



Published in final edited form as:

Am J Public Health. 2025 February ; 115(2): 201–208. doi:10.2105/AJPH.2024.307875.

Engaging low-wage workers in health and wellbeing survey research: Strategies from five occupational studies

Erika L. Sabbath, ScD^{*1,2}, Meg Lovejoy, PhD³, Daniel K. Schneider, PhD⁴, Yaminette Diaz-Linhart, PhD⁵, Grace DeHorn⁵, Susan E. Peters, PhD²

¹Boston College School of Social Work, Chestnut Hill, MA

²Center for Work, Health, and Wellbeing, Harvard T.H. Chan School of Public Health, Boston, MA

³Harvard Center for Population and Development Studies, Harvard T.H. Chan School of Public Health, Boston, MA

⁴Harvard Kennedy School, Cambridge, MA

⁵Institute for Work and Employment Research, Massachusetts Institute of Technology Sloan School of Management, Boston, MA

Abstract

Without perspectives of low-wage workers in studies of worker health and wellbeing, scholars cannot comprehensively assess occupational health (e.g. injury, mental health, wellbeing) and equity impacts of workplace exposures and interventions. Yet researchers and practitioners have noted particular challenges of engaging low-wage workers in worksite-based health survey research, above and beyond secular trends of declining survey response rates. Despite documented difficulties in recruiting low-wage workers for surveys, little scholarship has described strategies for improving their engagement and response rates. Between 2020–2024, we have overseen survey data collection from multiple studies of worker health and wellbeing, in industries ranging from healthcare to fulfillment centers to food service, with study populations either partly or fully composed of low-wage workers. In this Analytic Essay, we present case studies from five research projects. For each project, we describe how we identified barriers to worker engagement, explain specific strategies used to address those barriers, and assess the effectiveness of these actions. We summarize overall findings across the five studies, providing recommendations for scholars undertaking public health survey data collection in low-wage working populations.

* Address correspondence to Dr. Sabbath, Boston College School of Social Work, 140 Commonwealth Avenue, Chestnut Hill, MA 02467, erika.sabbath@bc.edu.

Contributors: Drs. Sabbath and Peters developed the concept for this Analytic Essay and convened the author group. All authors drafted narratives for the studies they led. Dr. Sabbath drafted the overall manuscript. All authors edited the manuscript.

Conflicts of interest: None to declare.

Human Participants Protection: Human subjects approval was provided by Institutional Review Boards at Mass General Brigham (Boston Hospital Workers Health Study), Brandeis University (Community Health Workers Study), the Harvard Kennedy School (Shift Project), Massachusetts Institute of Technology (Fulfillment Center Intervention Study), and the Harvard T.H. Chan School of Public Health (Work Organizational Health Study).

Introduction

Work is an established social determinant of health (1–4). In the United States, low-wage workers—those in the bottom 30% of the income distribution (5)—have higher rates of occupational illness and injury, less access to workplace benefits such as health insurance, and greater economic precarity (6,7). Additionally, low-wage work is more common among those minoritized by race, ethnicity, and immigration status. Exposures and experiences associated with low-wage work may also amplify other health risks (8).

To identify and address work-related health hazards and associated health outcomes, occupational health practitioners and scholars often collect survey data directly from workers to learn about their work experiences, exposures, and health. While chemical and physical hazards can be measured environmentally, self-report surveys are critical tools for assessing how workers perceive their psychosocial work environment, as well as measuring health outcomes such as pain, injury, sleep, mental health, and wellbeing.

Given the central role of organizational policies and practices in shaping health and wellbeing (9,10), it is particularly important to conduct research with workers from specific workplaces or employers, versus broad population-level samples asking working people about their working conditions and health. However, scholars have long noted challenges of recruiting workers for occupational health surveys, including survey overload, lack of perceived autonomy to respond during work time, and time pressure (11–13). These challenges take place within a secular trend of declining survey response rates (14,15), amplifying recruitment challenges. In studies of mixed-wage or low-wage workforces, response rates may be disproportionately low among workers who have low literacy, high fears of retaliation, or unmanageable workloads—the very factors that may be associated with exposure to workplace health hazards (16). Increasing use of email-based survey recruitment for worksite-based studies may induce response bias by privileging white-collar workers (who regularly access work email) over blue-, brown- and pink-collar workers who do not have or use institutional email accounts. To produce research that reflects experiences of these vulnerable workers, researchers must carefully consider how to engage low-wage working populations in research.

While some occupational health scholars describe innovative worker recruitment practices within their research manuscripts (17–19), a limited body of research focuses on strategies for improving response rates to occupational surveys specifically. Reports of successful strategies mirror those of non-occupational surveys (20), including pre-paid incentives, provision of multiple response modalities (e.g. paper, electronic), and monetary incentives (11,12,21,22). Despite this concrete, data-driven guidance (11,12,20–22), multiple knowledge gaps remain. Specifically, strategies may be most applicable to high- or moderate-wage workers with high literacy and whose jobs involve regular email access. Many strategies pertain to population-based, versus worksite-based, study designs. Finally, given rapidly changing technology norms, strategies from even ten years ago (e.g. phone surveys) may be outdated.

Over the past five years, we have fielded multiple surveys of low-wage workers to assess determinants of worker health and wellbeing. These studies span multiple industries (fulfillment centers, healthcare, food service); encompass multiple employment and work arrangements; employ workers from diverse social and demographic groups; and include both employer-researcher partnerships and direct worker sampling. Through these studies, we have learned recruitment strategies that were particularly effective (and ineffective). Our goal in this Analytic Essay is to synthesize experiences from five research projects so that other scholars can apply our recommendations to more effectively recruit low-wage participants.

Case studies of strategies to improve response rates from low-wage workers in occupational health research

High-touch recruitment: The Boston Hospital Workers Health Study

Study design and sample: The Boston Hospital Workers Health Study (BHWHS) is a longitudinal occupational cohort study of over 27,000 hospital workers at two large academic medical centers in Boston (23). In periodic surveys of a random sample of workers, we measure working conditions, stressors, health, and wellbeing, with surveys directly linkable to administrative data (24–26). In 2023, we expanded the cohort from our historical population of patient care workers (nurses, low-wage nursing assistants) to include low-wage service workers at the hospitals (environmental services, patient and materials transport).

Survey development and data collection: We conducted formative qualitative interviews with workers and managers from low-wage groups. Interviews informed survey content, built relationships and trust with managers, and identified potential barriers to participation (e.g. concerns with emailed surveys being mistaken for phishing).

The survey was distributed electronically to workers at their institutional email address from June 2023–January 2024. It was available in English, Spanish, Haitian Creole, and Portuguese and designed to take 30 minutes or less. Respondents received a \$20 Amazon claim code after completion, sent to their institutional email address.

Challenges and strategies: The database linkage component of BHWHS adds methodological strength, but presented barriers to survey response because a survey link unique to the workers' study identification number had to be sent by email. Workers that did not regularly use work email struggled to navigate their email and the survey, or did not understand certain questions, even in their preferred language. To address this, we reserved a conference room with institutional laptops, mirroring processes for mandatory hospital trainings. Managers helped us determine optimal times for our team to sit in the room, explain the study, and help workers access their email. This strategy increased the response rate among environmental services workers by five percentage points, from 18% to 23%. In contrast, our initial approach of scheduled reminder emails to this group, without accompanying team visits or support, yielded an Increase of <1 percentage point per reminder.

For unit-based workers (nurses, nursing assistants), study team members visited inpatient units (n=149 units across the two hospitals) with flyers and study-branded candy to leave in break rooms, asking unit nurse directors to promote the survey to workers. During informal interactions with nursing assistants at these visits, the study team identified several barriers to response, even among those who reported receiving the survey: discomfort with navigating an online survey, literacy challenges, concern about permissibility of taking the survey on “work time,” and the belief that as (self-perceived) peripheral workers, their responses were not valued.

To address these challenges, the study team transitioned away from our initial approach of leaving materials in break rooms and speaking with nurse directors, and to a high-touch approach. During visits, we asked the charge nurse on each unit to pull the on-duty nursing assistant off the floor so a study team member could help them access the survey; this provided available workers with implicit manager permission to take the survey at work. After each visit, we sent emails to unit directors inviting them to tell nursing assistants about the importance of taking the survey so their voice could be heard. These approaches boosted response rate among nursing assistants from 33% to 46%, compared with increases of 1–2 percentage points with email reminders but no accompanying visits. Overall, the study had responses from 2,023 workers out of 4,618 sampled (44%), with response rates of 49% among nurses, 46% among nursing assistants, 23% among environmental services workers, and 50% among patient/materials transport workers.

- Erika L. Sabbath, Meg C. Lovejoy, Susan E. Peters

Community organizing approach: Community Health Worker study

Study design and sample: Community health workers (CHWs) improve care quality for socially and medically complex communities (27). The goal of this study was to understand how worker voice (ways that workers attempt to influence their work to meet individual and collective interests) may be associated with CHW health and wellbeing (28,29). The study took place in Massachusetts from March–November 2021.

Recruitment: We initially hoped to partner with organizations employing CHWs, but although organizations expressed enthusiasm, none opted to formally partner. Instead, we proactively used community organizing strategies for recruitment (30), including engaging with CHWs prior to the launch of the study to co-develop research questions, and building partnerships with CHWs, CHW professional associations, and employing organizations.

Challenges and strategies: We initially sent recruitment emails to hospitals, health centers, and community partner organizations, using publicly available contact information; we asked organizations to forward the email to their CHWs. We quickly found that we could not rely on these organizations, instead developing more grassroots recruitment approach. The PI built trust with CHWs by volunteering to give invited talks at community meetings at which she shared findings from prior research on CHWs and discussed wellbeing for social service professionals.

At survey launch, many CHWs were exhausted from navigating the COVID-19 pandemic, and many felt over-surveyed. We established multiple systems to engage and support them. We sent recruited participants personalized emails (versus mass email): first to send them a unique survey link, and then to offer support for survey completion. These strategies resulted in minimal missing data (94% had complete responses). We offered respondents a wide range of \$40 incentive options, including a Visa gift card or gift card from any store they wanted (postal mail or electronic), or electronic payment. Personalized communication helped build relationships between worker and researcher, increasing trust and willingness to participate.

Overall, the study had a sample of CHWs that demographically mirrored the known population of CHWs across Massachusetts (31). Of the 314 interested and eligible individuals, 220 responded (70% response rate), in contrast to a prior study of Massachusetts CHWs with a response rate of 36% (31).

- Yaminette Diaz-Linhart

Social media engagement: The Shift Project

Study design and sample: The Shift Project (32) is a repeated cross-sectional survey of hourly workers employed at 150 of the largest service-sector firms (fast food, casual dining, grocery, pharmacy, big-box stores, hardware, other retail, delivery and fulfillment) in the United States. The survey is run twice per year, with 16 waves of data collected since 2016 accumulating surveys from 250,000 hourly workers.

Using surveys, the Shift Project measures workers' self-reported wages, work schedule stability and predictability, access to paid leave, exposure to surveillance and automation, respect, harassment, job security, workers' economic security, health, and wellbeing. These data are employer-employee linked, with workers nested within identifiable firms.

Data collection methods: No accessible sampling frames of hourly workers at large U.S. service-sector firms exist. Given relational, legal, and logistical challenges associated with creating multiple employer-research partnerships to survey workers, there are formidable barriers to using employer partnerships to construct employer-employee matched survey data at scale. Thus, we developed a method to directly recruit workers at specific firms. We constructed a sampling frame using targeted advertising tools available through Meta to reach Facebook and Instagram users. Using the audience creation tool, we constructed employer-specific Meta "audiences" of workers at specific firms and then ran paid advertisements to each of these audiences, inviting users to complete the survey. Respondents were entered into a drawing to receive a \$500 gift card. Over the last 14 waves of data collection, we averaged advertising/incentive costs of \$13 per "sufficient" survey response, defined as progressing sufficiently through the survey prior to break-off to report on basic dimensions of job quality.

Challenges and Strategies: We have honed multiple recruitment strategies on Facebook and Instagram. First, recruitment ads perform best when the audience characteristic, advertising design, and advertisement message align (e.g. Facebook and Instagram

advertisements targeting Walmart workers containing a picture of a Walmart worker and a recruitment message of “Survey for Walmart workers”). Advertisements missing any of these elements were less effective for recruiting target worker populations. For example, in April of 2021, a set of recruitment advertisements were erroneously run without including employer-specific targeting, but with employer-specific recruitment language in the ad text, so the ad was shown to the general population on Meta platforms. After discovering the error, targeting was fixed and data collection restarted. Using this “natural experiment” to compare efficacy of targeting, we found that untargeted advertisements produced 17 responses (0.3% of clicks), versus 473 responses (10% of clicks) when correctly targeted.

Second, fraudulent, low-quality data are concerns with online data collection (33). We assessed IP address and included “honeypot” questions to guard against bots; we have found no evidence of fraudulent responses across 16 waves of data collection. We also included basic attention checks; 91% of respondents pass checks, in excess of rates reported in online opt-in survey panels (33). We, like other researchers (34), find that guaranteed incentives (versus random prize draws) attract fraudulent responses.

Beyond imperfect coverage of the sampling frame and low response rates, Meta’s algorithm delivers recruitment advertisements non-randomly. Non-random selection is a common problem in modern survey research, often managed by post-stratification and weighting (35). Asking core demographics upfront allows for maximum preservation of sample size when weighting. While the sampling is non-probability, we benchmark Shift data to gold standard sources (e.g. National Longitudinal Survey of Youth-97, Current Population Survey (CPS)) to gauge representativeness. Before weighting, the Shift sample is biased on univariate measures of gender, education, and race/ethnicity, though not age, wages, or job tenure. However, the sample accurately represents bivariate associations (e.g. between job tenure and wages), as estimated in NLSY-97 and CPS (36).

- Daniel C. Schneider

Engaging workers in pressured environments: The Fulfillment Center Intervention Study

Study design and sample: The Fulfillment Center Intervention Study is a group-randomized controlled trial, comparing participants in worksites randomized to a participatory intervention (Health and Well-Being Committees, or HaWCs) with participants working for the same firm in control sites (37). HaWCs serve as a formal voice channel where a small group of frontline workers and supervisors solicit workers’ concerns and ideas about safety, the psychosocial environment, and work organization, then develop and implement improvement initiatives. The study utilized an established research partnership with the supply chain division of a mid-sized, non-unionized U.S.-based retailer. Sixteen fulfillment centers were randomized after matching on picking technology and building size.

Survey development and data collection: Survey measurement occurred at baseline, 6 months, and 12 months. At each timepoint, all current workers in each fulfillment center received a paper invitation to complete a web-based survey. Survey packets also included a survey ID number to track repeat participation and a treat (granola bars, fruit snacks). Letters contained a QR code and link to the survey, allowing workers to take the survey

electronically. Hard copies were also sent to buildings if workers preferred. Invitations were distributed at fulfillment centers during working hours; buildings were encouraged to provide workers with time off the floor to complete the survey. Upon survey completion, participants received a guaranteed incentive (\$10–15, either a physical gift card sent to their home or an electronic card sent to their personal email). Weekly raffles were run for each building during the three-week-long survey periods, with prizes ranging from \$25–\$150. During three waves of data collection, 4,444 workers were eligible to participate; 63% participated in at least one survey (N=2813). Response rates were 48% (Wave 1), 47% (Wave 2), and 55% (Wave 3).

Challenges and strategies: Data collection coincided with pandemic-related restrictions (baseline recruitment started July 2021) which limited the research team’s ability to be on-site to establish rapport and promote the survey. Instead, supervisors and managers announced the survey, which was a challenge as they were simultaneously managing COVID-related challenges and regular work duties. The research team designated a “survey point person” within each building to be an on-site contact to distribute and promote the survey. However, this reliance on management may have made workers skeptical, dampening participation. Once social distancing rules were lifted, we encouraged town halls where everyone in the building was introduced to the study and given time to take surveys.

The organization of work and incentive structure of the firm posed unique challenges. Time off the floor is frowned upon within fulfillment centers, as managers perceive it as reducing productivity. Additionally, some sites use performance-based pay, which may have disincentivized workers from taking the survey while “on the clock” for fear of losing pay. Furthermore, the company launched their own engagement survey the same year as the study survey. The overlap created survey fatigue and difficulty for managers, who were recruiting workers for both surveys.

We adopted several strategies in response. First, regular updates on response rates were shared with our building contacts to create friendly competition for high participation; buildings that reached over 50% participation received an additional three \$100 raffle prizes. To encourage participation and combat survey fatigue in the final survey wave, we increased guaranteed incentive amounts from \$10 to \$15. There were also four \$25–\$150 raffles for participants within each site per wave. Finally, the research team extended survey timelines while in the field to maintain positive relationships with management, stagger with company-wide surveys, and avoid peak periods where time off the floor was especially challenging. We implemented all presented strategies between Waves 1 and 3; the response rate increased by seven percentage points between waves, from 48% (Wave 1) to 54% (Wave 3).

- Grace DeHorn, Meg Lovejoy

Overcoming low literacy and time constraints: The Work Organizational Health Study

Study design and sample: The Work Organizational Health Study (WOHS) was a proof-of-concept cluster randomized control trial among food service workers, designed to test whether a multilevel participatory intervention targeting work organization and

environment could be feasibly implemented and improve workers' safety, health, and well-being (38,39). Collaborating with a large multinational food service organization, we worked with ten cafeteria sites providing food service to contracted corporate clients in greater Boston. Cafeterias were randomized to either intervention or control conditions. All food service workers were eligible to complete surveys. Baseline survey data were collected July-August 2018, with follow-up in early 2020; follow-up data collection was incomplete due to COVID-19.

Survey development and data collection: During intervention development, we conducted focus groups with workers, and interviews with managers, to learn about the worker population and work environment (40). These data informed the intervention and alerted us to potential data collection barriers (e.g. literacy and language needs).

Due to reported low literacy of workers by management, surveys were conducted using an interviewer-administered protocol by two trained research assistants, one of whom was English-Spanish bilingual (16% of surveys were completed in Spanish). We hired experienced survey administrators who understood the importance of quickly establishing trust and rapport. The survey was designed to take 30 minutes or less. Survey respondents received a \$25 Amazon gift card after completion. There was a 92% response rate (120/130 eligible workers).

Challenges and strategies: Some workers had low to no reading or spoken English literacy, so in addition to hiring the bilingual survey administrator, we also created Spanish versions of all materials (e.g. recruitment posters). We were invited to attend standing morning huddles with employees; we delivered prepared huddle scripts about the survey in both languages, emphasizing privacy of responses and voluntary participation. We learned from our project champion that communication and trust between managers and staff were strained. Accordingly, pre-survey recruitment and study launch were driven by the research team, rather than managers, to communicate our independence.

Company management allowed surveys to be completed on work time; many workers had second jobs, making completion otherwise unfeasible. Because of already high workloads, we had difficulty accessing workers at times they were able to complete the survey. The research team needed to be flexible to work around peak times and unexpected catering jobs; we spent many hours waiting for employees to be available to survey. We also returned for a "cleanup" day to offer the survey to staff who had been unable to complete the survey initially.

- Susan E. Peters

Lessons learned and recommendations

These studies affirm the necessity of several standard practices within survey data collection: conducting formative research, offering multiple languages and modalities, and providing incentives. Beyond these, cases yield a set of shared recommendations that may be specifically useful to future studies of low-wage working populations.

Recommendation #1: Build trust.

The three employer-engaged studies all worked with managers both before survey launch and while the survey was in the field. These collaborations did help generate specific recruitment ideas; for example, in the Boston Hospital Workers Health Study, using the conference room for survey administration was a manager's idea. But conversations also built trust between the study team and managers; as managers are often key linkage points with workers, management trust in the research team is necessary for managers to see the value of the study and encourage their workers to respond.

However, in some teams or organizations, manager-worker relationships are strained; the appearance of the study team being aligned with management may dampen response rates or lead to inaccurate responses due to worker fear of confidentiality breaches. In such cases, trust is most effectively built with workers. Shift Project's targeting of workers with social media advertisements is an example of how research teams can circumvent potentially untrusted managers. The Community Health Workers study PI established trust with respondents by providing free webinars to workers prior to survey recruitment; this helped workers feel that she cared about their wellbeing, versus primarily valuing their survey responses.

Determining the appropriate trust-building activities for a given worksite or workgroup requires identifying, prior to survey deployment, whether a worksite has a project champion that is trusted by the workers, or conversely, whether worker-manager trust is fractured. In the Workplace Organizational Health Study, some sites had trusting worker-manager relationships; in these cases, managers were effective champions. In other sites, the research team communicated their independence from managers by providing information about the survey and fielding worker concerns regarding privacy.

Recommendation #2: Build manager support for workers to take surveys during work time.

All employer-engaged studies noted the necessity of allowing workers to complete the survey during work time—thus improving workers' likelihood of survey completion. Manager support for using work time to complete the survey was thus essential. However, permission may not correlate with uptake if not accompanied by reduction in duties to allow time to take the survey. Workers at all sites were busy; some had productivity targets for a given shift (Fulfillment Center Intervention Study), or time-sensitive catering jobs (Work Organizational Health Study), dampening participation during work time even with manager permission. Some managers within the Boston Hospital Workers Health Study scheduled extra workers for shifts when the study team would be onsite assisting with survey administration, so that workers could complete the survey without impacting the team's overall workload. In addition to providing time to complete the survey, such scheduling signaled to workers that their managers thought the study was important. Within multi-site trials or observational studies, response rates might be higher at sites with managers who undertake these practices, with implications for bias.

Recommendation #3: High-touch recruitment and support.

No worker groups in the studies regularly accessed email as part of daily job duties. Therefore, even if workers have an institutional email address as part of their employment (many do not), survey invitations may be missed. In study designs where email is unavoidable (e.g. Boston Hospital Workers Health Study), in-person wraparound recruitment helped overcome this barrier; researchers were on-site to help workers navigate their email and find the survey. Non-email modalities, such as social media recruitment (Shift Project), QR codes to take the survey on participants' own devices (Fulfillment Center Intervention Study), or interviewer-administered protocols (Work Organizational Health Study) were all effective. Regardless of modality, a high-touch approach was essential for both recruitment and survey completion.

Recommendation #4: In-person data collection.

Two studies (Fulfillment Center Study, Community Health Workers Study) undertook some or all of their data collection early in the COVID-19 pandemic, when social distancing rules prohibited non-essential personnel (e.g. study team members) from entering worksites. These studies navigated remote data collection through close partnerships with managers, who served as their proxies (see Recommendation #1 for potential downsides of this relationship). In some cases (e.g. Boston Hospital Workers Health Study), remote recruitment was ineffective.

Across most studies, in-person recruitment occurred in evenings, late at night, on weekends, early in the morning, and at other non-standard times, reaching workers during times that they might be available to complete the survey. Off-hours recruitment sessions were especially important for capturing perspectives of workers on non-standard shift schedules.

Conclusions

We hope that future research projects benefit from the strategies and principles described here. We also hope that this Analytic Essay augments broad scholarship on methods for promoting survey response by describing specific needs of low-wage worker research participants. While many empirical papers do provide general descriptions of recruitment methods, we encourage scholars of low-wage workforces to use Methods sections in their manuscripts to additionally describe specific survey recruitment activities and strategies, as we have done in the case studies here. Doing so will allow others to learn from data collection processes as well as scientific findings.

Acknowledgments:

The author group thanks the Boston-Area Work, Wellbeing, and Equity Network for the conversation that led to the writing of this paper and Maggie Woodlock for research assistance. This work is supported by the Harvard Center for Work, Health, and Wellbeing (U19 OH008861).

Biography

Erika L. Sabbath is with Boston College School of Social Work, Chestnut Hill, MA. Meg Lovejoy is with the Harvard Center for Population and Development Studies, Cambridge,

MA. Daniel K. Schneider is with the Harvard Kennedy School, Cambridge, MA. Grace DeHorn is with the Institute for Work and Employment Research, Massachusetts Institute of Technology Sloan School of Management, Boston, MA. Susan E. Peters is with the Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston MA.

References

1. Lipscomb HJ, Loomis D, McDonald MA, Argue RA, Wing S. A CONCEPTUAL MODEL OF WORK AND HEALTH DISPARITIES IN THE UNITED STATES. *Int J Health Serv.* 2006;36(1):25–50. [PubMed: 16524164]
2. Krieger N Workers are people too: societal aspects of occupational health disparities--an ecosocial perspective. *Am J Ind Med.* 2010 Feb;53(2):104–15. [PubMed: 19816887]
3. Landsbergis PA, Grzywacz JG, LaMontagne AD. Work organization, job insecurity, and occupational health disparities. *Am J Ind Med.* 2012;n/a-n/a.
4. Ahonen Emily Quinn, Fujishiro Kaori, Cunningham Thomas, Flynn Michael. Work as an Inclusive Part of Population Health Inequities Research and Prevention. *Am J Public Health.* 2018;108(3):306–11. [PubMed: 29345994]
5. Fusaro, Vincent A; Shaefer H. How should we define “low-wage” work? An analysis using the Current Population Survey : Monthly Labor Review: U.S. Bureau of Labor Statistics [Internet]. [cited 2024 Jun 11]. Available from: <https://www.bls.gov/opub/mlr/2016/article/how-should-we-define-low-wage-work.htm>
6. Leigh JP, De Vogli R. Low Wages as Occupational Health Hazards. *Journal of Occupational and Environmental Medicine.* 2016 May;58(5):444. [PubMed: 27158950]
7. Hajat A, Andrea SB, Oddo VM, Winkler MR, Ahonen EQ. Ramifications of Precarious Employment for Health and Health Inequity: Emerging Trends from the Americas. *Annual Review of Public Health.* 2024 May 20;45(Volume 45, 2024):235–51.
8. Rosemberg MAS, Boutain DM, Hsin-Chun Tsai J. Occupational health research beyond the work setting: inclusive inquiry with ethnic minority and immigrant workers. *Ethnicity & Health.* 2021 Nov 17;26(8):1242–60. [PubMed: 31074288]
9. Sorensen G, Dennerlein JT, Peters SE, Sabbath EL, Kelly EL, Wagner GR. The future of research on work, safety, health and wellbeing: A guiding conceptual framework. *Soc Sci Med.* 2021 Jan;269:113593. [PubMed: 33341740]
10. Lovejoy M, Kelly EL, Kubzansky LD, Berkman LF. Work Redesign for the 21st Century: Promising Strategies for Enhancing Worker Well-Being. *Am J Public Health.* 2021 Oct;111(10):1787–95. [PubMed: 34499532]
11. VanGeest JB, Johnson TP, Welch VL. Methodologies for Improving Response Rates in Surveys of Physicians: A Systematic Review. *Eval Health Prof.* 2007 Dec 1;30(4):303–21. [PubMed: 17986667]
12. VanGeest J, Johnson TP. Surveying Nurses: Identifying Strategies to Improve Participation. *Eval Health Prof.* 2011 Dec 1;34(4):487–511. [PubMed: 21454329]
13. Rogelberg SG, Stanton JM, Stanton JM. Understanding and dealing with organizational survey nonresponse-Introduction. *Organizational Research Methods.* 2007;10(2):195–209.
14. Wu MJ, Zhao K, Fils-Aime F. Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports.* 2022 Aug 1;7:100206.
15. Eggleston J Frequent Survey Requests and Declining Response Rates: Evidence from the 2020 Census and Household Surveys. *Journal of Survey Statistics and Methodology.* 2024 Apr 26;smae022.
16. Clark MA, Roman A, Rogers ML, Tyler DA, Mor V. Surveying Multiple Health Professional Team Members within Institutional Settings: An Example from the Nursing Home Industry. *Eval Health Prof.* 2014 Sep;37(3):287–313. [PubMed: 24500999]

17. Williams JAR, Vriniotis MG, Gundersen DA, Boden LI, Collins JE, Katz JN, et al. How to ask: Surveying nursing directors of nursing homes. *Health Science Reports* [Internet]. 2021 Jun [cited 2024 Jun 11];4(2). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8177897/>
18. Collins JE, Boden LI, Gundersen DA, Katz JN, Wagner GR, Sorensen G, et al. Workplace Integrated Safety and Health Program Uptake in Nursing Homes: Associations with Ownership. *International Journal of Environmental Research and Public Health*. 2021 Jan;18(21):11313. [PubMed: 34769830]
19. Anderson NJ, Smith CK, Foley MP. Work-related injury burden, workers' compensation claim filing, and barriers: Results from a statewide survey of janitors. *American Journal of Industrial Medicine*. 2022;65(3):173–95. [PubMed: 34897753]
20. Phillips AW, Reddy S, Durning SJ. Improving response rates and evaluating nonresponse bias in surveys: AMEE Guide No. 102. *Medical Teacher*. 2016 Mar 3;38(3):217–28. [PubMed: 26648511]
21. Avemegah E, Gu W, Abulbasher A, Koci K, Ogunyiola A, Eduful J, et al. An Examination of Best Practices for Survey Research with Agricultural Producers. *Society & Natural Resources*. 2021 Apr 3;34(4):538–49.
22. Cho YI, Johnson TP, VanGeest JB. Enhancing Surveys of Health Care Professionals: A Meta-Analysis of Techniques to Improve Response. *Eval Health Prof*. 2013 Sep 1;36(3):382–407. [PubMed: 23975761]
23. Sabbath EL, Hashimoto D, Boden LI, Dennerlein JT, Williams JAR, Hopcia K, et al. Cohort profile: The Boston Hospital Workers Health Study (BHWHS). *Int J Epidemiol*. 2018 Dec 1;47(6):1739–1740g. [PubMed: 30107500]
24. Sabbath EL, Boden LI, Williams JA, Hashimoto D, Hopcia K, Sorensen G. Obscured by administrative data? Racial disparities in occupational injury. *Scand J Work Environ Health*. 2017 Mar 1;43(2):155–62. [PubMed: 27942733]
25. Sabbath EL, Yang J, Dennerlein JT, Boden LI, Hashimoto D, Sorensen G. Paradoxical Impact of a Patient-Handling Intervention on Injury Rate Disparity Among Hospital Workers. *Am J Public Health*. 2019 Apr;109(4):618–25. [PubMed: 30789763]
26. Sabbath EL, Williams JA, Boden LI, Tempesti T, Wagner GR, Hopcia K, et al. Mental health expenditures: Association with workplace incivility and bullying among hospital patient care workers. *J Occup Environ Med*. 2018;60(8):737. [PubMed: 29538275]
27. Rodriguez NM. Community Health Workers in the United States: Time to Expand a Critical Workforce. *Am J Public Health*. 2022 May;112(5):697–9. [PubMed: 35324266]
28. LINHART YD, BISHOP C. Designing Work for Complex Care Management Programs: What Works for the Workers? In: LERA 2020 Meetings. 2020. p. 31.
29. It May Not Be Rainbows and Sunshine Every Day, but I Know I Made a Difference: Voice as a Resource for Well-Being at Work [Internet]. [cited 2024 Jun 6]. Available from: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=eo1PzOwAAAAJ&sortby=pubdate&citation_for_view=eo1PzOwAAAAJ:2P1L_qKh6hAC
30. Staples L *Roots to Power: A Manual for Grassroots Organizing*. Bloomsbury Publishing USA; 2016. 510 p.
31. Nielsen VM, Ursprung WWS, Song G, Hirsch G, Mason T, Santarelli C, et al. Evaluating the impact of community health worker certification in Massachusetts: Design, methods, and anticipated results of the Massachusetts community health worker workforce survey. *Front Public Health* [Internet]. 2023 Jan 12 [cited 2024 Jul 15];10. Available from: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2022.1043668/full>
32. The Shift Project [Internet]. 2024 [cited 2024 Jun 6]. Homepage. Available from: <https://shift.hks.harvard.edu/>
33. Peer E, Rothschild D, Gordon A, Evernden Z, Damer E. Data quality of platforms and panels for online behavioral research. *Behav Res*. 2022 Aug 1;54(4):1643–62.
34. Data@Urban. How to Tackle Fraudulent Survey Responses [Internet]. Medium. 2023 [cited 2024 Jun 6]. Available from: <https://urban-institute.medium.com/how-to-tackle-fraudulent-survey-responses-4427f271a194>

35. Cornesse C, Blom AG, Dutwin D, Krosnick JA, De Leeuw ED, Legleye S, et al. A Review of Conceptual Approaches and Empirical Evidence on Probability and Nonprobability Sample Survey Research. *Journal of Survey Statistics and Methodology*. 2020 Feb 1;8(1):4–36.
36. Schneider D, Harknett K. What's to Like? Facebook as a Tool for Survey Data Collection. *Sociological Methods & Research*. 2022 Feb 1;51(1):108–40. [PubMed: 36845408]
37. Kelly EL, Siebach K, DeHorn G, Lovejoy M The 4W Study in the Warehousing Industry: Study protocol for the 4W group-randomized control trial of a participatory workplace intervention. *PLOS ONE*. July 2024.
38. Sorensen G, Peters S, Nielsen K, Nagler E, Karapanos M, Wallace L, et al. Improving Working Conditions to Promote Worker Safety, Health, and Wellbeing for Low-Wage Workers: The Workplace Organizational Health Study. *Int J Environ Res Public Health*. 2019 Apr 24;16(8):1449. [PubMed: 31022886]
39. Sorensen G, Peters SE, Nielsen K, Stelson E, Wallace LM, Burke L, et al. Implementation of an organizational intervention to improve low-wage food service workers' safety, health and wellbeing: findings from the Workplace Organizational Health Study. *BMC Public Health*. 2021 Oct 16;21(1):1869. [PubMed: 34656090]
40. Peters SE, Nielsen KM, Nagler EM, Revette AC, Madden J, Sorensen G. Ensuring Organization-Intervention Fit for a Participatory Organizational Intervention to Improve Food Service Workers' Health and Wellbeing: Workplace Organizational Health Study. *Journal of Occupational and Environmental Medicine*. 2020 Feb;62(2):e33. [PubMed: 31815814]