# 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.

There is NO COST to attend this program. We also provide financial support to scholars (up to $5000 each) and to mentors (up to $4500 each).

**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-Engaged Research Course Director)
- Erin Wilson, Wayne Steward, and Mara Decker (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: 31 January2024
- Application close: 31 March 2024
- Acceptance decision: 31 May 2024
- Anticipated course start date: 1 September 2023

**Who can Apply**

Anyone with a bachelors degree or equivalent public health work experience is 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)

**Program Components**

H2R is a 6-month program to includes (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 developments 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, RDSpopsize) 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, evalue) 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-engaged research (CER) and frameworks for understanding practical methods to engage H2R populations in public health research. Presented in four sessions, participants will engage with seminal readings and deep discussions about Cer 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 hardly reached 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. Mentors will also have access to training resources and participate in a half-day mentor training.

**(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 heard-to-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 and times may be subject to change.

| Date* | Topic | Details | Approximate Time Requirement (hours) |
|---|---|---|---|
| 2 Sep. 2024 | Orientation day | 1 session, mandatory[1] | 1.5 |
| 5-15 Sep. 2024<br>• Sept 3: 10am - 12pm<br>• Sept 4: 10am - 12pm<br>• Sept 5: 10am - 12pm<br>• Sept 6: 10am - 12pm<br>• Sept 9: 10am - 12pm<br>• Sept 10: 10am - 12pm<br>• Sept 11: 10am - 12pm<br>• Sept 12: 10am - 12pm<br>• Sept 13: 10am - 12pm | H2R sampling course | 10 sessions, mandatory[1] | 15 |
| 1-18 Oct. 2024<br>• Oct 2: 10am - 12pm<br>• Oct 3: 10am - 12pm<br>• Oct 4: 10am - 12pm<br>• Oct 7: 10am - 12pm<br>• Oct 8: 10am - 12pm<br>• Oct 9: 10am - 12pm<br>• Oct 14: 10am - 12pm<br>• Oct 15: 10am - 12pm<br>• Oct 16: 10am - 12pm | Population size sampling course | 8 sessions, elective | 12 |
| 6 - 30 Nov. 2024<br>• Nov 6: 10am - 12pm<br>• Nov 7: 10am - 12pm<br>• Nov 8: 10am - 12pm<br>• Nov 12: 10am - 12pm<br>• Nov 13: 10am - 12pm<br>• Nov 14: 10am - 12pm<br>• Nov 26: 10am - 12pm<br>• Nov 27: 10am - 12pm<br>• Nov 38: 10am - 12pm | Bias analysis course | 8 sessions, elective | 12 |
| 4-15 Dec. 2024<br>• Dec 3: 10am - 12pm<br>• Dec 4: 10am - 12pm<br>• Dec 5: 10am - 12pm<br>• Dec 6: 10am - 12pm | Community engagement research course | 4 sessions, mandatory[1] | 6 |
| Jan to March 2025 | 3-month H2R research project to apply H2R methods and relevant skills | 1 weekly session, mandatory[1] | 36 for the 6-months program |

* No class on Nov. 18-22

| 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 |

**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:
- o Gained knowledge and skills to design and implement research studies among hard-to-reach populations.
- o Received hands-on research and data analysis experiences.
- o 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.
- o Developed an individual career plan with educational goals.
- o 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.
- Participate in mentor training opportunities

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 16th 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]

# 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 only submit your online application once you have all items ready; you will not be able to save progress and resume at another time.

**Applicant name and Contact Information:**
Pronouns:
First Name:
Last Name:
Email Address:
Confirm Email Address:
Current work Address:
Current home Address:

**Are you applying as a scholar or a mentor to the H2R program?**
- As a scholar
- As a mentor

**Demographics and background**
Please use the following questions to provide your demographic information.

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

What is your current age?
- 18-25 years old
- 26-35 years old
- 36-45 years old
- 46-50 years old
- 50+ years old
- Do not want to provide

What is your ethnicity?
- Hispanic/Latino
- Non-Hispanic
- Do not want to provide

Race (select 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

What is your country of birth? *write in option*

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

What was your sex at birth?
- o Female
- o Male
- o Non-binary
- o Intersex
- o Additional
- o Don't now
- o Do not wish to provide

What is your gender identity?
- o Genderqueer
- o Man/Male
- o Non-binary
- o Transgender
- o Two-spirit
- o Woman/female
- o Additional: _____
- o Don't know
- o Do not wish to provide

What is your sexual orientation?
- o Lesbian or gay
- o Straight (that is, not lesbian or gay)
- o Bisexual
- o Two-spirit
- o Same gender loving
- o Asexual
- o Pansexual
- o Additional: _____
- o Don't know
- o Do not wish to provide

Do you have a disability we should be aware of?
- o No
- o Yes
- o Do not wish to provide

If you do, please select those which apply:
- o Mobility/Orthopedic Impairment
- o Hearing
- o Visual
- o Other: _____
- o Do not wish to provide

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?
- o Yes
- o No
- o Do not wish to provide


**Applicant Education background**
Please answer the following questions to provide information on your educational accomplishments to date.

Please provide the following information on your most recent three degrees.

| Institution Name | Date (MM/YY to MM/YY) | Major | Degree |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Are you a first generation student?
- o Yes
- o No
- o Do not wish to answer

Are you currently completing an education program?
- o Yes
- o 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)*

**Application Job Information**
Please answer the following questions to provide information on your recent job history.

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?
- o   Yes
- o   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? If no, please provide an explanation.
- ☐   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 either of the elective courses.
- ☐   Population size estimation course: 2-27 Oct. 2023
- ☐   Bias analysis course: 30 Oct to 30 Nov. 2023
- ☐   I don't want to opt out (I want to participate in these two elective courses)

**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 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. During the 6-month period, mentorship will focus on designing, piloting, and troubleshooting the sampling, recruitment, and engagement of participants in their H2R population research projects. Scholars will also be supported and mentored for data monitoring and diagnostics and data analysis.
- ☐ **Track B:** This is for scholars who do not have an already approved or funded H2R research project. The H2R Program provides several avenues 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.

**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.

- 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.

**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.