

## Introduction to the *All of Us* Research Program

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**Additional members of the *All of Us* Data and Research Center**

**SCHEDULE:** Monday, July 17 – Friday, July 21, 2023  
1:00 – 4:00 PM (Central Daylight Time)

**OVERVIEW**

The *All of Us* Research Program is a large-scale initiative that collects and studies data from over one million participants in the United States. This program gathers diverse data types, such as survey data, electronic health records, physical measurements, mobile health data (Fitbit), whole genome sequences, and array data. As a freely accessible resource, it plays a crucial role in improving health and advancing precision medicine. Researchers can access and analyze *All of Us* data via the Researcher Workbench, a secure Google cloud-based platform. This short course will cover (1) an overview of the Researcher Workbench and its built-in tools, (2) the process of identifying and extracting variables, and (3) case studies illustrating the analysis of various data types using the Workbench.

Upon completion of this course, students should be able to:

- Understand the goals and scope of the *All of Us* Research Program and its significance in advancing precision medicine.
- Navigate the Researcher Workbench confidently and effectively utilize its built-in tools for data analysis.
- Identify and extract relevant variables from diverse data types within the *All of Us* dataset.
- Comprehend some featured workspace studies that utilize a range of data types accessible in the Researcher Workbench, including survey data, electronic health records, physical measurements, mobile health data (Fitbit), whole genome sequences, and array data.
- Interpret the results of case studies to gain insights into potential applications of the *All of Us* data in health research.
- Collaborate with fellow researchers to design and execute research projects using the *All of Us* dataset.
- Understand and adhere to data security and privacy guidelines while working with sensitive information from the *All of Us* Research Program.

## PREREQUISITES

1. Basic programming knowledge in R or Python.
2. Participants **must** have an *All of Us* researcher workbench account set up by the start of the course. To obtain an account, complete all the steps at <https://www.researchallofus.org/register>. Because of the multiple requirements to be met, including participation in an hour-long training session, we strongly advise initiating your account set-up by **June 17** at the latest.

Note: The *All of Us* Research Program is currently available only to individuals at US-based academic, nonprofit, or health care institutions. Before registering for the course, please ensure your institution has an agreement on file, which can be found at <https://www.researchallofus.org/institutional-agreements/>. If your organization does not have an agreement, you can initiate one at <https://redcap.pmi-ops.org/surveys/?s=7N7TA9AHAA>. If you encounter technical issues during registration, please contact [support@researchallofus.org](mailto:support@researchallofus.org).

## SOFTWARE

The three software programs listed below will be utilized throughout the course. These programs are accessible within the Workbench for all registered researchers. Gaining a fundamental understanding of these software programs will enhance your comprehension of the case studies covered in this course.

- R: <https://cran.r-project.org/>  
<http://cran.r-project.org/doc/manuals/r-release/R-intro.html>
- Python: <https://www.python.org/>
- Jupyter Notebook: <https://jupyter.org/>

## SUPPLEMENTAL MATERIALS

Case studies for this course, also known as “featured workspaces,” can be found on the *All of Us* Researcher Workbench. To view a publicly available table of contents of these materials, visit <https://support.researchallofus.org/hc/en-us/articles/360059633052-Featured-Workspaces-Table-of-Contents>.

## COURSE OUTLINE

<b>Day 1</b>	<p><b><u>Topic</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to the course and the <i>All of Us</i> Research Program</li> <li>• Overview of data and resources</li> <li>• Introduction to OMOP tables and data structure</li> <li>• How to collaborate with other researchers on the Researcher Workbench and set up your workspace</li> <li>• Constructing a dataset using analytic tools</li> <li>• Publishing results derived from the <i>All of Us</i> Research Program</li> <li>• Hands-on lab exercises</li> </ul>	<p><b><u>Instructors</u></b></p> <p>Paul Harris and Brandy Mapes</p>
<b>Day 2</b>	<p><b><u>Topic</u></b></p> <ul style="list-style-type: none"> <li>• Case Study 1: Surveys</li> <li>• Understanding and working with survey data in the <i>All of Us</i> Research Program</li> <li>• Hands-on lab exercises</li> </ul>	<p><b><u>Instructor</u></b></p> <p>Qingxia “Cindy” Chen</p>
<b>Day 3</b>	<p><b><u>Topic</u></b></p> <ul style="list-style-type: none"> <li>• Case Study 2: Electronic Health Records (EHRs)</li> <li>• Understanding and working with EHR data in the <i>All of Us</i> Research Program</li> <li>• Hands-on lab exercises</li> </ul>	<p><b><u>Instructors</u></b></p> <p>Lina Sulieman and Cathy Shyr</p>
<b>Day 4</b>	<p><b><u>Topic</u></b></p> <ul style="list-style-type: none"> <li>• Case Study 3: Genetic Study</li> <li>• Introduction to genetic data in the <i>All of Us</i> Research Program</li> <li>• Hands-on lab exercises</li> </ul>	<p><b><u>Instructor</u></b></p> <p>Robert Carroll</p>
<b>Day 5</b>	<p><b><u>Topic</u></b></p> <ul style="list-style-type: none"> <li>• Case Study 4: Mobile Health Study (Fitbit)</li> <li>• Introduction to Fitbit data in the <i>All of Us</i> Research Program</li> <li>• Hands-on lab exercises</li> <li>• Course wrap-up and Q&amp;A</li> </ul>	<p><b><u>Instructor</u></b></p> <p>Aymone Kouame</p>