Providing Financial Security to California's Unbanked and Underbanked Residents

Technical Proposal to Conduct CalAccount Market Study and Feasbility Report

RFP No. SA000004-23

Submitted to

California State Treasurer's Office
ATTN: Mr. Andre Rivera
901 P Street, Suite 213B
Sacramento, CA 95814

Submitted by

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May 25, 2023

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May 18, 2023

Mr. Andre Rivera
California State Treasurer's Office
901 P Street, Suite 213B
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Re: RAND Proposal No. 2023PR-00474 in response to Request for Proposal No. SA000004-23: CalAccount Market Study and Feasibility Report

Dear Mr. Rivera

The RAND Corporation is pleased to submit the attached proposal to the California State Treasurer's Office. RAND's proposal is valid for a period of ninety (90) calendar days from the date of this submission. This information has been reviewed and approved by the appropriate officials at RAND Corporation.

RAND possesses the organizational expertise, skill, and experience to complete the services and provide the deliverables as described in the Scope of Work.

For technical questions regarding this proposal, please contact Dr. Jonathan Welburn at (703) 413-1100, x6273, or email at jwelburn@rand.org. Please address contractual matters to John Coughlan at (310) 393-0411, x7216, or email coughlan@rand.org .

We thank you for the opportunity to participate in this very important project.

Sincerely,

Michael Januzik | The RAND Corporation
Vice President and Chief Financial Officer
T (310) 393-0411 ext. 7216; ContractsTeam@rand.org

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1. Background and Experience

1.1. Company History and Competencies

1.1.1. RAND Overview

The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest.

RAND's research and analysis address issues that impact people around the world, including security, health, education, sustainability, growth, and development. As a nonpartisan organization, RAND is widely respected for operating independent of political and commercial pressures.

Research is carried out by three divisions that address social and economic policy issues; by four federally funded research and development centers that focus on national security; by professors and students at the Pardee RAND Graduate School; by RAND Europe, an independently chartered European affiliate; and by RAND's newest subsidiary, RAND Australia.

RAND researchers have advanced degrees in more than 350 disciplines and apply state-of-the-art methods to address a broader range of issues than any other research organization. Approximately 1,770 people from 48 countries work at RAND. Our research professionals (approximately 950) are our greatest asset because their collective professional backgrounds, academic experience, and cultural diversity uniquely position us to answer the toughest policy questions. This diversity reinforces RAND's core values of quality and objectivity by promoting creativity, deepening understanding of the practical effects of policy, and ensuring multiple viewpoints and perspectives.

Our research is supported by a global clientele that includes government agencies, foundations, and other nonprofits. In addition, RAND relies on philanthropic gifts to support staff who aspire to pursue visionary ideas; address critical problems that are under researched; shape emerging policy debates; and devise innovative approaches for solving complex policy challenges.

The RAND Corporation is a global organization with offices in North America, Europe, and Australia. RAND's U.S. locations include Santa Monica, California, the home of its headquarters campus (RAND is incorporated in the state of California and licensed to do business) and the Pardee RAND Graduate School; Arlington, Virginia; Pittsburgh, Pennsylvania; and Boston, Massachusetts. RAND also has U.S.-based researchers living and working in more than 27 states and operates the RAND Gulf States Policy Institute serving the U.S. Gulf States region. RAND Europe has offices in Cambridge, United Kingdom, and Brussels, Belgium; its research staff comprises people from more than 25 countries. RAND Australia has its office in Canberra.

1.1.2. Organizational Experience and Competencies

The work for this project will fall under RAND's Social and Economic Well-Being division, which seeks to actively improve the health and social and economic well-being of populations and communities throughout the world. The aim is to produce high-quality and consumable research and analysis that addresses critical factors necessary to promote health, social and economic well-being as well as to support decisionmakers and policy influencers in using the best and most practical approaches to solve social and economic problems.

The Social and Behavioral Policy program within Social and Economic Well-Being focuses on such topics as risk factors and prevention programs, social safety net programs and other social supports, poverty, aging, disability, child and youth health and well-being, and quality of life, as well as other policy concerns that are influenced by social and behavioral actions and systems that affect well-being. Cross-disciplinary teams help decisionmakers advance solutions to improve the effectiveness of economic and social programs; support marital and family well-being; raise people out of poverty, improve the lives of older adults, populations living with disabilities, and their caregivers; and further the positive development of children, youth, and young adults. The program also develops and evaluates prevention and treatment programs to address substance use and abuse, mental health, active and independent living, and other factors that are critical for well-being.

Most relevant to the proposed work for STO in developing CalAccount, RAND has conducted work for the Securities and Exchange Commission (SEC), the U.S. Consumer Financial Protection Bureau (CFPB), Social Security Administration (SSA). For example, RAND is the current holder of SEC's *Policy Oriented Stakeholder and Investor Testing for Innovative and Effective Regulation* (POSITIER) IDIQ. RAND supports the POSITIER Principal Investigator across the OIAD mandate, including household finance, behavioral economics, and decision science. Methods such as the use of surveys, experiments, qualitative data collection, and analysis of administrative data have been core to the study of investor behavior. Work under this contract has included tasks such as survey design and fielding, focus groups, data collection and analysis in areas such as the study of investor decision-making. Additional relevant project work is highlighted in Table 1 below.

TABLE 1. EXAMPLES OF RAND WORK WITH SIMILAR CLIENTS

Project Title, Funder	Short Description
The Lifetime Risk of Spousal Nursing Home Use and its Economic Impact on the Community-Dwelling Spouse *Social Security Administration* through the *Michigan Retirement Research Center*	Using data from the HRS the research team quantified the lifetime risk that one spouse will reside in the community while the other resides in a nursing home, and the associated cumulative out-of-pocket nursing home expenses. For affected couples the team studied the impact on the household's asset position, whether the couple spends down to Medicaid eligibility for nursing home expenses and to what extent Social Security income protects the community-residing spouse from poverty following the spousal nursing home episode.
How Reliant Are Older Americans on State and Local Government Pensions? *Social Security Administration through the Michigan Retirement Research Center*	This research assesses how many Americans have had employment in state and local government over their lifetime, how the economic resources for these workers compare by years of experience in state and local government, and how changes in state and local government pensions may affect preparation for retirement among those who participate in such plans. It does so by analyzing employment, wealth, and income characteristics among respondents 67 to 72 years old in the 2004, 2008, and 2014 waves of the Health and Retirement Study
Your Money, Your Goals Evaluation *Consumer Financial Protection Bureau*	RAND conducted process and outcome evaluations of the CFPB's Your Money, Your Goals program, which provides training to social services organizations to help clients make better financial decisions. Based in part on the results of RAND's evaluation, CFPB made changes to the implementation of this signature program.
Social Security Household Benefits: The Impact of Program Knowledge *Social Security Administration through the Michigan Retirement Research Center*	RAND explored what the public understands about Social Security spousal benefits and how it impacts labor, planning, and claiming behavior. The study assessed the state of knowledge overall and any misunderstandings and made recommendations about how to communicate more effectively about spousal benefits.
On the Road to Retirement: Investigating Retirement Planning Decision Making and the Evolution of Individual's Retirement Planning Decisions Over Time *Resolution Economics* (Prime); *Department of Labor*	RAND investigated retirement planning decision-making with a focus on understanding retirement behaviors of defined contribution plan participants and specifically IRA holders.

Project Title, Funder	Short Description
Drawing Down Retirement Wealth: Interactions between Social Security Wealth and Private Retirement Savings *Department of Labor*	RAND investigated how households integrated Social Security benefits into their overall retirement decisions.
Understanding Household Retirement Savings *Department of Labor*	RAND conducted an analysis of joint retirement savings decisions, with a particular focus on how couples divide assets between accounts in each spouse's name, to assess whether households optimize their savings opportunities.
Credit Building for All? *Consumer Financial Protection Bureau*	This project identified, designed, implemented, and analyzed an evaluation of a bundled product designed to build savings and credit among economically vulnerable consumers. The second part of the study focused on data collection and the documentation of findings.
Saving Regret: Self-assessed Life-Cycle Saving Behavior in the U.S. and Singapore *Social Security Administration through the Michigan Retirement Research Center*	The research team used data from the RAND ALP and the Singapore Life Panel to compare saving regret, defined as the wish to have saved more earlier in life, in the U.S. with that in Singapore and to shed light on the mechanisms leading to saving regret and how these may interact with the policy environment.
Retirement Security and Financial Decision Making *Consumer Financial Protection Bureau*	In this study, RAND researchers examined the relationship between key financial security indicators in retirement and decisions made before and during retirement.
Policy Oriented Stakeholder and Investor Testing, Focusing on Fiduciary Duty Standards *Securities and Exchange Commission*	This study will provide the SEC with high-quality data and analysis on investor confusion related to the retail marketplace for intermediary and advisory services and identify and test actional policy innovations.

Our market and feasibility study for STO will be supported by **RAND's Center for Financial and Economic Decision Making (CFED)**, which is dedicated to finding solutions that improve the financial well-being of individuals, families, and nations. CFED unites experts in behavioral economics, public finance, financial literacy, economic development, and psychology. CFED research teams investigate how people in the United States and around the world collect and think about financial information and how successfully they match their financial decisions to their interests and goals. CFED focuses on research to understand how people in the United States and around the world collect and think about financial and economic information and how well they match their decisions to their interests and goals. We use both qualitative and quantitative research methods to examine how people understand the financial and economic tradeoffs they face. Researchers working in CFED are dedicated to finding solutions that can improve the decision-making that affects the financial well-being of individuals, families, and nations. CFED has conducted work with organizations such as the SEC, the CFPB, the National Science Foundation (NSF), the Sloan Foundation, the Department of Labor, the Department of the Treasury, the Federal Reserve Board of Governors, the Boston Federal Reserve, and the SSA. Our work has been used both internally by clients and published in a wide variety of academic journals including: *American Economic Review, AEJ: Economic Policy, AEJ: Applied Economics, Cognitive Science, Journal of Behavioral Decision Making, Journal of Economic Behavior and Organization, Journal of Economic Psychology, Journal of Financial Economics, Journal of Political Economy, Journal of Risk and Uncertainty, Judgment and Decision Making, Proceedings of the National Academy of Sciences (PNAS), Psychology and Aging, and Risk Analysis.*

One of the tasks for this proposed project is a survey of hard-to-reach populations in the state of California. With our in-house **RAND Survey Research Group (SRG),** we are uniquely qualified to undertake this project for STO. The RAND SRG was established in 1972 to provide RAND with an in-house capability for

conducting primary data collection. SRG is composed of survey methodologists, behavioral scientists, and specialists in the technical aspects of survey research. These professionals share a common interest and expertise in applying state-of-the-art survey methods to the special challenges of public policy research. One major challenge is the application of such nontraditional survey methods as interviewing specialized populations, mixing data collection methods, and implementing experimental designs. SRG staff have developed and tested a variety of approaches to such problems. They have designed and conducted mail, telephone, web, and in-person surveys with physicians, corporate officials, attorneys, government officials, administrators of institutions, teachers and other elite professional groups, as well as with households and special populations like AIDS patients, the homeless, military personnel, schoolchildren, criminal offenders, sex industry workers, and substance abusers. SRG staff have designed and managed data abstraction from public and private institutional records and conducted observational surveys of social processes and physical phenomena.

SRG staff have special expertise in carrying out studies that vary greatly in scale, budget, research design, and management. Though some studies have been modest in size and cost, others have required multiple waves of data collection over several years at a considerable expenditure of personnel and financial resources. Similarly, they have conducted projects using a straightforward application of standard survey procedures as well as others that required innovative design and management. For some projects, SRG staff have carried out all aspects of research design and implementation; for others they have worked with a consortium of research institutions and one or more subcontractors. In meeting these challenges, the SRG has developed a flexible approach that emphasizes custom-tailored survey design and state-of-the-art survey methodology. Within this framework, the SRG provides a wide range of services, including:

- Data collection design, including evaluation of alternative methods, scheduling, budgeting, and technical planning
- Design of survey instruments, including the substance and wording of items, technical formatting and layout, and planning for cost-effective data entry
- Preparation of documents, like project descriptions, OMB clearance packages, and codebooks
- Design and operations for sample selection and control, including locating and evaluating sources for sample frames, and tracking and maintaining longitudinal panels
- Management and staffing for data collection, recruiting, hiring, training, and oversight of interviewers, data abstractors, and coders
- Data collection, including focus groups, personal interviews, web surveys, telephone surveys, mailed surveys, observational research, and abstraction and coding of data from public and private records
- Obtaining cooperation from local communities, businesses, professional organizations, government officials, and other elite groups, and enrollment of participants in longitudinal studies

Additionally, SRG has capabilities for web usability testing; facilities for computer-assisted telephone interviewing; programming web surveys; an infrastructure for computer-assisted personal interviewing; direct data entry; data scanning and production of scannable data collection forms; interactive data cleaning; management and reporting of sample status; internal and external tracking of documents using bar code technology; and high-quality support for preparing questionnaires, personalized letters, and other survey materials.

An exemplar of RAND's excellence in conducting difficult surveys in California is the 2020 California Neighborhoods Count which was the first ever independent post-enumeration survey designed to replicate and validate a decennial census. This survey was conducted by RAND as a contract to the **State of California's Department of Finance**. With the attempt of the Trump Administration to add a citizenship

question to the census along with ongoing concerns about below adequate funding levels of census operations and outreach, California was poised for a historic undercount of its population. Consequently, the state was at risk for losing congressional representation and billions in federal funds for government operations and social services. To provide objective, non-partisan evidence of the undercount during this volatile political period, RAND designed and executed a study in which SRG enumerated a state representative sample of approximately 25,000 households in the months following the 2020 decennial census via a multi-mode survey. The data from this survey allowed RAND to independently assess the magnitude of the undercount and to provide benchmarks to recalibrate small population area estimates for the state. This project required a complex sampling plan to jointly capture the geographical and socioeconomic diversity of the state; a versatile multi-mode data collection strategy implemented at scale across the nation's third largest state; an intensive in-field interviewing component to secure the participation of non-responders and hard-to-reach populations; and rigorous quality control procedures developed to mirror those implemented by the U.S. Census Bureau.

In addition to this work for the California Department of Finance, RAND researchers have done extensive work for and about the state of California for more than 20 years. This work includes:

- **Over 20 years of working on California workers' compensation issues.** RAND has been analyzing California's workers' compensation since 1996, when Commission on Health and Safety and Workers' Compensation (CHSWC) under the California Department of Industrial Relations (DIR) funded RAND to conduct a two-year study to evaluate the state's permanent partial disability system. With that foundation, RAND developed an extensive research agenda on workers' compensation, not just in California but also in several other states. A distinguishing feature of RAND's work in this area has been a continuing effort to present research results to the entire workers' compensation community and to work with California's bipartisan commission to make headway on the contentious issue of workers' compensation reform.
- **More than 10 years' experience conducting evaluations for the California Mental Health Services Authority (CalMHSA).** RAND has conducted several mental health evaluations for CalMHSA with contracts starting in 2011 and continuing through the present, through a series of consecutive contracts. The initial large-scale evaluation of Mental Health Services Act (MHSA)-funded statewide prevention and early intervention (PEI) efforts examined initiatives to reduce mental health stigma and discrimination, prevent suicide, and promote student mental health. RAND also created a statewide evaluation framework for PEI in coordination with CalMHSA and the Mental Health Services Oversight and Accountability Commission (MHSOAC). RAND provided technical assistance for mental health PEI outcome reporting to California counties, and provides ongoing consultation to CalMHSA to inform implementation of its mental health programs. Beyond the statewide work, CalMHSA has also contracted with RAND to conduct behavioral health evaluations for various member counties.
- **Long-standing relationship with the California Department of Social Services (CDSS) evaluating the CalWorks program.** RAND has held several contracts with the California Department of Social Services beginning in 1998 to evaluate the CalWORKs (California Work Opportunity and Responsibility to Kids) program. This program was a "work first" program providing support services to move recipients from welfare to work and self-sufficiency, along with limiting the receipt of cash aid to 60 months in a recipient's lifetime. In the most recent work (2014-2018), RAND conducted an independent, rigorous, comprehensive evaluation of Senate Bill 1041 (Budget Act of 2012), which made multiple reforms to CalWORKs.

Our work with California extends to the Board of State and Community Corrections, California Correctional Health Services, California Energy Commission, CalPERS (California Public Employees' Retirement System), and others.

1.2. Key Personnel

Given the complexities of this important project, we are bringing together a team of multi-disciplinary researchers that include macro- and micro-economists, mathematicians, statisticians, demographers, and quantitative analysts. This team brings deep expertise in financial decision making, fiscal policy, survey research, data analysis, and evaluations of social programs for disadvantaged populations. Below we list the ten key personnel who will undertake this project for the California State Treasurer's Office (STO) in alphabetical order, followed by brief bios that highlight their relevant expertise for this project. All ten key personnel are employed at the RAND Corporation. There are no external team members or sub-contractors for this project. In our planning for this project, we reviewed the 1,736 disabled veteran business enterprises (DVBE) certified to perform work in the state. Of those 1,736 DVBEs, only two provided services that were relevant to this solicitation. After careful evaluation, we determined that neither have the qualifications and/or track record to perform the work to meet our standards. Therefore, we decided to proceed with our own researchers to staff the core team. This team of key personnel will be supplemented by a team of junior analysts at RAND with master's degrees (not listed).

TABLE 2. LIST OF KEY PERSONNEL

Team Member	Role	Project Hours	Years of Post-Doctoral Experience	Education
Robert Bozick	Project Manager and Demographer	440	18	Ph.D., Sociology, Johns Hopkins University
Lane Burgette	Statistician	96	14	Ph.D., Statistics, University of Wisconsin
Jessie Coe	Economist	280	4	Ph.D., Economics, University of Texas
Natalie Cox	Economist	416	7	Ph.D., Economics, University of California-Berkeley
James Marrone	Economist	416	6	Ph.D., Economics, University of Chicago
Elizabeth Marsolais	Assistant Project Manager and Policy Analyst	360	NA	M.P.P., Public Policy, University of Southern California
Nicolas Robles	Mathematician	360	8	Ph.D., Mathematics, University of Zurich
Patricia Tong	Economist	464	13	Ph.D., Economics, University of California-San Diego
Jessie Wang	Economist	240	6	Ph.D., Economics, University of California-San Diego
Jonathan Welburn	Principal Investigator and Computational Economist	520	7	Ph.D., Decision Science and Operations Research, University of Wisconsin
George Zuo	Economist	432	2	Ph.D., Economics, University of Maryland

As demonstrated in the table below, our team of key personnel meet the requirements for core competencies required by the STO. At least one project team member has five or more years of experience in the six topic areas required by STO. Following this table we provide more detail on the qualifications and experience of the proposed key personnel.

TABLE 3. KEY PERSONNEL TOPIC AREAS EXPERIENCE

Team Member	Project Management	Banking Regulations	Financial Transactions	Data Analysis	Research and Surveys
Robert Bozick	■	●	●	♦	♦
Lane Burgette	▲	●	●	♦	■
Jessie Coe	●	●	●	▲	●
Natalie Cox	●	●	●	▲	●
James Marrone	▲	●	●	▲	▲
Elizabeth Marsolais	▲	●	●	▲	▲
Nicolas Robles	●	●	●	▲	●
Patricia Tong	▲	▲	▲	■	▲
Jessie Wang	●	▲	▲	▲	▲
Jonathan Welburn	▲	▲	▲	▲	●
George Zuo	▲	●	●	▲	●

Key: ● = 0–5 years; ▲ = 6–10 years; ■ = 11–15 year; ♦ = 16–20+

1.2.1. Key Personnel Qualifications and Experience

Below we provide summaries of the rich set of experiences and expertise that our key personnel will bring to this project.

Robert Bozick, Project Manager is a senior demographer at RAND whose research focuses on the effects of economic strain on labor force and education outcomes, with a particular focus on linkages between school, work, and health across the life course. Bozick has over 20 years of experience designing and administering surveys, analyzing survey data, and using longitudinal data to address public policy issues in education, labor, and population. He has expertise in the design and analysis of surveys administered to hard-to-study populations. Recently, for the State of California's Department of Social Services, Bozick led a longitudinal survey of 1,500 low-income families to understand their experiences with poverty and the labor force. Bozick's research has been supported by the National Institutes of Health, the National Science Foundation, the Department of Education's Institute of Education Sciences, the U.S. Department of Justice's Bureau of Justice Assistance, the California Department of Finance, the California Department of Social Services, the New York City Mayor's Office, the Spencer Foundation, the Peterson Foundation, the ECMC Foundation, and the Community Foundation for Greater New Haven. His research has been featured in over 100 news outlets, including *National Public Radio*, *The New York Times*, *TIME Magazine*, *The Washington Post*, *The Wall Street Journal*, and *U.S. News and World Report*. From 2014 to 2018 Bozick was the associate director of RAND Labor and Population, and from 2020 to 2022 Bozick was a Senior Fellow at Rice University's Kinder Institute for Urban Research.

Lane Burgette is a Senior Statistician at RAND whose research focuses on causal inference, survey statistics, and Bayesian methods suited for applications in the health and social sciences. Recent projects have included working with the California Department of Finance (along with Dr. Bozick) as lead statistician and project co-director on a large-scale evaluation of the 2020 Census in California. He has also worked with the Centers for Medicare and Medicaid services as project director and statistician to develop survey methodologies for potential future data collection to support Medicare's rate-setting processes. Burgette's methodological publications have included research on methods for missing data, measurement discrepancies, and causal inference.

Jessie Coe is a RAND associate economist trained in cutting edge causal methodology with specialties in panel data methods, survey methods, and program evaluation. Her methodological work has considered issues of survey non-response, and program evaluation when the program is introduced in different places at different times and when program participants differ from non-participants. Coe's substantive interests focus on interventions for lower-income families. She conducted secondary analysis on large-scale public survey data merged with proprietary data provided by the Legal Services Corporation to study the impact of access to legal aid on divorce for low-income families (2018-2021). She has conducted primary data collection via survey methodologies to study the public's support for providing tax-funded financial strain, food security, and program use among Army families (2018-ongoing). In previous work, Coe was part of a team tasked with the cost analysis of the rebuilding efforts following hurricane Maria (2018-2020). In ongoing work, Coe is the project manager and lead analyst studying Army marketing (2019-2024).

Natalie Cox is an economist specializing in public economics and household finance topics. After completing a one-year post-doc at the Stanford Institute for Economic Policy Research, she worked as an Assistant Professor in the Princeton University Economics Department until joining RAND in Sept 2022. Cox's research is primarily focused on understanding how individuals make investment and debt decisions, and how government intervention in consumer finance markets impacts these choices. Her work has analyzed government subsidies and regulations in the small business lending, retirement savings, and student loan markets in the United States. She is proficient in Stata, Matlab, and R, and has experience working with large consumer datasets, including credit bureau data, tax return data, credit card transaction data, and loan performance data.

James Marrone is an economist at RAND, whose research focuses on regulatory analyses and household financial behaviors. He has experience working with financial data, risk models, and cost/benefit analyses both in and out of federal government; and experience leading multi-million dollar projects for federal government clients. Most recently, he led an evaluation of a U.S. Coast Guard security regulation, including cost-benefit analyses conforming to federal guidelines. Previously, he worked at the Federal Reserve Board (2009-2011), where he helped to implement the computational infrastructure to monitor systemic risk of financial institutions, and published papers on banking regulations and financial market volatility. During a temporary detail as an economist at the Consumer Financial Protection Bureau (2019-2020), he studied the credit behaviors of young military Service members and their connection to job performance. He is currently studying the connection between financial distress and suicide in active-duty military members. He has experience working with large administrative datasets including credit bureau data and financial market data, as well as experience with survey design, survey analysis, and a broad set of econometrics tools.

Elizabeth Marsolais is a Policy Analyst who brings over six years' analysis, evaluation, and implementation experience with the State of California and California counties. She has a MPP from the University of Southern California and a BA in Political Science from the University of California, Berkeley. Marsolais' experience prior to joining RAND includes designing and implementing state-level pilot programs at the California State Treasurer's Office, evaluating state-level legislative and regulatory proposals, and over five years of

experience providing project management and stakeholder engagement for large-scale projects involving multiple levels of governments and large groups of stakeholders. Elizabeth has experience providing project management to state agencies in California on complex programs with significant stakeholder engagement.

Nicolas Robles joined RAND in February 2023 as a mathematician. Prior to joining RAND, he was a quantum scientist at IBM specializing on quantum algorithms for financial services and investment banks, including machine learning, Monte Carlo simulations for derivative pricing, and portfolio optimization. He was also an assistant professor of mathematics at the University of Illinois at Urbana-Champaign. He worked in investment banking (JPMorgan Chase, Nomura, UBS and Bank of America Merrill Lynch) for over 7 years in 3 different countries (UK, Switzerland, and US). He specialized in fixed income and equity structuring and trading. He is also well versed in AI and ML techniques for anti-money laundering and Compliance, Basel III, Dobb-Frank act banking regulations as well as collateral posting.

Patricia Tong is an economist at RAND who utilizes both quantitative and qualitative methods to study how public policy affects household outcomes, particularly among low-income families, married couples, and the aging population. She has co-led and served as task lead on multiple projects funded by various federal government entities during her tenure at RAND. Prior to joining RAND, Tong was a financial economist at the US Department of Treasury for almost 7 years where she was responsible for microsimulation modeling, revenue projections, reviewing regulations and proposed legislation, and market analyses to understand how changes to tax policies would impact low-income populations. Tong's research has been published in various journals *including American Economic Journal: Economic Policy, Health Economics, International Tax and Public Finance*, and *National Tax Journal*.

Jessie Wang is an economist at RAND with expertise in the intersection of demographic trends, macroeconomic policy, and inequality, her research studies the implications of disparities on individual-level and macroeconomic outcomes. She has more than 10 years of experience in developing quantitative frameworks integrating macroeconomic theory and micro-level data to shed light on the nature of disparities and evaluate potential policy interventions. Prior to her current position, she was a NIH/NIA postdoctoral fellow in the study of aging, specializing in investigating the effect of population aging on time use allocation and household wellbeing through data-driven models. She was an assistant professor of Economics at Furman University, where she taught courses such as Money and Banking, Macroeconomic Theory, Economics of Aging, and Economics of Gender.

Jonathan Welburn, Principal Investigator, is a researcher at RAND in the fields of computational economics and decision science, a faculty member at the Pardee RAND Graduate School, and a lead in the Pardee Tech + Narrative Lab. Welburn's research focuses on market failures ranging from racial wealth disparity to systemic risks to banking and financial crises. He recently led several large studies including a study on mitigating the use of forced labor, a study identifying and prioritizing systemically important entities in support of proposed federal policy, and a study evaluating policies for addressing the Black-white wealth gap. Notably, research teams led by Welburn have made use of large financial datasets and computational tools to provide novel insights on microfoundations of macroeconomic and financial challenges while producing policy insight for clients including the Department of Homeland Security, Office of the Secretary of Defense, the Air Force, and the Army. Welburn's research has been published in several RAND Reports, peer-reviewed academic journals, and news outlets including the LA Times, Wall Street Journal, New York Times, CNN, and NPR while his expertise on has been recognized as a contributor to the World Economic Forum on technology, innovation & systemic risk, a member of the Aspen Cybersecurity Group, an editorial board member at the journal Decision Analysis, a council member in the Decision Analysis Society, and a member of the executive council of the Society for Risk Analysis.

George Zuo is an associate economist at RAND. As an applied microeconomist, his research focuses on bridging economic, education, and health disparities in the United States. Zuo boasts nearly ten years of quantitative experience with a focus on econometric analyses of large surveys and administrative data for program evaluation. Prior to his graduate studies, he worked as a senior associate in economic consulting at Deloitte.

2. Draft Work Plan

2.1. Project Management

Given the complexity of this project, which includes multiple, concurrent tasks and significant analytic and survey tasks, the STO will require a contractor with demonstrated, successful experience in management of large, complex contracts. RAND brings this expertise through decades of experience managing contracts at the federal and state-level. This includes Indefinite Delivery Indefinite Quality (IDIQ) contract vehicles for agencies such as Securities and Exchange Commission (SEC), Department of Labor (DOL), Consumer Financial Protection Bureau (CFPB), and multi-task, multi-year state contracts with California Mental Health Services Agency (CalMHSA), California Department of Industrial Relations (DIR), New York Department of Health (NYDOH), or the State of Vermont Joint Fiscal Agency.

Through this work RAND has developed and tested a proven set of processes for managing contract work, including timely production of high-quality deliverables, routine reports, and financial information, and monitoring schedules, budgets, resource allocation, and milestone dates. Further, throughout our history overseeing similar contracts, RAND has proven its ability to meet unique management challenges and successfully manage projects to completion.

2.1.1. Project Leadership and Management

Project Leadership. This contract will be led by a strong leadership team: **Dr. Robert Bozick** and **Dr. Jonathan Welburn**. Dr. Bozick will be the Project Manager and will oversee the day-to-day operations of the project to ensure that RAND is meeting all contractual obligations. Dr. Welburn will be the Principal Investigator and will serve as the lead subject matter expert on this project. They both have extensive experience leading and managing large-scale projects, they both bring relevant technical and methodological expertise, and they will jointly maintain responsibility for the overall conduct and quality of the project.

Drs. Bozick and Welburn will be supported by RAND's Social and Economic Wellbeing Division in the leadership and management of RAND's experienced staff. Having the institutional support of Division leadership ensures that Drs. Bozick and Welburn are supported by both broad oversight, such as senior leaders overseeing projects on a periodic basis, and focused, direct supervision as necessary, such as senior leaders providing technical or management conflict resolution. Further, the leadership team also benefits from a suite of specialized expertise and services to help ensure that projects are completed on time and within budget, such as robust financial management systems and contract support teams.

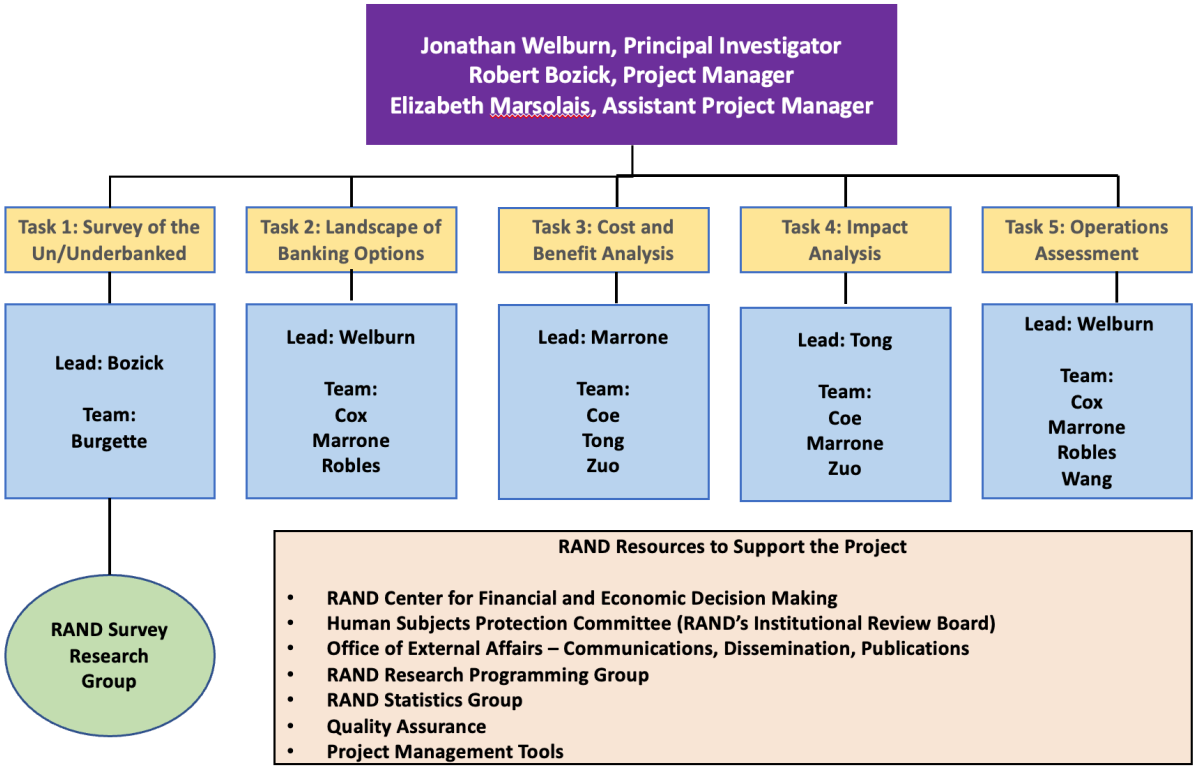
Project Management. As the Project Manager, Dr. Bozick will be the primary point of contact with STO and will ensure that the project team is responsive and that a robust project plan is developed, implemented, and updated as needed. He will provide overall management of the project, working closely with the team leads, and will assume responsibility for quality assurance of deliverables; oversee cost control requirements; ensure the timeliness of all deliverables and requests; and maintain business relations with STO. Dr. Welburn will work closely with Dr. Bozick in project leadership. Engaging two highly experienced researchers – one

with extensive experience in the management of contracts (Bozick) and an expert in macro-economics and banking (Welburn) –will ensure immediate availability of someone with the experience and authority to make contract-related decisions and provide substantive input. This will further enable rapid resolution of any technical issues, concerns, or corrections that may arise.

The project leaderss will be supported by a dedicated Assistant Project Manager, Elizabeth Marsolais. Ms. Marsolais is a policy analyst and project manager at RAND who will assist Dr. Bozick and Dr. Welburn with project management across all tasks. Ms. Marsolais will support the day-to-day management of the project, including assisting to develop the Work Plan, monitoring the budget, facilitating communication with the team and STO, and ensuring on-time submission of deliverables.

The work for this contract will be carried out across five distinct tasks (which are explained in detail in the Section 5, Market Analysis). In the figure below, we show the structure of the team by tasks.

FIGURE 1. PROJECT TEAM ORGANIZATIONAL CHART



Project Team Communication. Drs. Bozick and Welburn, along with Ms. Marsolais and the task leads will foster frequent and open communication within and between the project team. Dr. Bozick will lead weekly management meetings, comprising the project leadership team and task leads, to plan project activities, review the timeline and upcoming deliverables, discuss feedback received from the STO, and discuss emerging challenges. Individual task teams will also meet weekly to discuss progress on tasks, resolve data acquisition or analysis concerns, and identify issues to discuss with the project directors and/or the STO Program Officer. Team members will also use these meetings to distill key findings and shape the emerging

narrative for the final report and project dashboard project summaries. Meeting summaries will be uploaded to the project's SharePoint site and action items will be tracked on wikis to ensure adequate follow-up.

Financial Management. RAND has robust financial management systems encompassed in our Enterprise Resource Planning (ERP) system called Workday, which supports pricing, budgeting, and funding and provides project cost- and labor-reporting accessible by all RAND staff. Workday provides reporting for each task: labor days by person, labor dollars, travel (dollars spent, commitments remaining) by trip, computer costs (by person), publications costs, survey costs, and other direct costs. The cost and labor information can be viewed as of the current period, for the fiscal year to date, or from the inception of the project. Data in Workday can be downloaded into Microsoft Excel as the basis for customized management reporting. Dr. Bozick will tailor these reports for the project and use them to monitor the project spend and to ensure adequate resources are budgeted for remaining project tasks.

RAND Research Financial Administrators provide ongoing budget oversight for projects, which includes monitoring the budget biweekly by reviewing spending patterns, notifying project leaders of potential concerns, and working with them to resolve those concerns. They periodically update project budgets in consultation with project leaders, accounting for recent spending patterns, changes in cost rates, new funding received; and work closely with project leaders to ensure compliance with applicable regulations.

2.1.2. Management of Deliverable Due Dates

Draft and Final Work Plans. At the start of a project, Drs. Bozick and Welburn to incorporate the draft components in the proposals into a final work plan that lists key tasks and activities required to complete the project, deliverables, timelines and milestones, critical paths and risk factors, and key individuals responsible for delivery. The Plan will be tracked closely and the timeline will be monitored updated at least biweekly to ensure that tasks conducted simultaneously or in parallel are tracked accordingly. Deliverables, due dates, and key project activities will be discussed at regular meetings of the project team and with the STO Project Officer. These meetings will provide an opportunity to identify problems, discuss solutions, prioritize work tasks, and identify synergies. The work plan will be treated as a live document and updated as needed. Substantive changes to the Plan will be documented per the RFQ, to include a table of changes that identifies the date of the change, the topic, and the location in the Work Plan where the change occurs, and a version number and date. Project leadership will work jointly with STO's Project Officer regarding the work plan to refine and update the plan with improvements.

Draft and Final Reports. At RAND, we regard report writing as a critical research and analysis activity. We will produce high-quality, accurate analyses, and clearly written reports that can be used by STO leadership and other stakeholders to inform policy and planning. Report development will be led by Dr. Bozick and Dr. Welburn, who will ensure that the reports are detailed and extensive work products. The reports will include an executive summary, table of contents, study methodology, project assumptions, assessment of the validity of the data, relevant sources and a table that cross references the SOW elements with their location in the report.

Deliverables Table. In Table 4 we list out our key deliverables to STO along with their corresponding due dates.

TABLE 4. DELIVERABLES TABLE

Deliverable	Due Date	Deliver to	Responsible Staff
Draft Work Plan	7 business days after project kick-off meeting	STO Project Officer	Dr. Welburn Dr. Bozick
Final Work Plan	5 business days after feedback	STO Project Officer	Dr. Welburn Dr. Bozick
Draft Report	April 8, 2024	STO Project Officer	Dr. Welburn Dr. Bozick
Final Report	May 13, 2024	STO Project Officer	Dr. Welburn Dr. Bozick

2.1.3. Communications

Regular communication with the STO Project Officer and the Advisory Committee will be critical to the success of the project and to ensure that the contract deliverables meet the needs of STO. Dr. Bozick will have primary responsibility for regular communication with the STO Project Officer and Committee. As part of developing the Work Plan, Dr. Bozick will work with the STO Project Officer to determine the best means for maintaining ongoing communications. However, we will ensure that our leadership team will be available to meet with STO and the Advisory Committee at the STO's location or via Microsoft Teams at any time during the project, to present and discuss project status, methodology, project risks, analysis, interim findings. These meetings can be at the request of the STO or RAND's Project Manager as needs arise. Additional RAND team members may be included in these meetings to discuss project tasks and findings, as necessary.

The team will participate in an initial project kickoff meeting and regular calls (the frequency of which will be determined at the kickoff meeting) to allow for the opportunity to review project progress and status of tasks; discuss milestones, and deliverables; receive feedback on related government priorities and activities; plan for future activities; and resolve any concerns and issues in a timely manner. If we encounter circumstances that warrant a more in-depth working meeting with STO to discuss a key decision point, we will schedule these as needed at a mutually agreeable time.

2.1.4. Advisory Committee Meetings

To ensure a collaborative and close working relationship with the Commission and STO, Dr. Welburn and Dr. Bozick will attend regular Advisory Committee Meetings. These meetings will serve as an informed resource of working ideas, draft reviews, discussions, feedback and suggestions.

2.1.5. Project Dashboard

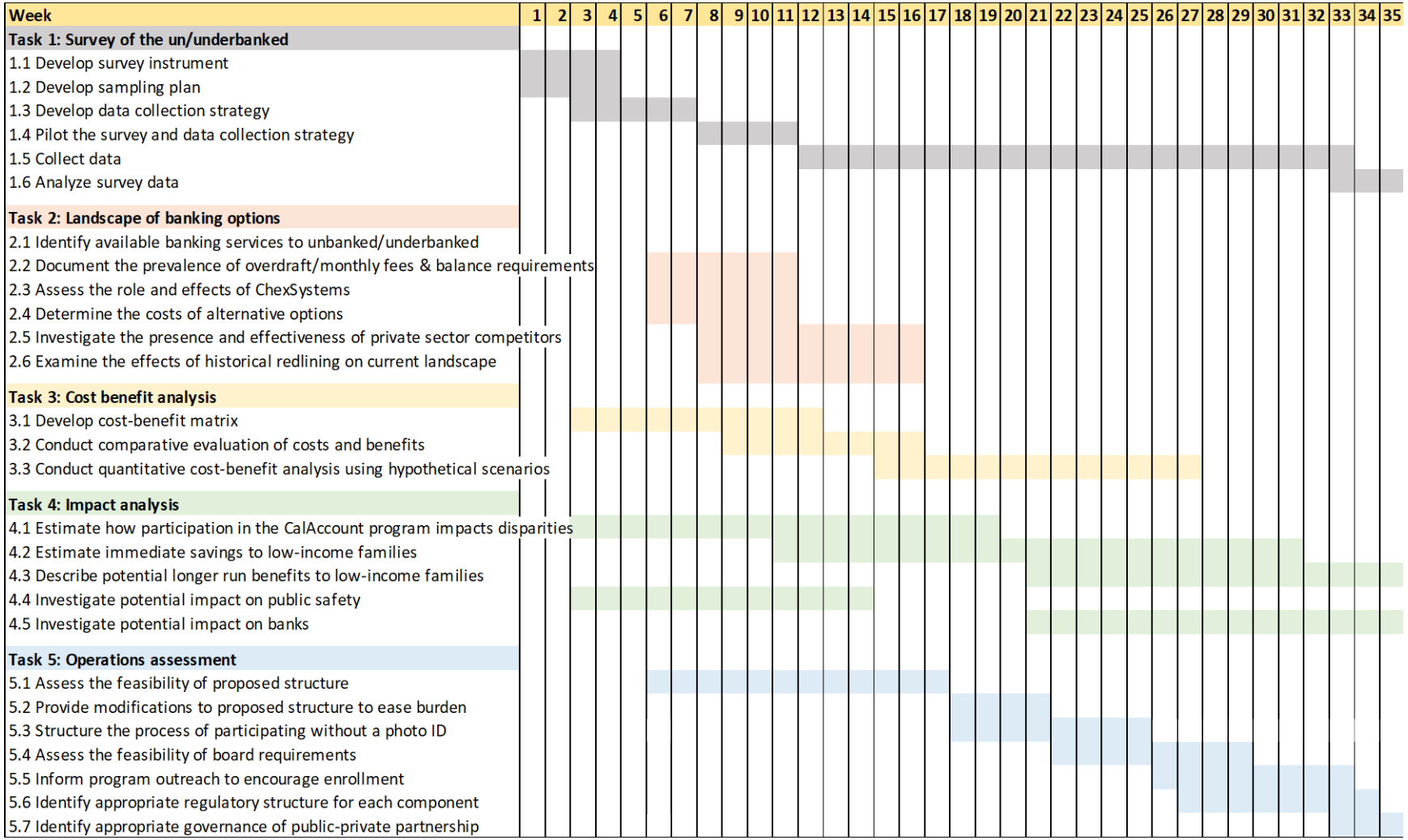
To provide the STO Project Officer and Advisory Committee members with regular updates on the status of the project, RAND will develop a shared Project Dashboard. RAND supports many coordination and collaboration mechanisms through the Microsoft Office 365 platform and regularly uses a dedicated SharePoint site to securely collaborate on documents and organize and store meeting minutes, decision memos, and work plans. Given this experience, we will develop the dashboard using a SharePoint site.

Ms. Marsolais, the Assistant Project Manager, will have the primary responsibility with developing and updating the dashboard, which will include a status report, project schedule, project risks and issues, project

budget and monthly progress reports. Ms. Marsolais will use weekly project management meetings with Drs. Bozick and Welburn to discuss the project progress and determine the updates necessary to the dashboard and its component parts. The dashboard will be updated weekly, except for the budget and progress report sections that will be updated at least monthly and coincide with submission of RAND's monthly invoices.

2.2. Project Timeline

Our proposed timeline is organized by week, and assumes that the contract promptly begins on June 29, 2023. All technical analyses will take place across 35 weeks, ending the first week of March 2024. During the month of March 2024, RAND will produce the draft report.



2.3. Key Performance Indicators

RAND will employ a multilayered approach to performance management that ties together quality review, project activities, and documentation and progress reporting to ensure that all tasks are monitored, and progress is documented. The Quality Assurance Surveillance Plan (QASP), component of our overall Work Plan, is meant to be broadly applicable while ensuring overall rigor and accuracy; it can be implemented efficiently and without disruption to the overall project timeline. The QASP will outline roles and responsibilities, methods of assessment, quality measures, and performance criteria and describes a comprehensive program of inspections and monitoring actions. To ensure clarity, the QASP includes quality measures that are objective, quantifiable, and can be readily tracked to monitor performance (e.g., meeting set deliverable schedules, time to respond to inquiries/requests).

RAND's QASP will build on our existing QA processes (described above) and financial management tools (described in the Management Plan), which are well suited to addressing CMS's requirements. Areas subject to inspection cover all performance metrics, and inspections occur throughout the lifecycle of the project, on a scheduled and unscheduled basis (Table 5).

TABLE 5. OVERVIEW OF MANAGEMENT AND REVIEW OF KEY PERFORMANCE INDICATORS

Measure	Schedule	Process	Team Member(s)
Accuracy, completeness, technical proficiency	Ongoing throughout project, with scheduled reviews for key deliverables	Continuous quality review of critical decisions and work products; specific deliverables will go through the RAND QA process with peer review; documenting decisions in a Project Decision Log (documenting decision, date of decision, and details as to why the decision was made) to be kept in a central location that all team members have access to.	Welburn & Marsolais
Timeliness	Ongoing, but at least weekly	Project Work Plan, updated as needed and reviewed weekly	Bozick & Marsolais
Responsiveness	Ongoing, but at least monthly	Regular meetings with STO, to provide clarifications, ensure approach continues to meet project goals; Ad hoc meetings can be scheduled as necessary	Bozick & Marsolais
Communication	Ongoing	In addition to calls with STO, emails and progress reports will be sent to STO to share progress, ensure shared expectations, share any deviations from project timeline and mitigation strategies	Welburn Bozick & Marsolais
Cost	Ongoing, but at least bi-weekly	Project cost- and labor-reports refreshed every two weeks	Bozick & RAND's Research Financial Administrator

2.4. Estimated Hours and Cost for Project Team

The estimated hours and cost for the proposed project team are included in Attachment 6, Cost Worksheet.

3. Market Analysis

3.1. Task 1: Survey of the Un/Underbanked

To understand banking options and financial needs among the un/underbanked population, we propose to develop a state-of-the-art survey. We plan to use the 2021 FDIC National Survey of Unbanked and Underbanked Households as the basis for this task, referred to herein as the "FDIC Survey" for ease of expression. The FDIC Survey includes a probability sample of 10,393 Californians, of which 258 are unbanked and 902 are underbanked. As a standard population-based survey drawn from a list of addresses, the FDIC Survey excludes accessory dwelling units and transitory housing – two forms of housing that are often used by migrants and low-income adults. Consequently, the FDIC Survey likely paints an incomplete portrait of the state's un/underbanked population. Further, the small number of unbanked households limits the depth and breadth of information that can be gleaned the data. Therefore, we propose to augment the FDIC Survey with our own survey of approximately 750 Californians, referred to herein as the "RAND Survey" for ease of expression. In the RAND Survey, we will ask the same exact questions as those used in the FDIC Survey. Additionally, we will ask new questions that are specific to the needs of STO for this initiative.

This development, administration, and analysis of the survey will be undertaken across six subtasks:

- Subtask 1.1 Developing a survey instrument
- Subtask 1.2 Developing a sampling plan
- Subtask 1.3 Developing a data collection strategy
- Subtask 1.4 Piloting the survey and data collection strategy
- Subtask 1.5 Collecting the data
- Subtask 1.6 Analyzing the data

We provide an overview of each of these subtasks in turn.

Subtask 1.1: Develop Survey Instrument

At the start of the project, we will coordinate with STO to determine key issues relevant to the development of CalAccount that require data beyond what is included in the FDIC survey. We will identify questions used in previous surveys (where possible), else we will construct new questions. The benefit of using existing survey questions is that they have been field-tested and permit comparisons with other surveys, while the benefit of constructing new questions allows to gather more program-specific information. We will weigh these trade-offs and prepare options for STO to consider. To contain costs, we anticipate adding approximately ten new questions to the RAND survey, in addition to the questions that were already asked in the FDIC survey.

In developing and revising the instrument, we will pay special attention to the validity of survey items; the feasibility of collecting reliable data using the proposed survey items; the appropriateness of proposed response options; methods for reducing item-level non-response; question ordering effects; skip logic; out of range checks; and terms, items, or concepts that might be difficult to translate into non-English languages. We will assess the feasibility of administering the survey using different modes of data collection including a web-administered survey, a computer-assisted telephone interview (CATI), a computer-assisted personal interview (CAPI), and a self-administered paper-pencil survey. Finally, we will assess the overall burden of completing the survey by determining the reading level of the survey and the average time to complete the

survey. If appropriate, we will make recommendations for simplifying the wording of survey items and reducing the overall length of the instrument.

In addition, RAND will develop participant recruitment materials, including survey invitation and reminder letters, a study brochure, FAQ's, CATI and CAPI interviewer interview protocols, and informed consent scripts. Once the survey and recruitment materials are completed, we will produce final versions of these documents and will submit them to the RAND Human Subjects Protection Committee (RAND's Institutional Review Board) for review. The final version of the survey and related survey materials will be translated into Spanish by professional translators and will be independently examined by bilingual reviewers for accuracy. If appropriate, we will make recommendations for modifying the English version of a survey item in order to make it more comprehensible for sample members who are not proficient in English. The final version of the survey and related interviewer scripts will be programmed for web, CATI, and CAPI administration.

Subtask 1.2: Develop Sampling Plan

Recognizing that the FDIC survey tends to exclude key populations that are un/underbanked, the goal of our sampling approach is to maximize the inclusion of those populations. Therefore, instead of a traditional population-based sample such as that used by the FDIC survey, we are planning for a targeted sample that predominantly draws from the populations excluded by the FDIC survey. We will develop our sample using an address-based approach in which potential sample members will be identified from a population frame of housing units, group quarters, and where possible, accessory dwelling units. Our sampling strategy will be guided by the goal of selecting a final sample of adults such that when combined with the FIDC survey, the results will generalize to all adults in the state of California. Our approach will involve balancing the competing objectives of oversampling as needed to obtain target counts within specific subgroups and minimizing the design effect yielded by the sample so as to optimize its efficiency. To ensure that we have the right sampling frame and adequate representation in that frame among the key subpopulations, we will identify a vendor with a strong reputation for supplying sampling frames with adequate coverage of minority and low-income populations; and that is able to append contact information (e.g., address, email, phone) for a high proportion of the sampled cases.

Once we have prepared the sampling frame, we plan to employ a stratified sampling design to ensure that target sub-populations are adequately surveyed. More specifically, we propose to use a two-stage sampling design where we first sample census blocks and then housing units and group quarters within census blocks. Using the block-based design confers two benefits. First, census and other data sources can provide information about characteristics of the sample that can be drawn from that area, such as race/ethnicity and proxies for income and wealth, such as information on housing prices and the presence/absence of banks and alternative banking options. This allows us to preferentially select geographic areas where residents are more likely to be un/underbanked. Second, our data collection team will perform in-person visits for households that do not respond to mail, e-mail, or phone survey invitations. Concentrating our sample into relatively compact geographic areas allows in-person surveys to be administered without incurring excessive travel costs.

Subtask 1.3: Develop Data Collection Strategy

In preparation for the implementation of the survey and in collaboration with STO, we will develop the most optimal data collection strategy for implementing the survey using best practices in survey methodology. In developing a data collection strategy, we will pay special attention to feasibility, cost in relation to the budget set aside for data collection, and effectiveness in obtaining high quality data on banking options and financial

needs among the un/underbanked population. Our proposed data collection strategy will include options for maximizing response rates, particularly for the hard-to-reach subpopulations of interest while maintaining ethical standards for the collection of primary data from human subjects. We will pay special attention to how to effectively engage local communities and will seek input from community stakeholders on the best way to promote the survey in their communities and the best way to reach their community members. Our proposed data collection strategy will include plans for community engagement, study promotion, participant recruitment, interviewer recruitment and training, data collection, strategies to maximize response rates, human subjects protection, data safeguarding, quality control, incentive structure, mode(s) of data collection, and the timing and sequencing of the data collection by mode. We believe that the most effective way of achieving an adequate response rate overall as well as from subpopulations of interest is likely to require a mixed-mode data collection approach using web, mail, CATI, and CAPI administration. This approach requires careful planning and would involve starting with the most cost effective data collection approach (web followed by mail) before deploying the data collection approaches that require the most resources (CATI and CAPI). It also requires careful coordination in the staging and sequencing of each data collection approach to avoid wasting resources while at the same time reducing the likelihood of collecting duplicate surveys across modes. Our proposed data collection approach will be submitted to STO for review and once approved, will be included in the application to RAND's Human Subjects Protection Committee.

Subtask 1.4: Pilot the Survey and Data Collection Strategy

RAND will develop a plan for pilot testing the survey to assess the feasibility and effectiveness of our proposed recruitment and data collection approach and to fully evaluate the survey including the validity and reliability of the survey items, skip logic, survey flow and question ordering, item level non-response, appropriateness of the translation(s), ability of respondents to provide the information required to complete the survey, and overall respondent burden. In addition, the pilot test will enable us to assess our participant recruitment approach, our strategy for selecting and engaging the best person in the household to complete the survey, the appropriateness of the incentive in relation to the time and burden required to complete the survey, and participants reaction to the overall purpose of the survey and to the topics that will be covered in the survey. Finally, the pilot test will allow us to gauge the effectiveness of various modes of data collection and will provide the opportunity to recruit and train local staff, to assess our training approach, and to test our data transmittal protocols. We propose to conduct the pilot test with 200 English and Spanish-speaking households selected from an area close to RAND's Santa Monica headquarters that will not be included in the sample for the full survey. We anticipate an overall response rate of 50% for an estimated 100 completed surveys. At the conclusion of the pilot test, we will run frequencies to ensure that there are no issues related to the skip logic in the survey, to examine the distribution of survey responses, identify out of range responses that may indicate a problem with a particular item, and assess item-level non response. We also propose to debrief the interviewers who participated in the pilot test to collect information on participant reactions to the survey, reasons refusing to participate in the survey, issues related to data quality including questions that participates struggled to answer or struggled to understand, reasons for item level non-response, reactions to the incentive, time to complete the survey, and overall respondent burden. We will use the information from the pilot test to improve and/or refine the survey (skip logic issues, item wording, question order, translation issues) and to inform improvements to our overall data collection strategy including our approach to study promotion, recruitment, interviewer training, strategies for refusal aversion and conversion, data safeguarding, and data transmittal.

Subtask 1.5: Collect Data

Findings from the pilot test will be used to inform revisions to the survey and our proposed data collection strategy prior to moving forward with full-scale implementation of the survey. Once STO has reviewed and approved the proposed revisions, we will proceed to produce final versions of the survey and related materials (both programmed versions and Word versions). As mentioned above, we propose to field the survey using a mixed-method approach to data collection. In this approach, we recommend first sending out a survey invitation letter and when possible an email with a study brochure and/or FAQs to all households in the selected sample, inviting them to complete the survey via the web (the web version of the survey will have a drop down menu that will allow respondents to choose the language they would like to complete the survey in). The survey invitation letter will include the url for the survey, a unique PIN to access the survey, and a QR code respondents can use to access the survey using a smart phone. Approximately one week after sending the initial survey invitation letter, we propose to send non-responding households a reminder letter. Households that fail to respond to the web survey invitation and reminder letters will subsequently be sent a hardcopy of the survey in English. The survey cover letter will include a toll free number letting them know they can contact RAND SRG to complete the survey by phone in either English or Spanish or can access the survey in these (and perhaps other) languages by completing it via the web. We will also proceed to attempt to reach non-responding households by phone and in person.

In preparation for these more resource intensive efforts, we will recruit and train a team of telephone interviewers who will work out of the RAND SRG telephone center in Santa Monica, CA. We will also recruit and train a team of field interviewers. To minimize travel and mileage costs, we will aim to recruit interviewers who live near the geographic areas targeted for the survey. Interviewers will be trained on general interviewing techniques, informed consent, confidentiality and data safeguarding, and refusal aversion and conversion techniques. In addition, they will be trained on the purpose of the survey, and will review and practice the survey, paying special attention to the goal of each questions, strategies for probing to obtain accurate information, and coding survey responses. Field interviewers will also receive training on data transmittal, field safety, and engaging with gatekeepers and community members. Interviewer training (for both telephone and field interviewers) will include a combination of classroom style presentations, group and pairs practice, quizzes, and a final checkout interview before they can begin to work. Telephone center supervisors will monitor interviewers to provide feedback and retraining as necessary. Likewise, a field supervisor will "shadow" field interviewers in the field to ensure they are following data collection and data safeguarding protocols and procedures and will also provide feedback and retraining as necessary.

Prior to launching the CATI survey we will first use a vendor to append telephone numbers, including landlines and cellphone numbers, to each of the non-responding addresses in our sample. Recent experience with samples in large metropolitan areas have resulted in telephone matches for 50-70% of the sample. Non-responding households for which we are able to obtain a telephone or cell phone number will be routed to RAND SRG's telephone center for phone follow-up. We propose to make up to seven attempts (on different days of the week and at different times of day) to reach a household. Non-responding households for which we are unable to obtain a telephone number or households with an invalid or non-working telephone number or who fail to complete an interview after seven attempts will be routed to the field for in-person follow-up. We propose to make up to four in-person attempts to complete an interview with a household. In consultation with STO and based on the overall survey response rate, the response rates for specific subgroups of interest, and the available budget, we will evaluate whether making additional field attempts and mailing one last survey reminder letter and/or hardcopy survey to non-responding households makes sense.

3.1.1. Subtask 1.5: Analyze Survey Data

After data collection is complete and the final disposition of all sample members is determined (e.g., completed survey, refused survey, sampled housing unit is vacant, etc.), we will clean and recode all variables, and where appropriate create composite measures based on multiple items. We will multiply impute missing values due to item nonresponse using a flexible, non-parametric imputation model. Next, we will create sampling weights that incorporate non-response adjustments for outcomes of interest. We anticipate that these weights will incorporate unequal sampling probabilities (through the survey design) and entropy-balancing assisted nonresponse weights which allow weighted sample moments (i.e., means and variances) of covariates to match population values.

Upon completion of data cleaning, weighting, and imputation, we will produce descriptive statistics for all key items for the combined FDIC-RAND survey and for the RAND survey separately. Where the data permit, we will present the results separately for key sub-groups defined by race/ethnicity, age, gender, level of education, and nativity. These analyses will be included in the final report. In addition, some of the parameters from the FDIC survey and the combined FDIC-RAND survey will be used as inputs to the other tasks.

3.2. Task 2: Landscape of Banking Options

From traditional banking (national banks, regional banks, credit unions) to alternative institutions, Californians have a wide landscape of available banking options. Yet, in many cases these options leave key gaps in challenges for Californians. Account minimums, overdraft fees, and historical redlining are among the many barriers leading many to remain un/underbanked. For the un/underbanked, alternative institutions (e.g., check-cashing services, prepaid cards, mobile money apps) provide partial, and often harmful, solutions. Task 2 seeks to provide a comprehensive overview and market analysis of the landscape of banking options available to Californians To inform the CalAccount Program development, Task 2 specifically seeks to understand how existing options from traditional and alternative financial services contribute to key gaps and challenges for un/underbanked Californians.

To assess the current banking landscape, Task 2 will be undertaken across six subtasks:

- Subtask 2.1: Identify Available Banking Services to the Un/Underbanked
- Subtask 2.2: Document the Prevalence of Overdraft Fees, Minimum Balance Requirements, and Monthly Fees
- Subtask 2.3: Assess the Role and Effects of ChexSystems
- Subtask 2.4: Determine the Costs of Alternative Options
- Subtask 2.5: Investigate the Presence and Effectiveness of Private Sector Competitors
- Subtask 2.6 Examine the Effects of Historical Redlining on Current Landscape

We provide an overview of each of these subtasks below.

Subtask 2.1: Identify Available Banking Services to the Un/Underbanked

In describing the landscape of banking options available for un/underbanked populations in California, we will first identify existing services offered in the state by private actors. This will both reduce potential for redundancies in any new state programs and help ensure new services address shortcomings in the existing market structure. We will create a comprehensive list of both traditional and alternative banking options that exist within California. Traditional banking systems include:

- National Banks: National banks have a presence in California and offer a variety of services, including checking and savings accounts, loans, credit cards, and online banking.
- Regional Banks: Regional banks, such as Bank of the West, Union Bank, and City National Bank, have a significant presence in California and offer a range of financial products and services.
- Credit Unions: Credit unions, such as the California Credit Union and the San Francisco Federal Credit Union, offer membership-based banking services and often have lower fees and better interest rates than traditional banks.

Alternative financial services commonly provide financial services in addition to, or in lieu of, traditional banking systems. These may, for example, be used by those who are unable or unwilling to access traditional banking services due to a range of reasons including variable or low income, unstable housing, lack of credit history, mistrust in the banking system, and lack of documentation. While we will conduct a review of alternative financial services, examples include:

- Check-cashing services: Check-cashing services allow people to cash checks without a bank account. They often charge fees that are higher than traditional banks.
- Prepaid debit cards: Prepaid debit cards can be used like a debit card, but they are not linked to a bank account. They can be used to make purchases and withdraw cash and may have lower fees than traditional bank accounts.
- Community development credit unions: Community development credit unions are nonprofit financial institutions that provide financial services to underserved communities. They often offer lower fees and better interest rates than traditional banks.
- Payday loans: Payday loans are short-term loans that are usually due on the borrower's next payday. They are often used by people with low credit scores or no credit history and can carry high interest rates and fees.
- Mobile money apps: Mobile money apps allows people to send and receive money using a mobile device.
- Emerging technology: Financial technology (FinTech) and decentralized finance (DeFi) companies are poised to play an increasing role in alternative financial systems ranging from payment systems to AI-assisted buy now, pay later (BNPL) services to stable coins.

Our proposed methodologies for assessing the current banking landscape include i) leveraging survey results from Task 1 and existing surveys and administrative data of FDIC insured banks operating in California including Federal Financial Institutions Examination Council (FFIEC) call reports, the FDIC Survey of Unbanked and Underbanked Households, the Infogroup Historical Business database, The California Department of Financial Protection and Innovation's Licensee and Financial Service Providers database, and the CFPB Prepaid Products database; ii) using RAND's access to financial data services including Bloomberg and FactSet to analyze the FinTech market (and where possible, FinTech companies operating in California), and describing the potential benefits and harms of these services, particularly with respect to the under and un-banked populations; iii) and finally, by taking advantage of RAND's extensive access to leading academic journals and government reports, we will conduct a literature review for additional banking systems commonly used at-scale by the target population.

Subtask 2.2: Document the Prevalence of Overdraft Fees, Minimum Balance Requirements, and Monthly Fees

Overdraft fees and minimum balance requirements are common practices among many banks and financial institutions. Overdraft fees occur when an account holder spends more money than is available in their checking account, resulting in a negative balance. The bank may charge a fee for covering the overdraft amount or rejecting the transaction. According to a report by the Consumer Financial Protection Bureau, in 2019, U.S. consumers paid over $11 billion in overdraft and non-sufficient fund fees (CFPB, 2021). These fees can be a significant burden for low-income individuals. Minimum balance requirements are also common, particularly for checking accounts. A minimum balance requirement is the lowest amount of money a customer must keep in their account to avoid fees or other penalties. Additionally, overdraft fees and minimum balance requirements can be a burden for many consumers, particularly those with lower incomes and is a significant factor for many in remaining un/underbanked (Federal Deposit Insurance Corporation, 2022).

To understand and quantify the prevalence of these fees, our team will employ a mixed methods approach. Quantitative data analysis on both primary source data collected in support of this project (i.e., data collected in Task 1) as well as relevant existing data sources already known to team members will be used to estimate the prevalence of overdraft fees, minimum, balance requirements and monthly fees at institutions identified in Subtask 1. For a selected subset of banks within California, we will hand collect information on overdraft fees, minimum balance requirements, and monthly fees. Where possible, we will supplement these findings with qualitative interviews of subject matter experts in industry and governing agencies (e.g., the CFPB).

Additionally, we will explore the estimation of summary statistics on overdraft and in-sufficient funds fees as a percent of bank balance sheets in line with the CFPB methodology, paying particular attention to trends in these sources of revenue across different regions of California over time. Demographic and socioeconomic statistics on these regions will also be collected and studied to estimate the prevalence of our population of interest in these areas. Finally, we will analyze questions the survey in Task 1 and in the FDIC Survey of un/underbanked households relating to overdraft fees to understand the potential impact on financial participation.

Subtask 2.3: Assess the Role and Effects of ChexSystems

ChexSystems is a consumer reporting agency that collects information about consumers' checking and savings account histories, including account closures, overdrafts, and bounced checks. This information is used by banks and other financial institutions to evaluate a consumer's risk and determine whether to open a new account or approve a new application for credit. If a consumer has negative information in their ChexSystems report, such as a history of overdrafts or bounced checks, they may be denied a new bank account or be required to pay higher fees and interest rates. This could negatively impact the ability of some consumers to access traditional financial services.

To learn more about the role and impact of ChexSystems on access to financial services for the underbanked, we will conduct a systematic review of the literature and interviews subject matter experts who work with ChexSystems where possible.

Subtask 2.4: Determine the Costs of Alternative Options

Quantifying the cost of alternative banking services is crucial to identifying potential savings associated with adopting the proposed CalAccount policy (Task 5). Our team will estimate theses cost by analyzing data

sourced from the FDIC and those identified in Subtasks 2.1 and 2.2 above. Proposed analysis includes generating summary statistics for identified costs associated with alternative banking services and exploring how they may covary across the state and with demographic composition of the areas the institutions locate in. Additionally, we will conduct a literature review of any existing studies that also sought to identify costs unique to the alternative banking industry.

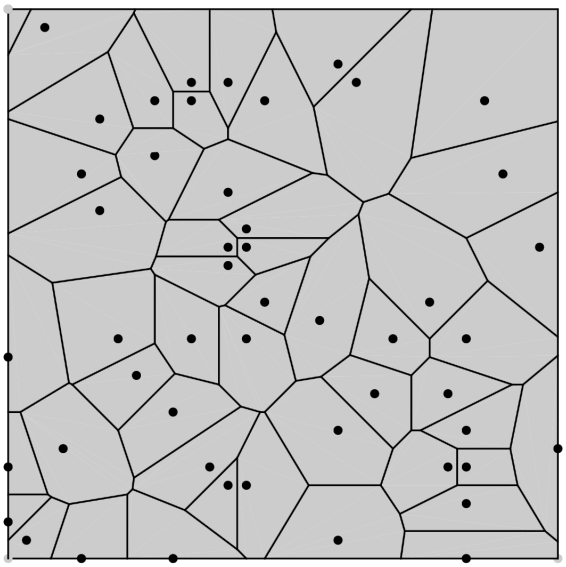
Should existing literature and data analysis prove insufficient for generating a clear description of these costs to California's underbanked population, there is potential for our team to collect primary data through this research. This would require identifying a representative sample of alternative banking service providers active in the state and gathering information by hand on the cost of their products.

Subtask 2.5: Investigate the Presence and Effectiveness of Private Sector Competitors

Evaluating the presence and effectiveness of private sector competitors of a potential state-administered financial service provider, will require a clear image of the banking landscape across California. In support of this effort, our team will generate a dataset consisting of detailed balance sheet information for all private banks and credit unions operating in the state. The primary source of these data is the FFIEC's public call report database, which covers commercial and savings banks nationwide.

We will then explore approaches for analyzing the geographic concentration across existing institutions. Specifically, this exploration will include constructing a dataset of FDIC Insured Banks using data resulting from Deposit Market Share Reports and the Summary of Deposits (see Federal Deposit Insurance Corporation (2023)) and geographic data on branch locations (see Homeland Infrastructure Foundation-Level Data (2023)). To combine geospatial locations with and bank attributes with GIS data to analyze the level of geographic concentration among these institutions' current branches, two perspectives will be explored. First, Voronoi tessellations (see image) can be combined with Census geospatial data (e.g., the American Community Survey and PL-94 datasets) to characterize key indicators such as the average distance to closest bank and average number of residents/branches by demographic characteristic. Second, available community boundaries and associated measures can be used to describe the number of branches per community and community characteristic. Finally, we will explore approaches for analyzing the financial "health" of these potential competitors, paying special attention to measures of profitability.

FIGURE 2 EXAMPLE GEOSPATIAL ANALYSIS OF BANK BRANCH LOCATIONS



This figure depicts an example Voronoi tessellation diagram which where communities are depicted as polygons and populations centers, or centroids, are depicted as dots. Overlaid with data on current bank branch locations (not depicted), the distance between branch locations and each population center provides an analytical approach for estimating distance to the closest branch while counts of branches in each polygon coupled with population data provide an approach to estimating the average number per resident. SOURCE: Image from Wolfram MathWorld (2023)

Subtask 2.6 Examine the Effects of Historical Redlining on Current Landscape

Historical redlining was a discriminatory practice in which financial services were refused to residents of certain neighborhoods based on their race, ethnicity, or other demographic characteristics. Redlining has contributed to the creation and perpetuation of wealth disparities between communities. By denying financial services to certain individuals, redlining forced them to rely on more expensive and less reliable forms of banking and credit. To understand the impact historical redlining has had on financial participation, the unbanked population, and the availability of banking services in California today, we will conduct a systematic review of the existing economic and sociological literature on redlining.

Furthermore, in a complementary data-driven analysis we will use the spatial dataset of FDIC insured bank branch locations constructed in Subtask 2.5 to analyze and visualize how the location and density of bank branches covaries with locations of historical redlining, rates of unbanked/underbanked individuals in California and neighborhood demographics including race and income.

3.3. Task 3: Cost-Benefit Analysis

To facilitate decisionmaking and comparison across alternative banking models, the cost-benefit analysis will be scoped around the Administrative Procedure Act (APA), which contains the statutes governing rulemaking procedures and standards for state agencies in California in Chapter 3.5 of the Government Code, section 11340 et seq., and relevant state and federal guidance on cost-benefit analysis. Such guidance includes, but is not limited to, the economic impact methodology laid out in Sections 2002-2003 of California Code of Regulations (CCR), Title 1, for major regulations. Although only a small number of California regulations trigger a Standardized Regulatory Impact Assessment (SRIA) in any given year, if required, an agency must

use a cost-benefit analysis in addition to an economic impact analysis methodology that also addresses the following (Title 1, Section 2003):

- The creation or elimination of jobs within the state
- The creation of new businesses or the elimination of existing businesses within the state
- The competitive advantages or disadvantages for businesses currently doing business within the state
- The increase or decrease of investment in the state
- The incentives for innovation in products, materials, or processes

The benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency. By adhering to regulatory guidelines, this task and Task 4 will provide analyses that can be used to fulfill SRIA requirements, should such an analysis eventually be required for the program. The proposed RAND team is well-equipped to work within the state's regulatory framework. RAND team members have led regulatory impact assessments of major regulations for federal and state agencies, including having conducted two recent Standardized Regulatory Impact Assessments (SRIAs) in the State of California (California Department of Industrial Relations, 2022; Metz, et al., 2021).

This cost-benefit task will consist of three subtasks:

- Subtask 3.1 Developing a cost-benefit matrix
- Subtask 3.2 Conducting a comparative evaluation of costs and benefits
- Subtask 3.2 Conducting a quantitative cost-benefit analysis using hypothetical scenarios

Subtask 3.1: Develop Cost-Benefit Matrix

This subtask will yield a cost-benefit framework that will guide a formal cost-benefit analysis. Our team will begin by developing a matrix framework to ensure that all relevant costs and benefits to all stakeholders are properly captured for subsequent analysis. The matrix will document stakeholders affected be the CalAccount Program, for example unbanked individuals who would open accounts, private banks who operate in the space, and the California state government. For each stakeholder, the matrix will identify categories of costs and benefits; for example, savings to account holders by avoiding check-cashing businesses, or increased savings to the state due to efficiencies in public benefit disbursement. This framework will consider the effects of a regulatory action on affected state and local government agency funds attributable to the action as well as the cost of enforcement and compliance by the rulemaking agency. The matrix will disaggregate up-front costs of standing up the program ("fixed costs") from operational costs that will depend on program uptake ("variable costs"). This will allow for more granular comparison of costs and benefits across scenarios.

The matrix will include stakeholders, costs, and benefits as listed in the RFP. Our team will use evidence gathered in Tasks 1 and 2 to identify additional costs and benefits, including the utilization of existing evidence from different sources such as surveys, interviews, prior research, and case studies in other countries or states. Finally, our team will determine what concrete evidence is necessary to quantify each cost or benefit; for example, a precise menu of fee structures, specific consumer demographic characteristics, or macroeconomic statistics at a certain geographic level. The resulting matrix will help guide the analyses in the subsequent subtasks.

Subtask 3.2: Conduct Comparative Evaluation of Costs and Benefits

This subtask will yield a comparative itemization of costs and benefits across different program scenarios, along the lines of CCR Title 1 § 2003 and contained in the Standard Form 399. The cost-benefit framework will describe the need for the proposed regulation and estimate an economic baseline that represents economic conditions in the state in the absence of the regulation. All regulatory alternatives will be compared against the established baseline. Like any cost-benefit analysis, this will require assumptions regarding certain inputs. In this particular case, many program details remain unknown and must be determined by policymakers (for example, funds spent on outreach and enrollment). California state agencies are required to evaluate at least two regulatory alternatives against a proposed regulation, all relative to the no regulatory action baseline. The regulatory alternatives should consider at least one alternative that is likely to achieve additional benefits beyond the proposed regulation and a next-best alternative that is less likely to achieve the same level of benefits as the proposed regulation. In this case, the CalAccount Program as described in the RFP would provide one alternative; other alternatives would be identified in prior tasks.

The costs and benefits of the CalAccount Program will depend on the ultimate enrollment, which is unknown and could depend on policy choices made in light of our team's analysis. To provide a standardized comparison of costs and benefits under different policy decisions, the team will devise hypothetical enrollment scenarios that will draw in part on our understanding of those most likely to enroll per the survey data in task 1. This approach to cost-benefit analysis has been used in the past when the regulatory environment is sufficiently uncertain. For example, the task leader (Dr. Marrone) previously led a cost-benefit analysis for a federal regulation comparing scenarios based on the size of the regulated population, a parameter that could be chosen by the regulating agency (Chang, et al., 2022). For CalAccount, levels of enrollment are determined partly by program characteristics, so the hypothetical scenarios will represent policy alternatives that yield different enrollment outcomes.

We will consult with STO to determine which program characteristics are of interest for our hypothetical scenarios. For example, such alternatives could be "low," "medium," and "high" levels of outreach to prospective consumers. The numeric definition of "high" versus "low" levels of outreach would then be based on evidence from prior subtasks. To the extent necessary, the team will then adapt the cost-benefit matrix for each CalAccount Program scenario. This customization is necessary because various policy decisions may result in different costs or benefits for different stakeholders. For example, a high-outreach scenario may involve participation from local financial institutions, whereas another scenario would not; that would mean private entities bear costs in some scenarios but not others.

The team will determine which costs and benefits are relevant for each scenario, and gather evidence to compare each factor across scenarios. All cost and benefit inputs will be based on reasonable assumptions or numerical data from prior tasks, as well. All assumptions will be carefully documented and justified by the research team. The team will seek, when possible, concrete and quantifiable costs (e.g., numeric inputs measured in U.S. dollars); however, given that some program details will be as-yet-unknown, the team will focus on *comparative* magnitudes of costs and benefits within and across alternatives. To the extent that there is considerable uncertainty in the magnitude of certain costs and/or benefits, the analysis will discuss these uncertainties and may present sensitivity analyses using a plausible range of estimates or simulation (e.g., Monte Carlo) to detail potential impacts of the regulation. This will yield an ordering of scenarios (from highest to lowest) for each stakeholder and cost cell of the matrix.

The ultimate desirability of one scenario over another will depend on the comparative costs and benefits, as well as the priority placed on each program outcome, particularly with regard to distributional effects and how the effects are distributed over time. For example, high fixed costs may be acceptable if a scenario also

maximizes enrollment. The comparative analyses in this subtask will therefore guide decisionmakers in thinking about the pros and cons of important program decisions, by offering a straightforward way to compare the resulting costs and benefits. The analysis will provide a direct comparison of the cost-effectiveness of each regulatory alternative, including the difference between each alternative and the proposed regulation. The analysis will also consider disparate impacts when feasible, including how the effects of the regulation are distributed, for example, by industry, income, race, sex, or geography.

As an example of the use case, decisionmakers will be able to see across scenarios which one is likely to generate the largest increase in savings for consumers; or the largest efficiency gains in stimulus disbursement; or the smallest loss in revenue to existing alternative lending institutions. Comparing within scenarios will also be useful: it could show whether revenue is likely to outweigh direct costs to the state; or whether enrollment in rural areas will be higher than urban areas.

Subtask 3.3: Conduct Quantitative Cost-Benefit Analysis Using Hypothetical Scenarios

Building on the comparative assessment in Subtask 3.2, the team will evaluate the relative net benefits (i.e., benefits net costs) and disparate impacts for each scenario. This assessment will account for future economic uncertainty (such as statewide economic growth and measures of financial risk) to calculate costs and benefits of each program alternative relative to the baseline case. The analysis may rely on the California Department of Finance's economic and demographic baseline projections, where applicable, or more stylized forecasts. To account for economic uncertainty, the team will leverage macroeconomic forecast data and commonly-used risk estimation models to assess broader economic impacts and financial risk. Again, to facilitate comparisons across alternatives, the analyses will be based on stylized scenarios. We will use forecast data to identify reasonable "high" versus "low" GDP growth rates for California, for example.

Next, we will implement risk models to estimate possible losses during an economic downturn. Financial risk is typically estimated using default simulations based on detailed market data; since we will not know the precise types and amounts of CalAccount investment activities, these simulations too will be based on well-documented assumptions for each economic growth/enrollment scenario. The actual methods will depend on the investment activities that are recommended as revenue-generating activities in other tasks. For example, if CalAccount generates revenue only from historically "safe" assets like U.S. treasuries, then a computationally complex default risk simulation would not be appropriate, but a measure of interest-rate risk such as modified duration may be appropriate (see, for example, California Debt & Advisory Commission, 2008, for recommendations on when to use modified duration).

These scenario-based estimates will provide a standardized way for decisionmakers to compare costs and benefits across program alternatives. Standardization provides a way to determine policy priorities in highly varying economic conditions and with program alternatives that may "look" very different in practice. For example, the findings might suggest that in a high-economic-growth situation, high levels of outreach can generate high enrollment with a low cost-benefit ratio; but in a low-growth situation, that same level of outreach might have a cost-benefit ratio that is orders of magnitude larger.

In our final report to STO, we will describe the various tradeoffs inherent in each program alternative, as they relate to each scenario. The descriptions will help guide decisionmakers, who will need to weigh such tradeoffs when choosing a single program design to implement among considerable economic uncertainty.

3.4. Task 4: Impact Analysis

Task 4 will study how the CalAccount Program could potentially affect different outcomes utilizing existing literature, results from previous tasks, and secondary data analysis. The focus of Task 4 is on understanding the impacts of the CalAccount Program on the outcomes of low-income families, disparities by race and ethnicity, disparities by urban and rural status, public safety, and banks. Task 4 will consist of 5 subtasks:

- Subtask 4.1 Estimate how participation in the CalAccount Program impacts disparities
- Subtask 4.2 Estimate immediate savings to low-income families by demographic groups
- Subtask 4.3. Describe potential longer run benefits to low-income families by demographic groups
- Subtask 4.4 Investigate potential impact on public safety
- Subtask 4.5 Investigate potential impact on banks

With the exception of Subtask 4.4, the rest of the subtasks build upon each other, and therefore, the timeline is designed to reflect the interdependence of these subtasks. The timeline also reflects the fact that although most subtasks rely on each other, some of the work for the subtasks can occur simultaneously (e.g., reviewing literature, creating data analysis files). Below are more details about each subtask.

Subtask 4.1: Estimate How Participation in the CalAccount Program Impacts Disparities

There are clear disparities in the likelihood of being un/underbanked across different demographic groups. In 2021, un/underbanked rates were documented to be higher among those with lower income, less education, and among racial-ethnic minorities (Board of Governors of the Federal Reserve System 2022). Moreover, working-age households with a disability and single-mother households experience higher unbanked rates (Federal Deposit Insurance Corporation 2022). There are also statistically significant differences by gender within race groups. For example, Hispanic women have been shown to be significantly less likely to be both un/underbanked than Hispanic men (Bogan and Wolfolds 2022). The opposite is true for Black adults with Black women being statistically significantly more likely to be both un/underbanked than Black men (Bogan and Wolfolds 2022). In contrast, White men and White women have been shown to have similar likelihoods of being un/underbanked (Bogan and Wolfolds 2022). A study investigating reasons for why disparities in unbanked rates exist found that group characteristics explained just under half of the disparity in unbanked rates between Black individuals and White individuals, and about half of the disparity in unbanked rates between Hispanic individuals and White individuals, suggesting that inequalities in access to the banking systems are a driving factor for these disparities (Creamer and Warren 2022). Consequently, it is important to study how the CalAccount might affect financial access across different demographic groups to understand its implications for reducing disparities.

The CalAccount Program may impact demographic groups differently depending on how participation in the program varies across these groups. The analysis will estimate how disparities by race and ethnicity and disparities between urban and rural locations are impacted as a result of the CalAccount Program. This task will utilize existing survey data and the RAND survey conducted in Task 1 to estimate how un/underbanked rates would change by demographic characteristics under each enrollment scenario considered in Task 3 to determine the program's potential impact on disparities.

Subtask 4.2: Estimate Immediate Savings to Low-Income Families by Demographic Groups

As described in Subtask 4.1, certain demographic groups are overrepresented among the un/underbanked population, including low-income families, minorities, and those with low levels of education. Moreover, the un/underbanked population disproportionately uses alternative financial services such as check cashing, payday loans, and pawn shops (Federal Deposit Insurance Corporation 2022). Participating in the CalAccount Program would eliminate the need for low-income families to use these types of services, and consequently, create immediate savings to these participating households.

The analysis for Subtask 4.2 would consist of three steps. The first step is to use existing survey data, such as the FDIC National Survey of Un/underbanked households, to infer the probability that future CalAccount participants currently use nonbank transactions or credit products and services. This step will be completed for each CalAccount Program enrollment scenario considered in Task 3. The second step is to review the literature and policy documents to estimate the fees, when possible, associated with alternative financial services. The third step is to impute these fees to potential CalAccount Program participants to estimate the amount of total savings and, if feasible, show how these savings vary across demographic groups.

Subtask 4.3: Describe Potential Longer Run Benefits to Low-Income Families by Demographic Groups

Subtask 4.3 will explore potential longer run benefits from participating in the CalAccount Program. There will be two lines of effort in this subtask. The first line of effort is to connect the amount of immediate savings estimated in Subtask 4.2 to the vast literature that estimates the benefits from cash transfer programs. The immediate savings from participating in the CalAccount Program are akin to a cash transfer for low-income families. This task will review the literature on cash transfers to provide an inventory of the potential ways that experiencing immediate savings from the CalAccount Program could benefit low-income families. For example, the earned income tax credit, which is a means tested federal tax credit based on taxable earnings, has been shown to have long-term benefits by increasing the likelihoods that child recipients complete high school, attend college, and complete college as well as increasing future earnings and the likelihood of working among child recipients (Bastian and Michelmore 2018; Manoli and Turner 2018). Another example comes from the literature studying the effects of stimulus payments. Studies examining survey evidence on the 2008 stimulus payments found that almost 50 percent of stimulus payments were used to pay off debt and 18 percent were put into savings (U.S. Bureau of Labor Statistics 2015). These examples demonstrate that the potential benefits from participating in the CalAccount Program can be far reaching and impact longer term outcomes and future generations.

The second line of effort is to review the existing literature and policy documents on the benefits of financial inclusion and disadvantages of using alternative financial services. Participating in the CalAccount Program both provides banking and avoids the need for using alternative financial services. Some benefits to being banked include having savings for short-term emergencies, wealth building, and building a positive credit history (Birkenmaier and Fu 2016). Alternative financial services, particularly payday lending, have been linked to greater difficulty paying mortgage, rent and utilities (Melzer 2011).

The results from both lines of effort will provide additional information for potential ways that the CalAccount Program could benefit its participants in the long run beyond the effects on disparities in rates of un/underbanked estimated in Subtask 4.1 and the immediate effects on savings estimated in Subtask 4.2.

Subtask 4.4: Identify Potential Impact on Public Safety

Subtask 4.4 will investigate the potential impact of the CalAccount Program on public safety. Payday lending, which are small loans with high interest rates, have been linked to increased crime (e.g., Kubrin et al. 2011; Lee, Gainey, and Triplett 2014). A study focused on Los Angeles, California found that the presence of fringe banks, including check cashers and payday lenders, were correlated with higher crime levels (Kubrin and Hipp, 2016). This subtask will draw from this literature to describe the potential for the CalAccount Program to improve public safety by reducing low-income families' reliance on alternative financial services.

Subtask 4.5: Identify Potential Impact on Banks

Subtask 4.5 will describe the potential impact of the CalAccount Program on banks. This subtask will review existing literature and utilize the analysis from previous subtasks and tasks, when appropriate, to describe the potential impact of the CalAccount Program on future bank customers, potential benefits and risks to participating banks, and opportunities to partner with other institutions. When possible, this task will draw from lessons learned by similar types of programs or accounts as the CalAccount Program. In consultation with the STO, this task may also explore opportunities to engage with representatives of community banks, BankOn institutions, public banks and/or other relevant subject matter experts to get their perspectives on the proposed CalAccount Program.

3.5. Task 5: Operations Assessment

Task 5 will conduct a comprehensive assessment of the operation of the CalAccount Program, from its day-to-day operations to mid- and long-term planning. This task will draw on the findings and recommendations of tasks 1-4, review additional literature and regulations specific to operational questions, analyze banking sector data, and conduct interviews with subject matter experts to evaluate the feasibility and merit of the program by highlighting best practices, potential challenges, and associated recommendations. The focus of this task is to identify ways to optimize the components and hierarchical elements of the program to maximize its feasibility and increase its chances of success. We will address key questions on operational feasibility through the following 7 subtasks:

- Subtask 5.1 Assess the Feasibility of Proposed Structure
- Subtask 5.2 Provide Modifications to Proposed Structure to Ease Burden
- Subtask 5.3 Structure of the Process of Participating Without a Photo ID
- Subtask 5.4 Assess the Feasibility of Board Requirements
- Subtask 5.5 Inform Program Outreach to Encourage Enrollment
- Subtask 5.6 Identify Appropriate Regulatory Structure for each Component
- Subtask 5.7 Identify Appropriate Governance for Public-Private Partnership

Subtask 5.1: Assess the Feasibility of Proposed Structure

The CalAccount Program, as outlined in Government Code 100104(a)(1), encompasses a well-defined set of goals and characteristics. These include objectives such as maximizing participation, establishing geographically diverse mechanisms for accessing funds, and implementing a secure mobile platform. In Subtask 5.1, we seek to assess the feasibility of the proposed structure by analyzing findings from Tasks 1-4, reviewing relevant literature, conducting interviews with subject matter experts (SMEs), and analyzing banking sector data.

Our team will use results from Task 1 alongside analysis of FDIC and SCF surveys of un/underbanked to assess consumer perceptions and preferences and the feasibility of maximizing participation. To understand the feasibility of achieving the proposed CalAccount Program characteristics, we will leverage findings and data from Task 2 analysis of the current market. For example, by building on the geospatial analysis of FDIC insured bank branch locations in Task 2, we intend to identify needs for achieving the stated goals of robust and geographically diverse access to account funds and account management tools. Where necessary, previously collected data can be augmented with supplementary data from Bloomberg and FactSet with geospatial enhancement. Additionally, we will augment the market analysis in Task 2 with a survey of similar, but non-financial, institutions to identify similar programs and best practices. Finally, we will use findings from Tasks 3 and 4 to identify potential cost implications and potential impacts/participation associated with the proposed structure.

Subtask 5.1 will result in a summary of which components care feasible as proposed, and which would require further modifications.

Subtask 5.2: Provide Modifications to Proposed Structure to Ease Burden

The findings of Subtask 5.1 will help us individually assess the feasibility of each proposed component in CalAccount. Then, for the components with feasibility challenges, we will apply methods like logic modeling and hierarchy trees to examples to identify modifications that achieve the fundamental objectives of the CalAccount Program. Where relevant, we will explore options for maximizing efficiency across proposed structures and ensuring malleability over time to meet new economic, legal, and technological developments.

Subtask 5.3: Structure the Process of Participating Without a Photo ID

In the 2021 FDIC National Survey of Unbanked and Underbanked Households, 11.6 percent of respondents cited a lack of required personal identification (ID) as a reason for not having a bank account (Federal Deposit Insurance Corporation, 2022). The proposed CalAccount Program stipulates that individuals should be able to open accounts without government-issued photo identification (ID) and without permanent housing while maintaining an age minimum of 14 years without a cosigner or guarantor.

To identify best practices for achieving the proposed Program goals, a literature review will be conducted to identify a set of current solutions FinTech and DeFi services (e.g., Venmo, CashApp, Affirm) that do not require photo ID or permanent housing along with non-financial examples (e.g., California voting requirements. Additionally, all financial services must manage risks stemming from compliance, money laundering, and illicit transactions. Shifts in identity verification may impact these risks. We will review current regulatory requirements on industry standards including Anti-Money Laundering (AML) and Know Your Customer (KYC) requirements along with a corresponding literature review. Where possible, we will supplement this review through discussions with SMEs.

Furthermore, building on the findings of Task 2, we will analyze the market for existing solutions while reviewing the state of technological solutions for identity verification. Specifically, we intend to explain any potential regulatory risk stemming from identity verification requirements while evaluating future changes in technology (e.g., artificial intelligence (AI) aided identity verification) that could enhance feasibility and efficiency. Finally, we will carefully consider the consequences of any challenges to feasibility along with any proposed modifications discussed in Subtask 5.2.to the goals of achieving maximum participation.

Subtask 5.4: Assess the Feasibility of Board Requirements

A well-functioning board is essential to the success of the CalAccount Program and its effective governance. The proposed Program outlines a set of requirements for board participation. In Subtask 5.4, we will consider the feasibility of the proposed structure and requirements for achieving Program goals. First, we will identify necessary qualifications for expertise, experience, and backgrounds for board participation, By evaluating executive boards at institutions of similar missions, other financial institutions, interviewing successful boards, and compiling evidence from the literature on institutional leadership, we will examine factors that influence related boards (e.g., industry trends, regulatory environments, and organizational culture), as well as best practices such as Environmental, Social, and Governance (ESG) principles, and racial and equity inclusion. Second, we will engage management teams from organizations we identified as operating similar programs or have similar missions to understand the specific challenges and strategies for a program like CalAccount. Our analysis will encompass an assessment of the risk tolerance and missions of these organizations to inform our design of board requirements that reflects the program's objectives in prudent and sustainable operations.

Subtask 5.5: Inform Program Outreach to Encourage Enrollment

In Subtask 5.5, we build on the work of the previous tasks, specifically the work of Task 1, to inform an outreach program to encourage maximum participation of the targeted un/underbanked population in California. We will assess current practices in unconventional banking services and identify the advantages of the CalAccount Program. Given that many of the barriers to banking relate to cost, one of the main areas we will focus on is cost as a leading attraction for enrollment in the CalAccount Program. To do so, we will (1) synthesize data from Tasks 1-4 and compile cost advantage of the CalAccount Program in categories such as fees, services that are of particular interest to the un/underbanked population, geographic access, and the ease of use of its platform; (2) analyze and compile the needs and the barriers to banking from the un/underbanked through findings from Task 1 and to identify targets for program outreach to different subpopulations in California; (3) review geospatial data constructed in Task 2 to identify geographic areas without current banking access in need of program outreach; and (4) review lessons learned from outreach efforts during the COVID-19 pandemic to maximize vaccine access in communities with low access and trust in health institutions. Additionally, within (3), we intend to explore modeling the state of California as a contact graph, where graph-based optimization methods can be used to identify potential node locations that identify optimal locations relevant to banking equity and access (note: this analysis will leverage the geospatial analysis introduced in Subtask 2.5). Using lessons learned, we seek to create a roadmap for a successful outreach program that can target the specific needs of its intended audience for enrollment.

Subtask 5.6: Identify Appropriate Regulatory Structure for Each Component

In Subtask 5.6, we seek to identify an appropriate regulatory structure for each component of the proposed CalAccount Program. To do so, we will (1) conduct a review of relevant academic literature on regulatory structure, policy documents, and regulatory requirements (e.g., FDIC requirements); (2) identify a set of successful and unsuccessful cases of regulatory structures for financial institutions and institutions with similar goals identified in prior subtasks; and (3) interview SMEs, where needed, to inform our assessment of needs for regulatory structure. We will synthesize findings, identify best practices, and introduce recommendations.

Subtask 5.7: Identify Appropriate Governance of Public-Private Partnership

The CalAccount Program will benefit from effective collaborations between the public and private sectors. This subtask develops recommendations for an appropriate governance structure that will define, establish, and maintain these collaborations. Specifically, we will discuss rules, practices, roles, and responsibilities in public-private partnership (PPP) to achieve accountability to the CalAccount board and proposed goals. To do so, we will (1) conduct a literature review of the PPP governance structures to examine important elements of such partnerships decision-making process, legal obligations, risk transfer, public engagement mechanisms and feedback loops, cost sharing, and information management; (2) with a focus on financial partnerships, build on similar cases identified in Subtasks 5.1-5.6 to identify challenges and lessons learned; and (3) from representative cases that are of particular relevance for the CalAccount PPP, summarize their features and illustrate how they fulfil or fail to fulfil the purpose of the partnership. Where feasible, we intend to engage with potential CalAccount PPP members to discuss program requirements to further support findings and recommendations.

4. References

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ATTACHMENT 1: REQUIRED ATTACHMENT CHECKLIST

Complete this checklist to confirm the items in your proposal. Place a check mark or "X" next to each item that you are submitting to the State. For your proposal to be responsive, all required attachments must be returned. This checklist should be returned with your proposal package also.

	Attachment #	Attachment Description
X	Attachment 1 -	Required Attachment Checklist
X	Attachment 2 -	Proposal/Proposer Certification
X	Attachment 3 -	Minimum Qualifications Certification
X	Attachment 4 -	Proposer References
X	Attachment 5 -	Resumes of Key Personnel
X	Attachment 6 -	Cost Proposal Worksheet
X	Attachment 7 -	Payee Data Record (STD. 204)
X	Attachment 8 -	Darfur Contracting Act Certification
X	Attachment 9 -	Iran Contracting Act Certification
X	Attachment 10 -	Contractor Certification Clauses (CCC 04/2017)
X	Attachment 11 -	California Civil Rights Laws Certification
X	Attachment 12 -	Bidder Declaration (GSPD-05-105)
N/A	Attachment 13 -	Small Business or Microbusiness Preference*
N/A	Attachment 14 -	Non-Small Business or Microbusiness Preference*
N/A	Attachment 15 -	Commercially Useful Function Evaluation*
N/A	Attachment 16 -	DVBE Participation Requirements*
N/A	Attachment 17 -	Target Area Contract Preference Act (TACPA)*

*If Applicable

ATTACHMENT 2: PROPOSAL/PROPOSER CERTIFICATION

ATTACHMENT 2

PROPOSAL/PROPOSER CERTIFICATION

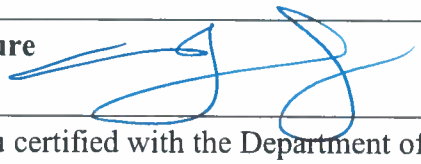
This Proposal/Proposer Certification must be signed and returned along with all the "required attachments" as an entire package with original signatures. The proposal must be transmitted in a sealed package in accordance with RFP instructions.

Do not return the RFP nor the "Sample Agreement" at the end of this RFP.

A. Place all required attachments behind this certification.

B. The signature affixed hereon and dated certifies compliance with all the requirements of this proposal document. The signature below authorizes the verification of this certification.

An Unsigned Proposal/Proposer Certification
May Be Cause For Rejection

1. Company Name The RAND Corporation	2. Telephone Number (310) 393-0411	2a. Email ContractsTeam@rand.org
3. Address 1776 Main Street, PO Box 2138, Santa Monica, CA 90407-2138		
Indicate your organization type: 4. ☐ Sole Proprietorship	5. ☐ Partnership	6. ☒ Corporation
Indicate the applicable employee and/or corporation number: 7. Federal Employee ID No. (FEIN) 95-1958142	8. California Corporation No. 227537	
9. Indicate applicable license and/or certification information:		
10. Proposer's Name (Print) Michael Januzik	11. Title Vice President and Chief Financial Officer	
12. **Signature** 	13. Date 5/17/23	

14. Are you certified with the Department of General Services, Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS) as:

a. California Small Business Yes ☐ No ☒
If yes, enter certification number: _____

b. Disabled Veteran Business Enterprise Yes ☐ No ☒
If yes, enter your service code below: _____

NOTE: Proof of Certification is required to be included if either of the above items is checked **"Yes"** and will be verified.

Date application was submitted to OSDS, if an application is pending:

ATTACHMENT 3: MINIMUM QUALIFICATIONS CERTIFICATION

ATTACHMENT 3

MINIMUM QUALIFICATIONS CERTIFICATION

The company certifies that it fulfills the minimum qualifications outlined in Section B of Request for Proposals (RFP) No. SA000004-23.

On behalf of The RAND Corporation,
(Company Name)

I certify that said company, including any and all subcontractors, complies with the Minimum Qualifications set forth in Section B of RFP No. SA000004-23.

(Authorized Signature)

RAND Corporation

(Company Name)

Michael Januzik

(Print Name)

5/17/23

(Date)

Vice President and Chief Financial Officer

(Title)

ATTACHMENT 4: PROPOSER REFERENCES

Reference 1			
Name of Organization	California Department of Finance		
Street Address 1021 O Street, Suite 3110	**City** Sacramento	**State** CA	**Zip** 95814
Contact Person Walter Schwarm		**Telephone No.** (916) 323-4086	
Dates of Service May 2019 - September 2021		**Value or Cost of Service** $4,999,289	
Brief Description of Service Provided			
Evaluation of the 2020 Census in California: The California Housing and Population Sample Enumeration: To inform the state about the accuracy of the 2020 Census, RAND undertook a survey of approximately 25,000 households across 173 blocks in the state. RAND produced a comprehensive report detailing the findings from this survey.			

Reference 2			
Name of Organization	California Department of Social Services		
Street Address 744 P Street	**City** Sacramento	**State** CA	**Zip** 95814
Contact Person Michael Billingsley		**Telephone No.** (916) 653-7264	
Dates of Service June 2014 – June 2020		**Value or Cost of Service** $9,638,368	
Brief Description of Service Provided			
Evaluation of the California Work Opportunity and Responsibility to Kids (CalWORKs) Program, SB 1041: To inform the state about the effectiveness of policy reforms to the CalWORKs program, RAND undertook a multi-method study that included survey collection and analysis, analysis of administrative data, interviews, and focus groups. RAND produced a comprehensive series of reports detailing the findings from these different study components.			

Reference 3			
Name of Organization	California Department of Industrial Relations, CHSWC		
Street Address 1515 Clay Street, 17th Floor	**City** Oakland	**State** CA	**Zip** 94612
Contact Person Eduardo Enz, Director, DIR		**Telephone No.** (510) 286-7083	
Dates of Service May 2021 – June 2022		**Value or Cost of Service** $299,959	
Brief Description of Service Provided			
Impacts of COVID-19 Claims and SB 1159 Presumptions of Compensability on the California Workers' Compensation System Study: CHSWC commissioned RAND to (1) evaluate the overall impacts of COVID- 19 claims on California's workers' compensation system, (2) evaluate the overall impacts of COVID-19 claims on California's workers' compensation indemnity benefits, medical benefits, and death benefits, including			

differences in the impacts across differing occupational groups, and (3) assess the overall and cost impacts of the frontline worker and outbreak presumptions created by SB 1159 on California workers' compensation system. RAND used a mixed-methods (qualitative-quantitative) approach to evaluate the overall effects of COVID-19 claims on the workers' compensation system and on the payment of workers' compensation benefits, as well as analyzed the effects of the different presumptions for COVID-19 established by SB 1159 and describe patterns of COVID-19 claim filing and claim outcomes by industry and occupation.

ATTACHMENT 5: RESUMES OF KEY PERSONNEL

Resumes for the key personnel proposed in Section 2.2 Key Personnel follow this page.

ROBERT BOZICK
PROJECT MANAGER

RAND CORPORATION

QUALIFICATIONS SUMMARY

Robert Bozick is a senior demographer at the RAND Corporation. His research focuses on the effects of economic strain on labor force and education outcomes, with a particular focus on linkages between school, work, and health across the life course. Bozick has over 20 years of experience designing and administering surveys, analyzing survey data, and using longitudinal data to address public policy issues in education, labor, and population. He has particular expertise in the design and analysis of surveys administered to hard-to-study populations. Recently, for the State of California's Department of Social Services, Bozick led a longitudinal survey of 1,500 low-income families to understand their experiences with poverty and the labor force. Bozick's research has been supported by the National Institutes of Health, the National Science Foundation, the Department of Education's Institute of Education Sciences, the U.S. Department of Justice's Bureau of Justice Assistance, the California Department of Finance, the California Department of Social Services, the New York City Mayor's Office, the Spencer Foundation, the Peterson Foundation, the ECMC Foundation, and the Community Foundation for Greater New Haven. His research has been featured in over 100 news outlets, including National Public Radio, The New York Times, TIME Magazine, The Washington Post, The Wall Street Journal, and U.S. News and World Report. From 2014 to 2018 Bozick was the associate director of RAND Labor and Population, and from 2020 to 2022 Bozick was a Senior Fellow at Rice University's Kinder Institute for Urban Research.

EDUCATION

Ph.D.	2005, Johns Hopkins University, Sociology
M.A.	2001, University of Maryland, Sociology
B.A.	1999, Ohio University, Sociology

PROFESSIONAL EXPERIENCE

Senior Demographer, RAND Corporation	2015–present
Demographer	2010–2015
Research Scientist, Academy for Educational Development	2009–2010
Research Scientist, RTI International	2005–2009

RELEVANT PROJECT EXPERIENCE

California Housing and Population Sample Enumeration, Client: New York City Mayor's Office (05/2019 - 10/2022); Role: Principal investigator; Tasks: Managed a team of approximately 50 people and wrote up the final report and to present to the client for this first-ever replication study of a decennial census. Study included the enumeration of 25,000 households across 173 blocks in the state in the weeks immediately following the 2020 Census.

Evaluation of New York City's Scholars at Work Program, Client: New York City Mayor's Office (07/2016 – 09/2018); Role: Principal investigator; Tasks: Managed a team of three researchers and conducted an analysis of outcomes using administrative data for this multi-method evaluation of a school-to-work program aimed at connecting high school seniors with employers in the city.

Science, Technology, Engineering, and Mathematics (STEM) Workforce Trends Following Postsecondary Degree Attainment, Client: American Petroleum Institute (11/2016 – 12/2017); Role: Co-principal investigator; Tasks: Analyzed the relationship between occupational credentials and employment outcomes using the Current Population Survey for this analysis of the relationship between STEM college degree receipt and employment outcomes.

The California Socioeconomic Survey: Evaluation of California's TANF Program, Client: California Department of Social Services (06/2014 – 06/2018); Role: Co-principal investigator; Tasks: Co-led RAND's Survey Research Group to design, collect, and analyze data from a three-wave longitudinal survey of 1,500 families receiving TANF benefits in the state for this multi-method evaluation of reforms to California's Temporary Assistance to Needy Families (TANF) program.

Preparing Local Talent for Jobs in the Sub-baccalaureate STEM Economy: The Marcellus ShaleNET Program and the Emerging Energy Sector, Client: National Science Foundation (10/2015 – 01/2019); Role: Principal investigator; Tasks: Managed a team of five researchers and oversee the administration and analysis of surveys administered to employers, college department chairs, and college instructors, as well as the collection and analysis of administrative data for this multi-method study of how colleges and job training providers respond to the skills needs of employers in the emerging energy sector in Appalachia.

Career and Technical Education as a Foundation to Support Postsecondary Transitions in STEM for Students with Disabilities, Client: National Science Foundation (09/2012 – 03/2014); Role: Co-principal investigator; Tasks: Analyzed data from the National Longitudinal Survey of Youth for this analysis of the relationship between participation in Career and Technical Education (CTE) and postsecondary outcomes among youth with disabilities.

Beyond Academic Math and Science: The Role of Applied Engineering and Computer Science in the High School Curriculum, Client: National Science Foundation (07/2011 – 06/2014). Role: Principal investigator; Tasks: Analyzed data from the Education Longitudinal Study of 2002 for this analysis of the relationship between participation in Career and STEM high school courses and postsecondary outcomes among youth.

RELEVANT SELECTED PUBLICATIONS

Bozick, Robert, "An Increasing Disinterest in Fatherhood Among Childless Men in the United States." Journal of Marriage and Family 85, (2022): 293-304.

Baird, Matthew, **Robert Bozick**, and Melanie Zaber, "Beyond Traditional Educational Credentials: The Labor Market Returns to Licenses and Certifications." IZA Journal of Labor Economics 11, (2022): 04.

Bozick, Robert, "Number of Sexual Partners and Serum Testosterone Levels in a Population-Based Sample of Unpartnered Heterosexual Men." *Andrology* 10, (2022): 944-950.

Bozick, Robert, "Population Structure and Excess Mortality Among Young Men in the United States." *Biodemography and Social Biology*. 67 (2022): 405-7.

Muchow, Ashley and **Robert Bozick**. 2022, "Exploring the Role of Legal Status and Neighborhood Social Capital on Immigrant Economic Integration in Los Angeles." *Demographic Research* 46, (2022): 1-36.

Bozick, Robert, "Ambient Air Temperature, Air Quality, and the Timing of Excess Mortality Among Young Men in the United States." *Human Ecology* 50, (2022): 373-383.

Bozick, Robert, 2021. "Is There Really a Sex Recession? Period and Cohort Effects on Sexual Inactivity Among American Men, 2006 – 2019." *American Journal of Men's Health* 15, (2021): 1-10.

Anderson, Drew, Matthew Baird, and **Robert Bozick**, "Who Gets Counted as STEM? A New Approach for Measuring the STEM Workforce and its Implications for Identifying Gender Disparities in the Labor Market." *International Journal of Gender, Science, and Technology* 13, (2021): 254-279.

Bozick, Robert, "The Effects of Hurricane Harvey on the Physical and Mental Health of Adults in Houston." *Health & Place 72*, (2021): 102697.

Bozick, Robert, "Age, Period, and Cohort Effects Contributing to the Great American Migration Slowdown." *Demographic Research* 45, (2021): 1260-1296.

Bozick, Robert "The Utility of Self-Rated Health in Population Surveys: The Role of Bodyweight." *Population Health Metrics* 19, (2021): 23.

Bozick, Robert, Drew Anderson, and Lindsay Daugherty. 2021. "Patterns and Predictors of Postsecondary Re-Enrollment in the Acquisition of Stackable Credentials." *Social Science Research* 98, (2021): 102573.

Bozick, Robert, Wendy Troxel, and Lynn Karoly. "Housing Insecurity and Sleep Among Welfare Recipients in California." *Sleep* 44, no. 7 (2021).

Bozick, Robert, Narayan Sastry, and Airan Liu. 2020. "Health in Early Adolescence and Paid Employment." *Youth & Society* 54, (2020): 347-371.

Strully, Kate, **Robert Bozick**, Ying Huang, and Lane Burgette. 2020. "Employer Verification Mandates and Infant Health." *Population Research and Policy Review* 39, (2020): 1143-1184.

Bozick, Robert, Christopher Doss, Gabriella Gonzalez, and Kyle-Siler Evans. 2020. "Occupational Credentials for Jobs in the Sub-Baccalaureate Economy: The Case of the Emerging Energy Sector in Ohio." *AERA Open* 6, (2020): 1-17.

Bozick, Robert, Jennifer Steele, Susan Turner, and Lois Davis. “Does Providing Inmates with Education Improve Post-Release Outcomes? A Meta-Analysis of Correctional Education Programs in the United States.” *Journal of Experimental Criminology* 14, (2018). 389-429.

Bozick, Robert, Sinduja Srinivasan, and Michael Gottfried. "Do high school STEM courses prepare non-college bound youth for jobs in the STEM economy?." *Education Economics* 25, no. 3 (2017): 234-250.

Bozick, Robert, Alessandro Malchiodi, and Trey Miller. "Premigration School Quality, Time Spent in the United States, and the Math Achievement of Immigrant High School Students." *Demography* 53, no. 5 (2016): 1477-1498.

Bozick, Robert, Trey Miller, and Matheu Kaneshiro. "Non-Citizen Mexican Youth in US Higher Education: A Closer Look at the Relationship between State Tuition Policies and College Enrollment." *International Migration Review* 50, no. 4 (2016): 864-889.

Steele, Jennifer, **Robert Bozick**, Lois Davis, and Susan Turner. “Education for Incarcerated Juveniles: A Systematic Review of What Works.” *Journal of Education for Students Placed at Risk,* no. 21 (2016): 65-89.

Gottfried, Michael A., and **Robert Bozick**. "Supporting the STEM pipeline: Linking applied STEM course-taking in high school to declaring a STEM major in college." *Education Finance and Policy* 11, no. 2 (2016): 177-202.

Gottfried, Michael A., **Robert Bozick**, Ernest Rose, and Ravaris Moore. "Does career and technical education strengthen the STEM pipeline? Comparing students with and without disabilities." *Journal of Disability Policy Studies* 26, no. 4 (2016): 232-244.

Bozick, Robert, Gabriella Gonzalez, and John Engberg. "Using a merit-based scholarship program to increase rates of college enrollment in an urban school district: The case of the Pittsburgh Promise." *Journal of Student Financial Aid* 45, no. 2 (2015): 2.

Bozick, Robert, and Angela Estacion. "Do student loans delay marriage? Debt repayment and family formation in young adulthood." *Demographic Research* 30 (2014): 1865.

Bozick, Robert, and Trey Miller. "In-state college tuition policies for undocumented immigrants: Implications for high school enrollment among non-citizen Mexican youth." *Population Research and Policy Review* 33, no. 1 (2014): 13-30.

Gottfried, Michael A., **Robert Bozick**, and Sinduja Srinivasan. "Beyond Academic Math." *Teachers College Record* 116, no. 7 (2014): 1-35.

Bozick, Robert, and Benjamin Dalton. "Balancing career and technical education with academic coursework: The consequences for mathematics achievement in high school." *Educational Evaluation and Policy Analysis* 35, no. 2 (2013): 123-138.

Austin, Erika Laine, and **Robert Bozick**. "Sexual orientation, partnership formation, and substance use in the transition to adulthood." *Journal of youth and adolescence* 41, no. 2 (2012): 167-178.

Bozick, Robert, and Stefanie DeLuca. "Not making the transition to college: School, work, and opportunities in the lives of American youth." *Social Science Research* 40, no. 4 (2011): 1249-1262.

Bozick, Robert, Karl Alexander, Doris Entwisle, Susan Dauber, and Kerri Kerr. "Framing the future: Revisiting the place of educational expectations in status attainment." *Social forces*88, no. 5 (2010): 2027-2052.

Bozick, Robert, "Job opportunities, economic resources, and the postsecondary destinations of American youth." *Demography* 46, no. 3 (2009): 493-512.

Alexander, Karl, **Robert Bozick**, and Doris Entwisle. "Warming up, cooling out, or holding steady? Persistence and change in educational expectations after high school." *Sociology of Education* 81, no. 4 (2008): 371-396.

Bozick, Robert, "Making it through the first year of college: The role of students' economic resources, employment, and living arrangements." *Sociology of education* 80, no. 3 (2007): 261-285.

Planty, Mike, **Robert Bozick**, and Michael Regnier. "Helping because you have to or helping because you want to? Sustaining participation in service work from adolescence through young adulthood." *Youth & Society* 38, no. 2 (2006): 177-202.

Bozick, Robert, "Precocious behaviors in early adolescence: Employment and the transition to first sexual intercourse." *The Journal of Early Adolescence* 26, no. 1 (2006): 60-86.

Bozick, Robert, and Stefanie DeLuca. "Better late than never? Delayed enrollment in the high school to college transition." *Social Forces* 84, no. 1 (2005): 531-554.

Bozick, Robert, and Keith MacAllum. "Does Participation in a School-to-Career Program Limit Educational and Career Opportunities?." *Journal of Career and Technical Education*18, no. 2 (2002): 30-46.

LANE BURGETTE
SENIOR STATISTICIAN

RAND CORPORATION

QUALIFICATIONS SUMMARY

Lane Burgette is a Senior Statistician at RAND. His research focuses on causal inference, survey statistics, and Bayesian methods suited for applications in the health and social sciences. Recent projects have included working with the California Department of Finance (along with Dr. Bozick) as lead statistician and project co-director on a large-scale evaluation of the 2020 Census in California. He has also worked with the Centers for Medicare and Medicaid services as project director and statistician to develop survey methodologies for potential future data collection to support Medicare's rate-setting processes. He has developed Bayesian methods for analyzing Medicare claims data and understanding correlates of value in health care and written on the use of Bayesian nonparametric techniques in several applied settings. He redesigned and expanded the TWANG software package (Toolkit for Weighting and Analysis of Nonequivalent Groups) for causal inference and currently maintains that software. Dr. Burgette's methodological publications have included research on methods for missing data, measurement discrepancies, and causal inference.

EDUCATION

Postdoc	2011, Duke University, Statistical Science
Ph.D.	2009, University of Wisconsin, Madison, Statistics
M.S.	2006, University of Wisconsin, Madison, Statistics
B.A.	2003, Whitman College, Mathematics

PROFESSIONAL EXPERIENCE

Senior Statistician	06/2018-present
Statistician	06/2014-06/2018
Associate Statistician	09/2011-06/14
RAND Corporation	Pittsburgh, PA (formerly Arlington, VA)
Postdoctoral Associate	09/2009-08/2011
Duke University	Durham, NC

RELEVANT PROJECT EXPERIENCE

Practice Expense Methodology and Data Collection Research (08/2016 – 08/2021)**;** *Client*: CMS**;** *Title, Level of Responsibility*: Co-Principal Investigator, Management**;** *Tasks*: Co-led the project and over-all project management; led the process to elicit feedback from CMS on prioritizing particular analyses; oversaw much of the project's data acquisition, management, and analysis; communicated findings to CMS; and led writing of the report.

Development of a Model for the Valuation of Work Relative Value Units (9/12-12/16)**;** *Client*: CMS**;** *Title, Level of Responsibility*: Co-Investigator, Task Lead**;** *Tasks*: Served as lead statistician and led tasks such as developing methods to transform billed anesthesia time into "skin-to-skin" time for surgical procedures, which, in turn were used to update intraservice times for thousands of procedures using a Bayesian framework.

Evaluation of the Medicare Imaging Demonstration (09/2012-12/2014)**;** *Client*: CMS**;** *Title, Level of Responsibility*: Co-Investigator, Task Lead**;** *Tasks*: Led the statistical analyses and assisted with writing and producing the final report mandated by Congress.

Linking Provider Cost Curves and Care Delivery Practices: Implications for VBP (10/13-8/17)**;** *Client*: National Institutes of Health**;** *Title, Level of Responsibility*: Co-Investigator

Tasks: Led the development of new Bayesian methods for analyzing the cost, quality, and value of health care, as well as developed methods to design a sampling frame that allows for stratification with respect to categories of provider cost curves.

Evaluation and Research Services Relating to the Connections to Care Initiative (9/15 – 10/20)**;** *Client*: Mayor's Fund to Advance New York City**;** *Title, Level of Responsibility*: Co-Investigator, Task Lead; *Tasks*: Served as lead statistician and led the development of the statistical aspects of the study design, as well as many of the quantitative analyses gathered.

Quantifying the Resources Used in Furnishing Global Surgical Services (5/16 – 5/18)**;** *Client*: CMS**;** *Title, Level of Responsibility*: Co-Investigator, Task Lead**;** *Tasks*: Served as the lead statistician on the RAND team, developing aspects of the survey design as well as interfacing with the external survey contractors.

RELEVANT PUBLICATIONS (SELECTED)

Burgette, L.F., J.J Escarce, S.M. Paddock, M.S. Ridgely, W.G. Wilder, D. Yanagihara, C.L. Damberg (2019). "Sample selection in the face of design constraints: Use of clustering to define sample strata for qualitative research." In press at *Health Services Research.*

Paddock, S.M., C.L. Damberg, D. Yanagihara, J.L Adams, **L.F. Burgette**, J.J. Escarce (2017). "What role does efficiency play in understanding the relationship between cost and quality in physician organizations?" *Medical Care*, 55(12): 1039-45.

Setodji, C.M., D.F. McCaffrey, L.F. Burgette, D. Almirall, B.A. Griffin (2017). "The right tool for the job: Choosing between covariate balancing and generalized boosted model propensity scores." *Epidemiology*, 28(6): 802-811.

Burgette, L.F. and S.M. Paddock (2017). "Bayesian two-part models for rolling admission therapy groups." *Psychological Methods*, 22(4): 725-742.

Burgette, L.F., A.W. Mulcahy, A. Mehrotra, T. Ruder, and B.O. Wynn (2017). "Estimating surgical procedure times using anesthesia billing data and operating room records." *Health Services Research*, 52(1): 74--92.

Uscher-Pines, L., R. Malsberger, **L. Burgette**, A. Mulcahy, and A. Mehrotra (2016). "Impact of telemedicine on access to dermatology care among Medicaid enrollees." *JAMA Dermatology*, 152(8): 905--912.

Hussey, P.S., J.W. Timbie, **L.F. Burgette**, N.S. Wenger, D. Nyweide, K.L. Kahn (2015).

"Appropriateness of advanced diagnostic imaging ordering before and after implementation of a clinical decision support system." *Journal of the American Medical Association*, 313(21): 2181--82.

Mulcahy, A.W., B. Wynn, **L. Burgette**, and A. Mehrotra (2015). "Medicare's step back from global periods -- Unbundling postoperative care." *New England Journal of Medicine*, 372(15): 1385--1387.

Lee, C.I., D. Khodyakov, B.A. Weidmer, N.S. Wenger, J.W. Timbie, I. Brantley, **L.F. Burgette**, K.J. Leuschner, P.S. Hussey, and K.L. Kahn (2015). "Radiologists' perceptions of computerized decision support: A focus group study from the Medicare Imaging Demonstration Project." *American Journal of Roentgenology*, 205: 947--955.

Setodji, C.M., D.F. McCaffrey, **L.F. Burgette**, D. Almirall, B.A. Griffin (2017+). "The right tool for the job: choosing between covariate balancing and generalized boosted model propensity scores." In press at *Epidemiology*.

Burgette, L.F. and S.M. Paddock (2016+). "Bayesian two-part models for rolling admission therapy groups." Forthcoming in *Psychological Methods*.

Griffin, B.A., D. McCaffrey, D. Almirall, **L. Burgette**, C. Setodji (2016+). "Chasing balance and other recommendations for improving nonparametric propensity score models." In press at the *Journal of Causal Inference*.

Parast, L., D.F. McCaffrey, **L. Burgette**, F. Hoces de la Guardia, D. Golinelli, J. Miles, B.A. Griffin (2016+). "Optimizing the variance-bias trade-off in the TWANG package for estimation of propensity scores." In press at *Health Services and Outcomes Research Methodology*.

Neelon, B., F. Li, **L.F. Burgette**, and S.E. Benjamin Neelon (2015). "A spatiotemporal quantile regression model for emergency department expenditures." *Statistics in Medicine*, 34(17): 3081--3103.

Griffin, B.A., R. Ramchand, D. Almirall, M. Slaughter, **L.F. Burgette**, and D.F. McCaffrey. (2014) "Assessing the causal effects of cumulative treatment episodes for adolescents." *Drug and Alcohol Dependence*, 136: 69--78.

McCaffrey, D.F., B.A. Griffin, D. Almirall, M.E. Slaughter, R. Ramchand, and **L.F. Burgette** (2013). "A tutorial on propensity score estimation for multiple treatments using generalized boosted models." *Statistics in Medicine*, 32(19): 3388--3414.

Burgette, L.F. and J.P. Reiter (2013). "Multiple-shrinkage multinomial probit models with applications to simulating geographies in public use data." *Bayesian Analysis*, 8(2): 453--478.

Burgette, L.F. and J.P. Reiter (2012). “Nonparametric Bayesian multiple imputation for missing data due to mid-study switching of measurement methods." *Journal of the American Statistical Association*, 107(498): 439--449.

Burgette, L.F. and E.V. Nordheim (2012). “The trace restriction: An alternative identification strategy for the Bayesian multinomial probit model." *Journal of Business and Economic Statistics*, 30(3): 404--410.

Burgette, L.F. and J.P. Reiter (2012). “Modeling adverse birth outcomes via confirmatory factor quantile regression.” *Biometrics*, 68(1): 92--100.

Neelon, B., G.K. Swamy, **L.F. Burgette**, and M.L. Miranda (2011). “A Bayesian growth mixture model to examine gestational hypertension and birth outcomes.” Statistics in Medicine, 30(22): 2721--2735.

Burgette, L.F., J.P. Reiter and M.L. Miranda (2011). “Exploratory quantile regression with many covariates: An application to adverse birth outcomes.” *Epidemiology*, 22(6): 859--856.

Burgette, L.F. and J.P. Reiter (2010). “Multiple imputation for missing data via sequential regression trees.” *American Journal of Epidemiology*, 172(9): 1070--1076.

JESSIE COE
ASSOCIATE ECONOMIST

RAND CORPORATION

QUALIFICATIONS SUMMARY

Jessie Coe is a RAND associate economist trained in cutting-edge causal methodology with specialties in panel data methods, survey methods, and program evaluation. Her methodological work has considered issues of survey non-response, and program evaluation when the program is introduced in different places at different times and when program participants differ from non-participants. Dr. Coe's substantive interests focus on interventions for lower-income families. She conducted secondary analysis on large-scale public survey data merged with proprietary data provided by the Legal Services Corporation to study the impact of access to legal aid on divorce for low-income families (2018–2021). She has conducted primary data collection via survey methodologies to study the public's support for providing tax-funded financial strain, food security, and program use among Army families (2018–present). In previous work, Dr. Coe was part of a team tasked with the cost analysis of the rebuilding efforts following hurricane Maria (2018–2020). In ongoing work, Dr. Coe is the project manager and lead analyst studying Army marketing (2019–2024).

EDUCATION

Ph.D.	2019, University of Texas at Austin, Economics
M.A.	2013, University of South Florida, Economics
M.A.	2007, University of Southern California, Mathematics
M.A.	2007, University of Southern California, Applied Mathematics
B.A.	2004, Pomona College, Mathematics

PROFESSIONAL EXPERIENCE

Associate Economist, RAND Corporation	07/2019–present
Core Faculty, Pardee RAND Graduate School	07/2019–present
Instructor, University of Texas at Austin	Summer 2018

RELEVANT PROJECT EXPERIENCE

Army Marketing, Client: US Army *(*10/2019–06/2024, expected), Role: Analysis lead and project manager; Tasks: Oversees all analysis tasks, from data collection to writing up of final results. Manages team of seven members including programmers, statisticians, and economists. Team compiles multiple different data sources to estimate the return on investment and relative effectiveness of different Army marketing tactics.

Today's Army Spouse, Client: US Army *(*10/2018–present); Role: Investigator; Tasks: Helps design survey fielded to spouses of Army service members. The survey aims to learn about Army households' financial security, food security, employment opportunities and outcomes, program knowledge and program use, among other topics.

The Impact of Access to Legal Services on Divorce, Client: RAND Institute for Civil Justice (10/2018–10/2021); Role: Task lead; Tasks: Leads the analysis seeking to measure the impact of access to legal services on divorce outcomes for low-income households. The task involves merging multiple years of American Community Survey data into a state-level panel data set. Data from the Legal Services Corporation is then merged on based on service area geography. The resulting service area panel data set is used for analysis. Analysis includes fixed effect panel data models, difference in difference estimation, and permutation tests.

Improving Naloxone Access and Its Effect on Drug Abuse and Overdoses, Client: Center for Disease Control and Prevention (09/2018–09/2022); Role: Investigator; Tasks: Works on the theoretical model used in analysis. The standard difference in difference or more general event study model has been shown to give unexpected results when policies are implemented at different times. Furthermore, the standard models do not consider a data setup where you have many observations per panel unit, such as county level data in a state level panel data set. Developing a new method to estimate average treatment effects using panel data where implementation happens at different times and there are observations at a more granular level than the panel level.

Evaluation of NISL Advanced Certification System for Highly Effective Principals, Client: Department of Education (10/2015–09/2020); Role: Investigator; Tasks: Analyzed panel data from an RCT of an education intervention. Implemented a machine-learning technique in R to explore possible heterogeneities in the treatment effect.

Expert Analysis of FEMA Cost Estimate Development, Client: US Department of Homeland Security (06/2018–09/2020); Role: Investigator; Tasks: Used panel data to estimate the predicted impacts of a labor demand shock to economy-wide wages. To that end, I aided in both the theoretical development and the implementation in GAMS of a computational general equilibrium model.

Culture of Health Measures, Sentinel Communities and Monitoring Progress, Client: Robert Wood Johnson Foundation (03/20 – 02/23); Role: Investigator; Tasks: In this project, I provided technical support for the analysis of the survey data in Stata, and aided in communicating the results from the non-linear multinomial model to a general audience.

RELEVANT PUBLICATIONS

Coe, Jessie; Ramchand, Rajeev; Farmer, Carrie; Carman, Katherine Grace (2021) "American Perspectives on Veterans." RAND Corporation. RR-A1363-1

Aaron Strong, Jeffrey Wenger, Isaac Opper, Drew Anderson, Kathryn Edwards, Kyle Siler-Evans, **Jessie Coe**, and R.J. Briggs. 2021 "Review and validation of a FEMA cost estimation approach for FEMA-DR-4339: future price forecast curve for Puerto Rico." Santa Monica, CA: RAND RR-A222-25 and RR-A222-26.

Carra Sims, Thomas Trail, and **Jessie Coe**. 2020 "Predicting soldier retention from Army spouse characteristics and attitudes: soldering on with spouse support." Santa Monica, CA: RAND RR-A429-1.

Relevant Working Papers And Works In Progress

Jessie Coe, 2021 “Estimation of fixed effects models with missing covariate data, with an application to valuing local water quality,” Working paper.

Jessie Coe and David Powell. 2021 “A GMM approach to event study designs,” Work in progress.

NATALIE COX
ECONOMIST

RAND CORPORATION

QUALIFICATIONS SUMMARY

Natalie Cox is a Full Economist at RAND specializing in public economics and household finance topics. She received her BA from Stanford University in 2012, and her PhD in Economics from U.C. Berkeley in 2017. After completing a one-year post-doc at the Stanford Institute for Economic Policy Research, she worked as an Assistant Professor in the Bendheim Center for Finance at the Princeton University Economics Department. At Princeton she has taught multiple courses in corporate and behavioral finance, and published academic work in respected finance journals.

Natalie's research is primarily focused on understanding how individuals make investment and debt decisions, and how government intervention in consumer finance markets impacts these choices. Her work has analyzed government subsidies and regulations in the consumer banking, small business lending, retirement savings, and student loan markets in the United States. She has also worked extensively with large consumer datasets, including credit bureau data, tax return data, credit card transaction data, and loan performance data.

EDUCATION

Ph.D.	2017, University of California Berkeley, Economics
B.A.	2012, Stanford University, Economics

PROFESSIONAL EXPERIENCE

Full Economist, RAND Corporation	09/2022–present
Assistant Professor of Economics, Princeton University	09/2018–present
Post-Doctoral Scholar, Stanford Institute for Policy Research	09/2017–08/2018

RELEVANT PROJECT EXPERIENCE

Financial Inclusion Across the United States, (2020-2023); Co-led a study that used IRS income tax data to infer bank account and retirement account participation rates across the income distribution and geography. This effort led to a publicly available dataset that reports bank account and retirement account participation rates at a zip code, income quintile level, as well as an academic paper. It was especially focused on correctly and comprehensively capturing rates of the unbanked, and understanding the reasons why certain segments of the population remain underserved.

Market Power in Small Business Lending, 2018-2023; Co-led a study that studied the impact of government loan guarantees through the Small Business Administration on access to credit for small business owners. Analyzed loan level data to see how interest rates and credit access varied geographically and with the concentration of the regional commercial banking market.

Research Fellow, JP Morgan Chase Institute (2017-2020); Assumed position as an Institute Research Fellow to produce both academic work and institute reports focusing on household finance and the impact of student loan repayment on consumption. Work uses the JMPCI transaction level data on individuals checking, credit, and savings data, as well as credit bureau data.

Debt, Human Capital Accumulation, and the Allocation of Talent, 2019-2023; Co-led a study with Titan Alon and Arlene Wong that used panel microdata to understand the impact of student debt on individuals' occupational choices and earnings throughout their lifecycle. The study found that credit-constrained individuals were more likely to choose occupations with front-loaded earnings profiles, and that this could be alleviated through programs like income-based repayment.

RELEVANT PUBLICATIONS

"Loan Guarantees and Credit Supply" joint with Olivia Kim & Constantine Yannelis. Journal of Financial Economics 2021

"Messaging and the Mandate: The Impact of Consumer Experience on Health Insurance Enrollment Through Exchanges" joint with Ben Handel, Jonathon T. Kolstad and Neale Mahoney, Papers & Proceedings, American Economic Review 2015

"Initial Impacts of the Pandemic on Consumer Behavior: Evidence from Linked Income, Spending, and Savings Data" Brookings Papers on Economic Activity, June 2020

"Market Power in Small Business Lending: A Two Dimensional Bunching Approach", with Ernest Liu and Daniel Morrison. Revise and Resubmit, Journal of Financial Economics 2022

JIM MARRONE — RAND CORPORATION

ECONOMIST

QUALIFICATIONS SUMMARY

Jim Marrone is an economist at the RAND Corporation and a faculty member at the Pardee RAND Graduate School and at Johns Hopkins University School of Advanced International Studies. He has methodological expertise in impact evaluations, risk modeling, cost-benefit analyses, and survey design. He has previously worked at federal government agencies to study bank risk and consumer financial behaviors. At RAND he has led or been involved in several impact evaluations and regulatory analyses, as well as studies of household financial distress and credit behaviors.

EDUCATION

Ph.D.	2017, University of Chicago, Economics
M.Sc.	2009, Barcelona Graduate School of Economics, Economics
B.S.	2008, University of Chicago, Mathematics

PROFESSIONAL EXPERIENCE

Economist, RAND Corporation	2021–present
Associate Economist	2017–2021
Professor of Policy Analysis, Pardee RAND Graduate School	2022–present
Adjunct Professor of Economics, Johns Hopkins SAIS	2019–present
Economist, Consumer Financial Protection Bureau	2019–2020
Senior Research Assistant, Federal Reserve Board	2009–2011

RELEVANT PROJECT EXPERIENCE

Financial Distress and Suicide in the Active Duty Military, Client: Defense Suicide Prevention Office (2021-2024)*;* Role: Principal investigator; Tasks: A multi-method evaluation of financial behaviors leading to suicide, including analyses of credit data and administrative personnel records, as well as case-level interviews of family members. As PI, duties include managing client relations, arranging data contracts, designing econometric analyses, and writing all reports and deliverables.

Credit Behaviors of Military Families During the COVID-19 Pandemic: A Proof-of-Concept, Client: United States Department of Defense (2020-2022); Role: Principal investigator; Tasks: Study of military family credit reports through the COVID pandemic. Demonstrated the utility of using administrative credit data to understand military family financial wellbeing. As PI, duties included negotiating data agreements, verifying data quality, overseeing econometric analyses, and writing final deliverables.

Credit Behaviors in U.S. Military Families, Client: Consumer Financial Protection Bureau, (2019-2020); Role: Lead researcher; Tasks: Conducted a comprehensive analysis of credit record data for active duty military members in comparison to civilians. Informed education program decisionmaking for Bureau's Office of Servicemember

Affairs. As Lead Researcher, validated data quality, designed analysis plan, implemented all analyses, and wrote final report.

Financial Outcomes and Early-Stage Alzheimer's Disease, Client: Assistant Secretary of Defense for Health Affairs (2017-2019); Role: Lead Programmer; Tasks: Led analysis of financial behaviors that predate Alzheimer's diagnoses, using longitudinal financial survey data linked to Medicare claims; designed the panel data analysis plan and handled all data cleaning and coding.

Measuring Risk of Systemically Important Financial Institutions, Client: Federal Reserve Board of Governors (2009-2011); Role: Task lead; Tasks: Led the development and implementation of automated system to run monthly systemic risk models of major financial firms, including: pulling financial market data, running simulations of bank defaults, creating inputs for report to Federal Reserve Governors.

Granularity Adjustment in Mark-to-Market Credit Risk Models, Client: Federal Reserve Board of Governors (2009-2011); Role: Team member; Tasks: Developed mathematical equations to extend a method for evaluating risk in banks' credit portfolios to a larger class of models used to comply with Basel II regulations, then implemented computer simulations to demonstrate method on synthetic portfolios.

Risk-Informed Analysis of TWIC Reader Requirements Client: United States Coast Guard (2020-2022). Role: Co-principal investigator: Tasks: For a regulatory analysis of a maritime security law, conducted a cost-benefit analysis that conformed to federal guidelines as prescribed by the Office of Management and Budget; oversaw data collection and analysis; wrote final report.

A Comprehensive Security Assessment of the TWIC Program, Client: United States Coast Guard. (2018-2020) Role: Task lead; Tasks: Led cost-benefit analysis of a maritime security law, conducted in conformance to federal guidelines as prescribed by the Office of Management and Budget.

RELEVANT SELECTED PUBLICATIONS

D. Schwam, **J. V. Marrone**, Veterans' Employment During Recessions, RAND Report PE-A1363-7, 2023.

J. C. Chang, **J. V. Marrone**, D. Metz, et al., Risk-Informed Analysis of Transportation Worker Identification Credential Reader Requirements, RAND Report RR-A1687-1, 2022.

J.V. Marrone, S. Carter, Debt and Delinquency After Military Service, Consumer Financial Protection Bureau research report, 2020

J.V. Marrone, S. Carter, Financially Fit? Comparing the Credit Records of Young Servicemembers and Civilians, Consumer Financial Protection Bureau research report, 2020.

H. Williams, K. van Abel, D. Metz, **J. V. Marrone**, et al., The Risk-Mitigation Value of the Transportation Worker Identification Credential: A Comprehensive Security Assessment of the TWIC Program, RAND Report RR-3096-DHS, 2020.

C. R. Gresenz, J. M. Mitchell, **J. V. Marrone**, H. J. Federoff, “Effects of Early-Stage Alzheimer’s Disease on Household Financial Outcomes,” Health Economics, 29(1):18-19, 2020.

T. Bollerslev, **J. V. Marrone**, L. Xu, H. Zhou, “Stock Return Predictability and Variance Risk Premia: Statistical Inference and Internal Evidence,” Journal of Financial and Quantitative Analysis, 49(3):633-661, 2014.

M. B. Gordy, **J. V. Marrone**, “Granularity Adjustment for Mark-to-Market Credit Risk Models,” Journal of Banking and Finance, 36(7):1896-1910, 2012.

ELIZABETH MARSOLAIS — RAND CORPORATION
PROJECT ROLE/POLICY ANALYST

QUALIFICATIONS SUMMARY

Elizabeth Marsolais has significant experience designing and implementing state-level pilot programs, evaluating state-level policy effort, conducting in-depth research on a wide range of topics, and providing project management and stakeholder engagement for large-scale projects involving multiple levels of governments and large groups of stakeholders.

EDUCATION

M.P.P.	2020, University of Southern California, Public Policy
B.A.	2013, University of California, Berkeley, Political Science

PROFESSIONAL EXPERIENCE

Policy Analyst, RAND Corporation 09/2022–present

Senior Policy Consultant, Aurrera Health Group 11/2020–05/2022

Legislative Analyst, California State Association of Counties 03/2016–05/2018

Associate Governmental Program Analyst, California State Treasurer's Office 09/2014–02/2016

Executive Fellow, Capital Executive Fellows Program 10/2013–08/2014

RELEVANT PROJECT EXPERIENCE

Monitoring Help Me Grow Western New York, Client: Ralph C. Wilson, Jr. Foundation (09/2022–present); Role: Policy Analyst; Tasks: Provide project management support including: tracking project deliverables, planning and facilitating meetings, and ensuring the project team stays on track to meet client expectations. Contribute to project evaluation analysis.

Developing a Patient Experience Measure, Client: Gordon and Betty Moore Foundation (09/2022–present); Role: Policy Analyst; Tasks: Provide project management support including: tracking project deliverables and milestones, planning and preparing for meetings, and ensuring the project team stays on track to meet client expectations. Contribute to project analysis.

Facilitating Teacher Learning, Client: National Science Foundation (10/2022–present); Role: Policy Analyst; Tasks: Provide project management support including: tracking project decisions and tasks, communicating with external project partners developing protocols, navigating internal project support processes.

Supporting Getting To Outcomes and Evaluability Assessments, Client: Federal Agency (10/2022–present); Role Provide project management support including: tracking project deliverables and budget, planning and facilitating meetings, reviewing draft deliverables and reports, and ensuring the project team stays on track to meet client expectations. Directly support one of the project evaluation tasks.

OASCN (ECHO ASP), Client: AHRQ (11/2022–present); Role: Policy Analyst; Tasks: Provide project management support including: tracking project deliverables and budget, managing scheduling and event planning processes, planning and facilitating meetings, communicating with external project partners, and ensuring the project team stays on track to meet client expectations.

Topic Nomination Development for PCORI-AHRQ Systematic Reviews, Client: PCORI (04/2023–present); Role: Policy Analyst; Tasks: Provide project management support including: tracking project deliverables, managing scheduling, planning and preparing for meetings, and ensuring the project team stays on track to meet client expectations.

Behavioral Health Policy Technical Assistance and Project Management, Client: Clients included the California Department of Health Care Services and several California County Behavioral Health Departments (11/2020–05/2022); Role: Senior Policy Consultant; Tasks: Drafted a variety of written products for and on behalf of clients, including research memos, policy analyses, stakeholder-facing reports, and slides; planned and facilitated internal and external meetings; independently researched and analyzed behavioral health policy issues, including financing requirements; provided project management on complex programs involving multiple stakeholders and levels of government.

Legislative Analysis, Client: California State Association of Counties (03/2016–05/2018); Role: Legislative Analyst; Tasks: Communicated policy and budget issues to a range of audiences through newsletters, comments to the California Legislature or Administration, and communications with specialized working groups; cprovided project management support for advocacy efforts; convened an internal technical committee of county staff on No Place Like Home; analyzed state legislative, budget, and regulatory proposals to determine their impact on county health and human services programs, including financial impacts.

Developing Pilot Programs: California Hub for Energy Efficiency Financing, Client: California State Treasurer's Office (09/2014–02/2016); Role: Associate Governmental Program Analyst; Tasks: Conducted policy research into financing options for energy efficiency financing programs; drafted program regulations; provided project management support through the emergency rulemaking process; engaged with stakeholders; independently led program training events.

Capital Executive Fellows Program, Client: California Delta Stewardship Council (10/2013–08/2014); Role: Executive Fellow; Tasks: Worked with technical staff to analyze policy issues and brief executive staff; presented legislative updates to the Council at monthly public meetings.

NICOLAS ROBLES
MATHEMATICIAN

RAND CORPORATION

QUALIFICATIONS SUMMARY

Nicolas Robles joined the RAND Corporation in February 2023 as a full mathematician. Prior to joining RAND, he was a quantum scientist at IBM specializing on quantum algorithms for financial services and investment banks, including machine learning, Monte Carlo simulations for derivative pricing, and portfolio optimization. He was also an assistant professor of mathematics at the University of Illinois at Urbana-Champaign. He worked in investment banking (JPMorgan Chase, Nomura, UBS and Bank of America Merrill Lynch) for over 7 years in 3 different countries (UK, Switzerland, and US). He specialized in fixed income and equity structuring and trading. He is also well versed in AI and ML techniques for anti-money laundering and Compliance, Basel III, Dobb-Frank act banking regulations as well as collateral posting. His website is: www.nicolasrobles.com

EDUCATION

Ph.D.	2015, University of Zurich, Mathematics
M.S.	2011, University of Cambridge, Mathematics
M.S.	2009, Imperial College London, Theoretical Physics
M.S.	2006, London School of Economics, Mathematics
B.S.	2005, Imperial College London, Mathematics

PROFESSIONAL EXPERIENCE

Full Mathematician, RAND Corporation	02/2023–present
Quantum Computational Scientist, IBM	12/2020–01/2023
Quantitative Analyst, Bank of America Merrill Lynch	07/2018–11/2020
J L Doob Research Assistant Professor, University of Illinois	08/2015–08/2018
Doctoral Student, University of Zurich	09/2011–07/2015
Hedge Fund Trader, UBS	09/2008–09/2011
Short Term Swaps Trader, Nomura International	11/2006–08/2007
Fixed Income Intern, JPMorgan Chase	07/2006–11/2006

RELEVANT PROJECT EXPERIENCE

AI and ML techniques for financial pattern detection, Client: Bank of America Merrill Lynch (01/2019–09/2019); Role: Data scientist; Tasks: Responsible for deploying Python scripts with latest ML and DL techniques to detect fraud, money laundering transactions.

RELEVANT PUBLICATIONS

S. Certo, A. Pham, **N. Robles**, A. Vlasic. 2023. “Conditional Generative Models for Learning Stochastic Processes.” *arXiv:2304.10382*.

D. Herman, R. Raymond, M. Li, **N. Robles**, A. Mezzacapo and M. Pistoia. 2023. "Expressivity of Variational Quantum Machine Learning on the Boolean Cube." *IEEE Quantum Engineering*, volume 4.

H. Alghassi, A. Deshmukh, N. Ibrahim, **N. Robles**, S. Woerner and C. Zoufal. 2022. "A variational quantum algorithm for the Feynman-Kac formula." *Quantum*, volume 6, 730.

PATRICIA TONG
FULL ECONOMIST

RAND CORPORATION

QUALIFICATIONS SUMMARY

Dr. Patricia Tong is a full economist at the RAND Corporation who utilizes both quantitative and qualitative methods to study how public policy affects household outcomes, particularly among low-income families, married couples, and the aging population. She has co-led and served as task lead on multiple projects funded by various federal government entities during her tenure at RAND. Prior to joining RAND, Dr. Tong was a financial economist at the US Department of Treasury for almost 7 years where she was responsible for microsimulation modeling, revenue projections, reviewing regulations and proposed legislation, and market analyses to understand how changes to tax policies would impact low-income populations. Dr Tong's research has been published in various journals including *American Economic Journal*: *Economic Policy*, *Health Economics*, *International Tax and Public Finance*, and *National Tax Journal*. She received her Ph.D. in economics from the University of California, San Diego and B.A. in economics and mathematics from New York University.

EDUCATION

Ph.D.	2010, University of California, San Diego, Economics
M.A.	2006, University of California, San Diego, Economics
B.A.	2004, New York University, Economics and Mathematics

PROFESSIONAL EXPERIENCE

Full Economist, RAND Corporation 02/2017-present

Financial Economist, US Department of the Treasury 08/2010-02/2017

RELEVANT PROJECT EXPERIENCE

Evaluating the Anti-Poverty Effects of the 2008 Stimulus (Conducted while at the US Department of the Treasury) (08/2010-02/2017); Role: Co-Lead; Tasks: Co-led a study and used quantitative analysis to estimate how receiving a cash transfer in the form of the 2008 stimulus payments via direct deposit payments and paper checks impacted the immediate and longer run economic well-being of low-income families.

How the Nontaxable Combat Pay Election Affects the Earned Income Tax Credit (Conducted while at the US Department of the Treasury) (08/2010-02/2017); Role: Co-Lead; Tasks: Used quantitative analysis to estimate how the nontaxable combat election affects the amount of EITC claimed among low-income military families.

Tracking EITC Qualifying Children Over Time (Conducted while at the US Department of the Treasury) (08/2010-02/2017); Role: Primary Lead; Tasks: Estimated how family formation changes among low-income families and the implications for tax credit claiming and economic well-being using administrative tax data.

Understanding How Marriage Tax Relief Policy Impacts Incentives to Work (Conducted while at the US Department of the Treasury) (08/2010-02/2017); Role:

Primary Lead; Tasks: Estimated how marriage tax relief policy affects marriage taxes and marginal tax rates of cohabiting couples using administrative tax data.

Estimating Tax Support for Families with Children (Conducted while at the US Department of the Treasury) (08/2010-02/2017); Role: Task Lead; Tasks: Used microsimulation models to estimate the effects of changing different low-income tax credits on the tax liability of low-income families.

Mortality Shocks and the Protective Role of Social Security's Survivors Insurance, Client: National Bureau of Economic Research (10/2017–09/2018); Role: Co-Principal Investigator; Tasks: Used administrative tax data to estimate the impact of Social Security Survivors benefits on the labor decisions and economic well-being of surviving widows.

A Framework for Integrating Family Caregivers into the Formal Care Team, Client: SeniorLink (8/2019–09/2020); Role: Co-Principal Investigator; Tasks: Co-led a project that utilized subject matter expert interviews and literature and policy reviews to develop recommendations on how to better integrate family caregivers into the formal care team.

RELEVANT PUBLICATIONS

Asch, Beth J., **Patricia K. Tong**, Lisa Berdie, and Michael G. Mattock, 2022. "Evaluation of Flexible Spending Accounts for Active-Duty Service Members," RR-1553-1.

Friedman, Esther M., and **Patricia K. Tong**, 2020. "A Framework for Integrating Family Caregivers in the Health Care Team." RR-A105-1.

Fadlon, Itzik, Shanthi Ramnath, **Patricia K. Tong**, and Lisa Cramer McKay, 2020. "Financial Life After the Death of a Spouse," Chicago Fed Letter, No. 438.

Lin, Emily Y. and **Patricia K. Tong**, 2017. "Using Administrative Tax Data to Estimate Work Participation and Earnings Elasticities of Married Couples," International Tax and Public Finance, 24(6): 997-1025.

Ramnath, Shanthi and **Patricia K. Tong**, 2017. "The Persistent Reduction in Poverty from Filing a Tax Return," American Economic Journal: Economic Policy, 9(4): 367-394.

Ackerman, Deena, Michael Cooper, Rachel Costello, and **Patricia Tong**, 2016. "Tax Support for Families with Children: Key Tax Benefits, Their Impact on Marginal and Average Tax Rates, and an Approach to Simplification," US Department of the Treasury, Office of Tax Analysis Working Paper 112.

Gleason, Suzanne and **Patricia K. Tong**, 2015. "Nontaxable Combat Pay Election and the Earned Income Tax Credit," 2015 IRS Research Bulletin: 207-215.

Lin, Emily Y. and **Patricia K. Tong**, 2014. "Effects of Marriage Penalty Relief Tax Policy on Marriage Taxes and Marginal Tax Rates of Cohabiting Couples," National Tax Association Proceedings from the 107th Annual Conference (November 2014).

Tong, Patricia K., 2014. "Tracking EITC Qualifying Children Over Time," National Tax Association Proceedings from the 107th Annual Conference (November 2014).

Lin, Emily Y. and **Patricia K. Tong**, 2012. "Marriage and Taxes: What Can We Learn From Tax Returns Filed by Cohabiting Couples?" National Tax Journal, 65(4): 807-826.

Kawano, Laura, Shanthi Ramnath, and **Patricia K. Tong**, 2012. "A Re-Balancing Act? Understanding Patterns in Refunds and Balances Due," National Tax Association Proceedings from the 105th Annual Conference (November 2012).

CONFERENCE PRESENTATIONS, SEMINARS, AND GUEST LECTURES

2023 University of Missouri; Western Economic Association International (WEAI) Annual Conference

2022 Office of the Chief of Naval Operations N1 Brown Bag; University of Missouri

2021 McCourt School of Public Policy, Georgetown University; University of Missouri; National Tax Association (NTA) Annual Meeting

2018 Michigan Retirement Research Center Researcher Workshop; WEAI Annual Conference; National Bureau of Economic Research (NBER) Retirement Research Consortium

2016 Colby College

2015 NBER Spring Public Economics Meeting; American Tax Policy Institute Conference; NTA Spring Symposium; IRS-Tax Policy Center Research Conference, NTA Annual Meeting

2014 NTA Annual Meeting

2013 Association for Public Policy Analysis and Management (APPAM) Annual Meeting; NTA Annual Meeting

2012 American Economic Association Meeting; NTA Spring Symposium, APPAM Annual Meeting; NTA Annual Meeting

2011 APPAM Annual Meeting; NTA Annual Meeting

2010 Population Association of America Annual Meeting

JESSIE WANG **RAND CORPORATION**
ECONOMIST

QUALIFICATIONS SUMMARY

Jessie Wang is a Full Economist at RAND Corporation. Her research studies the intersection of demographic trends, macroeconomic policy, and inequality. She has more than 10 years' experience in developing quantitative frameworks integrating macroeconomic theory and micro-level data to quantify effects of disparities and evaluate potential policy interventions. She was a NIH/NIA postdoctoral fellow in the study of aging, specializing in investigating the effect of population aging on time use allocation and household wellbeing through data-driven models. She was an assistant professor of Economics at Furman University, where she taught courses such as Money and Banking, Macroeconomic Theory, Economics of Aging, and Economics of Gender.

EDUCATION

Ph.D.	2017, University of California San Diego, Economics
M.A.	2015, University of California San Diego, Economics
B.A.	2012, Dickinson College, Economics and Mathematics (Double Major)

PROFESSIONAL EXPERIENCE

Full Economist, RAND Corporation 08/2022–present

NIH/NIA Fellow in the Study of Aging 08/2020–07/2022

Robert E. Hughes Assistant Professor, Furman University 08/2017–07/2020

Course: Introduction to Economics, Macroeconomic Theory, Money and Banking, Economics of Aging, Economics of Gender

RELEVANT PROJECT EXPERIENCE

Expanded Model and Tool to Assess Health System Preparedness for the Delivery of Alzheimer's Disease Therapies, *Client*: Genentech, Inc. (09/2022–09/2023*); Role*: Co-PI; Tasks: Led effort on system-level modeling of the U.S. healthcare system to evaluate its preparedness to deliver disease-modifying treatments for Alzheimer's Disease at the local, regional, and the national level.

RELEVANT PUBLICATIONS

Sarah E. Patterson, Ashley M. Tate, Yi-Ling Hu, **Jue Wang**, Robert F. Schoeni, HwaJung Choi. 2023. "The Social Cost of Providing Care to Older Adults With and Without Dementia." *The Journals of Gerontology: Series B*, 78, 71-80.

Jue Wang. 2021. "Hire or Care: The Effects of Aging Parents on Household Labor Supply." *Review of Economics of the Household*, 20, 921-954.

William K. Bellinger, **Jue Wang**. 2011. "Poverty, Place or Race: Causes of the Retail Gap in Smaller US Cities." *Review of Black Political Economy*, 38 (3), 253-270.

William K. Bellinger, **Jue Wang**. 2011. “Retail and Population Density in Smaller US Cities.” *Pennsylvania Economic Review, 18* (2), 53-70.

JONATHAN W. WELBURN — RAND CORPORATION

PRINCIPAL INVESTIGATOR

QUALIFICATIONS SUMMARY

Dr. Welburn is a researcher at RAND in the fields of computational economics and decision science, a faculty member at the Pardee RAND Graduate School, and a lead in the Pardee Tech + Narrative Lab. Dr. Welburn's research focuses on market failures covering topics including banking and racial wealth disparity, systemic risks, and financial crises. He has recently led several large studies including a Congressionally-mandated study on mitigating the use of forced labor, a study identifying and prioritizing systemically important entities in support of proposed federal policy, and a study evaluating policies for addressing the Black-white wealth gap. Notably, research teams led by Dr. Welburn have made use of large financial datasets, market analyses, and computational tools to provide novel insights on microfoundations of macroeconomic and financial challenges while producing policy insight for clients including the Department of Homeland Security, Office of the Secretary of Defense, the Air Force, and the Army. Dr. Welburn's research has been published in several RAND Reports, peer-reviewed academic journals, and news outlets including the LA Times, Wall Street Journal, New York Times, CNN, and NPR while his expertise on has been recognized as a contributor to the World Economic Forum on technology, innovation & systemic risk, a member of the Aspen Cybersecurity Group, an editorial board member at the journal Decision Analysis, a council member in the Decision Analysis Society, and a member of the executive council of the Society for Risk Analysis.

EDUCATION

Ph.D.	2016, University of Wisconsin, Madison, Decision Science and Operations Research. Minor: Economics.
B.S.	2010, University of Wisconsin, Madison, Industrial & Systems Engineering, Economics. Minor: Mathematics.

PROFESSIONAL EXPERIENCE

Researcher, RAND Corporation	08/2019–present
Associate Researcher	08/2016–08/2019
Professor of Policy Analysis, Pardee RAND Graduate School	2020–present
Visiting Researcher, Social Science Dept, University of Stavanger	2012
Graduate Research Fellow, University of Wisconsin	2010-2016

RELEVANT PROJECT EXPERIENCE

Systemic Risk in the Global Economy, Client: RAND Internal. (2021-2022). Role: Principal Investigator. Tasks: use large financial datafeeds to construct a global network of firm-to-firm financial and economic linkages; introduce machine learning methods for inferring missing data on global linkages; develop a theoretical model of the global economy at the firm-level and the potential for systemic risk; estimate model using

balance sheet data and inferred network of economic linkages; estimate the potential aggregate losses resulting from idiosyncratic shocks, sector concentration, and the variance in aggregate volatility by sector.

Measuring the Impact of Efforts to Combat Forced Labor, Client: Department of Homeland Security (2022-2023). Role: Principal Investigator; Tasks: A congressionally mandated study seeking to evaluate the impact of policy changes on the presence of goods made with forced labor in US supply chains includes a logic model of policy impacts, an assessment of global forced labor trends, a model of the economic impact of forced labor enforcement, and an analysis of impacts on firms, markets, and consumers.

Identifying & prioritizing systemically important entities, Client: Department of Homeland Security (2022-2023). Role: Principal Investigator; Tasks: Continuation of prior study on "systemically important critical infrastructure" through the advancement of methods for identifying entities with the potential to pose systemic risk due to their size, interconnectedness, or lack of substitutability; large scale data analysis of financial measures and non-financial measures of systemic importance; advancement of methods for modeling risk in interconnected networks; advanced development of interactive tools to aid decisionmaking; introduction of methods for conserving equity in identifying important entities to vulnerable populations.

Narrowing the Black-white wealth gap, Client: RAND Internal. (2020-2022). Role: Principal Investigator; Tasks: assess the historical origins of the racial wealth gap; use panel data on income and wealth to decompose the wealth gap; identify proposed policy solutions for narrowing the racial wealth gap from reparations to baby bonds; introduce computational models of intergenerational wealth with heterogenous shocks; test and compare the impact of potential policies on the long-term wealth gap.

Systemic Cyber Risk and Disclosure, Client: RAND Institute for Civil Justice (2021-2023). Role: Principal Investigator; Tasks: text analysis of annual financial statements to uncover disclosed losses resulting of cyber incidents; analysis of data on cyber incident losses; estimations of reveled preference on materiality thresholds; discussions with SEC stakeholders over proposed recommendations.

Systemically important critical infrastructure, Client: Department of Homeland Security (2022-2023). Role: Principal Investigator; Tasks: ,develop methodology for identify entities with the potential to pose systemic risk; large scale data-driven analysis measuring entity financials, market share, supply chain centrality, and sector influence using large financial vendor datasets; rapid prototyping of tool to aid decision-makers in creating a prioritized list of systemically important entities.

Mitigating Industrial Base Risks. Client: Army (2021-22). Role: Principal Investigator; Tasks: analyze asset balances of US Army Working Capital Fund (essentially, an internal bank for managing procurement and sustainment costs) in response to recent shocks; assess markets in the domestic industrial base of US firms;

introduce a methodology for “stress-testing” supply chains and in response to financial distress, demand shocks, and large scale disruptions.

Systemic Risk in the Broad Economy, Client: RAND Internal. (2019-2020). Role: Principal Investigator; Tasks: develop a firm-level model of the US economy; extract data from historical SEC 10-K filings to construct a network of customer-supplier linkages; develop a computational model of the US economy at the level of firms; estimate the potential impact of idiosyncratic shocks to firms and the potential to drive aggregate losses; evaluate the potential systemic risk across sectors.

RELEVANT PUBLICATIONS, WORKING PAPERS, AND COMMENTARY

Pedro Nascimento de Lima, **Jonathan W. Welburn**, Jonathan Lamb, Osonde Osoba. Forthcoming. “Modeling America’s Racial Wealth Disparities: Mathematical models help chart pathways for closing racial wealth gaps.” *Notices of the American Mathematical Society*. (Forthcoming).

John Bordeaux, **Jonathan W. Welburn**, et al., Forthcoming, “Identifying and Prioritizing Systemically Important Entities.” *RAND Report*. (Forthcoming).

Osonde A. Osoba, **Jonathan W. Welburn**, Jonathan Lamb, Pedro Nascimento de Lima, Krishna B. Kumar 2020. “Exploring Intergenerational Wealth Transfer Dynamics with Agent-Based Models.” *RAND Working Paper Series*. (2023)

Jonathan W. Welburn. 2023. “Financial Panic in the Age of Digital Banking and Social Media.” *The RAND Blog*. (2023).

Jonathan W. Welburn, Pedro Nascimento de Lima, Krishna B. Kumar, Osonde A. Osoba, and Jonathan Lamb. 2022 “Overcoming Compound Racial Inequity: Policies and Costs for Closing the Black-White Wealth Gap.” *RAND Corporation*, RR-A1259-2, (2022).

Jonathan W. Welburn, Justin Grana, and Karen Schwindt. 2022: “Cyber Deterrence with Imperfect Attribution and Unverifiable Signaling.”, *European Journal of Operational Research*. 2022

Jonathan W. Welburn and Aaron Strong. 2021. “Systemic Cyber Risk and Aggregate Impacts”., *Risk Analysis* (2021).

Jonathan W. Welburn and Aaron Strong. 2020. “Too Interconnected to Fail.” *The Wall Street Journal*. (2020).

Kjell Hausken and **Jonathan W. Welburn**. 2020. “Assessing the 2010-2018 Financial Crisis in Greece, Portugal, Ireland, Spain, and Cyprus.” *Journal of Economic Studies*, 2020.

Aaron Strong and **Jonathan W. Welburn**. 2020. “An Estimation of the Economic Costs of Social-Distancing Policies.” RAND Research Report. Santa Monica, CA: RAND Corporation (2020).

Raffaele Vardavas, Aaron Strong, Jennifer Bouey, **Jonathan W. Welburn**, Pedro Nascimento de Lima, Lawrence Baker, Keren Zhu, Michelle Priest, Lynn Hu, and Jeanne S. Ringel. 2020. “The Health and Economic Impacts of Nonpharmaceutical

Interventions to Address COVID-19: A Decision Support Tool for State and Local Policymakers." RAND Tool Documentation. Santa Monica, CA: RAND Corporation, 2020.

Jonathan W. Welburn and Aaron Strong. 2020: "Estimating the Impact of COVID-19 on Corporate Default Risk"., *RAND Working Paper Series* (2020).

J**onathan W. Welburn**, Aaron Strong, Florentine Eloundou Nekoul, Justin Grana, Krystyna Marcinek, Osonde A. Osoba, Nirabh Koirala, and Claude Messan Setodji. 2020. "Systemic Risk: It's Not Just in the Financial Sector." RAND Research Brief. Santa Monica, CA: RAND Corporation, 2020.

Jonathan W. Welburn, Aaron Strong, Florentine Eloundou Nekoul, Justin Grana, Krystyna Marcinek, Osonde A. Osoba, Nirabh Koirala, and Claude Messan Setodji. 2020. "Systemic Risk in the Broad Economy: Interfirm Networks and Shocks in the U.S. Economy." RAND Research Report. Santa Monica, CA: RAND Corporation, (2020)

Jonathan W. Welburn. 2019. "Crises Beyond Belief: Findings on contagion, the role of beliefs, and the Eurozone debt crisis from a borrower lender game." Computational Economics, (2019)

Jonathan W. Welburn and Kjell Hausken. 2015. "Game Theoretic Modeling of Economic Systems and the European Debt Crisis." Computational Economics. (2015).

Jonathan W. Welburn and Kjell Hausken. 2015. "A Game Theoretic Model of Economic Crises". Applied Mathematics and Computation. (2015). Vol 266, pp 738-762.

RAND CORPORATION

GEORGE ZUO
ASSOCIATE ECONOMIST

QUALIFICATIONS SUMMARY

George Zuo is an applied microeconomist whose research focuses on improving economic mobility for low-income Americans. His research has explored topics including broadband affordability, school discipline, affordable housing, and public investments in low-income neighborhoods. George received his PhD in Economics from the University of Maryland in 2021, where he studied on a National Science Foundation Graduate Research Fellowship. His dissertation, entitled "Bridging Economic and Educational Gaps in America", was selected as the top public policy dissertation by the Association for Public Policy Analysis and Management (APPAM). The dissertation is headlined by his job market paper, which evaluates an enormous variety of public investments in low-income neighborhoods funded by federal block grants to city and county governments. Prior to his graduate studies, George worked as a senior associate in economic consulting at Deloitte and received his B.A. in Economics from Harvard University in 2013.

EDUCATION

Ph.D.	2021, University of Maryland, College Park, Economics
B.A.	2013, Harvard University, Economics

PROFESSIONAL EXPERIENCE

Associate Economist — 08/2021-present
RAND Corporation — Pittsburgh, PA

Senior Associate — 07/2013-2016
Deloitte Consulting — Washington, DC

RELEVANT PROJECT EXPERIENCE

A Consumption-Based Approach to Defining the Middle Class
Client: RAND Middle Class Pathways Center; *Project Duration:* 08/21 – 12/21
Role: Investigator; *Tasks*: While there are many established ways of defining poverty and the working class, there is not a well-established method for defining America's middle class. This project seeks to understand the value of defining the middle class via necessities consumption as an alternative to traditional income-based definitions. To do so, I use the Consumer Expenditure Survey to assess the composition of a middle class defined through consumption, and how it overlaps with traditional income-based measures.

Evaluating a Multi-Site Eviction Prevention Pilot in Baltimore City
Client: Baltimore City Department of Health and Human Services*, Project Duration: 08/17 – 12/19*

Role: Principal Investigator; Tasks: In this project, joint with the J-PAL State and Local Initiative, I evaluated a pilot of Baltimore City's Emergency Rental Assistance Program (ERAP), which provided up to three months of rent to qualifying households with a 21-day eviction notice who were given the option to "pay to stay". The pilot was a multi-site evaluation: households could enroll at one of many locations throughout the city, each of which served different neighborhoods, received different amounts of funds, and had some level of discretion over which populations to randomize over. In addition to studying a variety of housing stability outcomes, participants were linked with data from Maryland's UI system to study labor market impacts.

RELEVANT PUBLICATIONS

Zuo, George W. 2021. "Wired and Hired: Employment Effects of Subsidized Broadband Internet for Low-Income Americans." *American Economic Journal: Economic Policy*, 13 (3): 447-82.

Working papers and works in progress

"Getting Beneath the Hood of Effective Place-Based Policies: Evidence from the Community Development Block Grant", *work in progress*

"Suspending Suspensions: The Education Production Consequences of School Suspension Policies" with Nolan Pope, *under review*

"Constructing Moves to Opportunity: Evidence from the Low-Income Housing Tax Credit" with Henry Downes and John Soriano, *work in progress*

ATTACHMENT 6: COST PROPOSAL WORKSHEET

COST OF KEY PERSONNEL

Cost Table 1, Cost of Key Personnel

Name	Project Role	Organization	Hourly Rate	Estimated Hours	% of Total Hours	Estimated Cost
Jonathan Welburn	Principal Investigator and Computational Economist	RAND Corporation	$302.60	520.00	8.43%	$157,351.00
Robert Bozick	Project Manager and Demographer	RAND Corporation	$525.27	440.00	7.14%	$231,118.00
David Metz	Quantitative Analyst, IV	RAND Corporation	$250.48	280.00	4.54%	$70,133.00
Elizabeth Marsolais	Policy Analyst, III	RAND Corporation	$358.02	360.00	5.84%	$128,886.00
George Zou	Economist, Assoc	RAND Corporation	$282.19	432.00	7.01%	$121,906.00
James Marrone	Economist, Full	RAND Corporation	$334.00	416.00	6.75%	$138,945.00
Jessie Coe	Economist, Assoc	RAND Corporation	$307.45	280.00	4.54%	$86,087.00
Jessie Wang	Economist, Full	RAND Corporation	$324.59	240.00	3.89%	$77,901.00
Lane Burgette	Statistician, Sr	RAND Corporation	$450.43	96.00	1.56%	$43,241.00
Natalie Cox	Economist, Full	RAND Corporation	$344.67	416.00	6.75%	$143,385.00
Nicholas Robles	Mathematician, Full	RAND Corporation	$310.23	360.00	5.84%	$111,683.00
Patricia Tong	Economist, Full	RAND Corporation	$362.34	464.00	7.53%	$168,127.00
Shannon Prier	Quantitative Analyst, II	RAND Corporation	$211.43	200.00	3.24%	$42,287.00
TBD	Research Assistant, I	RAND Corporation	$125.14	773.00	12.54%	$96,737.00
TBD	Economist, Sr	RAND Corporation	$501.14	24.00	0.39%	$12,027.00
TBD	Research Reviewer, Sr	RAND Corporation	$453.78	24.00	0.39%	$10,891.00
Kelsey O'Hallaren	Policy Researcher, Asst	RAND Corporation	$135.30	280.00	4.54%	$37,885.00
TBD	Policy Researcher, Asst	RAND Corporation	$127.24	560.00	9.08%	$71,254.00
Totals for Key Personnel:				**6,165.00**	**100%**	**$1,749,842.00**

COST OF PROPOSED EXPENSES

Cost Table 2, Cost of Field and Remote Survey Work

Name of Subcontractor or Supplier	Service Provided	Estimated Cost
The RAND Survey Research Group*	Survey Work	$747,008.00
	Total for field and telephone survey work:	**$747,008.00**

Cost Table 3, Cost of Language Translation Services

Name of Subcontractor or Supplier	Service Provided	Estimated Cost
The RAND Survey Research Group*	Translation Services	$3,121.00
	Total for language translation services:	**$3,121.00**

Summary

Cost Table 4, Summary Cost Table

Project Cost Element	Project Cost
Total for Key Personnel	$1,749,842.00
Total for field and remote survey work	$747,008.00
Total for language translation services	$3,121.00
Total Cost:	**$2,499,971.00**

*The RAND Survey Research Group (SRG) is a cost center within The RAND Corporation and is not considered subcontracted services. Further information regarding SRG and its budget is included below.

SRG COST CENTER PROPOSAL

Today's Date:	*5/17/2023*		
Task:	*Survey of Unbanked Households*		
PI:	*Bozick*		
Survey Coordinator:	*Beverly Weidmer*	**Total SRG budget:**	**$750,129**
Study Dates:	*September 2023-March 2024*		

MANAGEMENT STAFF	**HOURS**	**HOURLY RATE**	**TOTAL COST**
Survey Director			
Level 1	400	$206.77	$82,708
Survey Coordinator			
Level 2	416	$131.38	$54,655
RMS Programmer			
Level 1	80	$161.99	$12,960
CATI/CAPI/WEB Programming			
Level 1	96	$169.29	$16,252
Survey Assistant (Mgmt Specialist)			
Level 2	480	$101.91	$48,918
Administrative Assistant			
Level 1	80	$113.36	$9,069
Management Subtotal	***1552***		***$224,561***
OPERATIONS STAFF			
DR Specialist			
Level 1	40	$93.83	$3,753
DC/MAIL CLK/PACKET PREP			
Level 1	37	$58.64	$2,150
Operations Subtotal	***77***		***$5,903***
TOTAL STAFF	***1629***		***$230,464***
DIRECT COSTS			
POSTAGE			$15,109
CELLPHONE RELATED			$4,282
RESPONDENT PAYMENT/SCREENER			$72,828
RESPONDENT PAYMENTS/SURVEY			$15,000
PRINTING/PACKET PREP/FULFILLMENT			$10,404
MISC. PURCHASES (LEXIS-NEXIS)			$1,561
Surface Go Tablets			$6,242
HEADWAY			$360,311
MILEAGE			$28,621
RECRUITING ADS			$1,040
IS - WEB SURVEY SYSTEM			$1,144
TRANSLATION			$3,121
TOTAL OTHER DIRECT COSTS			***$519,665***

TOTAL SRG COST CENTER BUDGET	**$750,129**

SRG Budget Justification for a Survey of California's Unbanked and Underbanked Residents as part of the CalAccount Market Study and Feasability Report (2023PR-00445)
Investigators: Jonathan Wellburn/Robert Bozick
SRG Lead: Beverly Weidmer

The RAND Survey Research Group (SRG) was established in 1972 to provide RAND with an in-house capability for conducting primary data collection that was of the same high quality as the quality of RAND's research analyses. The SRG is made up of policy analysts, health services researchers, and specialists in the technical aspects of survey research. These professionals share a common interest and expertise in applying state-of-the-art survey methods to the special challenges of public policy research and have special expertise in data collection in various community and healthcare settings with difficult-to-reach populations. After 50 years, SRG has become known for innovative survey planning, data collection, and methodological research. SRG staff are experienced in working with community and other stakeholder groups as part of the data collection process and have many years of experience in collecting primary data in a variety of community and institutional settings.

The RAND Survey Research Group (SRG) operates as a cost center within RAND. This means that SRG's charges for data collection are set to recover actual costs on an annual basis. Rather than charging users on the basis of an individual staff member's actual rate, RAND's SRG Cost Center charges users by "positions" (i.e., users pay a set hourly rate for a "Senior Survey Coordinator" regardless of which of our senior survey coordinators perform the task). However, SRG assigns specific individuals to work on the project, as named in the proposal. Staff within each "position" have similar actual salaries and comparable skill sets. Each "position" hourly rate is inclusive of all costs (i.e., direct and indirect). SRG costs appear as a Direct Non-Labor Cost in the overall RAND budget, however, we have included a separate budget that details SRG costs including Ms. Weidmer's labor costs.

We have budgeted a total of **$750,129** for the design, pilot testing, and implementation of a survey to collect data on banking options and financial needs among the un/underbanked population. The budget includes $230,464 in labor cost for Survey Research Group (SRG) staff and $519,665 in direct costs associated with the design, pilot testing, and implementation of the survey.

SCOPE OF WORK

In budgeting for the proposed survey, we assumed that SRG would mail an advance notification letter to an estimated 20,000 households in selected geographic areas throughout California to invite them complete a screener, and if eligible, to complete a brief survey that will collect information on banking experiences, options and financial needs among un/underbanked California residents. To encourage participation, we propose to offer a $5 gift card for completing a brief eligibility screener. We assume that approximately 14,000 households will agree to complete the eligibility screener. Of these, approximately 1500 households (~ 11%) will be eligible for the survey and approximately 750 households (~50%) will complete the survey. To maximize response rates, particularly among subpopulations of interest, we will use a multi-mode data collection approach that includes web, mail, CATI, and CAPI administration and will make multiple attempts in each mode of data collection. In addition, we will offer a post-paid incentive of $20 for what is expected to be a 15 minute survey and will offer the survey in English, Spanish, and depending on the geographic areas selected for the study, another language (possibly Chinese or Vietnamese).

PERSONNEL
Below, we provide overview of the key SRG personnel that are proposed for this project.

Beverly Weidmer – Senior Survey Director. Beverly Weidmer is a Senior Survey Director in the RAND Survey Research Group (SRG). She has 30+ years of experience in both quantitative and qualitative research methods, including all aspects of survey design and management, instrument development, focus groups, and methods for assessing the validity of survey instruments, including cognitive interviews and usability testing. She is experienced in organizing instrument development processes involving the participation of multiple researchers and stakeholders, and has expertise in translation, in the design and testing of culturally appropriate survey instruments, in strategies to maximize response rates, and in reducing sample attrition and item non-response. She specializes in the design and implementation of complex field projects including longitudinal surveys, multi-mode data collection, and surveying special populations (clinicians, law enforcement, health plan representatives), as well as difficult to reach populations (immigrants, low literate populations, welfare recipients, the elderly, and children and adolescents). In her career at RAND Ms. Weidmer has managed surveys at both the local and national level including large-scale panel surveys of Medicare and Medicaid beneficiaries, panel surveys of children involving the collection of anthropometric measurements, biomarkers, and measures of child development development, testing, and implementation of complex, multi-mode surveys including a survey to assess the impact of welfare reforms to the CalWORKs program in California, a survey to assess the 2020 Census in California, and a survey to evaluate the impact of a guaranteed income program in California. For the survey of un/underbanked California residents, Ms. Weidmer will lead the implementation of the survey including developing the data collection approach, pilot testing and full-scale implemantion. She will work with the project team in developing the survey and will oversee the translation and programming of the survey. She will also take the lead in developing recruitment materials (survey invitation letters, FAQs, etc.) interviewer scripts, and data collection protocols and procedures. She will coordinate the work to be carried out by all SRG staff, will be responsible for reporting progress at each stage of survey implementation (survey review, pilot testing, and full scale implementation), will provide weekly survey status reports once the survey is fielded as well as on overall progress toward completion of the survey. Finally, she will track progress, closely monitor budget expenditures, participate in problem resolution and trouble-shooting as necessary, ensure that the survey is delivered on time and budget, and ensure that the survey is conducted according to RAND standards for high quality. She is budgeted for 50 days (400 hours).

SRG Survey Coordinator L1 is budgeted for 52 days (416 hours) to support Ms. Weidmer in overseeing the day to day implementation of all survey activities. The survey coordinator will oversee staff recruitment and training and supervise interviewers, will supervise all data collectors, and will oversee the delivery of survey data files.

Record Management Systems Programmer is budgeted for 10 days (80 hours) to develop and manage the database architecture used to track the sample overall and by mode of data collection. The RMS Programmer will manage the sample, coordinate sample delivery for the administration of surveys by mode of data collection (web, mail, CATI, CAPI), and generate survey status reports and descriptive statistics for key variables.

Web/CATI/CAPI Programmer is budgeted for 12 days (96 hours) to program the survey for web, CATI, and CAPI administration. She will be responsible for delivering interim and final survey data files and a codebook.

Survey Assistant is budgeted for 60 days (480 hours) to support Ms. Weidmer and the Survey Coordinator in the implementation of the survey.

Administrative Assistant is budgeted for 10 days (80 hours) to support Ms. Weidmer and other SRG staff in the implementation of this project.

Data Reduction Specialist is budgeted for 5 days (40 hours) to manage respondent incentive payments by mail including printing respondent payment checks and thank you letters.

A **Mail Clerk** is budgeted for 36.67 hours to support the Data Reduction Supervisor in the packet prep of incentive payment letters and will log returned mail and completed mail surveys.

Table 1 provides the total number of days for each task on this project.

Table 1-SRG Labor Days by Task

MANAGEMENT STAFF	
Survey Director	400.00
Survey Coordinator	416.00
RMS Programmer	80.00
CATI/CAPI/Web Programmer	96.00
Survey Assistant/Specialist	480.00
Administrative Assistant	80.00
OPERATIONS STAFF	
DR Specialist	40.00
Data Entry	0.00
TSC Specialist	0.00
Field Specialist Onsite	0.00
Field Specialist Offsite	0.00
Telephone Interviewers	0.00
Field Interviewers	0.00
CAPI Support	0.00
Field Clerk	0.00
Clerical-Mail	36.67
Clerical-General	0.00
TOTAL	**1628.67**

OTHER DIRECT COSTS

Postage and FedEx costs in the amount of $15,109 have been included to FedEx training and data collection materials to field staff and to mail thank you letters with the post-paid incentive to households that complete a survey (using first class mail).

Cell phone costs in the amount of $4,282 have been included for field interviewers.

Respondent payments for completing a screener in the amount of $72,828 have been included assuming a $5 incentive for each household that completes a screener.

Respondent payments for completing a survey in the amount of $15,000 have been included assuming a $20 incentive for ~750 households who complete a survey.

Printing/packet prep/and fulfillment costs in the amount of $10,404 have been included to mail advance notification and reminder letters, and mail surveys to non-respondents to the web survey.

Lexis-Nexis costs in the amount of $1,561 have been included to match telephone and/or cell phone numbers and emails to the sample.

Costs for the purchase of 20 **Surface Go Tablets** for field interviewers have been included at a cost of $6,242 (~$300 per tablet plus shipping).

Costs for a **Field Supervisors and Interviewers** have been included in the amount of $360,311. The Field Supervisor and interviewers will be recruited from areas proximate to the geographic areas that will be selected for the survey and will be payrolled through Headway Inc., a temporary employment agency. However, RAND SRG will vet all candidates, will select the candidates, and will train and supervise their work throughout the data collection period.

Mileage costs in the amount of $28,621 have been included for field staff to travel to people's homes to conduct the survey in-person using the CAPI version of the survey. Mileage costs assume approximately 30 miles round trip to travel to blocks in the selected geographic areas at a cost of $0.655/mile.

Recruiting and training costs in the amount of $1,040 have been included to recruit telephone staff and to travel to different sites in California to recruit and train field staff.

IS-Web Survey System costs in the amount of $1,144 have been included for an estimated 2000 households who will complete a screener+survey via the web at a cost of $0.55/survey.

Translation costs in the amount of $3,121 have been included to translate the survey invitation, reminder and thank you letters, mail survey cover letters, study brochures, FAQ's and interviewer scripts into Spanish and one other language. We will use a professional translation vendor to translate all survey materials.

SRG CHARGE STRUCTURE

SRG operates as a cost center within RAND. This means that SRG's charges for data collection are set to recover actual costs on an annual basis. SRG costs appear as a direct cost in RAND budgets.

Rather than charging users on the basis on an individual staff member's actual rate, RAND's SRG Cost Center charges users by "positions." For example, users pay a set hourly rate for a "Survey Coordinator, Level 2" regardless of which of the Level 2 Survey Coordinators performs the task. (However, SRG assigns specific individuals to work on the project, as named in the proposal.) Staff within each "position" have similar actual salaries and comparable skill sets. Each "position" hourly rate is inclusive of all costs listed below, i.e., direct and indirect.

- Salary and fringe for time attributable to the project
- Apportioned costs for:
    - Management and coordination of the SRG cost center, not attributable to a specific project
    - General supplies and materials, not attributable to a specific project
    - Misc. costs, software, training, conferences, membership dues, etc. not attributable to a specific project
    - Inter-departmental (indirect) charges: (costs that have been incurred by another RAND expense pool and allocated/charged on a pre-determined basis based on SRG usage) including:
        - Computer
        - Occupancy
        - Telecommunications
        - Finance

Other costs that are attributable to a specific project are passed through to that project, with no added charges. These include:

- Postage
- Telephone Survey Center phone charges
- Respondent payments
- Mileage
- Activities that are vended out or performed by consultants (e.g. some data entry, translation, sample list purchases, etc.)

SRG operates on a Cost Recovery basis (in general, the end result should be no profit, no loss each FY) after expenses are met.

RATES

Set up to capture the Operating costs unique to each group, which are then dispersed over the number of "budgeted/anticipated" days to be charged by that group. If the anticipated timeline or scope of work to be done is discrepant, then the rates set may not appropriately capture costs.

WEB SURVEY SPECIFICATIONS

SRG uses Forsta Plus Confirmit software hosted in the Confirmit cloud to provide highly scalable and available surveys that allow for the full range of computer-assisted interview features (e.g. skips,

calculations, error checking, testing for logical consistency, response rotations, text fills, pre-loaded data etc.). All surveys are conducted using a Secure Socket Layer (SSL) and the server is monitored continuously to detect unauthorized access.

ATTACHMENT 7: PAYEE DATA RECORD (STD. 204)

STATE OF CALIFORNIA – DEPARTMENT OF FINANCE

PAYEE DATA RECORD

(Required when receiving payment from the State of California in lieu of IRS W-9 or W-7)

STD 204 (Rev. 03/2021)

Section 1 – Payee Information

NAME (This is required. Do not leave this line blank. Must match the payee's federal tax return)

The RAND Corporation

BUSINESS NAME, DBA NAME or DISREGARDED SINGLE MEMBER LLC NAME (If different from above)

MAILING ADDRESS (number, street, apt. or suite no.) (See instructions on Page 2)

1776 Main Street, PO Box 2138

CITY, STATE, ZIP CODE	E-MAIL ADDRESS
Santa Monica, CA 90407-2138	ContractsTeam@rand.org

Section 2 – Entity Type

Check one (1) box only that matches the entity type of the Payee listed in Section 1 above. (See instructions on page 2)

- ☐ **SOLE PROPRIETOR / INDIVIDUAL**
- ☐ **SINGLE MEMBER LLC** *Disregarded Entity owned by an individual*
- ☐ **PARTNERSHIP**
- ☐ **ESTATE OR TRUST**

CORPORATION (see instructions on page 2)

- ☐ **MEDICAL** *(e.g., dentistry, chiropractic, etc.)*
- ☐ **LEGAL** *(e.g., attorney services)*
- ☒ **EXEMPT** *(e.g., nonprofit)*
- ☐ **ALL OTHERS**

Section 3 – Tax Identification Number

Enter your Tax Identification Number (TIN) in the appropriate box. The TIN must **match** the name given in Section 1 of this form. Do not provide more than one (1) TIN. The TIN is a 9-digit number. **Note:** Payment will not be processed without a TIN.

- For **Individuals**, enter SSN.
- If you are a **Resident Alien**, and you do not have and are not eligible to get an SSN, enter your ITIN.
- Grantor Trusts (such as a Revocable Living Trust while the grantors are alive) may not have a separate FEIN. Those trusts must enter the individual grantor's SSN.
- For **Sole Proprietor or Single Member LLC (disregarded entity), in which the sole member is an individual**, enter SSN (ITIN if applicable) or FEIN (FTB prefers SSN).
- For **Single Member LLC (disregarded entity), in which the sole member is a business entity**, enter the owner entity's FEIN. Do not use the disregarded entity's FEIN.
- For all other entities including LLC that is taxed as a corporation or partnership, estates/trusts (with FEINs), enter the entity's FEIN.

Social Security Number (SSN) or Individual Tax Identification Number (ITIN)

___ ___ ___ - ___ ___ - ___ ___ ___ ___

OR

Federal Employer Identification Number (FEIN)

9 5 - 1 9 5 8 1 4 2

Section 4 – Payee Residency Status (See instructions)

☒ **CALIFORNIA RESIDENT** – Qualified to do business in California or maintains a permanent place of business in California.

☐ **CALIFORNIA NONRESIDENT** – Payments to nonresidents for services may be subject to state income tax withholding.

- ☐ No services performed in California
- ☐ Copy of Franchise Tax Board waiver of state withholding is attached.

Section 5 – Certification

I hereby certify under penalty of perjury that the information provided on this document is true and correct. Should my residency status change, I will promptly notify the state agency below.

NAME OF AUTHORIZED PAYEE REPRESENTATIVE	TITLE	E-MAIL ADDRESS
Michael Januzik	Vice President and CFO	ContractTeam@rand.org

SIGNATURE	DATE	TELEPHONE *(include area code)*
	5/17/23	310-393-0411

Section 6 – Paying State Agency

Please return completed form to:

STATE AGENCY/DEPARTMENT OFFICE		UNIT/SECTION	
MAILING ADDRESS		**FAX**	**TELEPHONE** *(include area code)*
CITY	**STATE**	**ZIP CODE**	**E-MAIL ADDRESS**

ATTACHMENT 8: DARFUR CONTRACTING ACT CERTIFICATION

ATTACHMENT 8

DARFUR CONTRACTING ACT CERTIFICATION

Pursuant to Public Contract Code section 10478, if a proposer currently or within the previous three years has had business activities or other operations outside of the United States, it must certify that it is not a "scrutinized" company as defined in Public Contract Code section 10476.

Therefore, to be eligible to submit a proposal, please insert your company name and Federal ID Number and complete only **one** of the following three paragraphs (via initials for Paragraph # 1 or Paragraph # 2, or via initials and certification for Paragraph # 3):

Company/Vendor Name (Printed)	*Federal ID Number*
The RAND Corporation	95-1958142
Printed Name and Title of Person Initialing (for Options 1 or 2)	
John Coughlan - Contract Administrator	

1. _____ Initials — We do not currently have, and have not had within the previous three years, business activities or other operations outside of the United States.

OR

2. _____ Initials — We are a scrutinized company as defined in Public Contract Code section 10476, but we have received written permission from the Department of General Services (DGS) to submit a proposal pursuant to Public Contract Code section 10477(b). A copy of the written permission from DGS is included with our proposal.

OR

3. JC Initials + certification below — We currently have, or we have had within the previous three years, business activities or other operations outside of the United States, but we certify below that we are not a scrutinized company as defined in Public Contract Code section 10476.

CERTIFICATION for Paragraph # 3.

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective proposer to the clause listed above in Paragraph # 3. This certification is made under the laws of the State of California.

By (Authorized Signature)	
Michael Januzik - Vice President and Chief Financial Officer	
Date Executed 5/17/23	*Executed in the County and State of* Los Angeles, California

ATTACHMENT 9: IRAN CONTRACTING ACT CERTIFICATION

ATTACHMENT 9

IRAN CONTRACTING ACT CERTIFICATION

(Public Contract Code sections 2202-2208)

Prior to bidding on, submitting a proposal or executing a contract or renewal for a State of California contract for goods or services of $1,000,000 or more, a vendor must either: a) certify it is **not** on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b) and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS; or b) demonstrate it has been exempted from the certification requirement for that solicitation or contract pursuant to Public Contract Code section 2203(c) or (d).

To comply with this requirement, please insert your vendor or financial institution name and Federal ID Number (if available) and complete **one** of the options below. Please note: California law establishes penalties for providing false certifications, including civil penalties equal to the greater of $250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (Public Contract Code section 2205.)

OPTION #1 - CERTIFICATION

I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by DGS and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person/vendor, for 45 days or more, if that other person/vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

Vendor Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
The RAND Corporation	95-1958142
By (Authorized Signature)	
Michael Januzik, Vice President and Chief Financial Officer	
Date Executed 5/17/23	*Executed in* Los Angeles, California

OPTION #2 – EXEMPTION

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a vendor/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services.

If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

Vendor Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	*Date Executed*

ATTACHMENT 10: CONTRACTOR CERTIFICATION CLAUSES (CCC 04/2017)

ATTACHMENT 10

CONTRACTOR CERTIFICATION CLAUSES (CCC 04/2017)

CERTIFICATION

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective Contractor to the clause(s) listed below. This certification is made under the laws of the State of California.

Contractor/Proposer Firm Name (Printed)	*Federal ID Number*
The RAND Corporation	95-1958142
By (Authorized Signature)	
Printed Name and Title of Person Signing	
Michael Januzik, Vice President and Chief Financial Officer	
Date Executed	*Executed in the County of*
5/17/23	Los Angeles, California

CONTRACTOR CERTIFICATION CLAUSES

1. STATEMENT OF COMPLIANCE: Contractor has, unless exempted, complied with the nondiscrimination program requirements. (Gov. Code §12990 (a-f) and CCR, Title 2, Section 11102) (Not applicable to public entities.)

2. DRUG-FREE WORKPLACE REQUIREMENTS: Contractor will comply with the requirements of the Drug-Free Workplace Act of 1990 and will provide a drug-free workplace by taking the following actions:

a. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.

b. Establish a Drug-Free Awareness Program to inform employees about:

1) the dangers of drug abuse in the workplace;
2) the person's or organization's policy of maintaining a drug-free workplace;
3) any available counseling, rehabilitation and employee assistance programs; and,
4) penalties that may be imposed upon employees for drug abuse violations.

c. Every employee who works on the proposed Agreement will:

1) receive a copy of the company's drug-free workplace policy statement; and,

2) agree to abide by the terms of the company's statement as a condition of employment on the Agreement.

Failure to comply with these requirements may result in suspension of payments under the Agreement or termination of the Agreement or both and Contractor may be ineligible for award of any future State agreements if the department determines that any of the following has occurred: the Contractor has made false certification, or violated the certification by failing to carry out the requirements as noted above. (Gov. Code §8350 et seq.)

3. NATIONAL LABOR RELATIONS BOARD CERTIFICATION: Contractor certifies that no more than one (1) final unappealable finding of contempt of court by a Federal court has been issued against Contractor within the immediately preceding two-year period because of Contractor's failure to comply with an order of a Federal court, which orders Contractor to comply with an order of the National Labor Relations Board. (Pub. Contract Code §10296) (Not applicable to public entities.)

4. CONTRACTS FOR LEGAL SERVICES $50,000 OR MORE- PRO BONO REQUIREMENT: Contractor hereby certifies that Contractor will comply with the requirements of Section 6072 of the Business and Professions Code, effective January 1, 2003.
Contractor agrees to make a good faith effort to provide a minimum number of hours of pro bono legal services during each year of the contract equal to the lessor of 30 multiplied by the number of full time attorneys in the firm's offices in the State, with the number of hours prorated on an actual day basis for any contract period of less than a full year or 10% of its contract with the State.

Failure to make a good faith effort may be cause for non-renewal of a state contract for legal services, and may be taken into account when determining the award of future contracts with the State for legal services.

5. EXPATRIATE CORPORATIONS: Contractor hereby declares that it is not an expatriate corporation or subsidiary of an expatriate corporation within the meaning of Public Contract Code Section 10286 and 10286.1, and is eligible to contract with the State of California.

6. SWEATFREE CODE OF CONDUCT:

a. All Contractors contracting for the procurement or laundering of apparel, garments or corresponding accessories, or the procurement of equipment, materials, or supplies, other than procurement related to a public works contract, declare under penalty of perjury that no apparel, garments or corresponding accessories, equipment, materials, or supplies furnished to the state pursuant to the contract have been laundered or produced in whole or in part by sweatshop labor, forced labor, convict labor, indentured labor under penal sanction, abusive forms of child labor or exploitation of children in sweatshop labor, or with the benefit of sweatshop labor, forced labor, convict labor, indentured labor under penal sanction, abusive forms of child labor or exploitation of children in sweatshop labor. The contractor further declares under penalty of perjury that they adhere to the Sweatfree Code of Conduct as set forth on the California Department of Industrial Relations website located at www.dir.ca.gov, and Public Contract Code Section 6108.

b. The contractor agrees to cooperate fully in providing reasonable access to the contractor's records, documents, agents or employees, or premises if reasonably required by authorized officials of the contracting agency, the Department of Industrial Relations, or the Department of Justice to determine the contractor's compliance with the requirements under paragraph (a).

7. DOMESTIC PARTNERS: For contracts of $100,000 or more, Contractor certifies that Contractor is in compliance with Public Contract Code section 10295.3.

8. GENDER IDENTITY: For contracts of $100,000 or more, Contractor certifies that Contractor is in compliance with Public Contract Code section 10295.35.

DOING BUSINESS WITH THE STATE OF CALIFORNIA

The following laws apply to persons or entities doing business with the State of California.

1. CONFLICT OF INTEREST: Contractor needs to be aware of the following provisions regarding current or former state employees. If Contractor has any questions on the status of any person rendering services or involved with the Agreement, the awarding agency must be contacted immediately for clarification.

Current State Employees (Pub. Contract Code §10410):

1). No officer or employee shall engage in any employment, activity or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any state agency, unless the employment, activity or enterprise is required as a condition of regular state employment.

2). No officer or employee shall contract on his or her own behalf as an independent contractor with any state agency to provide goods or services.

Former State Employees (Pub. Contract Code §10411):

1). For the two-year period from the date he or she left state employment, no former state officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements or any part of the decision-making process relevant to the contract while employed in any capacity by any state agency.

2). For the twelve-month period from the date he or she left state employment, no former state officer or employee may enter into a contract with any state agency if he or she was employed by that state agency in a policy-making position in the same general subject area as the proposed contract within the 12-month period prior to his or her leaving state service.

If Contractor violates any provisions of above paragraphs, such action by Contractor shall render this Agreement void. (Pub. Contract Code §10420)
Members of boards and commissions are exempt from this section if they do not receive payment other than payment of each meeting of the board or commission, payment for preparatory time and payment for per diem. (Pub. Contract Code §10430 (e))

2. LABOR CODE/WORKERS' COMPENSATION: Contractor needs to be aware of the provisions which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions, and Contractor affirms to comply with such provisions before commencing the performance of the work of this Agreement. (Labor Code Section 3700)

3. AMERICANS WITH DISABILITIES ACT: Contractor assures the State that it complies with the Americans with Disabilities Act (ADA) of 1990, which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA. (42 U.S.C. 12101 et seq.)

4. CONTRACTOR NAME CHANGE: An amendment is required to change the Contractor's name as listed on this Agreement. Upon receipt of legal documentation of the name change the State will process the amendment. Payment of invoices presented with a new name cannot be paid prior to approval of said amendment.

5. CORPORATE QUALIFICATIONS TO DO BUSINESS IN CALIFORNIA:

a. When agreements are to be performed in the state by corporations, the contracting agencies will be verifying that the contractor is currently qualified to do business in California in order to ensure that all obligations due to the state are fulfilled.

b. "Doing business" is defined in R&TC Section 23101 as actively engaging in any transaction for the purpose of financial or pecuniary gain or profit. Although there are some statutory exceptions to taxation, rarely will a corporate contractor performing within the state not be subject to the franchise tax.

c. Both domestic and foreign corporations (those incorporated outside of California) must be in good standing in order to be qualified to do business in California. Agencies will determine whether a corporation is in good standing by calling the Office of the Secretary of State.

6. RESOLUTION: A county, city, district, or other local public body must provide the State with a copy of a resolution, order, motion, or ordinance of the local governing body which by law has authority to enter into an agreement, authorizing execution of the agreement.

7. AIR OR WATER POLLUTION VIOLATION: Under the State laws, the Contractor shall not be: (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board or an air pollution control district; (2) subject to cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of federal law relating to air or water pollution.

8. PAYEE DATA RECORD FORM STD. 204: This form must be completed by all contractors that are not another state agency or other governmental entity.

ATTACHMENT 11: CALIFORNIA CIVIL RIGHTS LAWS CERTIFICATION

ATTACHMENT 11

CALIFORNIA CIVIL RIGHTS LAWS CERTIFICATION

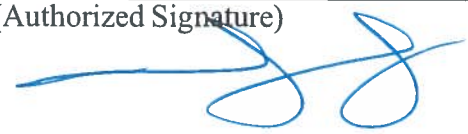
Pursuant to Public Contract Code section 2010, a person that submits a bid or proposal to, or otherwise proposes to enter into or renew a contract with, a state agency with respect to any contract in the amount of $100,000 or above shall certify, under penalty of perjury, at the time the bid or proposal is submitted or the contract is renewed, all of the following:

1. CALIFORNIA CIVIL RIGHTS LAWS: For contracts executed or renewed after January 1, 2017, the contractor certifies compliance with the Unruh Civil Rights Act (Section 51 of the Civil Code) and the Fair Employment and Housing Act (Section 12960 of the Government Code); and

2. EMPLOYER DISCRIMINATORY POLICIES: For contracts executed or renewed after January 1, 2017, if a Contractor has an internal policy against a sovereign nation or peoples recognized by the United States government, the Contractor certifies that such policies are not used in violation of the Unruh Civil Rights Act (Section 51 of the Civil Code) or the Fair Employment and Housing Act (Section 12960 of the Government Code).

CERTIFICATION

I, the official named below, certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Proposer/Bidder Firm Name (Printed)	Federal ID Number
The RAND Corporation	95-1958142
By (Authorized Signature) 	
Printed Name and Title of Person Signing Michael Januzik, Vice President and Chief Financial Officer	
Executed in the County of Los Angeles	Executed in the State of California
Date Executed 5/17/23	

ATTACHMENT 12: BIDDER DECLARATION (GSPD-05-105)

BIDDER DECLARATION

1. Prime bidder information **(Review attached Bidder Declaration Instructions prior to completion of this form)**:

   a. Identify current California certification(s) **(MB, SB, NVSA, DVBE):** _____ **or None** ☑ (If "None", go to Item #2)

   b. Will subcontractors be used for this contract? **Yes** ☐ **No** ☑ (If yes, indicate the distinct element of work your firm will perform in this contract e.g., list the proposed products produced by your firm, state if your firm owns the transportation vehicles that will deliver the products to the State, identify which solicited services your firm will perform, etc.). Use additional sheets, as necessary.

   _____

   _____

   c. If you are a California certified DVBE: (1) Are you a broker or agent? **Yes** ☐ **No** ☐
   (2) If the contract includes equipment rental, does your company own at least 51% of the equipment provided in this contract (quantity and value)? **Yes** ☐ **No** ☐ **N/A** ☐

2. If no subcontractors will be used, skip to certification below. Otherwise, list all subcontractors for this contract. (Attach additional pages if necessary):

Subcontractor Name, Contact Person, Phone Number & Fax Number	Subcontractor Address & Email Address	CA Certification (MB, SB, NVSA, DVBE or None)	Work performed or goods provided for this contract	Corresponding % of bid price	Good Standing?	51% Rental?
					☐	☐
					☐	☐
					☐	☐

CERTIFICATION: By signing the bid response, I certify under penalty of perjury that the information provided is true and correct.

Printed Name: Michael Januzik, Vice President and Chief Financial Officer

Signature: _____ Date Signed: 5/17/23