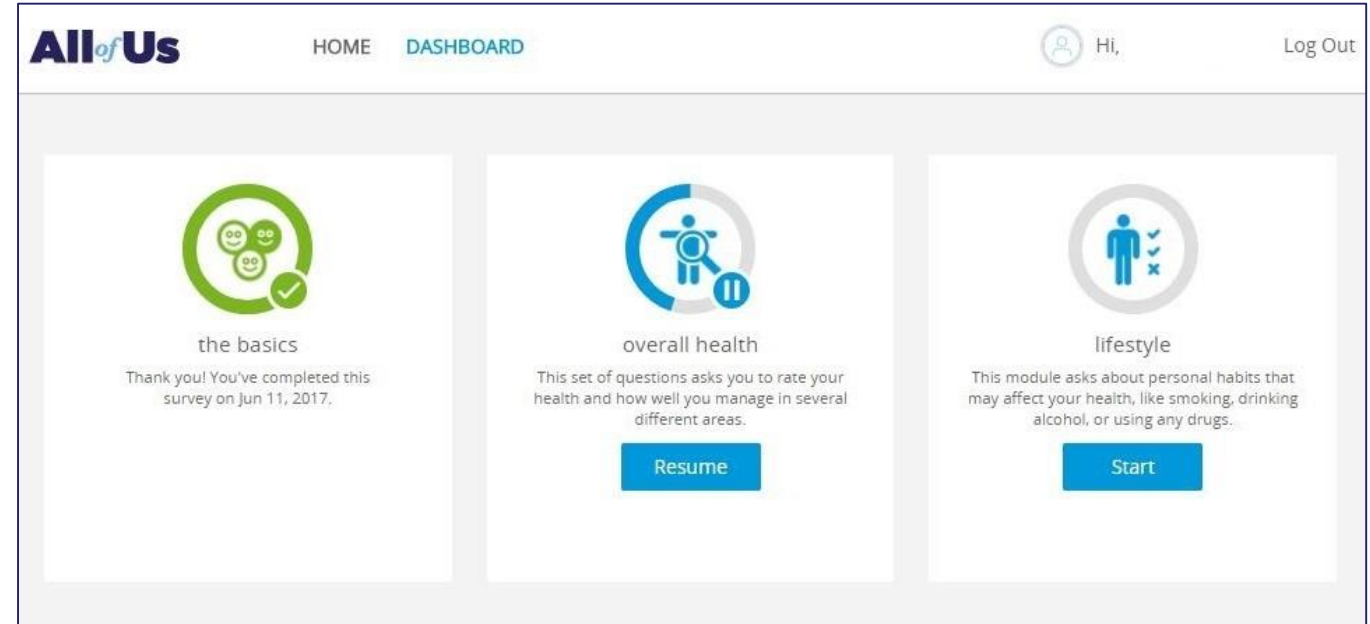
PPI/Survey Modules for Launch

PPI Enrollment Surveys

1. The Basics
2. Overall Health
3. Lifestyle

In Development

4. Personal Health History
5. Medications
6. Family History
7. Health Care Access and Utilization
8. Sleep
9. Environment/exposures



Physical Measurements

Physical Measurements

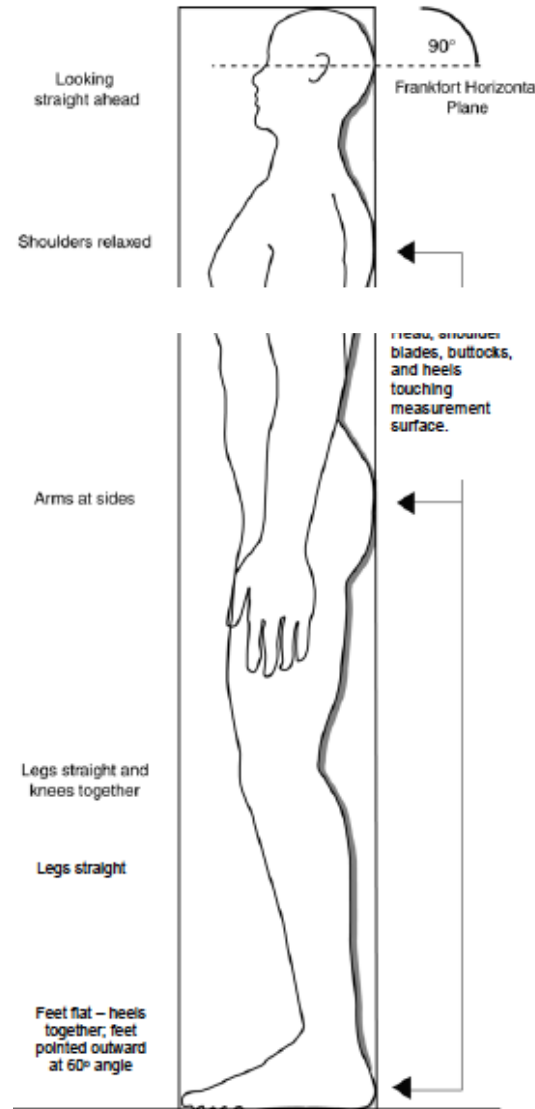
- Blood pressure
- BMI
- Heart rate
- Height
- Hip circumference
- Waist circumference
- Weight

Biospecimen Collection

- Blood (or saliva)
- Urine

Participants will have access to their physical measurements through:

- The Participant Portal
- In Writing



All of Us

Thank you for taking part in the *All of Us* Research Program. By sharing your information, you're helping shape the future of health care. This form has your physical measurements from your visit today.

Date of Visit: _____

Height: _____ Weight: _____ Body Mass Index (BMI): _____

Hip Circumference: _____

Waist Circumference: _____

Blood Pressure (Systolic/Diastolic): ____ / ____

Heart Rate (Beats per Minute): _____

You will see blood pressure and heart rate information on the right. This is to give you a broad sense of what is thought to be "normal" for an average person. Your "normal" may be different from this for many reasons. These reasons may include your age, level of fitness, and general health. Concerns or questions about your measurements? Please speak to your health care provider or contact the *All of Us* Support Center at 1-844-842-2855 or help@joinallofus.org.

The National Institutes of Health offers many resources to help people learn more about heart health. It also has tools to help people maintain a healthy weight.

Visit: <https://www.nhlbi.nih.gov/health>.

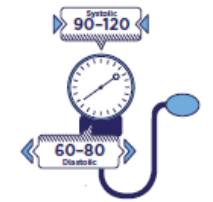


Your preliminary findings suggest a potential concern with your blood pressure ____ / ____ or heart rate _____. We recommend an evaluation by a health care provider as soon as possible.

Adult Body Mass Index (BMI) Groupings:



Normal Blood Pressure Range:



Normal Heart Rate Range:



In beta testing now...

The screenshot shows a web browser window with the URL joinallofus.org. The browser's address bar and tabs are visible at the top. The website header includes the logo "All of Us RESEARCH PROGRAM" with the tagline "The Future of Health Begins With You". A green banner in the header reads "We're Beta testing." Navigation links include "ABOUT", "HOW TO JOIN", "NEWS & EVENTS", "PARTICIPANT COMMUNITY", and "LOG IN". A search bar is located on the right side of the header.

The main content area features a large photograph of a diverse group of approximately 18 people of various ages and ethnicities. In the center of the group, a woman is seated in a wheelchair. Below the photograph is a dark blue button with the text "WATCH VIDEO" and a play icon.

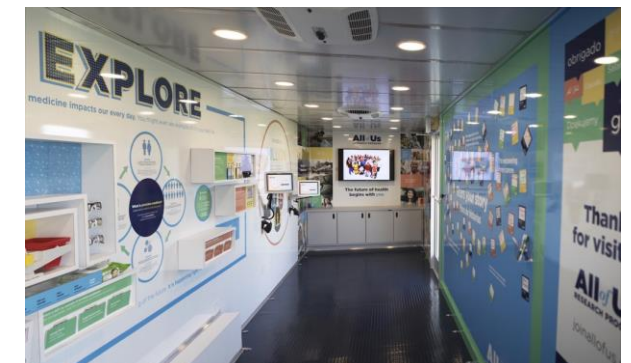
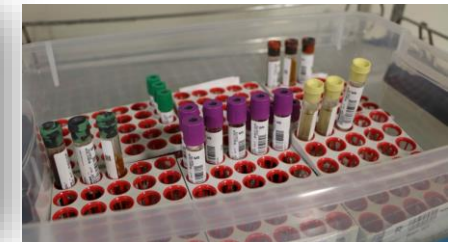
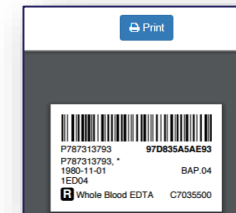
The bottom section of the page has a dark blue background. It features the headline "The future of health begins with you" in white and blue text. Below the headline is a paragraph: "The *All of Us* Research Program has a simple mission. We want to speed up health research breakthroughs. To do this, we're asking one million people to help us lead the way in discovering better care for all of us." To the right of this text are two buttons: a light blue "JOIN NOW" button and a green "Have Feedback?" button.

May 31, 2017: Launched Beta phase

- Version 1 protocol tested & IRB approved
- Completed security plan/tests
- Completed end-to-end “dress rehearsals” nationally
- Enrollment website & participant portal up & running
- Call center & command center up & running
- HPO network & Direct Volunteer capability established
- New sites launched every 1-3 weeks
- Kicked off mobile exhibit, the *All of Us* Journey
- Announced Fitbit pilot with 10,000 individuals

>13,000 participants in beta phase (slow ramp up)

Goal: 1 million in ~4-5 years



Data and Research Center (DRC): what we do

Our charter

- manage & organize *All of Us* data
- build tools to enable data entry, perform quality control, and monitoring
- enforce data access policies and security
- make the data useful

HealthPro Participant Lookup Biobank Order Lookup Work Queue Dashboard HPO-BannerSCampus kelsey.mayo@pmi-ops.org

Funke, Maeby

Name: Funke, Maeby
 Participant ID: P747682705
 Biobank ID: R324994553
 DOB: 12/2/1995
 Gender Identity:

Barcode: P747682705

Physical Measurements: Start Physical Measurements

Biobank Orders: New Order

HealthPro Participant Lookup Biobank Order Lookup Work Queue Dashboard HPO-BannerSCampus kelsey.mayo@pmi-ops.org

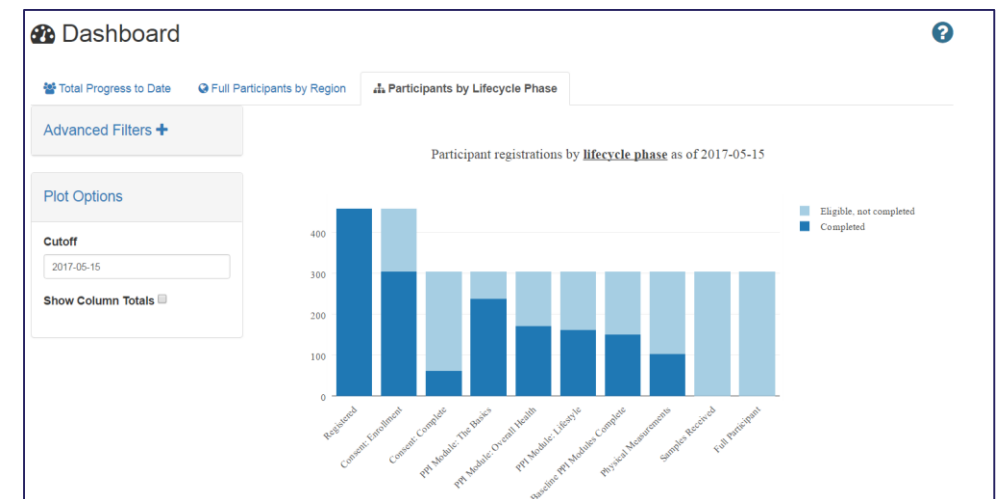
Participant Work Queue

Filters: reset

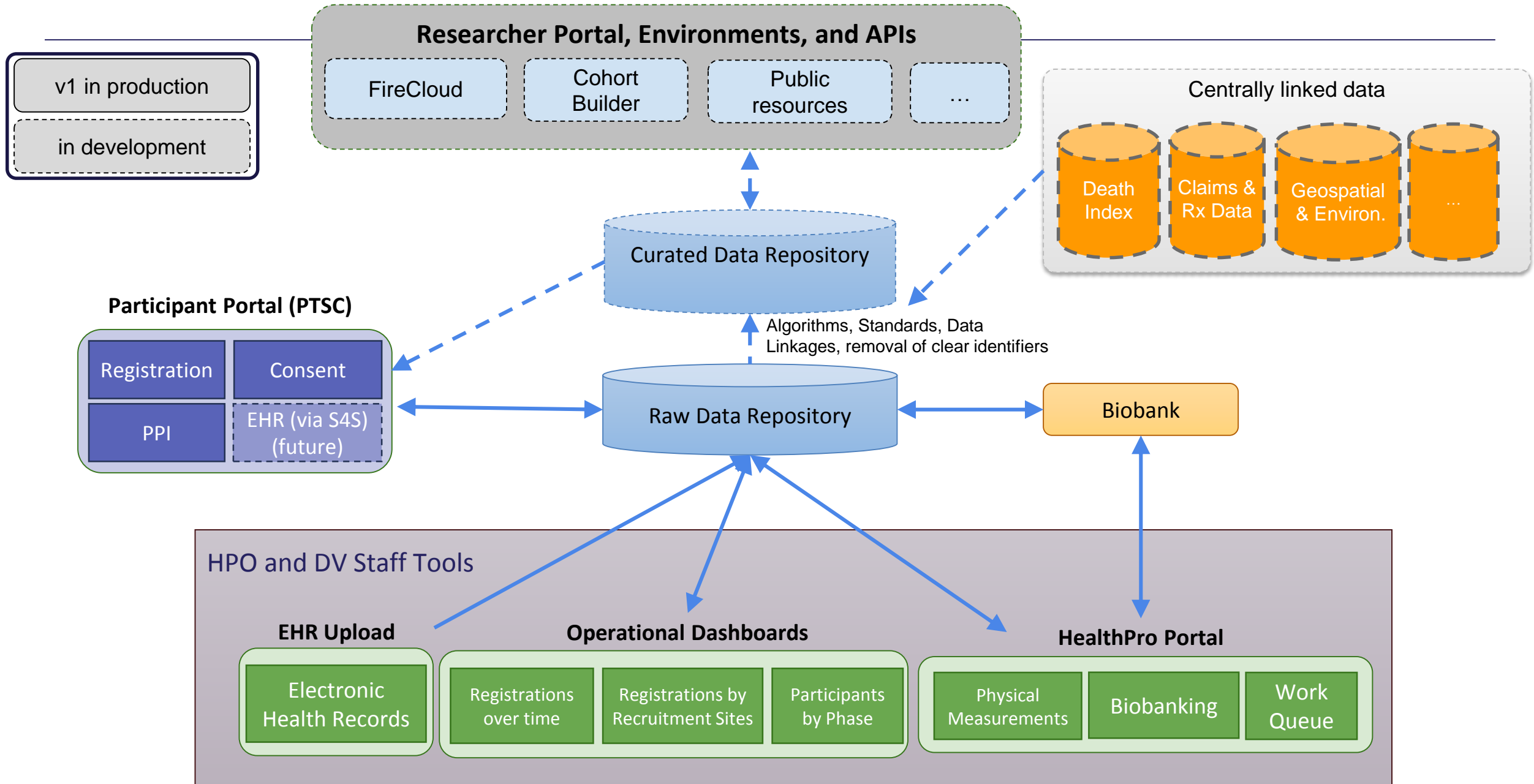
-- Withdrawal Status -- -- EHR Consent Status -- -- Age -- -- Gender Identity -- -- Race --

37 participants (AZ_TUCSON) Export

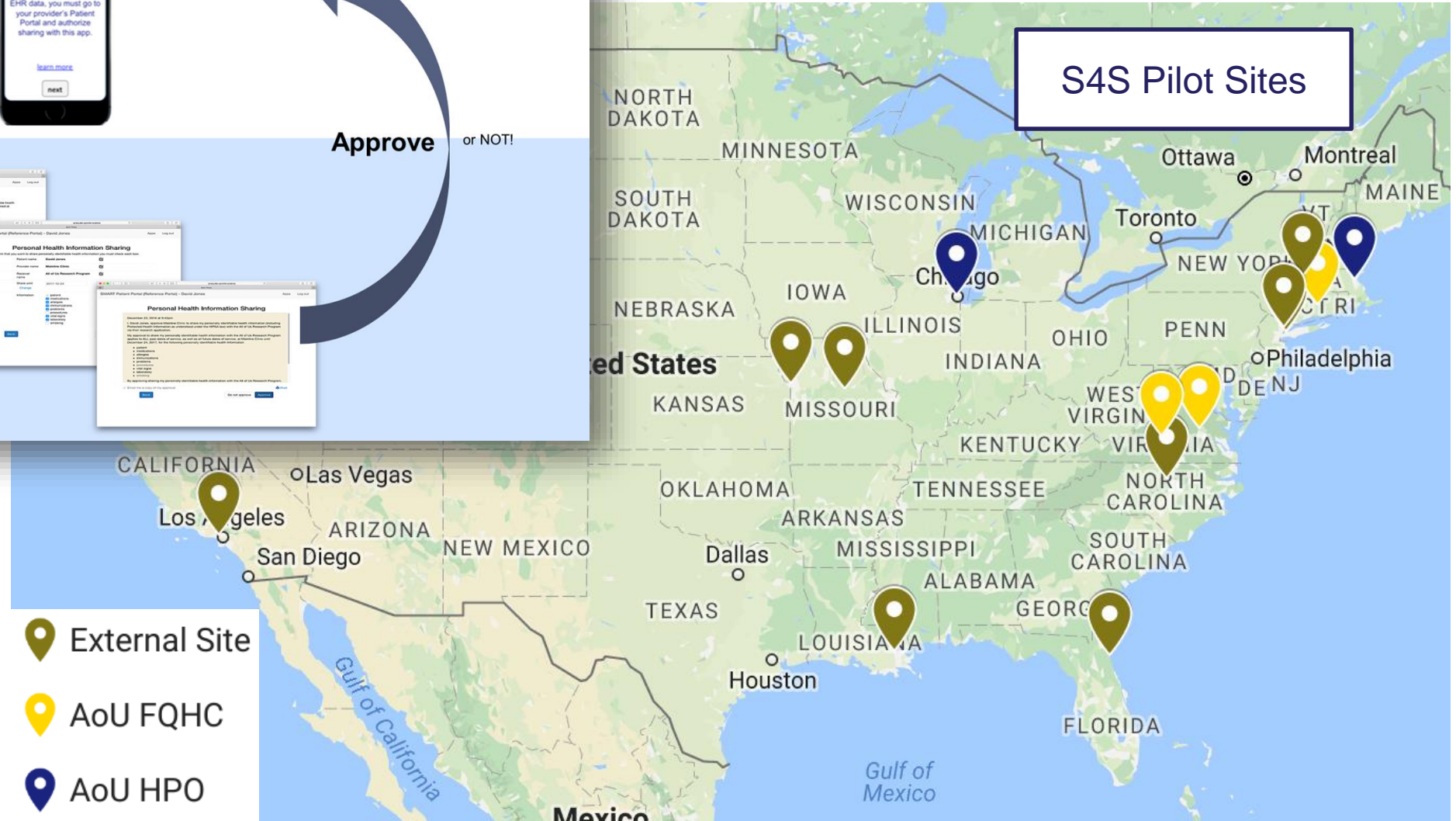
Last Name	First Name	Date of Birth	General Consent	EHR Consent	Withdrawal	PPI Survey Completion		In-Person Enrollment		
						Required Complete?	Completed Surveys	Phys Measurements	Samples for DNA Received?	Biospecimens
Funke	Maeby	12/02/1995	✓ 05/12/2017	✗ (not completed)		✗	1	✗	✗	0
Monday	Ryan	01/23/1994	✓ 05/12/2017	✗ (not completed)		✗	2	✗	✗	0
Pratt	Chris	01/14/1985	✓ 05/11/2017	✓ 05/11/2017		✓	3	✓ 05/11/2017	✗	0
Grabawski	Brittany	07/15/1977	✓ 05/11/2017	✓ 05/11/2017		✗	2	✓ 05/11/2017	✗	0
Nasari	Miriam	05/08/1993	✓ 05/11/2017	✓ 05/11/2017		✗	2	✓ 05/11/2017	✗	0



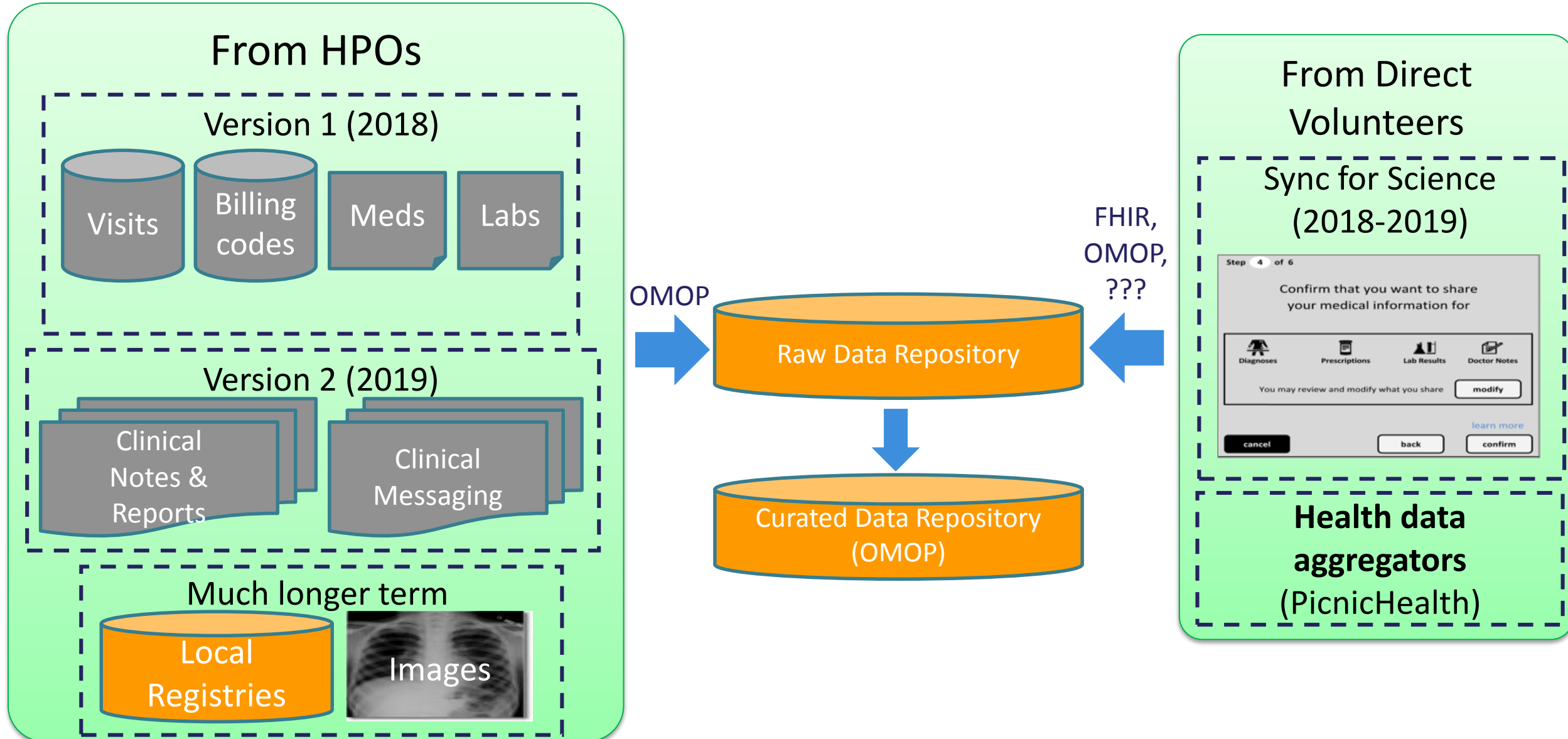
Key DRC Products for Data Ingestions, Curation, and Dissemination



Sync 4 Science (S4S) – a technology to share health data



Collecting Health Record/EHR data from *All of Us* Participants



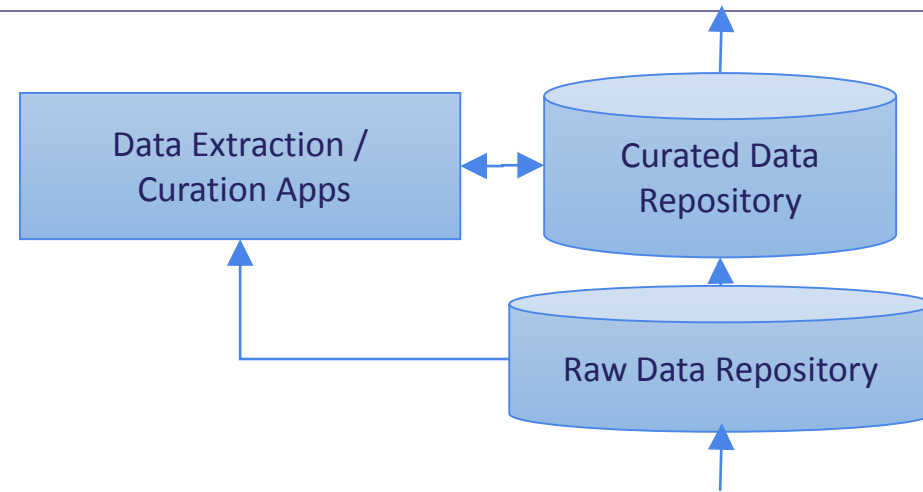
Intelligent Curation

AOU data gets smarter over time.

- progressive mapping to common data models
- framework to allow anyone to add smart annotations
- plug in latest and greatest techniques



Automatically captioned:
"Two pizzas sitting on top of a stove top oven"

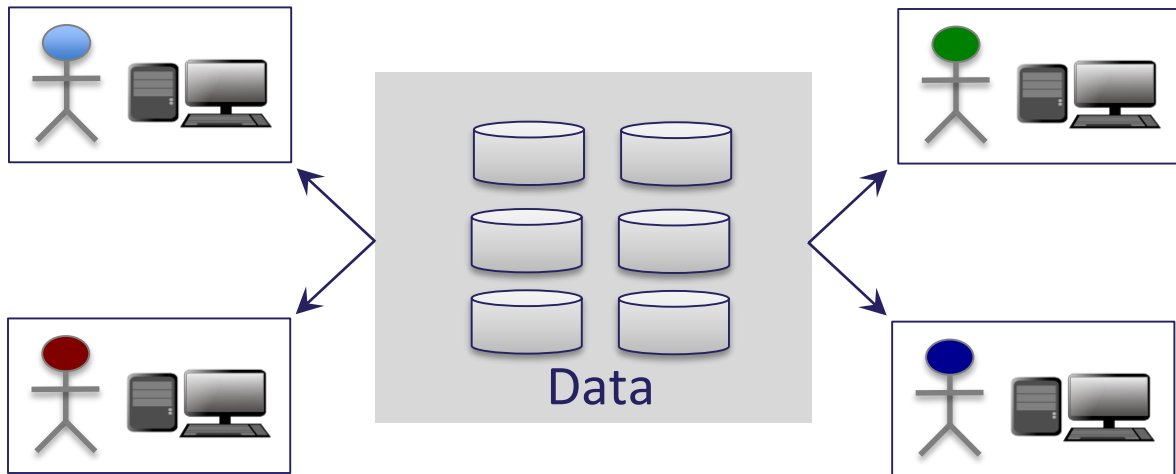


Leverage the “Web dividend” for Health.

- Computable phenotypes
- Natural language processing
- Imputation
- Precomputed analyses
- Crowdsourcing
- Extracting geocoded environmental info

AOU centralizes data to **enhance security** and **improve usefulness**

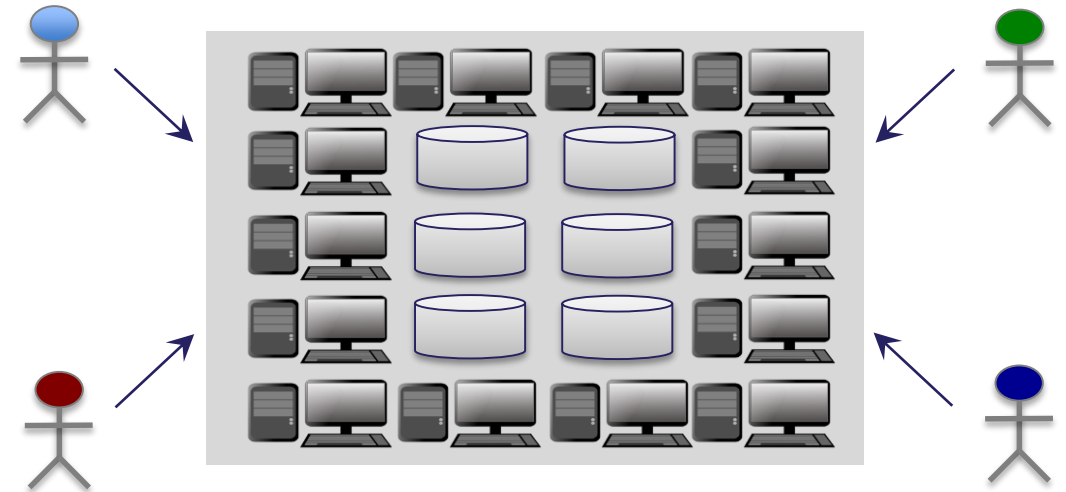
Traditional Approach Bring data to researchers



Problems

- *Data sharing = data copying*
- *Decreased security (data lots of places)*
- *Huge infrastructure needed*
- *Encourages siloed research*

AoU Approach Bring researchers to the data

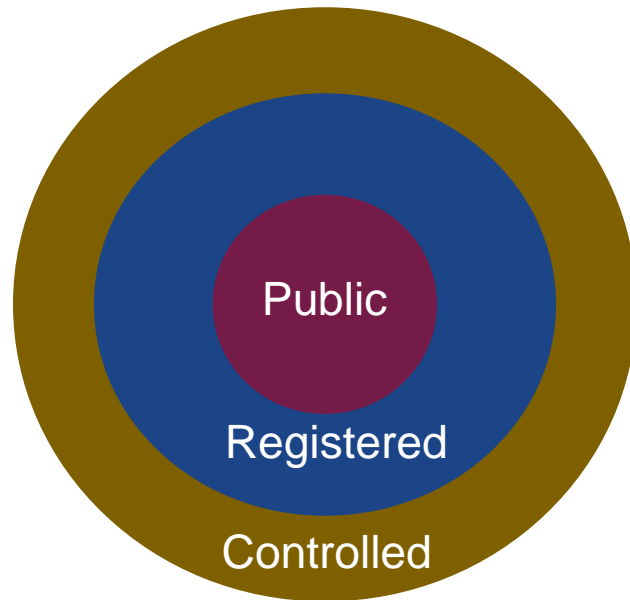


Advantages

- *Improved security and auditing*
- *Increased accessibility to researchers*
- *Shared compute*
- *Facilitates collaboration*

Data Access Tiers (DRAFT)

Data Tiers

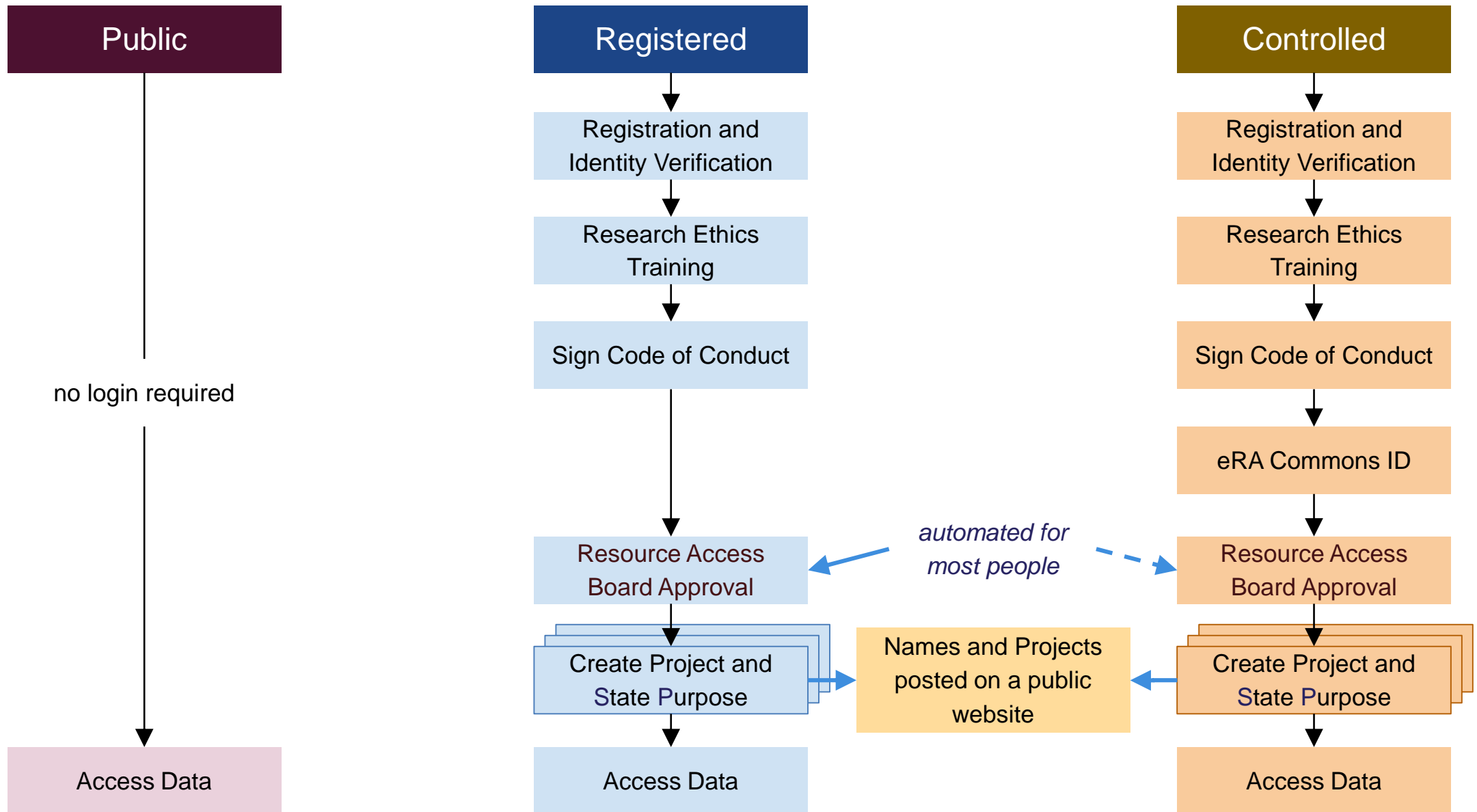


All data tiers have **obvious identifiers removed**

Access to identifiers, recontact, or biospecimens **requires new IRB proposal**

- 1. Public:** Data that poses minimal risks to the privacy of research participants. It can be accessed without logging into the *All of Us* Research Platform. (e.g. *aggregate statistics*)
- 2. Registered:** Individual level data that has some risk to the privacy of research participants. It can only be accessed after logging into the *All of Us* Research Platform by **approved users**; all access will be logged and may be audited. (e.g. *PPI responses, EHR structured data*)
- 3. Controlled:** Individual level data that poses the more significant risks to the privacy of research participants; needs additional approval step. (e.g. *EHR clinical notes*)

Data Access Protocol via a Passport model (DRAFT)



Building tools to facilitate research

A RESEARCHER - COHORT FILTER TOOL

Switch Study PMI Study Set A397-4.1 (IRB #64243-NU)

Select Criteria Search

Demographics

PMI Baseline Data

PMI PTC Data

PheWAS Codes

352-Disorders of other cranial nerv

353-Nerve root and plexus disorder

355-Complex regional/central pain

355.1-Chronic pain syndrome

356-Hereditary and idiopathic perio

357-Inflammatory and toxic neuro

358-Myoneural disorders

359-Muscular dystrophies and oth

360-Disorders of the globe

361-Retinal detachments and defe

362-Other retinal disorders

363-Chorioretinal inflammations, s

364-Corneal opacity and other dis

PMI Genetic Data

PMI Patient Reported Surveys

EHR Labs

EHR Meds

EHR Vitals

Include records where:

Contains Medication 'Simvastatin'

Exclude

Remove

Group Count: 181441

AND Include records where:

Chol Greater Than 170 210738

Exclude

Result Set Total: 945

Female

Male

Unknown

B RESEARCHER - PARTICIPANT REVIEW

Switch Set PMI Cohort (945)

Subject Detail Data

RUID STATUS

RUID 5222; Female; Age 27; Caucasian; Non Hispanic; DNA sample available

Subject Status: Included Excluded Undetermined Not Reviewed

Select tabs to display

Report Identified Data Add Comment

Documents x Medications x Labs x ICD Codes x Comments x Summary x

Labs by Date Labs by Name PREDICT Labs

DATE	TIME	SHORT NAME	LONG NAME	VALUE	ABNORM
2009-07-20	01:07:00	Na	SODIUM BLOOD	144	N
2009-07-20	01:07:00	HemIdx	HEMOLYSIS INDEX	/	NA
2009-07-20	01:07:00	Creat	CREATININE BLOOD	0.76	N
2009-07-20	01:07:00	BASOAB	BASO (ABS)	0.03	N
2009-07-20	01:07:00	Hgb	HEMOGLOBIN BLOOD	14.2	N
2009-07-20	01:07:00	Gluc	GLUCOSE BLOOD	104	N
2009-07-20	01:07:00	IGAB	IMM GRANULOCYTES (ABS)	0.01	N
2009-07-20	01:07:00	Plt-Ct	PLATELET COUNT	231	N
2009-07-20	01:07:00	PCV	PCV BLOOD	41	N
2009-07-20	01:07:00	Cl	CHLORIDE BLOOD	110	H
2009-07-20	01:07:00	LYMPAB	LYMPHS (ABS)	3.70	H
2009-07-20	01:07:00	NRBC#	NUCLEATED RBC#	0.00	NA
2009-07-20	01:07:00	eGFR	Estimated Glomerular Filtration Rate	102.1051	N
2009-07-20	01:07:00	MCV	MCV	83	N
2009-07-20	01:07:00	BUN	UREA NITROGEN BLOOD	9	N
2009-07-20	01:07:00	BPC	BPC	4.07	N

Findings for RUID 5222:

- Definite Hypertension
- History > 2 Years
- PRO Data Available
- Anxiety, Depression
- Smoker

Finalize & Take Action

FireCloud | Broad Institute

https://firecloud.dsde-staging.broadinstitute.org/#workspaces

FireCloud

Workspaces

Create New Workspace

Workspace Namespace

broad-firecloud-cga-alpha

Workspace Name

my_alpha_test

Workspace Description

Research Purpose

Option 1

Billing Contact

Option 1

Share With (optional)

Cancel Create Workspace

C CC ACTIVATED DATA SHARING & PARTICIPANT ENGAGEMENT

Secure Data Mart

Web Analysis Toolkit

PheWAS

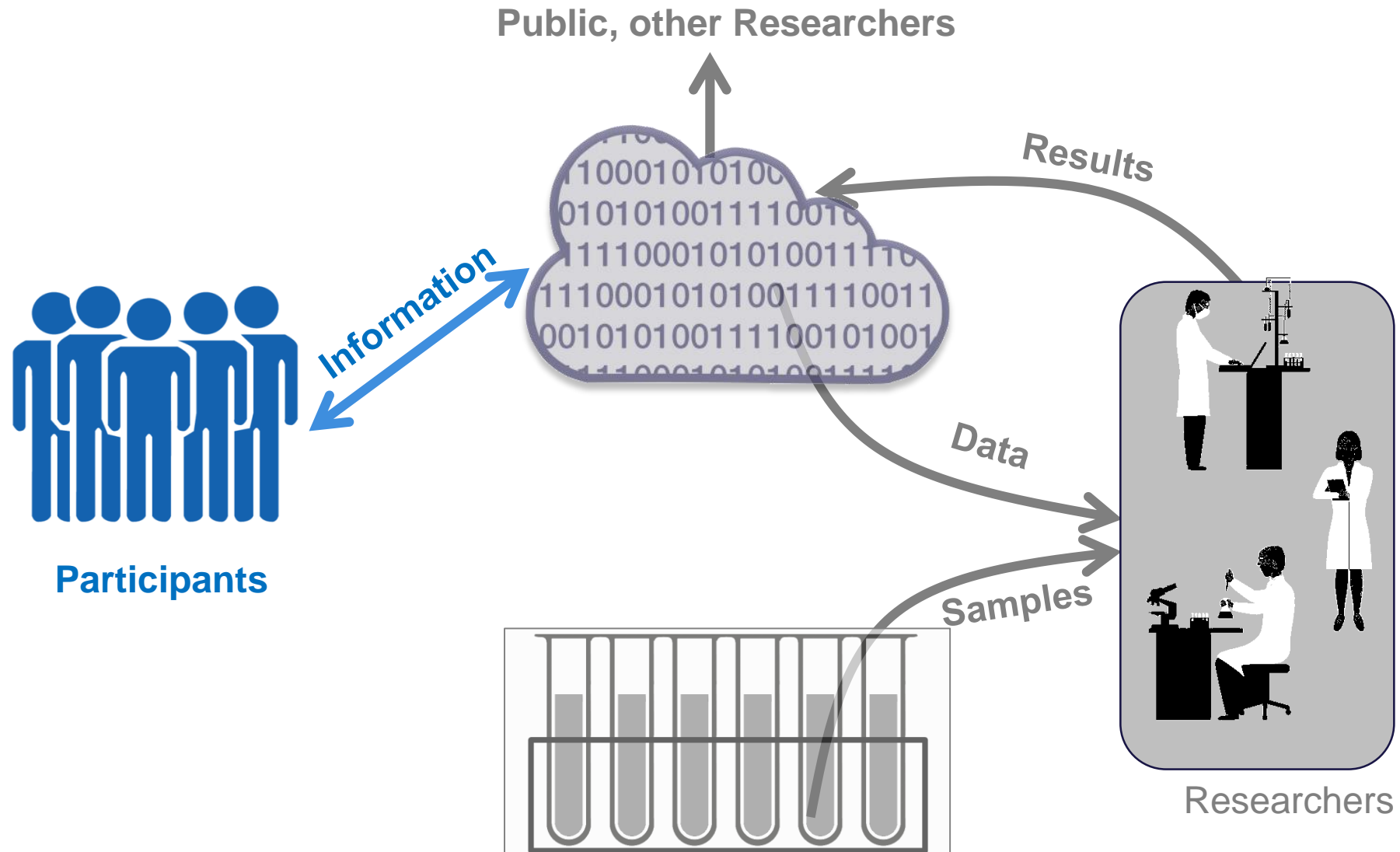
OMIC Analysis

PTC & APPs

Survey and Deep Phenotyping

REDCap[™]
Research Electronic Data Capture

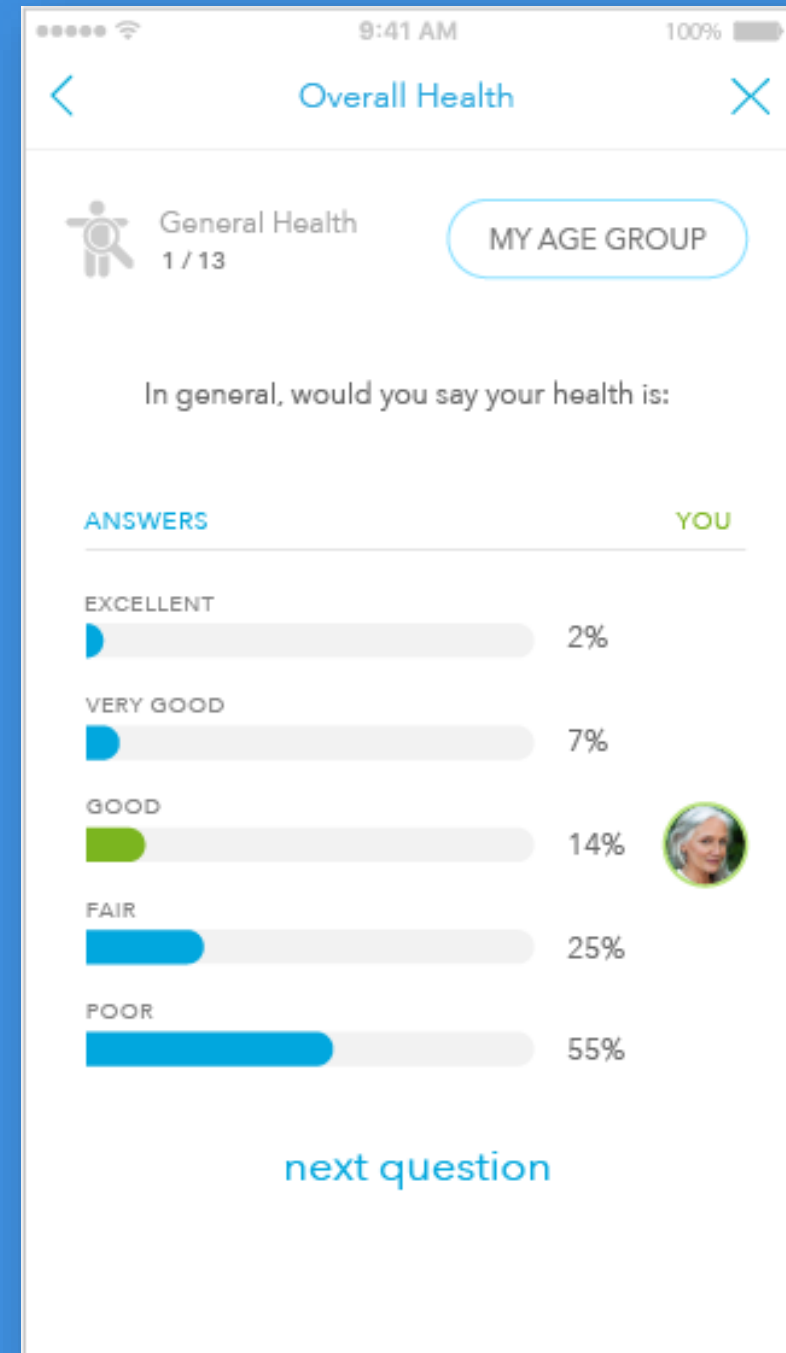
A key tenet of *All of Us*: participants will have access to their information



Return of Information

Participants may receive, depending on their preferences:

- Individual health information
- Survey data (comparative)
- EHR data, claims data
- Research results
- Ongoing study updates
- Aggregated results
- Scientific findings
- Opportunities to be contacted for other research opportunities



RESEARCH ARTICLE

HUMAN GENETICS

Distribution and clinical impact of functional variants in 50,726 whole-exome sequences from the DiscovEHR study

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The DiscovEHR collaboration between the Regeneron Genetics Center and Geisinger Health System couples high-throughput sequencing to an integrated health care system using longitudinal electronic health records (EHRs). We sequenced the exomes of 50,726 adult participants in the DiscovEHR study to identify ~4.2 million rare single-nucleotide variants and insertion/deletion events, of which ~176,000 are predicted to result in a loss of gene function. Linking these data to EHR-derived clinical phenotypes, we find clinical associations supporting therapeutic targets, including genes encoding drug targets for lipid lowering, and identify previously unidentified rare alleles associated with lipid levels and other blood level traits. About 3.5% of individuals harbor deleterious variants in 76 clinically actionable genes. The DiscovEHR data set provides a blueprint for large-scale precision medicine initiatives and genomics-guided therapeutic discovery.

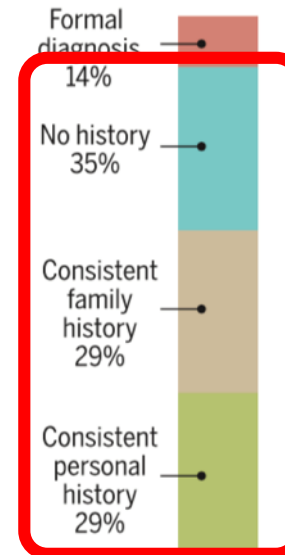
The application of high-throughput DNA | precision medicine requires further investigation

and DNA samples for a system-wide biorepository for broad research purposes, including genomic analyses, and linking to data in the GHS electronic health record (EHR). MyCode participants agree to be recontacted for additional phenotyping and return of clinically actionable results to inform their health care. The DiscovEHR cohort has clinical phenotypes recorded in the GHS EHR

B

	Variant positive/ total	Estimated prevalence
One clinically actionable genetic variant in G76	46/1415	1:31 (3.3%)
Two clinically actionable genetic variants in G76	3/1415	1:472 (0.2%)
Total	49/1415	1:29 (3.5%)

C



3.5% of all tested had an actionable result

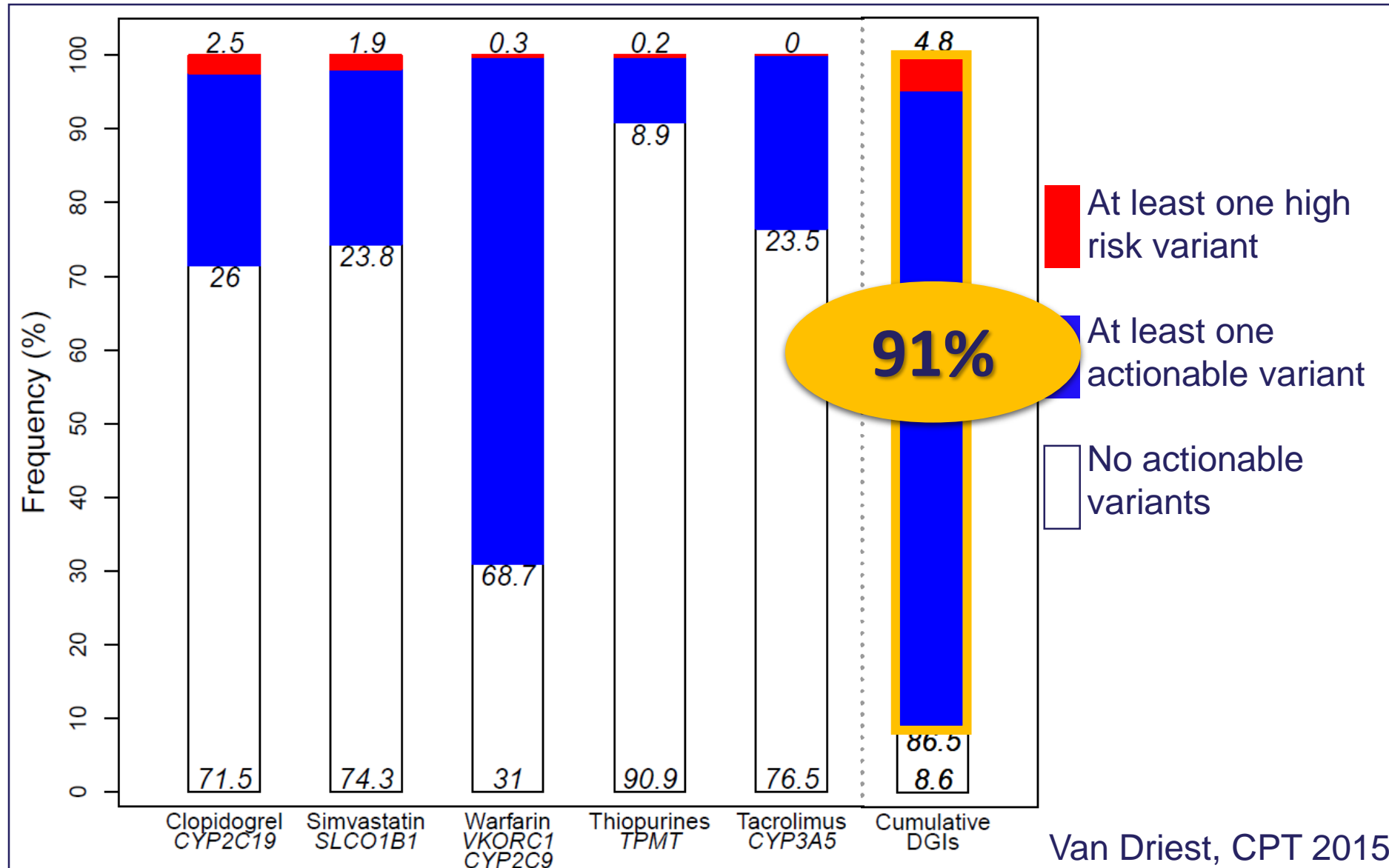
86% were new diagnoses

sociations between predicted LoF variants in lipid drug target genes ct, in SD units; whiskers denote 95% confidence intervals for effect. rriers. (B and C) Prevalence and expressivity of clinically actionable

specifically target families, we expected close familial relationships in this stable regional health care population. We therefore examined the extent of these relationships inferred from whole-exome sequence data using Pedigree Reconstruction and Identification of the Maximally Unrelated Set (PRIMUS) (26). Forty-eight percent of sequenced

aded from <http://>

And... most people have an variant that would effect drug prescribing



All of Us timeline

January 2015	President's State of the Union Address announcing PMI
September 2015	NIH Advisory Committee to the Director (ACD) PMI Working Group report
July 2016	Initial awards
May 2017	IRB & FISMA security approvals
May 31, 2017	Beta testing begins with initial participants <i>first set of participant provided information (PPI) surveys, baseline measures, biospecimen collections, EHR data</i>
Now	>13,400 people, first real initial EHR uploads, English and Spanish
Through 2018	Expand to national network, test & revise protocol, EHR uploads, develop additional survey modules, plans for genomics & pediatrics
Spring 2018	National launch
Early 2019	Initial researcher site launch
Next 4-5 years	Enroll 1M+ volunteers
Next 10+ years	Platform releases growing the data, tools, focus areas

Scientific Priorities Workshop

The *All of Us* Research Priorities Workshop

- ◉ **Date and Location:** March 21-23, 2018, in Bethesda, MD
- ◉ **Purpose:** Identify key research priorities that will capitalize on the *All of Us* Research Program's one million or more participants to help ensure optimal value for advancing precision medicine.
- ◉ **Planning Committee:** Senior leaders across NIH's Institutes and Centers.
- ◉ **Workshop Participants:** A broad array of stakeholders (e.g., researchers, participants, professional societies, advocacy groups); by invitation.
- ◉ **Outreach Plans:** Obtain substantial input on research questions and requirements prior to the workshop.
- ◉ **Updates:** You can subscribe at <https://www.joinallofus.org/news-and-events>



Three Big Questions for the workshop

1. Near Term

What are low-hanging fruit questions/measures for which the scale of *All of Us* could help accelerate knowledge & breakthroughs in precision medicine?

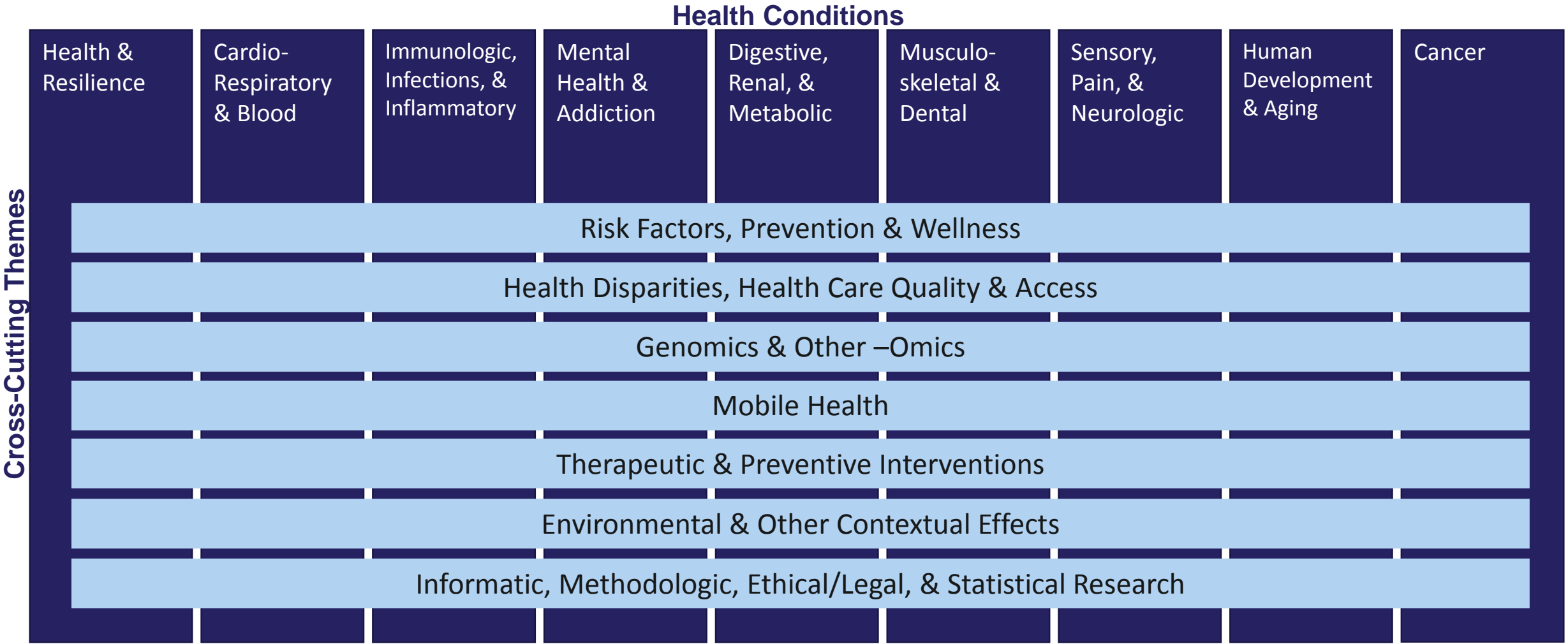
2. Mid-Term

What kinds of questions might this Program answer where additional work selecting among measures/instruments is needed?

3. Long Term

What kinds of questions are ripe for a program of this size but for which we need fundamental science & tech to develop the instruments and methods?

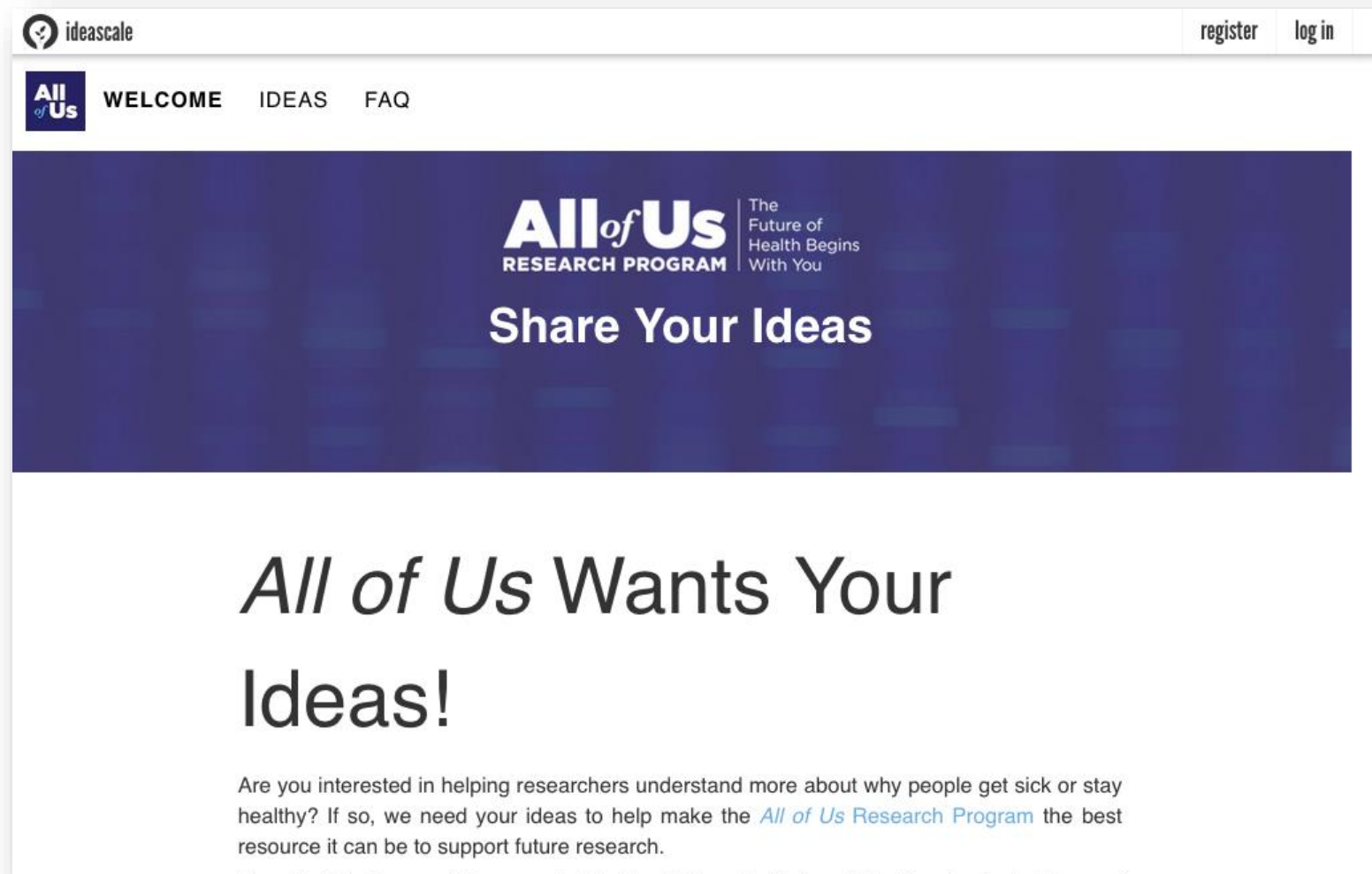
Scientific Framework for the *All of Us* March 2018 Workshop



We need your input! Crowdsourcing Use Cases

<https://allofusresearchpriorities.ideascale.com/>

- Register (easy!)
- Submit use cases
- Read use cases
- Comment on use cases
- Vote on use cases



The screenshot shows the homepage of the All of Us Research Program. At the top left is the 'ideascale' logo. To its right are 'register' and 'log in' links. Below this is a navigation bar with the 'All of Us' logo, 'WELCOME', 'IDEAS', and 'FAQ' links. The main content area features a dark blue banner with the 'All of Us' logo and the tagline 'The Future of Health Begins With You'. Below the banner, the text 'Share Your Ideas' is prominently displayed. Further down, a large heading reads 'All of Us Wants Your Ideas!'. At the bottom, a paragraph of text asks if the user is interested in helping researchers understand more about why people get sick or stay healthy, and mentions the 'All of Us Research Program'.

ideascale register log in

All of Us WELCOME IDEAS FAQ

All of Us | The Future of Health Begins With You
RESEARCH PROGRAM

Share Your Ideas

All of Us Wants Your Ideas!

Are you interested in helping researchers understand more about why people get sick or stay healthy? If so, we need your ideas to help make the [All of Us Research Program](#) the best resource it can be to support future research.

- ◉ **NIH *All of Us* website:** <https://allofus.nih.gov>
- ◉ **Enrollment site:** JoinAllofUs.org
- ◉ **Follow us on social media:** @AllofUsResearch, #JoinAllofUs

Thank you
