

# Short Trainings on Methods for Recruiting, Sampling, and Counting Hard-to-Reach Populations: The H2R Training Program

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## PROGRAM DESCRIPTION

### Overview

The “Hard-to-Reach” (H2R) program will train scholars and mentors on state-of-the-art methods for sampling, population size estimation, bias analysis, and engagement of hard-to-reach populations in public health, behavioral, social sciences, and clinical research.

Researchers and public health practitioners face challenges to reach, sample, count, engage, and retain program and study participants from socially disadvantaged and marginalized groups, or hard-to-reach populations. Hard-to-reach populations are often disproportionately impacted by many diseases and conditions. Such populations include but are not limited to, persons experiencing homelessness and housing insecurity, chronic mental illness, out-of-school youth, sex workers, trafficked adolescent girls, undocumented immigrants, gang members, street children, people who use drugs, racial/ethnic minorities, and sexual and gender minorities such as transgender persons and men who have sex with men.

There are many reasons why these groups are not fully represented or included in behavioral, social sciences, and clinical research. One reason is the lack of training on state-of-the-art methodologies to sample hard-to-reach populations and the statistical skills to analyze complex survey data. Moreover, the advanced methods needed to estimate their numbers (i.e., population size) are not taught in conventional behavioral, public health, and social sciences degree programs. These skills are needed to advance multiple lines of research to end health disparities, to be more inclusive of diverse populations in research, and to efficiently obtain representative samples of hard-to-reach populations in large enough numbers necessary for statistically powerful study designs.

The H2R training program capitalizes on our collective decades of research with hard-to-reach populations in the US and worldwide. Eligible scholars and mentors will be enrolled in a 6-month mentored program with the opportunity to attend up to four short courses (1. Sampling, 2. Population Size Estimation, 3. Bias Analysis, and 4. Community Engagement Research) to build capacities to implement lines of research among hard-to-reach populations. All courses will be held either online via Zoom or in-person at the University of California, San Francisco.

### H2R program team

- Ali Mirzazadeh, MD, PhD, MPH (Lead)
- Willi McFarland, MD, PhD, MPH&TM, (Sampling Course Director)
- Paul Wesson, PhD (Population Size Estimation Course Director)
- Thomas Hoffmann, PhD (Quantitative Bias Analysis Course Director)
- Sean Arayasirikul, PhD (Community-based Participatory Research Course Director)
- Drs. David Glidden, Elizabeth Fair, Sunghee Lee, and Erin Wilson (Program faculty)
- Maeve Forster (Program Manager), Ming Zhou (Grant Manager)

### Sponsors

- [NIH - National Institute of Mental Health \(NIMH\)](#)
- [NIH – Office of the Director \(OD\)](#)

### Key dates

- Application open: 7 April 2023
- Application close: 5 May 2023
- Acceptance decision: 31 May 2023
- Anticipated course start date: 1 September 2023

## Program Components

H2R is a 6-month program to include (1) courses, (2) mentoring, (3) a research project, and (4) one talk on a published hard-to-reach paper.

### (1) Courses

2 mandatory and 2 elective courses will be taught from Sept through December 2023. Both scholars and mentors are required to complete at least one of the elective courses. The elective course will be chosen during the application process. A brief description of each course is below.

#### **Sampling Methods and Statistical Data Analysis for Research on Hard-to-reach populations** (*mandatory course*)

Dr. McFarland, in collaboration with Dr. Mirzazadeh, will lead this course. This course will provide current information and recent development in sampling methods of hard-to-reach populations, advanced topics on sampling, implementation, and analysis of Responded-Driven Sampling (RDS) and Time-Location Sampling (TLS) methods, and special considerations of study designs for research among hard-to-reach populations. Participants will gain practical skills in R packages for analysis of the survey using RDS and TLS approaches.

#### **Population Size Estimation (PSE)** (*elective course*)

Dr. Wesson, in collaboration with Dr. Mirzazadeh, will lead this course. The course will cover advanced methods for identifying the location and population sizes of hard-to-reach populations (e.g., street children, undocumented immigrants, people who use drugs, SGM, sex workers). Methods provide basic information to define target areas and population sizes, provide sampling frames, and sample sizes needed for research with hard-to-reach populations. Topics will include formative assessments (key informant interviews and focus group discussions), census mapping and enumeration, reverse tracking method, RDS adjustment to the reverse tracking method (RadR), service and unique object multiplier methods, capture-recapture/multiple systems estimations, generalized network scale-up, Bayesian synthesis (the Anchored Multiplier), and national/sub-national extrapolation techniques. These will be presented in eight sessions; each session will include assignments and data-lab exercises using real examples from data collected by our team. Participants will gain practical skills in Excel, and R packages (Rcapture, dga, RDSpopsizes) for PSE projects.

#### **Quantitative bias analysis** (*elective course*)

Dr. Hoffmann will lead this course. Focusing on sampling, data collection, and counting hard-to-reach populations, this course will cover basic understanding of (information, sampling, confounding) biases, methods to quantify such biases, and running sensitivity and probabilistic bias analysis, and multiple-bias analysis methods. These topics will be presented in eight sessions; each session will include assignments and data-lab exercises using real examples from projects that our team has conducted in the past. Participants will gain practical skills in Excel and R packages (episensr, evaluate) for bias analysis.

#### **Community-based participatory research and ethnographic methods for studies of H2R populations** (*mandatory course*)

Dr. Arayasirikul will lead this course to introduce community-based participatory research (CBPR) as a framework for understanding practical methods to engage H2R populations in public health research. Presented in five sessions, participants will engage with seminal readings and deep discussions about CBPR principles, values,

ethical considerations, participatory methods, and best practices for engaging communities in the enterprise of public health research. Presentations of work conducted by our team will be highlighted, as well as interactive exercises for participants to discuss and evaluate their own experiences of engaging H2R populations in public health research.

**(2) Mentoring**

Mentoring is a large component of this program, both in supporting scholars to gain the skills to conduct research with hard-to-reach populations, and to support the enrolled mentors to build their mentoring skills needed for training the next generation of investigators in research for hard-to-reach populations. Using a team-based mentorship model, enrolled scholars, mentors, and UCSF faculty mentors with similar research areas will be grouped to provide support and encourage networking and peer-peer discussion.

**(3) Research project**

During the six-month program, scholars will be asked to move forward a research project and prepare one of the following by the end of the program: (1) a draft independent research proposal, OR (2) a draft sampling protocol, OR (3) a completed analysis and tables/figures for developing a first-authored publication. [This will not be a required program requirement for mentors.]

**(4) One talk on an already published hard-to-reach research paper**

In pairs, scholars will prepare one talk on paper on a hard-to-reach population to present to the rest of the cohort. They will critically review the methods and discuss the findings in the paper, and suggestion to improve it. [This will not be a required program requirement for mentors.]

**Program Schedule**

Below is the expected program schedule; dates may be subject to change.

Date*	Topic	Details	Approximate Time Requirement (hours)
1 Sep. 2023	Orientation day	1 session, mandatory <sup>1</sup>	1.5
5-15 Sep. 2023	H2R sampling course	10 sessions, mandatory <sup>1</sup>	15
2-27 Oct. 2023	Population size sampling course	8 sessions, elective	12
30 Oct-30 Nov. 2023	Bias analysis course	8 sessions, elective	12
4-15 Dec. 2023	Community engagement research course	4 sessions, mandatory <sup>1</sup>	6
Jan to Feb 2024	2-month H2R research project to apply H2R methods and relevant skills	1 weekly session, mandatory <sup>1</sup>	36 for the 6-months program

\* No class on Nov. 20-24

Program expectations on the time requirements for enrolled scholars and mentors		
Program Components	Scholar Approximate Time Requirement (hours)	Mentor Approximate Time Requirement (hours)
Courses	47	47
Asynchronous work	50	50
Mentor meetings	36 (1 2hr meeting per week)	36 (1 2hr meeting per week)
Research Project	100 (~4hr per week)	NA
TOTAL	233	133

**Target audiences**

Students, faculty, or employees at UCSF, or at colleges, universities, or health departments in the United States are eligible to apply to the H2R program. People can join the program in one of the following capacities:

- As a **scholar** (“scholars” are any persons who conduct or anticipate conducting research or monitoring and evaluation of programs for hard-to-reach populations, including graduate students of public health, social welfare, or other relevant degree programs)
- As a **mentor** (“mentors” are any persons who supervise, mentor, or teach persons who conduct research or monitoring and evaluation for hard-to-reach populations)

**Scholar Selection and Requirements**

Scholars will be selected based on:

- Commitment to complete the 6-month program requirements.
- A statement of interest matching the H2R program purpose, including how participation in the program will help advance their training and career goals and motivation to pursue education and research among hard-to-reach populations.
- A potential research topic with at least one hard-to-reach population.
- If currently a student, a letter of support from an academic advisor or Dean’s office attesting to the scholars’ good academic standing and future promise as researchers among hard-to-reach populations. A minimum GPA is not required.
- If currently staff of a public health or research organization, a letter of support from a supervisor attesting to the scholar’s performance, experience, and commitment to working with hard-to-reach populations, and authorization for the time required to attend the H2R program.

Selected scholars will be required to:

- Participate in the 6-month program schedule above.
- Meet with their mentors and faculty at least twice a month during the 6-month program, either in-person or virtually
- Complete a (1) draft independent research proposal, OR (2) draft sampling protocol, OR (3) analysis of data to produce tables and/or figure(s) suitable to develop a manuscript for publication in a scientific journal.

Scholars can apply for either Track A or Track B:

- **Track A** is for scholars who are implementing or designing research with a hard-to-reach population as part of their work, research, capstone project, thesis dissertation, or for their participation in a funded research project. During the 6-month period, mentorship

will focus on designing, piloting, and troubleshooting sampling, recruitment, and engagement of participants in their research projects. Scholars will also be supported and mentored for data monitoring, quality control, and analysis.

- **Track B** is for scholars who do not have a previously approved or funded research project. Through Track B, the H2R program will provide options to gain research experience, including secondary analysis for first-author publications, hands-on experience with primary data collection, integration of ancillary studies into their faculty's ongoing research, and the design of their individual research projects focusing on methods of sampling, counting, and engagement of participants for the 6-month H2R research project activities. Scholars will work with their mentors and faculty to choose an existing hard-to-reach population dataset or ongoing study.

By the end of this program, scholars will have:

- Gained knowledge and skills to design and implement research studies among hard-to-reach populations.
- Received hands-on research and data analysis experiences.
- Prepared (1) a draft independent research proposal, OR (2) a draft sampling protocol, OR (3) completed the analysis and tables/figures for developing a first-authored publication.
- Developed an individual career plan with educational goals.
- Participated in networking opportunities with faculty, mentors, senior researchers, and scholars with similar research interests.

### **Mentor Selection and Requirements**

Mentors will be selected based on:

- Being an assistant professor or higher, being a public health agency director or supervisor, or researcher in a professional or academic position.
- Availability to complete the 6-month program requirements.
- A statement of interest matching the H2R program purpose, including how participation in the program will help advance their mentees training and career goals, with an openness to pursue education and future research among hard-to-reach populations.
- A letter of support from a supervisor or academic advisor attesting to their interest and future promise as mentors to researchers among hard-to-reach populations

Mentors will be required to:

- Participate in the 6-month program schedule above.
- Meet with up to 3 mentees/scholars and H2R faculty twice a month during the 6-month program, either in-person or virtually.
- Collaborate monthly with other program mentors in the Mentorship Skill Development Workshops.

By the end of this program, mentors will have:

- Gained knowledge and skills to design and implement research studies among hard-to-reach populations.
- Received support from a faculty and observed as a role model on how to provide mentorship and support to a scholar doing research studies among hard-to-reach populations.
- Improved their mentorship skills.

**Participation format**

- In-person (at Mission Hall UCSF: 550 16<sup>th</sup> street, San Francisco, CA 94158)
- Online (via Zoom)

**Financial Support**

Financial support may be available for up to 9 eligible scholars (up to \$5000 each) and up to 3 eligible mentors (up to \$4500 each). This is for your time and costs associated with participating in the program. Applicants can identify if they want to be considered for this financial support during the application process.

**Questions**

For any questions, please contact the H2R Program Manager [Maeve Forster, [h2r@ucsf.edu](mailto:h2r@ucsf.edu)]

## APPLICATION FOR SCHOLARS AND MENTORS

Below is an offline version of the application form. Please review before submitting your application electronically (we only accept applications that are submitted electronically). Please start submitting your online application when you have all items ready.

### Applicant name

Full Name:

Pronoun:

### Applicant contact information

Email Address:

Confirm Email Address:

Current (Mailing) Address:

Phone:

### Are you applying as a scholar or a mentor to the H2R program?

- As a scholar
- As a mentor

### Demographics and background

Why do we collect this data? This section helps us to track the diversity of our applicants across different demographic characteristics.

Age category

- 18-25
- 26-35
- 36-45
- 46-50
- 50+
- Do not want to provide

Ethnicity:

- Hispanic/Latino
- Non-Hispanic
- Do not want to provide

Racial categories (*check all that apply*):

- American Indian or Alaska native
- Asian
- Black or African American
- White
- Native Hawaiian or Other Pacific Islander
- Other
- Do not wish to provide

Country of birth *write in option*

What language do you speak at home? *write in option*

Sex at birth:

- Female
- Male



- Non-binary
- Intersex
- Additional
- Don't now
- Do not wish to provide

Gender identity:

- Genderqueer
- Man/Male
- Non-binary
- Transgender
- Two-spirit
- Woman/female
- Additional: \_\_\_\_\_
- Don't know
- Do not wish to provide

Sexual Orientation:

- Lesbian or gay
- Straight (that is, not lesbian or gay)
- Bisexual
- Two-spirit
- Same gender loving
- Asexual
- Pansexual
- Additional: \_\_\_\_\_
- Don't know
- Do not wish to provide

Disabilities:

- No
- Yes
- Do not wish to provide

If any disabilities, please select all which apply:

- Mobility/Orthopedic Impairment
- Hearing
- Visual
- Other: \_\_\_\_\_
- Do not wish to provide

Disadvantaged background:

An individual is considered to be from a disadvantaged background if they meet two or more of the following criteria:

1. Were or currently are homeless, as defined by the McKinney-Vento Homeless Assistance Act (Definition: <https://nche.ed.gov/mckinney-vento/>);
2. Were or currently are in the foster care system, as defined by the Administration for Children and Families (Definition: <https://www.acf.hhs.gov/cb/focus-areas/foster-care>);
3. Were eligible for the Federal Free and Reduced Lunch Program for two or more years (Definition: <https://www.fns.usda.gov/school-meals/income-eligibility-guidelines>);

4. Have/had no parents or legal guardians who completed a bachelor's degree (see <https://nces.ed.gov/pubs2018/2018009.pdf>);
5. Were or currently are eligible for Federal Pell grants (Definition: <https://www2.ed.gov/programs/fpg/eligibility.html>);
6. Received support from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) as a parent or child (Definition: <https://www.fns.usda.gov/wic/wic-eligibility-requirements>).
7. Grew up in one of the following areas: a) a U.S. rural area, as designated by the Health Resources and Services Administration (HRSA) Rural Health Grants Eligibility Analyzer (<https://data.hrsa.gov/tools/rural-health>), or b) a Centers for Medicare and Medicaid Services-designated Low-Income and Health Professional Shortage Areas (qualifying zip codes are included in the file). Only one of the two possibilities in #7 can be used as a criterion for the disadvantaged background definition.

Are you from a disadvantaged background?

- Yes
- No
- Do not wish to provide

**Education background**

Complete this table for up to your most recent three degrees.

School Name	Date (MM/YY to MM/YY)	Major	Degree

Are you a first generation student?

- Yes
- No

Are you currently completing an education program?

- Yes
- No

If yes, please let us know the current school in which you are enrolled, the program you are completing, and the current school address: *(open answer)*

**Job Background**

Please provide the following information for your most recent job: (1) organization name, (2) dates of employment (MM/YY to MM/YY), (3) your position, and (4) your role.

Are you currently employed?

- Yes
- No

### Your availability

The H2R program may have two cohorts of participants, one who will attend the sessions in-person at the UCSF Mission Bay Campus and one who will attend online, depending on the pool of applicants selected for the program, their choices (in-person vs. online), and changing safety conditions for COVID.

With the information you have now, would you be able to attend the entirety of the 6-month mentored H2R training program as described on the first page? *Select one*

- Yes
- No (*with write in option for clarification, e.g., any planned and unavoidable absences*)

How would you be able to attend the H2R training program? *Select one*

- Entirely In-person
- Entirely Online

Please identify if you would like to opt-out of any of either of the elective courses.

- Population size estimation course: 2-27 Oct. 2023
- Bias analysis course: 30 Oct to 30 Nov. 2023

### Financial Support

Financial Support may be available for a limited number of eligible scholars (up to \$5000) and mentors (up to \$4500). Your answer to this question does not determine your eligibility and only gives us a sense of available resources. You will have an opportunity to apply for funds later in the process.

Would you like to be considered as a recipient for any available financial support?

- Yes
- No

### Your potential UCSF faculty

Please provide up to three UCSF faculty (including those from H2R program team) whose research and expertise align with your H2R population research area.

Links to UCSF faculty list/biographies are below, for your reference. **Please do not reach out directly to faculty members.**

- [PhD Program Faculty](#)
- [Master Program Faculty](#)
- [GSI Faculty](#)
- H2R program team (listed in the first page)

UCSF faculty's name	Faculty's email	Faculty's area(s) of research	Faculty's H2R population of interest
1.			
2.			
3.			

**IF “As a Scholar” IS SELECTED:**

**Your track choice**

If you are a scholar, in which track do you want to be enrolled?

- Track A:** This is for scholars who are doing hard-to-reach population research as part of their work, research, capstone, dissertation or an already funded research project.
- Track B:** This is for scholars who do not have an already approved or funded H2R research project.

**Letter of support**

- If you are currently a student, please upload a letter of support (as .pdf file only) from an academic advisor or Dean’s office attesting to your good academic standing and future promise as researchers among hard-to-reach populations. A minimum GPA is not required.
  - Name and relationship of recommender:
- If you are not a student, please upload a letter of support (as .pdf file only) from an academic or career advisor attesting to your interest and future promise as a researcher among hard-to-reach populations.
  - Name and relationship of recommender:

**IF “As a Mentor” IS SELECTED:**

**Your current experience**

Are you an assistant professor or higher, a public health agency director or supervisor, or researcher in a professional or academic position?

Select one:

- Yes
- No

**Your mentoring availability**

Are you available to meet with your scholar twice a month during the 6-month program? *Select one.*

- Yes
- No

**Letter of support**

Please upload a letter of support from a supervisor or academic advisor attesting to your interest and future promise as a mentor to researchers among hard-to-reach populations. As a reminder, you are not required to have your own research idea for research on hard-to-reach populations and will be matched to scholars to work with them on their hard-to-reach population research. Please upload a .pdf file.

## **Curriculum Vitae**

Please upload your Resume or CV (max 5 pages) as a .pdf file.

## **Statement of purpose**

To help us get to know you, your interest in the H2R program, and your aspirations for future work or research with hard-to-reach population(s), please provide a succinct response for each of the numbered topics below. Each topic has questions or themes to help guide your answer, but you do not have to specifically address all of them, and you can include other information that you feel is relevant.

1. Interest in the H2R program (up to 1400 characters or about 200 words):

- How did you become interested in H2R populations work or research?
- Why did you select our H2R training program in particular?
- Why complete the H2R training at this stage in your career trajectory?

2. Interest in H2R population work or research (up to 1400 characters or about 200 words)

- Please briefly provide additional information on the research you are either planning on conducting or are interested in pursuing, and where you are in the process.
  - Are you working on a research proposal? Have you secured funding? Is research currently underway? Are you working on the analysis?
- Please provide a description of the hard-to-reach population you are interested in.

3. Post-training plans (up to 1400 characters or about 200 words):

- What do you hope to gain from this program?
- What are your career goals after graduation?
- How will this program help you achieve your educational or career goals?
- If you are unsure of your next steps, how do you see this program helping you to decide what those might be?

4. Additional information (up to 1400 characters or about 200 words):

You are welcome to share any other information that is not included in your CV or elsewhere in your application that might be relevant for the selection committee to know, such as:

- What unique characteristics you bring and can contribute to a cohort of scholars.
- Any other area of potential concern, such as your availability, work, and life balances.
- Any financial need that you may have to attend the H2R training program.

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Thank you for completing the application for the H2R Training Program. Your response has been recorded. You should receive a decision by May 31.