



A NIOSH Center of Excellence for *Total Worker Health*<sup>®</sup>

# ANNUAL REPORT 2023 – 2024

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**The California Labor Laboratory (U19OH012293)**  
**A Collaboration of UCSF, UC Berkeley, Harvard University,**  
**and California State Department of Public Health**

**Executive Summary**

The California Labor Laboratory *Total Worker Health*<sup>®</sup> Center of Excellence (Lab) has been in existence since September 2021. In this annual report, we document how we have pursued our overall mission, the specific aims of the Evaluation and Planning and Outreach Cores, funded Research Projects and Pilot Grants Program, and engaged stakeholders beyond those with a formal role within the Lab to further the reach of the Lab.

As of October 2022 when we filed the initial Annual Report, we had a fully functioning infrastructure to support the success of the Center in all matters related to administration and had established five separate advisory groups to guide the Lab's work: the Internal Advisory Committee, the External Advisory Committee, the Community Engagement Board, the Policy Forum, and the Research Services Unit. The Lab has developed an interactive website allowing us to communicate with the public about our work and to receive input from them. Our communications program has resulted in the active engagement of over 1,500 members of the community who stay informed about our activities and are able to register for our programming.

The research projects are designed to provide an extensive look at the extent and impact of non-traditional employment throughout the California economy; an intensive look at the largest sector using such employment, the service sector; and a case study of one industry dominated by immigrants as both entrepreneurs and workers, artificial stone fabrication. All of the funded projects are on target to meet their timelines of accomplishment. The effort of the Lab's researchers to foment a new generation of investigators focused on emergent working conditions, the Pilot Grants Program, has been launched through the release of a RFA to which 23 applicants responded by submitting an application for funding. As of September 2023, eight investigators were funded to perform research consistent with the California Labor Laboratory's mission.

The Outreach Core has had a number of significant accomplishments, including the completion of a large scale scoping review of accumulated knowledge on how working conditions in traditional and emergent employment affect the health and well-being of workers; a comprehensive catalog of what other TWH Certificate programs have done as a prelude to defining our unique niche related to non-traditional employment; the completion of a comprehensive case study of how traditional practices for planning new workplaces can bring human-centered design as a primary goal to foster healthy work and workers; the initiation of a future of work program incorporating interdisciplinary principles of TWH, and the development of high impact public-facing education programs through a monthly webinar and three annual conferences.

As we enter the fourth year of the Lab's existence, we can report that the Outreach efforts are getting the Lab into the public eye, including that of legislators in DC and Sacramento. At the same time, our research projects have made enough progress in data collection and analysis to allow for presentation at professional meetings and legislative hearings as well numerous publications in peer-reviewed journals.

The CA Labor Lab continues to prioritize community and stakeholder engagement in all of its activities. To that end, a Community Engagement Board, made up of representatives of worker organizations representing low wage workers impacted by the changing nature of work, has been formed and has met

three times to provide input into ongoing work. We have also completed a Research to Practice toolkit which will support research teams in ensuring that stakeholders impacted by research are engaged in the research process as early as possible.

We have organized this report by four major overlapping functions: *the Evaluation and Planning Core*, which maintains the infrastructure to ensure the Lab's success; *the Research Program*, which describes the prevalence and impacts of emergent and traditional forms of employment; *the Outreach Core*, which sets the stage for mitigating these adverse impacts through a comprehensive set of activities; and the *Pilot Grants Program* and *Certificate Program in Total Worker Health®*, both of which seek to increase interest in the impact of emergent working conditions, focused particularly on protecting the health of workers in precarious work arrangements.

In the table below, we highlight the outputs of the Lab in its first three years of existence.

CA Labor Lab Outputs, September 2021 – October 2024
<p>Evaluation and Planning Core</p> <ul style="list-style-type: none"> <li>● Established internal and external oversight committees with regular schedule of meetings               <ul style="list-style-type: none"> <li>○ Projects revised according to oversight from external advisory committee members</li> </ul> </li> <li>● Constituted Community Engagement Board and held three annual meetings with membership               <ul style="list-style-type: none"> <li>○ Working with members to advocate for changes in law and regulation affecting workers in affected occupations and industries</li> </ul> </li> <li>● Created Policy Forum and held policy sessions at both of the Lab’s annual conferences               <ul style="list-style-type: none"> <li>○ Policy Forum involved in work with members of Congress, State of California Legislature and Executive Branch in matters related to oversight for workers in alternative arrangements, those subject to irregular shifts and on-call work, and</li> </ul> </li> <li>● Created infrastructure for monitoring progress               <ul style="list-style-type: none"> <li>○ Revised logic model governing operations in response to an evaluation of our evaluation activities</li> </ul> </li> <li>● Developed website and maintained regular communication with &gt;1,500 stakeholders</li> <li>● Launched public-facing education program of webinars and annual conferences with more than a thousand individual attendees</li> </ul>
<p>Outreach Core</p> <ul style="list-style-type: none"> <li>● Completed scoping review of impact of healthy work and workplaces in traditional and emergent working conditions.               <ul style="list-style-type: none"> <li>○ Distributed the Scoping Review Report for comment to other COEs, NIOSH colleagues, and submitting a manuscript for publication</li> </ul> </li> <li>● Made presentations to multiple academic and professional conferences regarding Total Worker Health</li> <li>● Developed and completed initial case study of using TWH principles to assist in design of academic building</li> <li>● Completed R2P toolkit for guiding community engagement</li> <li>● Initiated a Future of Work project across multiple disciplines with the goal of infusing TWH activities with interdisciplinary principles</li> <li>● Developed a proposal for the organization of a national educational Total Worker Health professional development program including core competencies for certificate program and completed review of existing programs and courses on UCSF and UCB campuses</li> </ul>

- Instituted an extensive public facing educational program consisting of monthly webinars in several series as well as three annual two-day conferences on precarity in employment, surveillance and monitoring of work, and the experience of work in contemporary employment.
  - Program has had over 1500 unique individuals attending one or more event

Pilot Study Program

- Finalized RFP (request for proposals), for release in November 2022
- Developed plan for broad dissemination of RFP to academic and non-profit institutions, including those serving under-represented minorities
- Created a peer review panel and evaluative criteria for proposals received
- Funded eight of 23 proposals received.
  - The grantees are currently presenting the results to our monthly research meeting during which they receive feedback from the Lab’s investigators and Research Services Unit.
- Issuing a second RFA in fall 2024, with plan to issue another series of grants in spring 2025

Project 1: Emergent Working Conditions

- Held summit meeting on measurement of alternative employment
- Developed set of potential measures of alternative employment arrangements
- Conducted series of key informant interviews and cognitive interviews to determine appropriateness of potential measures. Interview data will be used in paper about how people view the concept of a “job” in contemporary employment
- Pilot-tested and finalized structured survey questionnaire on work and health, including new items
- Survey of 4,000 working age Californians launched early November, 2022 and completed in May 2023
- Presented results in numerous forums beginning in October 2023
- Published a manuscript on the impact of emergent working conditions in American Journal of Industrial Medicine and another is in press on the development of our survey in the Monthly Labor Review
- Published seven data briefs on select topics relevant to project, four of which were done with involvement of State of California Labor Agency
- Disseminated data to several researchers
- Completed public use version of the data for public release in early 2024
- Designed follow-up survey and currently completing protocol for its administration in early 2025

Project 2: Inequality in Service Sector

- Completed three new manuscripts.
  - The first, published in Journal of Marriage and Family disaggregated gender wage gaps in service employment into within- and between-firm components, showing that a high proportion of the gender wage gap is due to the firms in which women work.
  - Two other publications used the database of state and local policies related to employment which has been put into the public domain. The first evaluated state paid leave policies on worker outcomes. The second evaluated whether state policies lead firms to adopt those policies across jurisdictions so that there is a positive externality of states initiating progressive policies.
- As noted, published the database of state and local policies for public usage on Github.

Project 3: CA Artificial Stone & Silicosis

- Completed assessment of educational resources for countertop fabrication workers and employers.
- Developed employer and worker questionnaires to assess silicosis knowledge and control methods used.
- Developed new educational materials for employers: 'Silicosis Air Monitoring Employer Guide' and 'Respirable Crystalline Silica Standard Overview.'
- Developed outline and draft content for Silicosis Continuing Medical Education (CME) Course.
- Established electronic case reporting of silicosis
- Published a series of papers
  - American Journal Industrial Medicine
  - JAMA Internal Medicine
  - Clinical Chest Medicine
  - New Solutions
  - MMWR
- Developed course for medical professionals, hosted at the Southern California Education and Research Center (ERC).

## Evaluation and Planning Core

Oversight for the California Labor Laboratory is the responsibility for the Lab's Evaluation and Planning Core (EPC); the EPC also serves as the musculoskeletal and circulatory systems for the Lab, providing an infrastructure to hold the components of the Lab together, to foster communication within the Lab, and to create a unified whole.

*The overarching aim of the Evaluation and Planning Core (EPC) is to ensure that CALL achieves its mission of understanding the health impacts of emergent work conditions through its research and fosters change in the use of the forms of employment that adversely affect the health of workers through its outreach. Specific aims of the EPC are to: 1) create and sustain a communication and coordination structure for the Center that will create the means for each research and outreach activity to succeed and provide a range of services that foster that success; 2) act as an incubator of change agents in research through the development of a pilot studies program and in outreach activities through the development of an interdisciplinary training program in mitigation of the adverse impacts of emergent working conditions so that the Center's mission can be furthered after its tenure is complete; and 3) to evaluate the Center's success in conducting the planned activities during its tenure and incubation of change agents beyond its tenure.*

To monitor and, if necessary, ameliorate the activities of the Lab, the EPC has constituted separate Internal and External Advisory Committees, a Community Engagement Board, a Policy Forum, and a Research Services Unit.

**The Internal Advisory Committee (IAC)**, consists of the Lab PI, Dr. Yelin, the Associate Director for Outreach, Dr. Cristina Banks, the Associate Director for Research, Dr. Harris Adamson, the Director of Community Engagement, Laura Stock, and the Lab's coordinator, Alicia LaFrance. Ima Varghese Mac, a Labor Lab staff member, attends all IAC meetings to ensure accurate meeting minutes and timely distribution of agendas. The Director of Educational Programs, Michelle Meyer, often attends these meetings to support external communication and event planning. Prior to June 2024, the meeting was also attended by the Center's former Coordinator, Laura Trupin. The IAC met weekly for the first four months of the Lab, and has met bi-weekly since to set strategy for the next period of the Lab's activities, monitor progress in each of the activities, and develop ways of maintaining ties among the Lab investigators.

The IAC is responsible for leading strategic initiatives, including selecting themes for the annual conference and guiding the Lab's interactions with the policy community and the public. Other key responsibilities of the IAC include facilitating external communications about outward-facing programs and events, oversight and improvement of the communication tools within the Center, including templates for reports and data briefs, and logos. The IAC also is responsible for ensuring timely completion of progress reports to NIOSH and the university as well as this annual report.

**The External Advisory Committee (EAC)**. The EAC is designed to provide input into the Lab's Cores and Projects as they unfold as well as to provide strategic direction to the Lab. Examples of the involvement of individual members of EAC in providing ongoing input abound. Dr. Ninez Ponce, as PI of the California Health Interview Survey (CHIS) has been an invaluable consultant to ongoing aspects and insights of the Project 1 California Work and Health Survey. Members of the EAC have also helped us make connections

for speakers at our webinars and annual conference, for example assisting us in getting Senator Padilla to speak at our second annual conference and Interim Secretary of Labor Su to speak at our third annual conference.

To meet the Lab’s aims, the EAC oversees the Lab’s strategic planning. To this end, the entire EAC and the Lab’s faculty and staff met most recently on January 26, 2024. Nearly all members of the EAC attended that meeting (members listed below). EAC members shared their perspectives on the overall goals of the CA Labor Lab and what they individually brought to the Lab’s work. There were in-depth discussions of the Shift Project’s findings about inequities in break time, and the California Artificial Stone and Silicosis Project’s potential policy interventions. The EAC will meet again in January 2025. At that meeting, the EAC will again provide a review of the California Labor Laboratory’s progress in pursuing its overall mission and in bringing its funded research and outreach activities to completion. However, the primary goal will be to present initial ideas of the evolution of the Laboratory’s focus on emergent working conditions for the next five-year cycle of funding and in how to build out the substance of the Lab given that evolution. The EAC members will also weigh in on potential membership of the EAC given the evolution of the focus.

<b>Members of the External Advisory Committee</b>		
<b>Member</b>	<b>Affiliation</b>	<b>Role in Ca Labor Lab</b>
Garen Corbett	Dir, Ca Health Benefits Review Program, UC, Berkeley	State Policy, Center Admin
Jeffrey Pfeffer, PhD	Prof, School of Business, Stanford University	Organizational behavior and health effects of work organ
Ninez Ponce, PhD	Dir, Ca Health Interview Survey, UCLA	Expertise in surveying diverse populations
Michael Reich, PhD	Prof of Econ, UC, Berkeley	Low wage and minority labor
Beth Ross, JD	Labor attorney	Legal strategy for alternative employment
Steven Shortell, PhD	Dean Emeritus, School of Public Health, UC, Berkeley	Work organization and Center Admin.
Sara Flocks	Legislative and Strategic Campaigns Director, Ca Labor Federation	Employment policy and legislative advocacy
Gervais Tompkins	Principal, Plus Gervais Architects	Design of healthy workplaces
Jora Trang	Chief of Staff and Equity, Worksafe	Community engagement and low wage employment

**Community Engagement Board (CEB).** The mission statement of the California Labor Laboratory puts community engagement at the center of Lab activities: everything we do we do in concert with our community partners to ensure that what we do is relevant to their needs. In the application for funding, we explicitly said that we would constitute the CEB as the work of the Lab began to unfold to make sure the work we do is informed by the needs of key stakeholders and that results of our research and other activities reach the impacted community.

Since the Labor Lab began, we have held CEB meetings in the Fall, with nearly all board members in attendance (members listed below). Thoughtful discussions about the Labor Lab’s work in research, outreach and policy, and its potential to impact the board’s constituents have been characteristic of these meetings. For example, at last year’s CEB meeting, we presented initial findings from California Work and

Health Survey data relevant to board members who organize with rideshare drivers. Their input in this meeting was reflected in the discussion sections of the manuscript on the impact of forms of employment published in the *American Journal of Industrial Medicine* and in one now in press in the *Monthly Labor Review*. The members have also helped us frame a form of data release – Data Briefs – that are more accessible to their constituencies due to the use of graphical formats. The members have also influenced the content of the Laboratory’s public-facing webinars and annual conference. For example, we relied on their input in the design of our most recent annual conference, *Modern Work and Workers’ Voices*, in which we centered workers’ voices to inform the public on how contemporary employment is experienced. Our 2024 CEB meeting will be held in November 2024 and will focus on interpretation and dissemination of study results from the Lab.

<b>Members of the Community Engagement Board</b>	
<b>Member</b>	<b>Affiliation</b>
Jane Thomason	California Nurses Association National Nurses United
Rocelyn De Leon-Minch	California Nurses Association
Kimberly Alvarenga	California Domestic Workers Coalition
Sara Miles	United Food and Commercial Workers (UFCW)
Ben Master	Service Employees International Union (SEIU) Fight for 15
Nicole Moore	Rideshare Workers United
Tim Shadix	Warehouse Workers Resource Center
Mitch Steiger	California Teachers Association
Ruth Silver-Taube	Legal Aid at Work
Kevin Riley	Labor Occupational Safety and Health Program (LOSH), UCLA
Jora Trang	Worksafe
Alice Berliner	UC Merced Community and Labor Center
Cassie Peabody	Maintenance Corporation Trust Fund

**Policy Forum.** The Policy Forum was designed to create interactions between the faculty and senior staff of the California Labor Laboratory and policymakers in the Legislative and Executive branches of the State and Federal government. The activities of the Forum are a key component of the Lab’s Outreach Core and are more fully described in that section of the Annual Report.

Key accomplishments over the duration of the Labor Lab include having Senator Alex Padilla provide an introductory and closing address to our 2023 annual conference and having Interim Secretary of Labor Su do the same for our 2024 conference, identifying and engaging with key legislators and executive branch officials in both State and Federal government. In February 2024, with the University of California Washington DC Office, we scheduled briefings with legislators and staff on the findings of the Lab’s projects. We now have an on-going relationship with Senator Padilla’s staff which led to a Zoom in which we outlined results from the California Artificial Stone and Silicosis (CASS) Project and discussed potential policy initiatives to protect workers in this industry.

Currently we are collaborating with the UCSF Director for State and Local Government Relations to develop engagement strategies with California elected officials to advocate for policies to prevent silicosis, a severe, incurable, and often fatal lung disease that is completely preventable. Eventually, we plan to



expand our policy engagement to federal lawmakers because of the growing evidence that the workers who fabricate countertops using artificial stone are impacted by this disease nationwide. We will be holding a briefing for members of the legislature and executive branch in winter 2025 to discuss the current status of our research and policy initiatives. California Labor Lab data have proven useful to the California Labor Agency for whom we have prepared four data briefs using the results of the California Work and Health Survey from the Lab’s Project 1. The briefs concern employment in the arts, work outcomes for older workers in the State, employment among persons with disabilities, a forthcoming one about the behavioral health workforce, specifically the magnitude and working conditions.

**Research Services Unit (RSU).** The focus of the External Advisory Committee and Community Engagement Boards are to make sure that the projects and Cores are oriented to the important issues arising from the emergence of alternative ways in which people are hired to work. The RSU is designed to provide on-going support to the Lab’s funded projects and to aid in the design and evaluation of proposed expansions of the Lab’s research endeavors through additional grants to existing investigators and the Lab’s Pilot Studies Program. The RSU includes expertise on the substantive orientation of the Lab to emergent working conditions as well as on the methodologies used in the Lab’s research projects. The RSU members attend the Lab’s monthly research meetings, providing input into the Lab’s projects at every step of completion; they also consult with Lab investigators one-on-one when needs arise. The RSU membership is listed in the table, below.

There are numerous examples of the use of the RSU members in the design of Lab research projects. For example, Dr. Blanc, an occupational health expert, provided input on measures of workplace exposures for our follow-up questionnaire for Project 1 and Dr. Katz has consulted with the Lab investigators regarding psychometric properties of selected data collection instruments. There are plans of future collaboration with Dr. Katz and with the Lab’s Director of Outreach to develop instruments that can be used to evaluate efforts to improve worker well-being.

Many of the members of the RSU will be involved in reviewing pilot project applications in the Winter of 2025, as they had previously done in in 2023. We also count on RSU members to provide support to a new cohort of pilot grantees research, as they have done in previous years. In past years, types of RSU support provided has included input on design issues, for example the trade-off between comprehensive measurement and respondent burden, to appropriate techniques for data analysis, providing key linkages for contacts relevant to their projects, and providing counsel and alternative solutions when projects do not go as planned.

<b>Membership of the Evaluation and Planning Core’s Research Services Unit</b>	
<b>Member</b>	<b>Expertise</b>
Kristen Harknett, PhD	Quantitative and qualitative research, demography, labor market measures
Carisa Harris Adamson, PhD	Ergonomics, work organization
Ken Jacobs, AB	Labor market trends and measurement
Patricia Katz, PhD	Psychometrics, survey research methods, behavioral health measures
Edward Yelin, PhD	Survey research, systematic reviews, research techniques on vulnerable groups
Paul Blanc, MD, MPH	Occupational exposures

## Outreach Core

**Cristina Banks, PhD, Director**  
**Laura Stock, MPH, Director of Community Engagement**  
**Victor Rubin, PhD, Director of Policy**  
**Monique Hosein, DrPH, Community Engagement Coordinator**  
**Michelle Meyer, Educational Coordinator**  
**Alicia Lafrance, MPH, MSW, Research Analyst**  
**Ima Varghese Mac, Research Analyst**

*The Outreach Core is the second pillar of the California Labor Laboratory (CALL) structure. The first pillar, the Center's Research, provides the evidence of the impact of emergent working conditions and the second pillar, the Outreach Core, turns that evidence into tangible, concrete, and accessible practice and policy information for public use. The Outreach Core's success rests on its ability to translate CALL's research findings into the right knowledge in the right forms to the right places. CALL's ambitious goal of describing, understanding the causes of, and mitigating the health impacts of existing and emergent working conditions with special attention paid to vulnerable workers, requires a robust and compelling outreach partner to turn this research into lasting change for good. The Outreach Core is designed to fulfill that need.*

*In the Outreach Core, we translate research into practice through the following four overlapping aims: 1) consolidation of known science across relevant fields of knowledge and California Labor Laboratory research; 2) dissemination of accumulated knowledge to stakeholder groups; 3) engagement in mitigation and prevention efforts through research to practice (R2P) process, development of intervention strategies, consultation with organizations, and development of policies; and 4) development of educational programming to inform the public, policymakers, labor, and industry and to develop a cadre of change agents who will work with these constituencies to improve the health and well-being of the working age population.*

**Consolidation of Known Science.** In the first two years of the Center, the Outreach Core conducted a multi-disciplinary scoping review, collecting and summarizing healthy work and worker wellbeing literatures. A scoping reviews is a type of literature review that is performed when the goal is to map the literature and is generally used to address broader topics. Thus, using a scoping review framework seemed apt for mapping the literature that relates to the broad list of Total Worker Health priority issues. In 2023, draft reports of the scoping review were circulated with all of the Total Worker Health COEs and presentations were shared with the Total Worker Health audience. Feedback accumulated from these audiences helped to hone and refine the messaging of the scoping review findings.

A key finding from the scoping review is that literature from several disciplines were identified as having relevance to TWH priorities but appear to be missing in the practice and application of TWH interventions. This and other findings from the scoping review have been summarized in a manuscript submitted for publication in the Journal of Occupational and Environmental Medicine in the fall of 2024. Once published, the Outreach Core will create a publicly accessible online database containing the literature citations included in the scoping review plus the primary discipline associated with each citation, summaries or abstracts of each citation, and a selection of interventions and/or best practices extracted

from the citations. We aim to enable comments for future readers to suggest new literatures that can be added to the citation list to have the potential to further inform and expand the TWH field of practice.

**Dissemination of Knowledge.** An important goal of the Outreach Core is to inform a wide range of stakeholders about the health impacts of traditional and emergent working conditions. The stakeholders include labor and industry, researchers, advocates, and policymakers at the local, state, and national levels.

One venue for the engagement with stakeholders is the Community Engagement Board, of which provides oversight for the ways the Lab involves the community in its work as well as to suggest issues for the Lab to address and, with results in hand, how to spur their more effective utilization in the communities we wish to influence. The Community Engagement Board will provide input into the expansion of the research activities of the Lab through its Pilot Studies Program grant applications.

**Community Engagement Board.** The California Labor Laboratory held the first Community Engagement Board (CEB) meeting in fall of 2022; a second was held in October 2023, and a third is planned for fall of 2024. The goals of the CEB include: providing input and guidance to the Lab to ensure that community and stakeholder interests are reflected in its overall strategies; to share knowledge and experience regarding practices and mitigation strategies; to assist in development of overall outreach and dissemination plans, including identification of audiences, outreach methods, dissemination activities; and to assist in identifying and advocating for effective policy strategies to ensure the impact of Center research. The meetings have been well attended by members of organizations representing workers affected by changing working conditions in California. The list of members appears in the Evaluation and Planning section, above.

During the meetings, members provide input on a) key issues facing their members; b) suggestions for the Lab's research agenda; c) outreach and training needs; and d) suggestions for our policy agenda. CALL staff provide updates on current activities and future plans. In the meeting planned for fall 2024, members will review the CALL Logic Model and provide input into future goals and priorities that can be incorporated into the upcoming 5-year renewal proposal.

**Research to Practice.** Research to Practice (R2P), refers to the basic principle that research needs to serve a purpose and lead to action to improve the health and safety of workers and other community members. R2P also refers to the process of incorporating systematically researched interventions and solutions for broader adoption and implementation. It also involves a 'practice to research' orientation which involves setting research agendas that originate with and respond to concerns and priorities of workers, employers, and other key stakeholders.

An important activity of the Lab in the first three years has been the development of the R2P toolkit to promote community engagement in research. This toolkit is designed to help research teams create a plan to identify and engage key stakeholders early in the research process and develop a research-to-action strategy to disseminate their most significant findings and recommended action. It also guides both researchers and communities in how to define a common set of goals for research, how to better serve community needs through this research, and how to ensure that the results have maximal effects when it is time to turn the results into actionable programs and policies.

This year, Laura Stock, Director of Community Engagement, and Dr. Monique Hosein, coordinator of UC Berkeley's Labor Occupational Health Program's (LOHP) R2P work, have finalized the R2P toolkit with the

goals of ensuring that research projects include community engagement in research activities as well as in the design and implementation of a dissemination plan. They partnered with Michelle Meyer and her staff from the Center for Occupational and Environmental Health (COEH) with expertise in instructional design to finalize the design and structure of the document. In June of 2024, the toolkit was pilot tested by one of the national centers as part of their mid-course center-wide evaluation. It was used with their project teams to help them focus on dissemination products and activities. The CALL team used results from that pilot test to refine the tool in advance of public dissemination.

Current dissemination plans of the toolkit include: posting the toolkit on the CALL website and those of other relevant organizations in fall 2024; leading a webinar in Spring 2025 on Research to Practice, with project examples and instructions on how to use the Toolkit; meeting with CALL researchers to introduce the Toolkit and promote and support efforts to engage communities in research and dissemination plans; and Dr. Hosein will be presenting a poster on the R2P Toolkit at APHA in October 2024.

**Research.** In this period, Labor Occupational Health Program (LOHP) staff involved in the California Labor Laboratory has partnered with COEH researcher, Sadie Costello, on a study, funded by Santa Clara County Office of Labor Standards Enforcement, of food service workers in Santa Clara County. The purpose of the study is to capture experiences of fast food and full-service restaurant workers relating to wage theft, health and safety, and general working conditions. The study was conducted in collaboration with the Fair Workplace Collaborative, a network of community-based organizations and workers centers in Santa Clara County. These trusted community groups were responsible for recruitment and data collection. A report summarizing findings will be completed in the fall.

Another example of research includes UC Berkeley's Interdisciplinary Center for Healthy Workplaces' (ICHW) efforts in administering an online survey created in collaboration with researchers at Norwegian University of Science and Technology. The survey measures the degree to which employees experience features of a healthy workplace. This particular version of the Healthy Workplace Index (HWI) was a short form, a version created from analyses undertaken previously by the team to identify the most discriminating items for predictive personal and organizational outcomes embedded in the survey.

The survey was administered in June to 300 UC Berkeley University Health Service staff, and 58 completed surveys were returned. Analyses were conducted based on the 58, and the attached report describes the results and implications of the survey responses. The plan is to eventually administer the HWI to all UC Berkeley staff, and then it may be rolled out to all staff across University of California campuses as part of the Healthy Campus Initiative under Associate Vice Provost for the Semel Healthy Campus Initiative Center based in UCLA.

**Mitigation and Prevention Efforts.** The Lab has completed an initial case study for applying the basic principles of *Total Worker Health*<sup>®</sup> to the process of designing and building a new workplace. This first study focuses on a more traditional work setting and will be paired with another case study which focuses on non-traditional employment as part of the Center's effort to compare work across traditional and non-traditional employment.

The Lab worked with the Hobby School of Public Affairs (HSPA) at the University of Houston (UH) as a test case for how to apply the basic principles of *Total Worker Health*<sup>®</sup> to the development of a new educational building in order to build into the new structure spatial and behavioral components that prevent illness and injury and promote occupant health, safety, well-being, and productivity. In the history of building construction on the UH campus, occupant physical and behavioral health and well-being have

not been considered significantly at the early planning stage. The Lab was invited by the School Dean and Building Committee to collaborate with the Facilities & Construction Unit in plan development and most important, to lead the effort in determining occupant needs, potential workplace stressors, and work context factors that were important for occupant health, well-being, and productivity and should be included as critical components of the building plan. Over a period of nine months, Dr. Banks with the assistance of Drs. Alan Witt and Dustin Maneethai of UH, devised a pre-design process for collecting essential information from future building occupants and integrating occupant data into the Facilities & Construction Unit's pre-design plan. Occupant data were collected using a new methodology designed specifically for this purpose and then translated into building design requirements that meet occupant needs and preferences. The pre-design process consisted of conducting a "building vision" workshop, developing and administering work and workplace surveys, analyzing occupant data with respect to occupant experience and space requirements, summarizing survey findings, and issuing recommendations to the Facilities & Construction Unit and outside design consultants (Cannon Design) for utilization in the planning process.

Specifically, the following actions were accomplished:

- Development and delivery of a "building vision" workshop with Hobby School faculty, staff, and students (5 hours) which generated important information regarding the desired "look" and operation of the building in order to create an inclusive and highly engaging culture; a comfortable, safe and productive place to work; and a work experience that values flexibility, diversity of ideas and perspectives, and caring towards all members of the Hobby School community.
- Development and administration of a "work analysis" survey that generated information regarding each occupants' work activities (e.g., high concentration tasks, communication of confidential information, teaching and coaching, influencing others), work context factors (e.g., quiet, separation from others, stimulating environment, resource-rich), amount of time spent across categories of work activities (e.g., percentage of time spent across a typical week), and non-work amenities required to support occupant satisfaction and commitment to the organization. This survey was specifically designed to collect information that had workplace design implications, and the data analysis generated information that could be used to specify building design requirements such as the need for private office space, a café for socializing, lounges for students and faculty to mix, lounges for staff and faculty to mix, and private and confidential research spaces for government-sponsored research groups.
- Development of a set of building design concepts and principles based on the occupant data to serve as a reference point for all subsequent design decisions the Facilities & Construction Unit and Cannon Design will make to ensure occupant space design requirements are met in addition to engineering considerations. The occupant requirements are critically important to ensure physical and behavioral health, well-being, and productivity.
- Cannon Design shared a draft building plan with the Lab and the Hobby School building committee, and the plan is now being reviewed and revised based on our feedback. The Cannon Design plan will specify the building's total amount of square footage, the division of space for different purposes and floor layout, the sustainability features built into the physical structure to protect health and comfort, and the "stacking" of floors to accomplish the segregation of instructional space from faculty and researcher offices and high concentration spaces. Thus, the plan should reflect the occupants' building design requirements as communicated and memorialized in the design principles and concepts document. The next step is to begin exploring the organizational policies, practices, and programs to layer on top of the physical workspace to build an integrated, holistic school focused on occupants' physical and psychological health, well-

being, and productivity. An architectural firm has been selected to begin the actual design of the building following the building plan developed in collaboration with Cannon Design.

**Policy Forum.** The Policy Forum is the Labor Lab’s committee devoted to identifying and engaging with key legislative and executive branch officials with involvement in issues related to our mission understanding and mitigating emergent working conditions. To that end, we have maintained and developed relationships with the government affairs officers of the two flagship campuses of the Lab, UCSF and UC, Berkeley, to identify key officials with whom to have a dialog around policy opportunities across various projects of the Lab. Earlier in 2024, investigators of the California Artificial Stone and Silicosis Project held a meeting with staff from Senator Padilla’s office to discuss policy solutions at both state and federal levels to mitigate and prevent cases of accelerated silicosis among workers who fabricate countertops using artificial stone.

We are working with the UCSF Director for State and Local Government Relations to develop strategy for state legislative targets to engage in the fall of 2024 with policy recommendations from the Lab’s research projects. At the behest of members of U.S. Congress, the Outreach Director and staff provided a briefing on the current state of remote work. Recipients of this briefing included:

- Beverly McKittrick, Senior Labor Policy Advisor for Senator Bill Cassidy
- Felix Wu, Legislative Assistant for Congressman Ted Lieu (36<sup>th</sup> district, CA)
- Sarah L. Jackson, Deputy Chief of Staff & Legislative Director for Congressman Mark DeSaulnier (10<sup>th</sup> district, CA)
- Clayton Smith, Legislative Assistant for Congressman David Valadao (22<sup>nd</sup> district, CA)
- Kelvin Lum, Legislative Director for Congressman Ami Bera (6<sup>th</sup> district, CA)
- Julian Garcia, staff of U.S. Senator Padilla.

Julie A. Su, Acting Secretary of the U.S. Department of Labor provided opening remarks for our 2024 annual conference. Secretary Su set the tone for our conference about modern work and the importance of workers’ voices by highlighting workers both in California and across the country, who are betting on their value at the negotiating table with their employers advocating for better working conditions and better wages, stating that “when workers have power in the workplace, they get to practice how to exercise power in their lives. And this advances not just economic justice, but our democracy overall”.

Finally, we have been working with the California State Labor Agency to tailor information to their data needs as reflected in four of the Data Briefs we have completed using data from the California Work and Health Survey. The four briefs done for the Labor Agency concern arts-related employment, employment among persons with disabilities, work outcomes for older workers, and the magnitude of the behavioral health workforce.

**Development of Educational Programming.** The California Labor Lab has built a successful program of public-facing educational programs, including monthly webinars and an annual two-day conference, both described in more detail in the ‘Public-Facing Programs’ section below. The team is in process of developing an educational program in *Total Worker Health*<sup>®</sup>.

**Public-Facing Programs.** The purpose of the public-facing educational programs is to engage the public in the issues raised by emergent working conditions with the hope that they will be involved in efforts to improve the health of the workforce both for themselves and their colleagues as well as by engaging in

efforts to improve legislation and regulation. Since the inception of the California Labor Lab in 2021, we have held 19 webinars across four series.

The first series, held in Spring 2022, provided insights into the employment situation in the wake of Covid-19 in the State of California and the nation, as well as insights into one of the fastest growing sectors in the economy, warehouse workers. The series concluded with a discussion of mitigation efforts. The second series, held in Winter and Spring of 2023, concerned occupational health issues across the spectrum of blue-, pink-, and white-collar work. Topics ranged from ergonomics, homes as a workplace, organizational changes to improve health, job quality measurement, federal, state and local legal protections, and rideshare experience.

Most recently, in the fall and winter of 2023, the CA Labor Lab hosted a third series on marginalized workers. The webinars in this series discussed the policies that impact transgender, nonbinary, and undocumented workers, the well-being of gig workers in California, and the risks the countertop fabrication industry poses to immigrant workers. The Center's most recent series, which took place during the spring and summer of 2024, focused on the health and well-being of workers. Webinars dove into topics such as the role of work conditions in the causation of chronic illness, the role of leadership in supporting workers' mental health, and effective workplace interventions to prevent workplace mistreatment.

This year, we held our third annual conference, Modern Work & Workers' Voices on May 7th and 8th, 2024. The conference focused on the state of working today and the recovery of workers' voices. Notable worker advocates and scholars spoke, including Lorena Gonzalez Fletcher and David Weil. The conference also highlighted speakers like Deysi Gomez and Costanza Nider, who shared their first-hand experiences of unfair working conditions and workplace organizing.

In prior years, annual conferences have focused on precarity in employment (May 2022), and monitoring, surveillance, and data-gathering in contemporary employment (May 2023).

We are proud that all three of the annual conferences and webinars have consistently been very well attended. Our annual conference has grown from 95 unique learners in 2022 to 168 unique learners in 2024, with an average of 133 learners attending annually.

Our most well-attended webinar was held on November 29th, 2023, and featured a presentation on the California Artificial Stone and Silicosis (CASS) Project, with 381 real-time viewers.

Across all webinars and annual conferences, 5,187 people have registered for our public-facing programs, with 3,081 attending live. Attendees include 1,538 unique learners who have attended one or more of the webinars and conferences; many have attended multiple events, with even more viewing the recordings on our website.

The Lab's educational programs are available for CME credits in various health professions. All webinars and the entire two-day annual conference have been recorded and are publicly accessible through the Labor Lab website: <https://calaborlab.ucsf.edu/educational-programs> and in our YouTube channel.

**Work Futures Project.** The Work Futures Project is a joint initiative by the UC Berkeley Haas Business School, the Interdisciplinary Center for Healthy Workplaces, and the CA Labor Lab. The project orchestrates a series of "Sandbox" meetings, which are virtual discussions led by Dr. Banks. The primary

aim of these Sandboxes is to gather insights into the current trends, concerns, and future preparations of various professional groups. Each session revolves around a series of open-ended questions that delve into the themes of current occupational challenges and future anticipations. What distinguishes this effort from other future of work consortiums is its underlying focus of formulating an interdisciplinary vision for the health, safety, and wellbeing of workers.

To date, the project has successfully conducted six Sandbox meetings, with plans to hold nine more. Participants have included a diverse array of occupational groups such as architecture/design workplace strategists, occupational safety and health professionals, occupational health psychologists, senior HR professionals, C-suite HR leaders, and work psychologists.

Upcoming meetings will engage building owners/developers, urban planners, union representatives, government agencies, public policy professionals, technologists, venture capitalists, investors, economists, top executive leaders, and sustainability advocates. Each session is recorded, and audio transcripts are summarized and distributed to Sandbox participants. The culmination of the series of meetings will be a comprehensive compendium of all the Sandbox summaries. This document will be distributed to a select group of diverse experts to set the stage for an in-person Mixer event. During this event, participants will synthesize the gathered information to forge a new, collaborative, and interdisciplinary vision for the future of work, workers, and workplaces. This vision will be crafted in a workshop-style setting, emphasizing a framework that emerges directly from the diverse voices of the participants rather than from top-down research directives. The significance of this project lies in its unique approach; it is driven by first-hand perspectives of professionals from various health-informing disciplines. Once the future of work, workers and workplaces framework is established, a contracted cohort of experts will transform these ideas into tangible outputs, potentially including podcasts, toolkits, book chapters, and videos, thereby translating the future of work vision into actionable strategies.

**Teaching/student engagement.** During this reporting period, LOHP staff have provided remote classroom presentations, including interactive activities, for graduates and undergraduates. Topics have included principles of participatory action research, research to practice, methods for engaging with community and labor stakeholders, and overview of occupational health and principles of taking action. LOHP staff who are part of the California Labor Laboratory provided presentations for undergraduate SPH students on racism and health, to nurses at the UCSF School of Nursing on labor and occupational health on Research to Practice as part of STEER, COEH's summer internship program; in the Targeted Research Training (TRT) Program for students in the UC Berkeley Labor Center internship program; as part of UCB Labor Studies, among others. In fall of 2024, LOHP's biannual class, *Social Justice and Workers' Health*, will be offered in the Berkeley Public Health School.

LOHP has also worked to ensure that the voices of workers and worker organizations are included in the CA Labor Lab annual conference. LOHP organized and facilitated three panels at the 2024 Labor Lab annual conference: Low wage immigrant workers, workers in health care, and workers in higher education. Each panel included front line workers as well as representatives of unions/worker organizations engaged in efforts to advance protective policies. LOHP also planned and co-facilitated the conference panel on Policy Initiatives.

**Certificate Program in Total Worker Health®.** The Lab has two principal programs to train a generation of change agents focused on the principles of *Total Worker Health®*, the Pilot Studies Program for researchers described in its own section of this Annual Report, and the Certificate Program for practitioners across a range of disciplines, including those interacting with workers on a daily basis as well as those who are involved in policy through law and regulation.



The Outreach Core is exploring the development of a new Total Worker Health continuing education curriculum, including curriculum content, and targeting specific audiences who would most benefit from a certificate. To this end, and in collaboration with colleagues at four other COEs, the Outreach Core has started cataloging existing TWH programs and investigating the competencies required for TWH training. The Lab and partnering COEs are in the process of surveying all COEs to assess the educational programs they offer, aiming to understand the current state of TWH education, its evolution, and potential future collaborations among the COEs. In addition, the Lab is in dialogue with NIOSH Education & Research Center at UC Berkeley, the UC Berkeley Graduate Education Program, and with UC Berkeley Executive Education to explore the development of such an educational program.

#### **Papers.**

1. Cristina Banks, Alicia LaFrance, Ima Varghese Mac, Trisha Iley, Ed Yelin. A Scoping Review of the Literature Relevant to Total Worker Health. (expected submission to the Journal of Occupational and Environmental Medicine, fall of 2024).

#### **Research Briefs.**

1. [A Brief Review of the Current State of Remote Working](#). By Ima Varghese Mac and Cristina Banks. April 8, 2024.

#### **Presentations.**

1. Monique Hosein. Development of a research-to-practice (R2P) toolkit for occupational safety and health to increase dissemination of research findings through community engagement. Poster presentation at the American Public Health Association Annual Meeting, Minneapolis, MN, October 28, 2024.
2. Cristina Banks. Human and Organizational Factors in AI Risk Management - A Workshop. [Virtual] Panel Presentation given at National Academies Division on Engineering and Physical Sciences, June 26, 2024.
3. Cristina Banks. Enhancing the Reach and Depth of Worker Health, Safety, and Well-Being Through Total Worker Health®. In-person presentation at the American Industrial Hygiene Association - Northern California Section Technical Symposium, April 24, 2024.
4. Cristina Banks. Home-Like Workplaces: Where Do We Draw the Line? In-person panel discussion at the SIOP Annual Conference in Chicago, Illinois, April 18, 2024.
5. Cristina Banks & Ed Yelin. Traditional and Alternative Employment in Contemporary Work: Who Takes Responsibility for Workers' Well Being? Virtual presentation at UC Davis COEH's Builds Bridges Conference, January 20, 2024.
6. Cristina Banks & Lawrence Witt. New Building Design: A Total Worker Health® Opportunity. Virtual presentation at the Work, Stress, & Health Conference, November 9, 2023.
7. Cristina Banks. Interdisciplinary Scoping Review of Literature Relating to Worker Health, Safety, and Well-Being. Virtual presentation at the Work, Stress, & Health Conference, November 9, 2023.

8. Cristina Banks & Lawrence Witt. Work Experience: It's Not About Stuff. In-person presentation at the Academy of Management Annual Conference, Boston, MA, August 2023.
9. Cristina Banks. Work Experience: It's Not About Stuff. In-person presentation to CoreNet Houston, TX, June 2023.
10. Cristina Banks. Work Experience: It's Not About Stuff. Virtual presentation to Google Workplace R&D Conference, March 2023.
11. Cristina Banks. Work Experience: It's Not About Stuff. Virtual presentation to GSA Digital in March 2023.
12. Cristina Banks. Introducing AI in the Workplace. Presentation to Executive Development Program, CSHRP. October 2024.

## Pilot Studies Program

**Edward Yelin, PhD, Principal Investigator**  
**Carisa Harris Adamson, PhD, Co-Investigator**

*The Pilot Studies Program of the California Labor Lab serves to advance the twin goals of the Center – describing the magnitude and effect of emergent working conditions on health along with preventing and mitigating health effects of adverse working conditions – by increasing the number and diversity of researchers focusing in these areas and providing opportunities to those already experienced in this work to explore emerging issues as they arise. This program has funded eight projects and intends to fund three more in the fourth year of the grant. These pilot projects will continue to expand the scope of research beyond the established projects proposed in this TWH Center application, allowing CALL to broaden the field of research in emergent working conditions and health and to truly serve as a laboratory for testing new concepts and ideas in this area. Specific aims of the program are: 1) To expand the number and kind of researchers addressing the relationship between emergent working conditions and health and well-being to junior investigators (graduate students, post-doctoral fellows, junior faculty) beginning a research career and to senior investigators segueing to a focus on this area; 2) To expand the range of topics covered under the broad umbrella of emergent working conditions and health and well-being by funding researchers from a wider array of disciplines and methodological orientations than the Center’s existing investigators; 3) To expand the use of the Center’s state of the art data sources by new investigators to aid in achieving the prior aims of expanding the number and kind of researchers and disciplines applied in this work; 4) To identify emerging issues consistent with the Center’s mission of improving the health of the working age population affected by emergent working conditions.*

The Pilot Studies Program is supported by the California Labor Laboratory grant and contributions from the two home campuses, UCSF and UC, Berkeley. For the first year of the pilot studies program, announced in fall of 2022, we issued eight grants of up to 18 months duration in two funding cycles. This fall, we will issue our second pilot studies request for applications (RFA) for a funding period starting in 2025 and ending in 2026.

We plan to distribute the RFA widely, as we did in 2022. For the initial RFA, our colleagues from the Center for Occupational and Environmental Health, several of whom are Lab investigators, developed a comprehensive list of universities and research organizations in California and beyond, especially tailored to include institutions serving marginalized populations such as Historically Black Colleges and Universities (HBCUs) and the campuses of the University of California (Riverside and Merced) with large numbers of underrepresented students and staff and California State University System. Having this list helped us improve the probability that grantees would be from underrepresented groups and that grantees would address an important priority for the Lab, describing the impact of emergent working conditions on the health of marginalized populations.

The initial year of the pilot program the Lab received 23 applications to the pilot program. We anticipate we will have a similar, if not greater number of applicants to our program in 2025 as the Lab continues to expand its network. We will target applicants from diverse settings, including academic institutions, non-profit organizations, and worker coalitions. Consistent with the first year of the program, applications will be assessed by a review panel that consists of Lab investigators, including members of the Research

Services Unit; members of the External Advisory Committee and Community Engagement Board, the latter to reflect community input; and, when necessary to provide substantive or methodological expertise, researchers from outside the Lab and these Lab committees. Two reviewers will be assigned to an application and scored based on the rubric outlined in the RFA. After scores are submitted, the Lab's Internal Advisory Committee will conduct a second, discussion-based review of the highest-scoring proposals to ensure adequate representation of trainees and users of Lab data.

For the current cohort of pilot program of eight award recipients, funding was dispersed in September 2023 with projects running for 12- to 18-months at the grantees' discretion. This cohort is predominantly made up of trainees and includes principal investigators from a wide range of organizations. The pilot program recipients present their research progress at the Lab's monthly research seminars and will continue to attend future meetings until the conclusion of their projects, early in 2025.

Two of our Pilot Study Grantees, Drs. Nicholas Smith and Heather Amato have gotten tenure track jobs at new universities, Dr. Smith at the University of Texas-Arlington and Dr. Amato at the School of Public Health of the University of Maryland. In addition, another grantee, Dr. Sheiphali Gandhi has received an internal UCSF K2 Award and grants from the UCSF Hellman Fellowship for Faculty Development, UCSF Irene Perstein Award Program, and the California Silicosis Support Network.

**Summary of progress of current award recipients:** Each pilot project's progress is summarized below.

**Pilot Grant Awardee:** Heather Amato, PhD, MPH

**Project Title:** Zoonotic pathogens and antibiotic resistance near concentrated animal feeding operations (CAFOs) in California's Central Valley

**Aims:** Our primary aim was to identify antibiotic resistant zoonotic pathogens in various environmental exposure pathways near dairy CAFOs and in communities without dairy CAFOs. We also aimed to assess carriage of resistant pathogens in dairy farm workers in community members, but due to challenges identifying a community engagement partner, we were not able to recruit farmworkers or community members to participate in biological sampling.

**Methods:** We collected soil, surface water, and bioaerosol samples near 10 dairy CAFOs in Yolo, Solano, San Joaquin, Stanislaus, and Fresno counties. We additionally collected soil, surface water, and bioaerosol samples from 5 "green sites" (i.e. regional parks and recreational areas) where there were no dairy CAFOs within approx. 10 miles to serve as comparison sites. Homogenized samples were passed through a membrane filter, which were plated on ESBL ChromAgar media to culture extended-spectrum beta-lactamase (ESBL) producing enterobacteriales on each filter.

**Results:** We collected 35 environmental samples, 21 samples near dairy CAFOs and 14 samples from green sites. Dairy CAFO samples had significantly higher concentrations of ESBL-producing *Pseudomonas* and *Klebsiella/Enterobacter/Citrobacter* compared to green site samples. The highest concentration of ESBL-producing bacteria was for *Pseudomonas* detected in water samples near dairy CAFOs (mean colony forming units [CFU] = 71.4, compared to mean CFU = 14.4 in water from green sites).

**Conclusions/Future Directions/Potential Policy Implications:** Surface water near dairy CAFOs is highly contaminated with ESBL-producing bacteria, especially *Pseudomonas*. Next steps include metagenomic and whole-genome sequencing of purified DNA from filter samples and from single bacterial isolates to

identify clinically relevant strains of ESBL-producing bacteria and to detect key antibiotic resistance genes. Finally, we will share findings with community-based organizations and community members in the Central Valley and guide focus group discussions to identify and prioritize recommendations for next steps. The results from this pilot study will be used to engage with community-based groups and determine how a larger epidemiological study could support community-driven policy objectives to improve occupational and community health. Future directions include more thorough field and lab testing of bioaerosol sampling to improve detection (e.g. comparing sampling duration, mobile vs. stationary, season, etc, and testing a positive aerosolized bacteria control in lab).

**Publications/Reports/Presentations:** Poster Presentation at CZ BioHub Confab, May 8, 2024; manuscript in preparation summarizing environmental sampling methods, lab methods comparison, and results from culture-based and sequencing analyses.

**Pilot Grant Awardee:** Marley Zalay, MPH

**Project Title:** Assessment of Diesel Exhaust Exposures and Work-Related Stress among Farmworkers using Off-Road Diesel Equipment

**Aims:** The specific aims of this study include characterizing personal occupational exposures to diesel exhaust among farmworkers, investigating perceptions of work stress, work-related exposures and hazards, and developing worker-informed results return materials.

**Methods:** Methods include personal exposure monitoring for nitrogen dioxide, black carbon, and naphthalene during full-shift sampling among farmworkers and qualitative data collection with semi-structured interviews.

**Results:** Data collection is still ongoing fall of 2024.

**Conclusions/Future Directions/Potential Policy Implications:** Exposure concentrations to these constituents of diesel exhaust have not previously been measured among farmworkers. Understanding exposures associated with farmworker tasks will allow for reduction of exposure. Worker-informed reports will yield helpful information about what constitutes clear and usable information among this population. Therefore, capturing employee perceptions around work stress, exposures, and hazards will inform the communication of results and dissemination/resources to both employees and employers, as well as industry stakeholders.

**Publications/Reports/Presentations:** There have not yet been any publications, reports or presentations because data collection is still ongoing.

**Pilot Grant Awardee:** Lina Stepick, PhD

**Project Title:** The Union Effect for Direct Care Workers in the United States

**Aims:** This study examines the effect of being covered by a union contract on direct care workers' economic and wellbeing outcomes.

**Methods:** This study primarily draws on data from the Current Population Survey (CPS), using regression analysis to estimate the effect of union coverage on direct care workers' economic outcomes. Our primary

analyses are conducted at the individual level, followed by exploratory descriptive analyses at the state level. Using these data, we also analyze the relationship between union density and median direct care wages at the state-level. In addition, we also evaluate how changes in the direct care union density are associated with changes in the median wages over two time periods (2004 to 2013 vs. 2014 to 2023). This study also draws on BLS Injury, Illness, and Fatalities (IIF) data to descriptively explore relationships between state-level direct care union density and reported workplace injuries. While we obtained findings on economic outcomes that update and expand on previous research, this pilot study has also been instrumental in helping to identify data limitations and potential future research opportunities, particularly for this specific workforce. Due to data limitations in the CPS ASEC and IIF data and state variation in reporting for the latter, we expanded our state-level analyses to include change over time and pivoted to focus our analysis of injury data to facility settings and to a sample of specific states selected based on high and low direct care worker union density.

**Results:** Our primary findings include a statistically significant effect of union coverage on direct care worker earnings, of seven percent, net of controls. With the addition of industry controls in our second model, we contribute novel findings that reveal that the union effect varies by direct care setting, which we specify with an interaction term in our third model. In our exploratory analysis at the state-level, our initial findings reveal a positive relationship between state-level direct care worker union density and direct care worker wages. In line with this, we also find a negative relationship between state policies that restrict union activity—so-called “right-to-work laws”—and direct care worker wages. Finally, our exploratory descriptive analysis of state-level workplace injury data reveals that states with the highest direct care worker union densities report higher workplace incidence rates than states with the lowest union densities. While this merits further investigation, these descriptive findings support prior research showing that union representation is associated with a greater likelihood of reporting workplace hazards and injuries.

**Conclusions/Future Directions/Potential Policy Implications:** This study builds on previous union effect research, demonstrating the value of union coverage, particularly for low-wage workers like those in direct care and the importance of policies that support unionization and organizing efforts. It also underscores the importance of unionization for reporting workplace injuries, with implications for the possibility of co-enforcement and other models that leverage workers on the ground in health and safety initiatives. These findings further highlight the need to examine variation by direct care setting and by state in earnings and in union effect. Additionally, this pilot study was instrumental in identifying recommendations for improved data collection at the detailed occupation and industry levels and future directions for research. While our state-level analysis descriptively suggests that there is a positive relationship between union density and median direct care wages, future research is needed to test this relationship while controlling for additional state-level factors. We are working with external partners to develop a follow-up study that will use a multi-level model, nesting individual direct care workers within states to examine both the within state variations in direct care wages by individuals’ union membership status as well as across state variations in wages by their union density.

**Publications/Reports/Presentations:** The results from this pilot study will be published as a PHI research brief in 2024 (<https://www.phinational.org/>). We are also exploring potential journal articles, based on the future directions and additional analyses identified through this pilot project.

**Pilot Grant Awardee:** Nicholas Smith, PhD

**Project Title:** Assessing the Implications of State-Level Overtime Pay Legislation among Latine Agricultural Workers

**Aims:** The aims of this project are to evaluate the impact of the phase-in of Oregon's overtime law for farmworkers, assess workers' perceptions and understanding of the law, and to convene a group of subject matter experts to support ongoing development and implementation of the study.

**Methods:** This study planned to invite 48 participants to be part of focus groups held on location at community-based organizations. We conducted 2 focus groups, comprised of 25 participants, at a community-based organization in Medford, OR which were facilitated by 1 PhD-level faculty member, 1 PhD student, 1 MS-level graduate student, and 1 undergraduate student. These focus groups complemented an additional 5 focus groups with 50 participants collected in Summer, 2023 from our two other community partners. Upon reviewing the findings from these focus groups, members of our team perceived that we had reached saturation and our remaining 2 community partners requested that we pause data collection for this year with the hope of collecting additional focus group data in summer 2025 after the threshold to qualify for overtime moves from 55 hours to 48 hours.

**Results:** As farmworkers are eligible for overtime in 2023 and 2024 for work over 55 hours, we have integrated the findings from all 7 focus groups collected to date. We are using an abductive, thematic coding approach to identify themes in the data to better understand farmworkers' experiences and perceptions. Overall, 8 themes have emerged at this point: General Working Experiences (e.g., working in extreme weather), General Experiences with Pay (e.g., wanting a wage increase), General Non-Working Experiences (e.g., needs including access to childcare), Employer/Supervisor/Contractor Behaviors (e.g., pressure to work harder/faster), Workers Speaking Up (e.g., working as a unit to make change), Power in Information (e.g., perceiving focus groups as a resource), Overtime Pay & Law (e.g., impacts of overtime for work and family), and General Law Experiences (e.g., perceptions of enforcement of laws). Regarding the overtime law, participants varied in terms of their knowledge of the law and general attitudes towards the law such that some participants expressed that they believed the law would have important impacts over the long term, some participants expressed concerns about hours being reduced, and others discussed important points about working conditions and about the impact of working long hours on health and well-being, while recognizing the need to make wages to support themselves and their families.

**Conclusions/Future Directions/Potential Policy Implications:** In terms of aims/deliverables, substantial progress has been made over the past year: monthly meetings with community partners, completed IRB, conducted 2 focus groups with 25 participants, ongoing coding of these data to integrate into the full sample of 7 focus groups (75 participants), submitted a grant based on this ongoing work to NIH (unscored), submitted a grant to Robert Wood Johnson Foundation (under review), convened subject matter experts to support the development and implementation of the study in a Community Advisory Board meeting in July, 2023, a Kick Off Meeting in October, 2023, and a follow-up Community Advisory Board meeting in March, 2024. To this point, we identified multiple important perceptions and considerations regarding farmwork and overtime in Oregon, however given that the law is only providing overtime for 55 hours of work or more, many questions still existed about how the implementation of the law will impact work because many did not work beyond this threshold.

Regarding next steps, our team has already integrated findings across these focus groups and have worked together with our community-based organizational partners to develop a survey instrument and our community partners are actively collecting data with this instrument either over the phone or through in person meetings with farmworkers (expecting over 200 responses), which will be integrated into a report for our partners at the community-based organizations. We believe these findings may be helpful for our partners to draw on as they regularly interface with state agencies and lawmakers.

**Publications/Reports/Presentations:**

[Presentation] Smith, N. A., Hammer, L. B., Brockwood, K. J., Robles-Saenz, F., Snoeyink, M. J., Martinez, L. R., Martinez-Medina, J., Cuello-Martinez, I., & Colon, J. (2024, June). Organizing change through incorporating active engagement with focus groups among Latinx farmworkers. Association of European Qualitative Researchers in Psychology Conference 2024, Milan, Italy.

[Poster Presentation] Smith, N. A., Hammer, L. B., Brockwood, K. J., Robles-Saenz, F., Snoeyink, M. J., Martinez, L. R., Martinez-Medina, J., Cuello-Martinez, I., & Colon, J. (2024, June). Saludables juntos: A community-based participatory examination of the implementation of overtime legislation for Latinx farmworkers' health & well-being. European Academy of Occupational Health Psychology Conference 2024, Granada, Spain.

**Pilot Grant Awardee:** Serena Rice, MS

**Project Title:** Trade Union Staff Health and Well-being: A Mixed Methods Study

**Aims:** The aims of this study are to examine and describe the working conditions and health status of a sample of trade union staff members to understand how they perceive their health and well-being to be impacted by their work.

**Methods:** Participants were recruited to the study via an online registration, that allowed researchers to vet their eligibility. Survey data was collected using an adaptation of the CPH-NEW All Employee Questionnaire, delivered via Qualtrics. Narrative interviews were conducted via Zoom and analyzed using NVivo software.

**Results:** Union staffers experience high rates of stress and burnout due to excessive workloads, systemic racism and sexism, and low organizational support. About 40 to 50% of survey participants reported scores higher than the population average for job strain and burnout. These were significantly higher for nonbinary individuals compared to their cis-male and cis-female counterparts. 75% of staff interviewed are being treated by medical professionals for stress related illnesses such as depression (48% of survey participants' CESD scores indicate clinical depression), anxiety and burnout. The demanding nature of the work has led to various health issues such as weight gain (70% of survey participants are overweight or obese), hypertension (20%) and low back disease (15%).

**Conclusions/Future Directions/Potential Policy Implications:** The study has found that work appears to significantly shape participants personal identity, they identified a strong sense of social, political, and ethical commitment to social justice and workers' rights as their motivation for remaining in the labor movement despite challenges of the work. High rates of stress could be mitigated by developing programs that increase organizational support, more equitably distribute workloads, and prioritize diversifying the leadership and staff of unions to reflect the membership more fully.



**Publications/Reports/Presentations:** None to report yet.

**Pilot Grant Awardee:** Ashley Membere, PhD

**Project Title:** An investigation of factors driving health disparities for marginalized workers in California

**Aims:** The major aims of the project are to assess 1) the physical and mental health outcomes of California workers in various industries including gig workers and 2) investigate health disparities based on sociodemographic variables and other contextual factors (e.g., family care responsibilities).

**Methods:** The project utilizes data from the California Labor Lab's California Work and Health Survey (CWHS) to test our hypotheses. A series of moderation and mediation analyses will be used to examine the relationships among the variables. Currently, our team is in the process of sorting and analyzing the data within the CWHS by job industry. County-level data such as labor rights voting results and income levels are being added to the industry datasets.

**Results:** Preliminary analyses of the gig worker data reveal that stress mediates the relationship between perceived financial difficulty and outcomes such as mental health and social satisfaction.

**Conclusions/Future Directions/Potential Policy Implications:** One of the practical goals of the project is to disseminate the results to labor activist groups in California to assist with their work to protect employees. As the National Labor Relations Board (NLRB) has expanded the criteria that can be used for employee classification in organizations, this data can be of use to organized labor groups to argue for increased protections.

**Publications/Reports/Presentations:** In pursuit of publication, we are also hoping to give greater visibility to populations that have been understudied in management literature.

**Pilot Grant Awardee:** Sarah Beth Stein, MPH

**Project Title:** Workplace violence in food services: Workers' compensation and lived experience

**Aims:** The aims of this project are to 1) describe the past and current state of workplace violence-related workers' compensation claims submitted by food service industry workers in the state of California; 2) characterize current workplace violence experiences of food service workers in Los Angeles County; and 3) present findings to relevant stakeholders and incorporate feedback to form policy recommendations.

**Methods:** The methods that were planned to use included a review of WCIS data, focus groups with workers in LA County, and individual interviews with restaurant workers from the focus groups. The methods have shifted to only include focus groups without individual interviews. Additionally, the analysis of the WCIS data and conducting the focus groups will occur in tandem, rather than the WCIS data analysis coming first.

**Results:** Results have yet to be obtained. Our community partners are still completing their CITI training and the recruitment process is ongoing. The estimated timeline has been shifted to the 2024-2025 academic year (as approved by CA Labor Lab pilot program).

**Conclusions/Future Directions/Potential Policy Implications:** Conclusions have yet to be made.

**Publications/Reports/Presentations:** No publications have been made using the data from this study.

**Pilot Grant Awardee:** Sheiphali Gandhi, MD, MPH

**Project Title:** Understanding Pulmonary Fibrosis Through Complex Occupational Exposure Assessments

**Aims:** Employing an iterative process with an expert panel, I will develop a pulmonary fibrosis-specific job exposure matrix (PF-JEM) for work-related inhalational exposures to link job titles with indices of exposure. I will then utilize developed PF-JEM by measuring the association between occupational exposures and PF in Cal-EDRS using a frequency-matched case-control analysis of California decedents using the California Electronic Death Registration System.

**Methods:** Employing an iterative process with an expert panel, I will develop a pulmonary fibrosis-specific job exposure matrix (PF-JEM) for work-related inhalational exposures to link job titles with indices of exposure. I will then utilize developed PF-JEM by measuring the association between occupational exposures and PF in Cal-EDRS using a frequency-matched case-control analysis of California decedents using the California Electronic Death Registration System.

**Results:** Data from 2017-2019 demonstrates that among 800,656 decedents, 10,104 (1.3%) had PF listed on the death certificate. Occupational and industry data was successfully linked and identified for these decedents. The initial analysis demonstrated significantly elevated proportionate mortality ratios (PMRs) were seen in the industry categories of utilities (1.28, 95% CI 1.04-1.52), public administration (1.22, 95% CI 1.12-1.31), agriculture (1.20, 95% CI 1.07-1.33) and manufacturing (1.10, 95%CI 1.04-1.17). Those categorized as never employed had a significantly decreased PMR of 0.48 (95% CI 0.41-0.55).

**Conclusions/Future Directions/Potential Policy Implications:** This pilot work demonstrates the feasibility of determining industry using death certificates within the Cal-EDRS using the National Institute for Occupational Safety and Health (NIOSH) Industry and Occupation Computerized Coding System (NIOCCS). Using multiple strategies and an iterative consensus process, we are currently in the process of designating exposure levels into 3 ordinal exposure levels for the 535 US Census occupations. Following development of the job exposure matrix, we will assign exposure levels to the diagnosis definition described above.

**Publications/Reports/Presentations:** This project's abstract of the initial pilot data has been accepted for an oral presentation at the CHEST Annual Meeting hosted in Boston, Massachusetts in October 2024.

## **Project 1: Impact of Emergent Working Conditions on the Health of Working Age Californians**

**Edward Yelin, PhD, Principal Investigator**  
**Nari Rhee, PhD, Co-Investigator**  
**Laura Trupin, MPH, Co-Investigator**  
**Alicia Lafrance, MPH, MSW, Project Analyst**  
**Ima Varghese Mac, Project Analyst**  
**Trisha Iley, Project Analyst**

*The overarching aim of the proposed project is to evaluate the impact of the totality of change in work as well as of important sentinel working conditions that are part of that change on the health of the working age population. Three major changes are noted: the growth of alternative ways that workers are hired, spanning task-, project-, and contract-based employment; increase in contingent forms of employment; and erosion of traditional working conditions. Specific aims are to: 1) develop a survey instrument capable of measuring several axes of change in work and a range of adverse health outcomes; 2) compare the utility of individual axes of emergent working conditions singly and in combination to predict changes in health status of the working age population over time and to estimate the critical individual sentinel working conditions within the axes in determining future health status; and 3) evaluate the changes in the organization of work as defined by the axes of change and important sentinel individual conditions for the health of vulnerable groups in the labor force.*

The context for this project is that many analysts have noted that the labor market measures that have been developed do a poor job of characterizing alternative and contingent forms of employment. The purpose of the California Work and Health Survey (CWHS) is to capture information about the employment and health status of California adults in a longitudinal survey. One special feature of the CWHS is that it collects information on jobs worked in the past month, not just the past week. The rationale is that alternative and contingent forms of employment may be episodic and less likely to be captured in data collection solely about the week prior to interview.

The major activity of the first year (2021-2022) of Project 1 was to develop a large-scale survey instrument—the CWHS—to be conducted among a random sample of working-age Californians. Development of the survey included consulting with experts, conducting key informant interviews, piloting new survey questions via cognitive interviews, and pre-testing the survey instrument in its entirety. The CWHS baseline survey was conducted from November 2022 to May 2023, with a total of 4,014 respondents, of whom 74% completed an online version of the survey and 26% completed it via telephone.

In the current year (2023-2024), Project 1 investigators conducted analyses of the dataset, presented initial findings, submitted and published papers in academic journals, and published a series of data briefs summarizing CWHS findings to our website. In a series of webinars during the fall of 2023, investigators presented the results of the CWHS. Two of the webinars focused on the prevalence and impact of alternative, contingent, and app-based employment, while another discussed the forms of monitoring and surveillance of work. Early in 2024, we continued our analyses, and summarized our findings in manuscripts and submitted them to two journals. One manuscript exploring the health and economic impacts of non-standard work, was accepted by the American Journal of Industrial Medicine (AJIM), and the second manuscript focuses on the prevalence of non-standard forms of work has recently been accepted for publication in the Monthly Labor Review. Among the data briefs, one concerning the

magnitude of arts-related employment was completed at the behest of the State of California Labor Agency who sought information on that issue. Another being done at the Labor Agency's behest concerns the characteristics of workers in app- and project-based employment. Yet a third done for the Labor Agency concerns the nature of employment among older workers.

A key finding, as published in our AJIM article, was that risks associated with alternative, contingent, and app-based work included strong associations of earnings at or below a living wage for a single individual and high reported frequency of wage theft. The association between the forms of work and current health status was less consistent; however we did observe that workers in alternative arrangements are less likely to have access to a pension or employment-based health insurance, and those in contingent jobs experience a higher probability of reporting fair or poor mental health and high levels of perceived stress. We anticipate that there may be clearer associations between forms of work and health status when respondents are re-interviewed in 2025 due to the long latency period of many health problems.

In 2024, the research team developed the follow-up CWHS questionnaire. Many of the question items from the baseline CWHS will remain similar; the main difference is that the follow-up survey will only ask about respondents' main job. During the fall and winter of 2024, the CWHS follow-up questionnaire will be piloted in English and Spanish to a test group of Californians, and the survey instrument will subsequently be finalized. In February 2025, the follow-up CWHS will be administered to as many of the original 4,014 respondents as possible. Data collection will conclude in May 2025, at which point we will begin an analysis comparing respondents' employment and health status over the three-year time period.

We created a public use version of the CWHS dataset, which can be made available to researchers outside of the CA Labor Lab upon request. As of this writing, the dataset has been released to one of the CA Labor Lab pilot project grantees, [Dr. Ashley Membere](#), and is being used for a student research project at the UC Berkeley School of Public Health. The dataset has also been shared with five researchers from various institutions, including the UCLA Fielding School of Public Health and the University of Southern California. The projects of these researchers focus on diverse topics, such as the relationship between working conditions and the health of immigrant workers and the correlation between precarious employment and worker well-being.

More information about the CWHS and a data request form, is available at <https://calaborlab.ucsf.edu/cwhs>.

#### **Papers.**

1. Ed Yelin, Laura Trupin, Trisha Iley, Nari Rhee, Alicia LaFrance, Ima Varghese Mac. The Impact of Alternative, Contingent, and App-Based Employment on the Well-being of Working Age Adults: Results from the California Work and Health Survey. *American Journal of Industrial Medicine*, June 17, 2024.
2. Laura Trupin, Alicia LaFrance, Nari Rhee, Trisha Iley, Ima Varghese Mac, Ed Yelin. Exploring the Complexities of Nonstandard Employment: The 2023 California Work and Health Survey (Monthly Labor Review, in press).

#### **Presentations.**

1. Ed Yelin. Prevalence and Impact of Alternative, Contingent, and App-Based Employment: First Estimates from the California Work and Health Survey. Presentation given at NIOSH Webinar, October 19, 2023.

2. Ed Yelin. The Future of Work is Now: Results from the California Work and Health Survey. Presentation given at California Labor Laboratory Webinar, October 25, 2023.
3. Ed Yelin. Surveillance and Monitoring in Contemporary Employment. Talk given at Society for Total Worker Health Peer Learning Webinar, November 2, 2023.
4. Ed Yelin. Is Work Changing and to What Effect? Results from the California Work and Health Survey. Presentation given at the Western States Occupational Network - 15th Annual Meeting, Denver, Colorado, September 19, 2024.

**Published Data Briefs.**

1. [Working from Home in California](#). By Ed Yelin, Trisha Iley, Laura Trupin, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. March 13, 2024.
2. [Work Quantity in California](#). By Ed Yelin, Trisha Iley, Laura Trupin, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. April 8, 2024.
3. [Financial Strain among Working Age Californians](#). By Ed Yelin, Trisha Iley, Laura Trupin, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. April 8, 2024.
4. [Employment in Arts and Related Occupations and Industries in California](#). By Ed Yelin, Trisha Iley, Laura Trupin, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. May 29, 2024.
5. [Employment among Persons with Disabilities in California](#). By Ed Yelin, Trisha Iley, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. July 2, 2024.
6. [Quality of Union vs. Non-Union Work in California](#). Trisha Iley, Ed Yelin, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. July 12, 2024.
7. [Employment among Older Workers in California](#). By Ed Yelin, Trisha Iley, Alicia LaFrance, Nari Rhee, Ima Varghese Mac. October 4, 2024.

**Products.**

1. California Work and Health Public Use Dataset. October 2023. Access to the dataset is granted on a per request basis at <https://calaborlab.ucsf.edu/accessing-cwhs-dataset>.

**External CWHS Users & Projects.**

1. Name/affiliation: Cindy Calderon Correa, UC Berkeley, MPH in Environmental Health Sciences Student.  
Project: Total Workers Health: The Joint Interaction Between Housing and Employment Instability in California's Workforce.
2. Name/affiliation: Jane Fazio, UCLA Fielding School of Public Health, UCLA David Geffen School of Medicine. Department of Medicine.  
Project: Disparities in work related injuries and worker's compensation.

3. Name/affiliation: Sarah Beth Stein, UCLA Fielding School of Public Health, Department of Community Health Sciences.  
Project: Precarious employment as a contributor to poor physical and mental health among California immigrants.
4. Name/affiliation: Emily Kaner, MPH MCP, UCLA Fielding School of Public Health, Department of Community Health Sciences.  
Project: An intersectional approach to investigating the relationship between precarious employment and mental health.
5. Name/affiliation: Ezinne Nwankwo, University of Southern California, USC Dornsife Equity Research Institute.  
Project: Workplace bullying and the health of immigrant adults in California.

## **Project 2: Inequality in Job Conditions in the Service Sector**

**Kristen Harknett, PhD, Co-Principal Investigator**

**Daniel Schneider, PhD, Co-Principal Investigator**

**Rebecca Wolfe, Project Analyst**

*This proposal seeks to examine disparities by gender and race/ethnicity and the laws and company practices that serve to widen or lessen such disparities. The service sector represents a strategic focus given that this sector has been the site of legislative interventions to improve job quality, with states and localities implementing higher minimum wages, but also passing laws that require large private sector employers to provide greater work schedule stability and predictability, offer paid sick leave, and provide access to paid family and medical leave. We propose to use data from The Shift Project from 65,000 service sector workers nested in 150 large firms, collected from 2017-2020, and to leverage forthcoming NIA funding (R01) to collect data from 90,000 additional workers nested in 210 firms and follow a subset longitudinally between 2021-2024. We propose to use this data to accomplish three key aims: (1) to document gender and race/ethnic inequality in a set of work conditions that are social determinants of health but are typically absent from national data sources; (2) to estimate the effects of local labor laws and higher road employment practices on unequal working conditions; and (3) to examine the effects of the COVID19 shock on job displacement and inequality in work conditions.*

Working conditions influence population health and contribute to disparities in a range of health outcomes, and these conditions have deteriorated over the past forty years. Much of the research on precarious working conditions has focused narrowly on hourly wages, but precarious working conditions go beyond wages and include multiple dimensions such as schedule control, predictability, and stability; paid time off, health insurance, and other fringe benefits; as well as job security and job satisfaction. Precarious work schedules, lack of benefits, and job insecurity and dissatisfaction are particularly pronounced for the nearly 20% of American workers employed in the service (including retail, grocery, food service) sectors. These sectors have also been sites of legislative interventions to improve job quality, with states and localities implementing higher minimum wages but also passing laws that require large private sector employers to provide greater work schedule stability and predictability, offer paid sick leave, and provide access to paid family and medical leave. Because of occupational sorting and discrimination processes, precarious working conditions may disproportionately affect those who identify as female, non-binary, or transgender and African American and Hispanic workers.

Yet, there is little existing data that captures multi-dimensional measures of job quality and that allow comparisons across policy environments and employers. To fill this gap, we use data from The Shift Project from over 200,000 service sector workers nested in more than 150 large firms, collected from 2017-2023 and from a subset of workers followed longitudinally between 2021-2024 (data collection is funded by other sources, primarily an NIA R01 award).

We use this data to accomplish three key aims: 1) Document gender and race/ethnic inequality in a set of work conditions that are social determinants of health but are typically absent from national data sources; 2) estimate the effects of local labor laws and higher road employment practices on unequal working conditions; and 3) examine the effects of the COVID19 shock on job displacement and inequality in work conditions.

Our major activities in the third year of our project included producing a peer-reviewed journal publication and submitting two additional research papers to peer-reviewed journals.

### **Papers.**

1. In an article title, “Between-Firm Sorting and Parenthood Wage Gaps in the U.S. Service Sector”, forthcoming in *Journal of Marriage and Family*, Charlotte O’Herron, Daniel Schneider, and Kristen Harknett assess how the distribution of parents across firms contributes to parenthood wage gaps in a low-wage U.S. labor market and examine the role of understudied compensating differentials relevant to precarious work. We draw on employer-employee matched data on 74,086 hourly service-sector workers to decompose parental wage gaps into their within- and between-firm components. We find that mothers are overrepresented in lower-wage firms, accounting for 68% of mothers’ wage gap. In contrast, fathers’ wage gap accrued within firms. We found limited evidence that compensating differentials, even schedule quality, produce parental wage gaps.
2. In year three, we drew on the state and county policy database that we compiled and released to the public on Github in two new papers. One paper, “Estimating the Impact of State Paid Sick Leave Laws on Worker Outcomes in the U.S. Service Sector, 2017-2023,” has been submitted for peer review and to the annual meeting of the Population Association of America. A second paper, “Beyond Borders: Does Firm-Level Exposure to State and Local Paid Sick Leave Mandates Lead to Policy Diffusion?,” received a Revise & Resubmit from the *Journal of Policy Analysis and Management*.
3. We revised a manuscript entitled, “Do Transgender and Non-Binary Workers in the Retail and Service Sectors Have Lower Quality Jobs Than Their Cisgender Counterparts?” authored by Danya Lagos, Rebecca Wolfe, and Daniel Schneider, for resubmission to a peer-reviewed journal.

### **Media.**

1. Marketplace (podcast, produced and distributed by American Public Media). Stephanie Hughes & Kai Ryssdal. "Why getting workers their schedules in advance is good for business". April 15, 2024. Kristen Harknett was interviewed to discuss scheduling norms in large retail and food service industries. She highlighted cities with laws requiring employers to hand out schedules at least two weeks in advance. Her study on the effects of this in Seattle found improvements in sleep, economic security, and overall levels of happiness, and reduced employee turnover.
2. Los Angeles Times (press article). Rebeca Plevin. "L.A. law aims to make retail workers' schedules more predictable. Is it working?". February 17, 2024.
3. Business News Daily (press article). Adam Uzialko. "The Business Costs of Employees Coming to Work Sick". April 11, 2024.



### **Project 3: California Artificial Stone and Silicosis (CASS) Project**

**Kristin Cummings, MD, MPH, Co-Principal Investigator**

**Robert Harrison, MD, MPH, Co-Principal Investigator**

**Amy Heinzerling, MD, MPH, Co-Investigator**

**Fernanda Florez, Research Associate**

**Jennifer Flattery, MPH, Epidemiologist**

*California workers who fabricate countertops using artificial stone are at risk of developing accelerated silicosis, a severe, incurable, and potentially fatal lung disease that is completely preventable. The Occupational Health Branch (OHB) of the California Department of Public Health (CDPH) has been instrumental in characterizing this emerging occupational health issue in California.*

*The burden of silicosis in California's countertop fabrication industry is unknown, but it is likely that these cases and the handful of others that have been reported to OHB in the last year represent the tip of the iceberg in an industry that employs at least 9,000 people statewide. The traditional approach to workplace hazards is regulation by the California Division of Occupational Safety and Health (Cal/OSHA). Indeed, occupational exposure to silica has been regulated for decades, and more protective standards comprising a lower exposure limit and requirements for exposure monitoring, exposure controls including respiratory protection, and medical surveillance were introduced in 2016. Yet the occurrence of advanced and fatal lung disease in young silica-exposed workers highlights the limitations of this strategy for the countertop fabrication industry.*

*The overarching aim of this project is to promote respiratory health among vulnerable workers in California's countertop fabrication industry through education, medical monitoring, and statewide enhanced surveillance. The overall hypothesis of this project is that a multifaceted public health intervention will increase compliance with silica regulations and the detection of silicosis in the contemporary workplaces of California's countertop fabrication industry. The specific aims are to: 1) increase awareness in the countertop fabrication industry about the risk of silicosis to workers using artificial stone and methods for effective strategies for prevention; 2) facilitate medical monitoring of silica-exposed workers in the countertop fabrication industry; and, 3) enhance public health surveillance of silicosis related to working with artificial stone through increased reporting.*

*This surveillance project will use data per OHB's legal mandate (under Health and Safety Code §105175) to collect and summarize statistics describing the causes and prevalence of work-induced diseases in California.*

During Year 3 of the CASS Project, we made substantial progress on all three project aims.

**For Aim 1**, our activities relate to educational messages for California-based countertop fabrication employers and workers. We updated the following educational materials developed in Years 1 and 2 to reflect Cal/OSHA's Emergency Temporary Silica Standard that was enacted in December 2023:

1) Air Monitoring for Silica: An Employer Guide

2) Respirable Crystalline Silica Standard Overview (this document was incorporated into the new fact sheet about the Emergency Temporary Silica Standard mentioned below)

3) Hazard Alert for Workers: Silica dust from countertop work can harm you! (English, Spanish, and Chinese versions available)

In addition, we developed a new fact sheet about the Emergency Temporary Silica Standard:

4) Guide for Employers. Silica: Emergency Temporary Standard

All of these materials are available on our website:

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/Pages/SilicaStoneFabricators.aspx>

In addition, the Los Angeles County Department of Public Health has a webpage on silicosis that links to our resources: <http://ph.lacounty.gov/silicosis/>

In May 2024, we participated in a conference on silicosis related to engineered stone held at UCLA (<https://coeh.ph.ucla.edu/symposia/preventing-silicosis/>), which included industry representatives and employers as well as worker advocacy groups. We were able to distribute printed copies of our educational materials to conference attendees.

In *Year 3*, we undertook an overhaul of our silica resources website to make it easier for various audiences (workers, employers, healthcare providers, public health officials) to find dedicated information. We are finalizing the changes now and expect that the new website will debut by December 2024.

**For Aim 2**, our activities relate to the development of training materials for continuing medical education (CME) on silicosis and the design of a pilot study comparing routine and enhanced testing protocols for detecting silicosis.

In *Year 3*, we identified a host for the CME course, the Southern California NIOSH Education and Research Center (ERC), housed at UCLA and UCI. The CME course covers the health effects of silica exposure, the hazards of artificial stone, diagnosis, referral, and treatment of silicosis, reporting cases to CDPH, vulnerable workers, and components of the silica medical examination. The CME course was posted online as a free resource offered by the ERC in the spring of 2024 (<https://erc.ucla.edu/course/silicosis-in-countertop-fabrication-workers/>). We have advertised the course on our website and through presentations at the UCLA silicosis conference and other venues, including the Health Officers Association of California (HOAC) Grand Rounds. A complement to the CME course is one-page fact sheet that we developed in Year 2 called “Silicosis in Countertop Fabrication Workers: What Providers Need to Know.” The fact sheet is available on our website:

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/CDPH%20Document%20Library/SilicosisinCountertopFabricationWorkersWhatProvidersNeedtoKnow.pdf>

In addition, we developed an educational document about the diagnosis and treatment of silicosis that healthcare providers can distribute to their patients. We are working with the American Thoracic Society, a national respiratory health professional organization, to have the document published in one of their journals.

For the pilot study, we identified UCLA-Olive View Medical Center as a research partner, with Drs. Jane Fazio and Nader Kamangar as site investigators. We chose UCLA-Olive View Medical Center because this Los Angeles County public hospital is located near a large concentration of countertop fabrication shops. To date, the physicians at this hospital have diagnosed and cared for the majority of the State’s cases of silicosis related to engineered stone. Should any study participant have abnormalities on study testing

that merit further diagnostic work-up, Drs. Fazio and Kamangar will be able to offer that clinical care, regardless of the participant's ability to pay.

We worked with Drs. Fazio and Kamangar to establish a subcontract for UCLA-Olive View Medical Center to conduct participant enrollment and medical testing (chest radiography, chest computed tomography, full pulmonary function tests, and blood biomarkers). We renewed our Institutional Review Board (IRB) approval with the California Health and Human Services Agency's Committee for the Protection of Human Subjects (CPHS), as required on an annual basis, and also received approval for amendments that reflect the partnership with UCLA-Olive View Medical Center. We developed a REDCap database for collection of the questionnaire responses and clinical data.

At the close of Year 2, we began study recruitment:

[https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/OHB/CDPH%20Document%20Library/CASS\\_Study\\_Flier.pdf](https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/OHB/CDPH%20Document%20Library/CASS_Study_Flier.pdf)

Recruitment continued throughout *Year 3*, with a total of 42 enrolled participants to date. All of the enrolled participants have completed the interviewer-administered questionnaire and more than half have undergone the medical testing, with the remainder scheduled for testing in the upcoming weeks. We anticipate meeting our goal of 100 study participants within the planned timeframe.

Preliminary analysis of the questionnaire responses was presented at a UCSF Occupational Medicine conference in March 2024. Of the first 15 participants, most were foreign-born Hispanic males with a median of 16 years' tenure in the industry. Nearly all reported frequent exposure to dry cutting, and although most reported respirator use, respiratory protection training and fit testing were uncommon. These initial results indicate that participants commonly engage in high-risk dust generating activities, with few utilizing mitigation strategies.

**For Aim 3**, our activities relate to exploring options for increased reporting of silicosis cases to OHB. During *Year 3*, we continued to pursue multi-source surveillance, including hospital discharge records, direct provider reporting, and electronic case reporting using the Reportable Conditions Knowledge Management System (RCKMS). In anticipation of the addition of silicosis to California's Title 17 list of reportable conditions, we collaborated with CDPH partners to develop a reporting form within CalREDIE (<https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/CalREDIE.aspx>), the state's secure system for electronic disease reporting and surveillance. We are told this regulatory step should be completed during Year 4, and we are preparing messaging for healthcare providers and local health jurisdictions accordingly. We thus remain ahead of schedule for our Aim 3 milestones.

In addition, during *Year 3*, we provided input to Cal/OSHA on planned permanent changes to the Silica Standard. Notably, the proposed regulation includes requirements for healthcare providers conducting mandated medical screening of silica-exposed workers to submit to OHB each employee's name, date of birth, and written medical report, regardless of the results of the examination. In addition, the proposed regulation requires employers to report cases of silicosis to OHB. We expect the permanent changes to the Silica Standard will be reviewed and approved by the state's Standards Board in Year 4. These requirements related to reporting to OHB will expand the reach of our surveillance system.

Finally, we have developed a silicosis data dashboard that we intend to incorporate into our updated silicosis webpage. The dashboard will provide the current tally of artificial stone-related silicosis cases identified through surveillance, and present basic demographics, metrics of disease severity (lung

transplants, deaths), epidemiologic curves, and a state map with information by county. We anticipate the dashboard will be posted online early in Year 4.

### **Papers and Presentations.**

1. Surasi K, Ballen B, Weinberg JL, Materna B, Harrison R, Cummings KJ, Heinzerling A. Elevated exposures to respirable crystalline silica among engineered stone fabrication workers in California, January 2019—February 2020. *Am J Ind Med.* 2022;65(9):701-707.
2. Spiegel A, Cummings KJ, Flattery J, Harrison R, Heinzerling A. Self-reported silica exposures and workplace protections among engineered stone fabrication workers in California. *Am J Ind Med.* 2022;65(12):1022-1024.
3. Gandhi S, Heinzerling A, Flattery J, Alam A, Cummings K, Harrison R. Active surveillance of artificial stone workers facilitates early identification of silicosis. *Am J Respir Crit Care Med.* 2022;205:A2497. Poster presentation at the American Thoracic Society International Conference, May 16, 2022.
4. Cummings KJ. Silicosis related to engineered stone in California. Presentation at the Western States Occupational Network (WestON) – 13th Annual Meeting, Council of State and Territorial Epidemiologists, NIOSH Western States Division, Denver, Colorado, September 15, 2022.
5. Fazio J, Gandhi SA, Flattery J, Heinzerling A, Kamangar N, Afif N, Cummings KJ, Harrison, RJ. Identification of a statewide epidemic of silicosis among engineered stone fabrication workers – California. *Am J Respir Crit Care Med.* 2023;207:A4359. Oral presentation at the American Thoracic Society International Conference, May 22, 2023.
6. Gandhi SA, Heinzerling A, Flattery F, Cummings KJ. Occupational contributions to respiratory health disparities. *Clin Chest Med.* 2023;44(3):635-649.
7. Fazio JC, Gandhi SA, Flattery J, Heinzerling A, Kamangar N, Afif N, Cummings KJ, Harrison RJ. Silicosis among immigrant engineered stone (quartz) countertop fabrication workers in California. *JAMA Intern Med.* 2023;183(9):991-998.
8. Gandhi SA, Heinzerling A, Flattery J, Fazio JC, Alam A, Cummings KJ, Harrison RJ. Active surveillance of engineered stone workers facilitates early identification of silicosis: A discussion of surveillance of occupational lung diseases. *New Solut.* 2023;33(2-3):119-129.
9. Fazio J, Heinzerling A. Silicosis in Engineered Stone Fabrication Workers: An Emerging Epidemic. Presentation at the California Medical Association Virtual Grand Rounds, November 14, 2023.
10. Flattery J, Woolsey C, Epstein-Corbin M, Blackley DJ, Harrison RJ, Cummings KJ. Surveillance of silicosis using the Reportable Conditions Knowledge Management System — California, December 2022–July 2023. *MMWR Morb Mortal Wkly Rep.* 2023;72(46):1275-1276.
11. Cummings KJ. Engineered stone countertop fabrication and silicosis in California, USA. Presentation at the European Respiratory Society Vision Live webinar (<https://channel.ersnet.org/channel-32-ers-vision-live?contId=107957>), April 2, 2024.

12. Cummings KJ. Public health surveillance. Presentation at the Preventing Silicosis Caused by Artificial Stone in the United States Conference, Los Angeles, California, May 16, 2024.
13. Flattery J, Woolsey C, Fazio JC, Gandhi S, Heinzerling A, Harrison R, Cummings KJ. Silicosis associated with engineered stone exposures and tuberculosis: overlaps in clinical presentation and delayed diagnosis. *Am J Respir Crit Care Med.* 2024;209:A3105. Poster presentation at the American Thoracic Society International Conference, May 20, 2024.

### **Products.**

Available at:

<https://www.cdph.ca.gov/Programs/CCDC/DEOD/DCDC/DCDC/Pages/SilicaStoneFabricators.aspx>

1. CASS Study Flier
2. Hazard Alert for Workers: Silica Dust from Countertop Work Can Harm You!
3. Silica: Emergency Temporary Standard (ETS): Employer Guide
4. Workplace Air Monitoring for Silica: Employer Guide
5. Silicosis Reporting Form
6. Silicosis in Countertop Fabrication Workers: What Providers Need to Know
7. Global Epidemic Comes to California: Silicosis in Countertop Workers

### **Media.**

The issue of silicosis related to artificial stone in California has received extensive media attention. Below is a selection of pieces that were published/aired in *Year 3*.

1. Werner, Anna, and Analisa Novak. "Workers Who Cut Crushed Quartz Countertops Say They Are Falling Ill from a Deadly Lung Disease: 'I Wouldn't Wish This Upon My Worst Enemy.'" CBS News, February 6, 2024.
2. Chiabra, Enrique. "Nuevo Proyecto De Ley Ayuda Prevenir Silicosis En Trabajadores." Telemundo 52, Los Angeles, May 15, 2024. "Epidemia Oculta: Un Mal Que Se Ensaña Con Los Pulmones De Trabajadores Latinos." Telemundo 52, Los Angeles, May 13, 2024.
3. "Epidemia Oculta: Pacientes De Silicosis Viven Con Un Tanque De Oxígeno." Telemundo 52, Los Angeles, May 14, 2024.
4. "Epidemia Oculta: Un Trasplante De Pulmón Sería Su Única Opción." Telemundo 52, Los Angeles, 2024, May 15.
5. Alpert Reyes, Emily. "Incurable Silicosis Cost a Countertop Cutter His Lungs. Are These Companies at Fault?" Los Angeles Times, July 28, 2024.