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Mixed-Methods UX Researcher and Social Scientist

Practitioner-focused field research in dynamic, high-stakes environments

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Research Philosophy

Identifying societal challenges where the status quo is unacceptable and collaboratively developing solutions through field-based, mixed methods, human-centric research design that leads with humility and prioritizes adaptability

PRACTITIONER-FOCUSED

I study and support the people who operate complex systems in high-stakes environments where excellence is the only standard.

FIELD-BASED

I do on-the-ground research in real-world operational contexts. From Navy ships at sea to communities facing natural disasters.

IMPACT-DRIVEN

I lead research that ships. The insights from my work have shaped products deployed nationally and frameworks adopted by federal agencies with lasting impact.

*The underlying foundation of my UXR approach is having the **humility** to listen first and the **adaptability** to shape my research to the decisions my users face.*

Selected UXR Field Research Projects

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

Flood Risk Communication UXR Program

Identifying Challenges • Collaboratively Designing Prototypes • National implementation • Demonstrated Risk Reduction

UNITED STATES NAVY

Fire-Resistant Uniform Product Prototype UXR and Pilot

Identified Safety Risk • Collaborative Requirements Sourcing and Prototype Development • Fleet-wide Deployment and Data-driven Iteration

STANFORD DOERR SCHOOL OF SUSTAINABILITY

Home Search Health and Safety UXR Journey Mapping

Developed Journey Maps • Identified Friction and Pain Points • Executive Report and Recommended Interventions

Flood Risk Communication UXR Program

PROJECT

Flood hazard mapping and communication tools and products weren't working for the practitioners who needed them most.

Research Question: Why are flood hazard mapping tools and products failing practitioners, and what is needed to design better ones?



Field observation with practitioners



Focus groups with practitioners, regulators



Semi-structured interviews



Nationwide survey of managers and practitioners

INSIGHT

Surveys told us what was happening

Practitioners were misinterpreting risk products.

Misinterpretation of risk was (1) undermining their ability to plan for and recover from disasters and (2) eroding the trust of the community in their ability to keep them safe.

Focus Groups, Interviews and Observation told us why

The traditional deterministic tools used to communicate flood hazard were creating a false sense of certainty that eroded trust in practitioners.

The tools and products that were provided to practitioners were fundamentally misaligned with operational needs.

IMPACT



Field-based prototype deployed in 4 initial markets and 12 subsequent markets for usability testing and collaborative refinement



Products shipped nationally, with research-informed tools used by practitioners to keep millions of Americans safe



Changed how FEMA communicates flood risk—shifted from deterministic to probabilistic framing



Collaborated with Zillow and Redfin to develop online tools to democratize access to new products and tools at scale



Delivered on scope and schedule balancing programmatic expectations

The Challenge

THE RESEARCH PROBLEM

Flood hazard mapping and communication tools and products weren't working for the practitioners who needed them most.

USERS AFFECTED

- Floodplain managers
- Emergency operations professionals
- State and local regulators
- Developers and local businesses

WHY IT MATTERS

These practitioners make decisions that protect lives and property. Flawed tools meant flawed decisions, ineffective risk communication, and unacceptable risk to communities.

THE RESEARCH QUESTION

Why are flood hazard mapping tools and products failing practitioners, and what is needed to design better ones?

SCOPE

\$5M research portfolio within \$1.1B federal program

Nationally representative survey

Local focus groups, listening sessions, and interviews

Prototype risk communication products deployed in 4 initial geographies, expanded to 12 in later phases

Mixed Methods Research Approach

QUALITATIVE

Focus Groups, Participant Observation, Interviews

In-depth group sessions and semi-structured interviews with practitioners across diverse geographic contexts to understand critical user journeys, pain points, and opportunities for improvement

QUANTITATIVE

Nationally Representative Survey

Nationwide survey with floodplain managers, emergency operations professionals, and regulators to quantify patterns in how hazard communication tools and products were being implemented and interpreted

KEY INSIGHTS

Surveys told us **what** was happening → practitioners were misinterpreting risk products.
Focus Groups and Observation told us **why** → deterministic framing was creating false certainty that eroded trust in practitioners.

CROSS-FUNCTIONAL COLLABORATION

- Engineers (prototyping flood models)
- Designers (prototyping tools and platforms)
- Comms specialists (developing comms products)
- Zillow & Redfin (democratizing insights)

End-to-End Research Process



Designed for Iteration

The user experience of prototype pilots was continuously researched, and pilot deployment surfaced new issues, including concerns about uncertainty communication in the tools and insurance affordability implications if the tools were misinterpreted. I built capacity into the research designs to address subsequent design iterations, and we optimized the product in the field over sequential deployments.



Research in a Dynamic Environment

This end-to-end research process was field-based, conducted in dynamic environments where practitioners were working every day to prepare for and respond to natural disasters. Their jobs couldn't wait for my research, so the design adapted to them, listening first and adjusting to the dynamic needs of their jobs, with safety and security always remaining the #1 priority.

Impact

4

Initial Pilot
Markets

12

Subsequent
Pilot Markets

Field-Tested Tools

Data-driven enhancements to tools
and communication products

National Deployment

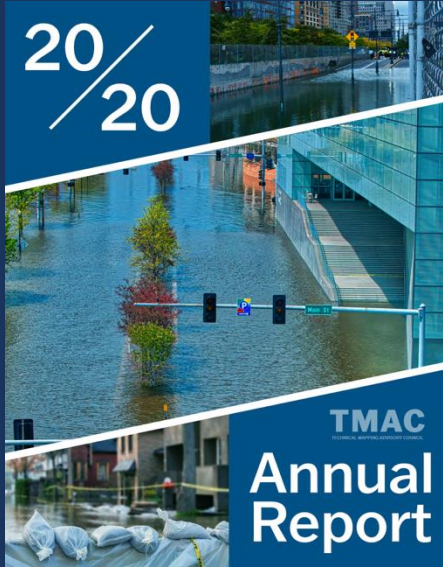
Products aligned to national
regulations and diverse contexts

- ✓ Products shipped nationally, with research-informed tools used by practitioners to keep millions of Americans safe
- ✓ Changed how FEMA communicates flood risk, shifting from deterministic to probabilistic framing

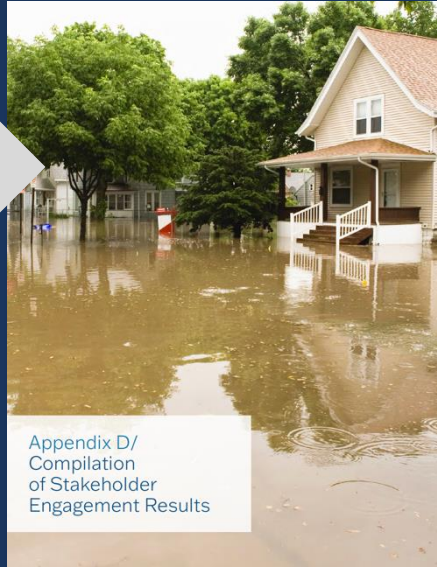
- ✓ Collaborated with online platforms (Zillow, Redfin) to develop online tools to democratize access to new products and tools at scale
- ✓ Delivered on scope and schedule balancing programmatic requirements and expectations with research depth

This research generated the insights and impact to change how flood hazard is communicated and understood, increasing trust in practitioners and making communities safer.

Example Artifacts



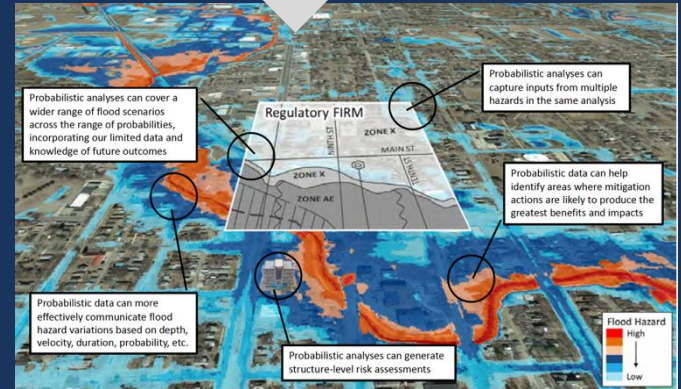
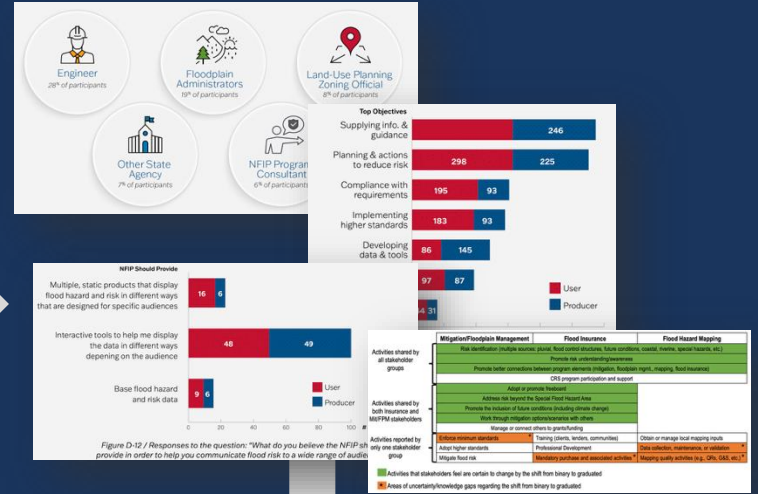
Executive Report for National Policymakers*



Appendix D/ Compilation of Stakeholder Engagement Results

Full UXR Results Section

Sample UXR Outputs



Prototype products developed through collaborative piloting process

*I was responsible for coordinating and supporting Subcommittee 2 (research subcommittee), responsible for Chapter 4, and led the effort of editing and revising this report and developing the data visualization, graphics and layout for the entire document. Some data remain confidential and are not included here or in the publicly available report but may be discussed with me directly.

Fire Resistant Uniform Prototype

PROJECT

Existing shipboard uniforms worn throughout the fleet didn't meet fire safety standards, putting sailors at critical safety risk.

Research Question: What about the existing uniform works, what needs to change, and how do we ensure safety, comfort, and durability?



Field observation and pulse surveys with sailors



Requirements development with product managers



Collaborative prototyping and field usability testing



Auto-ethnography, wearing and testing the uniform

INSIGHT

Safety is the ultimate concern, but job-specific requirements were critical elements that needed to be incorporated.

Users across different operational roles had fundamentally different requirements for the same uniform. Requirements for mobility, heat tolerance, comfort, and durability varied by context.

A new uniform would not be successful if those requirements weren't honored, even if it met general safety standards.

Initial prototype products were safe, but failed usability testing because they didn't meet job-specific needs.

Focus groups with sailors in pilot programs and product managers highlighted dissatisfaction that resulted in improper wear of new uniform prototypes, undermining the safety advancements.

IMPACT



Delivered and iterated on early-stage product in collaboration with product managers, manufacturers, distribution operators, and end-users



Identified distinct user segments with different requirements within the same product category



Data-driven adaptations addressed role-specific needs while maintaining core safety requirements



Research methodology (auto-ethnography + user testing) demonstrated deep user immersion



Fleet-wide deployment informed by sequential pilot learnings

The Challenge

THE RESEARCH PROBLEM

Existing shipboard uniforms did not meet fire safety standards, creating unacceptable risk during onboard emergencies.

USERS AFFECTED

- Sailors, pilots, engineers across diverse operational roles
- Uniform product managers and designers
- Product manufacturers and suppliers
- Logistics and distribution operators

WHY IT MATTERS

Fire is one of the most dangerous hazards at sea. Uniforms that fail under heat exposure can mean the difference between escape and injury. These practitioners can't wait for perfect solutions, and they need equipment that works in their operational context.

THE RESEARCH QUESTION

What is required to design fire-resistant uniforms that meet safety standards while supporting the diverse operational needs of sailors across the fleet?

SCOPE

Prototype deployment to multiple organizations throughout the fleet

User acceptance testing with diverse operational roles

Iterative adaptation with product managers and designers based on field feedback

Sequential deployment phases based on pilot learnings

Mixed Methods Research Approach

QUALITATIVE

Interviews and Participant Observation

Semi-structured interviews with sailors across diverse operational roles to understand context-specific requirements, pain points, and usability concerns in real operational conditions

Auto-ethnography

Wore the prototype uniforms myself to understand the user experience firsthand during observation and field visits, experiencing heat, mobility, and comfort requirements during extended wear in operational contexts

QUANTITATIVE

User Acceptance Testing Surveys

Structured surveys deployed across prototype pilot groups to quantify satisfaction, identify common issues, and track improvement across iterations

KEY INSIGHTS

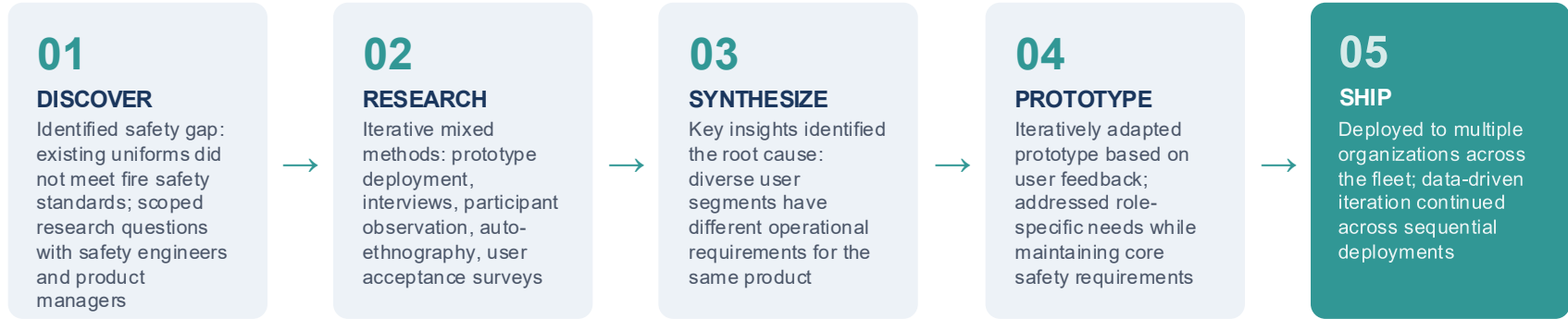
Interviews and observation revealed **why** there was an acceptance problem → Different user segments had fundamentally different requirements for the same product that drove user acceptance.

Field-based usability testing revealed **what** was causing it → Specific features and modifications needed to serve each segment while maintaining safety standards, otherwise improper wear would undermine safety advancements.

CROSS-FUNCTIONAL COLLABORATION

- Supply chain (sourcing fire-resistant materials)
- Safety engineers (verifying compliance with standards)
- Command leadership (securing pilot authorization)
- Diverse operational units (pilots, engineers, deck crews)

End-to-End Research Process



Designed for Iteration



Purposefully designed to be an iterative product development process, with user feedback surfacing new requirements that were incorporated into each deployment phase. The research design built in capacity to address subsequent iterations in close collaboration with engineers, product managers, manufacturers, and logistics and operations teams.

Research in a Dynamic Environment



This end-to-end research process highlights field-based research conducted aboard operational vessels where the work can't stop to ask questions. The design adapted to operational constraints, with safety always remaining the #1 objective and priority, and maintained awareness of the diverse requirements that users needed in addition to safety standards.

Impact

30+

Ships, squadrons, and shore commands participated in the pilot

Data-Driven Iteration

Sequential deployments informed by user feedback

Fleet-Wide Deployment

Research developed a pathway towards deployment to the entire fleet

- ✓ Identified distinct user segments with different requirements within the same product category
- ✓ Iteratively adapted prototype to meet operational needs and usability concerns while prioritizing safety standards

- ✓ Auto-ethnographic approach demonstrated deep immersion in user experience
- ✓ Early-stage product cycle effectively executed
- ✓ Research methodology established model for future product evaluation and larger rollout

This research demonstrated that the same product could require fundamentally different configurations for different user segments even within the same operational environment and under the same minimum safety standards.

Home Search Health and Safety Journey Mapping

PROJECT

Renters and home purchasers lack effective tools and accessible information about health and safety risks when making housing decisions.

Research Question: How do critical users navigate health and safety information when making housing decisions, and what tools are needed to help fill in critical information gaps?



Community Listening Sessions and Focus Groups



Semi-structured Interviews



Journey Mapping for multiple user segments



Proposed toolkits for diverse users

INSIGHT

Users frequently discovered health and safety risks (flood exposure, air quality, environmental hazards) only after committing to housing decisions

At critical stages throughout the journey, users did not have meaningful access to the tools that would help them answer health and safety risks about their home choices.

User agency and information availability vary dramatically across the decision journey, creating specific points where users lack both the information they need and the ability to act on it

Trusted sources and authoritative tools were difficult or impossible to identify without extensive prior experience, limiting user agency throughout the decision-making process.

IMPACT



Developed journey map framework identifying critical intervention points across multiple distinct user types (renters, buyers, realtors, insurance agents, etc.)



Executive report developed and delivered with NGO and private sector collaborators, intended for real estate practitioners, community educators, and property information sites (Zillow, Redfin, etc.) with recommended interventions



Framework informing practitioner training recommendations for real estate and lending professionals



Research methodology being extended to additional housing contexts

The Challenge

THE RESEARCH PROBLEM

Renters, purchasers, and real estate practitioners lack accessible information about health and safety risks when making housing decisions, often discovering problems only after commitment.

USERS AFFECTED

- Renters and buyers searching for homes
- Realtors, brokers, insurance agents, other practitioners
- Property information hubs (Zillow, Redfin, etc.)
- Local regulators and zoning officials

WHY IT MATTERS

Housing decisions have long-term health and safety implications, including flood risk, air quality, and environmental hazards. Renters/Buyers often discover risks after commitment, when they have the least agency to adapt. Practitioners are likewise often under-informed at critical decision points, limiting their ability to support clients.

THE RESEARCH QUESTION

How do critical users in home selection processes navigate health and safety information, and what tools and processes can be developed to support their decision-making?

SCOPE

Interviews, focus groups, and community listening sessions with diverse users in California, Montana, Texas, and Louisiana

Comparative journey mapping for multiple distinct user segments, including renters, buyers, agents, and brokers

Executive report with policy recommendations

Partnership with Bay Area NGOs and private sector partners for intervention development and eventual deployment

Mixed Methods Research Approach

QUALITATIVE

Community Listening Sessions and Focus Groups

Group-based qualitative data collection across 4 diverse geographies exploring and understanding decision-making processes, go-to-information sources, and critical information gaps across the home selection journey

Semi-Structured Interviews

In-depth interviews with renters and home purchasers to understand decision-making processes, information sources, pain points, moments of friction, and perceptions of agency at different points in the critical user journey

COMPARATIVE CRITICAL USER JOURNEY MAPPING

Comparative analysis of critical user journeys to identify where experiences diverge and where common patterns emerge across both home searchers and real estate practitioners

KEY INSIGHTS

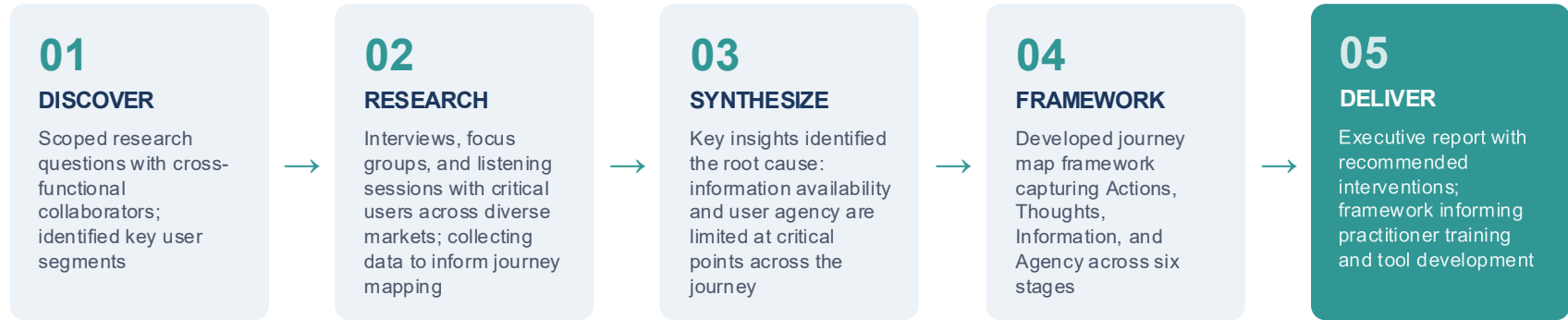
Interviews revealed critical gaps in information → Users lack the ability gather trusted information during search processes and frequently discover health and safety risks only after committing to a property.

Journey mapping revealed why → Information availability and user agency are often limited at critical stages in the process (negotiation, signing, etc.) and trusted, authoritative tools are not available to support them on their journey.

CROSS-FUNCTIONAL COLLABORATION

- Policy researchers (process understanding, intervention design)
- Bay Area home safety NGOs (implementation partners)
- Real estate & lending practitioners (validation and input)
- Local community leaders (access and local context)

End-to-End Research Process



Designed for Iteration

The journey map framework was iterated with critical users and collaborators and is designed to be extended to incorporate additional housing contexts (renovation, relocation), which can be mapped using the same methodology. Research is ongoing, with NGO partners testing interventions informed by the framework.



Research in a Dynamic Environment

This field-based research centers diverse critical users including real estate agents, inspectors, renters, and buyers in a dynamic process that is time-sensitive and vitally important to health, safety, and wellbeing of individuals and communities. The participants were actively engaged in home searches as individuals and practitioners, and the insights impact and inform the safe outcomes of these dynamic processes.

Impact

Focus on Practitioners

Framework informing training and tooling for real estate practitioners

Journey Maps

Six-stage framework mapping information and agency against critical decision points

Executive Report

Distributed through community leaders, industry partners, and NGOs

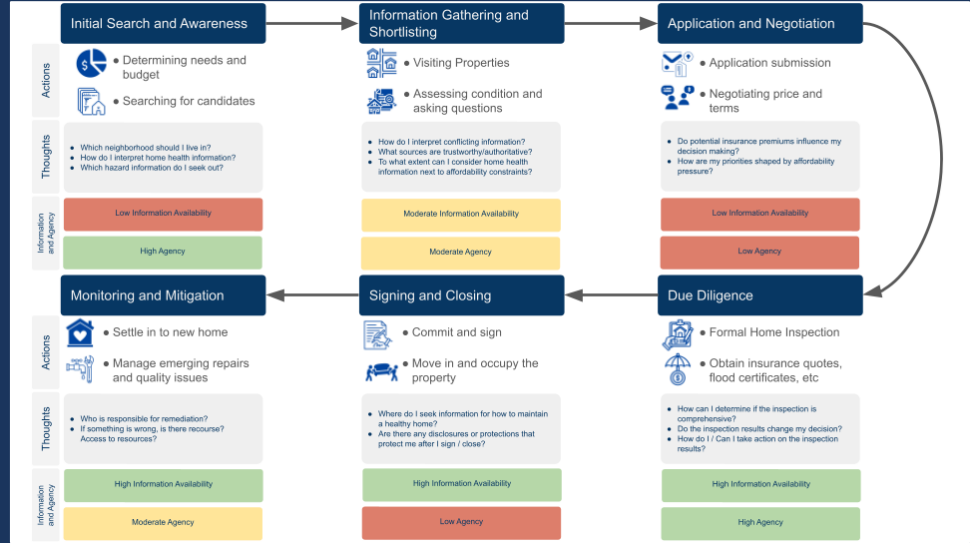
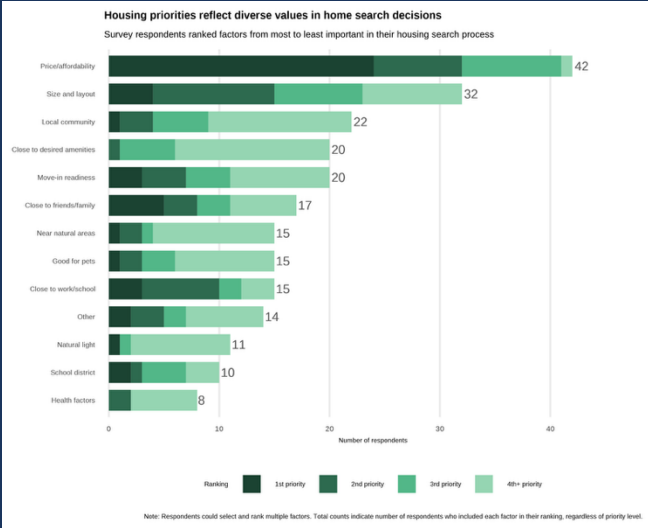
- ✓ Journey map framework adopted by policy partners and industry leaders for intervention design
- ✓ Identified critical intervention points where information delivery can improve decisions

- ✓ Framework informs practitioner training recommendations for real estate and lending professionals
- ✓ Research methodology extended to additional contexts
- ✓ Partnership with Bay Area NGOs advancing research to real-world implementation

This research develops an understanding of where along the home selection journey critical users have agency, where they have information, and where gaps need to be filled by trusted, authoritative, and accessible tools, products, and processes.

Example Artifacts

*Example draft Critical User Journey Map, mapping user Actions and Thoughts alongside availability of information and user agency at key stages of the home search process**



*Analysis of renter/buyer user priorities in home search decision-making processes, used to inform Thoughts / Actions dimensions of the Critical User Journey**

*These figures are adapted from a report currently in preparation for publication. As such, they represent work in progress that is not available for distribution, referencing, or further publication. Please contact me for more details or information as needed

Skills and Expertise

MIXED METHODS EXPERTISE

Extensive training and field-based experience in diverse mixed methods approaches to UX research, including:

Qualitative

- *Interviews (semi-structured, expert, etc.)*
- *Community Listening Sessions*
- *Focus Groups*
- *Participant Observation and Ethnography*

Quantitative

- *Surveys (pulse, representative, etc.)*
- *Computational Social Network Analysis*
- *Big Data Modeling and Analysis*

8 YEARS FIELD RESEARCH EXPERIENCE

Mixed-methods investigation of high-stakes domains through on-the-ground research

END-TO-END RESEARCH LEADERSHIP

Leading research from scoping through shipping with demonstrated real-world impact

PRACTITIONER-FOCUSED RESEARCH

I study operational teams that manage risk and keep people safe in dynamic environments

CROSS-FUNCTIONAL COLLABORATION

From beginning to end, I'm in the room with engineers, designers, product managers, and regulators to drive relevant impact

SAFETY-DRIVEN RESEARCH

My career has focused on helping practitioners identify and mitigate risk and keep communities safe

RESEARCHING DYNAMIC ENVIRONMENTS

Research in natural disaster zones, Navy ships at sea, and other places where operations can't stop to ask questions

I identify societal challenges where the status quo is unacceptable, investigate them using field-based mixed methods in dynamic environments, and work with on-the-ground partners, designers, and engineers to inform and implement solutions.

Ryan O'Connor, PhD

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