RESEARCH COMPENDIUM

California Collaborative for Public Health Research

May 2025

CPR3 | UCSF

Table of Contents

NOTE: The research summaries presented in this Compendium reflect ongoing work and were submitted by CPR3 grantees in April 2025. Results may be preliminary and are subject to change. The views expressed are those of the authors and do not necessarily reflect the views of CPR3 or its funder, the California Department of Public Health.

About CPR3

Funded in 2022, the **California Collaborative for Public Health Research** (CPR3) is a joint public health research program between the University of California, San Francisco (UCSF), the California Health and Human Services Agency (CalHHS) and the California Department of Public Health (CDPH). CPR3 was born out of the COVID-19 pandemic, when policymakers in California were in need of rapid, trustworthy and high-quality evidence to inform public health actions. CPR3 established the infrastructure necessary to bring together the expertise of the University of California (UC) system to help solve pressing public health problems quickly and efficiently.

CPR3's infrastructure provides support for the conduct of high-quality research, meaningful community engagement and high-impact evidence translation.

CPR3 Core Activities

Crafting high-priority public health research agendas by convening key stakeholders to prioritize public health research needed for individuals and communities to experience renewed and improved health and wellbeing	Amplifying public health research through **targeted investment, technical assistance and facilitated data sharing** to close gaps in knowledge and implementation, enhancing the impact of public health in California	Facilitating **community engagement and evidence to policy strategies** to ensure that public health research meets the needs of communities, policymakers and other stakeholders

Collectively, these activities are critical to achieving CPR3's mission: to harness the depth of expertise throughout the UC system – including diverse partnerships with community organizations and state and local policymakers – to conduct high-impact public health research. By supporting research to inform public health interventions, investments and decision-making, CPR3 is focused on making meaningful change in the lives of all Californians.

CPR3 by the Numbers

Public Health Research Agenda Setting

4 | Governance committees

With leaders from state agencies, community organizations and policy & research institutions across California.

5 | Priority research areas

To better understand the impact of the pandemic on California and explore pathways for recovery.

Research Portfolio

38 | Research projects

from all 10 UC campuses selected for funding
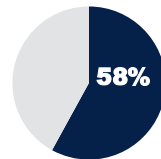
$6.8M dispersed

Reviewed & scored by

51 | Technical & community reviewers
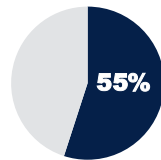
With representation from:

8 UC campuses
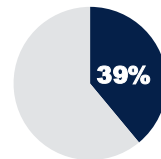
7 Non-UC academic institutions

6 Community-based organizations

58%

state agency or local health department partner

55%

UC or other academic partner

39%

at least one community or advocacy partner

Data Access & Sharing

1st | ever CDPH-UC wide interagency Data Use Agreement

60 | Researchers accessed DUA data

from 7 of the 10 UCs

165+ | Datasets on the CPR3 Data Catalog

A publicly accessible, searchable catalog averaging 130 visitors per month

Evidence Translation & Results Dissemination

4 | Virtual events

related to research communication and how evidence is used in policymaking, drawing in over 230 participants

CPR3 Portfolio Kickoff

Elevator Pitch Workshop

Research Uptake for Policy

Policymakers Perspective Panel

33% | Of projects shared findings

with community and policy audiences

15 | Interactive works-in-progress sessions

attended by over 300 participants – including more than 50 policymakers and community discussants

1 | Symposium

to share insights from CPR3's portfolio and explore their implications for shaping public health policies and initiatives

A letter from CPR3's Principal Investigator

The California Collaborative for Public Health Research (CPR3) emerged from a shared recognition that real-time evidence generation was needed to inform policy decisions and that the disproportionate impacts of the COVID-19 pandemic were deepening existing health and social inequities. This spurred unprecedented collaboration between groups that historically didn't always communicate with one another. It was through these conversations and shared efforts that we were able to navigate the challenges we faced.

What began as a necessity during a crisis quickly evolved into something powerful. CPR3 is a testament to what we can achieve when public health policymakers, academic scientists and community-based organizations come together. This spirit of collaboration and meaningful connections is what we continue to nurture at CPR3. We aim to provide a trusted space for people to exchange ideas and support one another – not just to confront immediate challenges, but to create lasting solutions.

This Research Compendium synthesizes the multi-disciplinary work led by over 35 CPR3-funded project teams who span all 10 UC campuses and countless community and state agency partners. Through this Compendium, we aim to help disseminate findings from the CPR3 research portfolio and create a connection between the research teams and the policymakers, practitioners, program experts and communities who may be able to use and benefit from it. While many CPR3 projects were aimed at understanding and mitigating the effects of the COVID-19 pandemic in key areas of need, we know that their findings extend well beyond the pandemic.

These projects highlight the endless possibilities for continued academic, public health and community collaboration. CPR3 will remain a hub for collaboration, learning and innovation, where everyone's expertise and experiences are valued in solving these complex problems.

I am excited about the continued opportunity to work alongside you to build a healthier, more equitable future for all. Thank you for being a part of this important work.

Sincerely,

Priya Shete, MD, MPH
Principal Investigator
California Collaborative for Public Health Research (CPR3)

A letter from the California Department of Public Health

As we reflect on the journey that brought us together, it's clear that the COVID-19 pandemic highlighted the power of collaboration and the importance of working as one unified force to tackle the challenges we face in public health.

From the very beginning, our partnership among academic researchers, public health professionals and the healthcare sector was instrumental in responding to the crisis. Together, we worked on modeling, projections and forecasting to better understand the impacts of COVID-19 and to prioritize and allocate scarce resources in a way that directly addressed inequities in our communities. This partnership has been transformative, blending academic expertise with on-the-ground public health and healthcare experience to develop valuable solutions.

It is through this unique partnership between University of California campuses and the California Department of Public Health that we have been able to bridge the gap between theory and practice. We are proud of our achievements in data modeling for evidence-based decision-making and our collaborative efforts to study the long-term impacts of the pandemic and related policies. We are confident that this collaboration will continue to help us address the public health challenges ahead, whether it is vaccine-preventable diseases, H5N1 bird flu or other emerging threats, and create more equitable health outcomes for all Californians.

Thank you for being a part of this vital work. We look forward to continuing our partnership and building a healthier future for our communities.

Sincerely,

Erica Pan

Erica Pan, MD, MPH, FAAP, FIDSA
State Public Health Officer & Director
California Department of Public Healt

Priority Research Area

CHILDREN & ADOLESCENTS

The impact of the COVID-19 pandemic on children & adolescents and the role of intersecting social, structural and economic factors at household and community levels.

Understanding the impact of the COVID-19 pandemic on cardiometabolic health among Latino, Black, and Pacific Islander children in San Francisco, CA

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PROJECT SUMMARY

We compared weight gain among children in San Francisco during the period of pandemic school closures to the prior two years. We found that children gained more weight during the pandemic and that lower-income children gained the most. We interviewed parents of Latino and Black children living in San Francisco and found that during school closures children had very limited physical activity, spent most of their day on screens, went to bed later and snacked more frequently. Investments in physical activity and healthy food for children may be needed to offset the impacts of the pandemic on their health.

PARTNERS

- San Francisco General Hospital Children's Health Center
- United Playaz
- Jamestown Community Center

Public Health Significance

Understanding the impact of the COVID-19 pandemic and related policies on children's health behaviors and weight trajectories is critical for informing strategies to mitigate these effects. This information can help inform decision making in future pandemics.

BACKGROUND

COVID-19 pandemic-related closures of schools and recreational activities led to unprecedented changes in children's routines. However, there remain gaps in understanding the impacts on marginalized communities, particularly in settings that experienced prolonged school closures. Our objectives were: 1) to analyze an electronic medical record-based cohort of children ages 4-17 years in San Francisco, CA to assess population change in BMI prior to, during and after the period of school closures, and 2) to use qualitative methods to understand parents' and youth-serving community-based organization (CBO) staff members' perspectives on how the pandemic impacted children's health behaviors.

METHODS

We used generalized estimating equations (GEE) to assess population-level changes in BMI-z score and overweight/obesity across different time periods (prior to and from the onset of the COVID-19 pandemic). We assessed for effect modification by age-category, insurance status, and race/ethnicity. We conducted focus groups and semi-structured interviews with Latino and Black parents/caregivers of school age children as well as staff members of CBOs that serve low-income children. The focus groups and interviews explored perceptions of children's experiences with physical activity, screen time, sleep and eating during the period of school closures, as well as long term impacts.

RESULTS

Mean population-level BMI-z score increased twice as fast during the period of school closures in San Francisco compared to the year prior. The proportion of children with overweight/obesity increased by 1.4% points per year in the year prior to the pandemic and by 4.9% points per year during the school closure

period. Increases in BMI-z and overweight/obesity were steeper among younger and publicly insured children resulting in widening of income and racial-ethnic disparities.

We conducted two focus groups with 13 parents/caregivers and semi-structured interviews with 36 parents. Four major themes emerged: 1) Children's physical activity was severely limited by pandemic restrictions, fears of going outside, and small living spaces. 2) Children were on screens continuously throughout the day with some developing "screen addiction." 3) Sleep schedules shifted later, and some children developed difficulties with sleep onset that parents attributed to lack of physical activity, anxiety and depression. 4) Children's eating frequency increased, with parents describing children as snacking continuously. Parents attributed this to boredom, sadness and anxiety.
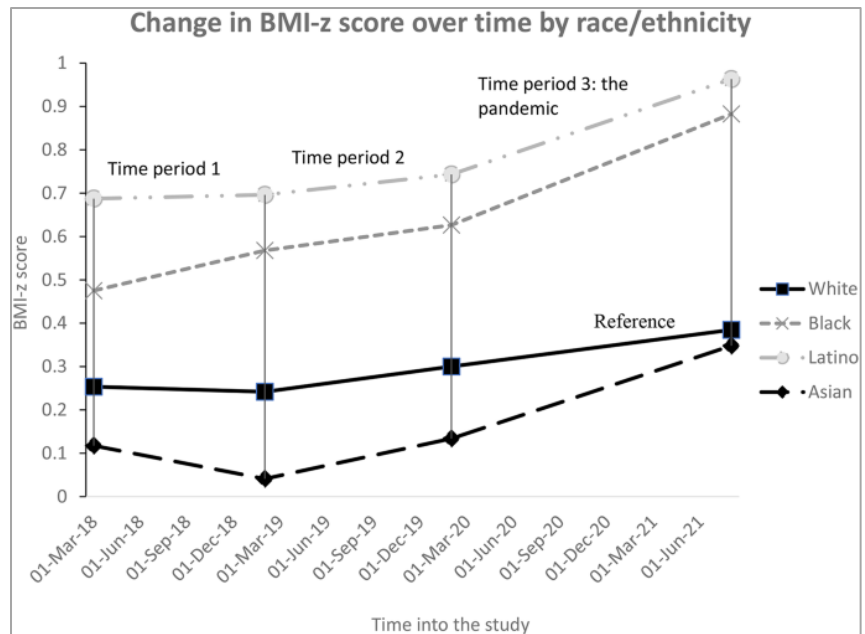
Figure 1. Change in BMI-z score over time among children in San Francisco, CA prior to and during the COVID-19 pandemic by race/ethnicity

	Start of the study: March 1, 2018	End of time period 1: February 28, 2019	End of time period 2: February 28, 2020	End of time period 3 (the COVID-19 pandemic): August 31, 2021
Percent of all children with overweight/obesity (%)	25.0	26.1	28.2	36.2
Age category:				
4–6 year olds *	20.8	15.8	18.5	25.5
7–9 year olds **	17.5	20.7	21.9	36.9
10–12 year olds **	25.8	28.4	33.8	43.3
13–17 year olds= (reference group)	35.1	35.9	36.4	40.7
Insurance Category:				
Public insurance**	31.1	32.6	34.3	46.6
Private insurance= (reference group)	19.8	18.9	21.5	26.6
Race/ethnicity:				
Black	30.9	31.1	34.3	43.2
Latino	34.9	34.5	38.3	48.0
Asian	17.7	17.1	18.3	27.9
White= (reference group)	18.2	19.8	20.3	26.4

* $p < 0.05$ for effect modification of the increase in overweight-obesity relative to the reference group during time period 3

* $p \leq 0.001$ for effect modification of the increase in overweight-obesity relative to the reference group during time period 3

Table 2. Changes in the percent of children with overweight/obesity prior to and during the COVID-19 pandemic among children in San Francisco, CA

CONCLUSION Children in San Francisco experienced increases in BMI-z and overweight/obesity during the period of school closures, resulting in widening of disparities by income and race-ethnicity. Our qualitative findings suggest that these increases were likely driven by significant changes in children's physical activity, screen time, sleep and eating habits.

ACKNOWLEDGEMENTS Parents, children, staff and providers of the San Francisco General Hospital Children's Health Center.

NEXT STEPS Based on findings from our qualitative study, our team is interested in pursuing research that assesses the impact of intensive case management for physical activity and food resources on cardiometabolic health outcomes in children. Our objective will be to assess whether such a resource can overcome the many structural barriers to physical activity and healthy food access and how such an approach can improve child health. We are actively pursuing funding to support this work.

DISSEMINATION
- **Changes in BMI prior to and during the COVID-19 pandemic among children: a retrospective cohort study in San Francisco, CA.** *BMC Public Health*. October 2024.
- **A qualitative examination of the impact of the COVID-19 pandemic on health behaviors during the period of school closures among children in San Francisco, CA.** Poster Presentation. Pediatric Academic Societies Conference. Honolulu, HI. April 2025.

Evaluating the impacts of county-level COVID-19-related policies on disparities in educational outcomes among California youth

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[2] *University of Chicago Harris School of Public Policy*
[3] *Social Policies for Health Equity Research Center, Harvard T.H. Chan School of Public Health*

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PROJECT SUMMARY

This project explores the relationship between county-level pandemic-era policies and children's schooling and educational outcomes. More comprehensive indoor face covering requirements, stay at home orders, and school closures were most consistently associated with higher rates of adverse outcomes, while contact tracing, income supports, and utility supports were associated with lower rates of adverse outcomes. We observed substantial differences between schools with a majority vs. minority of students enrolled in Free and Reduced Price Meals, and some modest differences by race/ethnicity. These results have implications for the implementation of county-level policies to protect children's well-being during future public health crises.

PARTNERS

- University of California, San Francisco
- Social Policies for Health Equity Research Center, Harvard University

BACKGROUND Research since the onset of the COVID-19 pandemic has highlighted the importance of policies as determinants of children's well-being. Most research to date has focused on federal or state-level policies, despite significant variation in policies across smaller jurisdictions. We sought to assess the relationship between county-level policies and children's schooling outcomes.

Public Health Significance

Even well-intentioned government policies may have detrimental effects on child health and schooling outcomes due to elements of their design or the larger structural context in which recipients live, reinforcing the need to evaluate even common-sense legislation. This study provides evidence that can be used to inform future research and local policymaking, promoting recovery from this pandemic and preparedness to support children in future health emergencies.

METHODS We linked the U.S. COVID-19 County Policy Database (UCCP) to annual school- and county-level datasets from the California Department of Education, the American Community Survey, and other publicly available data sets. We assessed the relationship between the comprehensiveness of 13 containment, economic, and other public health policies that were implemented between 2020-2021 and children's rates of chronic absenteeism, suspensions, and test score failures in 2022 and 2023. Counties received a policy comprehensiveness score, determined by length of time and policy intensity (range 1-100 for each individual policy). We conducted a series of multivariable linear regressions to estimate the association between each policy and each outcome, controlling for school- and county-level variables including COVID-19 hospital admission rates. We then included an interaction term for an income proxy (<50% vs. >50% of students enrolled in free and reduced-price meals (FRPM)) and race/ethnicity (<50% vs. >50% of students identify as Black and/or Hispanic) to assess for potential disparate impacts.

RESULTS Several economic policies were associated with lower rates of chronic absenteeism, suspensions, or test failures, but these relationships were weak (<0.1 percentage point). More comprehensive contact tracing policies were most consistently associated with reduced rates of adverse outcomes (0.1 percentage point reduction in chronic absenteeism (2022 and 2023), math failure rates (2022), and English failure rates (2022 and 2023). More comprehensive indoor face covering requirements were associated with increased rates (<0.1-0.3 percentage points) of all adverse outcomes in either 2022 or 2023, and more comprehensive stay-at-home orders and school closures were associated with <0.1-0.3 percentage point increase in most outcomes in either 2022 or 2023. Some policies (e.g., daycare closures, workplace closures, and nutritional supports) had different relationships across outcomes and/or years.

In general, majority-FRPM schools with more comprehensive economic or non-containment-related public health measures had predominantly higher adverse outcomes than minority-FRPM schools. Differences by the racial/ethnic composition of schools were less consistent among majority Black and Hispanic schools relative to minority Black and Hispanic schools across both years.
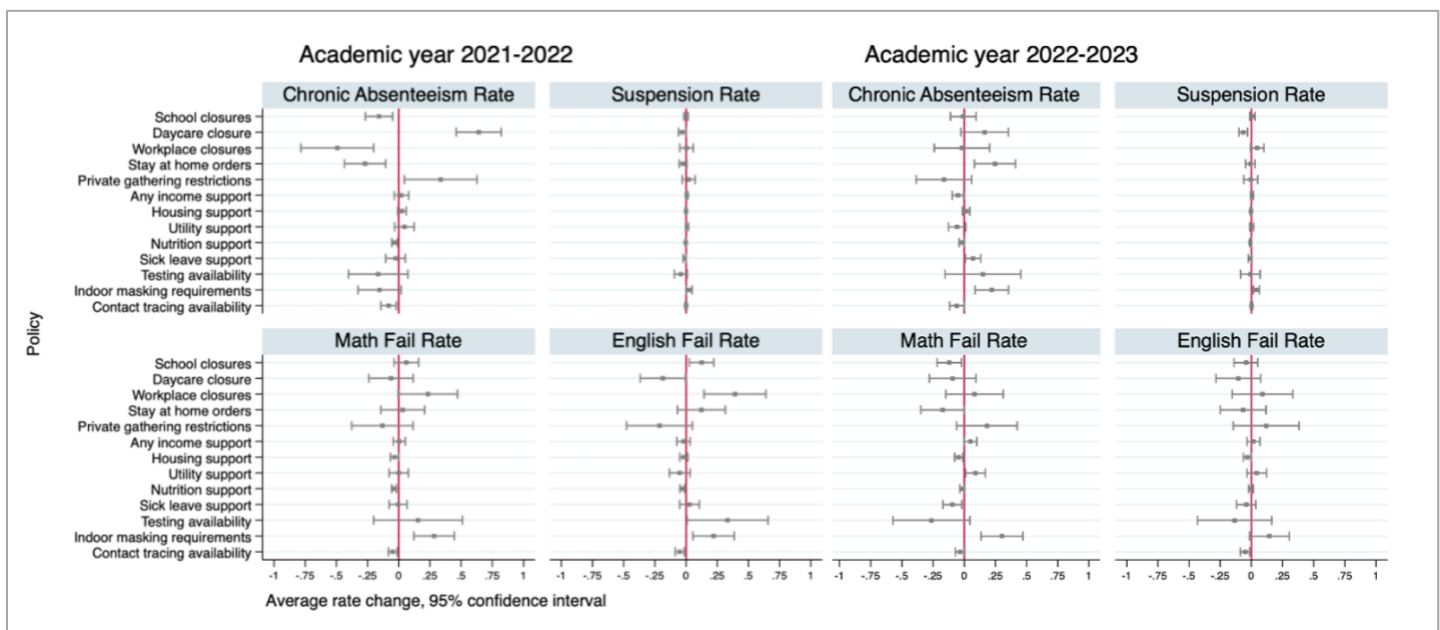

Figure 1. Association between 2020-2021 COVID-era policy comprehensiveness and four adverse schooling outcomes

CONCLUSION County-level COVID-19 policies are associated with children's educational outcomes, although in some cases a given policy had differential effects on different outcomes. Indoor masking requirements were most consistently associated with adverse impacts. These findings suggest that a more rigorous investigation of emergency public health measures is warranted, with particular attention paid to the effects of indoor face-covering requirements and differential effects of policies among economically disadvantaged schools.

NEXT STEPS This study was originally designed to also assess the impacts of county-level policies on disparities in health outcomes among California youth. However, due to ongoing delays in obtaining access to health data from the Department of Health Care Access and Information (HCAI), the results presented here are limited to schooling outcomes. Once HCAI grants us access to the health data that we have been approved to

analyze, we plan to link the UCCP to the emergency department and hospitalization claims data to evaluate how weekly policy changes from 2020-2021 impacted children's healthcare utilization from 2020-2023. These data are forthcoming.

DISSEMINATION After this project is complete, we will focus our efforts on disseminating our findings to relevant stakeholders, including the UCCP advisory board, policymakers, community members, and other interested parties. We will accomplish this by creating and circulating a policy brief and submitting our findings to academic journals.

Stories of care: Community-engaged action research to address caregiver burn-out in socially vulnerable communities

Rebecca Fielding-Miller[1*]

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PROJECT SUMMARY

We hosted three storytelling workshops at YMCA childcare facilities across San Diego County. In small groups of four to six, parents and caregivers were invited to imagine a family like theirs or those in their community and think of childcare related concerns and strategies. We summarized these themes into three stories that captured the common plots, challenges, and solutions that community members imagined. We shared these stories with policymakers, advocates, and providers, and asked them to imagine different strategies that might make these stories come true. Data collected from parents and childcare expert stakeholders showed that childcare issues should be addressed at a systemic level. This is important as it allows us to gather data from parents and childcare expert stakeholders to identify common childcare concerns and needs to inform policy change.

PARTNERS

- San Diego County YMCA
- San Diego for Every Child

BACKGROUND

The COVID-19 pandemic caused high and prolonged levels of stress among families, especially those who were already contending with racism, poverty, and unstable housing. Even though the immediate challenges of the pandemic are over, disruptions to childcare and a lack of support for under-resourced families continue to cause distress and burnout.

Public Health Significance

The purpose of this study is to better understand the experience of pandemic-related burnout among socially vulnerable caregivers in California, and to co-create actionable plans with key community stakeholders for strengthening early family supports to further pandemic response and readiness.

METHODS

We utilized an iterative, community-based participatory process to understand experiences of caregiver burnout and identify early family supports that can support parents currently experiencing the aftereffects of the pandemic and potentially prevent these in future crises. We conducted a series of storytelling workshops to describe the community impact of caregiver burnout. Caregivers were asked to co-create a story of a typical Californian family with small children experiencing childcare issues and to imagine solutions. The stories and solutions were summarized into themes and shared with policy makers, advocates, and providers.

RESULTS

The workshops came up with four imagined stories about real challenges with the following solutions:

1. Improve childcare quality with higher compensated and trained providers
2. Access to nutritious foods
3. Child friendly transportation
4. Lower cost of living
5. Mutual aid solutions for childcare.

CONCLUSION Families are struggling with the economic impact of the COVID-19 pandemic. The common solutions proposed by caregivers and providers highlighted the need for a shift in how childcare is funded in California to alleviate caregivers' stress and burnout.

NEXT STEPS We are currently working on two manuscripts drawn from data from this study. One is a methodology paper on storytelling workshops. The other is looking at the gendered nature of who are the protagonists of the stories developed during the workshops. Data from this study will be used to apply for NIMH R01 grants. We are also working with a local refugee led organization to explore child play groups as a tool to mitigate parent burnout.

DISSEMINATION

- **Stories of care: Childcare for family resilience**. Study website.
- **San Diego research shows parents of young kids are feeling 'burnt out'**. KPBS Quality of Life article. July 2024.
- **IMAGINE Rally.** Sacramento, CA. Dissemination event. May 2024.

The Stories of Care team at a community event in May 2024.

Addressing unfinished learning in mathematics: Games for Access to Mathematical Engagement (GAME)

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PROJECT SUMMARY

Students in California have unfinished math learning from pandemic disruptions. We sought to design a math intervention that would support students in unfinished learning through engagement in non-digital math games. We provided professional development, high-quality games, and undergraduates to support a "Games Time" twice a week in third and fourth grade classrooms. We saw significant academic growth in one grade, with the other grade experiencing less growth. Teachers and students strongly endorsed the program, noting positive shifts in engagement, positive attitudes towards mathematics, and learning. We are continuing the project this year with expansion into special education and middle schools.

PARTNERS

- Santa Barbara Unified School District
- California Math Project

BACKGROUND Our goal was to collaboratively develop a math intervention that meets the needs of students and teachers using non-digital math games for mathematical joy and learning.

METHODS Through a collaboration with a local district, third and fourth grade teachers facilitated a non-digital games session twice a week for a year, serving 217 students in 11 classrooms. We provided undergraduates, high-quality games, and professional development to support the project. A second research question for this project asked about the experiences of students and teachers in this project. We interviewed 11 teachers and 47 students and analyzed the data using thematic coding.

Public Health Significance

Intervention in mathematics is an unsolved and under researched problem in California schools, where students have fallen further behind post pandemic. Approaches to intervention in mathematics often focus on memorization rather than the problem-based approach recommended for California schools. Students need intervention that is both effective and engaging, while teachers need intervention without additional burdens.

RESULTS In our quantitative analysis of student learning, we found that participating third graders grew 16 points (STAR), or 1.6 grade levels, and fourth graders grew 9.9 points, or .99 of a grade level. The fourth-grade average was lower due to one classroom with a long-term substitute teacher with very little growth (.25). In researcher-created assessments, students grew an overall 13.38% (statistically significant), with stronger results in third grade.

From the interviews, both teachers and students voiced that games had helped with learning fundamental math concepts and found math games useful and fun. Teachers noticed a positive shift in student attitudes towards math. Both teachers and students reported increased engagement when games were offered during math time. Teachers credited games with providing opportunities for procedural practice in an engaging way. Students reported learning about fractions and money the most. In addition, students felt the social aspects of the games, such as competition and ability to play with friends, were the key components that fostered their increased engagement. Teachers believed that the games helped them differentiate instruction more

effectively through the built-in scaffolds of certain games. They liked games like *Multi* and *Fraction Fortress,* which allowed students to have an "entry point," regardless of their level of prior knowledge. All 11 teachers saw inherent value in implementing games time and stated their intention to continue using games in their classroom the following school year. Teachers identified barriers to implementation such as the quality of some games and variability in tutor support.

CONCLUSION Overall, our project was endorsed strongly by participants (both teachers and students). We saw significant growth in one grade across different instruments, with the other grade experiencing less growth. Teachers and students strongly endorsed the program, with both noting positive shifts in engagement, feelings towards mathematics, and learning. We are continuing the project this year with expansion into special education and middle schools. We are expanding beyond the original school district into two more California districts.

ACKNOWLEDGEMENTS We are grateful for the collaboration with cooperating teachers, students, and undergraduates in this project.

NEXT STEPS This project was developed in collaboration with the Santa Barbara Unified School District, our existing partner. The idea for the use of non-digital games was that of an administrator in the district. We continue to collaborate with the district to continue Games Time in two of the three schools. We were also able to develop new partnerships with secondary teachers who either teach special education or math intervention classes. We began a collaboration with a local middle school, particularly focused on the special education classrooms. We have done professional development with paraeducators and provided games to see how these educators use them. In addition, the work is expanding outside the district. We now have two related games-focused projects beginning in high schools in two additional districts in southern California.

DISSEMINATION

- **Universal Design for Learning Mathematics; Designing Math Intervention for Mathematical Joy**. California Mathematics Council North. Preconference session. December 2023.
- **Real Games, not "Worksheets Pretending to be Games"; Designing Math Intervention for Joy; The Magic is in the Margins.** UDL Math. National Council of Teachers of Mathematics Research Conference. Workshop. September 2024.
- **The Magic is in the Margins**. Presentation to all K-8 teachers, Rio School District, CA. November 2024.

MTOTO: Mobilizing Towards Outcomes Through Advocacy

Issa Beatriz Palomata[1], Hamza Kohistani[1], Labeeb Ijaz[1], Lisa Tealer[2], Kala Mehta[1,3]*

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[2] Bay Area Community Health Advisory Council
[3] Department of Epidemiology and Biostatistics, UC San Francisco

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PROJECT SUMMARY

TOTO stands for "Towards Outcomes Through Advocacy." In this study, we developed and augmented a youth leader program in San Mateo County to address health and mental health. We learned that there are many resources available for youth; however, the information about these resources is not always transparent. Our team solved this gap by making a resource sheet that simplified information for youth. We also learned that engaging in service – that is, being a youth leader is beneficial for young people. It introduces them to health workforce careers in public health and medicine. Several of our youth mobilizers have applied to the Children and Youth Behavioral Health Initiative (CHYBI) program to become Youth Leaders in that program.

PARTNERS

- Bay Area Community Health Advisory Council

Public Health Significance

Youth are experiencing higher rates of anxiety, depression, and suicide in the U.S. One way to mitigate poor mental health, is access to health care and preventive care. This study used a community participatory framework to fill this gap in knowledge with youth leaders, true representatives of community.

BACKGROUND

The COVID-19 pandemic has exacerbated existing mental health disparities among youth, particularly affecting Black, Indigenous, and People of Color (BIPOC) communities. Disruptions from school closures, online learning, and social distancing have increased anxiety, depression, and stress among young individuals, with BIPOC youth facing compounded challenges due to socioeconomic status, geographic location, and systemic barriers to accessing mental health care. The TOTO (Towards Outcomes Through AdvOcacy) research project aimed to address these disparities in the Bay Area. Utilizing a community participatory framework, the program leveraged youth mobilizers as authentic community representatives. This initiative investigated youth and family access to health care and preventive services from 2020-2022. The goal was to develop evidence-based strategies to enhance mental health resilience among diverse communities, focusing on COVID-19 experiences, care access, and mental health needs.

METHODS

This cross-sectional study focused on evaluating the effectiveness of youth mental health programs in the Bay Area, particularly examining how these programs adapted to the challenges posed by the COVID-19 pandemic. The study targeted youth aged 14 to 25 years, with an emphasis on marginalized BIPOC communities. Participants were recruited through direct outreach to youth programs, local schools, community centers, and social media platforms. Information sessions were held to inform potential participants about the study's objectives and the voluntary nature of participation.

Inclusion Criteria: To be included in the study, participants had to have been between 14 and 25 years old, resided in San Mateo County and provided informed consent.

Measures: Data collection involved anonymous surveys. Surveys were distributed electronically, covering topics such as mental health status before and after the pandemic, experiences with mental health programs,

perceived effectiveness of these programs, and the impact of COVID-19 on their school/work life and personal and family health and economic circumstances.

RESULTS *Improved Mental Health Status:* Preliminary results indicate that the majority of participants report better mental health now compared to before the pandemic. This suggests that some youth may have adapted positively or found beneficial coping mechanisms and support during the pandemic.

Limited Use of Community Support Services: The majority of participants did not access community support services during the pandemic. This finding highlights a potential gap in outreach or awareness of available resources among the youth in San Mateo County.
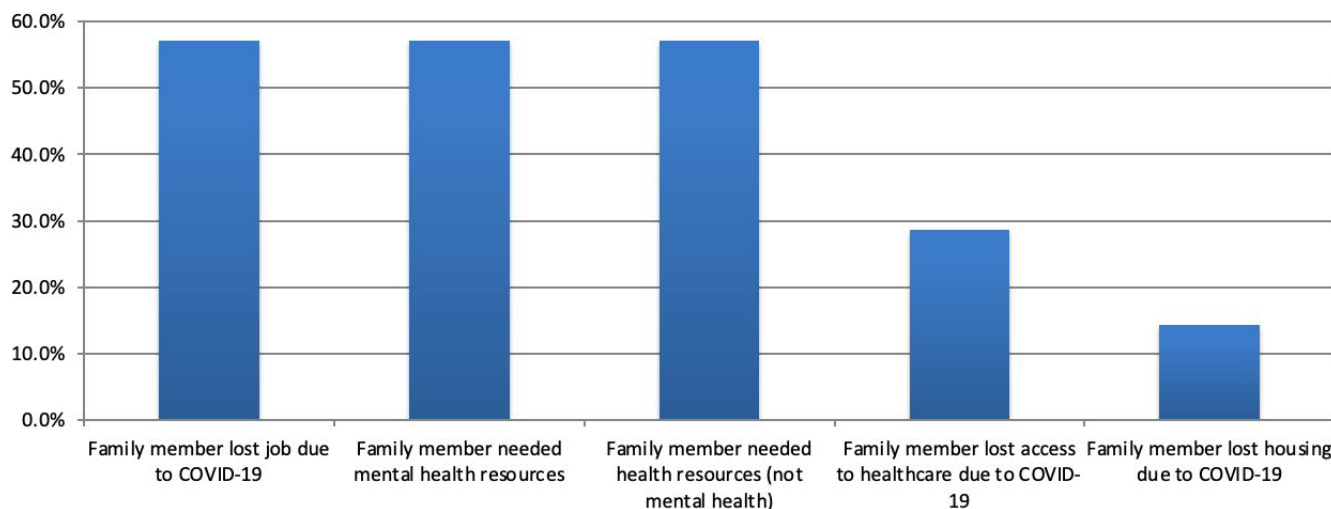
Figure 1. Percentage of respondents reporting access to specific community support services during the pandemic (n=251)

Economic and Health Impact: Many participants and their family members experienced significant economic and health challenges due to COVID-19:

▪ Job Loss: A considerable number of respondents reported that they or their family members lost their jobs during the pandemic.

▪ Mental Health Resources: There was a high demand for mental health resources among the participants and their families.

▪ Health Resources: Participants also indicated a need for general health resources, underlining the widespread impact of the pandemic on overall well-being.

Need for more participants: The current dataset (N=251) requires additional participants to enhance the reliability and generalizability of the findings. Increasing the sample size will provide a more robust understanding of the mental health impacts on the youth in the Bay Area.
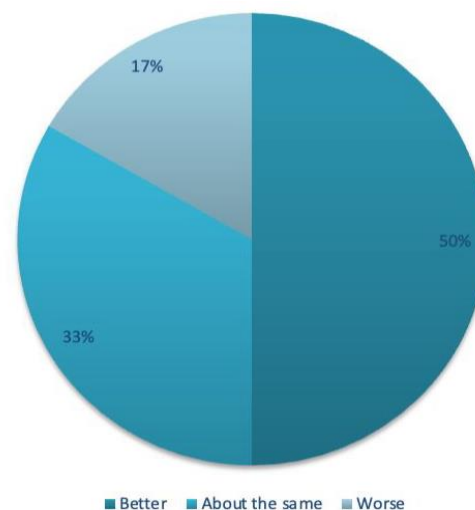

■ Better ■ About the same ■ Worse

Figure 2. Percentage of respondents reporting their current mental health is about the same, better or worse than before the COVID-19 pandemic (n=251)

CONCLUSION Future studies should explore the specific factors contributing to this positive change in mental health, such as increased family time, remote learning environments, or new coping strategies developed during the pandemic. Future programs should focus on increasing visibility and accessibility of mental health and community support resources to ensure they reach those in need. The significant economic and health impacts reported by participants highlight the urgent need for comprehensive support systems. Programs should aim to provide holistic assistance that includes job placement services, mental health counseling, and healthcare access to support recovery and resilience among affected families.

ACKNOWLEDGEMENTS We would like to acknowledge the CPR3 for the grant funding and linkages to policy initiatives at the state level. In particular, we wish to thank the CPR3 team, including but not limited to Kim Coleman-Phox, Andrea Nickerson, Hilary Spindler and Dr. Priya Shete. Their vision has made it possible to connect our model and research to others throughout the state. In addition, we wish to acknowledge the funding through the SF BUILD program supporting Kala Mehta (BUILD II grant 2020-2024, National Institute for General Medical Disciplines, U54 GM118986) and the Clinical Translational Science Institute at UCSF for the funding in support of the Pre-Health Undergraduate program supporting Hamza Kohistani, Labeeb Ijaz, Issa Palomata and Kala Mehta.

NEXT STEPS We intend to perform another round of surveys and potential scaling based on the success of this primary grant. We intend to apply for funding/grant opportunities at the state and federal level to increase and leverage our success with this proposal. We hope to develop a new relationship with the CYBHI policymakers and their agency to develop a 'funnel' for young youth to access these entry-level jobs and, in so doing, make youth-serving mental health resources available for our communities. One potential public health program impact of our findings could be to create a youth-focused public mental health workforce, and our program would be a model or prototype that could be implemented California-wide.

DISSEMINATION We have disseminated our results to our 200-person consortium in San Mateo County.

In the face of adversity: Promoting mental health and well-being among adversity-exposed adolescents during the COVID-19 pandemic

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PROJECT SUMMARY

During the pandemic, adolescent anxiety and depression doubled globally, with rates of mental health distress remaining alarmingly high among Californian adolescents. Those who experienced adverse childhood experiences (ACEs)—traumatic events before age 18—faced a higher risk of developing mental health conditions. The risk was even greater for youth identifying as lesbian, gay, or bisexual, who experience ACEs at higher rates. However, several interventions can protect adolescent mental health, especially among high-risk youth who have experienced ACEs or have sexual minority identities: parental involvement in schoolwork, in-person schooling, and coping behaviors like meditation, sleep, and exercise. Promoting these strategies can support recovery for youth with ACEs and better prepare Californians for future emergencies.

PARTNERS

- Adolescent Brain Cognitive Development Study
- YMCA Youth Research Advisory Council

BACKGROUND Adverse childhood experiences (ACEs) are associated with significant mental health risks in adolescents. Understanding i) disparities in ACEs by sexual identity and ii) identifying protective factors for adolescents with high ACEs during public health crises, such as the COVID-19 pandemic, is crucial for designing effective interventions.

### Public Health Significance

The COVID-19 pandemic exacerbated mental health challenges, especially among i) those with high ACEs and ii) sexual minority youth. Identifying protective factors that can mitigate these effects is essential for designing public health strategies.

METHODS This study used cross-sectional data from the Adolescent Brain Cognitive Development (ABCD) Study, analyzing a national cohort of 10,934 early adolescents (ages 10-14 years) between 2018 and 2020 across the U.S. There are four California sites in this national dataset. Linear regression analyses of 4,515 adolescents aged 11-15 years from the study's COVID Rapid Response Research surveys (2021) explored factors associated with improved mental health, such as in-person schooling and coping behaviors, stratified by ACE risk (0 ACEs, 1-3 ACEs, ≥4 ACEs). Subsequent analyses used linear regressions to estimate associations between protective factors and pandemic mental health, stratifying by sexual identity (LGB/Unsure vs No).

RESULTS During the COVID-19 pandemic, adolescents with high ACEs who engaged in in-person schooling, exercise, and healthy behaviors reported higher positive affect and lower perceived stress. In-person schooling had a particularly strong impact on positive affect among those with high ACEs (B = 5.55).

Among LGB/Unsure participants, in-person schooling, taking breaks from the news, caring for one's body, exercising, engaging in healthy behaviors, and making time to relax were significantly associated with higher positive affect and lower perceived stress scores (all p<0.05, statistically significant). In-person schooling was associated with greater improvements in mental health for LGB/Unsure youth compared to heterosexual youth (p<0.05, statistically significant).
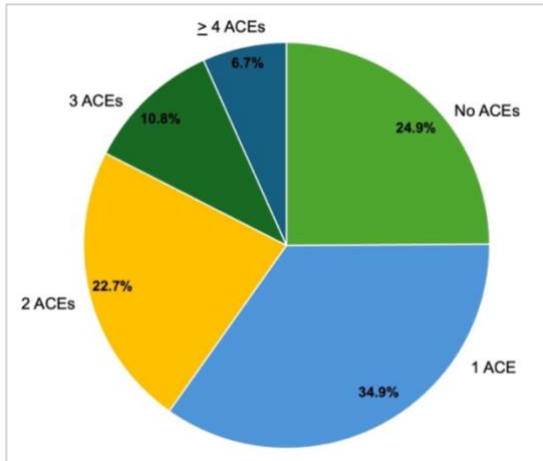
Figure 1. ACE stratification in ABCD sample of early adolescents.
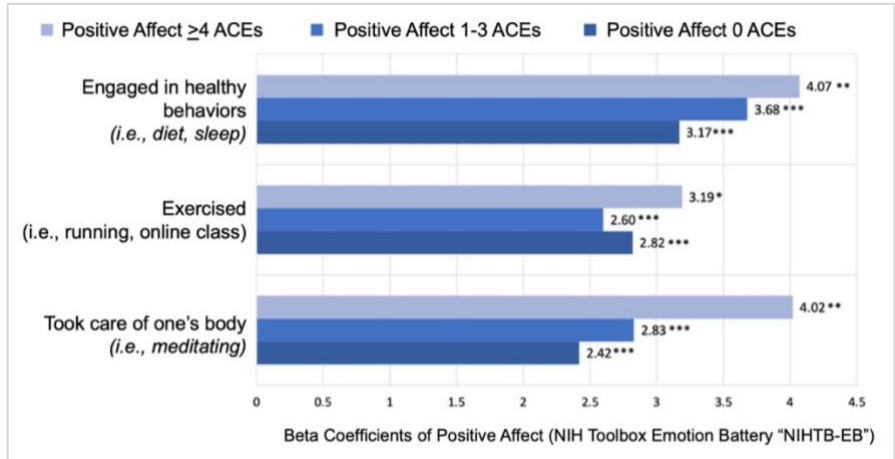
Figure 2. Coping behaviors that were associated with significantly higher positive affect and lower perceived stress (not pictured), for all youth, especially those with high ACEs.

School Method	Positive Affect			Perceived Stress		
	0 ACEs	1-3 ACEs	≥4 ACEs	0 ACEs	1-3 ACEs	≥4 ACEs
	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)
Online	ref	ref	ref	ref	ref	ref
In-person	1.9 (0.1, 3.7)*	1.3 (0.3, 2.3)*	5.6 (2.1, 9.0)**	-0.2 (-0.8, 0.4)	-0.5 (-0.8, -0.2)**	-1.5 (-2.7, -0.3)*
Hybrid	0.9 (-0.1, 2.7)	1.3 (0.3, 3.3)*	0.6 (-2.9, 4.1)	0.1 (-0.4, 0.7)	-0.2 (-0.5, 0.2)	-1.1 (-2.2, 0.1)

Table 1. Associations between schooling method and mental health among adolescents with 0 ACEs, 1-3 ACEs and ≥4 ACEs during the COVID-19 pandemic (n=4,515).

CONCLUSION During the pandemic, protective factors such as in-person schooling and coping behaviors significantly improved mental health outcomes for adolescents with high ACEs and those with minority sexual identities. These findings underscore the need for targeted clinic and school-based interventions to support high-risk youth, particularly in times of crisis.

NEXT STEPS We plan to continue working with our community partner, the YMCA Youth Research Advisory Council (YRAC), to tailor messaging on our ACEs and sexual minorities investigations and to inform future projects on the adolescent health impacts of social media use. We also plan to continue to collaborate with UCLA/UCSF ACEs Aware Family Resilience Network (UCAAN) and the *Live Beyond* campaign of The Office of the California Surgeon General to disseminate our findings with maximum public health impact.

DISSEMINATION
- **In the Face of Adversity: Pandemic Mental Health Protective Factors for Adolescents Who Have Experienced Adverse Childhood Experiences**. Abstract. Journal of Adolescent Health. March 2024.
- **Mental Well-Being Among Adversity-Exposed Adolescents During the COVID-19 Pandemic**. JAMA Network Open. March 2024.
- **Sexual identity is associated with adverse childhood experiences (ACEs) in US early adolescents**. Academic Pediatrics. January 2025.

Child and adult care food program: Impacts of COVID-19 changes to meal and snack reimbursement rates on family childcare home providers, children and families – Phase 2

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PROJECT SUMMARY

We examined how lower post-pandemic Child and Adult Care Food Program (CACFP) reimbursements affected family childcare home providers' (FCCH) ability to serve healthy foods to children. Findings show that lower rates made it harder for providers to participate in the program, negatively impacted meal quality, strained food budgets, and affected child food security. Providers and sponsors believe CACFP funding is insufficient and are asking for more support, including funding for an additional meal or snack. Such improvements to CACFP, the largest food support program in childcare, could improve the diets of all young children in FCCHs, irrespective of socioeconomic status.

PARTNERS

- UC Berkeley
- CACFP Roundtable
- California Department of Social Services: CACFP Branch and Community Care Licensing Division
- Community advisory board comprising CACFP experts

Public Health Significance

The United States Department of Agriculture, California Department of Social Services and other Child and Adult Care Food Program (CACFP) stakeholders can use study findings to help improve access to CACFP, inform CACFP responses to economic insults to mitigate nutrition insecurity, and promote health equity among vulnerable young children and their caregivers.

BACKGROUND The Child and Adult Care Food Program (CACFP), the largest U.S. nutrition program for childcare, provides two tiers of reimbursements (Tier 1 and Tier 2) to family childcare home providers (FCCH) to serve healthy foods to young children, many of whom are from families with low incomes. Due to COVID-19, federal waivers temporarily allowed all FCCH on CACFP to receive the higher Tier 1 reimbursements until June 2023. We aimed to understand the impact of tier reinstatement on CACFP participation, benefits and challenges, business viability, nutritional quality of food served, and food security of providers and families.

METHODS CACFP participation trends among all licensed FCCH in California (~28,000) were analyzed using Joinpoint regression to identify significant shifts in CACFP participation overall and by Tier. A subset of FCCH providers on CACFP (n=136 Tier 1, n=141 Tier 2) completed surveys in 2024 following waiver expiration. Survey estimates were analyzed and adjusted for confounders using linear or logistic regression. Qualitative interviews were conducted with 10 FCCH providers, 5 sponsors, and 5 families and analyzed using immersion crystallization.

RESULTS After the reinstatement of tiers, through December 2023, CACFP participation decreased at an average monthly percent change (AMPC) of -0.5 (95% CI: -0.7-0.4). This monthly decrease was most evident

among Tier 2 FCCHs (AMPC=-1.4, 95% CI: -1.6-1.1). Compared to Tier 1, Tier 2 providers reported more challenges with the reinstatement of tiers including increased out-of-pocket spending for food (90% Tier 2 vs 86% Tier 1), reduced variety (49% vs 39%), and charging families more for childcare (35% vs 22%), and were less likely to implement optional CACFP best practices (12% vs 28%). Over half of FCCHs (Tiers 1 and 2) found the higher reimbursement rates inadequate

Figure 1. Tier 2 providers reported more challenges with current reimbursement rates

during the waiver (56%); this increased to 96% with tier reinstatement. Providers want to be reimbursed for >3 meals/snacks (65%) for an average of four meals/snacks daily. A quarter of providers reported facing food insecurity. Qualitative data further illustrated reimbursement inadequacy and that tier reinstatement negatively impacted food budgets, food quality, and food security for children. Families valued CACFP for providing a variety of high-quality foods; providers and sponsors agreed that positive parental perception was a benefit of participation. Providers and sponsors called for universal, increased federal CACFP reimbursements of >3 daily meals/snacks.
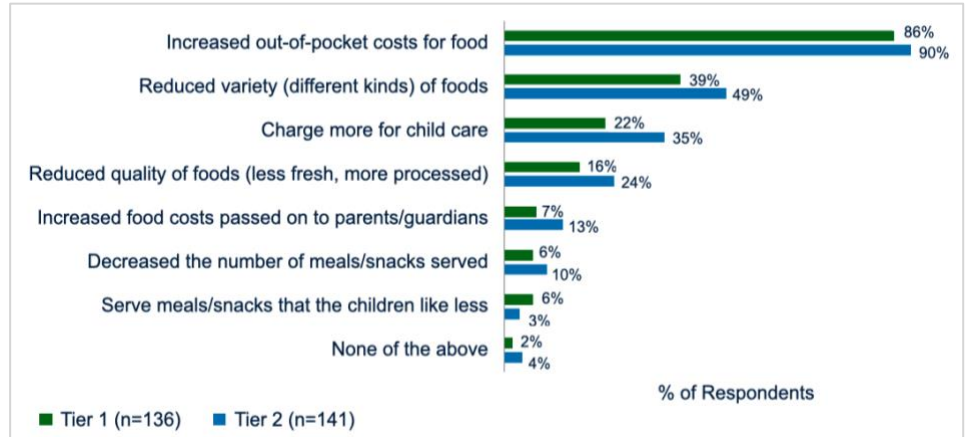
CONCLUSION Reinstatement of tiers reduced CACFP participation, especially among FCCHs in the lower Tier 2. Increasing reimbursements for healthy foods served to young children and reducing other participation barriers can better support FCCH providers and sponsors, improving nutrition and food security for young children from all families, irrespective of socioeconomic status.

	Actual Reimbursement (federal)		Ideal Reimbursement (average)	
	Tier 1	**Tier 2**	**Tier 1**	**Tier 2**
Pre-COVID	$4.78	$2.29		
During COVID	$5.67		$7.34	$7.54
After COVID	$5.70	$2.72	$7.74	$6.95

Figure 2. Both Tier 1 and Tier 2 providers report needing higher CACFP reimbursement. The ideal reimbursement numbers on the right represent the mean daily amounts reported by FCCH providers needed to serve 2 meals/1 snack per child aged 3-5 years which meet all CACFP requirements and appeal to children (during COVID n=518; after COVID n=277).

NEXT STEPS In collaboration with the CACFP Roundtable organization and leveraging the work from this CPR3-funded study, we have been granted two-year funding through the Robert Wood Johnson Foundation Healthy Eating Research program to implement an FCCH provider peer-navigator pilot program. This peer-led intervention aims to assist in overcoming challenges related to CACFP participation as identified in our CPR3 study and others, to bridge disparities in access. This pilot will involve FCCHs in California, most of whom are women of color and care for children from households of color and with low income. The main outcomes include the extent to which barriers are overcome, and program satisfaction and retention. In addition, we have worked with the California Department of Social Services to create a publicly available California story map

featuring geographical variation in CACFP participation by FCCHs that will be used to address service gaps. CDSS will officially release the Story Map later in 2025.

DISSEMINATION

- **Child and Adult Care Food Program Meal Reimbursement Rates and Program Participation by Family Child Care Homes in California.** Abstract. Journal of Nutrition Education and Behavior. August 2024.

- **Impact of Increased Child and Adult Care Food Program Reimbursement Rates for Family Child Care Home Providers in California.** Abstract. Journal of Nutrition Education and Behavior. August 2024.

- **Child and Adult Care Food Program: Family Childcare Home Providers' Perceptions of Impacts of Increased Meal and Snack Reimbursement Rates during the COVID-19 Pandemic.** Nutrients. September 2024.

- **Family Childcare Home Providers Need More Funding to Provide Healthy Meals and Snacks to Young Children.** Research Brief. October 2023.

- **CACFP Family Childcare Home Sponsor Perspectives - Serious Deficiency Challenges.** Research Brief. June 2024.

- **Challenges Experienced by Child and Adult Care Food Program Sponsors.** Research Brief. November 2024.

- **Evidence to Support an Additional CACFP Meal Reimbursement for Family Childcare Home Providers.** Research Brief. December 2024.

- **Strengthening the Child and Adult Care Food Program: Connecting Research and Policy to Improve Child Nutrition.** NPI news brief. February 2025.

"Ideally, we would like a reimbursement for all the meals that we serve, which is five. But I'm thinking if I do have a secondary choice, I would want to be reimbursed four meals, like those big meals, breakfast lunch, and dinner, plus either AM snack or PM snack. That's the four meals that I need."
— Tier 2 provider

"… all of our providers are serving all meals all day because their parents are working. So, if we were able to assist with giving those providers reimbursements for [all] those meals, it would be so headful for them and their business and the families and the children in their care."
— FCCH Sponsor

UNIVERSITY OF CALIFORNIA
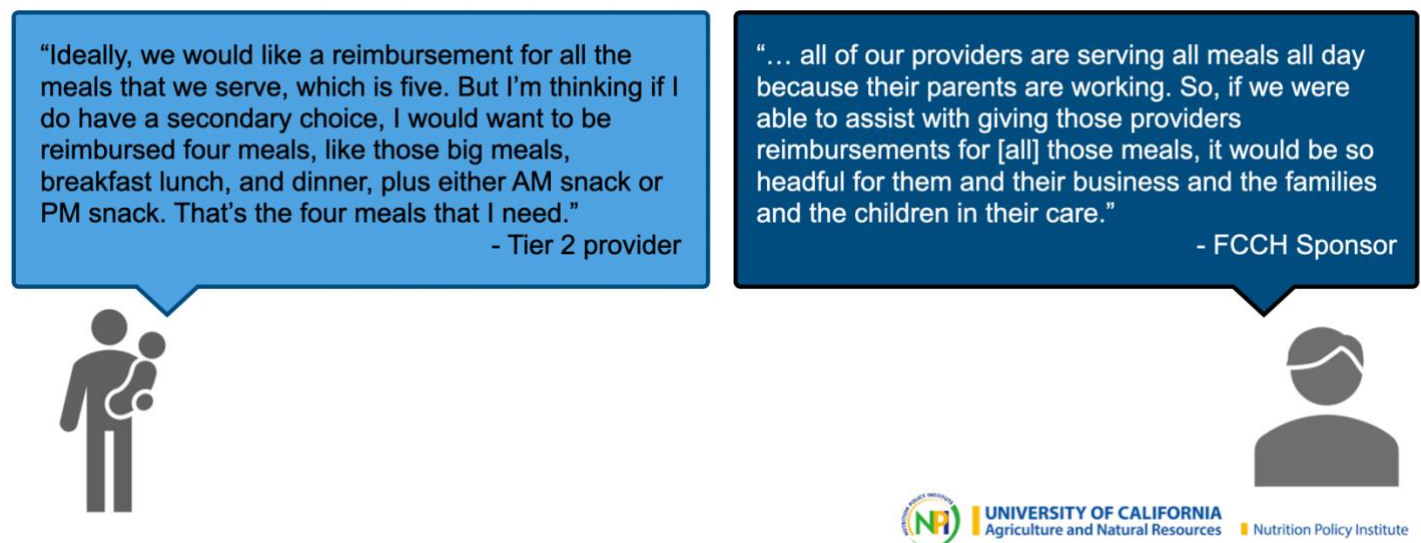Agriculture and Natural Resources | Nutrition Policy Institute

Figure 3. Providers and sponsors interviewed request CACFP coverage of more than three meals/snacks per day.

Recovery Pending Revolution: Youth artists of color as agents of recovery and readiness

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PROJECT SUMMARY

In this multi-methods and multi-aim study, we were able to demonstrate that a youth-generated, arts-based, online vaccine campaign was at least as effective in advancing vaccine goals as the gold standard but was superior in terms of viewer engagement and identification, particularly for Latinx youth. We also were able to successfully engage youth of color (YOC) in a process to create a new online campaign to promote emotional recovery from the COVID-19 pandemic and derive/generate meaningful themes that can inform public health efforts. Finally, we found that we could disseminate this new campaign content online with a two to three times greater degree of engagement when funds were dedicated to supporting online influencers and aligned community-based organizations. In aggregate, these findings suggest that engaging arts organizations as partners in public health communication efforts can be an effective and novel means to enable marginalized populations to affirmatively respond to current and future public health crises.

PARTNERS

- Youth Speaks
- UCSF Health Communications Research Program
- California Department of Public Health

Public Health Significance

COVID-19 has taken a toll on the mental health of many teens and youth adults, and pathways to recovery have been understudied. In addition, little work has explored how best to reach diverse YOC with engaging, culturally affirming, pandemic-related content to promote recovery from COVID-19 and readiness for future public health crises.

BACKGROUND This project had three aims to promote pandemic resilience and recovery in youth and young adults of color (YOC), with understandings gleaned through spoken word workshops, associated communication campaigns, and related dissemination efforts. This research evaluated online campaigns co-developed by UCSF and Youth Speaks, a leading arts-based youth organization: *Survival Pending Revolution* (SPR, a vaccine campaign based on critical communication theory) and *Recovery Pending Revolution* (RPR, a campaign to promote emotional recovery).

METHODS This was a multidimensional and multi-methods study. To evaluate SPR, we subjected the Youth Speaks content to an online randomized controlled trial, comparing its effects to those of a well-funded and established campaign targeting Black and Latinx populations (KFF's The Conversation). Participants were between 18-35 years of age residing in California. The intervention involved three tests: The first test included 600 Black participants and 600 participants from other racial/ethnic backgrounds who were randomly assigned to view videos from the two competing campaigns targeting the Black population. The second test had 600 English-speaking Latinx participants and the third test had 600 Spanish-speaking Latinx participants, all of whom were randomly assigned to view videos from these two competing campaigns targeting the Latinx population. Participants completed pre- and post-intervention surveys to assess attitudes, vaccination and booster status, vaccine and booster intentions, and direct message reactions. In contrast, we used a cross-sectional, qualitative approach to assess the RPR campaign process. To characterize the dominant themes

that reflect the challenges to, attributes of, and pathways to equitable pandemic recovery from the perspectives of a cohort of YOC participating in the campaign (n=11), we employed rapid ethnography to capture conversations and experiences conveyed over the course of writing workshops and conducted thematic analysis of workshop content and post-workshop interviews using a combined inductive and deductive coding approach. Finally, we carried out a descriptive quantitative study of six Instagram posts from RPR (using the historical control of six Instagram posts from SPR) to assess the impact of involving social media influencers or CBO partners on dissemination outcomes.

RESULTS In terms of pandemic readiness, both SPR and The Conversation were effective in improving attitudes and intentions towards COVID-19 vaccination across diverse YOC. SPR campaign viewers, however, reported greater identification with the message, higher engagement, increased credibility, and greater perceived effectiveness of the message. They also rated the argument's strength and personalized effectiveness of the message higher and greater positive emotions and willingness to share the messages. SPR was particularly more effective than the traditional approach (Conversation) among the Latinx population.

Partial Narrative	Whole Narrative
Gen Z aren't reliable or informed public messengers. Core Beliefs • Youth are inexperienced and need guidance from older people and institutions. • Youth spread mis/disinformation and are unreliable fact-checkers.	*We're savvy navigators of information platforms and mis/dis information.* Core Beliefs • That's cap. • We're smarter about information platforms than most adults we know. "News" isn't just on tv anymore.
Gen Z are passive victims of the world. Core Beliefs • Youth don't have the power or know-how to rise above personal or societal barriers. • Youth are unable to achieve success without other people's support.	*Our mental health struggles are also teaching us resilience practices.* Core Beliefs • We aren't helpless—we're skeptical about racism and unfair systems. • Staying true to and not denying my pain is what's getting me through life's crises.
Gen Z is a lonely generation without tools to make healthy connections. Core Beliefs • Youth don't have social skills to connect with people outside of games and the internet. • Youth are stuck in depression with no self-help skills.	*We value intergenerational connections but it's hard to learn how to relate when we don't see it enough in the world.* Core Beliefs • Some of the safest parts of our lives are when we are connected to elders and kids younger than us. • We feel strongest when we're connected but aren't really taught what solidarity with other groups has looked like throughout history.

Table 1. Replacing partial narratives with whole narratives for Recovery Pending Revolution campaign.

In terms of pandemic recovery, five overarching themes from the RPR campaign process emerged:
1. COVID-19's personal and collective impacts (e.g. disproportionate effects on subpopulations; the intersection between recovery and mental health);
2. equitable recovery (e.g. emphasizing the role of art in the healing process and its intersection with racial and social justice);
3. resilience (e.g. practices for self- and community-care, how individuals and communities adapt/find strength during challenging times);
4. mental health individually and collectively across time (e.g. intergenerational trauma, isolation, and emotional well-being); and
5. organizational partnerships (e.g. the role of a trusted youth-facing arts-based organization in promoting public health).

Finally, RPR posts (augmented by influencers and CBOs) outperformed SPR posts in all measured categories on a per-week basis. This includes higher averages for accounts reached (followers and non-followers), plays, likes, comments, shares, and saves. The differences were particularly pronounced in the categories of likes, saves, and watch time where RPR posts showed significantly higher engagement compared to SPR posts. Across posts, RPR content shared in partnership with influencers reached 2-3 times more social media users, and notably, the majority of the users reached were not current followers of Youth Speaks.

CONCLUSION This study provides numerous points of validation for harnessing youth-based arts and arts organizations as meaningful partners in advancing pandemic readiness and recovery.

ACKNOWLEDGEMENTS Thank you to our core contributors Gretchen Carvajal, Bijou McDaniel, Perla Barraza, Joan Osato, and Kat Evasco.

NEXT STEPS We plan to continue to innovate and disseminate around art-based approaches to public health communications, always through a research, policy, practice and community-engaged set of lenses.

DISSEMINATION
We have shared our work both formally and informally through presentations, community discussions, and collaborations. We are currently working on multiple manuscripts for peer-review publication.
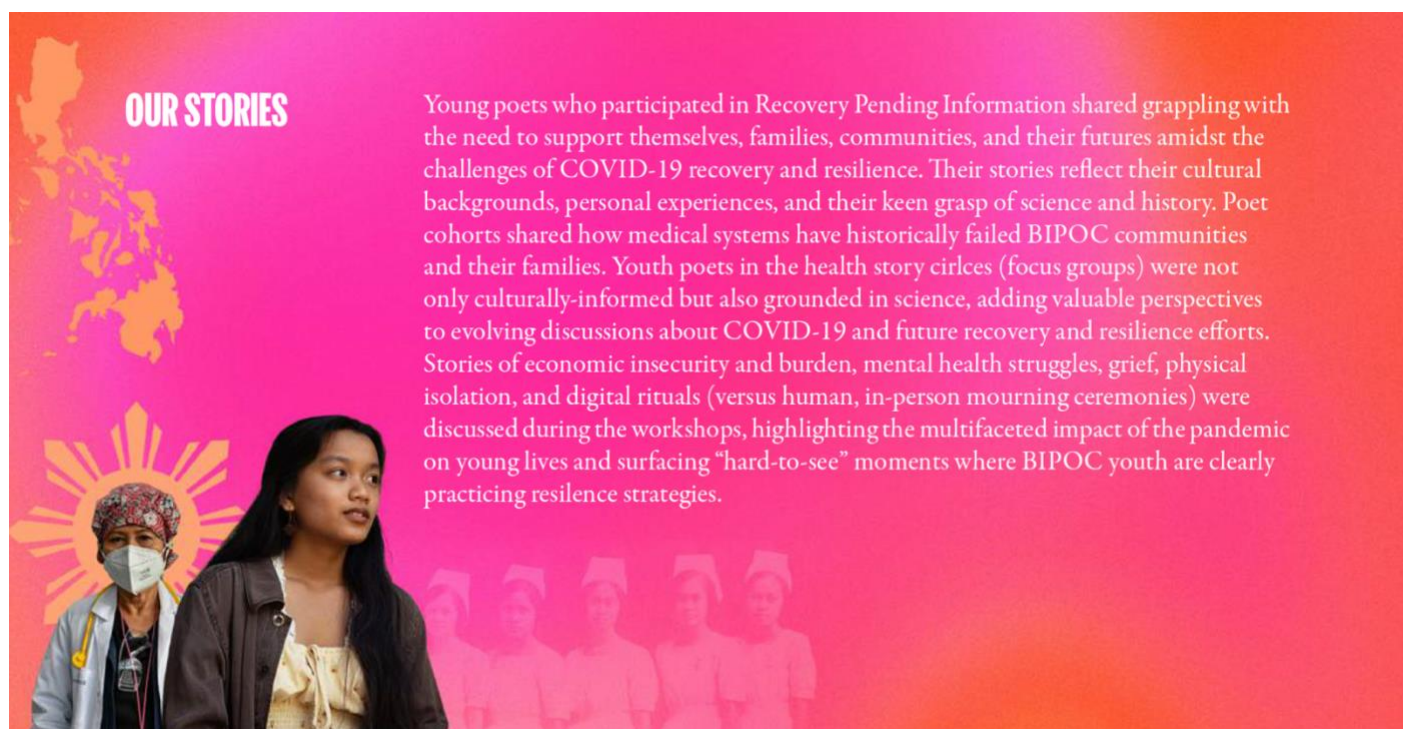
Figure 1. Our Stories: Perspectives of youth poets who participated in the Recovery Pending Revolution campaign development workshops

Priority Research Area

MENTAL HEALTH

The impact of the COVID-19 pandemic on mental health, particularly among sub-populations at increased risk such as the elderly, children, people with pre-existing conditions, and communities with underlying social vulnerabilities.

Examining the impact of COVID-19 on perinatal mental health and lactation

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PROJECT SUMMARY

This study examined the mental health and lactation experiences of minoritized postpartum people in California during the COVID-19 pandemic. A total of 214 participants were enrolled. Both survey and interview data were collected between March and August 2024. We found that participants of all racial and ethnic backgrounds and socioeconomic groups experienced high levels of stress and depression during the perinatal period. Approximately 40% of participants were not offered any mental health services or support. Mental health symptoms were also linked to experiences of racism, discrimination and intimate partner violence. These findings reveal significant gaps in perinatal mental health support for minoritized families.

PARTNERS

- Breast Friends Lactation and Support Services
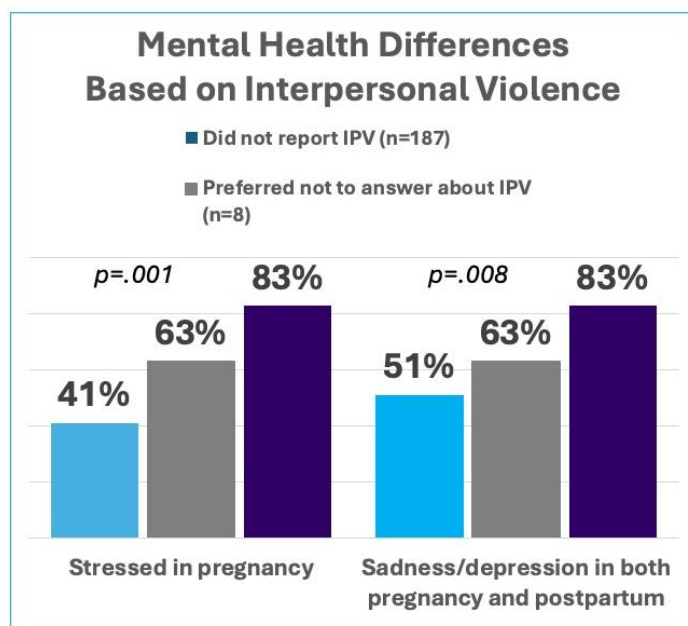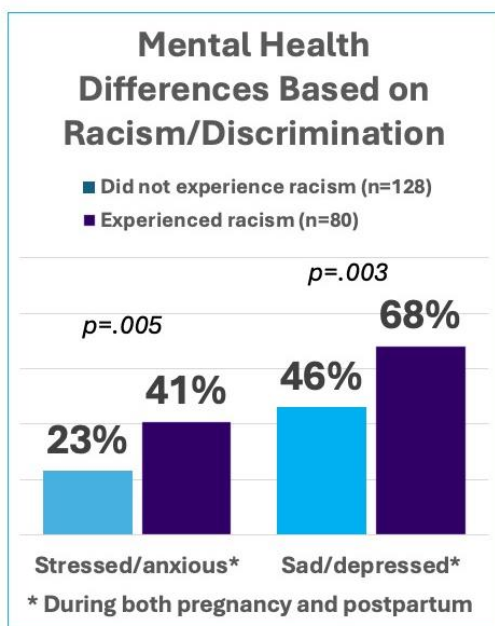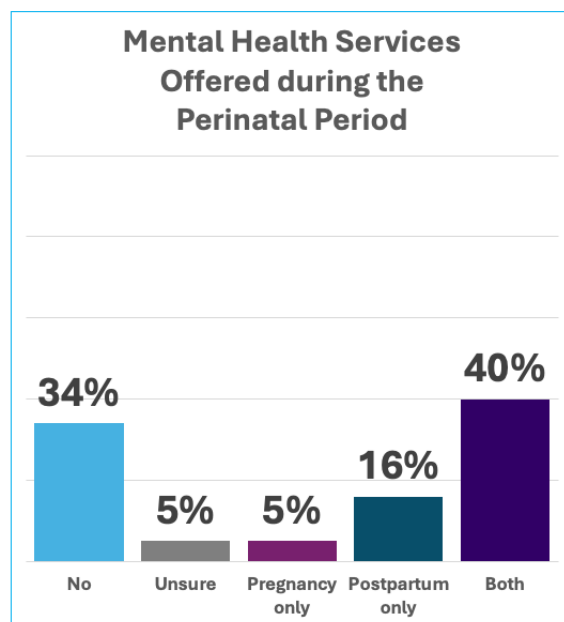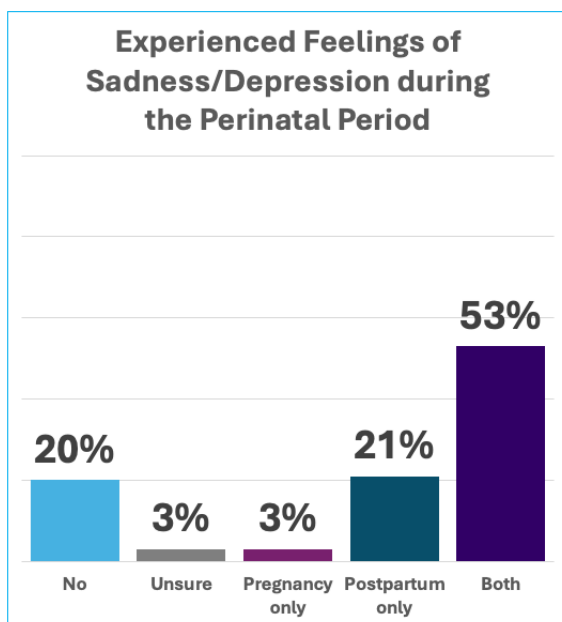- California Black Women's Health Project

BACKGROUND Perinatal mental health conditions occur at unacceptably high rates in the United States, with minoritized pregnant and postpartum people facing the greatest burden. The COVID-19 pandemic exacerbated these issues by straining healthcare infrastructures, reducing access to perinatal care, including routine mental health screenings, and worsening existing health inequities. This study addressed a critical evidence gap by examining mental health, lactation and perinatal care experiences of racially minoritized individuals in California during the COVID-19 pandemic.

Public Health Significance

Given the short- and long-term implications of suboptimal perinatal mental health across the maternal and infant life course and that untreated perinatal mental health costs the state of California $2.4 billion a year, examining perinatal mental health experiences among marginalized communities during the pandemic is critical.

METHODS This mixed-methods study enrolled participants from March to August 2024. To be eligible, participants had to self-identify as a racial and ethnic minority, have given birth in the last four years, live in California, be at least 18 years old, and be English literate. Data were collected via online surveys (n=214) and semi-structured interviews (n=42). Primary outcomes were self-reported symptoms of stress, anxiety and depression during pregnancy and/or postpartum. Data were analyzed using descriptive statistics, subgroup comparisons with hypothesis testing and thematic analysis of interview responses.

RESULTS The sample of 214 participants was racially and ethnically diverse (57% Black, 21% Latinx, 9% Asian, 13% multiracial/other), socioeconomically diverse regarding education, employment, health insurance, and income, and geographically diverse, representing 22 (38%) of California's 58 counties. Participants' mean age was 30 years (SD 6, range 19-47), and they were a mean of 23 months (SD 15, range 0-52) postpartum. Nearly all (97%) fed their infant human milk and 64% did so for at least six months.

Experienced Feelings of Sadness/Depression during the Perinatal Period

Category	Percentage
No	20%
Unsure	3%
Pregnancy only	3%
Postpartum only	21%
Both	53%

Mental Health Services Offered during the Perinatal Period

Category	Percentage
No	34%
Unsure	5%
Pregnancy only	5%
Postpartum only	16%
Both	40%

Mental Health Differences Based on Racism/Discrimination

■ Did not experience racism (n=128)
■ Experienced racism (n=80)

Category	Did not experience racism	Experienced racism
Stressed/anxious* (p=.005)	23%	41%
Sad/depressed* (p=.003)	46%	68%

* During both pregnancy and postpartum

Mental Health Differences Based on Interpersonal Violence

■ Did not report IPV (n=187)
■ Preferred not to answer about IPV (n=8)

Category	Did not report IPV	Preferred not to answer	(dark)
Stressed in pregnancy (p=.001)	41%	63%	83%
Sadness/depression in both pregnancy and postpartum (p=.008)	51%	63%	83%

About half the participants reported being highly stressed during pregnancy (45%) and/or postpartum (55%), and more than a third reported frequent anxiety during pregnancy (36%) and/or postpartum (38%). Additionally, 38% reported currently feeling stressed/anxious at the time of the survey. Feelings of sadness/depression were even more common, with 77% reporting such feelings during either their pregnancy or postpartum, 53% reporting them in both, and 38% still having such feelings at the time of the survey. Despite the prevalence of mental health symptoms, only 61% reported being offered mental health services/support during either their pregnancy or postpartum, and only 40% in both.

Mental health symptoms were strongly associated with perinatal experiences of unfair treatment, racism/discrimination, and intimate partner violence. Mental health symptoms were also evaluated by

race/ethnicity, socioeconomic advantage, and other factors, but few group differences were observed. In the interviews, themes of social isolation, limited social support, greater need for mental health resources and relationship difficulties were common.

CONCLUSION Across all races and ethnicities and levels of socioeconomic advantage, minoritized postpartum people experienced high levels of stress, anxiety, and depression during the COVID-19 pandemic. Our findings reveal an unfulfilled need for regular mental health screenings and access to equitable, culturally responsive mental health services throughout the perinatal period.

ACKNOWLEDGEMENTS Valuable support across all stages of the research process was provided by our community partners, Breast Friends Lactation and Support Services and California Black Women's Health Project.

NEXT STEPS We plan to adapt an existing California Black Women's Health Project's (CABWHP) Mental Health Toolkit to produce a culturally responsive toolkit design to support perinatal mental health during emergencies. We plan to conduct focus groups in collaboration with CABWHP to gain feedback on the product from study participants and edit the toolkit accordingly. In preparation, we have been reviewing the CABWHP Mental Health Toolkit and have started identifying statewide and regional perinatal and family mental health resources, mobile health applications, and policies. We are also currently developing manuscripts and a policy brief based on our research.

DISSEMINATION
- Community **Study Website**
- Social Media: **Instagram, Facebook, X**

Digital cognitive behavior therapy (dCBT) for anxiety during pregnancy: Evaluation and actioning through HOPE

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PROJECT SUMMARY

In the HOPE THRIVE study, we assessed the use of digital cognitive behavioral therapy (dCBT) for treating anxiety in marginalized, low-income, pregnant individuals, a group facing significant barriers to mental health care. While data analyses are still ongoing with respect to dCBT efficacy and acceptability, interviews with providers revealed that, while some providers supported dCBT as a flexible aid, others questioned its effectiveness as a standalone treatment. This study highlights dCBT's role in expanding mental health access, addressing disparities in maternal health, and supporting state health goals.

PARTNERS

- Postpartum Support International

BACKGROUND The HOPE Transforming Health and Reducing Perinatal Anxiety through Virtual Engagement (HOPE THRIVE) study explored the effectiveness and acceptability of digital cognitive behavioral therapy (dCBT) for treating clinical anxiety in marginalized and low-income, pregnant individuals, a group experiencing significant barriers to mental health care access. Clinical anxiety, which affects over 30% of pregnant individuals post-COVID-19, has been linked to adverse pregnancy outcomes like gestational hypertension and preterm birth. This study aimed to assess whether dCBT could offer an accessible solution to improve mental health outcomes in this population.

Public Health Significance

HOPE THRIVE has the potential to enhance maternal health in California by introducing scalable digital therapies, aligning with the California Health and Human Services Agency's objectives to improve health outcomes for MediCal recipients and marginalized groups. By addressing anxiety in pregnancy, dCBT could alleviate stress-related health disparities in these vulnerable populations.

METHODS The study pursued three key aims:
- **Aim 1:** Measured the effect of dCBT on clinical anxiety among marginalized, low-income, pregnant people. Participants with high anxiety, determined through a standardized measure, were randomized into immediate or 10-week delayed access groups for dCBT, with anxiety as the primary outcome and depression and sleep as secondary outcomes.
- **Aim 2:** Evaluated the acceptability of dCBT through focus group interviews with Aim 1 participants, assessing their experiences and perceptions of using the therapy.

- **Aim 3:** Explored barriers and facilitators to implementing dCBT among MediCal-covered pregnant individuals through focus groups with clinicians and public health professionals. Rapid thematic network analysis organized subthemes using the RE-AIM implementation science framework to reveal how providers thought key concepts, including reach, effectiveness, adoption, implementation and maintenance, would apply to dCBT rollout among minoritized pregnant people.

RESULTS **Aim 1:** Of 232 individuals screened of whom 118 were initially found eligible, only 24 were confirmed eligible after excluding fraudulent cases (duplicate computer addresses, mismatched pregnancy data). The remaining participants were split into two groups: one receiving immediate access to dCBT and the other placed on a 10-week waitlist. Analysis of their outcomes is ongoing. **Aim 2:** Given the large number of fraudulent participants identified in the study, Aim 2 efforts pivoted to qualitative analysis of data contained within study surveys which focused on acceptability of dCBT. This data is currently being analyzed and will be reported in Spring 2025. **Aim 3:** Two focus groups with providers (n=11) from Psychiatry and Obstetrics/Gynecology revealed mixed perspectives regarding the implementation of dCBT (see subthemes identified in **Table 1**).

RE-AIM Construct	Subtheme	Explanation
Reach	Characteristics of potential users vs. non-users	Providers identified differences between those who would easily engage with the intervention and those who do not, considering demographics, barriers, and facilitators.
	Provider/system level	Providers believed that the large number of Medi-Cal covered benefits could limit the reach of dCBT without clear integration into provider workflows.
	Intervention Characteristics	Providers identified intervention-specific features that would make engagement more and less likely among low-income and minoritized pregnant people.
Effectiveness	Unintended Consequences	Providers' worried that treating pregnant people with dCBT could result in inadvertent delays to an appropriate level of care (e.g., in person, medication management).
	Anxiety Severity	Providers identified dCBT would be useful for patients with mild symptoms of anxiety.
Adoption	Symptom Monitoring	Providers desired a way to measure whether prescribed dCBT was having the desired effect with routine outcome monitoring.
	Sharing Additional Referrals	Providers wanted the app to include community resources that addressed nutrition and exercise.
	Role of Providers	Providers saw themselves as playing a key role in introducing patients to the app, as trusted professionals.
Implementation	Human Touch	Providers felt a digital tool without the support of a provider would result in poor adherence.
	Perception of Dismissal	Providers worried that offering an app instead of a provider could be felt as a rejection of their need for mental health support.
Maintenance	Symptom Identification	Providers felt that only patients who accurately identified their anxiety as excessive would use the app sustainably.
	App Fatigue	Providers identified feeling overwhelmed by the number of available apps and wanted evidence dCBT was a gold-standard.
	Integration into Clinical Workflow	Providers noted that identifying practice champions and a way of billing for dCBT would increase the success of dCBT in perinatal settings.

Table 1. Rapid Thematic Network Analysis Subthemes

CONCLUSION Given the high level of fraudulent signups in Aim 1, future recruitment efforts will need to occur in clinical settings. Initial analyses of dCBT's impact on anxiety and its acceptability among participants

are in progress. Providers showed mixed but generally positive views on dCBT's potential as a supplementary tool in supporting low-income pregnant individuals, indicating it may be an effective addition to traditional care.

NEXT STEPS We intend to submit the Aim 2 manuscript to a peer-reviewed journal in April 2025. We plan to launch a phase II period of enrollment provided contracts between UCSF and the app provider can be settled. This is an ongoing issue across multiple projects that involve apps, so it is challenging. We may need to nest the RCT within a different system.

DISSEMINATION

- **Transforming Health and Reducing Perinatal Anxiety through Virtual Engagement (THRIVE): Protocol for a Randomized Controlled Trial**. JMIR Preprints. December 2024.
- **HOPE-Thrive Community Advisory Board Meeting**. April 2024.

Promoting mental health equity in Orange County, California: The role & vision of community health workers and navigators

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PROJECT SUMMARY

This study examined how the pandemic affected mental health for low-income, immigrant, and communities of color, focusing on both community strategies and the pivotal role of Community Health Workers (CHWs). We found that the pandemic worsened existing mental health issues, while isolation, trauma, and social, economic, and political impacts also contributed to new mental health issues. This research highlights the critical role of CHWs and community-driven strategies in promoting mental well-being, while also addressing the mental health needs of CHWs themselves. Our findings emphasize the need for sustained funding and policy support to integrate CHWs into mental health services and for community-level resources that are structurally and culturally sensitive to meet significant mental health needs for low-income communities of color.

PARTNERS

- Latino Health Access
- Orange County Asian and Pacific Islander Community Alliance

BACKGROUND

Low-income, immigrant, and communities of color, disproportionately affected by racial and economic inequities, faced worsened mental health challenges during the COVID-19 pandemic. Community health workers (CHWs), who are trusted

Public Health Significance

By highlighting the critical role of CHWs and community-defined practices in mitigating mental health disparities among historically marginalized communities, the findings will inform policy recommendations and strategies to strengthen CHWs' roles, enhance mental health services, and build community resilience in California. These findings contribute to advancing health equity by ensuring that mental health support is culturally responsive and centers community-defined practices.

members of communities often excluded from public health and healthcare resources, were vital in supporting community needs throughout the pandemic and recovery efforts. Significant mental health needs arose during and after the pandemic, affecting both community members and the CHWs who supported them. While community-defined practices have begun to address these needs, it is important to identify and promote effective community-defined practices. This project investigates the unique and intersecting mental health issues affecting Latina/o/e and Asian and Pacific Islander communities in Orange County and throughout California, along with the strategies used to support them.

METHODS

The study employs a qualitative research design, leveraging secondary analysis of existing interviews and focus groups conducted with Latina/o/e and Asian and Pacific Islander CHWs in Orange County and across California and Orange County community residents. Data analysis followed a flexible coding approach, wherein the mental health index across all transcripts was analyzed to identify mental health challenges and effective CHW and community strategies. We also conducted an analysis of health equity

Figure 1. Recognition of CA workplace violations.
Source: Michelen M, Phan M, Zimmer A, Coury N, Morey B, Montiel Hernandez G, Cantero P, Zarate S, Foo MA, Tanjasiri S, Billimek J, LeBrón AMW. (2024) Practical Qualitative Data Analysis for Public Health Research: A Guide to a Team-Based Approach with Flexible Coding. International Journal of Qualitative Research. DOI: 10.1177/16094069241289279

plans from local collectives and coalitions, incorporating discussions with institutional officials to inform visioning workshops with CHWs and mental health practitioners.

RESULTS Preliminary findings indicate that CHWs play a vital role in addressing mental health issues exacerbated by the COVID-19 pandemic. Key mental health challenges identified include increased stress, anxiety, and depression due to socioeconomic instability and health inequities. CHWs employed strategies such as personalized mental health education, community outreach, and collaboration with mental health resources to support residents. Additionally, CHWs faced their own mental health challenges, necessitating support mechanisms within their organizations.

CONCLUSION CHWs are instrumental in promoting mental health equity in underserved communities. The findings underscore the need for sustained funding and policy support to integrate CHWs into the mental health services infrastructure. By addressing both community and CHW mental health needs, we can build a more resilient and equitable mental health system.

Theme	Subtheme
Theme 1. Resident mental health issues brought on or worsened by the pandemic	1.1 Community members 1.2 CHWs as community members
Theme 2. Social, economic, & health care inequities worsen mental health	2.1. Social & economic drivers 2.2. Stigma towards mental health 2.3. Limited access to mental health resources
Theme 3. CHW-led strategies to accompany residents to address mental health issues	3.1. Raise awareness of CHWs as a resource 3.2. Connect with & accompany residents to identify & support needs that residents cannot bear alone 3.3. Bring residents together to reduce social isolation 3.4. Provide community-based mental health resources in the context of limited access to mental health care

Table 1. Key themes and subthemes

NEXT STEPS Building on this project, we intend to continue to further explore the impact of CHWs on community health outcomes and system-level changes. We aim to secure additional funding to expand our research on effectively supporting CHW models, enhancing community engagement, and influencing policy. Future efforts will continue to involve collaborating with community partners and the newly formed coalition to integrate findings into practice, apply for grants to support longitudinal studies, and advocating for policy changes that address systemic inequities revealed through our research.

DISSEMINATION

- **Community health worker strategies to accompany Latiné, Asian American, and Pacific Islander communities to address mental health issues during the COVID-19 pandemic**. Presentation. American Public Health Association. October 2024.

- **Practical qualitative data analysis for health equity research: A guide to a team-based approach with flexible coding**. Presentation. American Public Health Association. October 2024.

- **"Each one of us did the best we could for the community, while also supporting each other": community residents' perspectives on community health worker (CHW) response during the COVID-19 pandemic - a community science worker-led qualitative study.** BMC Public Health. April 2025.

California Pacific Islander Well-Being And COVID-19 Economic Survey (CAPIWAVES)

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PROJECT SUMMARY

The California Pacific Islander Well-being And COVID-19 Economic Survey (CAPIWAVES) was a community-engaged project that collected information on the mental health, social, and economic impact of the COVID-19 pandemic on California's Native Hawaiian and Pacific Islanders (NHPIs). CAPIWAVES revealed that NHPIs faced mental health challenges and barriers to accessing mental health care. Relatedly, NHPI Californians also experienced major social and economic stressors while receiving few government resources during the pandemic. NHPI community leaders are beginning to access and use CAPIWAVES data to build future resilience through advocacy, education, research, policy, and grantsmanship to support NHPIs in California.

PARTNERS

- Central Valley Pacific Islander Alliance (Bernadine Tuisavalalo)
- Empowering Pacific Islander Communities (Karla Thomas)
- Kutturan CHamoru Foundation (Heidi Quenga)
- Marshallese Youth of Orange County (Kelani Silk)
- Radio Bula Duavata (Una Vunidakua)
- Samoan Community Development Center (Danny Boy Naha-Ve'evalu and Tupou Latukefu)
- SoCal Pacific Islander Community Response Team ('Alisi Tulua and Audrey Kawaiopua Alo)
- Tana Lepule

Public Health Significance

The **CA**lifornia **P**acific **I**slander **W**ell-being **A**nd CO**V**ID-19 **E**conomic **S**urvey (CAPIWAVES) filled a data gap by unveiling the mental health and socioeconomic impact of COVID-19 on California's diverse NHPI population. Data were made available to NHPI community leaders to inform their programmatic, policy advocacy, research, and fundraising efforts.

BACKGROUND Native Hawaiians and Pacific Islanders (NHPIs) were and still are the racial group in California with the highest COVID-19 case and death rates compared to any other racial or ethnic group in the state. Unfortunately, data on the mental health and socioeconomic impacts of the heavy toll of COVID-19 on NHPI communities have been lacking. NHPI communities have been advocating for more data that represents their unique needs and builds future resilience.

METHODS Academic researchers collaborated with community leaders to conduct a large survey of NHPI Californians using respondent-driven sampling. We initially recruited 60 adult participants representing CHamorro, Fijian, Marshallese, Native Hawaiian, Samoan, and Tongan communities in Northern, Central, and Southern California. Survey participants completed the online survey and then received codes to refer four other NHPI adults who were encouraged to keep passing on the survey within their social networks. Analyses

applied statistical methods to weight the data according to the structure and the size of participants' social networks to generate prevalence estimates.

RESULTS A total of 929 NHPI adult Californians completed the CAPIWAVES survey. An estimated 40.8% (95% CI: 33.6–47.9%) completed high school or GED as their highest level of education, and 25.2% (95% CI: 18.5–32.0%) reported not having health insurance. Among NHPIs, 28.2% (95% CI: 21.6–34.7%) reported fair/poor mental health, 7% (95% CI: 3.9–10.2%) had major depressive disorder, 18.5% (95% CI: 12.8–24.2%) had moderate anxiety, and 5.6% (95% CI 3.3–7.9%) had severe anxiety. Consequently, 33.9% (95% CI: 27.4-40.4%) of NHPIs reported needing

Figure 1. Fair/poor mental health and past-year treatment need

mental health treatment in the past year (Figure 1), although 17% (95% CI: 12.5–21.6%) reported delaying seeking this needed treatment. NHPIs also reported high levels of pandemic-related stressors, including 29.7% (95% CI: 23.7–35.7%) who had someone in their household lose a job or significant amount of income during the pandemic. A sizeable proportion — 34% (95% CI: 27.7–40.2%) — reported that their household income was lower than their income before the pandemic. Few NHPI Californians reported accessing COVID-19 government or public resources.

CONCLUSION CAPIWAVES successfully recruited a large sample of NHPIs in California, a group that is often not represented in population datasets because they are a relatively smaller population. We were able to generate more accurate statistics to assess how NHPIs are coping in terms of mental health and socioeconomic status in the aftermath of COVID-19. NHPIs were clearly impacted and need more support to recover and build community resilience.

ACKNOWLEDGEMENTS We would like to express our gratitude to the Native Hawaiian and Pacific Islander community-based organizations, leaders, experts, service providers, and community members who provided their support for CAPIWAVES. We also express our appreciation to the participants of CAPIWAVES and recognize the contributions of the staff at the UCLA Center for Health Policy Research.

NEXT STEPS We received a pilot grant from the UCLA-UCI Center for Eliminating Cardiometabolic Disparities in Multi-Ethnic Populations (UC END DISPARITIES, supported by National Institute on Minority Health and Health Disparities Grant No. P50-MD017366, m-PIs: Brown, Boden-Albala, Norris) to continue collaborating with NHPI community leaders. This grant supports us to 1) develop papers focused on cardiometabolic risk using secondary analysis of CAPIWAVES data, and 2) develop a R01 National Institutes of Health grant proposal focused on addressing and preventing cardiometabolic disease among NHPI communities at risk in southern California.

DISSEMINATION

- **CAPIWAVES: Mental health and socioeconomic impact of COVID-19 on California's Native Hawaiians and Pacific Islanders: A report based on the California Pacific Islander Wellbeing and COVID-19 Economic Survey (CAPIWAVES).** UCLA Center for Health Policy Research. Los Angeles, CA. 2025.

- **The CAlifornia Pacific Islander Well-Being And COVID-19 Economic Survey (CAPIWAVES): Community Partnerships to Collect Population Representative Data for Native Hawaiians and Pacific Islanders.** Oral presentation. American Public Health Association Annual Conference, Minneapolis, MN. October 2024.

- [Diving into CAPIWAVES: Examining Mental Well-Being and COVID-19 Economic Impacts Among NHPIs in California](). Webinar. June 2024.

Figure 2. A meeting of some of the southern California CAPIWAVES community academic partnership members at the Pacific Island Ethnic Art Museum in Long Beach, CA. Top row (left to right): Sora Park Tanjasiri, Ualani Ho'opai, 'Alisi Tulua, Richard Calvin Chang, Brittany Morey. Bottom row (left to right): Audrey Kawaiopua Alo, Fran Lujan, Christen Marquez

Exploring the impact of the COVID-19 pandemic on the mental health and well-being of Black and Latinx nurses in California

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PROJECT SUMMARY

We surveyed 378 Black and Latinx nurses in California to examine COVID-19 impacts on their psychological well-being, coping strategies, and their recommendations for supporting nurses. Male nurses and those experiencing racial microaggressions reported high stress whilst female nurses and those over 50 years reported burnout. Fear of COVID-19 infection, racial health disparities, social unrest due to police brutality and racial abuses contributed to burnout and stress. Interviews highlighted mindfulness, exercise, family support, alcohol use and overeating as some coping mechanisms. The study underscores the importance of mental health services and supportive management in mitigating COVID-19 impact on nurses' mental health.

PARTNERS

- National Hispanic Nurses Association
- National Association of Black Nurses
- California Black Health Network

Public Health Significance

The findings will have significant impact and inform future intervention strategies, including the adaptation of existing interventions to meet the needs of this population, while highlighting key resilience strategies. Further, data will be disseminated through briefs intended to inform policy discussions and decisions at the local and state levels. The findings of this study may be relevant and applicable to Black and Latinx communities nationally, and for health care providers and health systems.

BACKGROUND The COVID-19 pandemic has significantly impacted healthcare workers through personal risks and direct patient contact, increasing their risk of contracting the virus. Racial and ethnic disparities in COVID-19 outcomes are evident, particularly for Black and Latinx nurses. The combined effects of personal risks, stress, and job challenges create a significant risk for mental health issues like stress and burnout. Therefore, we aimed to evaluate the pandemic's impact on nurses' mental health, as well as explore nurses' coping mechanisms and support recommendations.

METHODS We employed an explanatory sequential mixed-methods design using cross-sectional online surveys (N = 378) with Black and Latinx nurses in California, followed by in-depth interviews with a subset of nurses (n = 23). Stress and burnout were measured using standardized tools. In-depth interviews were transcribed and analyzed using rapid analysis.

RESULTS A total of 246 (65.1%) and 243 (64.3%) out of 378 participants were analyzed for the perceived stress and burnout outcomes respectively. The mean perceived stress score was 18.48 (SD=5.41) while mean burnout score was 7.33 (SD=1.97). Male nurses compared to females were associated with a 2.75 decrease in perceived stress (β=-2.75, [-4.69,-0.80], p=0.006). Further, minority nurses who experienced racial microaggressions were associated with a 2.90 increase in perceived stress scores compared to those who did

not (β=2.90, [0.87,4.93], p=0.005). Qualitatively, most nurses reported experiencing significant levels of stress due to fear of COVID-19 infection, a significant sense of responsibility, social unrest from police brutality, and racial health disparities. Similarly, male nurses compared to females were associated with 0.70 decrease in burnout scores (β=-0.70, [-1.38,-0.02], p=0.043). Also, nurses aged 50 years and above were associated with 0.92 reduction in burnout compared to those less than 30 years (β=-0.92, [-1.82,-0.02], p=0.044).
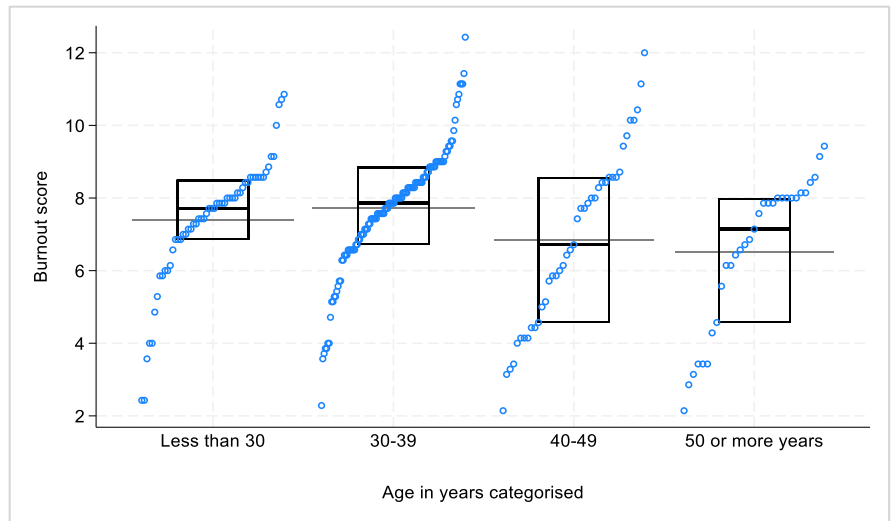
Figure 1: Burnout severity by age among Black and Latinx nurses

Qualitative data supported these findings, revealing that nurses felt perpetually on edge, relying on adrenaline, and facing abuse from patients. Some of these mistreatments were linked to racism, prompting some nurses to contemplate quitting. Many nurses mentioned utilizing positive coping strategies such as exercising, practicing yoga and mindfulness, engaging in spirituality and faith-based activities, attending support groups, and relying on family support. In contrast, some negative coping mechanisms included overeating and excessive alcohol use. Recommendations to support nurses include providing mental health resources and services, ensuring adequate personal protective equipment (PPE) and training, offering hazard pay and income protection, allocating funds for preparedness and support, implementing improved policies concerning healthcare worker who became infected with COVID-19, fostering management practices that encourages nurses to take breaks and vacations and promoting greater diversity at the workplace.

CONCLUSION The COVID-19 pandemic has negatively impacted the mental health of Black and Latinx nurses in California. Many nurses have reported experiencing significant stress and burnout, further highlighting the lack of sufficient resources to manage these challenges. To alleviate the mental health effects of public health crises like the COVID-19 pandemic, it is crucial to ensure provision of adequate resources, staffing, training, income protection, supportive management, and mental health services to improve the preparedness of nurses and health systems alike to respond to future pandemics.
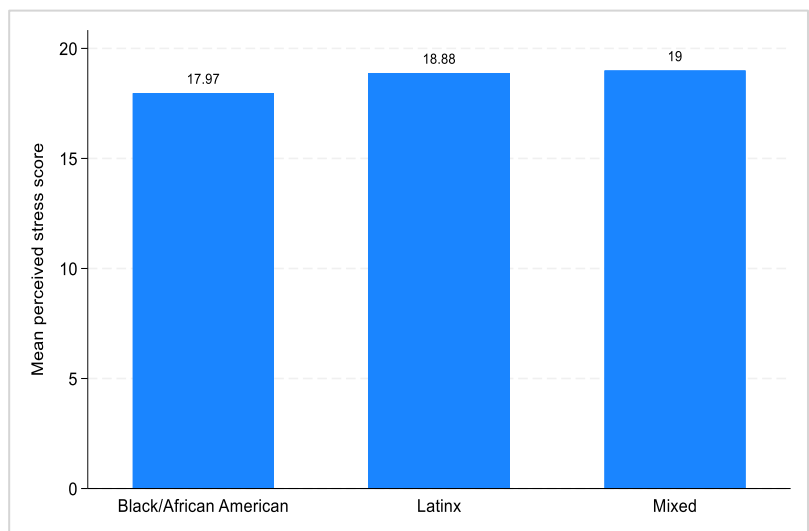
Figure 2: Mean perceived stress score among different races/ethnicity

NEXT STEPS Based on our findings, we plan to seek funding to design an intervention to improve mental health and psychological well-being of Black and Latinx nurse in California. We will work with nursing organizations to design the intervention. The intervention will be co-designed with Black and Latinx nurses. We will apply for federal, state and foundational grants to support the next phase of our project.

Assessing the sustainability of peer programs in addressing social isolation and loneliness in older adults: Implications for California COVID-19 recovery efforts

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PROJECT SUMMARY

We studied the impact of peers (trained support specialists that share lived experiences with clients) on social isolation and loneliness among older adults in California during and after the pandemic. We talked to various people (clients, peers, program leaders, and community members) who are involved or interested in these programs. We found that peer programs were most effective in helping with social connection when they combined in-person, virtual, and telephone options. In the future, peers should continue assisting older adults with social isolation and loneliness. They should also be a part of public health emergency responses.

PARTNERS

- Curry Senior Center
- Front Porch Community Services
- Project Return Peer Support Network
- Richmond Area Multi-Services
- Shanti Project
- Peninsula Family Service

Public Health Significance

We examined pandemic-era innovations, ongoing challenges, and future opportunities for growth across six peer programs in California.

BACKGROUND Peer programs, which pair individuals of similar age or life experience, can address complex psychosocial needs, loneliness and social isolation among diverse older adults. However, these services were heavily disrupted by the COVID-19 pandemic. This study examined the feasibility and challenges of sustaining pandemic-era innovations across six peer programs and identified core features of peer programs relevant to future public health emergency preparedness.

METHODS We thematically analyzed 67 qualitative interviews (8/2023–4/2024) with diverse stakeholders, including older adult participants (n=24), peer specialists (n=12), program leaders across six peer programs (n=12), and experts in aging, public health and peer programs (n=19) using a rapid assessment process. Qualitative findings were compared with quantitative trajectories of loneliness and depression among peer program participants over six-month intervals (5/2020–4/2024).

RESULTS Peer programs have played a vital and ongoing role in helping older adults recover from prolonged loneliness and isolation related to pandemic restrictions. Two pandemic-era innovations were sustained: 1) hybrid communication (in-person, virtual, and telephone) that expanded reach, and 2) new partnerships with health and city services. However, "peer drift," where peers roles can become diluted as they

are asked to do more, emerged as a challenge, complicating the consistency and effectiveness of programs. Core features of peer programs identified as relevant to future public health emergency preparedness included: 1) fostering trust with marginalized communities, 2) flexibility in responding to urgent public health needs, and 3) complementary expertise to clinical teams. Quantitative data demonstrated how peers responded to dynamic changes in loneliness and depression over multiple years of the public health emergency.

Theme	Subtheme	Representative Quote
Peer program adaptations	Virtual programming	"We get to serve more people so there's no real reason to stop doing Zoom… it's like, wait, I can get to 30 people in one hour and help 30 individuals as opposed to, I was only able to help one or two people in that hour... it's a massive reach." (Program Leader 110)
	New partnerships	"So, like senior centers… places that would have meal delivery programs and wanted to do more for their community… I had a few different art place centers. … You had the food bank, definitely the Alzheimer's Association, just a lot of centers that would offer in-person-type stuff and then some resident service coordinators that were like "We want to help our residents, and we don't know what to do, and I heard that you offer this. How can I get them plugged-in?" (Program leader 109)
Core elements of peer programs can be leveraged in public health emergencies	Trust	"What enables the recipient to overcome mistrust and a sort of defensiveness? People who are alone most of the time lose the skill of how to make new connections, how to make friends, how to chat, how to talk about the weather... And they're shy and they're afraid that they don't have what it takes anymore to be able to be on the other side of a reciprocal relationship. And so, our biggest problem, we try to get our patients to go to local senior centers. We try to get them to agree to have a friendly visitor program. People can come in and read to them and they decline. They won't do it. And I really do think it has to do with losing the muscle" (National Expert – Clinician 214)
	Unique role on interdisciplinary teams	"I think every treatment team should have a peer on it. I think any touch of a behavioral health you should have the feedback of people who are being served or have been served ... and it's like even when they're trying to hire an Arabic-speaking peer to work in the Tenderloin or stuff, I mean, there needs to be more expansion into different cultural communities as we build out." (National Expert – Policymaker 218)
	Bridge to marginalized communities	"I think any marginalized community will do a little bit better with a person that can be a bridge. That's how I see peer supports. I don't see them as the end-all of the service, but as the conduit for the community, for that individual to get additional services if necessary, or to understand what's available to support them in their well-being. So, to me, that's how I see peers. Not just casting them out there, "You're the service." That doesn't work for me." (National Expert - Policymaker 212)

Table 1. Pandemic recovery: residual effects of the pandemic on clients, innovations and new challenges

CONCLUSION   Results demonstrate the feasibility of sustaining pandemic-era innovations in peer programs and suggest that proactively integrating peer programs into future public health emergency responses may help ensure that isolated older adults are not overlooked during public health crises.

NEXT STEPS   We have an upcoming five-year Prevention Research Center study, funded by the CDC to examine the expansion of peer programs to older adults. To continue our CPR3 work, we would welcome opportunities to better understand peers' impacts on rural or non-dominant communities and roles in public health emergencies. Additional funding needs to be identified to continue this work.

DISSEMINATION

- **Attitudes about peer certification and Medicaid billing: Perspectives from peers, clients, program leaders, and policy experts in California.** Oral Session: Strategies to Further Support the Behavioral Health Workforce. American Public Health Association. Minneapolis, MN. October 2024.

- Presentation. Northern California Coalition for Social Connection General Meeting. July 2024.
- **Sustaining the Gains: How COVID-19 Spurred Innovations in Peer Support Programs.** American Geriatric Society Annual Meeting. May 2024
- **Recent Innovations, Challenges, and Opportunities for Peer Support Programs to Address Loneliness and Isolation Among Older Adults.** Oral Session. Gerontological Societies of America Annual Meeting. Seattle, Washington. November 2024.
- **Policy Brief** presented at Master Plan for Aging Action Day. Sacramento, California. October 2024.
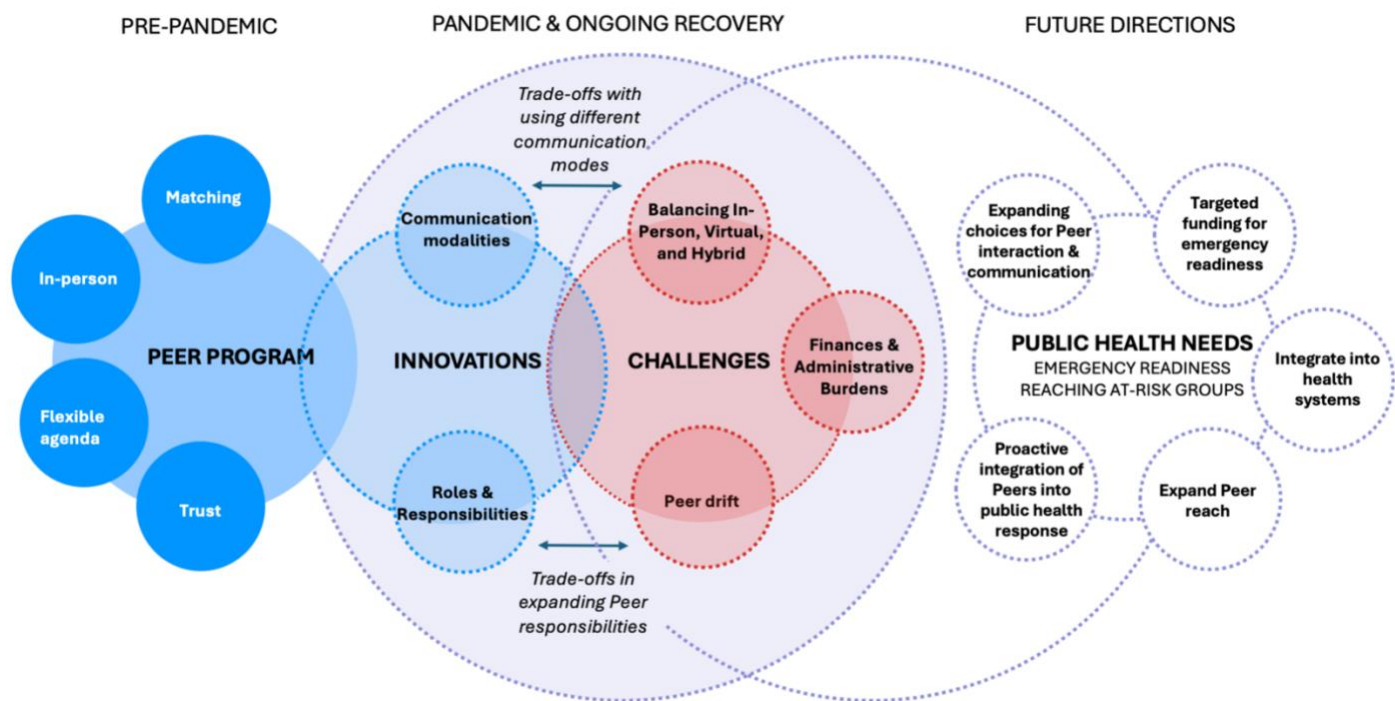
Figure 1. Conceptual Model Informed by Study Findings on Expanded Role of Peer Programs, Challenges, and Future Directions

Getting INFORMED and living well: A demonstration project to facilitate pandemic recovery among Asian Americans in California

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PROJECT SUMMARY

We evaluated the multilingual "INFORMED-Living Well" program designed to promote mental well-being among 616 adult Asian Californians. Participants received text messages, and some also chose to receive support from lay health educators. The program was well-received, with many participants gaining knowledge about where to get help, improving their mental well-being, and supporting their families. Those with community health educator support had greater improvements in decision-making about seeking mental health help and awareness of a free crisis hotline (988). This is important because it shows that culturally targeted programs can effectively improve mental health awareness and decision-making in Asian American communities.

PARTNERS

- UC Chinese Community Health Resource Center
- Immigrant Resettlement & Cultural Center
- The Fresno Center

BACKGROUND The COVID-19 pandemic and a surge in anti-Asian incidents have intensified mental health disparities among Asian Americans, who report the lowest rates of receiving mental health services compared to other racial groups.

Public Health Significance

This study utilizes an evidence-informed, culturally accepted health communication infrastructure designed to advance equitable access to a) credible and timely information, b) essential resources, and c) a supportive environment for sharing and receiving peer support via a trusted platform. Beyond various health promotion topics, including COVID-19 testing, this study explores how this infrastructure can be expanded to disseminate information and gather insights related to mental health within prioritized communities. If proven feasible, this infrastructure could be adapted to support culturally tailored communication research initiatives.

METHODS We conducted a non-randomized intervention trial to evaluate the six-week "INFORMED-Living Well" program, which aims to promote informed mental health care decisions, increase awareness of resources, and improve mental health outcomes among Asian American adults in California. Participants chose between two groups: text message only (Text-Only) or text messages plus lay health educator outreach (Text+LHE), which included two educational sessions via Zoom and follow-up calls. Figure 1 depicts a sample intervention text message. Participants received up to $50 for completing baseline and follow-up surveys at eight weeks.

RESULTS From March to June 2024, 616 Asian American adults enrolled (mean age 41.6 years, range: 18 to 85). Participants included 26.6% Chinese, 27.4% Hmong, 20.8% Korean, 20.5% Vietnamese, and 4.7% other Asian Americans. The primary survey languages were English (46.9%), simplified or traditional Chinese

(23.2%), Korean (16.4%), Vietnamese (11.2%), and Hmong (2.3%). A majority of participants were female (64.7%), born outside of the United States (76.4%), and married (64.4%). Nearly half had limited English proficiency (49.9%), and 12.8% participated with family/friends. At baseline, 15.2% reported experiencing long COVID19-related symptoms, 7.5% had a clinical mental health diagnosis, and 34.3% reported elevated anxiety or depressive symptoms (PHQ4 score of 3 or higher).

Of these, 18.2% chose Text+LHE, and those choosing Text+LHE (vs. Text Only) were more likely to be female, Vietnamese or Chinese, speak limited English, and have lived 10 or fewer years in the US. A majority (93%, n=573) completed the week 8 survey, with 92.0% recommending the program. Participants reported gaining knowledge about where to get help (90.3%), improving their mental well-being (84.4%), improving their family's mental well-being (78.3%), and receiving support from family and friends (76.3%). Compared to the text-only group, the Text+LHE group were more likely to report improving their mental well-being (91.6% vs. 82.6%, p=.029), family well-being (87.9% vs. 76.0%, p=.010), and support from family/friends (84.6% vs. 74.3%, p=.030). See Figure 2.

At week eight, adjusting for baseline, Text+LHE participants had higher odds of reporting confident decisions about mental health help-seeking (odds ratio [OR]: 1.7, p=0.049) and being aware of 988 crisis hotline (OR: 5.3, p<0.001). There was no significant change in mental health outcomes (PHQ4 score) between baseline and week eight or between programs.
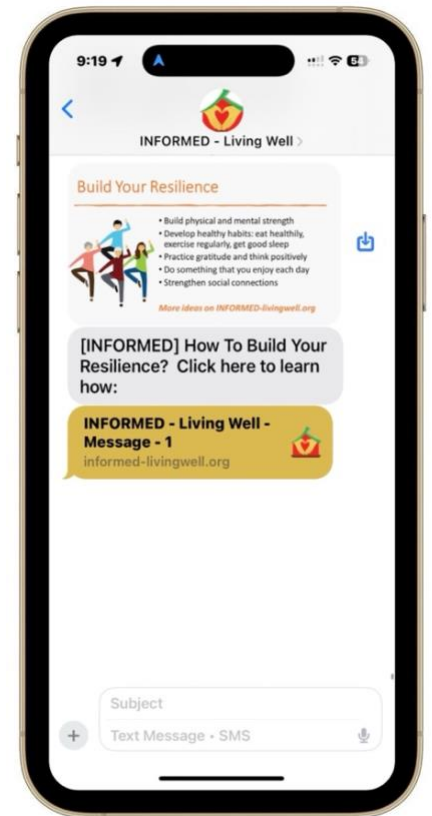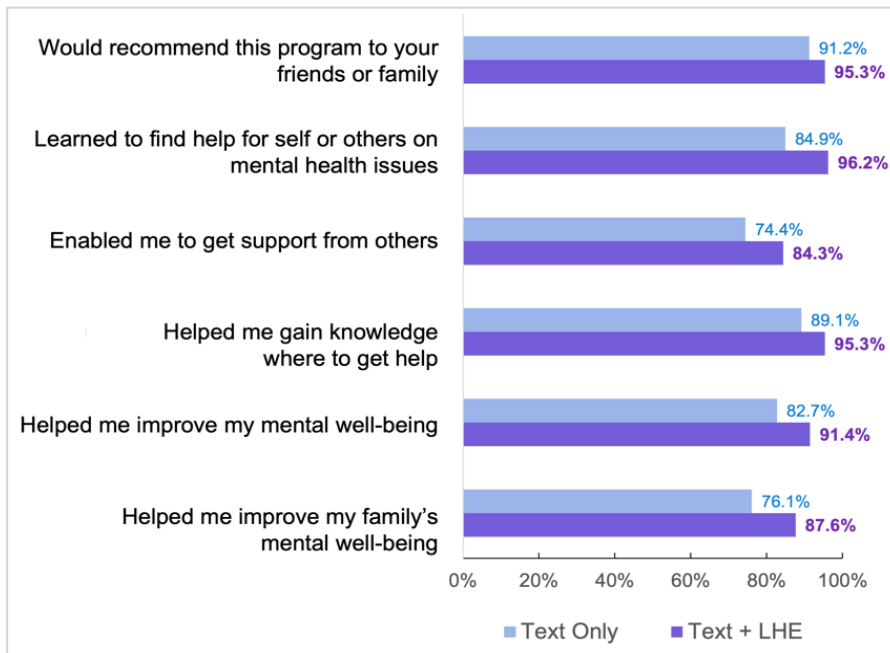
Figure 1. A sample INFORMED-Living Well intervention message: Week 1 – Building Resilience. INFORMED-Living Well Week 1 intervention message with an image, a tag line, and a link to the relevant study webpage that provides additional educational contents.

Figure 2. Participants' feedback for the INFORMED-Living Well Program: Text messaging with or without lay health educator's support. Text Only (Participants received text messages only); Text+LHE (Participants received text messages with lay health educator's support).

CONCLUSION Results suggest that the multilingual INFORMED-Living Well program, delivered via text messages with or without the support of lay health educators, was well-received by Asian Americans for promoting emotional wellness. After accounting for baseline values, participants in the lay health educator

group reported less decisional conflict regarding help-seeking for mental well-being. Further analyses are ongoing.

NEXT STEPS The UCSF RAP fund is supporting an ongoing research project called the INFORMED: Brain Health Project, built upon the INFORMED: Living Well Project, to develop two core components (text messages and a project website) and test the program with 20 Korean American family caregivers of persons with dementia. The project will focus on 1) promoting knowledge and confidence in caregiving skills and 2) increasing awareness of their capacity to seek help and resources.

DISSEMINATION

- **INFORMED-Living Well: A Multilingual Program to Promote Mental Wellbeing**. Presentation. Niseko Mental Health Conference. January 2025.
- **Promoting Emotional Wellness among Asian Americans with Text Messaging and Lay Health Educators: The Multilingual INFORMED-Living Well Preference Trial**. Poster. Society of Behavioral Medicine Annual Conference. March 2025.
- **Healthy Family Project: Getting INFORMED for Living Well**. Project website.

Identifying the effect of housing policy on mental health outcomes among low-income renters & their children during the COVID-19 pandemic

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PROJECT SUMMARY

This project evaluated whether the Emergency Rental Assistance (ERA) programs directly improved mental health outcomes or did so indirectly through alleviating housing insecurity and related stressors, using data from the Census Household Pulse Survey (2021-2023). In California, low-income households receiving support were less likely to experience housing insecurity and reported fewer symptoms of anxiety and depression, with the latter effect mediated by reduced housing insecurity. Additionally, ERA significantly reduced children's internalizing mental symptoms like anxiety, depression, developmental regression, and unspecified physical pain through the alleviation of housing insecurity. This information can be used to evaluate the efficacy of ERA and similar policies as public health instruments and to inform future housing policy interventions.

PARTNERS

- U.S. Census Bureau

BACKGROUND Housing insecurity is a critical social determinant of health. During the COVID-19 pandemic, many California renters faced increased housing costs, job loss, and economic stress, leading to heightened housing insecurity. To mitigate this, the federal government introduced two Emergency Rental Assistance (ERA) programs in early 2021, offering financial support for rent and utilities. This study aims to evaluate the ERA program's impact on mental health outcomes among low-income renters and assess whether these effects are mediated by reduced housing insecurity.

Public Health Significance

While research on the mental health effects of rental assistance is limited, existing studies suggest positive outcomes. However, the extent to which these benefits persisted amid the additional burdens of the COVID-19 pandemic has not been thoroughly examined. Anticipating severe housing disruptions, Congress and the U.S. government implemented ERA programs to mitigate these effects. Assessing the full impact of these programs is critical for informing responses to future pandemics or similar crises.

METHODS We leveraged a waitlist control design embedded in the Household Pulse Survey (HPS), a national survey conducted by the Census Bureau, with a focus on California. Using data from waves 40–57 (December 1, 2021, to May 8, 2023), we measured housing insecurity through two key indicators: rental arrears and eviction risk. Mental health outcomes were grouped into three categories: renters' mental health, access to mental health services, and children's mental health. To rigorously assess ERA's impact, we applied propensity score weighting combined with survey weights in a quasi-experimental framework. We used causal mediation analysis to evaluate whether ERA improved mental health outcomes for low-income renters and their children, increased mental health service utilization, and the extent to which these effects were mediated by reductions in housing insecurity.

RESULTS Nationwide and in California, low-income renters who received ERA saw significant reductions in rent arrears and eviction likelihood, key indicators of housing insecurity. In California, ERA recipients reported fewer symptoms of anxiety and depression, primarily mediated by reduced housing insecurity (*Figure 1*). Additionally, ERA significantly decreased children's internalizing mental health symptoms—including anxiety, depression, developmental regression, and unspecified physical pain—through improved housing security. While ERA did not have a statistically significant effect on mental health service usage in California (*Figure 2*), our national analysis found that ERA increased mental health service utilization among renters experiencing anxiety or depression symptoms, highlighting its role in supporting those with the greatest need.
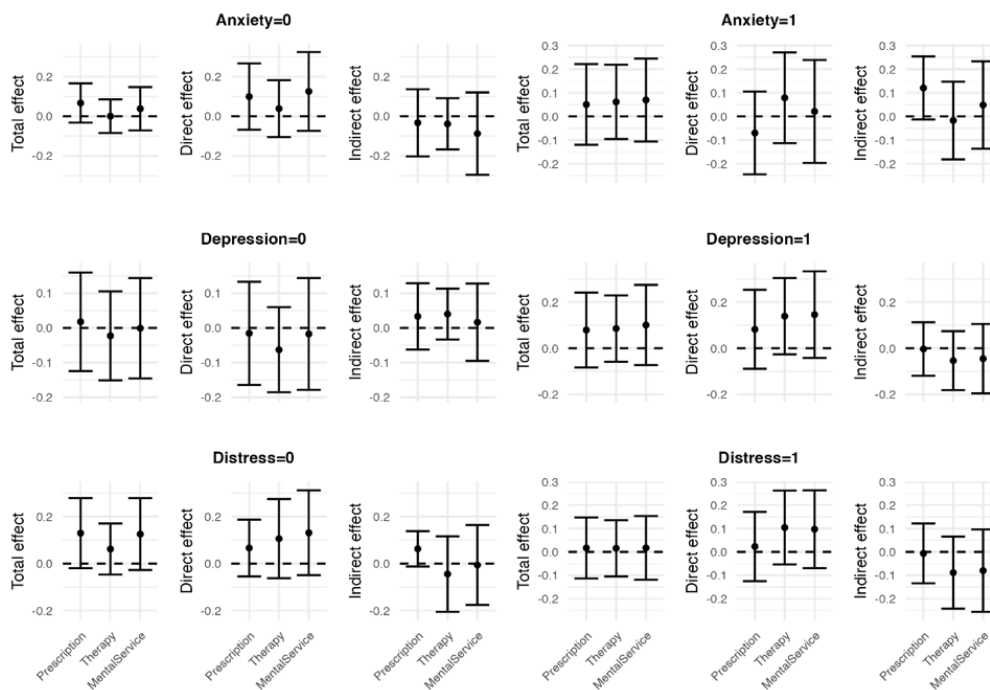
Figure 1. Effects of ERA on adults' and kids' mental health symptoms and service use, mediated by rent arear, Household Pulse Survey, 2021–2023. Each dot represents the estimated average treatment effect, while the bars extending from each dot indicate the upper and lower bounds of the 95% confidence intervals.
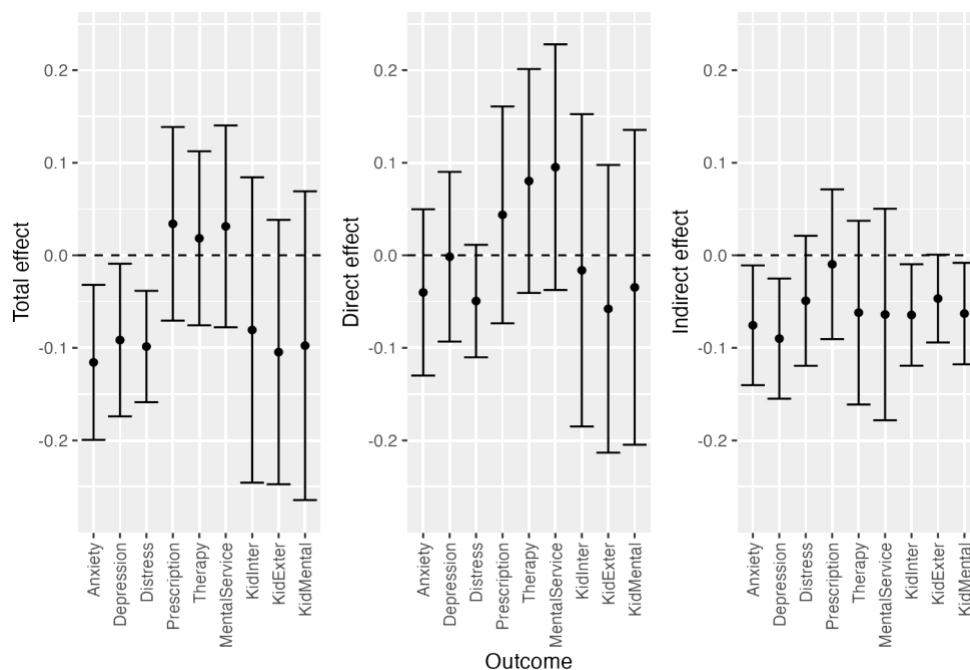
Figure 2. Effects of ERA on mental service use, mediated by rent arear, stratified by mental symptoms, Household Pulse Survey, 2021–2022. Each dot represents the estimated average treatment effect, while the bars extending from each dot indicate the upper and lower bounds of the 95% confidence intervals.

CONCLUSION ERA was an effective intervention for improving mental health outcomes, including among low-income renters in California, especially indirectly through alleviating housing insecurity.

NEXT STEPS We plan to expand the current study to incorporate a crucial layer of community conditions to explore how policy effects interact with local environments. Additionally, we intend to integrate a public health component into our ongoing research on housing and community development, which will provide insights relevant to multiple government agencies. These expansions will open opportunities for further research, community engagement, and collaboration, as well as potential funding from agencies focused on housing, public health, and policy development. We aim to further pursue grant opportunities to support this broader, interdisciplinary approach.

DISSEMINATION A manuscript related to this work is currently under review.

Priority Research Area

SOCIAL & ECONOMIC OUTCOMES

The impact of the COVID-19 pandemic on social and economic outcomes - those related to household finances, housing and mobility, labor markets, etc. - and evaluation of policies and interventions designed to mitigate or stabilize these effects.

Evaluating the effect of SNAP benefit expansion and contraction on persistence, financial stability, and employment

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PROJECT SUMMARY

This study will use linked CalFresh enrollment, wage, and credit panel data to examine how CalFresh benefit changes during the pandemic shaped low-income families' economic well-being. *Due to significant delays in obtaining credit panel data, we have just completed the data linkage but have not yet begun analyses.*

PARTNERS

- California Department of Social Services - Research, Automation, and Data Division

Public Health Significance

This study will help elucidate the extent to which pandemic-era CalFresh benefit changes impacted personal finances, providing critical insights for policymaking during future economic and public health crises.

BACKGROUND The COVID-19 pandemic spurred an historic expansion of the social safety net to meet an unprecedented level of need. One of the largest safety net programs — the Supplemental Nutrition Assistance Program (SNAP, or CalFresh in California) — provided staggered benefit increases such that all participating households received at least $95 in additional benefits per month by April 2021, followed by a sudden contraction in March 2023. These changes in SNAP benefit eligibility and generosity represent some of the largest enhancements of food aid policy ever undertaken, yet their impacts on recipients' financial wellbeing have not been well studied.

METHODS After linking individual-level administrative CalFresh enrollment records to wage and credit bureau data, we will use a series of difference-in-difference and interrupted time series designs to estimate the causal impact of CalFresh benefit enhancements on recipients' continued enrollment in the social safety net, their labor market outcomes (employment and wages), and their overall financial health (credit scores, credit card utilization, debt levels, and delinquency rates). We will then stratify findings by age, race/ethnicity, and gender.

RESULTS *Results are pending.* We hope this work will shed new light on the potential role of SNAP in mitigating the economic impact of future crises among disadvantaged families.

NEXT STEPS We aim to present our findings to the CalFresh team and CDSS Directorate upon completion, and then disseminate our findings to news outlets, advocacy and legislative stakeholders, and relevant policy-oriented conferences. We also hope to scale our design and data sources to examine the health and health care effects of the benefits cliff as well (e.g., hospitalizations, ED visits, births, and postpartum maternal outcomes).

The effect of pandemic interventions on the financial health of California student borrowers

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PROJECT SUMMARY

From 2020 to 2023, the U.S. government introduced several measures to address financial hardships caused by COVID-19, including pausing federal student loan payments, debt relief for public service workers, and funds to colleges. We examined the impact of these actions on California student loan borrowers, using data from a credit reporting agency, the Department of Education, and interviews with student loan borrowers. We found that these measures reduced delinquency rates and helped close the homeownership gaps. Borrowers reported more savings, less debt, and reduced stress. Funds to colleges helped maintain student enrollment. These efforts provided crucial support to borrowers and families during uncertain times.

PARTNERS

- California Policy Lab
- UC Student Loan Law Initiative

BACKGROUND

Interventions included several rounds of funding passed by Congress to provide direct funding to institutions of higher education and students, a pause on federal student loan payments, and reforms to address long-standing problems in existing debt relief programs including the Public Service Loan Forgiveness (PSLF) program. This analysis seeks to better understand the effects of these policies on borrowers, families, and students in California.

Public Health Significance

From 2020 to 2023, the federal government implemented a series of large-scale, high-profile interventions to address the financial uncertainty and economic emergency caused by the COVID-19 pandemic, and to provide long-term fixes to several existing programs aimed at helping ease the burden of student loans on borrowers and families. Given the nationwide scale and simultaneous nature of many of these efforts, research on the impacts of any single policy or program remains limited.

METHODS

Leveraging proprietary credit panel data, qualitative interviews with borrowers, and publicly available data from the U.S. Department of Education, we focus on the effects of three major interventions: the student loan payment pause, a one-time PSLF "waiver" to increase access to debt relief for public service workers, and funding to institutions from the Higher Education Emergency Relief Fund (HEERF). Finally, we added a qualitative component to our project which led us to interview nineteen California borrowers who benefited from the Public Service Loan Forgiveness Waiver.

RESULTS

Our findings include:

- The student loan repayment pause narrowed the gap in homeownership between relatively advantaged and disadvantaged households in California and reduced the likelihood of delinquency on any type of loan more for borrowers subject to the payment pause.

- According to qualitative interviews of borrowers in California, the payment pause allowed student loan borrowers greater opportunity to consider family planning, save money, reduce other debts, and relieve

mental distress, while also enabling some participants to afford meaningful life experiences and make needed investments, such as house repairs.

- Improvements to the PSLF program that led to loan cancellation allowed borrowers the financial room to make large purchases and catch up on savings, as well as provide immediate economic support to family members.

- In California, public higher education institutions dedicated HEERF funds disproportionately to defraying the cost of tuition for students, which may have contributed to the state largely maintaining enrollment rates as institutions in other states suffered considerable declines.
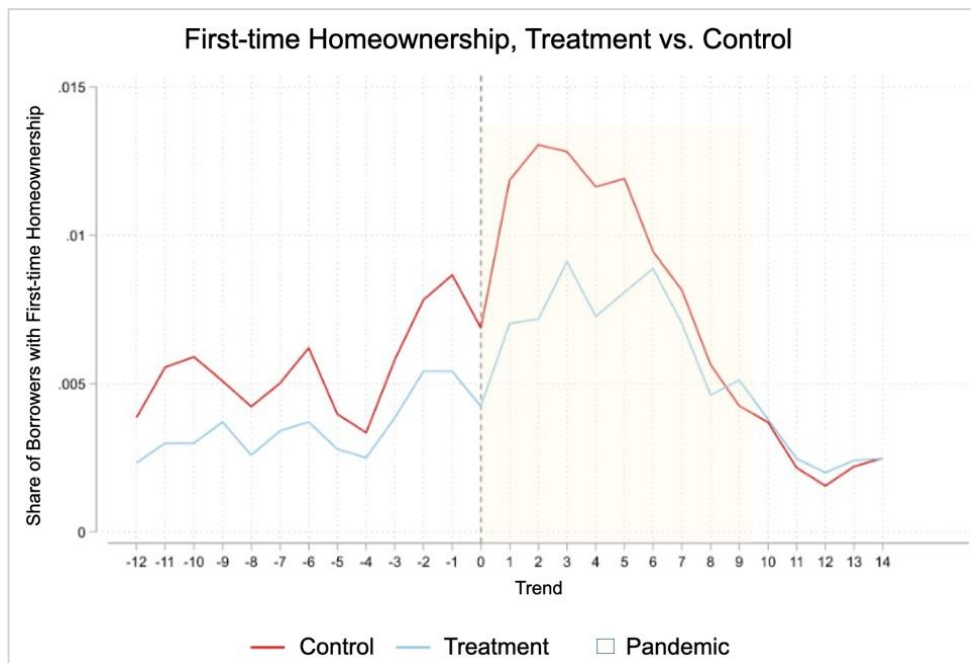
Figure 1. First-time homeownership in California, before and after the student loan payment pause enacted in the first quarter of 2020. The control group consists of student loan borrowers with loans that were not eligible for the payment pause. The treatment group were borrowers eligible for the payment pause. The x axis is a time series trend in quarters (e.g., -1 is Q4 2019). While student loan borrowers affected by the pause were different from the control group even before the pause was put in place, they nevertheless increased their rate of first-time homeownership in the year following the pause's
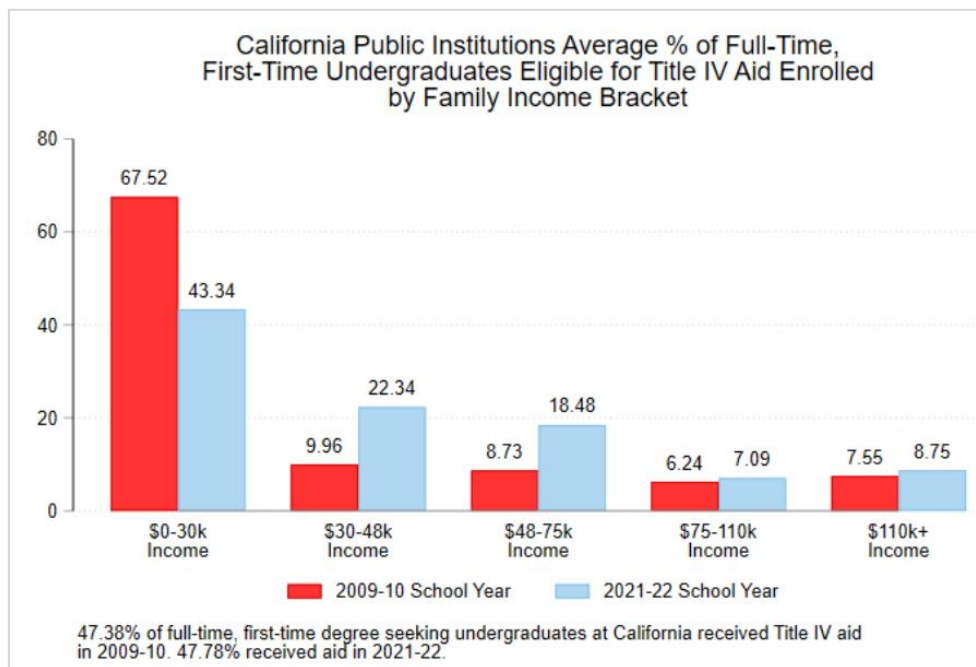
Figure 2. California public institutions average percentage of full-time, first-time undergraduates eligible for Title IV aid enrolled by family income bracket. While roughly the same percentage of full-time, first-time degree-seeking undergraduates at California public institutions received federal student aid between 2009-10 and 2021-22 school years, the share of students from the lowest income decile dropped significantly between the two academic years.

CONCLUSION The extraordinary policy interventions undertaken in response to the COVID-19 pandemic had multiple and desirable effects. Student loan borrowers received relief from financial burdens at a difficult moment, and that relief correspondingly promoted both personal financial and mental health. Institutions of higher education in California used federal funds to weather an otherwise extremely challenging environment without causing further enrollment declines, thereby also benefitting students. Further, some borrowers took advantage of this relief to advance their financial and personal circumstances that were previously undermined by debt obligations.

ACKNOWLEDGEMENTS Over the course of this research project, we have benefitted from our relationship with the California Policy Lab, which houses the credit panel data that we drew upon to measure the financial health of student loan borrowers in the state. We have also consulted frequently with the Student Borrower Protection Center, a nonprofit advocacy group that is our partner in the Student Loan Law Initiative and that is committed to protecting the interests of student loan borrowers.

NEXT STEPS We have initiated multiple research projects to examine the effects of the new administration's policies on student debt relief. We hope to learn what the effects are of the restarting of student loan payments which were suspended during the pandemic. We also plan to study the implications of new restrictions imposed by the Trump Administration on different loan repayment programs available to student loan borrowers.

DISSEMINATION

- **Student Loan Debt Relief Public Hearing PM Session**. Department of Education Negotiated Rulemaking. December 2023.
- **Pandemic Era Interventions.** Presentation. Student Borrower Protection Center and Student Loan Law Initiative Research Showcase. April 2024.
- **Student Loan Borrowers and Pandemic-Era Interventions in California.** Whitepaper. August 2024
- **Student Loan Law Initiative.** Website.

Researching explanations of variations in COVID-19 disparities and the effects of equity-focused pandemic policies (REVIVE-CA)

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PROJECT SUMMARY

To make public health investments more equitable and effective, we studied social, economic, and local factors influencing COVID-19 outcomes across California. We combined quantitative analysis with qualitative interviews among staff at public health departments and community-based organizations to uncover key factors affecting health. Our findings demonstrate how place and time play a significant role in health outcomes. Engaging communities and stakeholders can shed light on this, address data gaps, and identify populations experiencing the greatest disparities. This approach supports the idea that both statistical analyses and community insights are needed to design targeted health interventions that better serve local needs.

PARTNERS

- California Department of Public Health, Division of Communicable Disease Control (DCDC) and the Office of Health Equity (OHE)

BACKGROUND This project aimed to identify social, economic, and local factors across California that explain the variation of COVID-19 outcomes, including case rates, mortality, test rates, and estimated effects of California's equity-focused COVID-19 policies.

Public Health Significance

Identifying key factors influencing health outcomes can help target public health investments for achieving more effective and equitable outcomes, while accounting for the diversity across the state of California. We retrospectively focus on COVID-19 with the intention to expand into other health priorities in the future.

METHODS To identify factors that explain variation in key outcomes, a statistical approach using machine learning (ML) was implemented and compared to traditional, non-ML techniques. To identify local factors that explain variation from different stakeholder perspectives, we conducted qualitative semi-structured interviews among 48 individuals, including seven California Department of Public Health (CDPH) state and regional staff, 29 county and city Department of Public Health staff from 21 local health jurisdictions (LHJs), and 12 community-based organization staff.

RESULTS Quantitatively, we found that healthcare access and economic variables best explained variation in case rates during the summer 2020 surge in California, while education variables best explained variation in case rates during the winter 2020-2021 and Delta variant periods. There was no clear "best" after vaccines were introduced. For mortality rates, housing variables best explained variation during the first two surges, with environmental variables best explaining variation during the Delta period. Transportation and housing variables best explained testing volume variation during the summer 2020 surge, with education and housing explaining testing variation in the winter 2020-2021 surge, and education and healthcare access explaining variation in testing once vaccines become available in early 2021.

Our qualitative results shed light on factors that aren't typically captured quantitatively. Regarding factors that would help achieve health equity, our respondents highlighted both external elements (e.g., opportunities for

residents across California to reach their full potential for health regardless of race, gender, and ability) but also internal elements (e.g., state and local DPH leadership responsibilities, backgrounds of people in positions of power). Respondents also spoke often about the impact of intersectionalities and isolation among those with fewer opportunities, suggesting the need to further dissect how determinants of health are used for public health planning and programming. Relatedly, challenges exist in accessing disaggregated data to identify who is the best fit for health resources. Staff at different agencies highlighted how they received more detailed disaggregated data during COVID-19, challenging prior assertions about its availability. Examining some of this data quantitatively obscured small pockets of struggling neighborhoods next to more affluent ones, with further challenges in small-population areas that have small number issues.
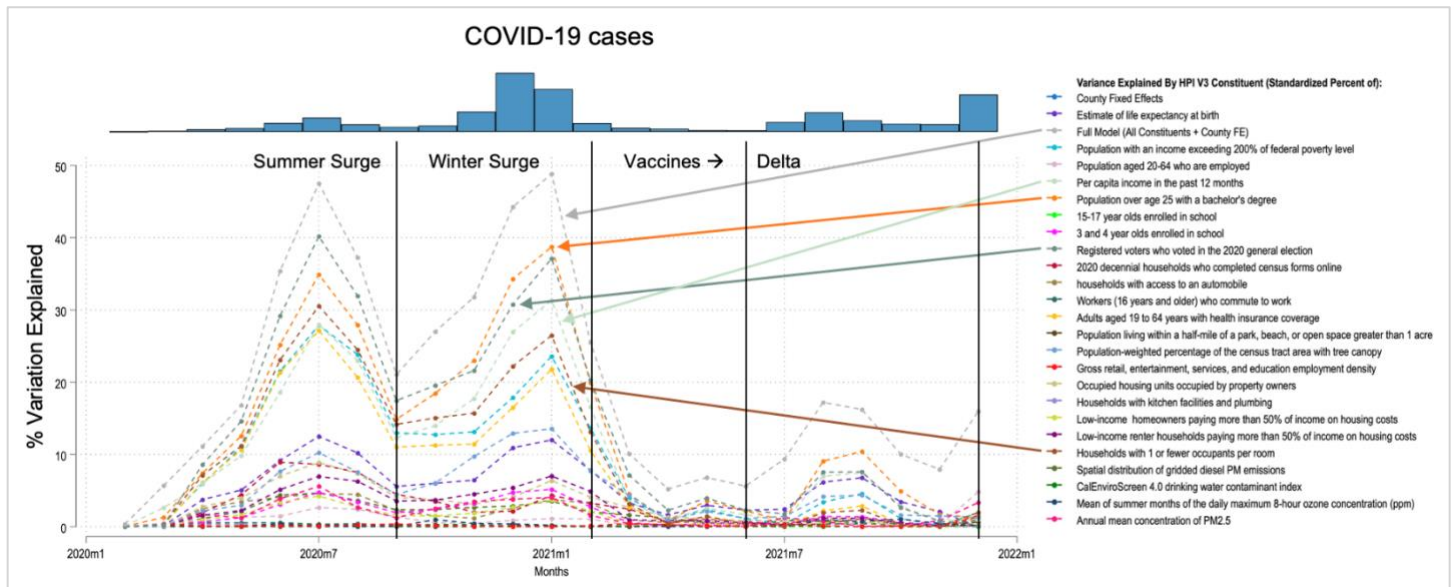
Figure 1. Variation in COVID-19 cases explained by social, economic, and other factors (2020-2021). Total COVID-19 cases by month for large counties in California are depicted in histogram. Line plots represent the percent variation in standardized monthly case rates among large counties explained by social and economic factors (represented by different colors) for each month in 2020 and 2021. Large counties are defined as counties with a 2019 population of 35,000 or more.

CONCLUSION Both statistical analyses and community insights are needed to inform targeted health interventions that aim to advance health equity. Community insights highlight issues beyond quantitative data, such as the need for disaggregated data and an understanding of intersectionality to inform public health initiatives that better serve local needs.

ACKNOWLEDGEMENTS We thank the individuals from over 20 of California's county and city local health jurisdictions and over 10 community-based organizations across California who provided their time and thoughts in the qualitative component of this project. We are immensely grateful for their work and commitment to the health of California's population.

NEXT STEPS Several manuscripts, as well as grants to pursue the extension and translation of work from this project are in preparation and under development. Additionally, the PI (Kwan) submitted an NIH K01 career development award in November 2024 to further extend research related to this project. The K01 objective is to generate foundational evidence on utilizing place-based methods to feasibly and effectively address health disparities, focusing on COVID-19, tuberculosis, and asthma. Using qualitative data collected in this project, the K01 will map factors identified as influencing health disparities onto an implementation science framework and quantitatively assess their relative importance alongside key determinants of health to elucidate

mechanisms that explain disparities in outcomes across California. Ongoing community engagement will systematically inform the research process.

DISSEMINATION Manuscripts and presentations are in preparation.

Guaranteed income as a perinatal equity intervention: Evaluation of the Abundant Birth Project expansion through the San Francisco Bay Area, California

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PROJECT SUMMARY

Our grant period covered the launch of data collection for the California Abundant Birth Project (CA-ABP) evaluation, including baseline and third-trimester surveys and 12 key informant interviews to assess program implementation. We solicited feedback from community experts throughout to ensure research efforts are informed by community members' perspectives. Preliminary analysis indicated a balance at randomization in demographic variables and outcomes. We also identified barriers to scaling up CA-ABP, including uneven capacity at partner organizations and difficulties in accessing the program. Future analyses will explore the impact of ABP on adverse pregnancy outcomes, mental health and wellbeing, and infant development.

PARTNERS

- California Department of Social Services
- Expecting Justice
- Alameda County Department of Public Health
- FIERCE Advocates (Contra Costa County)
- Los Angeles County Department of Public Health
- Riverside Community Health Foundation

Public Health Significance

This ongoing project evaluates the impact of unconditional income supplementation on financial security among Black birthing people in California. Evidence suggests the potential for improvements in perinatal mental health because of guaranteed income and timely intervention to mitigate economic insecurity in the wake of the COVID-19 pandemic.

BACKGROUND In the U.S., racial inequities in pregnancy and birth outcomes persist, with Black women and birthing people most affected. Structural racism and subsequent stress have been identified as root causes of these inequities, which intensified during the COVID-19 pandemic. Examining economic inequality during pregnancy and across the life course is vital to advance maternal and infant health equity for communities at highest risk of adverse outcomes.

The California Abundant Birth Project (CA-ABP) is a guaranteed income program for pregnant people at greatest risk of birth inequities in four California counties (Alameda, Contra Costa, Riverside, and Los Angeles), providing unconditional, monthly income supplements for 12-18 months during pregnancy and postpartum to curb financial stress and promote healthy pregnancy outcomes.

METHODS We co-designed and implemented a rigorous evaluation of CA-ABP with community and government partners. Four counties are actively recruiting participants, with a goal of recruiting close to 900 total participants. The program randomly selects participants into ABP through a process called the Abundance Drawing. We expect a sample size of 1411 for the opt-in evaluation focusing on Black-identified participants. Using a community-driven, mixed method, quasi-experimental approach, we will evaluate the impact of receiving GI on pregnancy and birth outcomes using surveys and qualitative interviews.

For this report, we described baseline demographics at the mid-point enrollment and examined baseline equivalence in outcomes as of October 2024. Additionally, we conducted one-on-one interviews with 12 program staff from the four active counties to assess the consistency of implementation procedures. We used a rapid assessment process to analyze interviews.

RESULTS As of October 2024, 1070 applicants were approved for the Abundance Drawing, and 430 were selected into the program. Program participants' median age was 31 years at the time of application, and median annual household income was $15,600.

For the evaluation, 891 (83%) out of 1070 eligible participants consented to participate in baseline data collection. 48.8% of baseline participants were enrolled in Los Angeles, 25.3% in Alameda, 14.4% in Contra Costa and 11.6% in Riverside. We observed no differences among ABP and control group participants on demographic characteristics or baseline values of depression (PHQ-8), anxiety (GAD-7), stress (Perceived Stress Scale), hope (Herth Hope Index), food security (USDA Food Security Scale-6), or financial wellbeing (Consumer Financial Protection Bureau financial well-being). Data collection is ongoing and expected to conclude in late 2026.

Preliminary analysis of key informant interviews uncovered barriers to implementation of CA-ABP, including differing capacity of implementation partners, challenges with communication across sites, and difficulties supporting program participants to meet their basic needs. Interviewees described accessibility issues related to features of program design (e.g., applicant difficulty securing required eligibility documents) and the need for targeted recruitment efforts (e.g., to reach LGBTQ+ birthing people).

CONCLUSION This grant period encompassed the initiation of the evaluation and demonstrated the feasibility of recruiting participants to baseline surveys and baseline equivalence across key measures. Future analyses will explore the impact of ABP on adverse pregnancy outcomes, mental health and wellbeing.

NEXT STEPS Participant recruitment and data collection are ongoing, including additional survey data collection (6-month and 12-month postpartum), qualitative data collection with a subsample of participants, and qualitative data on CA-ABP implementation practices. We are in the first year of a five-year R01 for this project and are currently seeking additional grant funding to fully cover the evaluation costs.

The socio-economic impact of COVID-19 on vulnerable Asian American communities and the potentiality of multigenerational, culturally informed solidarity economy as critical intervention

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PROJECT SUMMARY

We conducted interviews and focus groups to assess COVID-19's impact on South and Southeast Asian (S/SEAn) communities and identify solutions, including culturally informed solidarity economy interventions. Preliminary findings were shared through community convenings across California and nationally. The study highlights shared challenges like job loss, housing and food insecurity, and social isolation, alongside distinct issues such as language barriers, racial violence, and re-traumatization. It exposes gaps in government aid, systemic inequities, and the deepening of preexisting poverty. The resilience and resourcefulness of S/SEAn communities underscore the need for culturally responsive interventions and partnerships with community organizations to support their long-term well-being.

PARTNERS

- Asian Immigrant Women Advocates, Oakland
- National Cambodian American Organization
- Khmer Community of Seattle - King County
- The Cambodian Family, Santa Ana
- Cambodian Association of America, Long Beach
- Cambodian Association of Greater Philadelphia
- Laotian American Community of Fresno
- Merced Lao Family Community
- The Fresno Center
- Hmong Cultural Center of Butte County
- Center for Empowering Refugees and Immigrants, Oakland
- Members of a grassroots Nepali immigrant network
- South and Southeast Asian Americans through community and student networks

Public Health Significance

This study promotes health and mental health equity and related social and economic security in underserved Asian American (AA) communities. Lack of policy attention to language barriers and to differential needs of communities impede the extension of critical assistance to vulnerable populations. The findings will help government and non-government agencies improve program planning and service delivery to underserved AA populations.

BACKGROUND Throughout the pandemic, Asian Americans (AAs) have faced a triple crisis of health vulnerability, anti-Asian violence, and economic insecurity, registering one of the highest unemployment rates across all racial groups, high representation in frontline and high COVID-19-impacted economic sectors, and pre-existing socio-economic and health precarities. Yet, there is little scholarship on the social and economic impact of COVID-19 on AAs, and even less on the more vulnerable and less visible subgroups such as low-wage workers, refugees, and the undocumented. The existing few studies on AAs tend to adopt a pan-Asian framework without consideration of inter- and intra-group differences and disparities. Most focus on health and do not go beyond identifying the problems.
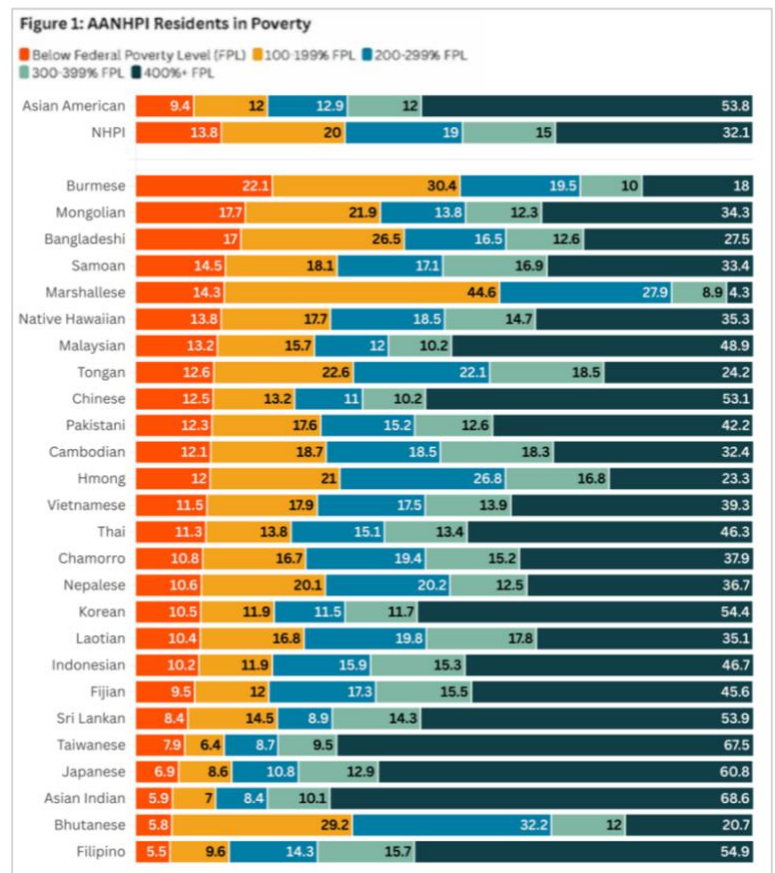
Given existing gaps, our community-engaged research aims to 1) assess the research landscape on COVID-19 impact on AAs 2) assess COVID-19 impact on the economic, health, and social wellbeing of South and Southeast Asian (S/SEAn) low-wage workers and new immigrant and refugee communities, and 3) engage those communities in multi-stakeholder and multigenerational conversations about the potentiality of solidarity economy, such as homecare cooperative, as a pathway to greater economic security, mutual aid, and self-determination. Through a social justice lens and attention to intersectionality between immigration status, gender, and class, we identified a few possible intervention initiatives, including homecare, given existing needs in the community and complementarity of skills, aptitudes, and cultural values that many S/SEAn low-wage workers, especially first-generation women, already possess.

Population	Poverty Rate
Burmese	19%
Hmong	17%
Cambodian	13%
Vietnamese	11%
Thai	11%
Laotian	11%
Asian American (overall)	10%
Nepali	9%

Table 1: Demographic & socioeconomic status of South and Southeast Asians in the U.S. *Source: Tian, Z., & Ruiz, N. G. (2024, March 27). Key facts about Asian Americans living in poverty. Pew Research Center. https://www.pewresearch.org/short-reads/2024/03/27/key-facts-about-asian-americans-living-in-poverty/*

METHODS We conducted 43 semi-structured individual interviews and 4 focus groups of 45 participants in total to explore how COVID-19 impacted the economic, health, and social wellbeing of S/SEAn low-wage workers and new immigrant and refugee communities. One of the focus groups was dedicated to the discussion of community-centered, culturally informed, and mutuality-guided interventions. Additionally, we conducted 4 sharing and listening sessions with the Cambodian American communities in Long Beach and Orange County in Southern California (90 participants), the Lao American community in the Central Valley (14 participants), the Nepali community in the Bay Area (16 participants), and a national sharing session that drew participants from California, Philadelphia and Washington State (55 participants). Participants were S/SEAn workers in vulnerable sectors, students, community members, and immigrant and refugee serving organizations.

Figure 1: Research Project Partners and Community Forum

RESULTS The findings reveal many challenges facing S/SEAn communities that are both shared and different across and within groups. While other vulnerable populations in the U.S. also experience issues such as social isolation, loss of jobs and income, and housing and food insecurity as a result of the pandemic, S/SEAns face additional and compounding challenges such as language barriers and immigration status that further restrict access to information and resources, racially motivated violence, and re-traumatization. The communities, especially community-based organizations, also demonstrate tremendous resilience and resourcefulness in filling the gaps in public assistance.

CONCLUSION S/SEAn communities face distinct, compounded challenges due to the pandemic. Despite these adversities, the communities demonstrate considerable resilience and adaptability that inform our thinking about and co-development of intervention initiatives.
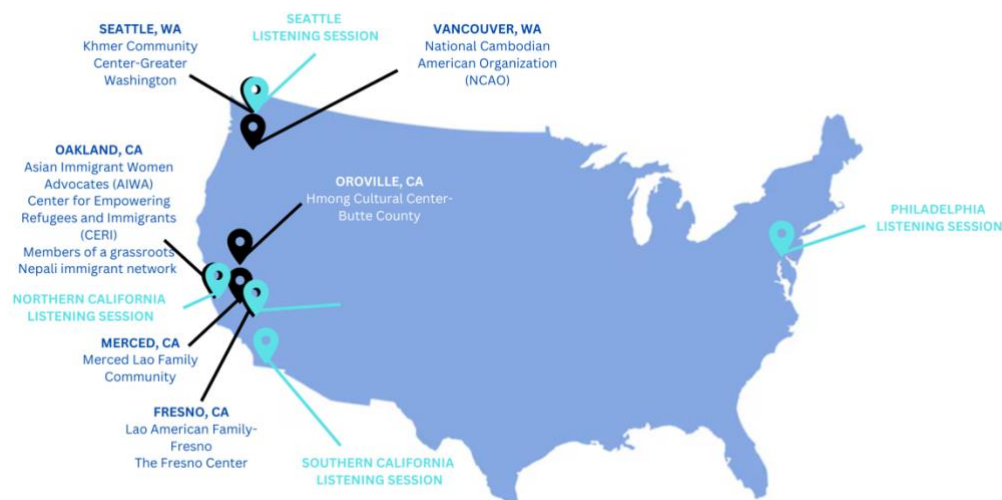

Figure 2. Community partners & listening sessions

NEXT STEPS We plan to work with our community partners to develop community-centered, culturally informed, and mutuality-guided initiatives that meet community needs, and that help enhance their social and economic wellbeing.

DISSEMINATION
- National sharing and listening sessions in partnership with community groups that included communities in Greater Philadelphia, Vancouver and Seattle.
- Three regional sharing and listening sessions in Northern California, Central California and Southern California.
- We are preparing a policy brief and a more comprehensive report that will be shared nationally with multiple stakeholders.

Figure 3. Community Forum – Greater Washington

67

Keeping vulnerable Californians in jobs: examining different unemployment insurance programs and strategies for job retention

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PROJECT SUMMARY

We compared regular Unemployment Insurance (UI) to Short-Time Compensation (STC), a layoff prevention program which provides prorated benefits to workers with reduced hours. We described who used these programs during the COVID-19 pandemic, then identified which program yielded better labor market outcomes. Our analysis found that program take up is low in California, in particular among disadvantaged workers. We also found that STC claimants experienced less income disruption, higher employment rates, and more job stability. This suggests that STC was effective at maintaining worker-employer relationships during a turbulent period and there is opportunity to increase STC take up in California.

PARTNERS

- California Employment Development Department
- California Labor and Workforce Development Agency

Public Health Significance

As a condition of participation in the STC program, employers are required to maintain workers' healthcare benefits even as they reduce the number of hours worked. Producing research that supports scaling up the STC program, especially among workers who have been historically disadvantaged, will help the program serve as a healthcare retention strategy in future crises. Furthermore, by preventing workers from losing their job completely, STC can avert the negative health outcomes typically associated with the income loss and stress of layoffs.

BACKGROUND The goal of this research was to compare traditional Unemployment Insurance (UI) and Short-Time Compensation (STC), a layoff prevention program that provides prorated UI benefits to workers with reduced hours. Our research aimed to describe who used these programs during the COVID-19 pandemic, then to identify which program yielded better labor market outcomes for workers and relevant subgroups of workers. We also aimed to provide data-driven recommendations on how the government can most effectively promote the programs, in particular to those who have been underserved or historically disadvantaged in the labor market. Currently, little is known in the U.S. about how different types of workers fare under STC relative to the other UI programs or which type of workers and firms are likely to participate in STC. This project is the first such empirical analysis in California and the U.S.

METHODS Our research sample was the cohort of UI claimants who entered in the second quarter of 2020, right as the COVID-19 pandemic began. Our sample was divided by program and by demographic subgroups. We used an event study design to track worker employment, earnings, and industry stability outcomes before and after the start of the pandemic. We improved our causal design by matching and reweighting UI claimants and STC claimants across a set of observable variables to generate two groups of claimants that are statistically indistinguishable. To measure STC take up by subgroup, we calculated the share of all initial UI claims that are STC claims.

RESULTS Our event study analysis found that STC claimants experienced only temporary earnings reductions, while maintaining high employment rates and job stability. Individuals receiving partial or full UI benefits had worse employment outcomes and lower industry stability than STC claimants. Additionally, we found that overall STC program take up is low in California but increased in the most affected sectors during the pandemic. STC claimants disproportionately come from manufacturing. Historically disadvantaged groups have lower rates of STC take up, including female workers, younger workers, and workers in counties with larger Black and Hispanic populations.
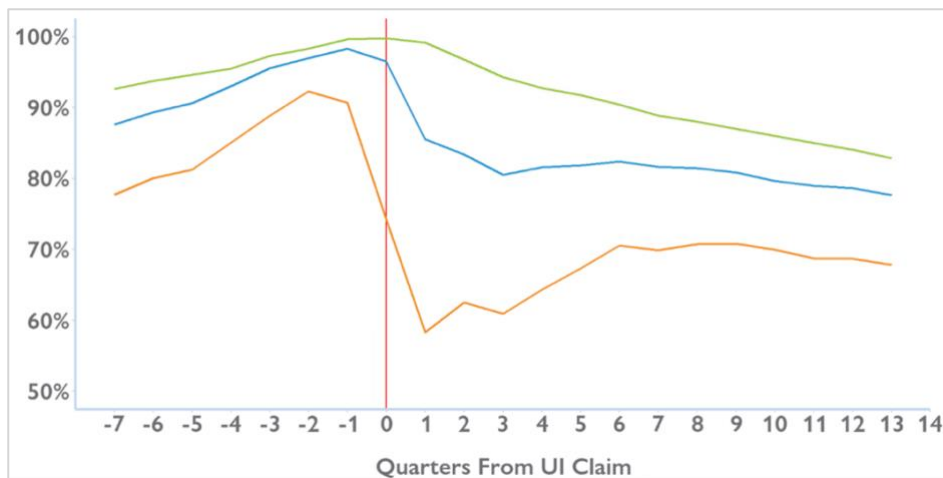
Figure 1. Quarterly employment of Unemployment Insurance (UI) claimants on Short-Time Compensation, partial UI, and full UI in California during the COVID-19 pandemic. Graph shows the employment rate over time for a cohort of Unemployment Insurance (UI) claimants who started receiving benefits in the second quarter of 2020. The green, blue, and orange lines represent claimants receiving benefits through Short-Time Compensation, Partial UI, and Full UI respectively.
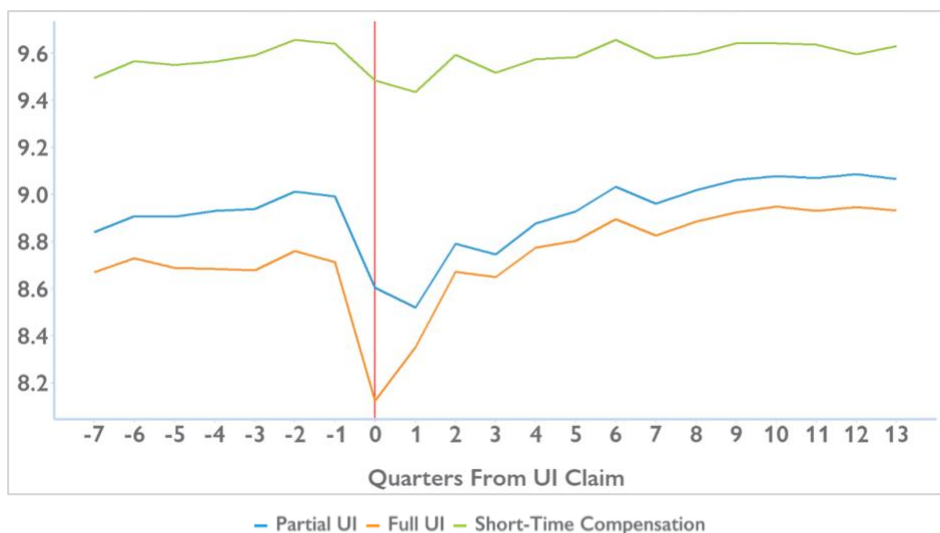
Figure 2. Quarterly Log Earnings of Unemployment Insurance (UI) Claimants on Short-Time Compensation, Partial UI, and Full UI in California during the COVID-19 Pandemic. Graph shows the average log earnings over time for a cohort of Unemployment Insurance (UI) claimants who started receiving benefits in the second quarter of 2020. The green, blue, and orange lines represent claimants receiving benefits through Short-Time Compensation, Partial UI, and Full UI respectively.

— Partial UI — Full UI — Short-Time Compensation

CONCLUSION STC was effective at maintaining worker-employer relationships during a turbulent period. People receiving partial or full UI benefits had worse employment outcomes than STC claimants, indicating that these programs were not as effective in assisting workers. There is opportunity to increase STC take up in CA, particularly among historically disadvantaged workers.

NEXT STEPS We intend to conduct a randomized controlled trial (RCT) study to evaluate the effect of promoting EDD's Short-Time Compensation program on program awareness and take up, as well as worker and firm short- and medium-term labor market outcomes. We are in conversation with the California Employment Development Department about this experiment and have received a two-year grant from the Washington Center for Equitable Growth to support survey design and administration for the study. We will continue to prospect additional financial support.

DISSEMINATION

- **Short-Time Compensation: Evidence on Take Up & Labor Outcomes**. Association for Public Policy Analysis and Management (APPAM) Conference. Presentation. November 2023.
- **Work Sharing: Evidence on Take Up & Labor Outcomes and Outreach Best Practices**. Presentation. California Employment Development Department. May 2024.
- **Short-Time Compensation Webinar Series: Building the Case for Why STC Supports Workers and Employers**. WorkforceGPS U.S. Department of Labor Employment and Training Administration's technical assistance website. July 2024.

Post-Acute Sequelae of SARS-CoV-2 infection (PASC) as accelerated disability and need for health services in older adults with baseline impairments

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PROJECT SUMMARY

We studied how COVID-19 infection affects older adults with pre-existing functional and cognitive impairments using data from the Health and Retirement Study, focusing on health services use and work-related outcomes. We found that pre-existing functional and cognitive impairments in older adults were linked with increased health services use and work limitations in 2022. However, the relationship between these impairments and these outcomes did not vary by COVID-19 history. Understanding these impacts helps in planning healthcare and social services, ensuring better support for older adults with pre-existing impairments, irrespective of COVID-19 history.

BACKGROUND Some survivors of COVID-19 have reported enduring symptoms that impair their ability to work or care for themselves, a condition termed Post-Acute Sequelae of SARS-CoV-2 infection (PASC) syndrome. While older age and disability are linked with severe COVID-19, which in turn is associated with prolonged symptoms, PASC research has been limited, often lacking baseline functional or cognitive data and focusing on patients without prior impairments. This study aims to understand how PASC manifests in individuals with pre-existing impairments to understand the evolving needs for services among older adults.

Public Health Significance

The aging population, coupled with the potential of PASC to accelerate disability, could have ramifications across healthcare services, the workforce, and social services. Understanding these impacts is crucial for planning in these sectors.

METHODS This longitudinal cohort study utilized biannual data from the Health and Retirement Study (HRS), spanning 2018-2022. Participants included were aged 50 and older in 2018 with documented functional and cognitive status scores. They responded to surveys in 2018, 2020, and 2022, and had a COVID-19 history documented in either the 2020 HRS or the 2021 Fall/Spring Perspectives on the Pandemic HRS survey. Outcomes were 2022 self-reported health services use (doctor visits, hospitalization, nursing home stays) and work-related outcomes (ability to work, work-limiting impairments, application for disability benefits).

RESULTS There were 9,714 respondents meeting the inclusion criteria. In multivariable analyses controlling for age, gender, marital status and number of chronic conditions, baseline functional limitation in 2018 was not associated with having seen a doctor by 2022, but moderate/severe functional limitations were linked to increased nursing home stays and hospitalizations by 2022. However, the associations of baseline functional status with these outcomes were unaffected by COVID-19 history.

In multivariable analyses, baseline cognitive limitation in 2018 was not associated with hospitalization, but those with cognitive impairment not dementia (CIND) and dementia were less likely to report having seen a doctor in the two years prior the 2022 survey. The association between baseline cognitive status and health

service outcomes did not vary by COVID-19 history. We did not examine nursing home usage in multivariable analyses as few (n=51) respondents with CIND/dementia were living outside of a nursing home in 2020. Among those who were able to work in 2018, multivariable analysis showed that baseline functional limitations were associated with developing work limiting impairments and applying for disability benefits by 2022, but again, this did not vary by COVID-19 history. Baseline cognitive impairments were similarly linked to an inability to work by 2022, but there was no association with reporting a work-limiting impairment by 2022. Those with CIND in 2018 were more likely to apply for disability benefits by 2022. Again, this did not vary by COVID-19 history.

CONCLUSION In this cohort of older adults, while baseline functional or cognitive impairments in 2018 were associated with health services use and diminished ability or inability to work. However, a history of COVID-19 infection in 2020-2021 did not modify the association of these baseline impairments with these outcomes.

NEXT STEPS A manuscript summarizing these findings is in preparation.

DISSEMINATION

- UCSF Patient and Family Advisory Council. Presentation. February 2025.

Priority Research Area

BEHAVIOR CHANGE & PUBLIC HEALTH COMMUNICATIONS

Behavior change strategies to improve relevance, acceptance, and uptake of pandemic-related recommendations, policies and interventions, including public health communication approaches.

Social networks and social media for health among Californians

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PROJECT SUMMARY

We recruited a diverse California sample to explore how social networks and social media engagement shaped COVID-19 vaccine attitudes and behaviors. We gathered data on individuals' social network composition and structure, and we found that having individuals in one's social network (i.e. social ties) who were vaccinated, social ties who encouraged vaccination, and highly trusted social ties, including those with whom individuals interacted with on social media, strongly predicted future intentions for COVID-19 vaccination. We also found that individuals preferred COVID-19 media content that was factual, video-based, sourced from CDPH, and delivered by health workers. Public health interventions should engage trusted social connections, using personal stories and peer advocacy, and feature factual video messaging from health workers to boost vaccine confidence and uptake.

PARTNERS

- Indigenous Community Advisory Board

BACKGROUND

The COVID-19 pandemic exacerbated healthcare disparities, particularly among Black, Hispanic/Latinx, Indigenous and immigrant communities, who experienced disproportionately higher case and death rates and lower vaccination rates. Social networks can play a critical role in disseminating health information and shaping behaviors, but limited research exists on how these networks influence responses to emerging health threats like COVID-19, particularly vaccine uptake and future vaccination intentions. This study aimed to fill this knowledge gap by exploring how social networks affected attitudes and behaviors toward COVID-19 vaccines.

Public Health Significance

Our research provides critical insights for the California Department of Public Health, community-based organizations, and other stakeholders to implement health information campaigns by engaging individuals' social networks and social media to disseminate trusted, accurate COVID-19 vaccine information, tailored to California's diverse racial and ethnic communities.

METHODS

We recruited 1,154 adults from December 2023 to August 2024 through Facebook, Instagram, and a pre-established survey panel reflecting California's demographic diversity. Eligibility criteria included being 18 or older, residing in California, and being proficient in English or Spanish. Participants completed an online survey covering socio-demographics, vaccination history, and attitudes towards COVID-19 vaccines. Using an ego-centric social network approach, study participants (egos) reported on their social ties (alters), capturing information on discussions about vaccination, alters' vaccination status, and COVID-19 illness. We used multivariable logistic regression to identify the association between social network characteristics and future COVID-19 vaccine intentions. We also recruited a sub-sample (n=240) for a follow-up survey to conduct a discrete choice experiment (DCE) evaluating preferences for COVID-19 vaccine information posts.

RESULTS Our multivariable regression models revealed that having at least one social tie who encouraged vaccination was strongly predictive of intentions to vaccinate (aOR 5.93, 95% CI 3.89-9.03). Having a social tie who had been sick with COVID-19 also significantly increased vaccine intentions (aOR 2.13, 95% CI 1.59-2.86). Additional predictors included having a vaccinated social tie, a highly trusted health advisor, and social ties they communicated with on social media. In the DCE, participants preferred TikTok-style videos versus static text-only vaccine posts and favored posts with real pictures over cartoons, although the difference was not statistically significant. Information from CDPH was preferred over unsourced or CDC-sourced information, and participants favored factual over humorous tones. Images featuring older adults were more popular, and information specific to COVID-19 or the flu was more compelling than general vaccine content.
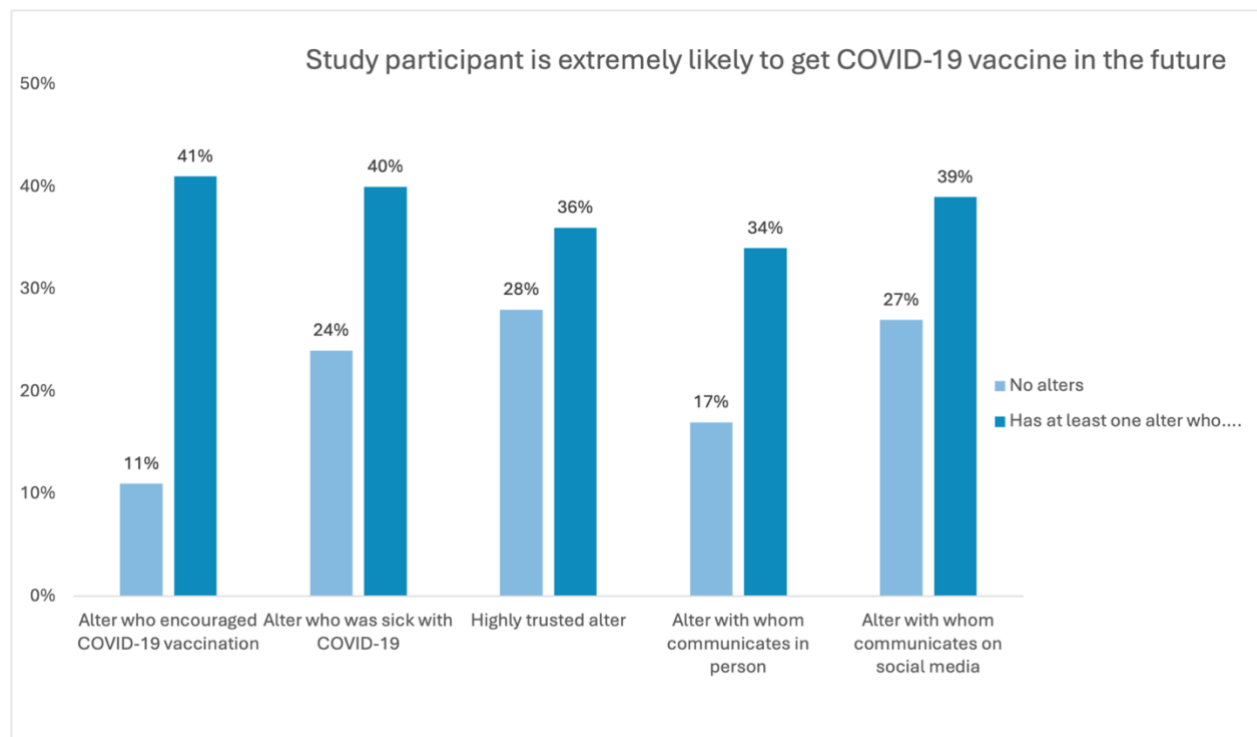
Figure 1. Study participants likelihood of getting vaccinated against COVID-19 in the future by social network characteristics. Regression-adjusted means by network characteristics. Estimates represent regression-adjusted means by social network characteristics from models adjusting for age, gender, language, household size, income and health insurance status.

CONCLUSION Our study highlights the critical role of social networks in shaping COVID-19 vaccine behaviors. Engaging trusted personal networks, peer advocates, and using targeted health messages can enhance vaccine confidence and uptake. These findings are also applicable to addressing other emerging health challenges by leveraging social networks to spread accurate, trusted information.
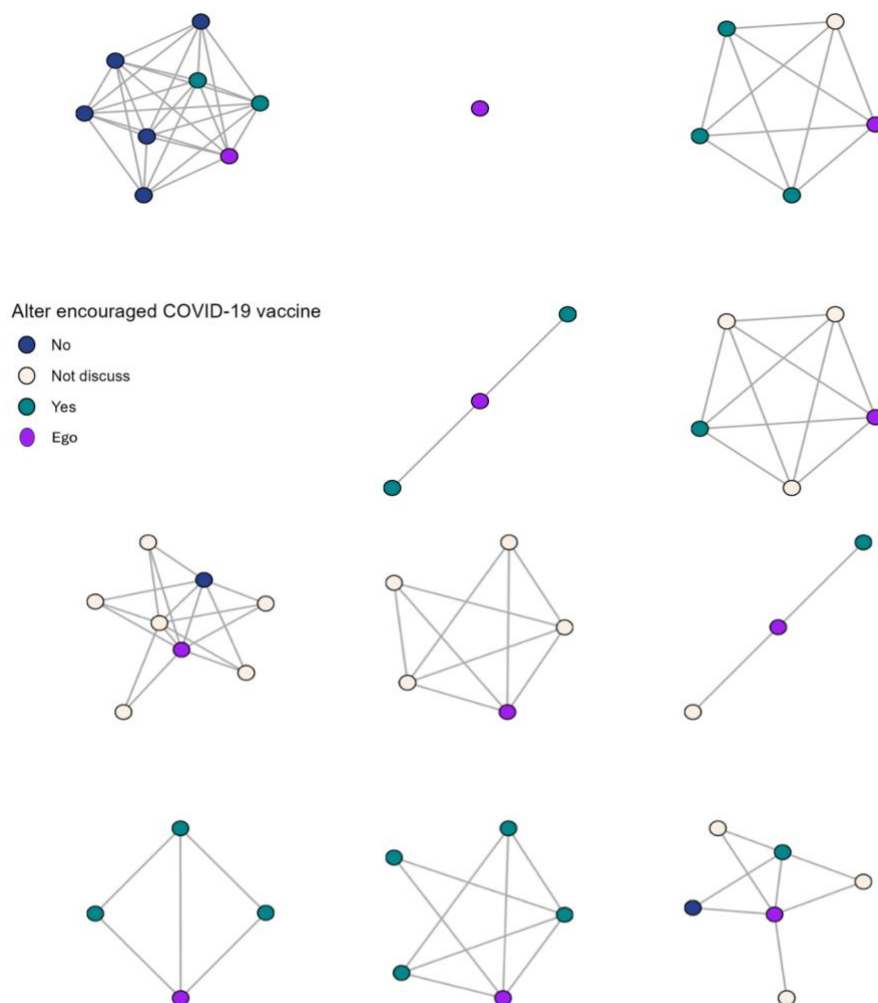
Figure 2. Health networks of study participants showing alters who encouraged COVID-19 vaccination. Nodes show connections between study participant (i.e. ego) and their alters, including connections between alters, and whether alters ever encouraged, discouraged, or did not discuss COVID-19 vaccination.

NEXT STEPS Our CPR3-funded study is part of a broader project which investigates how social networks and social media influence COVID-19 vaccine attitudes among Indigenous populations from both the U.S. and Mesoamerica who are residing in California. We continue to recruit Indigenous participants to compare the relationship between social network characteristics and vaccine beliefs across different racial and ethnic groups in California, to understand predictors of vaccine intentions and confidence. We are implementing focus group discussions with U.S. and Mesoamerican Indigenous people to further inform findings. Results will guide the development of a targeted intervention using human-centered design with community partners, to deliver trusted COVID-19 vaccine information. Published findings will offer policy insights to support future vaccine communication initiatives.

Figure 3. Team members including Indigenous Community Advisory Board at UC Santa Cruz Convening (October 2024)

DISSEMINATION

- **Social Networks and Health among Indigenous Californians.** Poster. UC Global Health Day. March 2024.
- **Social networks and their role in COVID-19 vaccine attitudes, beliefs, and behaviors: evidence from California.** Poster. UCSF Health Services Research Conference. April 2024.
- **Social networks and their role in COVID-19 vaccine attitudes, beliefs, and behaviors: evidence from California.** Oral Presentation. Population Association of America, Washington D.C. April 2025.
- Two manuscripts related to this work are currently under review.

Developing community-engaged and contextually tailored COVID-19 vaccine messages for Latinos in the Central Valley: The C4 Project

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PROJECT SUMMARY

Ongoing uptake of updated COVID-19 vaccines is important to minimize outbreaks and serious cases, particularly in underserved communities. We used a 'design science' approach to develop messages to promote COVID-19 vaccination in Latino residents of California's Central Valley, a community with low vaccination rates and high vaccine hesitancy. Focus group and surveys of Latino community members identified the important beliefs informing their vaccination intentions, particularly beliefs about vaccine safety and family and community benefits. These findings informed the development of a set of prototype messages tailored for the Latino community, which received high acceptability, appropriateness, feasibility and cultural appropriateness ratings.

PARTNERS

- Promotoras de Salud, Camarena Health Service, Madera

BACKGROUND Widescale uptake of updated COVID-19 vaccines is central to controlling infection rates and minimizing serious cases. Coverage and uptake of updated vaccines is particularly low among traditionally underserved communities, including Latino residents of California's Central Valley, with vaccine hesitancy a persistent barrier. Lack of culturally responsive messaging is a further limiting factor.

Public Health Significance

Given low vaccination rates and high vaccine hesitancy observed in Latino residents of California's Central Valley, the development of prototype messages targeting updated COVID-19 vaccine uptake for this community, the key deliverable of this project, may feed into public health campaigns designed to promote vaccine coverage and minimize outbreaks and serious cases in this priority group.

METHODS Project aims were fulfilled in three phases comprising six studies. Phase 1 gathered formative data through an environmental scan of existing COVID-19 vaccination messages issued by health authorities (Study 1a) and a systematic search of scientific studies testing COVID-19 vaccination message efficacy (Study 1b). Cultural responsiveness of existing messages identified in Studies 1a and 1b was assessed in focus groups in samples of Latino residents of California's Central Valley (Study 2). An open-ended belief elicitation survey of Latino residents identified salient beliefs guiding COVID-19 vaccination decisions (Study 3). In Phase 2, a broader survey of Latino residents confirmed links between beliefs and COVID-19 vaccination intentions and hesitancy (Study 4). In Phase 3, Phase 1 and 2 findings and expert consensus were used to develop prototype COVID-19 vaccination messages, and their cultural appropriateness was assessed in focus groups (Study 5). Final message acceptability and cultural appropriateness was tested in a feasibility trial (Study 6).

RESULTS Phase 1 reviews (Studies 1a, 1b) identified six messages capturing vaccination promotion themes. Focus groups (Study 2) indicated efficacious message components: highlighting salient benefits,

family support, and vaccine safety, and highlighting concerns: message length and lack of clarity on side effects. Belief elicitation (Study 3) and broader survey (Study 4) findings identified behavioral, normative, and self-efficacy beliefs and socio-structural variables including vaccine hesitancy, vaccine confidence, and conspiracy beliefs relevant to COVID-19 vaccine intentions. Phase 1 and 2 data, expert consensus, and further focus group feedback (Study 5) produced final prototype messages targeting behavioral, normative, and self-efficacy beliefs, respectively, with common content on guiding themes: emphasis on family and community; focus on safety and salient benefits; providing efficacy information; and reducing message complexity and length. Our feasibility trial indicated high acceptability, appropriateness, feasibility, and cultural appropriateness ratings (Study 6).
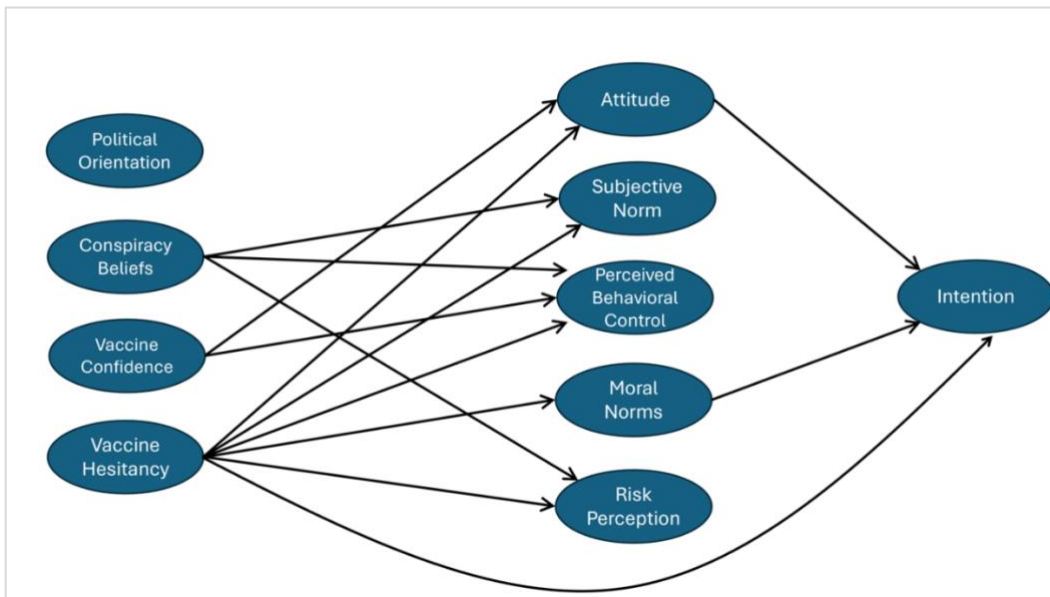
Figure 1. Model illustrating salient belief-based psychological and social-structural determinants of intentions to get the updated COVID-19 vaccine in a sample of Latinos matching the demographic profile of the Latino population in California's Central Valley from the project survey study (Study 4). Data were used to inform refine development of prototype messages designed to promote uptake of updated COVID-19 vaccines as part of public health campaigns in this population.
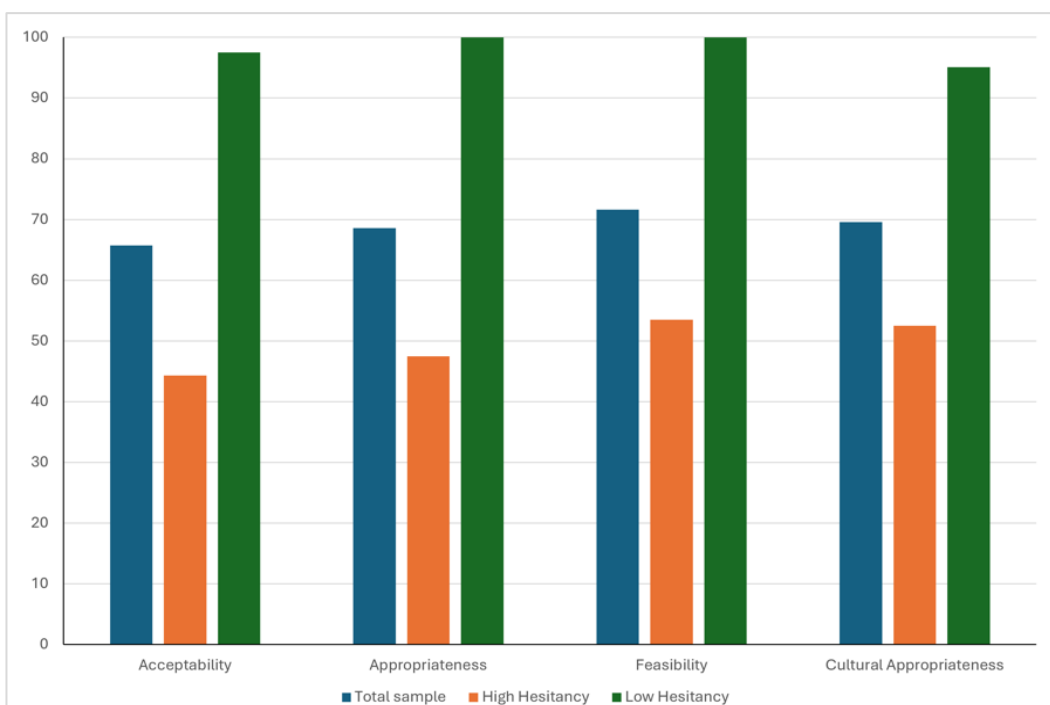
Figure 2. Latino study participants' acceptability, appropriateness, feasibility, and cultural appropriateness evaluations of final prototype messages designed to promote future uptake of updated COVID-19 vaccines from the final feasibility study (Study 6) of the project by vaccine hesitancy. Evaluations were universally positive, including among those most hesitant to get vaccinated.

CONCLUSION The project delivered a set of culturally tailored messages to promote COVID-19 vaccine uptake in Latino residents of California's Central Valley with good acceptability and appropriateness ratings. The project also produced a systematic protocol with potential to inform future health message development in underserved communities.

ACKNOWLEDGEMENTS We thank the Promotores de Salud community health workers at Camarena Health in Madera, California, for their assistance in developing our focus group protocol, assistance with participation recruitment, facilitation of the focus group interviews, and provision of feedback and recommendations on draft prototype messages for the project.

NEXT STEPS Several manuscripts are in preparation.

▪ Hamilton, K., Balla, J., & Hagger, M. S. (2025). *Development of contextually-tailored COVID-19 vaccine messages for Latinos in California's Central Valley: The 'C4' Project*. Video interview to be included in the Inclusive Research Methodologies part of Sage Research Methods multimedia collection.

DISSEMINATION

▪ **Development of contextually-tailored COVID-19 vaccine messages for Latinos in California's Central Valley: The 'C4' Project.** Symposium. 46th annual meeting of the Society of Behavioral Medicine. San Francisco, California. March 2025.
▪ **Developing community-engaged and contextually tailored COVID-19 vaccine messages for Latinos in the California Central Valley: The 'C4' project.** Distinguished Graduate Speaker in Psychological Science Awards. Department of Psychological Sciences, University of California, Merced. November 2024.
▪ **Developing community-engaged and contextually tailored COVID-19 vaccine messages for Latinos in the Central Valley: The C4 project.** Research dissemination symposium. University of California, Merced. October 2024.
▪ **Developing community-engaged and contextually tailored COVID-19 vaccine messages.** Research seminar. Griffith University Centre for Mental Health. Brisbane, Australia. October 2024.
▪ **Developing community-engaged and contextually tailored COVID-19 vaccine messages.** Research seminar. University of Jyväskylä. Jyväskylä, Finland. September 2024.
▪ **Examining cultural responsiveness of COVID-19 vaccination messages for Latino persons in the California Central Valley: The C4 project.** 38th Annual Conference of the European Health Psychology Society. Cascais, Portugal. September 2024.

Figure 3. Team members at the C4 Symposium (October 2024).

Understanding changes in vaccine hesitancy and uptake in California Black and Latinx communities

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PROJECT SUMMARY

This study explored the role of leaders and organizations in Black and Latinx communities in combating vaccine hesitancy and increasing vaccination rates among ethnic minorities. We learned that leaders and organizations were able to overcome barriers to getting community members vaccinated by building ongoing relationships with them, providing educational campaigns regarding the virus, providing support and access to COVID-19 vaccinations in their communities, and providing material resources such as food to support individuals and families in addition to health services. The findings can be used to create future campaigns promoting COVID-19 boosters and other immunizations, including annual flu shots.

PARTNERS

- Alameda County Health Department
- Los Angeles County Health Departments
- Inland Empire Empowerment Agency
- Umoja

Public Health Significance

This research provides insights into how Black and Latinx leaders helped improve acceptance of COVID-19 safety protocols and vaccines in a relatively short time. The findings have important applications for developing community-driven interventions to decrease vaccine hesitancy and refusal among adults and are relevant to future campaigns promoting COVID-19 boosters and other immunizations, including annual flu shots.

BACKGROUND The COVID-19 pandemic resulted in stark racial and ethnic disparities in disease rates but also in major efforts by Black and Latinx community leaders to combat vaccine hesitancy and increase vaccination rates among ethnic minorities. However, few, if any, previous studies have explored the roles of leaders and communities in lowering resistance to being vaccinated in minority neighborhoods. To help address this gap, this study explored how leaders in Black and Latinx communities framed and interpreted the pandemic to their constituents; types of messaging and educational strategies they used to promote COVID-19 testing, vaccination and behavioral norms to reduce infections; outreach strategies they used to overcome residential and socio-economic barriers to receive COVID-19 services; and the general role that they and their organizations played within communities and their relationships to health institutions.

METHODS To accomplish the study goals, we conducted 22 in-depth qualitative interviews with leaders of community-based organizations successfully providing COVID-19 testing and vaccination services to Black, Latinx and other marginalized populations from three regions in California (San Francisco Bay Area, Los

Preliminary Results: Key Themes

▶ Central importance of role of community collaboration and engagement as a success factor in vaccine campaigns.

▶ Lack of trust as a major barrier to vaccine uptake.

▶ Key importance of "misinformation" as a barrier to vaccine acceptance and immunization.

Figure 1. Key themes from preliminary results.

Angeles Area and Inland Empire). The interviews were transcribed by a professional transcription service and entered into Atlas.ti, a well-known qualitative data analysis software package. Atlas.ti is being used to identify key concepts that are emerging in the interviews and to create codes and categories reflecting those themes.

RESULTS We are still coding data in Atlas.ti so have not finalized the study findings. We are currently analyzing strategies and messaging that organizations used to overcome barriers to vaccination and increase acceptance of the vaccine. Emerging themes from the transcripts emphasize the importance of long term and deep community engagement; the need to create trust among respondents; the central role of organizations in combatting widespread misinformation and disinformation; and the importance of holistic approaches to health that include provision of material resources and primacy of overcoming barriers to access to healthcare.

Preliminary Results: Quotations

Community	Lack of Trust	Misinformation
I mean, it wasn't something we did on our own. Everything we did had to have collaboration, community collaboration, partnerships and things like that. So, I think that just understanding that and playing my role and not trying to be the only one and the first and knowing that I needed to lean into the community. And we all needed to lean in with each other. So, I think that was just important.	So, what came up during COVID was the lack of medical - well, was the heavy medical mistrust. We learned real quick that the Black communities and even Latinx communities didn't trust doctors, of course, for two totally different reasons. But for the Black community, the lack of trust was there. And so, it was important that when we executed engagements that we utilized Black doctors… to put doctors of color in the community.	So, some of the messages that it had was going up against the misinformation. Because that was the biggest thing was everybody was saying that you were being injected with the chip, that the government was going to track you. It was really tough because once you have social media involved, everybody believes social media.

Table 2. Quotations for preliminary themes

CONCLUSION Preliminary findings suggest that community-based leaders in Black and Latinx neighborhoods were able to overcome barriers such as access limitations, medical distrust, lack of information and disinformation through building in-depth on-going relationships with community members, providing systematic educational campaigns regarding the virus, providing support and access to COVID-19 vaccinations in their communities, and providing material resources such as food to support individuals and families in addition to health services.

NEXT STEPS We are interested in exploring the following possibilities for proposing new research projects related to this study: (1) Helping agencies such as the local county health department create and evaluate interventions related to health equity using the frameworks and strategies that community-based leaders described as critical for reaching marginalized populations and helping overcome barriers to receive health services, (2) Examining the development of anti-vaccination sentiments and their promotion in rural and

suburban white communities to better understand the rationale for acceptance of these beliefs and how they could be re-directed to embrace a culture of health perspective.

DISSEMINATION

- **The Role of Disinformation and Mistrust in Vaccine Hesitancy Among Black and Latinx Community Members.** Lecture. UC Berkeley Public Health Students. October 2024.

Empowering vulnerable workers and improving knowledge: Insights from California's COVID-19 Workplace Outreach Project and the trusted messenger model

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PROJECT SUMMARY

We explore the role that government-community partnerships can play in informing and empowering vulnerable workers in California on their workplace rights and protections. Using two surveys and a set of qualitative interviews, we provide insights about one prominent example of this type of partnership: the California COVID-19 Workplace Outreach Project (CWOP). We find that many vulnerable workers in the state are unaware of their workplace protections, hesitant to file formal complaints, and distrustful of government. Our interviews, as well as a survey experiment, further indicate that partnering with community organizations can help government deliver critical information to hard-to-reach populations. Findings from this project can be used to inform decisions around the future of the CWOP program, as well as similar projects that rely on "trusted messengers" to connect with vulnerable communities.

PARTNERS

- California Department of Industrial Relations
- California Labor and Workforce Development Agency
- UC Merced Community and Labor Center
- Over 75 community-based organizations across California

Public Health Significance

CWOP is one of a set of emerging government-community partnerships, which utilizes a trusted messenger model to ensure the state's most vulnerable workers have access to critical information and support when dealing with workplace health and safety issues.

BACKGROUND

California's low-wage workers faced heightened and disproportionate vulnerability during the COVID-19 pandemic, including higher exposure risks, inadequate safety information, and lack of knowledge of their labor rights. In response, the California Labor and Workforce Development Agency (LWDA) launched CWOP in 2021, which aimed to educate workers in high-risk sectors about these issues using a trusted messenger model through community-based organizations (CBOs).

METHODS

This study utilized a mixed-methods approach, which included interviews with 36 CBO staff and the design and implementation of two surveys: one targeting low-wage workers statewide (N=1,871) and the other focusing on CWOP-engaged workers across California (N=170). The former survey also included two embedded survey experiments.

RESULTS

Key Findings: Awareness and Trust Among California's Vulnerable Workers

- CWOP-engaged workers are more aware of potential work violations and more interested in learning about workplace protections relative to a statewide sample of low-wage workers.

- Workers distrust all levels of government when it comes to helping them with issues in the workplace, but CWOP-engaged workers are more likely to trust community organizations relative to the statewide sample of low-wage workers.
- Workers are reluctant to file official workplace complaints with the state because they do not know the process, assume it will be complicated, fear employer retaliation, and don't believe anything will change.

Key Findings: CWOP's Trusted Messenger Model

- Many CWOP CBOs serve as culturally relevant system navigators, helping workers anticipate and understand the process of filing a claim or accessing a benefit and thereby serving as a bridge between the community and government.
- It takes time for CBOs to gain the trust of communities. Many invest in the long-term process of building trust by providing culturally-competent language assistance; proactively following up with workers and being responsive outside conventional hours or methods of contact; becoming familiar faces through repeated interactions; and meeting people where they are by conducting outreach in informal, local, and social settings.
- CBOs see their role as providing outreach in the short term, with the longer-term goal of having community members take the lead.

Survey Experimental Findings: Testing Messengers and Messages

- An embedded survey experiment in the statewide survey indicates that co-branding outreach materials with both government agency and CBO logos is perceived as more helpful, trustworthy, accessible relative to information with only CBO branding.
- A messaging experiment within the statewide survey indicates that using destigmatizing language can motivate workers to seek additional support and information.
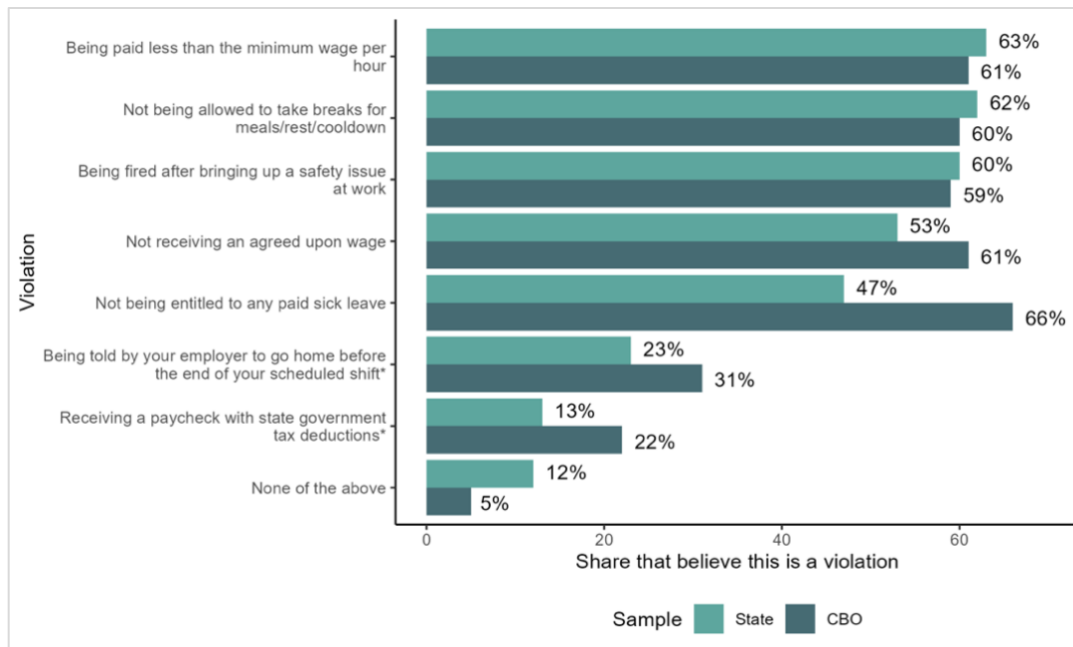
Figure 1. Recognition of CA workplace violations. Survey question: (Statewide Survey N=1,871; CWOP-Engaged Survey N=170): "We would like to get a sense for how familiar you are with what is and isn't legal in the workplace. According to what you know, which of the following scenarios below are considered a violation of your rights as a worker?"
* indicates this item is not a workplace violation.

CONCLUSION Findings from this study highlight the benefits of the trusted messenger model in enhancing the knowledge and empowerment of California's most vulnerable workers, underscoring the need for government and communities to work together towards health and safety outcomes. Challenges remain, including the need for improved government responsiveness to formal complaints and better alignment of

programmatic expectations with CBO engagement practices, but CWOP's approach demonstrates the importance of government-CBO partnerships for effective outreach.

ACKNOWLEDGEMENTS We extend our deepest thanks to our many community partners that made this research possible: CWOP UC regional leads that spread the word, all the staff at myriad CWOP CBOs that took the time to participate in interviews, and the thousands of workers who shared their thoughts and experiences through the surveys.

NEXT STEPS Our completed research examines the broad challenges and opportunities involved in the trusted messenger model. As part of the on-going state effort to broaden its applications of this model, LWDA and partner agencies are creating One Stop Shop clinics. These clinics will deliver comprehensive outreach, education, and support to California farmworkers in collaboration with CBOs. As a direct result of our work funded by CPR3, we have been asked by LWDA to partner on this upcoming project to inform the design of the community clinics, provide technical assistance in developing a clinic implementation protocol, and evaluate various dimensions of the program.

DISSEMINATION

Empowering Vulnerable Workers and Improving Knowledge: Insights from California's COVID-19 Workplace Outreach Project (CWOP) and the Trusted Messenger Model.

- **Final report** (ENG) / **Full report** (ESP)
- **Executive Summary** (ENG) / **Executive Summary** (ESP)
- **Website** (ENG) / **Website** (ESP)
- **Research Findings Presentation**

Scaling postpartum home visiting to improve uptake of public health guidelines in Medi-Cal and uninsured populations: the First 5 Yolo-Welcome Baby project

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PROJECT SUMMARY

We evaluated First 5 Yolo-Welcome Baby (Welcome Baby) as a sustainable model of a postpartum home visiting program to improve post-pandemic health and social outcomes for vulnerable families, including people of color, immigrants, and/or those with limited financial resources. Program participants had positive health outcomes, including high rates of postpartum and infant well-child visits. Currently, home visiting programs in California are not universally accessible to families. Long-term funding for the program is needed to ensure that families continue receiving services. Future engagement with policymakers should work towards reimbursement of home visiting services for all families.

PARTNERS

- First 5 Yolo
- CommuniCare Health Centers
- Local hospitals
- Over 25 community-based organizations
- Community Leadership Board

Public Health Significance

Evaluations of successful home visiting programs in California are needed to support state policies that authorize and fund home visiting programs to increase access, reach, and positive health outcomes.

BACKGROUND Pregnant people and parents of infants who also identify as people of color, immigrants, and/or as having limited financial resources are experiencing inequities in pandemic recovery. Despite moving beyond the crisis stage of the pandemic, worsening health and social risks for these subgroups persist. Home visiting has been shown to support social and health outcomes, however, few families in California who would benefit from home visiting ever receive it. To improve access to home visiting, we need to better understand who benefits from home visiting programs and how they benefit, as well as validate successful strategies for maintaining a successful home visiting program.

METHODS We conducted a hybrid effectiveness-implementation project to establish First 5 Yolo-Welcome Baby (Welcome Baby) as a replicable and sustainable model of a community-embedded program that promotes equitable pandemic recovery. Guided by the Practical, Robust Implementation and Sustainability Model, we leveraged our community-academic partnership and engaged key constituents, including service providers and patients. We collated program data and qualitative interview data to develop recommendations for implementation and dissemination strategies for Welcome Baby.

RESULTS Nearly all families (93.9%) received at least one referral to a health or social service through the Welcome Baby program. More than half of women received referrals for child development services (66.0%), and social support services (54.7%). Welcome Baby participants had high rates of postpartum visit completion (89.2% for two-week visit, 81.6% for 6-week visit, and 74.5% for both visits) and high rates of well-child visit completion (97.8% for newborn visit, 87.4% for one-month visit, 99.3% for two-month visit).

We completed interviews with 30 Welcome Baby participants (15 in English, 15 in Spanish) and 15 providers and staff involved in the program. Barriers to adoption/referral by providers and community organizations included: 1) lack of knowledge about different home visiting programs and services and the perception of "competing" programs; and 2) restrictions (county of residence, length of time since birth, insurance status) that limited eligibility for the program. Facilitators to adoption included: 1) a quick and easy referral process for providers; 2) collaborative relationships between Welcome Baby nurses and providers at referring facilities; 3) ongoing outreach to existing and new providers via the outreach coordinator.

CONCLUSION Facilities were committed to continuing to refer patients/clients to the Welcome Baby program. Long-term funding for the program is needed to ensure that families continue receiving services. Nurse home visitors require sustained support and sufficient nurse/staff time to avoid burnout and ensure a sustainable workforce as the number of participants increases. Currently, home visiting programs in California are not universally accessible to families. Future engagement with policymakers should work towards reimbursement of home visiting services for all families.

ACKNOWLEDGEMENTS The team would like to thank the patients, providers, and champions for First 5 Yolo-Welcome Baby without whom this project would not have been possible.

Figure 1. Welcome Baby improved breastfeeding rates
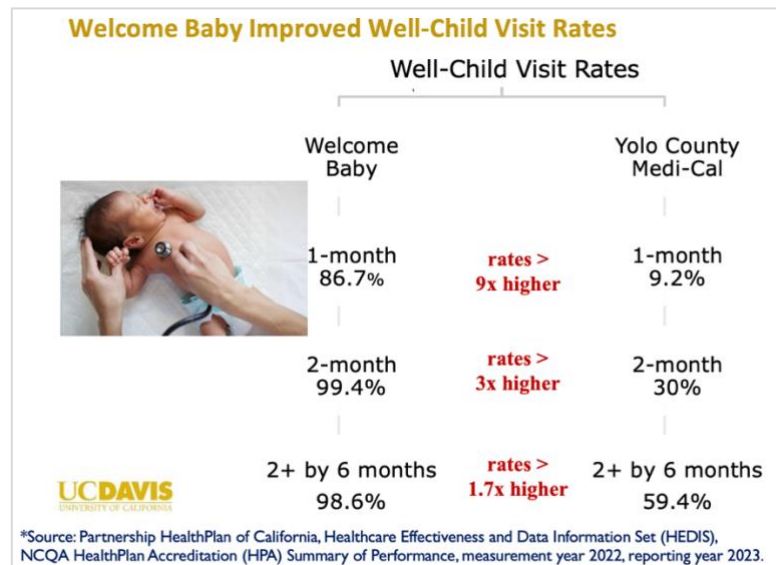
Figure 2. Welcome Baby improved well-child visit rates

NEXT STEPS Future research will include annual evaluations of Welcome Baby and presentation of findings to the Yolo County Board of Supervisors and state and federal policymakers. We will see the submitted manuscripts through to publication. We will resubmit our scored but unfunded NIH R01 application. We also will disseminate informational 1-pagers upon final approval.

DISSEMINATION

- **Summary Report of First 5 Yolo-Welcome Baby**. Presentation. Yolo County Board of Supervisors. June 2024.
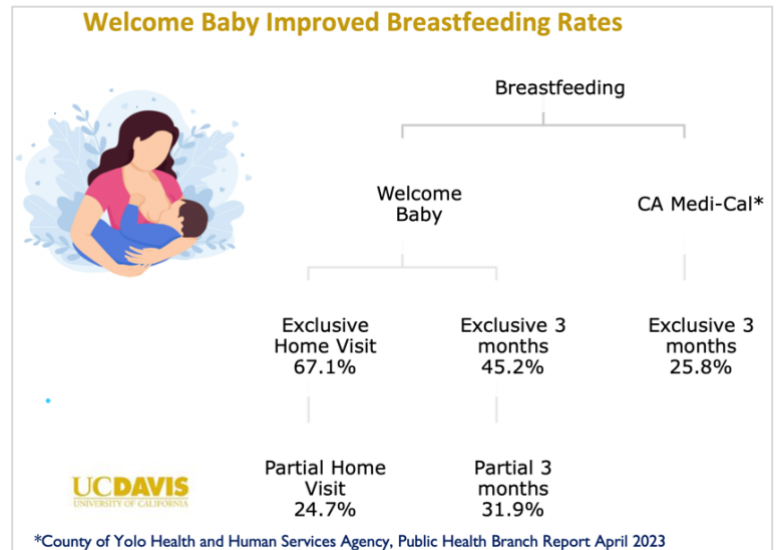- **First 5 Yolo Welcome Baby – Year 1.** Report. 2024.

Masking practices in early childhood education programs: impact on language and socioemotional learning of dual language learners

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PROJECT SUMMARY

We conducted a community-based online survey between March 31 and May 29, 2024 on parents' and teachers' practices of and attitudes towards face mask use in early childhood education programs (ECEP) serving predominantly Asian American families. Despite the ending of COVID-19 pandemic and mask mandate, we observed significant heterogeneity within the Asian American ECEP community in mask wearing practices. Parents (or other family caregivers) and teachers expressed mixed attitudes towards the potential benefit and negative impact of wearing face mask on children's experiences at school. While parents and teachers reported similar levels of personal face mask use in classrooms, parents reported higher personal face mask use than teachers at indoor meetings and outdoor playgrounds. Parents perceived greater benefits of face mask wearing than teachers, whereases teachers were more likely to view face mask use as a personal choice or not necessary compared to parents. Future public policies/guidelines on mask use in public space should be sensitive and responsive to socioeconomic and cultural variations in mask wearing practices and attitudes in the community.

PARTNERS

▪ Kai Ming Head Start, San Francisco

BACKGROUND The COVID-19 pandemic exacerbated the already widening school readiness gap between young dual language learner (DLL) children and their non-DLL peers. This underscored a high need for research-based guidelines on how to re-engage DLL families in early childhood education (ECE) programs and support DLL children's unique developmental pathways to school readiness during the post-pandemic era. Although the masking mandate has been lifted, considerable heterogeneity exists within the ECE community regarding guidelines, practices, and attitudes towards masking. Nonetheless, no systematic research has been conducted in this line of research. This study aimed to explore and describe the variations in masking practices and attitudes towards masking in ECE communities.

Public Health Significance

With the fluctuating trends in COVID-19 cases, government agencies, school districts, and early childhood education programs need to revise guidelines on face mask use in public space. This study revealed variations in mask-wearing practices and public attitudes towards face mask use in an early childhood education community serving predominantly Asian American families. The findings can inform the development of culturally sensitive and responsive public health policies and guidelines on face mask use.

METHODS An online survey was distributed to teachers and parents (or other family caregivers) of early childhood education programs (ECEPs) serving predominantly Asian immigrant families in Northern California through our community partners and community outreach events. A total of 99 parents/caregivers (69.7% females, 93% Asian) and 89 teachers (83.1% females, 85% Asian) completed the surveys about their personal and community mask use, opinions on the potential benefits and concerns of mask-wearing in indoor and outdoor ECE settings, as well as demographic information. Data were collected during March, April, and May

2024. Statistical analyses were conducted to characterize the overall trends in parents' and teachers' mask use behaviors and attitudes and associations between demographic characteristics and mask use behaviors and attitudes.

RESULTS We observed significant heterogeneity within the ECEP community in mask use practices: while about 40% of teachers and parents reported hardly ever using face mask in ECEP indoor settings in the past month, about 20% of teachers and parents reported using face mask in ECEP indoor settings most of the time. Over 60% of teachers and parents reported observing mask use by members of their community in indoor ECEP space. Parents and teachers generally viewed wearing face masks as beneficial and a personal choice. But at the same time, they also endorsed moderate concerns regarding the potential negative impact of wearing face mask on children's social interactions at school. Parents with higher English proficiency, higher education, and better health status were more likely to believe that face mask use is no longer necessary and less likely to endorse the potential benefits of wearing face mask in ECEP. We further compared differences and similarities in parents' and teachers' mask wearing practices and attitudes. While parents and teachers reported similar levels of face mask use in classrooms, parents reported higher use of personal face mask than teachers at indoor meetings or outdoor playgrounds. Moreover, parents perceived greater benefits of face mask wearing than teachers, whereas teachers were more likely to view face mask use as a personal choice or not necessary compared to parents.
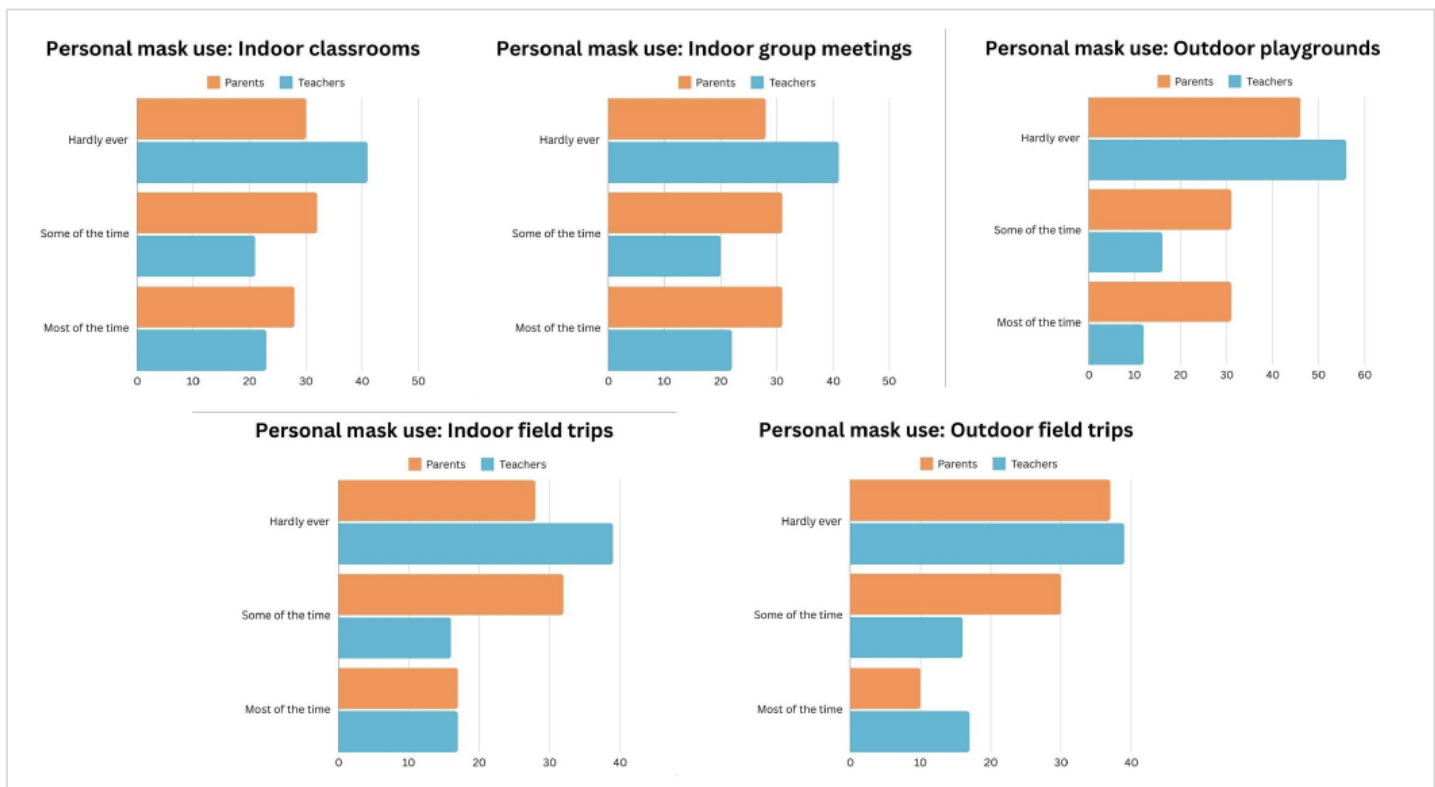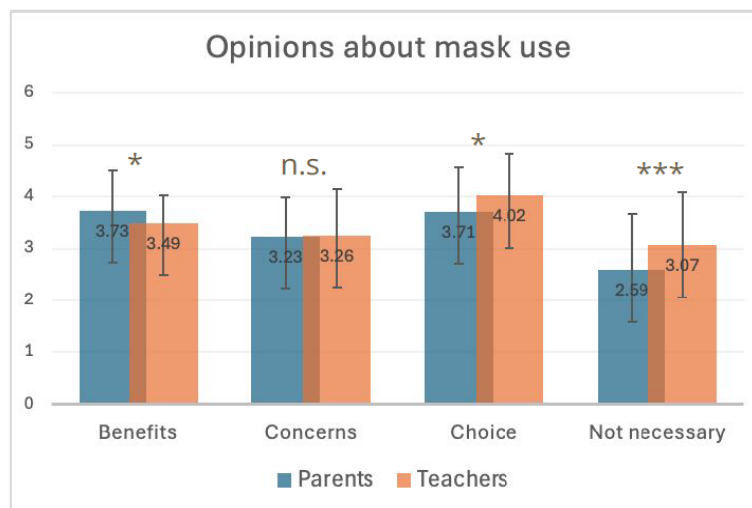

Figure 1. Parents' and teachers' reports of personal face mask use in ECEP.

CONCLUSION Despite the ending of mask mandates, there is significant heterogeneity within the Asian American community in mask wearing practices, ranging from no mask use to using face masks most of the time. Parents and teachers expressed mixed attitudes towards face mask use: while they generally perceived wearing face masks as beneficial and a personal choice, they expressed moderate concerns regarding the potential negative impact of face masks on children's social interactions at school. Compared to teachers,

parents in the Asian American ECEP community reported higher personal face mask use and perceived higher benefits of personal face mask use.

Compared to teachers, parents perceived greater benefits of mask use and were less likely to view mask use in ECEP as a personal choice or not necessary.

Opinions about mask use

Benefits: Parents 3.73, Teachers 3.49 (*)
Concerns: Parents 3.23, Teachers 3.26 (n.s.)
Choice: Parents 3.71, Teachers 4.02 (*)
Not necessary: Parents 2.59, Teachers 3.07 (***)

■ Parents ■ Teachers

Figure 2. Parents' and Teachers' Opinions about Face Mask Use in ECEP. Legend: * $p < .05$, *** $p < .001$, *n.s.* = no significant group difference.

NEXT STEPS We plan to collect qualitative data from members of the early childhood education programs community to gain in-depth understanding of their experiences and attitudes towards face mask use. We also plan to replicate the study in early childhood education programs, teachers and caregivers from other geographic locations and socio-demographic backgrounds.

DISSEMINATION A manuscript related to this work is currently in development.

Improving Latinx knowledge and acceptance of preventative health: a community-centered ethnic media organization (CCEMO) public health randomized clinical trial

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PROJECT SUMMARY

Can community-centered ethnic media organizations (CCEMOs) promote Latino preventative health care knowledge and uptake? We answer this question with three pre-registered multi-site, multi-wave field experiments among Spanish-speaking Latinos. We partnered with five CCEMOs to improve the information environment available to Latinos, and to assess the effectiveness of journalist-moderated social media groups on increasing knowledge and use of preventative health care. These experiments randomly assigned participants to engage for two months with a CCEMO, or to engage with a mainstream local media organization. We find that relative to mainstream media organizations, engagement with a CCEMO significantly increases Spanish-speaking Latinos' trust in the media and their preventative health care knowledge. While CCEMOs increase Latinos' preventative health care uptake intent, these positive effects are not statistically significant. These findings suggest that enriching the informational environment available to Latinos may help reduce inequities in health and health care facing Latinos.

PARTNERS

CCEMOs in Arizona, California, North Carolina, New York City and Texas:

- Conecta Arizona
- El Tímpano
- Enlace Latino North Carolina
- La Esquina TX
- Documented

Public Health Significance

The COVID-19 pandemic exacerbated underlying inequities in health and health care facing Latinos. Limited access to high quality information and the flourishing of misinformation compounds issues to Latinos' access to preventative health care. This project aims to provide evidence-based knowledge about best practices in delivering public health communication to the most COVID-19 hard-hit communities in the U.S.

BACKGROUND

Latinos are the largest minority group in the U.S, accounting for almost 19% of the U.S. population. Latinos endure multiple adverse social determinants of health that act as barriers to preventative health care use, including residential segregation, lack of access to material resources, discrimination, and limited English proficiency. The media environment available to Latinos, especially to Spanish-speaking Latinos—who have low levels of trust in the media and are particularly susceptible to misinformation—contribute to reinforcing these barriers. Many Latinos live in informational deserts, and even when ethnic media organizations are available, mainstream organizations often prioritize entertainment over informational and educational content. In recent years, community-centered ethnic media organizations (CCEMOs) have grown across the United States, providing immigrant populations with informational resources relevant to them.

METHODS

In this project, we assess whether CCEMOs promote Latino preventative health care knowledge and uptake by drawing on three pre-registered multi-site, multi-wave field experiments among Spanish-

speaking Latinos. For the first two experiments, we partnered with three CCEMOs in Arizona, California and North Carolina, and for the third experiment we added two CCEMOs in New York City and Texas. (We are currently finalizing the data analysis of the third experiment). In these experiments, we randomly assigned participants to engage for two months with a CCEMO, or to engage with a mainstream local media organization (e.g. Univision, Telemundo). We surveyed participants before randomization, every two weeks during the two-month period of participant media engagement, and one month after media engagement, asking them questions about their trust and attitudes toward the news media, factual knowledge about COVID-19 guidance, and flu and COVID-19 vaccination intent.

RESULTS Using meta-analytic estimates that combine data from the first two experiments across the three locations, we find that relative to mainstream media organizations, subscribing to a CCEMO increases Spanish-speaking Latinos' trust in their assigned media organization by 0.25 standard deviations (sd) (p-value < 0.04), trust in local journalists by 0.13 sd (p-value < 0.03), and their knowledge of COVID-19 guidance by 0.11 sd (p-value < 0.05). While the CCEMO-effects on flu and COVID-19 vaccination intent are positive (0.1 and 0.06 sd, respectively), these effects are not statistically significant, in part, because these effects present large variation across locations: from a 0.33 sd increase in flu vaccination intent in California to a 0.18 sd decrease in North Carolina, and from a 0.19 sd increase in COVID-19 vaccination intent in California to a 0.18 sd decrease in North Carolina.
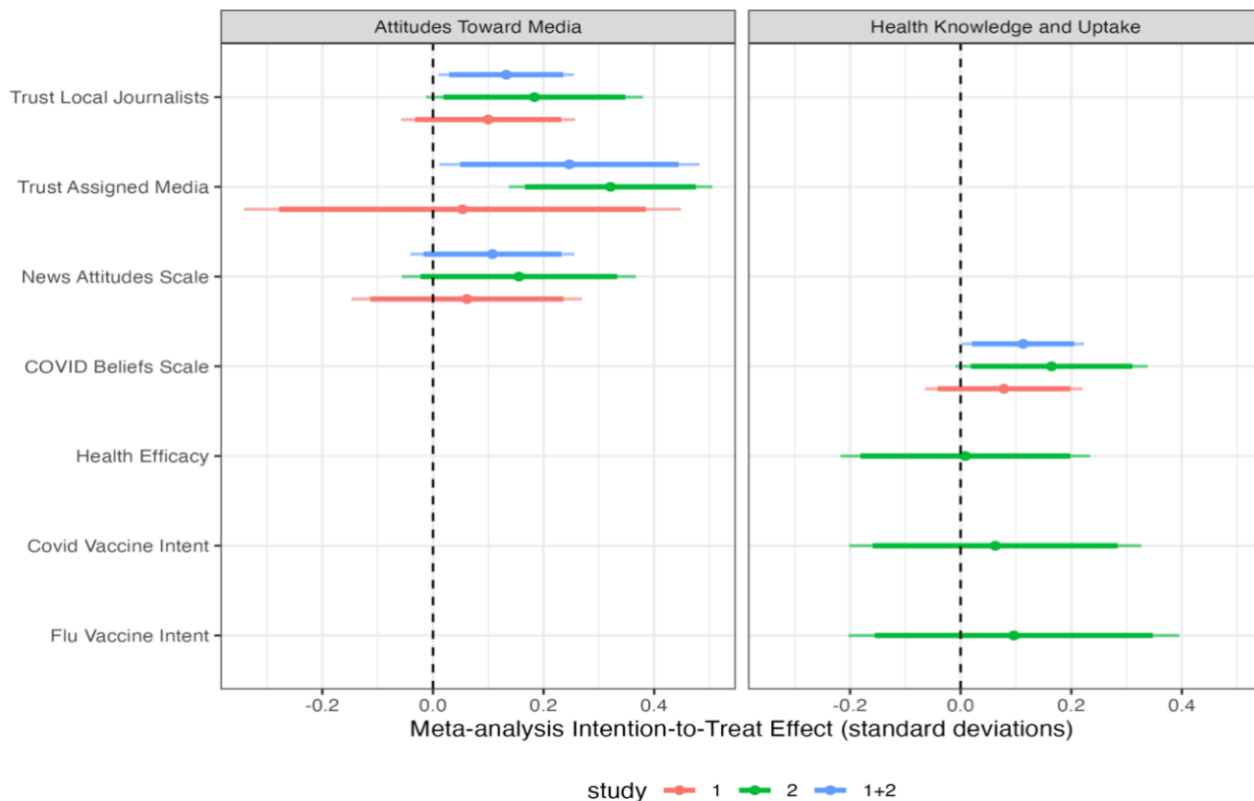
Figure 1. CCEMO-effects on attitudes toward the media, healthcare knowledge and vaccine intent. Points are intention-to-treat effect estimates based on a random effects meta-analysis of intention-to-treat effects across three sites (AZ, CA, NC). The site intention-to-treat effects are estimated with a linear model that regresses the outcome on a treatment indicator and survey wave fixed effects. This linear model accounts for serial correlation in outcomes across survey waves by clustering the standard errors by participant. Thick bands are 90% confidence intervals and thin bands 95% confidence intervals.

CONCLUSION These findings suggest that enriching the informational environment available to Latinos, with educational and culturally relevant content delivered by community-based organizations, can promote Spanish-speaking Latinos' trust in the media, their preventative health care knowledge, and possibly, and perhaps over a longer-term exposure, their preventative health care uptake.

ACKNOWLEDGEMENTS We thank Viviana Diaz Baquero for excellent research assistance.

NEXT STEPS We would like to present our study results to state and county departments of public health, and we would like to foster partnerships between our CCEMO partners and these institutions. Our findings suggest that CCEMOs have great potential in establishing a trusting relationship with their audiences, allowing them to reach audiences with quality health information, and therefore increasing audiences' health knowledge. Access to high quality information from a trusting source is currently one of the barriers to preventative health care use among Latinos. Enhancing the capacity of CCEMOs can reduce such a barrier.

DISSEMINATION We returned the results of the second and third rounds of this study to our CCEMO partners in April 2024 and January 2025, respectively. We have presented this work, **Community-centered ethnic media and Latino political engagement,** at multiple events:

- Interdisciplinary Center for Economic Sciences Seminar Series. George Mason University. Spring 2024.
- PDRI-DevLab Conference. University of Pennsylvania. Spring 2024.
- American Political Science Association Annual Meeting. September 2024.
- Identity and Inequality Conference. Center for the Study of Democratic Politics, Princeton University. Fall 2024.

Priority Research Area

MODELING & ADVANCED ANALYTICS

Policy-relevant research related to infectious disease modeling to build on lessons learned from the COVID-19 pandemic.

Investigating Interventions for Responding to Misinformation (IN2FORM)

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PROJECT SUMMARY

COVID-19 misinformation resulted in exacerbated health disparities and reduced uptake of vaccines and other public health measures during the COVID-19 pandemic. It is not well understood if misinformation also led to excess mortality. As generative AI advances, it will accelerate the spread and sophistication of misinformation. This project aims to quantify the impact of misinformation on mortality and create interventions to combat it. Understanding misinformation's impacts on public health and effective countermeasures will help California better prepare for future public health challenges.

PARTNERS

- California Department of Public Health
- San Diego County Public Health Department

ABSTRACT *Note: This research is ongoing.*
COVID-19 misinformation was widespread during the pandemic and its exposure was associated with demographic characteristics, resulting in health disparities. Although misinformation reduces acceptability of prevention measures (e.g., vaccine uptake), its impact on COVID-19 mortality has not been quantified nor potential effectiveness of mitigation strategies been evaluated. Understanding the impact of misinformation and developing interventions to combat it is necessary to create an informed path to recovery and to better prepare for future challenges as misinformation will only accelerate given the advances in generative AI. We propose to: 1) estimate the number of excess SARS-CoV-2 infections and COVID-19-related deaths attributable to vaccine misinformation in San Diego County stratified by race/ethnicity; 2) conduct workshops to co-create potential anti-misinformation interventions with CDPH and San Diego County based on analyses from Aim 1 on the impact of misinformation; and 3) investigate the potential of anti-misinformation interventions to mitigate these excess infections and deaths.

Public Health Significance

By understanding the extent of misinformation and its effects on public perception and behavior, CDPH can tailor communication strategies to counter false information effectively. Combating misinformation can contribute to fostering resilience against misinformation and promoting informed decision-making among Californians during the pandemic.
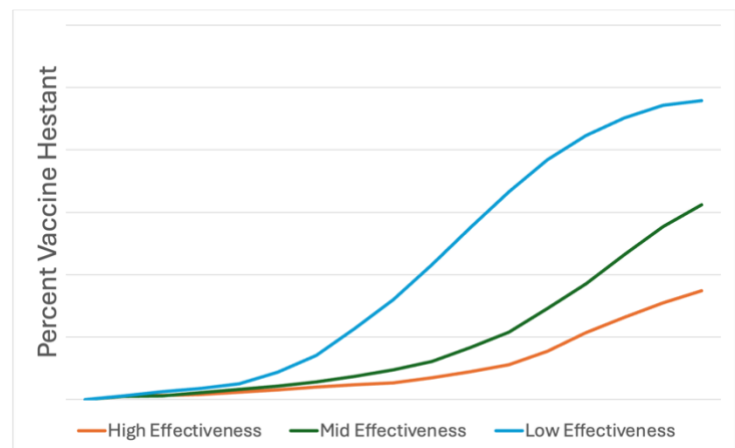
Figure 1. Vaccine hesitancy stratified by vaccine incentive effectiveness. Percent vaccine hesitancy over time stratified by vaccine incentive effectiveness. Higher incentive effectiveness (orange) is associated with lower vaccine hesitancy, while lower effectiveness (blue) corresponds to higher hesitancy.

PRELIMINARY FINDINGS Our analysis examined the percent change in vaccine hesitancy over time as a function of vaccine incentive effectiveness. As shown in Figure 1, vaccine hesitancy increased across all conditions, but the rate of change varied significantly depending on the effectiveness of the incentive.
At the end of the simulation, vaccine hesitancy in the mid-effectiveness condition was 78.8% higher than in the high-effectiveness condition. Similarly, hesitancy in the low-effectiveness condition was 174.3% higher than in the high-effectiveness condition and 53.4% higher than in the mid-effectiveness condition.

These results highlight a strong inverse relationship between vaccine incentive effectiveness and vaccine hesitancy. When incentives were more effective, hesitancy was significantly lower, whereas lower effectiveness was associated with a disproportionately greater increase in hesitancy. These findings underscore the potential role of strong incentives in mitigating vaccine hesitancy over time.

NEXT STEPS

- Finalize calibration of the statistical and agent-based models to ensure alignment with observed data trends.
- Generate baseline estimates of excess SARS-CoV-2 cases and COVID-19-related deaths attributable to vaccine misinformation in San Diego County, disaggregated by race/ethnicity.
- Continue working with San Diego County public health officials to co-develop and refine potential anti-misinformation interventions.

Identifying social dynamics of COVID-19 vaccine refusal in San Quentin prison to improve adherence to public-health interventions

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PROJECT SUMMARY

There is increased vaccine refusal in congregate settings, like prisons. The impact of social dynamics such as peer pressure to reduce schedule disruption on vaccine refusal are unclear. We propose an agent-based model study of the social dynamics of vaccine refusal in the San Quentin prison (SQ). We also test whether a social-network-based intervention can improve epidemic outcomes for the prison population. This study will generate insights into how mistrust and misinformation circulate through social networks, and these insights can inform approaches to improve outreach and health outcomes in prisons and other congregate settings during future pandemics.

PARTNERS

- California Department of Corrections and Rehabilitation

ABSTRACT *Note: This research is ongoing.*

Refusal to accept outbreak prevention measures like vaccination is prevalent in highly vulnerable populations, including incarcerated people. To reduce infections and limit morbidities from pathogenic outbreaks, we must understand the social dynamics underlying refusal. Herein, we propose a set of models based on the San Quentin prison context to 1) characterize the social structural dynamics of SARS-CoV-2 vaccine refusal (agent-based model, ABM); and 2) estimate the benefit of a socially informed intervention on outbreak mitigation (ABM-based dual-contagion model). We will build a simulation of the San Quentin prison population using California Department of Corrections de-identified resident data including vaccination, demographics, and location and daily movement patterns, which will be the basis of both proposed models. This project will offer insights into the social pathways by which mistrust and misinformation spread to improve outreach and health outcomes during future pandemics for prison populations, as well as other congregate-living settings.

Public Health Significance

Understanding the social dynamics underlying resistance to vaccination among incarcerated populations will enable prison healthcare systems to target misinformation earlier and improve participation among residents, which will result in better outbreak control and healthier prison populations. The closed nature of a prison population makes it easier to generate realistic models of internal social dynamics. By starting in this context, for which we also have detailed socio-demographic and daily movement data, our models offer an approach for expanding into other congregate settings, like nursing homes and skilled nursing facilities.

NEXT STEPS 1. Continue model construction and begin simulations by May 2025; 2. Analysis, manuscript writing, and a final report will be completed during Summer 2025.

Creating thresholds for spatial transport and environmental metrics to lower infectious disease mortality: Implications of systematic and random heterogeneity

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PROJECT SUMMARY

The built (e.g., walkability, land use, public transport), natural (e.g., parks, tree canopy, air pollution), and social (e.g., income distribution, disability) environments of neighborhoods influence residents' health outcomes, including those related to COVID-19. This project will generate evidence-based guidelines and measures that public health practitioners and policymakers in California can use to better integrate these environmental factors into public health policy. The outcomes of this project will support the design of more equitable policy and resilient infrastructure to address both current and future infectious disease risks in California.

PARTNERS

- California Department of Public Health – Dr. Tomas Leon, Modeling Section Chief

Public Health Significance

Fusion of advanced heterogeneity-based models with machine learning analytics will provide a suite of environmental thresholds that public health agencies and policy makers can use to inform interventions/policies for COVID-19 and prevent and control other future infectious diseases. Incorporating social vulnerability will enable optimization of policy targets to meet the needs of distinct demographic subgroups in California.

ABSTRACT   *Note: This research is ongoing.*

Evidence on the built and social environment impacts on COVID-19 outcomes (including hospitalizations and deaths) is growing. Developing effective environmental policies to mitigate COVID-19 harm requires measurable policy targets. Positioned within the built environment-social vulnerability framework, this project aims to develop generalizable thresholds for objectively assessed environment features to mitigate infectious disease mortality in California. We will create a unique data infrastructure by spatially joining COVID-19 outcome data with neighborhood level data on built/social environments, transport accessibility, and travel behavior. Additionally, we will incorporate objective data on natural environment, air pollution, and other health metrics from the California Healthy Places Index framework. We will develop a novel methodology to account for systematic, spatial and random heterogeneity in environmental impacts. The evidence-based thresholds will help California policymakers set policy targets that can be used to guide more equitable and resilient infrastructure design to mitigate COVID-19 harm and prepare for future infectious disease outbreaks.

PRELIMINARY FINDINGS

Preliminary outcomes have demonstrated the feasibility of integrating neighborhood-level COVID-19 outcome data with objectively assessed built environment, social environment, and sociodemographic characteristics. Findings from descriptive analyses suggest that the distributions of neighborhood COVID-19 mortality outcomes are plausible and demonstrate considerable variations by age, sex, and race/ethnicity. Additionally, the descriptive analyses of the built and social environment measures, demographic factors, and travel behavior characteristics show that the data are of high quality and exhibit significant variation across California, effectively capturing diverse profiles of built and natural environments that reflect national variations. This increases our confidence in the ability of California-based guidelines and thresholds to be of national relevance as well. Insights from preliminary modeling demonstrate the predictive

ability of these measures in explaining COVID-19 mortality rates. Specifically, the individual environmental factors in each of the above constructs provide additional predictive power in explaining mortality rates across different parts of the state. Overall, the results of preliminary modeling are promising and point to the ability of more advanced inferential analysis (see next steps) in providing a more nuanced picture of how local conditions influence spatial variations of mortality across California's geography.
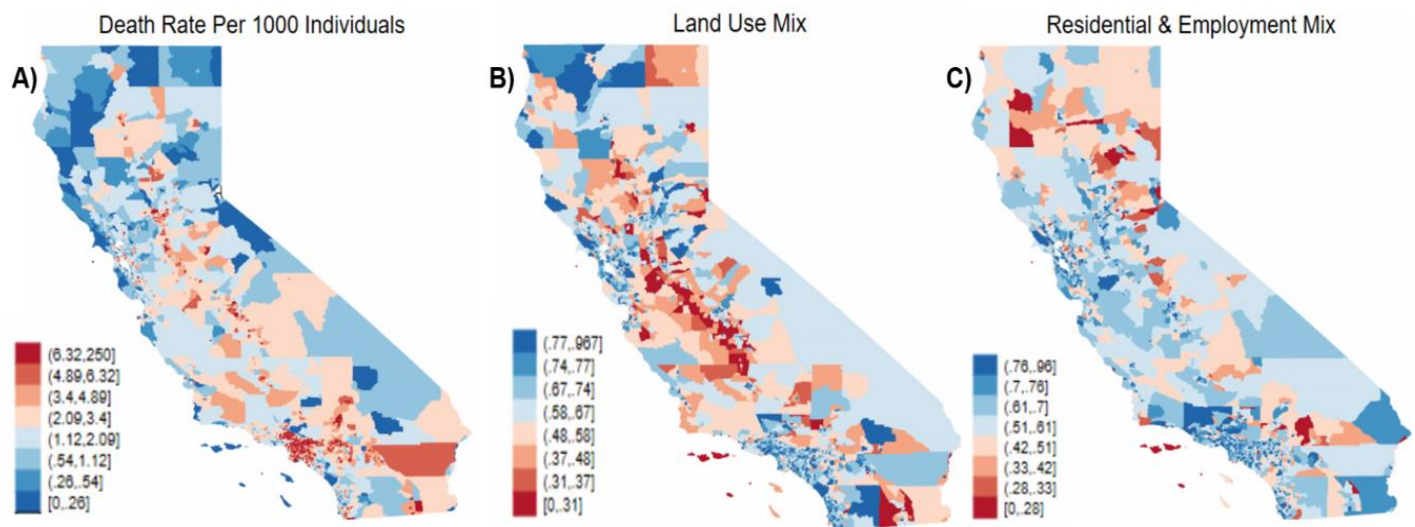
Figure 1. Distributions of COVID-19 mortality rate and land use mix variables. B and C are measured on a scale from 0 to 1, where 1 indicates the highest diversity of land use mixes.

NEXT STEPS

- Integrating additional measures on the natural environment, air pollution, and other healthy places measures guided by the methods and protocols for California's Healthy Places Index, alongside relevant transport and public health peer-reviewed literature.
- Develop new models for COVID-19 mortality rates that account for heterogeneous impacts while controlling for relevant factors and implement an advanced behavioral framework that simultaneously accounts for systematic, random, and spatial heterogeneity in environmental impacts on infectious disease outcomes.
- Use results of the modeling analyses to explore and infer thresholds for environmental measures in relation to COVID-19 mortality rates.

Additional UC-CDPH Modeling Consortium Grants

In 2022, four teams of UC researchers focused on COVID-19-related data analysis and modeling received grants from the UC-CDPH Modeling Consortium. The areas of focus were driven by priorities set by CDPH for gaining deeper understanding of COVID-19 matters, such as disease detection and impact, virus transmission and behavior, mitigation strategies, and social and behavioral considerations.

These projects included:

- **Merging electronic health record and CDPH data on COVID-19 vaccination rates to examine structural, neighborhood, and individual-level disparities in uptake**
  PI: Courney Lyles, previously at UC San Francisco, now at UC Davis

  Related publications and presentations:
  Neighborhood-level COVID vaccination and booster disparities: A population-level analysis across California. SSM Popul Health, 2023.
  California COVID-19 vaccination and booster disparities at the neighborhood level. Presentation. June 2023, UCSF.

- **Epidemiologic and model-based assessments of K-12 public health policies for mitigation of SARS-CoV-2 variant transmission in schools**
  PI: Justine Remais, UC Berkeley

  Related publications and presentations:
  COVID-19 Vaccination and Incidence of Pediatric SARS-CoV-2 Infection and Hospitalization. JAMA Network Open, 2024.
  Estimated impact of COVID-19 vaccines and school attendance on pediatric COVID-19 incidence in California, 2020-2022. Presentation May 2023. Virtual.

- **Improving accuracy and precision of forecasts and scenarios by fitting mechanistic transmission models to multiple disaggregated surveillance data sources**
  PI: Vladimir Minin, UC Irvine

  Related publications and presentations:
  Incorporating testing volume into estimation of effective reproduction number dynamics. JRSS Series A, 2024.
  Semi-parametric modeling of SARS-CoV-2 transmission using tests, cases, deaths, and seroprevalence data. arXiv preprint, 2023.
  Forecasting hospitalization and nowcasting transmission of SARS-CoV-2 in California. Presentation. May 2023, UCSF.

- **Black-Focused Assessment of Indicators for Risk Reduction**
  PI: Ninez Ponce, UC Los Angeles

  Related publications and presentations:
  Black-Focused Assessment of Indicators for Risk Reduction. Presentation. June 2023. Virtual.

As these projects concluded in 2022, they are not included in this Research Compendium.

Acknowledgments

We would like to thank the CPR3 network of researchers and partners who have contributed to this portfolio of work.

Program Partners

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To learn more about CPR3, please visit: https://cpr3.ucsf.edu/
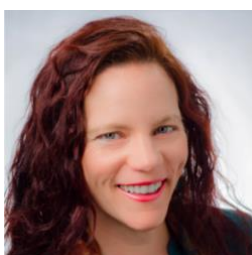
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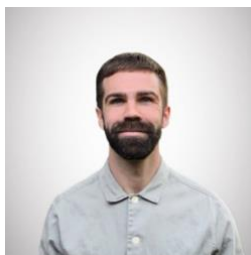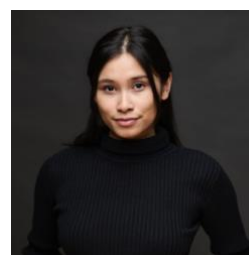
Matthew Brandner
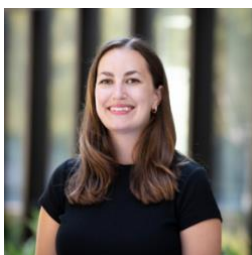Project Analyst

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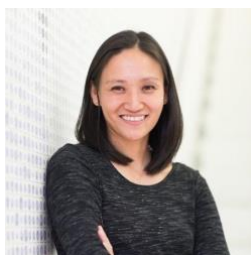Portfolio Manager

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