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HCD4HS
Human Centered Design For Human Services

# Applying Human-Centered Design to Human Services: Pilot Study Findings

Desiree W. Murray, Kristina Rosinsky, Maggie Haas, Asaph Glosser, and Suzanne Boyd

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**Submitted to:**
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The views expressed in this publication do not necessarily reflect the views of these individuals or organizations.

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# Expert Advisory Group Members

The authors thank the following members of the Human-Centered Design for Human Services (HCD4HS) expert advisory group. These individuals were selected for their expertise in the implementation and/or study of human-centered design. Selections were made collaboratively between the Office of Planning, Research, and Evaluation (OPRE) at the U.S. Department of Health and Human Services' Administration for Children and Families (ACF), Child Trends, Anthro-Tech, and MEF Associates. The views expressed in this publication do not necessarily reflect the views of these members.

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# Overview

Human-Centered Design (HCD) is a process and a mindset for addressing complex problems by designing solutions with those who will ultimately use the solution (i.e., end users). Because of its inherent focus on end users or recipients of services, HCD appears to have potential for promoting effective, efficient, and compassionate service delivery that is aligned with the mission of the U.S. Department of Health and Human Services' Administration for Children and Families (ACF). Despite this appeal, the implementation of HCD within human services is relatively novel.[1,2] There has been little empirical work to date on how HCD might be used to improve outcomes of interest to ACF programs.

## Project Goals and Research Questions

In 2018, ACF's Office of Planning, Research, and Evaluation (OPRE) initiated the Human-Centered Design for Human Services (HCD4HS) project to explore the viability of HCD in addressing the complex problems facing public sector human services programs. The HCD4HS project team was comprised of Child Trends, Anthro-Tech, and MEF Associates. This project included a review of the knowledge base to define HCD and describe how it has been used and evaluated in the human services context, and a pilot study to evaluate the implementation of HCD, with a focus on assessing its evaluability.

This pilot study sought to answer the following research questions:

1. What types of challenges within ACF programs are best suited for an HCD approach?
2. What resources are required to implement HCD approaches in ACF programs?
3. What systemic or cultural barriers may make implementation a challenge, and can those be mitigated?
4. What does HCD implementation look like?
5. How can the HCD approach be evaluated in order to better understand outcomes of interest to ACF? Can HCD be evaluated to determine whether or not this approach is more or less successful than traditional approaches?
6. What criteria are defined as successful outcomes when evaluating this process?
7. Were improvements observed on outcomes of interest for end users?
8. Were improvements observed within the organization?

## Methods

The HCD4HS project selected three human services agencies that administer different ACF-funded programs, have different end users, and are likely to successfully implement HCD based upon their readiness, including need, fit, resources, and capacity: Denver Human Services, Santa Clara County Social Services Agency, and Washington State Division of Child Support. These sites were identified through a structured recruitment process and were selected from 32 human services agencies or programs across the country that self-nominated.

The pilot study implemented a capacity-building approach in which HCD consultants from Anthro-Tech provided ongoing HCD training and coaching to a team of staff at each agency (the "design team") who carried out the HCD activities. Training began with an introductory workshop in January 2021; Design

Thinking Workshops were held in the summer of 2021; and coaching occurred from February through December 2021. Design teams received an average of 7-9 hours of coaching support per week. Evaluation data were collected throughout most of the implementation period, beginning in February 2021 and ending in November 2021.

The HCD4HS pilot study used a mixed methods evaluation approach in which similar questions were asked of different individuals participating in the pilot study, in different formats. For example, some data were collected as weekly and monthly logs to assess the consistency of implementation experiences across time. To address the research questions, the project developed of a suite of measures for use in this evaluation based on the literature, which included:

- Design Team Logs,
- HCD Consultant Logs,
- Content Expert Logs,
- Interview protocols for design teams and HCD consultants, and an
- Implementation Assessment tool (a semi-structured group interview assessing key aspects of implementation in a manner that is quantifiable).

## Key Findings and Discussion

This project contributes to current understanding of how HCD can be evaluated within a human services context by:

- Formalizing a Theory of Change,
- Developing new evaluation tools and testing methods, and
- Identifying key findings regarding implementation of a capacity-building approach for HCD in this context.

Responses to the initial research questions for the pilot study are provided below. Of note, not all the questions could be fully addressed.

- All three sites appeared to make good progress in addressing very disparate challenges: Temporary Assistance for Needy Families (TANF) cliff effect, staff engagement, and completion of child support order modifications. However, given that there were only three sites, we cannot fully address which types of challenges within the broad range of ACF programs may be *best* suited for HCD.
- Design teams identified project management, leadership support, and incentives for end user participation as critical resources for implementation of HCD, similar to implementation of other change initiatives.
- Design teams identified primary barriers as time and capacity, recruitment of end users, getting incentives in place to encourage end user participation, and organizational structures and processes.
- Using a capacity building approach, all design teams participated in an initial HCD Primer workshop (24 hours) followed by 11 months of training and coaching from an HCD consultant (average of 5 hours/week) and content expert (average of 2-4 hours/week). All training and coaching were provided virtually.

- Design teams clearly demonstrated HCD principles related to empathy and collaboration. Demonstration of some principles varied across site, time, and reporter. The evaluation timeline precluded full assessment of all principles.
- Given limitations of existing measures, this project developed tools including weekly and monthly logs of HCD activities, interviews, and an Implementation Assessment assessing HCD principles, process, and mindset. However, the project timeline precluded evaluation of solutions, including outcomes for end users. In order to compare HCD to other approaches, different tools would likely be needed.
- Given that design teams did not get to the HCD phase where they would implement their solution, outcome improvements for end users could not be assessed.
- All design teams demonstrated an HCD mindset by demonstrating empathy; openness to the opinions and perspectives of end users and others; and adopting new ways of identifying challenges, brainstorming, and trying different ideas. They also demonstrated a bias toward action.

Additional key findings also emerged that supplement the initial research questions, as follows:

- HCD can be evaluated systematically in human services programs with a variety of theoretically-driven data collection tools, although more work is needed in measure development.
- With expert training and coaching, design teams demonstrated HCD principles and implemented a range of HCD techniques with different challenges, end users, and contexts.
- From early in the evaluation, design team members demonstrated an HCD mindset, including empathy for end users, openness to different opinions and perspectives, and new ways of identifying challenges and brainstorming.
- Design teams demonstrated capacity for HCD through using strategies competently, building confidence, developing processes to support sustainability, and addressing challenges that arose.
- HCD was found to be useful and relevant in addressing disparate challenges across three sites, and each site had interest in continuing to use HCD in some ways.

# Executive Summary

Human services programs address complex social issues ranging from supporting healthy relationships, child welfare, and economic mobility, to providing high-quality, accessible early childhood programs. Because of its inherent focus on end users or recipients of services, human-centered design (HCD) appears to have potential for promoting effective, efficient, and compassionate service delivery that is aligned with the mission of the U.S. Department of Health and Human Services' Administration for Children and Families (ACF).[3] HCD also can be used to spark innovation to address the myriad challenges faced by human services programs. Despite this appeal, the implementation of HCD within human services is relatively novel.[4,5] There has been little empirical work to date on how HCD might be used to improve outcomes of interest to ACF programs. A priority for ACF is to explore the potential for HCD in human services—whether it is feasible for human services programs to implement, what implementation might look like in human services, what resources are required, and how HCD implementation could be evaluated in this context.

In 2018, ACF's Office of Planning, Research, and Evaluation (OPRE) initiated the Human-Centered Design for Human Services (HCD4HS) project to explore these topics. The HCD4HS project team was comprised of Child Trends, Anthro-Tech, and MEF Associates. This project included a review of the knowledge base to define HCD and describe how it has been used and evaluated in the human services context, and a pilot study to evaluate the implementation of HCD, with a focus on assessing its evaluability.

This pilot study sought to answer the following research questions:

1. What types of challenges within ACF programs are best suited for an HCD approach?
2. What resources are required to implement HCD approaches in ACF programs?
3. What systemic or cultural barriers may make implementation a challenge, and can those be mitigated?
4. What does HCD implementation look like?
5. How can the HCD approach be evaluated in order to better understand outcomes of interest to ACF? Can HCD be evaluated to determine whether or not this approach is more or less successful than traditional approaches?
6. What criteria are defined as successful outcomes when evaluating this process?
7. Were improvements observed on outcomes of interest for end users?
8. Were improvements observed within the organization?

The HCD4HS pilot study built on current knowledge of HCD in human services, including the definition and principles in the box below that were developed by the HCD4HS project team.

## What is HCD?

The HCD4HS project defines HCD as:

A process and a mindset for addressing complex problems by designing solutions with those who will ultimately use the solution (i.e., end users). HCD is guided by key principles that promote empathy for end users and the generation of new and creative solutions by taking into account behaviors, ways of thinking, needs, and aspirations. A design team comprised of individuals from multiple perspectives engages both end users and stakeholders (such as partners, community organizations, staff from other departments, etc.) throughout an iterative process that tests proposed solutions and refines them based on feedback. Ideally, the intensive involvement of end users and stakeholders will help ensure solutions are both easily adopted and effective.[6]

HCD is also characterized by the following six principles:[7]

**Principle 1: Understand end users and stakeholders.** The design solution is rooted in explicitly understanding the needs, tasks, and environments of these individuals.

**Principle 2: Engage with end users and stakeholders throughout.** These individuals are meaningfully engaged throughout the design process (i.e., from helping define the problem to brainstorming and testing potential solutions).

**Principle 3: Test and revise solutions based on end user and stakeholder feedback.** The design is created and revised based on feedback from these individuals.

**Principle 4: Iterate.** The process may not be linear, meaning the team revisits prior steps to ensure the final solution best meets the needs of the end user.

**Principle 5: Consider entire experience.** The design solution considers the contexts in which end users live and the solution operates.

**Principle 6: Collaborate across disciplines.** The team of individuals collaborating to design solutions (i.e., design team) should represent varied skillsets, areas of expertise, and perspectives to promote cross-learning and understanding.

# Pilot Study Overview

Three human services agencies participated in the HCD4HS pilot study: Denver Human Services, Santa Clara County Social Services Agency, and Washington State Division of Child Support (see below for descriptions of each agency). Site selection considerations included representation from a breadth of ACF-funded programs and end users (e.g., customers, staff), and an assessment of a site's readiness for successful implementation, including need, fit, resources, and capacity. These sites were identified through a structured recruitment process and were selected from 32 human services agencies or programs across the country that self-nominated. The project team reviewed applicants for alignment with the site selection criteria, including further conversations with a subset of sites. The pilot study implemented a capacity-building approach in which HCD consultants from Anthro-Tech provided ongoing HCD training and coaching to a team of staff at each agency (the "design team") who carried out the HCD activities. Each design team was also provided with support from a content expert from MEF or Child Trends. The content expert for each design team provided expertise and guidance in the substantive area each agency was focused on (e.g., how child support works, etc.). Training began with an introductory workshop in January 2021; Design Thinking Workshops were held in the summer of 2021; and coaching occurred from February

through December 2021. Design teams received an average of 7-9 hours of coaching support per week. Evaluation data were collected throughout most of the implementation period, beginning in February 2021 and ending in November 2021.

## Denver Human Services

Denver Human Services (DHS) operates federal, state, and locally funded services to support children, older adults, and families. For the HCD4HS pilot study, DHS sought to focus efforts on supporting individuals exiting the county's Temporary Assistance for Needy Families (TANF) program. They wanted to help families experiencing the consequences of what is known as "benefits cliffs," or the "cliff effect." This phenomenon occurs when an increase in earnings results in an individual or family exceeding an income eligibility threshold for a given benefits program, but the amount of the new earnings does not replace the cumulative value of the assistance they had been receiving while on public benefits.[8] The goal was to support these end users—families exiting TANF—and to reduce the number of them who returned to TANF after exiting the program.

## Santa Clara County Social Services Agency

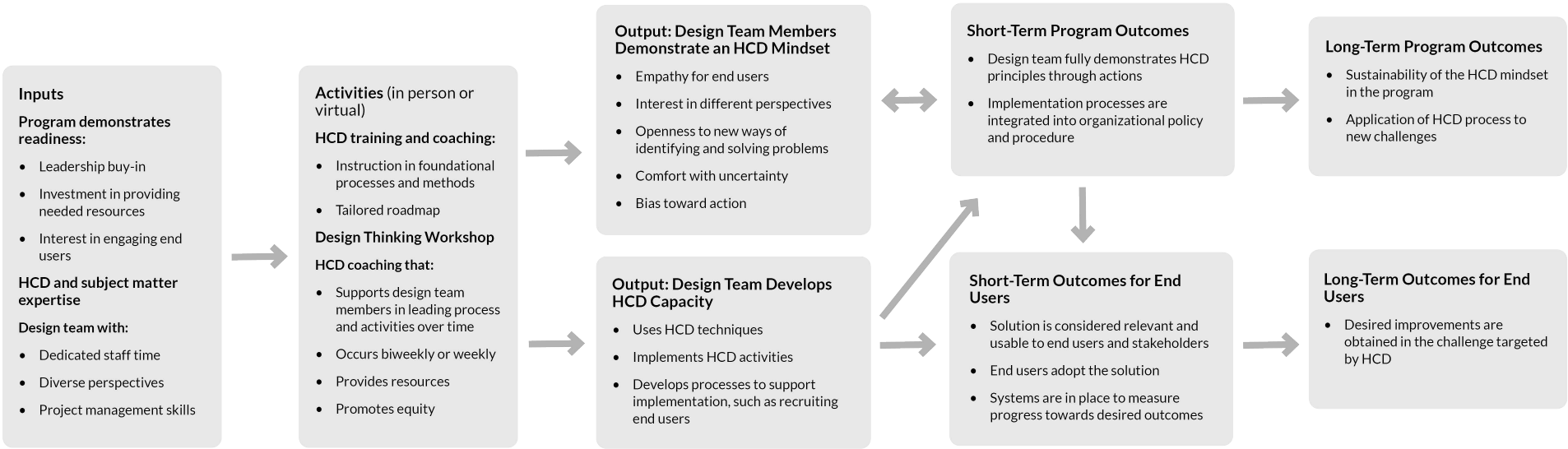
The Santa Clara County Social Services Agency (SSA) provides safety net services to children, families, and adults. With multiple operational divisions providing direct services to community members, SSA sees staff wellness and engagement as critical to providing high-quality services to the families and individuals it serves. Prior efforts to measure staff engagement by SSA underscored the opportunity to improve in this area. For the HCD4HS pilot study, SSA sought to build on prior county efforts to increase engagement and well-being of agency employees (the end users).

## Washington State Division of Child Support

The Washington State Division of Child Support (DCS) is housed within the state's Department of Social and Health Services. DCS operates the state's child support program. A core responsibility of child support programs is establishing monthly support orders. These orders can be changed when the circumstances of a parent change (e.g., getting or losing a job). For the HCD4HS pilot study, DCS sought to improve the order modification process for families to ensure child support payments reflected the most up-to-date circumstances of the family. The order modification process can be daunting for parents. It entails filling out multiple complex forms and often requires the provision of detailed financial information. DCS sought to use the HCD4HS pilot study to increase the percentage of these end users—parents who requested a modification—who successfully complete the application for a modification.

# Theory of Change

A Theory of Change is a model that specifies the critical components, activities, and/or processes hypothesized to produce specific changes (outcomes). A Theory of Change was developed to guide this pilot study. The Theory of Change was informed by a review of the knowledge base on the use of HCD in human services conducted as part of the HCD4HS project.[9] Over the course of the pilot, the Theory of Change was revised based on what was learned. The figure below shows how inputs and activities (such as readiness, HCD expertise, and coaching) are expected to change the way organizations approach problem-solving and ultimately, improve outcomes for end users.



# Methods

The HCD4HS project used a mixed methods approach including quantitative and qualitative data that were integrated in generating findings. In order to inform questions about HCD evaluation approaches, we asked similar questions of different individuals participating in the pilot study, in different formats. In addition, some log data were collected weekly and monthly to assess implementation experiences across time. To address the research questions, the project included the development of a suite of measures for use in this evaluation based on the literature, which included:

- Design Team Logs,
- HCD Consultant Logs,
- Content Expert Logs,
- Interview protocols for design teams and HCD consultants, and an
- Implementation Assessment tool (a semi-structured group interview assessing key aspects of implementation in a manner that is quantifiable).

To analyze quantitative data from the logs and Implementation Assessment, we used descriptive statistics, including counts, averages, and ranges. We then triangulated data across measures and methods, noting any similarities and differences between raters, across agencies, and across time. Thematic analysis was used to summarize open-ended responses on the logs and in interviews.

# Findings

Evaluation findings provide important lessons about HCD implementation for practitioners. The findings also provide lessons for researchers on how they can approach theory-driven evaluations of future HCD efforts in public human services settings. Responses to the initial research questions for the pilot study are provided below. Of note, not all the questions could be fully addressed.

| Research question | Finding |
|---|---|
| **Research Question 1:** What types of challenges within ACF programs are best suited for an HCD approach? | All three sites appeared to make good progress in addressing very disparate challenges: TANF cliff effect, staff engagement, and completion of child support order modifications. However, given that there were only three sites, we cannot fully address which types of challenges within the broad range of ACF programs may be best suited for HCD. |
| **Research Question 2:** What resources are required to implement HCD approaches in ACF programs? | Design teams identified project management, leadership support, and incentives for end user participation as critical resources for implementation of HCD, similar to implementation of other change initiatives. |
| **Research Question 3:** What systemic or cultural barriers may make implementation a challenge, and can those be mitigated? | Design teams identified primary barriers as time and capacity, recruitment of end users, getting incentives in place to encourage end user participation, and organizational structures and processes. |

| Research question | Finding |
|---|---|
| **Research Question 4:** What does HCD implementation look like? | Using a capacity building approach, all design teams participated in an introductory training (24 hours) followed by 11 months of training and coaching from an HCD consultant (average of 5 hours/week) and content expert (average of 2-4 hours/week). All training and coaching were provided virtually.<br><br>Design teams clearly demonstrated HCD principles related to empathy and collaboration. Demonstration of some principles varied across site, time, and reporter. The evaluation timeline precluded full assessment of all principles. |
| **Research Question 5:** How can the HCD approach be evaluated in order to better understand outcomes of interest to ACF? Can HCD be evaluated to determine whether or not this approach is more or less successful than traditional approaches? | Given limitations of existing measures, this project developed tools including weekly and monthly logs of HCD activities, interviews, and an Implementation Assessment assessing HCD principles, process, and mindset. However, the project timeline precluded evaluation of outcomes for end users. In order to compare HCD to other approaches, different tools would likely be needed. |
| **Research Question 6:** What criteria are defined as successful outcomes when evaluating this process? | Criteria that could be used to define successful implementation based on the Theory of Change developed for this study include: demonstration of an HCD mindset, development of HCD capacity, demonstration of HCD principles in action, integration of HCD implementation into organizational policies and procedures, and development of relevant and usable solutions that end users adopt and for which progress is monitored on an ongoing basis. |
| **Research Question 7:** Were improvements observed on outcomes of interest for end users? | Given that design teams did not get to the HCD phase where they would implement their solution, outcome improvements for end users could not be assessed. |
| **Research Question 8:** Were improvements observed within the organization? | All design teams demonstrated an HCD mindset by demonstrating empathy; openness to the opinions and perspectives of end users and others; and adopting new ways of identifying challenges, brainstorming, and trying different ideas. They also demonstrated a bias toward action. All teams expressed interest in continuing their HCD capacity building efforts. |

Additional key findings also emerged that supplement the initial research questions, as follows:

**HCD can be evaluated systematically in human services programs with a variety of theoretically-driven data collection tools, although more work is needed in measure development**. Data collected through multiple methods yielded largely similar findings, supporting the validity of our tools. Reliability was supported by the consistency of ratings repeated by several respondents. Discrepancies between reporters may reflect important differences in perspectives and inform which measures may be more useful for assessing different types of information. Future measurement work is also needed to clearly distinguish HCD principles (which we suggest may be best defined as actions) and an HCD mindset (thoughts,

perceptions, and beliefs). The theoretical model and measures used in this project may be useful for developing more rigorous HCD evaluation studies in the future and for identifying key components and mechanisms of change to strengthen impact.

**With expert training and coaching, design teams (i.e., staff at human services agencies) demonstrated HCD principles and implemented a range of HCD techniques with different challenges, end users, and contexts**. Design teams received approximately 7-9 hours per week of consultation and direct support from an HCD consultant and a content expert over the course of 11 months, in addition to three full days of initial HCD training. With this capacity-building support, design teams demonstrated HCD principles and appeared to use HCD techniques effectively as evidenced by (1) high HCD consultant and design team ratings on relevant log questions (such as, "Our team demonstrates empathy for end users" and "The design team effectively uses HCD techniques"), (2) the use of various HCD techniques over the course of the pilot study, and (3) Implementation Assessment scores for several of the HCD principles.

**From early in the evaluation, design team members demonstrated an HCD mindset, including empathy for end users, openness to different opinions and perspectives, and new ways of identifying challenges and brainstorming**. The mindset was underscored across multiple data collection approaches across time and agency. However, aspects of this mindset were apparent at the beginning of the pilot study, suggesting that design teams at the selected agencies came to this work with a strong initial HCD mindset, rather than developed it through the pilot study.

**Design teams demonstrated capacity for HCD through using strategies competently, building confidence, developing processes to support sustainability, and addressing challenges that arose.** HCD consultants rated design teams' use of HCD techniques highly and there was evidence of an increase in design team confidence in and capacity for HCD across the evaluation period. Design teams also developed capacity by creating new processes to support HCD implementation and addressing challenges.

**HCD was found to be useful and relevant in addressing disparate challenges across three sites, and each site had interest in continuing to use HCD in some way.** Design team members were optimistic about the viability of the solutions they were creating. They also consistently indicated that HCD was relevant for their agencies' specific challenges, as did the HCD consultants. There was also evidence that design teams were utilizing an HCD mindset and principles in other aspects of their work and were taking action to enable continuation of HCD, although concerns about the time commitment for full implementation were noted.

# Discussion

This project contributes to current understanding of how HCD can be evaluated within a human services context. It formalized a Theory of Change, developed new evaluation tools and tested methods, and identified key findings regarding the value of building capacity for HCD implementation.

**Evaluation tools and methods**. Data collection tools and methods were developed for use in this project and were grounded in the current literature and a theoretical model using a systematic evaluation approach. Formalization of these and other HCD evaluation tools is not only useful for research, but may help shift organizational priorities, and even metrics, for success.[10] There may be particular value to assessing the HCD principles and mindset through a facilitated interview with key design team members (similar to the Implementation Assessment tool developed for this project). Moreover, the work suggests the need to further refine measures in a manner that can better distinguish a design team's HCD mindset (their thoughts, perceptions, and beliefs) from their demonstration of principles (their actions).

**Implications of findings for HCD implementation.** This project provides valuable lessons for other human services programs interested in implementing HCD.

- Readiness, including leadership support and adequate staff capacity and resources, appeared to be a critical component for successful implementation of HCD in this project.
- Fully virtual training and coaching were viable and effective based on feedback from design team members and HCD consultants.
- Training human services staff new to HCD to implement the full process takes time and requires ongoing support and coaching from experts. However, this capacity-building may be an important outcome in and of itself since it may promote an HCD mindset that could benefit any number of change initiatives. To support capacity building, it may be helpful to train design teams by working on a smaller, more manageable challenge before using HCD for complex challenges.
- Equity can be integrated within HCD via the use of specific strategies. Equity is also promoted when design teams include individuals with diverse perspectives, backgrounds, skills, expertise, and roles within the organization or community. However, human services programs may also experience challenges fully engaging some individuals (e.g., end users and stakeholders) throughout the project, an important area for future initiatives to prioritize.

# Conclusion

The HCD4HS project developed an approach for evaluating capacity-building to support HCD implementation within three organizations addressing different challenges related to human services delivery. This project provides valuable insights about the capacity-building process for HCD within human services programs that demonstrate interest in and readiness for engaging in this type of change initiative. It also demonstrates the importance of using a theoretical model, highlights the value of different assessment approaches, and identifies specific areas for future research, including work to further operationalize the HCD principles and mindset, and to validate research tools.

# Introduction

Human services programs address complex social issues ranging from supporting healthy relationships, child welfare, and economic mobility to providing high-quality, accessible early childhood programs. Because of its inherent focus on end users or recipients of services, human-centered design (HCD) appears to have potential for promoting effective, efficient, and compassionate service delivery aligned with the mission of the U.S. Department of Health and Human Services' Administration for Children and Families (ACF).[11] HCD also can be used to spark innovation to address the myriad challenges faced by human services programs. Despite this appeal, the implementation of HCD within human services is relatively novel.[12,13] There has been little empirical work to date on how HCD might be used to improve outcomes of interest to ACF programs.

## The HCD4HS Project

Given the lack of research on the use of HCD in human services, in 2018, ACF's Office of Planning, Research, and Evaluation (OPRE) contracted with Child Trends and its partners Anthro-Tech and MEF Associates to conduct the Human-Centered Design for Human Services (HCD4HS) project to explore the viability of HCD in addressing the complex challenges facing public sector human services programs. This project includes two major activities: 1) a review of the knowledge base to define HCD and describe how it has been used and evaluated in the human services context, and 2) a pilot study including 11 months of training and coaching for three human services agencies and a mixed methods evaluation of the HCD implementation at these agencies. The latter is the focus of this report. These two research activities were complementary. In particular, the review of the knowledge base informed how HCD training was delivered, the development of a Theory of Change, and the data collection approaches used.

The pilot study aimed to describe implementation of HCD in human services with a particular focus on assessing its evaluability. HCD experts from Anthro-Tech trained and provided coaching to a group of staff at three human services agencies (i.e., the "design teams"). Child Trends and MEF Associates provided consultants with policy and subject matter expertise matched to the challenge being addressed to assist with implementation. Child Trends also collected data to explore the implementation, feasibility, and evaluability of HCD.

From the outset of the project, OPRE placed specific emphasis on developing an evaluation approach to assess implementation of HCD in a manner that can inform future evaluation efforts. Although individuals at agencies without prior experience with HCD were trained and coached during a relatively short period of time, this approach provides a model that future evaluators of HCD implementation can build upon in an array of different policy and implementation settings.

## What is Human-Centered Design?

As part of this work, the HCD4HS project included a review of the knowledge base about the use of HCD within human services (see Box 1 for a summary of themes from this review). Through this review, it became clear that there is no one universally accepted definition of HCD. Therefore, the HCD4HS project developed the following definition of HCD:

> A process and a mindset for addressing complex problems by designing solutions with those who will ultimately use the solution (i.e., end users). HCD is guided by key principles that promote empathy for end users and the generation of new and creative solutions by taking into account behaviors, ways of

thinking, needs, and aspirations. A design team comprised of individuals from multiple perspectives engages both end users and stakeholders[a] (such as partners, community organizations, staff from other departments, etc.) throughout an iterative process that tests proposed solutions and refines them based on feedback. Ideally, the intensive involvement of end users and stakeholders will help ensure solutions are both easily adopted and effective.[14]

In addition, the HCD4HS project identified six principles that capture the essence of HCD, which are based closely on standards from the International Organization for Standardization (ISO Standard No. 9241-210:2019):

**Principle 1: *Understand end users and stakeholders*:** The design solution is rooted in explicitly understanding the needs, tasks, and environments of these individuals.

**Principle 2: *Engage with end users and stakeholders throughout***: These individuals are meaningfully engaged throughout the design process (i.e., from helping define the problem to brainstorming and testing potential solutions).

**Principle 3: *Test and revise solutions based on end user and stakeholder feedback***: The design is created and revised based on feedback from these individuals.

**Principle 4: *Iterate*:** The process may not be linear, meaning the team revisits prior steps to ensure the final solution best meets the needs of the end user.

**Principle 5: *Consider entire experience***: The design solution considers the contexts in which end users live and the solution operates.

**Principle 6: *Collaborate across disciplines***: The team of individuals collaborating to design solutions (i.e., design team) should represent varied skillsets, areas of expertise, and perspectives to promote cross-learning and understanding.[15]

The pilot study used this definition and these principles to help guide the way design teams were trained and coached in HCD. Data collection tools were also developed to be in alignment with these definitions and principles (for more, see Methods, below).

[a] While some scholars have expressed concerns about the term "stakeholder," because of its connotation and potential to obscure power dynamics,[16] we use it here for clarity due to its unique meaning within the HCD field. Where it is possible to replace "stakeholder" with a more specific term, we do so.

### Box 1. Other Key Findings From Review of Knowledge Base[17]

- There are five HCD phases: Research and Discover, Synthesize and Generate Solutions, Conceptualize and Prototype, Test and Iterate, and Implement and Refine.
- HCD is being utilized for many challenges across a range of human services programs.
- HCD is being implemented primarily at a local level, often with government or philanthropic support, and in consultation with a design firm or institute that provides training and expertise.
- Most human services organizations using HCD are in the early stages of implementation. An HCD mindset develops over time through engagement with the HCD process and could be thought of as a long-term outcome of the process. Given the novelty of HCD within human services, at this time there are more resources available on the process of HCD than on the HCD mindset.
    - Organizations implementing HCD are utilizing a variety of methods across all phases of the HCD process, such as interviews, observation, design workshops, and pilot studies.
    - Human services organizations report the process of obtaining input directly from end users is quite valuable, and often leads to new, unexpected solutions.
    - Organizations implementing HCD have reported positive changes in the design team's mindset, exemplified through increased empathy, innovation, community engagement, and collaboration.
    - HCD implementation studies suggest that important facilitators include 1) strong leadership; 2) buy-in from stakeholders; 3) a design team with a strong facilitator, diversity of perspectives, and shared language; and 4) ongoing coaching. Successful implementation also requires time, effort, and collaboration.
- HCD's sustainability in human services is unclear. HCD processes have been sustained within some organizations, particularly where there is strong support from leadership. However, resource and time constraints are key barriers to sustaining HCD within an organization.
- Although evaluations of HCD are largely descriptive, several efforts have been made to advance the measurement of HCD activities, implementation quality, and organizational outcomes. Lack of validated measures of the HCD process has limited progress in this area.
- Much remains to be learned about if and how HCD actually improves the challenges being addressed in human services.

## Evaluating Human-Centered Design in the Context of Human Services

A priority for ACF is to explore the potential for HCD in human services – whether it is feasible for human services programs to implement, what implementation might look like in human services, what resources are required, and how HCD implementation could be evaluated. In a review of the knowledge base, the HCD4HS project team found few examples of rigorous evaluations of HCD interventions, particularly in the public sector.[18] Prior evaluations of HCD interventions have had limited scope and have generally relied on a case study approach to evaluation. These case studies describe how HCD was implemented in a particular

place, and identify facilitators of the process, challenges, and/or lessons learned.[19,20,21,22,23] The case study approach, which often places a heavy emphasis on engaging end users and stakeholders in the study design and implementation, provides rich information on a specific implementation effort in a given locale. However, case studies are not well suited to support generalizable findings or to understanding the impact of the HCD process.

The individual case study approach has also limited the development of valid and reliable tools specifically aimed at measuring HCD implementation, despite growing recognition of the need to document and evaluate HCD.[24,25,26,27] Nearly all measures used in the HCD implementation studies identified appear to have used investigator-designed measures, such as unique surveys and interview guides. In addition to the emergent nature of the HCD field, this may also reflect challenges in measuring amorphous concepts like the extent to which people demonstrate an "HCD mindset."[28]

Prior evaluations have also not typically used a formal Theory of Change to design or select methods and measures. A Theory of Change is a model that specifies the critical components, activities, and/or processes hypothesized to produce specific changes (outcomes). Without a Theory of Change, it is not clear how or why the HCD process is believed to create desired changes. Similarly, the core components of HCD that might be generalizable across HCD interventions have not been identified. The absence of a recognized theoretical framework in the field makes it difficult to measure the implementation of HCD and its outcomes with standardized measures that are comparable across programs or implementation efforts. Moreover, grounding evaluation efforts in a clear Theory of Change can support evaluation designs that assess overall impact, the degree to which the intervention was implemented as designed, and the influence contextual factors have on implementation and impacts.

## This Report

Subsequent sections in this report summarize the evaluation approach, implementation of the pilot study, and our findings. First, the report presents the research questions that grounded the pilot study work and describes the three agencies that participated in the pilot study and the approach to their selection. Then, the report presents the initial Theory of Change. It then provides a description of HCD implementation and the data collection and analytic approach, followed by a presentation of the evaluation findings as organized by the Theory of Change.

The report concludes with a discussion of the strengths and limitations of the study, presentation of a revised Theory of Change based on study findings, and lessons for future studies of HCD and implications for HCD implementation. Several appendices accompany this report: a glossary of terms (Appendix A), supplemental figures (Appendix B), detailed findings for each of the study's research questions (Appendix C), the data collection measures used and recommended modifications for future use (Appendix D), as well as the references used throughout this report.

# Research Questions

The pilot study addressed eight main research questions, which were further refined and operationalized by the evaluation team (described in Methods, see below):

- **Research Question 1:** What types of challenges within ACF programs are best suited for an HCD approach?
- **Research Question 2:** What resources are required to implement HCD approaches in ACF programs?
- **Research Question 3:** What systemic or cultural barriers may make implementation a challenge, and can those be mitigated?
- **Research Question 4:** What does HCD implementation look like?
- **Research Question 5:** How can the HCD approach be evaluated in order to better understand outcomes of interest to ACF? Can HCD be evaluated to determine whether or not this approach is more or less successful than traditional approaches?
- **Research Question 6:** What criteria are defined as successful outcomes when evaluating this process?
- **Research Question 7:** Were improvements observed on outcomes of interest for end users?
- **Research Question 8:** Were improvements observed within the organization?

While these research questions specifically focus on ACF programs, the findings from this work apply to human services programs more broadly.

# Pilot Study Site Recruitment and Selection

The HCD4HS project involved a structured recruitment process to identify three sites for the pilot study. The recruitment process aimed to identify a range of ACF-funded programs that had the capacity to implement HCD and a willingness to be active participants in the pilot study. In this section we describe the site recruitment and selection process, criteria for selecting the programs for the pilot study, and the characteristics of the sites themselves. This section provides important context for the study that must be considered when interpreting findings.

The recruitment, selection, and engagement process occurred as follows:

- **Recruitment.** Information about the opportunity to participate in the pilot study was disseminated through OPRE's newsletter, discussions with ACF program offices, and social media. The announcement described the pilot study, emphasizing both the potential for program improvement and the opportunity to inform the broader field about HCD, and it provided instructions for nominating a human services program to be considered for the study. Applicants were asked to provide a brief narrative that described their agency or program, along with the challenge they would like to solve with HCD.
- **Review and assessment.** The HCD4HS project received 32 self-nominations from human services agencies or programs across the country. This included state and county human services programs, as well as other ACF-funded programs (e.g., Head Start grantees). The self-nominations were

reviewed and assessed for alignment with the selection criteria (see Table 1). Following this initial review, a small subset of applicants was interviewed to further assess fit with the selection criteria.

- **Selecting and securing sites**. The HCD4HS project team had conversations with the identified subset of sites to help prioritize those that best aligned with the selection criteria. These conversations included helping the applicants better define their problem statement, as well as determine the composition of their design team (a group of approximately five people collaborating to design a solution). During this process, each applicant was rated on the degree to which there was demonstrated alignment with each selection criterion in Table 1, and that information was used to recommend sites to OPRE for inclusion in the pilot study.
- **Finalizing terms of participation**. Following OPRE approval, each prospective site was engaged in further conversations to finalize the terms of participation in the pilot study. A memorandum of understanding (MOU) clearly laid out the responsibilities of the participating agency and the HCD4HS project team. These MOUs described the key project phases and timeline, the anticipated level of effort of the design teams associated with participation (minimum of 30 hours per week over five months,[b] spread across the approximately five design team members), and the training, coaching, and financial supports to be provided by the HCD4HS project. Supports offered were distributed equally across the three participating sites.

Each site was assessed using specific selection criteria informed by the National Implementation Research Network's (NIRN) Hexagon Tool[29] and input from the HCD4HS project's expert advisory group (listed at the beginning of this report). The advisory group reviewed the selection criteria to help apply categories from the Hexagon Tool to the HCD implementation context. Table 1 summarizes the primary criteria used to identify programs that were likely to be the best fit for the pilot study. There was substantial variation across the applications, as well as the three agencies that were ultimately selected, in terms of the degree to which they fully met the below criteria. The selection process resulted in the identification of three agencies with strong leadership buy-in, adequate resources, and interest/alignment with an HCD approach.

[b] As described later, the initial five-month term was extended during the course of the pilot study.

**Table 1.** Selection criteria

**Need**

- Identification of a challenge that can likely be addressed by HCD
- Clear identification of the end user
- Identification of a challenge that can be realistically improved within the pilot study period

**Fit**

- Not currently using an HCD process in the organization
- Alignment with ACF programmatic areas (e.g., economic security, early childhood, and healthy marriage/responsible fatherhood programming)
- Contribution to geographic diversity in the pilot study

**Resources**

- Materials and facilities available to support the HCD process
- Data systems in place to measure program outcomes/outputs
- Available program funds to support implementation of solution

**Evidence**

- Clear description of the challenge of interest
- Clear description of program's goals for participating in the process
- Availability of data tied to stated challenge

**Readiness**

- Interest in learning more about HCD through training and coaching
- Both executive leadership and supporting staff buy in
- Openness to end user perspectives and willingness to involve end users in the problem-solving process
- Comfort with iterative processes
- Comfort and use of data-driven decision making
- Openness to new potential interpretations about the origins and definitions of the challenge and openness to new potential solutions to the challenge

**Capacity to implement**

- Number of staff members available to participate in the process (target of five)
- Ability to commit time to pilot study activities

We recognize that the selection process resulted in the identification of organizations with strong readiness and capacity for implementing HCD. This decision was made so it would be possible to fully evaluate HCD

implementation. We also explicitly chose to work with programs without prior HCD experience to represent the broader field of human services organizations that do not have HCD expertise.

The three human services agencies selected to participate in the pilot study represent a range of ACF-funded programs with varied challenges and end users. Below, we provide an overview of each agency, as described by agency staff, including the programmatic area, the challenge they sought to address, the targeted end user, and strengths identified through the selection process.

## Denver Human Services

Denver Human Services (DHS) operates federal, state, and locally funded services to support children, older adults, and families. For the HCD4HS pilot study, DHS sought to focus efforts on supporting individuals exiting the county's Temporary Assistance for Needy Families (TANF) program.

In Colorado, each individual county administers its own TANF program under the supervision of the state Department of Human Services. States and counties have substantial discretion in how they use TANF funds to best meet the needs of families with low incomes. Along with direct cash assistance, TANF programs provide a variety of services to promote the main goals of TANF, which include the reduction of dependence on government benefits through job preparation, employment, marriage, and the formation and maintenance of two-parent families.

DHS leadership wanted to use HCD to support the transition of individuals exiting TANF. Specifically, they wanted to help families experiencing the consequences of what is known as "benefits cliffs," or the "cliff effect." This phenomenon occurs when an increase in earnings results in an individual or family exceeding an income eligibility threshold for a given benefits program, but the amount of the new earnings does not replace the cumulative value of the assistance they had been receiving while on public benefits.[30] DHS wanted to use the HCD4HS pilot study to improve supports for families during this transition. The goal was to support these end users—families exiting TANF—and to reduce the number of them who returned to TANF after exiting the program. DHS's interest in participating in this HCD pilot built on their "Human Together" initiative, a strategic framework the county is using to advance organization-wide goals through engagement with their staff and clients.

With regard to selection criteria detailed in Table 1 above, Denver had a clearly defined challenge (need and evidence) as well as considerable resources like a dedicated data and technology team, prior experience with process improvement efforts, and a previously identified team and champion for the work (resources). They expressed high interest and openness to an HCD approach (readiness), and wanted to learn about how to engage differently with clients to ensure the centrality of client voice and experience.

## Santa Clara County Social Services Agency

The Santa Clara County Social Services Agency (SSA) provides safety net services to children, families, and adults. With multiple operational divisions providing direct services to community members, SSA sees staff wellness and engagement as critical to providing high-quality services to the families and individuals it serves. Prior efforts to measure staff engagement by SSA underscored the opportunity to improve in this area. For the HCD4HS pilot study, SSA sought to build on prior county efforts to increase engagement and well-being of agency employees (the end users).

SSA leadership saw the pilot study as an opportunity to design new methods of employee engagement that were directly responsive to the needs of SSA staff, particularly client-facing staff, as end users. Data

collected from employee surveys before the HCD pilot study suggested that client-facing staff benefited the least from employee engagement and well-being efforts, likely due to the nature of their work. For example, client-facing staff expressed their strong commitment to prioritize serving their clients, often at the expense of participating in agency-sponsored engagement efforts, such as virtual road shows or newsletters where important updates, communications, and celebrations are shared with SSA staff. Data collected from annual surveys also suggested that two-way communication was a driver of engagement. While over half of client-facing staff agreed or strongly agreed that communications from agency leaders have improved and that they provide opportunities for staff to give feedback, share ideas, or raise concerns, there was no mechanism for staff to hear the responses to their suggestions or comments from leadership. SSA leadership wanted to use the HCD pilot study to learn about the barriers that client-facing staff face in participating in employee engagement activities and to design a prototype that increased this engagement.

With regard to selection criteria detailed in Table 1 above, SSA provided strong evidence of need with data and a literature review (need, evidence). In addition, they had various levels of staff engaged in addressing their challenge and an identified champion for the work (capacity). However, there were some questions about ongoing labor issues in the county which were thought to have the potential to create challenges in engaging employees as end users (readiness).

## Washington State Division of Child Support

The Washington State Division of Child Support (DCS) is housed within the state's Department of Social and Health Services. DCS operates the state's child support program, including locating noncustodial parents, establishing paternity, establishing and enforcing child support orders, modifying these orders when circumstances warrant it, and collecting and disbursing child support payments. For the HCD4HS pilot study, DCS sought to improve the order modification process for families.

A core responsibility of child support programs is establishing monthly support orders. Child support orders, the amount a noncustodial parent is required to pay to the custodial parent, are set based on the financial and social circumstances of the parents. Child support programs typically take into consideration factors such as the income of each parent and parenting time arrangements.[31] In Washington State, child support orders can be established through administrative processes or through the court system. In either case, either the custodial or noncustodial parent has the right to request a modification to their child support order if their financial or social circumstances change. For example, if a noncustodial parent loses their job, they might request a downward modification to their monthly support order amount to reflect their decreased ability to pay support. This modification process can be daunting for parents. It entails filling out multiple complex forms and often requires the provision of detailed financial information. DCS sought to use the HCD4HS pilot study to increase the percentage of these end users—parents who requested a modification—who successfully complete the application for a modification. Their participation in this pilot builds on the agency's longer-term efforts to improve the order modification process. This includes developing messaging and processes that increase the opportunity for parents to request and receive order modifications that align with the financial and family circumstances of the two parents. This includes involvement in a prior OPRE-funded behavioral science-informed intervention that resulted in a significant increase in the number of parents who were incarcerated who received modifications to their child support order.[32]

With regard to selection criteria as detailed in Table 1 above, DCS had a clearly defined challenge (need), availability of relevant data (evidence), a pre-existing workgroup (capacity), previous participation in related change initiatives, and clear understanding of the value of the client perspective (readiness).

**Table 2.** Summary of pilot agency challenges, end users, and design team composition

| | Denver | Santa Clara | Washington |
|---|---|---|---|
| **Challenge to be addressed** | Easing the abrupt end of benefits when individuals are no longer eligible for TANF (commonly referred to as the "cliff effect") | Improving employee engagement | Increasing the completion of child support order modifications |
| **End users** | Program clients | Human services agency staff | Program clients |
| **Design team composition** | Strategic planning staff, TANF caseworkers, eligibility specialist | Leadership, representation from across departments and job functions at SSA | Child support supervisor, leadership, strategic planning staff |

Source: HCD Consultant Log, Weekly Design Team Log, HCD Consultant and Design Team Interviews

# Initial Theory of Change

A Theory of Change was developed to guide the evaluation (see Figure 1 below), and was informed by a review of the knowledge base on the use of HCD in human services conducted under the HCD4HS project.[33] A Theory of Change is a model that specifies the critical components, activities, and/or processes hypothesized to produce specific changes (outcomes). Our proposed Theory of Change specifies key concepts related to how HCD is expected to aid problem solving and make improvements for end users. This model also reflects a capacity-building approach to HCD implementation in a human services agency. Specifically, human services agency staff (design teams) were trained and coached by HCD professionals who are external to the agency. The proposed Theory of Change specifies key concepts related to capacity-building activities and their expected outcomes for the design teams, and ultimately, the broader human services program or agency. Thus, a Theory of Change may look different for other implementation approaches, such as those in which the implementation of HCD is led by an external HCD consultant or those in which organizations have devoted full-time HCD professionals who conduct the HCD activities using their own in-house expertise.[34]

We organize the Theory of Change by inputs (e.g., resources and characteristics brought to the work), activities (e.g., tasks engaged in as part of HCD implementation), outputs (e.g., the presumed direct results of implementing the activities well), short-term outcomes (e.g., the most immediate impact of the work), and long-term outcomes (e.g., impacts of the work expected in the more distant future).

In this Theory of Change, we identify three inputs: (1) a program meets selection criteria (i.e., demonstrates readiness and capacity), (2) the program's own resources, policies, and leadership support to implement and ultimately sustain the HCD approach,[35,36,37] and (3) the expertise brought by the HCD consultants and content experts to guide each program through HCD implementation. In reality, these inputs may not be fully demonstrated (i.e., a program may not have these inputs), but for the purpose of this Theory of Change, we are hypothesizing that having all inputs would lead to the greatest likelihood of achieving the outputs and outcomes.

These inputs are needed for ideal implementation of three main activities described in more detail in the Methods section below: (1) initial HCD training (referred to as the HCD Primer), (2) a workshop with end users where research findings are synthesized and solutions brainstormed (referred to as a Design Thinking Workshop), and (3) ongoing training and coaching. Participation in all three activities was theorized to result in the following implementation outputs at each program:

- The design team effectively uses HCD techniques to address the challenge they have identified;
- The design team demonstrates HCD principles defined above;[38,39] and
- The design team implements HCD activities, such as doing research to better understand end users, generating solutions, prototyping, testing, etc.

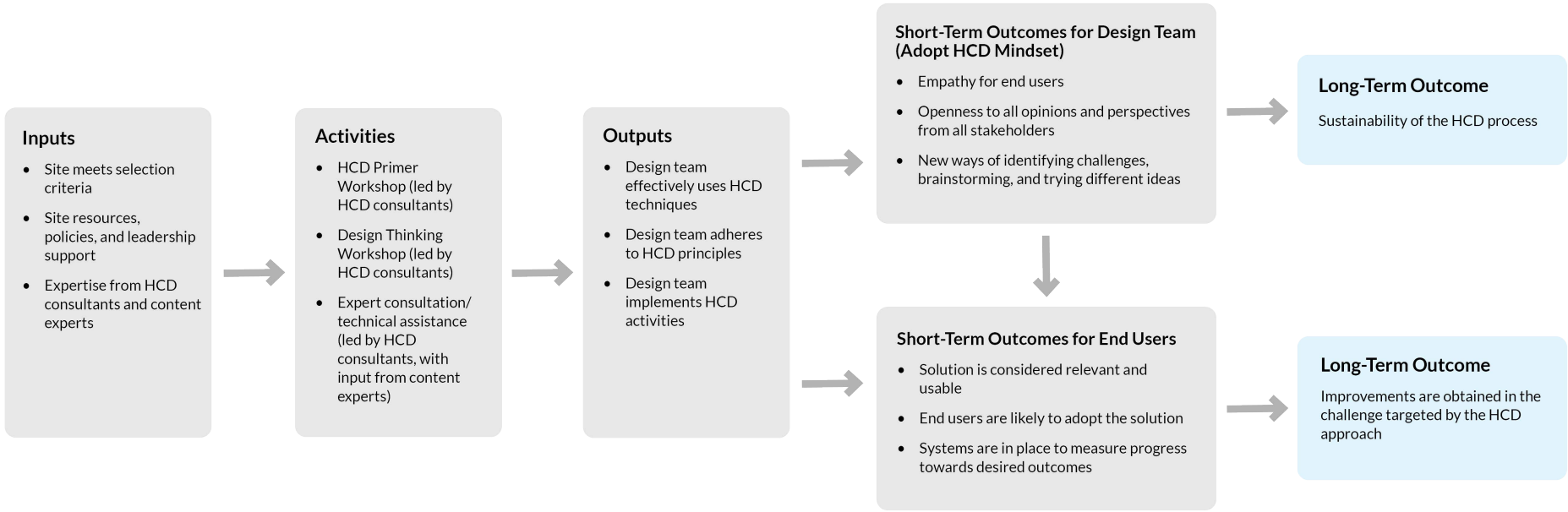
The literature suggests that implementing HCD can lead to a number of short-term process outcomes for a design team. The three components of an "HCD mindset" with the strongest evidence from the literature are:

- Increased empathy for end users[40,41,42]
- Increased value of listening to all opinions and perspectives from all stakeholders;[43,44] and
- Increased innovation through new ways of identifying challenges, brainstorming potential solutions, and trying different ideas.[45,46,47]

Based on evidence provided from the review of the knowledge base, we hypothesized that having an HCD mindset contributes to sustainability of HCD practices by promoting the use of HCD in solving other challenges an organization may face (although this pilot study was not designed to assess this hypothesis).[48,49,50] In addition, we hypothesized that a team of individuals who have adopted an HCD mindset will generate novel solutions that address a targeted challenge. In particular, we expect that having an HCD mindset will lead to solutions that end users and stakeholders consider relevant and usable, an increased likelihood of users adopting the solution that is created, and the development of systems to measure progress toward desired outcomes.[51,52,53,54,55] When implemented effectively, we hypothesize that HCD results in solutions that meet the needs of end users and stakeholders and solve the challenge the design team initially set out to solve.[56] The pilot study included a pre-registered plan to measure the solution-specific long-term outcomes, however, solutions were not yet implemented at the time the evaluation ended.

Findings in this report are organized by the components of the Theory of Change to help tell a story that flows from inputs to outcomes. This Theory of Change was revised based on what was learned through this pilot study, which is reviewed in the Discussion section later in this report.

**Figure 1.** Original Theory of Change[c]



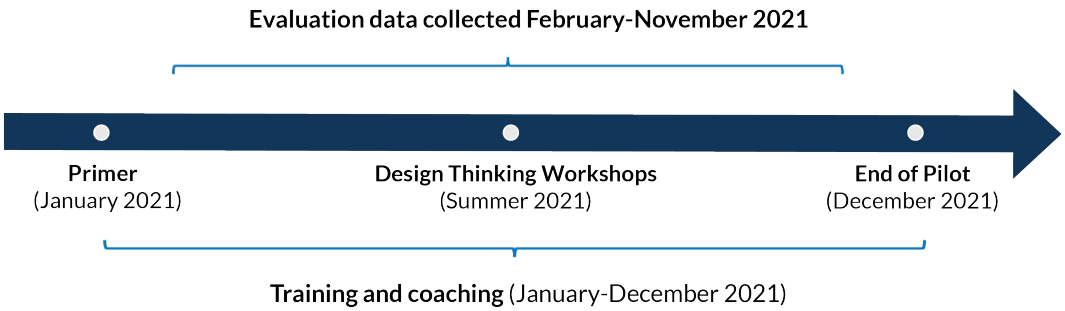

[c] The pilot study did not intend to measure the long-term outcome of sustainability. The pilot study included a pre-registered plan to measure the solution-specific long-term outcomes (i.e., measurable improvements in the challenges targeted by the design teams), however, solutions were not yet implemented at the time the evaluation ended. Therefore, the long-term outcome boxes are in a different color than the other boxes.

# Methods

To address the research questions, the HCD4HS project included a pilot study that encompassed both implementation and evaluation of HCD at three agencies. HCD was implemented with a capacity-building approach in which HCD consultants from Anthro-Tech provided ongoing training and coaching to a design team at each agency that implemented the HCD process. The pilot study began with the HCD Primer, or introductory training, in January 2021, and coaching ended in December of 2021. Data related to implementation, feasibility, and evaluability of HCD were collected throughout this period beginning after the Primer through November 2021. Coaching continued after data collection at the request of the agencies, as seen in a timeline for the project in Figure 2.

Of note, the HCD activities were planned to occur over five months, with data collection activities occurring throughout and after the training and coaching ended. However, due to complications presented by the COVID-19 pandemic, discussed further in Box 4 below, agencies progressed through the HCD process more slowly than anticipated, and coaching was extended to 11 months (February through December of 2021).

**Figure 2.** Pilot study timeline




## HCD Implementation

The pilot study used a capacity-building model of HCD implementation. HCD professionals external to the organizations provided training and coaching to the agency staff, who then learned HCD through the process of implementing it. This model was selected to support the agencies' desire to increase their staff's knowledge and skills related to HCD, and to help standardize the HCD process for the purpose of the pilot study. This approach has advantages for sustainability and in the long term may be less costly than approaches that rely on external consultants to complete the HCD work for the agencies. Other approaches such as external consultant implementation or having programs build their own in-house capacity without external expertise would likely result in different evaluation findings.

The training and coaching included the following activities described below in more detail:

- A three-day virtual workshop about the core principles and techniques of HCD (HCD Primer);
- Virtual training and coaching from an HCD consultant throughout the pilot study to provide guidance and feedback to the design teams as they practiced HCD techniques and activities, as well

as ongoing support from a content expert with knowledge of the challenge the design teams were trying to solve; and

- A virtual Design Thinking Workshop with design team members, stakeholders, and end users to synthesize the research findings, brainstorm solutions, and work toward a prototype.

Each agency was paired with its own HCD consultant from Anthro-Tech who had at least 7 years of experience in HCD implementation. The HCD consultants were overseen by an individual with 20 years of experience in HCD and who is an affiliate assistant professor at the Department of Human Centered Design and Engineering at the University of Washington. The HCD consultants met and communicated with each other regularly (at least 30 minutes per week) about their work with each agency to promote consistency across the design teams. These consultants led the HCD Primer and Design Thinking Workshops, and provided virtual training and coaching.

Each agency was also provided the support of a human services content expert from MEF or Child Trends. The content expert for each agency provided expertise and guidance in the substantive area each agency was focused on (e.g., how child support works, etc.). The content expert role was designed to supplement the expertise already present in each agency, for instance, by sharing innovative ideas from other locales, best practices, common challenges, and other knowledge that could have helped the agency address the challenge they identified. Denver and Washington were assigned the same content expert from MEF Associates; Santa Clara was assigned a different content expert from Child Trends, each with relevant content expertise.

## HCD Primer

The purpose of the HCD Primer was to introduce design teams to the project, to teach them about the HCD process and key activities, and to lay out a customized roadmap for each design team's challenge area. The Primer, which totaled 24 hours over three days, was conducted virtually using Zoom and Miro as collaboration platforms. At the time (January 2021) these were new platforms for the design teams, who used them for later activities as they implemented HCD at their agencies. The first two days of the HCD Primer were attended by all three pilot design teams, together. The third day of the Primer was conducted separately for each pilot agency.

The first two days of the HCD Primer provided foundational training, including an introduction to the HCD process and mindset along with benefits, critiques, and several case studies of successful HCD implementation. Following this overview, participants learned about each of the phases of the HCD process (see Box 2) and practiced key techniques such as user research methods, defining their challenge, ideation, prototyping, and evaluating prototypes with end users (see the glossary in Appendix A for definitions of HCD-related terms used throughout this report).

## Box 2. HCD Phases

1. **Research and Discover.** The goal of the Research and Discover phase is to learn about the lives of end users to understand their needs, constraints, motivations, and context free of prior assumptions and without jumping to solutions. The perspective of key stakeholders is also considered and assessed during this phase.
2. **Synthesize and Generate Solutions.** The primary goal of this phase is to synthesize the research findings to fully understand the problem from the perspective of the end users and generate insights that can lead to new or creative solutions. Toward the end of this phase, ideas are often narrowed down through prioritization exercises, the consolidation of ideas, and by evaluating what is feasible, viable, and desirable according to both end users and stakeholders.
3. **Conceptualize and Prototype.** During this phase, design teams move from prioritized ideas and insights into prototypes (i.e., possible solutions) that visualize the design solution to make it more tangible. The goal is to create rough (or "low-fidelity") design solutions that can be tested with end users before a prototype is perfected.[57]
4. **Test and Iterate.** The goal of the Test and Iterate phase is to evaluate low-fidelity prototypes to determine what is working well, what needs improvement, and why. During testing, the design team gathers data on end users' ability to understand and use the solution, end users' satisfaction and likelihood to adopt the solution, and other metrics. The team may need to circle back to earlier steps to generate additional ideas (enacting the "iterate" principle).
5. **Implement and Refine.** This phase is about implementing the design solution and planning for ways to continue to get feedback after starting implementation. Depending on the type of solution, this step may include developing the solution (through coding, building, writing, programming), developing an implementation plan (what will be implemented and when), piloting the solution on a small scale, developing communication and marketing plans, developing governance frameworks, and planning end user feedback loops.[58]

One criticism of HCD is that it does not explicitly promote equity because it does not take into account power dynamics between various individuals that are involved (or not involved) in the design process.[60] In this pilot study, the curriculum included a focus on the importance of considering equity throughout all HCD phases. For example, participants were trained in how to take "equity pauses" to reflect on shared goals, take stock of assumptions, and to name what they might do better in support of equity and inclusion (see Box 3). Participants were also encouraged to consider whose perspectives they were hearing and those they were not hearing, and how the proposed solutions could positively or negatively impact different groups.

## Box 3. Equity Pause

An "equity pause" is a pause in the design or planning process to reflect, remind ourselves of our goals, and name what we might do better in support of equity and inclusion.[59]

The third day of the HCD Primer was tailored to each agency's needs. Participants reflected on take-aways about the HCD process, further explored the challenge they wanted to address, and worked with their HCD consultant to draft a roadmap. The roadmap included team roles and responsibilities, stakeholder engagement plans, proposed HCD activities, and timelines. These roadmaps effectively became the plan for the rest of the implementation.

## Training and Coaching

After the HCD Primer, each of the three HCD consultants trained and coached the design teams on a regular weekly basis during 60-to-90-minute virtual meetings. As needed, additional check-ins with the entire team or the lead of each design team ("design team lead") were held. As discussed above, the approach to coaching was focused on supporting design team members to be actively engaged in building their HCD capacity and applying HCD processes and strategies. The HCD consultants provided space, trust, knowledge, and confidence, and asked thoughtful questions while letting the design teams learn how to resolve any challenges themselves.

Each of the HCD consultants worked most closely with the design team leads. These were the individuals with the primary responsibility for moving forward the HCD process in their agency and coordinating with the rest of the design team. HCD consultants met with their respective design team lead to co-create weekly meeting agendas. Often, meetings focused on planning for HCD activities, applying findings from research and data, and strategic and emergent project planning based on the HCD principles. The HCD consultants also provided templates for HCD activities, such as user interviews, brainstorming workshops, concept posters, and usability test scripts, and they helped the design teams create custom versions tailored to their agency and project. When a certain topic required a more hands-on instructional approach, the HCD consultants provided short workshops with models and exercises to practice. For example, before one design team conducted interviews, their HCD consultant provided a thorough training on interviewing, along with a workshop to detail and finalize their interview goals.

The HCD consultants compiled learnings, progress, innovative solutions to challenges, and advice and provided that information to all of the design team members in a monthly newsletter.

## Design Thinking Workshop

Approximately six months after the HCD Primer, each HCD consultant facilitated a virtual Design Thinking Workshop with their pilot agency. The workshops were attended by the design team members, additional subject matter experts or stakeholders from the community, content experts, and end users. The goals for the Design Thinking Workshop were to:

- Review the user research conducted to date to distill a problem statement;
- Ideate and brainstorm ideas for how to solve the challenge;
- Prioritize the ideas based on co-created evaluation criteria from the research, and then vote on solutions; and
- Prototype and usability test the solutions.

As with the HCD Primer, the Design Thinking Workshops combined instructional activities with hands-on collaborative exercises. For example, the HCD consultants facilitated activities to brainstorm many ideas, followed by using criteria to narrow down their ideas to the most feasible, desirable, and useful solutions. Each of the design teams concluded their Design Thinking Workshop with a prototype that had been usability tested by end users. Training and coaching continued after the Design Thinking Workshop through the end of December 2021.

## Box 4. Context

The preparation for this pilot study began in the months immediately preceding the start of the COVID-19 pandemic in the United States. The HCD4HS project had not finalized agreements with any of the three agencies by March 2020, when governors across the country began issuing stay at home orders and most public sector agencies either went fully remote or paused operations.

The pandemic clearly necessitated a shift in the pilot study, and it specifically contributed to delays and a change of focus during the selection phase. There were multiple programs the HCD4HS project had engaged as potential pilot study sites that did not have the capacity to participate once the severity of the pandemic became clear. In some cases, this was a result of substantial budget reductions of public programs or temporary reductions in work hours out of concern for the economic shocks of the pandemic. The HCD4HS project was engaged in conversations with multiple state and local early care and education programs as part of this process. Though all public sector programs experienced dramatic disruptions in the spring of 2020, these providers were particularly strained. In several cases, applicants that had expressed strong interest in participating indicated that they were no longer able to proceed. All three of the agencies that ultimately participated in the pilot study were able to make relatively rapid shifts to remote work and had the capacity to engage in restructured pilot study activities in a virtual environment.

The effects of COVID-19 on the project persisted beyond the recruitment phase, as well. The initial design of the project anticipated substantial in-person interaction between design teams and the HCD consultants. All of these activities shifted to a virtual format for the entirety of the project. Moreover, HCD is heavily dependent on hearing directly from end users, and the operational status of each of the three agencies also reduced the ease with which they could engage end users. More specifically, the end users in one agency were human services agency staff who were overloaded with more work than during pre-pandemic times. In the other two agencies, which had program clients as their end users, design teams faced challenges with recruiting and engaging clients via virtual means.

Despite these challenges, the pilot study implemented a model aligned with the core goals of the project and the principles of HCD. Design teams were actively engaged throughout the pilot study period. The work conducted throughout this pilot study underscores the flexibility of the agencies and demonstrates the ability to implement HCD in a remote context. At the same time, the COVID-19 pandemic is an important contextual factor for interpreting findings.

# Data Sources, Measure Development, and Analytic Approach

## Research Questions

The pilot study initially proposed eight main research questions (see Table 3). Within these questions, more specific sub-questions were developed to help clarify each and ensure the pilot study focused on the areas of greatest interest to OPRE. The sub-questions are presented in the second column of Table 3, along with data sources used in the third column.

**Table 3.** Research questions and data sources

| Research question | Sub questions | Data sources |
|---|---|---|
| **Research Question 1:** What types of challenges within ACF programs are best suited for an HCD approach? | • What types of challenges did programs want to address with an HCD approach? How were these similar/different across programs?<br>• What progress did programs show in addressing challenges they identified? | • Design Team Logs<br>• HCD Consultant Logs<br>• Interviews |
| **Research Question 2:** What resources are required to implement HCD approaches in ACF programs? | • What resources did programs use to implement HCD?<br>• Which specific resources were perceived as necessary for facilitating HCD implementation? Which were helpful (but not necessarily critical)? Which were not helpful?<br>• To what extent did HCD design team members experience support from executive leadership and buy in from other relevant staff?<br>• How were resources similar or different across programs? | • Design Team Logs<br>• HCD Consultant Logs<br>• Content Expert Logs<br>• Interviews |
| **Research Question 3:** What systemic or cultural barriers may make implementation a challenge, and can those be mitigated? | • What barriers made HCD implementation a challenge and how did programs address those barriers?<br>• How did barriers to implementation differ across the participating programs? | • Design Team Logs<br>• HCD Consultant Logs<br>• Content Expert Logs<br>• Interviews |
| **Research Question 4:** What does HCD implementation look like? | • What HCD activities did the design teams complete during implementation?<br>• How did implementation of the HCD process differ across the participating programs?<br>• How did the HCD training and coaching inform HCD design team's HCD mindset?<br>• How helpful was the HCD training and coaching?<br>• To what extent did design teams effectively use HCD techniques?<br>• To what extent did each design team demonstrate the HCD principles? Which principles were more and less difficult to demonstrate? | • Design Team Logs<br>• HCD Consultant Logs<br>• Content Expert Logs<br>• Implementation Assessment<br>• Interviews |

| Research question | Sub questions | Data sources |
|---|---|---|
| **Research Question 5:** How can the HCD approach be evaluated in order to better understand outcomes of interest to ACF? Can HCD be evaluated to determine whether or not this approach is more or less successful than traditional approaches? | • What tools did the HCD4HS pilot study use to evaluate the HCD process? Which ones seemed most valuable for future evaluations? | • Design Team Logs<br>• HCD Consultant Logs<br>• Content Expert Logs<br>• Implementation Assessment<br>• Interviews |
| **Research Question 6:** What criteria are defined as successful outcomes when evaluating this process? | • What objective measure of success did design teams identify for their challenge?<br>• How did they track these outcomes? By the end of the study, were systems in place to measure progress toward desired outcomes?<br>• Is the solution considered relevant and usable?<br>• Are end users likely to adopt the solution? Why or why not? | • Interviews<br>• Implementation Assessment |
| **Research Question 7:** Were improvements observed on outcomes of interest for end users? | • Were improvements observed on the outcomes of interest? If so, what factors seemed to be associated with this improvement?<br>• Did improvements on outcomes of interest vary by program? If so, how? What contributed to any variation? | • Design Team Logs<br>• HCD Consultant Logs<br>• Interviews |
| **Research Question 8:** Were improvements observed within the organization? | • To what extent did design team members adopt an HCD mindset?<br>• Did programs notice unexpected improvements in outcomes? | • Design Team Logs<br>• HCD Consultant Logs<br>• Implementation Assessment<br>• Interviews |

To address the research questions, a suite of measurement tools was developed for use in this evaluation (see Appendix D), which included:

- Design Team Logs (weekly and monthly),
- HCD Consultant Logs,
- Content Expert Logs,
- Interview protocols for HCD consultants and design team members, and an
- Implementation Assessment tool.

Table 3 indicates the data sources used to answer each research question. As noted in the review of the literature on evaluation of HCD implementation and outcomes in human services, measures with well-established reliability and validity are lacking.[61] Thus, the pilot study adopted some of the most commonly used approaches to HCD evaluation, including the use of multiple perspectives and in-depth interviews.[62] New measurement tools were also developed for key constructs identified as critical to the HCD implementation process, including empathy for end users and innovative thinking. The pilot study used a mixed methods approach that asked similar questions of different individuals (e.g., design team members and HCD consultants) and in different formats (e.g., monthly logs with ratings reflecting HCD principles, interviews, etc.). This mixed methods approach is particularly useful for an emerging area of research like the evaluation of HCD in human services programs because it provides an opportunity to identify new or unexpected findings while also obtaining information that can be summarized numerically. In addition, the pilot study used a repeated measures format for some data collected weekly and monthly to assess the consistency of implementation experiences across time.

Tools and specific measures were designed to align with the Theory of Change and to answer the research questions. Best practices in measure development were used, drawing from the authors' prior experience developing and validating measures,[63,64,65] including implementation tools. For the rating scales, we identified each construct or domain to be assessed based on the Theory of Change, confirmed there were no existing measures, specified and defined the dimensions of each construct, and created items to assess each dimension and construct based on the literature review or related measures (a process described as "deductive generation").[66] To ensure the items measured the intended constructs (i.e., content validity), HCD expert advisory group members reviewed the items and suggested edits. In-depth semi-structured interview guides were developed for HCD consultants and design team members in alignment with the research questions and recommendations for qualitative research on implementation.[67]

All data collection tools were developed to be administered virtually. The study was preregistered with the Center for Open Science to enhance transparency and objectivity.[d]

Table 4 summarizes the constructs measured by each tool. Details about the analytic approach used for each data source are described below. Copies of all tools are available in Appendix D.

**Table 4.** Constructs measured by each tool

| | Demonstration of HCD principles | Having an HCD mindset | Activities | Type and amount of training and coaching | Barriers and facilitators | Outcomes |
|---|---|---|---|---|---|---|
| **Design Team Logs** | X | X | X | | X | X |
| **HCD Consultant Log** | X | X | X | X | X | X |
| **Content Expert Log** | | | X | X | X | |
| **Interviews** | X | X | X | X | X | X |
| **Implementation Assessment** | X | X | X | | | |

[d] Please refer to https://osf.io/kyqru.

## Design Team Logs

Design teams completed both weekly and monthly logs (see Appendix D). Logs were expected to provide a more accurate and precise way to track the activities and work each agency was doing throughout the process, rather than relying on interviews at the end of the pilot study. The logs asked design team members to indicate the types of HCD activities they engaged in (e.g., surveys, interviews, etc.), rate their demonstration of the HCD principles (e.g., degree to which the team demonstrated empathy, was collaborative, etc.), the impact of barriers, and team progress. The weekly and monthly logs also provided respondents the opportunity to provide comments about their experiences. Design teams selected one person to fill out the weekly log and selected three people to each fill out a monthly log (such as the design team lead, an administrator, and an additional team member).

Information was collected about HCD activities weekly to promote accurate data reporting, although the need for this frequency was an aspect of the approach that was evaluated. Information about the demonstration of HCD principles and progress was asked of three individuals in each design team, given expected variability in any one individual's perspective. These questions were asked monthly because they were broader in scope and weekly changes in perceptions were not anticipated.

To analyze the Weekly Design Team Log data, the HCD activities were counted and the most frequent activities were summarized in a table. There were several instances where respondents did not complete a log for a given week or month.[e] When responses were missing, available data were analyzed, with missing data points omitted and findings presented in terms of averages or percentages, rather than raw counts. The open-ended data in all logs were analyzed for themes (via content analysis), with attention to changes in themes over time (e.g., whether a challenge in the beginning was present later) or differences by agency.

For Monthly Design Team Logs, an average score was computed across the three reporters from each design team and ratings of each item were examined separately. Analysis involved noting any similarities and differences between raters, across design teams, and patterns across time. These data (both open-ended responses and ratings) were referenced in the interview guide for design teams, so that interviewees were able to elaborate further on their ratings, and so that interviewers could ask questions about trends they saw over time.

On these logs, respondents were given the option to indicate whether a question was "not applicable." "Not applicable" was presented as an option because some HCD principles asked about on the logs were only applicable once a design team got to a particular step in the HCD process. For example, the item "Our team generates, tests, and revises potential solutions, going back to earlier steps as often as needed (i.e., uses an iterative process)" is only relevant after the Research and Discover phase.

## HCD Consultant Logs

The three HCD consultants each completed a monthly log (see Appendix D) that captured the activities the design teams completed, how they provided support to their assigned site, the amount of support they provided, the design teams' demonstration of HCD principles and use of HCD techniques, and the design teams' progress towards solving their identified challenge. Although design team members were asked about their activities weekly, similar questions were only asked of HCD consultants monthly to limit response burden.

[e] Response rates for the Weekly Design Team Logs ranged from 66 to 97 percent, depending on the site. The response rate for Monthly Design Team Logs was 92 percent.

Log data from HCD consultants were analyzed in the same way as the Monthly Design Team Logs. Level of support provided to design teams was averaged across months (to understand average level of support across the pilot study period) and across design teams (to understand average support provided to a team). HCD consultants' responses were compared with those collected from design team members and any similarities or differences were noted through visual inspection of the quantitative data summaries. On these logs, respondents were provided an option to indicate whether a question was "not applicable" for the same reasons mentioned above.

## Content Expert Logs

The two content experts from MEF and Child Trends completed a monthly log that captured their experience providing support to their assigned agency(ies), including the type and amount of supports they provided. Data were analyzed using the same approach used for the other monthly logs.

## Interviews

Individual interviews were conducted with each of the HCD consultants and three HCD design team members at each agency.[f] Similarly to the extant HCD evaluation literature, in-depth semi-structured interviews were used to enrich our understanding of quantitative data and obtain a more nuanced understanding of their experiences.[68] The goal of the interviews with HCD consultants was to understand the types of supports they provided to the design teams, gather their perspectives on how the HCD design teams functioned and changed over time during the pilot study process, and discover barriers and facilitators to HCD implementation in the agency they worked with. The goal of the design team interviews was to gather information on their experiences and insights from participating in the HCD process to answer each of the broad research questions. The design team interviews also provided insight into the extent to which equity was considered throughout the pilot study.

All interview recordings were transcribed and reviewed for completeness before being analyzed for themes. Initially, two trained researchers with qualitative analysis experience read and re-read each set of transcripts and took notes about potential themes related to each research question, as well as additional important themes that emerged through the interviews using a process informed by the Framework Method.[69,70] The two researchers compared their notes and came to a consensus on key themes. Next, the full evaluation team met to review the themes and identify any patterns. A set of consistent and coherent themes derived from this process were presented to the broader implementation team for interpretive analysis and refinement to generate a final set of themes to report. Representative individual quotes were also identified to highlight and contextualize specific themes.

## HCD Implementation Assessment

Based on a validated assessment tool developed by Aldridge et al. (2016), which was derived from a similar tool created by NIRN, we developed a tool to systematically assess HCD implementation.[71,72] This tool was administered to three design team members from each agency (including the design team lead) through a semi-structured facilitated group interview and yielded data regarding the extent to which each item measured by the tool is "in place," "partially in place," or "fully in place." This tool assessed the extent to which the team was doing the following:

- Demonstrating each of the six HCD principles,

[f] Some, but not all, of these individuals responded to the Monthly Design Team Logs.

- Implementing HCD activities specific to each phase, and
- Demonstrating an HCD mindset.

A group format was used to account for variation in perspectives and interpretations from different design team members. A "modified consensus" process (i.e., where all participants were comfortable moving forward with a particular rating even if they disagreed) allowed for the three design team members to accept the group agreement without every individual agreeing on every rating. The facilitator—a researcher from Child Trends—provided clarification on assessment items when needed and reflected on similar and discrepant information previously shared in the interview.

For each of the three areas noted above (e.g., HCD mindset), an average score was calculated to indicate the extent to which it was considered to be present in the design team. This was summarized in a percentage (i.e., average of .5 on a 0-2 scale = 25%; average of 1.5 = 75%)[g] and depicted graphically for each agency, as is consistent with Aldridge et al. (2016)'s established scoring approach.[73] Although all design teams participated in the Implementation Assessment, some data from Washington are missing due to inadequate time to fully complete the assessment with their team.

### Synthesis Across Data Sources

After each of the data sources was analyzed separately, they were reviewed in relationship to each other and to each of the research questions. Data were integrated across raters, time, and data collection tool by visual inspections of descriptive data, graphs, and review of interview themes addressing similar questions. First, we assessed whether findings were consistent or not. Where there were discrepancies, we examined the data further to explain them with additional context or generated hypotheses for differences in the data or in respondent perspectives. In some cases, it became clear that respondents misinterpreted the questions asked of them. In other instances, the differences seem to reflect different perspectives on the same issue. In the sections that follow, we indicate when any discrepancies arose and how we triangulated data to arrive at a conclusion. Once findings were identified, we shared them with the expert advisory group for further interpretive context (see the Acknowledgments for a list of experts consulted). Findings are presented in this report in a way that best captures the story the data are telling. Given the project goals and small sample size of the study, our analyses were descriptive (not inferential).

# Findings

This section presents the findings of the evaluation, organized according to the Theory of Change. Findings related to the HCD activities (i.e., training and coaching activities) are presented first, followed by the outputs, and short- and long-term outcomes for the design team. Limited data are available for short- and long-term outcomes for the end users, but are addressed as possible. Throughout this section, the discussion of findings is focused on information obtained from each data source and how data were triangulated to produce the final takeaway findings that are presented in text boxes throughout this report.

[g] The Implementation Assessment asked questions about the HCD principles, HCD phases, and the HCD mindset. Multiple questions were asked related to each principle, phase, and the overall mindset (i.e., "domains"). The Implementation Assessment ratings were on a scale of 0 to 2. A rating of 0 indicated that no activities or elements from the item were in place and/or the team had not yet started on this item. A rating of 1 indicated that the item in question was sometimes, or partially in place. A rating of 2 indicated that all dimensions of the activity or element were fully in place, and there is clear evidence to support this. Scores across all items for a given domain were averaged by site. The averages were converted into percentages by dividing the average by 2.

### Box 5. Approach to Reporting Findings

Findings are presented in a way that best captures the story the data are telling. In some cases, the story is about how a particular data point changed over time in different ways in the three sites. In such a case, longitudinal data is presented by site. In other cases, each site's experiences over time were similar, so data are averaged across sites. And in some instances, where there is little change over time, data are averaged over time.

Further, while individual sites are named frequently, in some cases, the site's name is masked to protect the privacy of the respondent.

Finally, tables and figures are presented to provide key information for understanding the overall findings. Additional tables and figures that are less central to the overall story are presented in Appendix B.

## Activities

To document the activities used to build HCD capacity in design teams, data were collected about (1) average number of hours of support provided by the HCD consultant and content expert, (2) types of support provided, as well as (3) perceived helpfulness of and satisfaction with the coaching. These findings inform the overarching feasibility of implementing HCD in human services.

### Amount of Training and Coaching Provided

The HCD consultants spent an average of five hours per week providing support to the design teams (typically 3-6 hours/week with significant variability across design teams and months, suggesting coaching was tailored to the needs of the design teams).[h] See Box 6. This is inclusive of direct support, like calls and observing/participating in design team meetings, as well as indirect support, like preparing for meetings with agencies and reviewing deliverables or design solutions.

Content experts spent less time with each design team (2-4 hours/week), which was expected given their role was more narrowly defined than the role of the HCD consultant.[i] Again, this is inclusive of direct and indirect time spent supporting the design team and/or HCD consultant.

### Box 6. Amount of Support Provided

HCD consultants provided an average of five hours of support per week per design team (range = 4.4 - 6.4).

Content experts provided an average of two to four hours of support per week per design team.

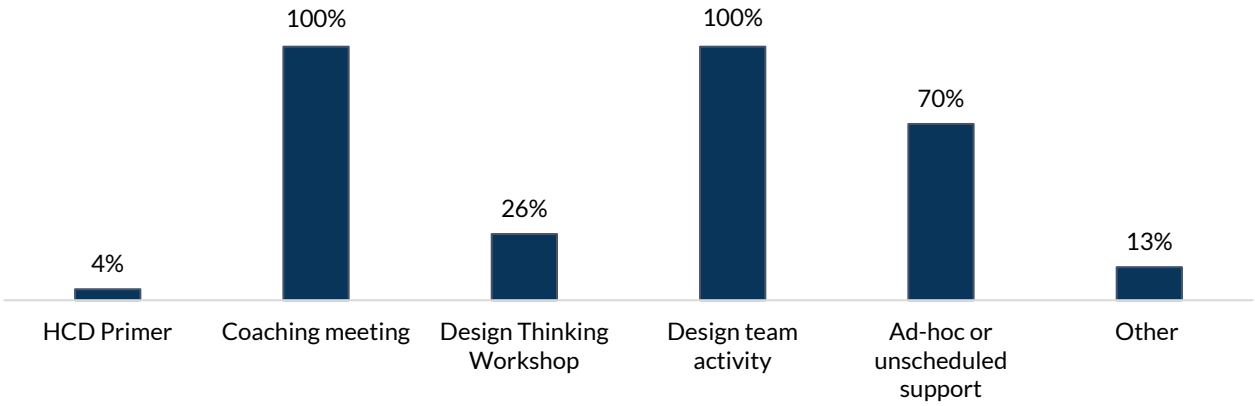
This information was corroborated by interview data. During the interviews, design team members were asked whether the amount of support they received was too much, too little, or just right. Several design team members described the amount of support they received from the HCD consultants and content experts as "just right."

[h] Across sites, the lowest monthly average was 3 hours and the highest was 14 hours.
[i] Across sites, the lowest monthly average was 2 hours and the highest was 5 hours.

## Types of Training and Coaching

Figure 3 shows the percentage of months during which HCD consultants provided particular supports to the design teams, averaged across sites to protect the privacy of the consultants. Although some supports occurred on a weekly basis, HCD consultants were asked about the types of supports they provided on a monthly basis. Consistent with the coaching plan developed for the study, HCD consultants led and/or participated in virtual coaching meetings and design team activities with each design team each month. Most months, HCD consultants also provided ad-hoc or unscheduled support, although this varied greatly across agencies (50%-100% of months). The HCD Primer and Design Thinking Workshops were time-limited activities, thus they occurred in fewer months.

**Figure 3.** Percentage of months HCD consultants provided specific supports, averaged across sites




Source: HCD Consultant Log
Notes: Multiple activities could occur each month. "Coaching meeting" corresponds to the "virtual technical assistance (TA) meeting" option on the HCD Consultant Log (which is a regular meeting where the HCD consultant provided coaching to the design team). "Design team activity" refers to an HCD activity the consultant participated in with the design team. Data are shown in terms of the percentage of months rather than a count because of missing data. The number of months an activity occurred was divided by the number of months for which data were available. Ranges by activity are as follows: HCD Primer (0-13%), coaching meeting (no variation), Design Thinking Workshop (14-38%), design team activity (no variation), ad-hoc or unscheduled support (50-100%), and other (0-25%).

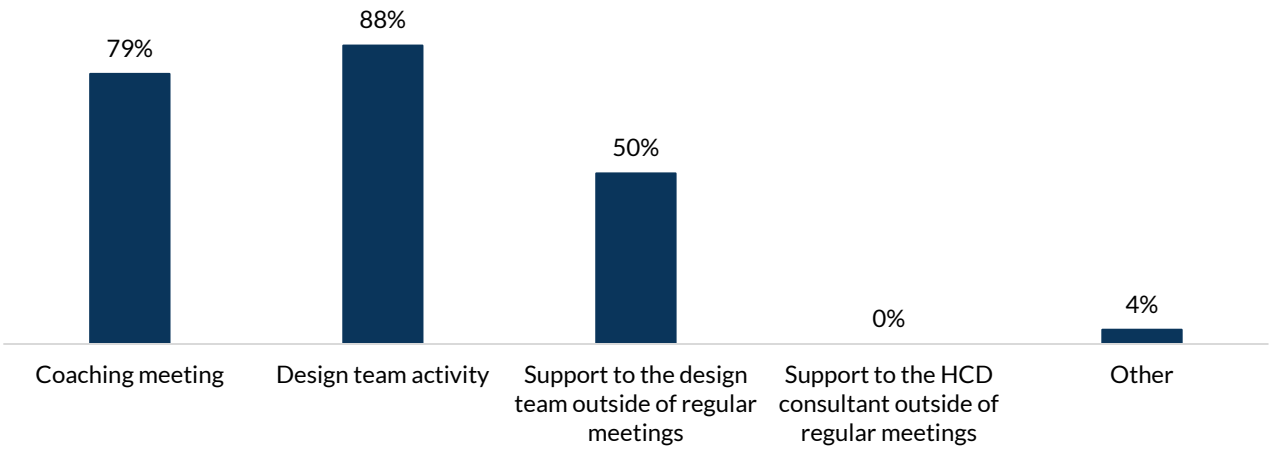
The interviews with HCD consultants and design teams confirmed the types of support described on the HCD Consultant Monthly Logs. In addition, interviewees described how HCD consultants:

- Helped the design teams with project management, especially at the beginning of the pilot study;
- Provided design teams with templates and examples from others that have implemented HCD; and
- Provided ongoing coaching that helped the design team members build skills (such as interviewing and effectively leading design team meetings) and take action.

Interviewees described HCD consultants as "coaching, not doing."

Similarly, content experts participated in design team activities and virtual TA meetings in most months. They also provided ad-hoc support to the design team in about half of the months, with some variation by site. However, they did not provide any support directly to the HCD consultants outside of regular meetings (see Figure 4). The greatest amount of variability across sites occurred in time spent providing consultation to the design team outside of regular meetings.

**Figure 4.** Percentage of months content experts provided supports, averaged across sites




Source: Content Expert Log
Notes: Multiple activities could occur each month. Data are shown in terms of the percentage of months rather than a count of months to be consistent with how HCD Consultant Log data are presented. Ranges by activity are as follows: virtual TA meetings (75-88%), design team activities (75-100%), support provided to the design team outside of regular meetings (38-75%), support provided to the HCD consultant outside of regular meetings (no variation) and other supports (0-13%).

The interviews with HCD consultants and design teams provided additional details to supplement the Content Expert Log data. Specifically, interviewees said content experts did the following:

- Provided resources and advice about the content area that was the focus of the design team, for example, sharing research articles with the team for them to read and discuss.
- Provided advice about user research practices, such as which research methods to use for which purpose.
- Asked questions and reflected back what they heard from design teams to help them clarify their thinking and address barriers.

The various data sources aligned with the type of supports the HCD consultants and content experts provided. HCD consultants and content experts provided direct support to each design team, mostly in the form of trainings, participation in design team activities (e.g., design team meetings), and virtual TA to build capacity within each agency. Based on the data collected, it is clear HCD consultants were focused on coaching design teams on the use of HCD while the content experts provided outside knowledge about the challenge design teams were trying to solve.

## Training and Coaching to Build HCD Capacity

**HCD Primer.** In interviews, design team members acknowledged the value of the HCD Primer in terms of helping them understand HCD. One person mentioned often referring back to the materials shared during the Primer throughout their implementation of HCD.

**Design Thinking Workshop.** On the Design Team Logs, participants described the Design Thinking Workshop as "an eye opener," "fun," and "a beautiful experience." In interviews, one person noted that the Design Thinking Workshop represented a new approach to idea generation and that without the workshop, they likely would have landed on a different solution.

One HCD consultant likened the roles of HCD consultant and content experts to a pair of travel agents, with the HCD consultant providing information on how to get to the destination (i.e., using HCD to address the challenge), and the content expert providing information about local customs and other important context about the destination (i.e., what others have done in the content area, pitfalls to avoid).

**Coaching.** On the Monthly and Weekly Design Team Logs, respondents consistently indicated that the regular coaching sessions supported their learning of the HCD process and kept the work moving forward. The design team members expressed appreciation for the project management-related supports their HCD consultant provided, such as tracking next steps, taking notes, and facilitating meetings. A representative from one of the design teams shared how their HCD consultant coached them to take on more of the project management tasks over the course of the pilot study. Another design team member noted how the HCD consultant helped their team move forward when they got "stuck" (for instance, when developing interview questions and planning for focus groups). The respondents repeatedly noted the general helpfulness of the coaching they received (e.g., how the HCD consultants explained new concepts and helped the team get to consensus, and how the one-on-one guidance to support project management and leadership skills made design team meetings more effective). Respondents elaborated on these sentiments in interviews. Design team members noted how the HCD consultants coached them and did not "do" for them, which they saw as helpful in building their own capacity and supporting the team in taking action.

Design teams' reports of the content expert role in building an agency's capacity to implement HCD was mixed. On the Monthly and Weekly Design Team Logs, one respondent noted being unclear about the role of the content expert. In interviews, some individuals commented that they did not find the content expert role particularly helpful, saying they offered the wrong kind of support (e.g., the team wanted information about prior efforts to address the challenge they were focusing on, but did not receive it), or that feedback was not helpful as the content expert did not fully understand the organizational structure and climate. One of these individuals mentioned how they did not understand the content expert role since the design team members were experts themselves. In contrast, there were many other positive comments about the content expert. Design team members noted on the logs that their content expert helped them develop strong interview questions and/or noted the general helpfulness of the training and coaching they received from the content expert. In interviews, two people described the perspective the content expert brought as valuable in part because the content expert was not within their system. In one agency, all design team members interviewed described the content expert as invaluable, with specific comments indicating that the expert brought discussions to a new level, helped the team make time to read and discuss relevant articles, and helped them conceptualize their challenge more clearly. Therefore, opinions about the content experts varied by design team.

## Box 7. Integrated Findings

### *Activities*

**HCD consultants**

1. Served as a coach to build capacity in the agencies.
2. Helped with project management, especially at first, but transitioned this to design teams over time as they became the driver of the process.
3. Provided curated resources about HCD, like tools, templates, and example artifacts from others who have implemented HCD in the past.
4. Served as a catalyst for action—encouraging design teams to move from discussion to action and providing scaffolding to make them more comfortable with activities they were less comfortable with (like interviews and focus groups).
5. Provided supports primarily via virtual coaching sessions and participation in design team activities, with some additional ad hoc support as needed (average of 5 hours per week total for direct and indirect time).

**Content experts**

1. Provided consultation on the relevant content area.
2. Shared knowledge and provided resources about what others have done.
3. Provided advice about research practices.
4. Provided feedback to the design team and asked questions to help the team think through their ideas and any barriers.
5. Provided support primarily via virtual TA meetings and participation in design team activities, with some additional ad hoc support when requested (average of 2-4 total hours/week).

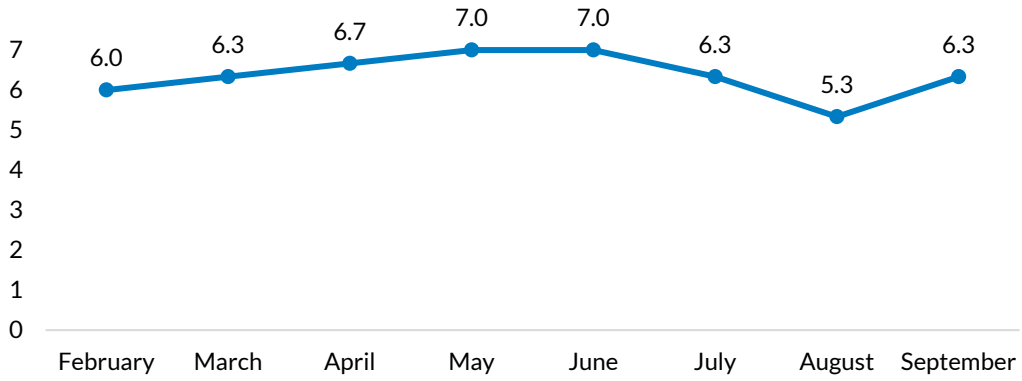
# Outputs

As noted in the Theory of Change, Outputs include (1) effective use of HCD techniques, (2) demonstration of HCD principles, and (3) implementation of HCD activities, which are each addressed in this section.

## Design Team Effectively Uses HCD Techniques

Two questions on the monthly logs provide insight into how effectively design teams used HCD techniques. Figure 5 shows that HCD consultant ratings of teams' perceived effectiveness increased steadily from the beginning of the pilot study through June, and decreased in July and August, before increasing again in September.

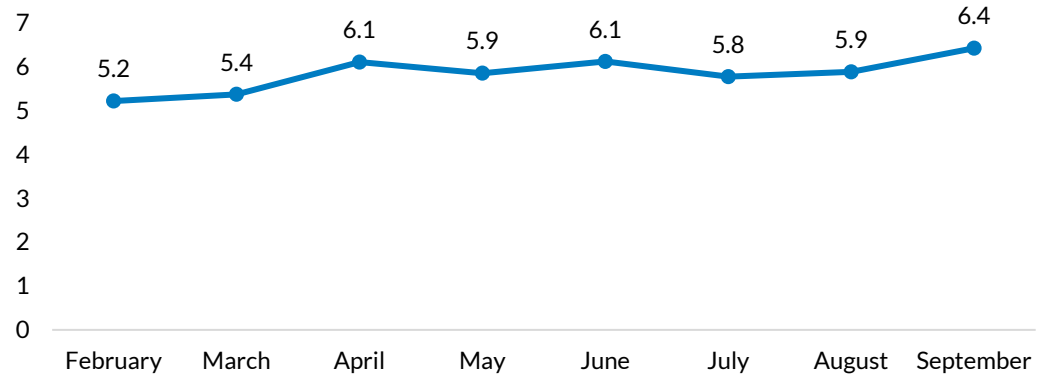
**Figure 5.** HCD consultant perceptions of whether design teams used HCD techniques effectively, averaged across sites




Source: HCD Consultant Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the average site scores ranged from 5 to 7.

Design team members were also asked to reflect on the extent to which they felt confident about using HCD techniques. Design team ratings seen in Figure 6 show generally increasing confidence across time with relatively high levels of confidence from the very beginning. Findings are averaged across sites due to limited variation among sites.

**Figure 6.** Design team member rating of their confidence using HCD techniques, averaged across sites




Source: Monthly Design Team Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the average site scores ranged from 4 to 7.

The interviews support these findings and provide important additional context that may not be reflected in the 7-point ratings on the logs. HCD consultants described design team members as becoming more confident in leading the work over time, as they shifted from providing a great deal of support to acting more like an advisor (e.g., someone to share ideas with) than a coach. An HCD consultant noted, "My role changed as their competency grew. I was able to add more nuance or bring them to the next level of detail." The design team members echoed this point by emphasizing how the HCD consultants were helping them build new skills throughout the pilot study (such as learning how to conduct interviews or effectively lead design team meetings).

However, there were some instances where design teams had challenges with regard to HCD techniques. For instance, in two of the three sites, both HCD consultants and design team members noted how design team members had difficulty conducting interviews and/or summarizing findings early in the pilot study. For example, one design team found it difficult to distill the learnings from interviews with end users without injecting their own perspectives. At another site, a design team member shared how conducting interviews was new to them and initial training was necessary. One of the design teams often wanted to move straight to implementation after the Design Thinking Workshop before prototyping and testing, which does not align with the principles of HCD. Design team members from two agencies noted that it was difficult to determine how to move forward after the Design Thinking Workshop since there were so many options to pursue. This may explain why the log ratings suggest a dip in effective use of HCD techniques in the latter half of the summer, after the Design Thinking Workshops.

### Box 8. Integrated Findings

***Output: Design teams effectively use HCD techniques***

HCD consultants and design team members reported high levels of perceived skill and confidence that improved over time. However, there were some setbacks, especially with research and synthesis and the period after the Design Thinking Workshop.

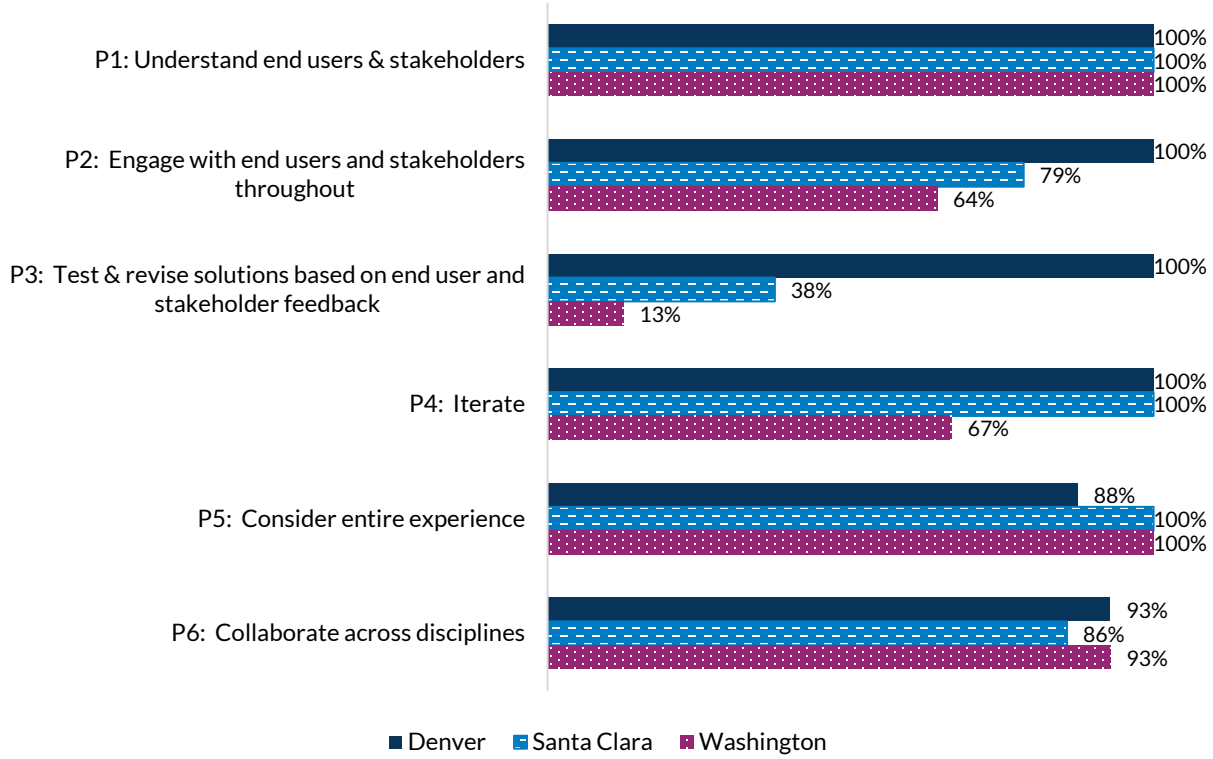
## Design Team Demonstrates HCD Principles

Multiple data sources were used to assess the extent to which design teams demonstrated the six principles of HCD detailed earlier in the report, including the Monthly Design Team Logs, the HCD Consultant Logs, the Implementation Assessment, and the interviews. The specific wording of questions assessing the principles varied somewhat across measurement tools, but items were intended to directly reflect the key concept of each principle.

Overall, there was considerable variability across the different principles, as well as across agencies and across time, suggesting the importance of looking at these data in more detail. The first data source is the Implementation Assessment, which was administered to three design team members at each agency at the end of the evaluation period. Each principle was given a score based on multiple questions (see Appendix D) that used consensus ratings with facilitator clarification.

As seen in Figure 7, Principles 1 (understand end users and stakeholders), 5 (consider entire experience), and 6 (collaborate across disciplines) were scored as being fully demonstrated by all three design teams (using 75% as the threshold for "fully").[74] Principles 2 (engage with end users and stakeholders throughout), 3 (test and revise solutions based on end user and stakeholder feedback), and 4 (iterate) were less fully demonstrated by design teams. Denver was scored as fully implementing all six principles; Santa Clara was scored as implementing five, and Washington was scored as implementing three. The extent of implementation of the principles is explained in part by how far along each site got in their implementation of HCD (discussed more below).

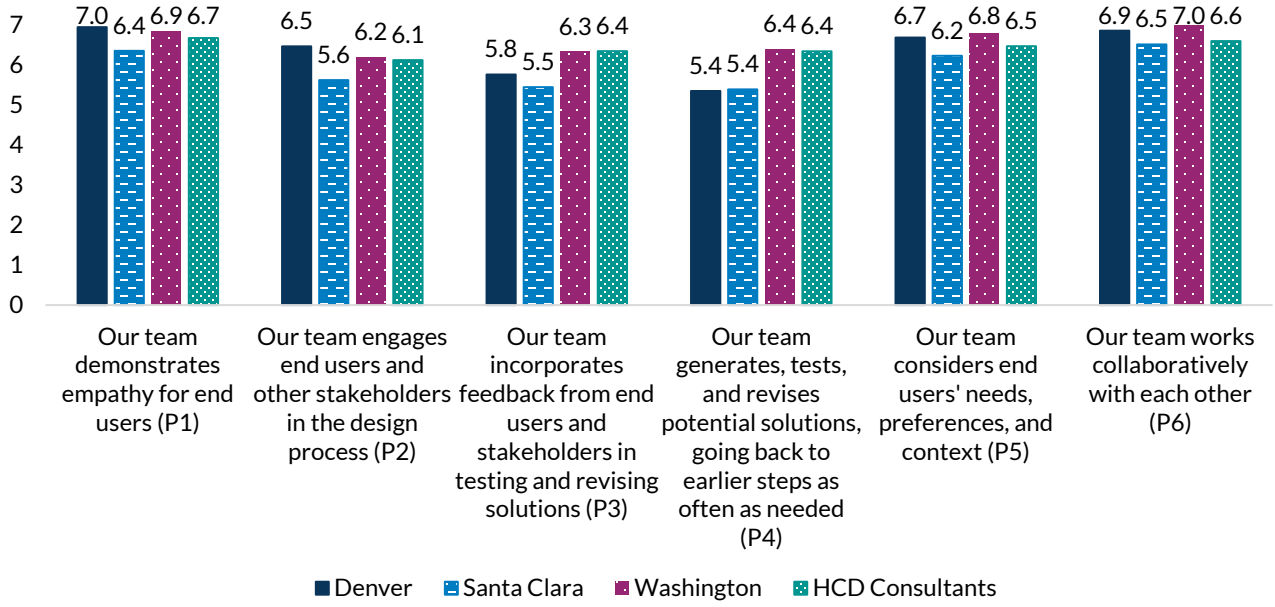
**Figure 7.** Extent of implementation of HCD principles




Source: Implementation Assessment

Information about demonstration of principles is also provided by monthly ratings of single-item questions about each principle by a sample of individuals on the design teams and by HCD consultants. As can be seen below in Figure 8, there is a similar story with Principles 1, 5, and 6 having the highest ratings, which are consistent over time. Consultant ratings, averaged across sites, are generally similar to those provided by design team members.

**Figure 8.** Design team and HCD consultant ratings on design team demonstration of HCD principles, averaged over time




Source: Monthly Design Team Log, HCD Consultant Log
Note: The log question text used in this graph reflects the text on the Monthly Design Team Logs. The HCD Consultant Logs used slightly adapted text such as "The design team demonstrates empathy for end users." Average HCD consultant ratings by agency ranged from 6.4 to 6.9 for Principle 1, 6.0-6.4 for Principle 2, 5.7 to 6.8 for Principle 3, 5.0-6.7 for Principle 4, 6.1-6.9 for Principle 5, and 6.3-6.9 for Principle 6.

Support for design teams' demonstration of HCD principles, such as focusing on end users and collaborative problem-solving, was also reflected in interviews. One design team member explained, "It's a valuable experience, even if there is no solution. It's having empathy. The HCD principles are valuable to know and practice." Evidence of collaborative teamwork can also be seen in this quote from an HCD consultant, "They're really achieving quite a lot in terms of new ways of working and new ways of collaborating, as well as learning the mindsets and principles and tools and techniques of HCD. That's on top of working together in a way that they usually don't in their organization, which is really exciting."

"Our organization is good at seeking feedback, but it's just that we had never co-created in the past. In the past, we just heard a problem and then decided on what we thought would be best for end users." They added, "We are well-versed in doing surveys and getting feedback from customers and clients, but we have yet to engage with them in co-creating a solution. Those two things are very different—hearing what the problem is versus hearing what they want as its solution." – Design Team Member

**Variation across Principles**

As noted, convergent evidence across multiple raters and data sources suggest that all three design teams were perceived as successfully demonstrating principles related to understanding end users, considering end users' entire experience, and working collaboratively in multidisciplinary teams. For principles demonstrated less fully, data from interviews and activity logs were used to facilitate understanding of the design teams' experiences.

As seen in Figure 7, according to the Implementation Assessment, Principle 2 (end user and stakeholder *engagement* throughout the process) was less fully implemented at two sites than Principle 1 (*understanding* end users and stakeholders). However, the monthly logs suggested high ratings (>6) on these principles at all but one agency. From the Weekly Design Team Logs, Denver and Santa Clara reported engaging end users during approximately 45 percent of the weeks, while Washington reported engaging end users during about 20 percent of the weeks. Design team ratings were generally higher during months when they were actively engaging with end users (e.g., "Research and Discover" in spring and the Design Thinking Workshop in the summer), which is to be expected. Interview data validate some of the challenges design teams had recruiting end users (described further below), despite the value many design team members placed on this engagement. Moreover, the HCD consultants gave design teams higher scores on end user and stakeholder engagement throughout the pilot study than did the design team members themselves. Assessment of this principle is further complicated by the fact that several design team members reported "not applicable" on their logs, especially at the beginning of the pilot study (see Table B-1 in Appendix B).

Principle 3 (incorporate feedback in testing and revising solutions) had relatively low scores for two design teams when compared to other principles on the Implementation Assessment, similar to the monthly log ratings. However, some design teams rated Principle 3 as not applicable until they were actually engaged in this activity during the summer, while others rated themselves lower because it had not happened yet (see Figure B-1 and Table B-2 in Appendix B). Interviews suggested that all design teams embraced the idea of testing and revising solutions based on the feedback they obtained (or would obtain) from end users and stakeholders, and there was enthusiasm for talking to more end users and testing the solutions with them. One HCD consultant reported that the design team became overly focused on implementation after the Design Thinking Workshop, although they were also excited about co-creating solutions with their end users.

Principle 4 is focused on the extent to which the design team uses an iterative and nonlinear problem-solving approach, going back to earlier phases as needed. Two of the three design teams had their lowest scores (5.4) on the monthly log ratings for this principle, although only one agency was considered to be implementing it less than fully on the Implementation Assessment. This discrepancy appears related, in part, to design teams' interpretation about when this principle was applicable (similarly to Principle 3) and numerous 'not applicable' ratings until they did the Design Thinking Workshops during the summer. Given this confusion, design teams' reports of when they worked on the different HCD phases across the study period were examined (See Table 5) as an indicator of how they iterated. As can be seen, Denver and Santa Clara revisited the Research & Discover and Synthesize & Generate Solutions phases throughout the pilot study. Washington, on the other hand, proceeded more linearly, although with some overlap between phases. However, the Washington design team described in interviews how they would refer back to the research they did earlier in the project, how they created low-fidelity prototypes before higher-fidelity ones, and were generally comfortable with a non-linear process. They indicated they had not designed, tested, and revised potential solutions as many times as needed, which lowered their score on the Implementation Assessment.

**Table 5.** Work on of phases by month and site reflecting iterative process

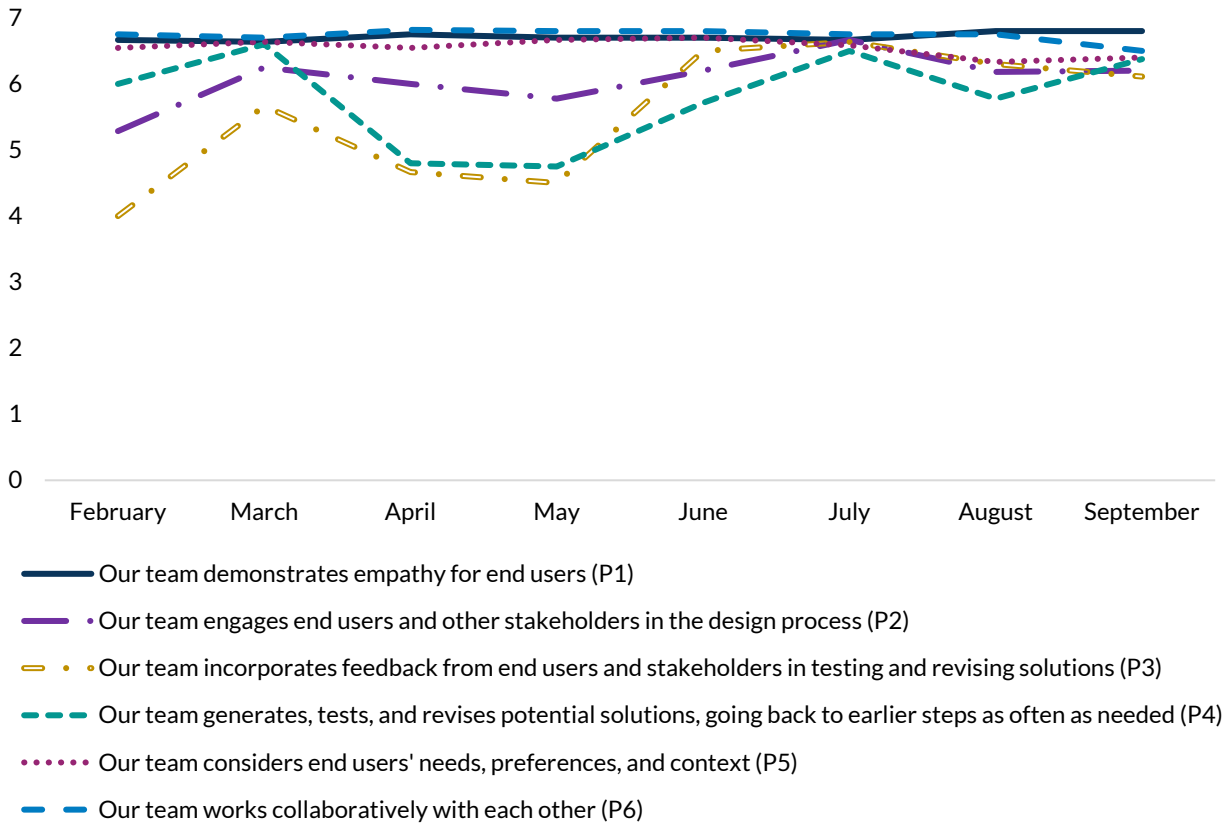
| | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|
| **Research and Discover** | D<br>S<br>W | D<br>S<br>W | D<br>S<br>W | D<br>S<br>W | D*<br>S<br>W* | D*<br>S | D<br>S* | D* |
| **Synthesize and Generate Solutions** | S*<br>W* | S* | D | D<br>S<br>W | D<br>S<br>W | D*<br>S<br>W | D*<br>S<br>W* | D*<br>S* |
| **Conceptualize and Prototype** | S* | | | | D* | D*<br>S* | D<br>S<br>W | D<br>S<br>W |
| **Test and Iterate** | | | | | D* | D*<br>S* | D<br>S* | D<br><br>W |
| **Implement and Refine** | | | | | D* | | | <br>S* |

*Indicates there were inconsistencies between the Weekly Design Team Log and HCD Consultant Log. This table shows all instances in which either a design team member or HCD consultant indicated the team worked on a particular phase. The asterisk (*) indicates when only one reporter (design team member or HCD consultant) said the team worked on a phase that month.
Source: HCD Consultant Log, Weekly Design Team Log
Note: For the Weekly Design Team Log, we marked an activity as occurring in a given month if the respondent indicated the activity occurred in any week of that month.
D=Denver, S=Santa Clara, W=Washington

### Variation across Time

Data collected from monthly log ratings about demonstration of principles from HCD consultants and design teams provide additional nuance to interpretation. As seen below in Figure 9, ratings across principles converged over time around the Design Thinking Workshops when design teams were beginning to develop solutions to their challenges and share these with end users and other stakeholders. In particular, Principles 2, 3, and 4; which were rated lower overall across sites; improved after this time. Some of this variability may again have been related to differences in interpretation of whether all principles were applicable during earlier phases of the HCD work. For instance, some teams indicated "not applicable" early on, whereas others rated themselves more poorly early on, highlighting a measurement challenge.

**Figure 9.** Design team demonstration of HCD principles over time




Source: Monthly Design Team Log, HCD Consultant Log
Note: Ratings from design team members and HCD consultants were averaged together across sites.

### Challenges in Assessing HCD Principles

There were a number of challenges related to assessing the HCD principles by design team member reports on the monthly logs that complicate interpretation of these data. First, design team members rated their demonstration of the HCD principles as they were learning HCD, and it was surprising to see that they reported relatively high ratings from early in the pilot project. This could be due to a number of factors, including having selected agencies that were well-prepared for this type of work, providing initial training before assessments started (i.e., lack of a true baseline), or lack of sensitivity in the measures. Second, it appears that the design teams interpreted questions about some of the principles differently than they were intended (e.g., providing responses of N/A when they were relevant). It may be that design team members did not fully understand the principles given that this was their first experience with the process. Although their ratings were generally similar to those provided by the HCD consultants (i.e., Figure 8), there were numerous discrepancies between design team and HCD consultant report of specific activities conducted each month (i.e., Table 5).

Finally, and perhaps most importantly with regard to the evaluability objective of this project, it may be that the measures of the principles were not reliable and/or that the principles themselves need further conceptual clarification. In designing a monthly rating of demonstration of principles, single items were created for each principle, which may not adequately represent each one. For example, Principle 1 was assessed by asking about empathy specifically, whereas the principle describes having a design solution

rooted in explicitly understanding the needs, tasks, and environments of end users. The Implementation Assessment includes a broader assessment of each principle and provides an opportunity to clarify understanding of what is being asked, which may suggest that scores on this measure are more reliable. Thus, additional conceptual clarity for the purpose of measure development and refinement would be helpful. This issue is addressed further in the Discussion.

**Equity in the HCD Process**

As discussed above, HCD does not necessarily include an explicit focus on equity. In fact, equity-centered design was conceptualized to fill this gap.[75] However, intentional efforts to prioritize equity were made in this pilot study. In addition to teaching strategies for promoting equity within HCD practices, design teams worked to create teams with diverse perspectives, skills, and expertise and to be aware of power dynamics within the teams and broader agency in making task assignments. The various qualitative data sources provide information about the extent to which design teams demonstrated a focus on equity, even though it was not explicitly assessed in this project.

Respondents to the Weekly and Monthly Design Team Logs shared how they created diverse teams from across different departments, roles, and levels within their agencies. They discussed how team members shared work responsibilities and were respectful of team members' availabilities and skills. Santa Clara implemented a rotating project manager role to ensure the responsibility of leading meetings and moving the work forward did not fall disproportionally on one person. This division of labor allowed all team members the opportunity to guide discussions and contribute in varied ways throughout the project. These logs also provided information about how the design teams offered gift cards or other tokens of appreciation to end users who participated in the pilot study. These incentives were aimed at helping to reduce barriers to participation (such as through reimbursement for internet access and compensation for their time). Incentives were especially important for the design teams whose end users were clients; since when agency staff are end users, they are compensated for their time as part of their normal work responsibilities. Finally, design team members mentioned on these logs that they were trying to recruit end users from various backgrounds to help ensure they were hearing varied perspectives.

The HCD consultants also noted on the HCD Consultant Logs that the teams considered which voices and perspectives (from design team members to end users) they had not heard from when making decisions and gathering feedback. During the interviews, design team members from two agencies and their HCD consultants explicitly mentioned their use of equity pauses. For instance, one consultant said: "I think they also really benefited from the concept of the equity pause —a moment and a set of questions to pause and ask yourself throughout the project about whether or not you have the right people involved, who we are not hearing from, and what is the history here, those sorts of things. I think that clicked really well for them as a technique and a mindset to have when they are making decisions." This approach helps teams consider the implications of the decisions they are making on varied groups before the decision is made.

Interviewees also discussed how the teams focused on ensuring all voices were being heard. However, two of the three HCD consultants and one design team member mentioned how design teams struggled to identify a diverse group of end users with whom to speak. For instance, in Denver, the design team ended up only hearing from a subset of their end users because the department only served some TANF recipients (others were served by contracted agencies). In Washington, a large proportion of end users reached (interviewed) were military veterans; this encouraged the team to develop a process for providing incentives to encourage participation from more diverse end users.

From these data sources, it is clear that the design teams made efforts to consider equity both within their design team and among the end users they engaged. However, it was not clear if all important groups of end users were successfully engaged, despite reports of efforts to do so. This may be related to the time and resource constraints imposed by this pilot study. For instance, it may take more time to build trust with people from communities that may have had negative interactions with human services agencies in the past, or staff who have had negative workplace experiences for many years.

### Box 9. Integrated Findings

***Output: Design team demonstrates HCD principles***

- Agencies demonstrated some HCD principles more than others.
- Demonstration of three principles appeared to improve over time.
- Demonstration of some principles varied across site, time, and reporter.
- Agencies took a number of actions to promote equity, although found engagement of a diverse group of end users to be challenging.
- There were several challenges in assessing principles as defined in this project.

## Design Team Implements HCD Activities

As previously depicted in Table 5, the design teams varied somewhat in when they worked on the different HCD phases, and none of the design teams were able to complete all the phases during the time period of the study. Additional data on activities and phases collected on the weekly and monthly logs and the Implementation Assessment reflect a similar pattern and provide additional details.

**Extent of Implementation of Each Phase**

The Implementation Assessment assessed Denver and Santa Clara's implementation of each phase[j] (see Appendix D). Figure B-2 in Appendix B shows that both of these design teams fully (90-100%) implemented the first three phases: Research & Discover, Synthesize & Generate Solutions, and Conceptualize & Prototype phases. Denver also fully implemented the Test & Iterate phase (100%), while Santa Clara had not yet started that phase at the time of the assessment. Neither agency had implemented the Implement & Refine phase.

**Activities and Time Implementing Each Phase**

Design teams used a diverse array of HCD activities over the course of the pilot study, with the most commonly implemented activities indicated in Table 6 (see the glossary in Appendix A for definitions of each activity).

[j] Some data from Washington were missing due to inadequate time to fully complete the implementation assessment with their team.

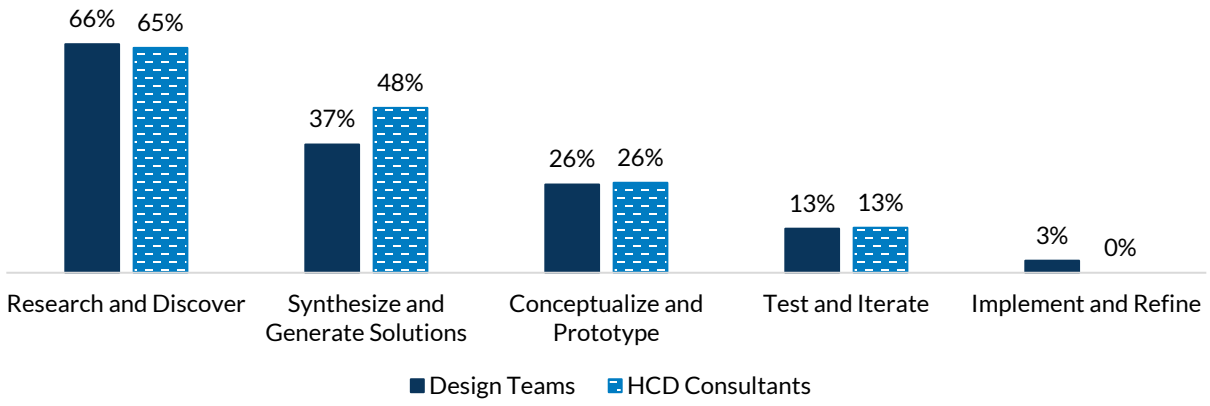
**Table 6.** Most frequently implemented activities, by phase of the HCD process

| Phase | Most frequently implemented activities |
|---|---|
| **Research and Discover** | Interviews, data analysis |
| **Synthesize and Generate Solutions** | Design Thinking Workshops, brainstorm sessions, How Might We statements |
| **Conceptualize and Prototype** | Rapid prototyping, concept posters |
| **Test and Iterate** | Cognitive walkthroughs, usability testing |
| **Implement and Refine** | Development of the solution, governance planning |

Source: HCD Consultant Log, Weekly Design Team Log
Note: Design Thinking Workshops were part of the prescribed implementation plan.

As seen in Figure 10 below, design teams spent most of their time on the Research and Discover phase, with decreasing amounts of time for each subsequent phase, including little to no time on the Implement and Refine phase. Although largely consistent in their ratings, the HCD consultants indicated that the teams spent more time synthesizing and generating solutions than design teams reported. Figures B-3 through B-7 in Appendix B provide additional details on the percentage of time spent on each activity within each phase as reported by the design teams and the HCD consultants.

**Figure 10.** Percentage of time spent on each phase, averaged across sites




Source: Weekly Design Team Log, HCD Consultant Log
Note: Time is expressed as a percentage due to missing data. The design team data is presented as a percentage of weeks; HCD consultant data are presented as a percentage of months and averaged across agency due to limited variability. Ranges of agency level HCD consultant averages by activity are as follows: Research and Discover (63-71%), Synthesize and Generate Solutions (38-57%), Conceptualize and Prototype (25-29%), Test and Iterate (0-25%), and Implement and Refine (no variation). Ranges of design team averages by activity are as follows: Research and Discover (62-72%), Synthesize and Generate Solutions (26-48%), Conceptualize and Prototype (13-35%) Test and Iterate (4-24%), and Implement and Refine (0-7%).

### Box 10. Integrated Findings

***Output: Design team implements HCD activities***

- During the time period available for the study, design teams spent the most time on, and more fully implemented, the earlier HCD phases.
- While some activities occurred more frequently than others, design teams used a diverse array of HCD methods/activities over the course of the pilot study.

## Barriers and Facilitators

Although barriers and facilitators of HCD implementation were not explicitly identified in the original Theory of Change, they were included in the evaluation and assessed in a number of ways, including interview questions and a checklist of common barriers (based on the HCD literature) on the HCD Consultant and Design Team Monthly Logs. There was also opportunity for design team members and HCD consultants to share open-ended comments about challenges and what was working well on both monthly and weekly logs (see Appendix D).

### Facilitators

Resources and supports identified as helpful for HCD implementation in the Monthly Design Team Log included strong project management, leadership support, having diverse perspectives on the design team, collaborative and respectful team dynamics, technology resources (including resources used to facilitate virtual training and coaching and design team collaboration), and the alignment of the work with the culture and priorities of their organizations (i.e., the organization being open to change, or the support of HCD by the state's governor). Weekly Design Team Logs highlighted similar facilitators, but also reflected the importance of having a process for, and the ability to, distribute incentives. In addition to the aforementioned facilitators, the HCD Consultant Log also noted benefits of access to HCD expertise and tools, and the strategic engagement of stakeholders (including other relevant staff and IT support). Across reporters, the three facilitators identified as most critical were: strong project management, leadership support, and the ability to offer incentives to end users.

Interviews highlighted the importance of these three factors. For example, a design team member from Denver noted that, "A good lead or project manager is essential. It's hard to remember what's always due but having someone organizing and efficient kept the ball rolling and held us accountable." The HCD consultants described how they often had to serve in this role for the teams, especially at the beginning of the pilot study. Regarding leadership support, design teams emphasized the importance of frequent and open communication with leadership. In Washington, effective leadership and support from their finance team enabled the design team to distribute incentives to end users—something they previously were not able to do. A design team member from Santa Clara emphasized, "Leadership needs to set the tone and demonstrate the commitment. They also need to know what's going on so they can address barriers that we can't... This is essential to any systems change—you need leadership buy in ownership or else you'll be working in a house of cards—everything could come crumbling down fast."

Both HCD consultants and design team members also clearly communicated the importance of incentives for engaging end users. A design team member from Washington detailed how they did not offer incentives when they first held end user interviews, which they believe contributed to challenges with recruitment and

participant no-shows. Learning from this experience they decided to offer $25 gift cards to participating end users for participation in the Design Thinking Workshop, and saw a boost in participation. Two of the three design teams were able to distribute monetary (i.e., gift card) incentives to end users that provided feedback and support to the teams. Santa Clara did not have the ability to provide incentives, but found creative ways to express appreciation to those who provided feedback and support (ex., thank you cards and "goody" bags). A design team member from Santa Clara highlighted the importance of finding ways to thank participants, "You need that community to participate—if you don't get that you're not getting anywhere."

## Box 11. Integrated Findings

### *Facilitators*

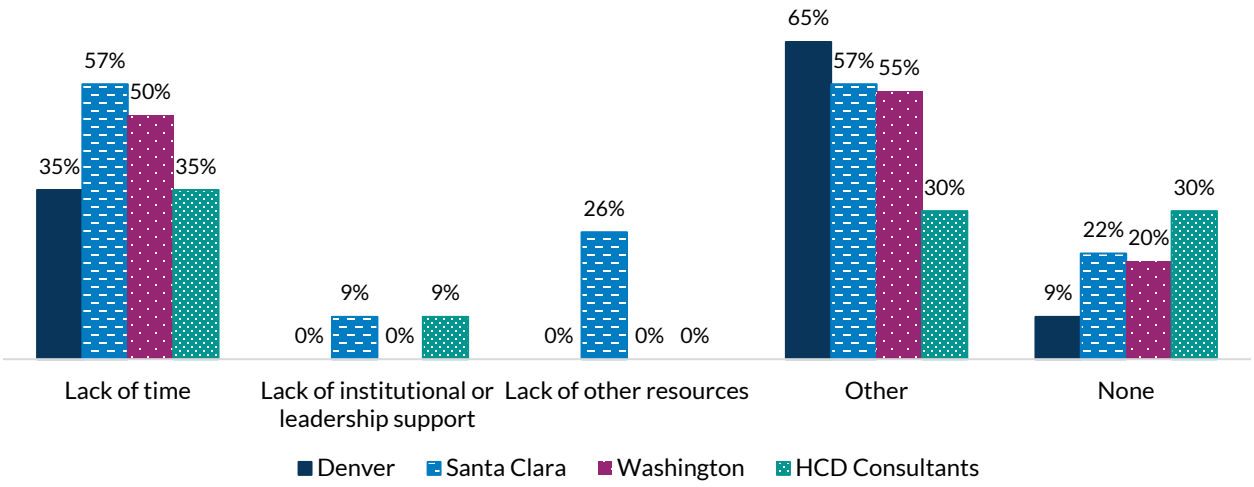
The most critical facilitators to the HCD process were:

- Strong project management,
- Leadership support, and
- A process for, and the ability to, distribute incentives.

## Barriers

Each design team reported regular and ongoing barriers on the weekly and monthly logs, although design team members described these as more challenging than the HCD consultants did. Specific barriers assessed each month are depicted in Figure 11 below. In addition to lack of time, other barriers not identified in checklists were also quite common, including organizational/operational challenges and "red tape," engaging and recruiting end users, balancing other work priorities with their HCD-related work, adapting to COVID-19 and design team members being deployed for disaster service, and challenges related to distributing incentives to end users participating in the design process. Interviews with design team members and HCD consultants identified the following barriers: the recruitment of end users, challenges related to distributing incentives, general constraints of operating in a government agency, challenges related to the COVID-19 pandemic, ensuring end user confidentiality and data security, and sustainability.

**Figure 11.** Percentage of months design teams encountered different barriers




Source: HCD Consultant Log, Monthly Design Team Log
Note: Months are presented in percentages, as opposed to counts, due to missing data. Ranges of site-level HCD consultant averages by challenge are as follows: lack of time (25-57%), lack of institutional or leadership support (0-25%), lack of other resources (no variation), other (0-63%), and none (13-50%).

A design team member from Santa Clara discussed the unique challenge of this pilot study taking place during the COVID-19 pandemic. They explained, "The context of COVID was a challenge and reward—it required us to be adaptive, which is a piece of HCD. That part also provided some challenges—we had to figure out how to be together and build trust in a virtual world." That individual went on to discuss why building internal capacity was so critical. Another design team member from Santa Clara highlighted the importance of adequate staff time by stating, "If we want to have HCD live on past the [training and coaching] phase, we need to have a dedicated—at least one full time position—but more likely a team to be able to continue this type of work. It's very time intensive, very resource intensive, and the design team is doing this in addition to the work they normally do."

In addition to the types of barriers, the extent to which barriers interfered with HCD implementation at each agency was examined. Overall, the design teams experienced barriers as more impactful than the HCD consultants did, which is understandable given their difference in experience with HCD. Design team members also faced ongoing demands from competing work and organization priorities that the HCD consultants may not have observed. As seen in Figure 12, there is also variability in the impact of barriers across sites and across time, with design teams generally rating the impact as more than "somewhat." Importantly, however, none of these barriers were described as

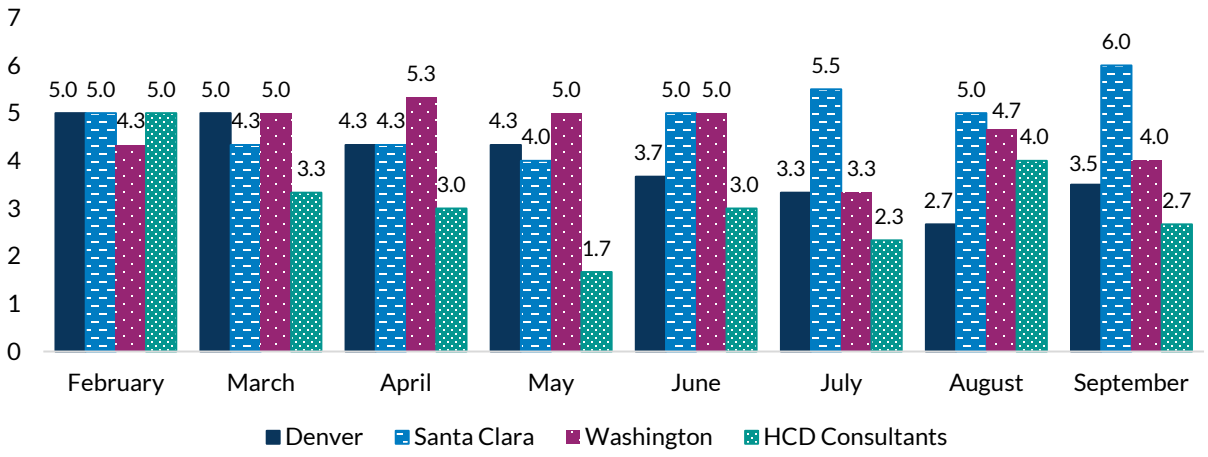
## Box 12. Integrated Findings

### *Barriers*

- Design teams faced barriers often, though no barrier was found to be insurmountable.
- Design teams reported barriers as more challenging than did HCD consultants.
- The experience of barriers varied across time and by site.

insurmountable. In fact, as can be seen in Table 7 below, there were many creative and purportedly effective ways in which each of these were addressed.

**Figure 12.** Perceptions of how much barriers interfered with implementation




Source: HCD Consultant Log, Monthly Design Team Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the range of average HCD consultant ratings was 2.3-4.3.

**Table 7.** Types of barriers experienced by design teams and strategies used to address them

| Barrier | How barrier was addressed |
|---|---|
| Time available for design team members to engage in the HCD work, which was exacerbated by the pandemic and staff time off | • Bringing in other team members<br>• Rotating project management structure<br>• Having HCD consultant help with project management<br>• Shifting staff day-to-day responsibilities so design teams could dedicate time towards HCD work<br>• Collaborative design teams with members who would pitch in when others were busy |
| Recruitment of end users, specifically having no-shows; recruiting a diverse pool of end users; lack of incentives; limited time to build trust with end users; end users' lack of time | • Incentives and wi-fi stipends for virtual meetings<br>• Working with case workers to identify individuals who would be more likely to engage<br>• Listening to end users and not being defensive<br>• Using virtual platforms end users were more comfortable with |
| Incentives, specifically not having a process in place to administer gift cards | • Gift bags and other forms of appreciation used as an alternative<br>• Building a new process to provide gift cards |

| Barrier | How barrier was addressed |
|---|---|
| Organizational structures and processes with many layers of approval needed | • Frequent communication and involvement with leadership and executive teams inside the organization |
| End user confidentiality, specifically around consultant participation in the Design Thinking Workshop, and issues related to file sharing with people outside of the organization (i.e., HCD consultants/experts) | • Creating separate locations for file storage for design team members and people outside the agency (i.e., HCD consultant)<br>• Working with agency to explain project/get approval for HCD consultant and content expert participation in the Design Thinking Workshop |
| COVID-19, when people needed to be deployed as disaster service workers, other employees having increased workloads, having to do everything virtually | • Breaking up Design Thinking Workshop into multiple shorter virtual sessions<br>• Use of technology (such as Teams, Zoom, Calendly, and Miro) to collaborate as a team and engage with end users and stakeholders virtually<br>• Extension of training and coaching timeline |

# Outcomes

## Short-Term Outcomes for Design Team: Adopt an HCD Mindset

As noted in the Theory of Change, an HCD mindset was operationalized as (1) empathy for end users, including working to understand the feelings and perspectives of end users; (2) openness to all opinions and perspectives from all stakeholders; and (3) new ways of identifying challenges, brainstorming solutions, and trying different ideas. To assess this construct, we used log ratings, the Implementation Assessment, and interviews.

**Overall Mindset**

The Implementation Assessment included the following three items that were averaged to assess the HCD mindset within each design team at the end of the evaluation:

- The team truly understands the feelings and perspectives of the end users.
- The team is interested in and open to trying new and creative ideas.
- The team is comfortable with uncertainty about the challenge and solutions and avoids "jumping to conclusions."

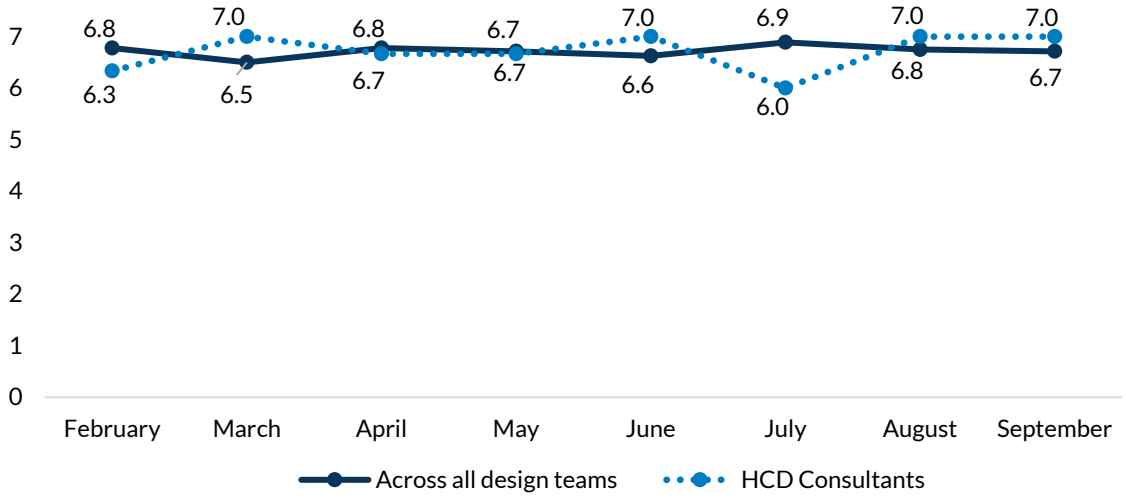
Based on these items, one design team demonstrated 100 percent of an HCD Mindset, while the other two demonstrated 83 percent, each of which exceeds the 75 percent threshold for full demonstration of implementation. Of note, design team members had different interpretations of the first item, *understanding the feelings and perspectives of end users*. In interviews, HCD consultants were asked to what extent design team members adopted an HCD mindset. One noted that their team was "working together in a way that they usually don't in their organization, which is really exciting. It was just a very different mindset shift to be talking to [end users about their experiences]." A design team member from Santa Clara discussed how

their design team has begun to think more creatively, and while at the beginning of the pilot study they had one solution in mind and wanted to "make it work," they are now open to new solutions and the idea of iteration. That individual went on to describe HCD, highlighting, "It's something that's going to make you think on your feet. Something that is going to give you a different way of thinking, and there's never a right or wrong answer to it."

### Empathy for End Users

Although previously depicted in Figure 8, Monthly HCD Consultant and Design Team Logs assessed empathy, which can be interpreted both as Principle 1 (understand end users and stakeholders) and as part of an HCD mindset. Figure 13 shows data on empathy across time, which demonstrate high ratings from the first assessment that were relatively consistent across time and raters. HCD consultants generally agreed with design teams, with slight variation during July, coinciding with when the Design Thinking Workshops occurred. In interviews, design team members from Santa Clara indicated that they gained humility by talking to end users, and design team members from Washington said that engaging with clients reduced stereotypes they had about their clients.

**Figure 13.** Perceptions of how design teams demonstrate empathy for end users, averaged among raters




Source: HCD Consultant Log, Monthly Design Team Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the range of average HCD consultant ratings was 6.4-6.9 and the range of design team ratings was 6.4-7.0.

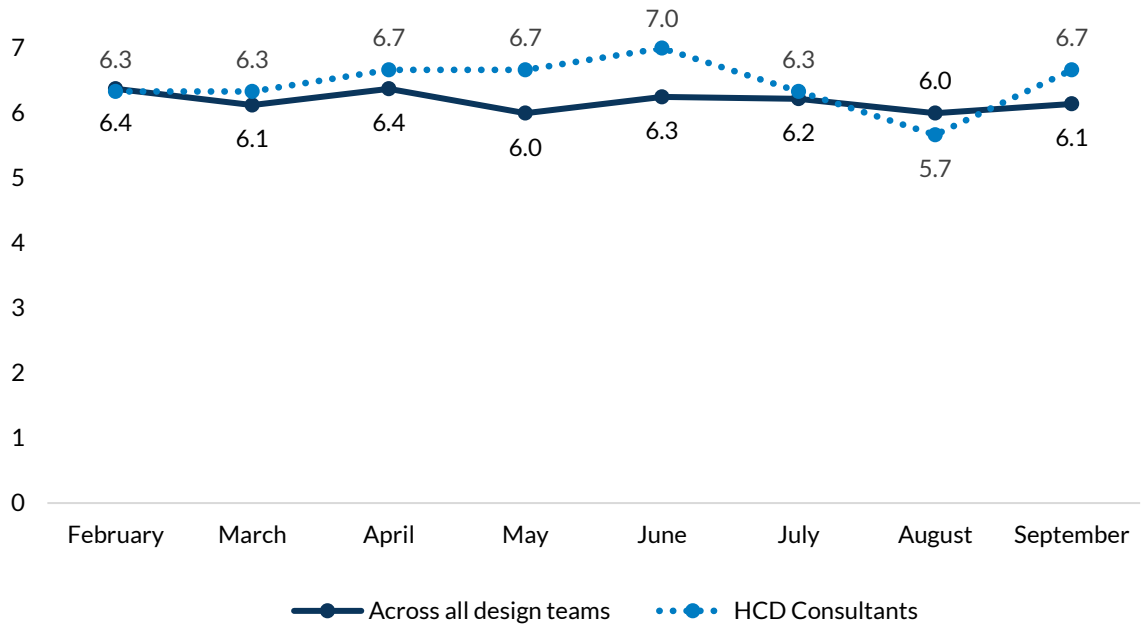
### Openness to All Opinions and Perspectives of Stakeholders

HCD consultants provided evidence of openness in describing how design team members expanded their perspectives on stakeholder needs. For example, one noted that "talking to customers and partnering with vendors that [they] don't normally talk to about how their programs work were the most impactful things towards shifting [their] perspective toward iterating on designs and focusing on what customers actually needed or wanted." A design team member from Denver shared how they realized during the pilot study that they were missing an important voice on their design team, so they invited someone with that perspective to join. Design team members in Washington talked about engaging a variety of stakeholders to ensure that all of the stakeholders understood the goals of the video they were making about the child support order modification process. The stakeholders also reviewed the language being used so the video was as accurate as possible.

**New Ways of Identifying Challenges, Brainstorming, and Trying Different Ideas**

The HCD Consultant and Monthly Design Team Logs also assessed the extent to which design teams tried new ideas and new ways of identifying challenges and brainstorming solutions (Figure 14). As seen below, ratings were again largely high and consistent across time and raters, with the exception of one lower rating by the HCD consultants shortly after the Design Thinking Workshops when design teams were integrating a lot of feedback and deciding how to move forward with a solution. Again, this suggests evidence of an HCD mindset at the beginning of the evaluation (following the initial training).

**Figure 14.** Perceptions of how design teams tried new ideas and new ways of identifying challenges and brainstorming, averaged among raters




Source: HCD Consultant Log, Monthly Design Team Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the range of average HCD consultant ratings was 6.0-6.9 and the range of design team ratings was 5.6-6.6.

In contrast to these ratings, interview data reflect that design teams learned new approaches to problem-solving during the pilot study. For example, a design team member from Denver described how they prioritized not getting too attached to an idea or solution. Instead, they chose to be led to solutions with input from end users, being willing to adapt and refine their prototypes based off of collected feedback. They described, "I've been a part of several process improvement efforts in the past, and I remember getting so attached to my ideas…The end user in mind when designing is huge and something I'll carry with me beyond this project." Another individual from Denver declared, "The success of what we've learned through this [pilot study] is because we were very open and ready." A Santa Clara design team member also discussed how the design team grew closer over the course of the pilot study, and they were able to "think outside the box" more than they could at the beginning of their work. On the other hand, one HCD consultant noted that their design team struggled with imagining something new. The same HCD consultant commented on how it was hard for their agency to make the shift from being organization/business-focused and more user-focused.

**"Bias Toward Action": An Emergent Indicator of an HCD Mindset**

HCD consultants and design team members also described gaining a perspective that encourages action, rather than excessive thinking and planning ("bias toward action"). This perspective is consistent with the training provided and is commonly referenced in the field as part of a design thinking mindset,[76] although it did not emerge with strong evidence in the literature review discussed previously. One HCD consultant provided a helpful perspective on the novelty of this indicator for the design team they worked with: "I think they're doing a good job with the bias toward action—I think it's very new. I think the current way of doing things is to document a really well thought out, well-argued plan, approach, and budget for a solution all at once, get it approved and then make it happen. Instead of, you know, to try things out and see what works and define your solution before you ask for the budget and permission to sustain it afterwards. I think that's been a reversal for them, but one they've adapted to well." Two design team members from different agencies also appreciated how the HCD consultants helped them move toward action and test out their ideas.

## Box 13. Integrated Findings

***Short-term outcomes for design teams (developing an HCD mindset)***

- All design teams clearly demonstrated an HCD mindset, with notable consistency across time and sites.
- Design teams demonstrated empathy for end users in multiple ways from early on in the project, including focusing on the "human side" of an issue.
- Design teams demonstrated openness to the opinions and perspectives of end users and others by seeking out their perspectives and incorporating end user feedback in other aspects of their work, outside the pilot study.
- Design teams adopted new ways of identifying challenges, brainstorming, and trying different ideas.
- Additional aspects of an HCD mindset emerged from the interview data including comfort with uncertainty, and a bias towards action.

## Short-Term Outcomes for End Users

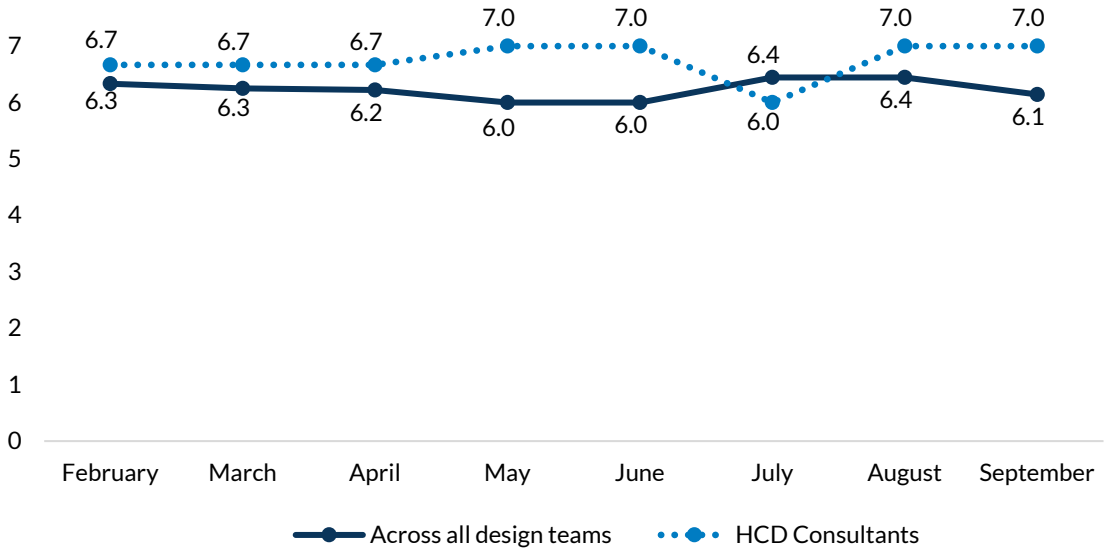
Log ratings and interviews were used to measure the following short-term outcomes for end users: (1) the relevance and usability of the solutions, (2) the likelihood of end users adopting solutions, and (3) whether systems are in place to measure progress toward desired outcomes. At the time of the evaluation, the design teams were in the process of testing the following prototyped solutions:

- **Denver**: Congratulatory email to those exiting TANF accompanied by a phone call from a case worker to discuss supports and resources available based on their specific circumstances, which staff then compile and share with the end user in a customized follow-up email
- **Santa Clara**: A platform and process for staff to propose ideas to leadership and for leadership to respond to the ideas ranked as highest priority by staff
- **Washington**: Video walking end users through paperwork required to initiate a child support order modification

**Solution is Considered Relevant and Usable**

The HCD Consultant and Monthly Design Team Logs asked respondents to report on their perceptions of how well-suited the HCD approach was to the design team's challenge. Figure 15 reflects high ratings on this item across time from both respondents, with a slight decrease in HCD consultant ratings around the time of the Design Thinking Workshops.

**Figure 15.** Perceptions of how well-suited the HCD approach was to the design team's challenge, averaged among raters




Source: HCD Consultant Log, Monthly Design Team Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the range of average HCD consultant ratings was 6.5-6.9 and the range of design team ratings was 6.0-6.5.

One HCD consultant noted that their site started out with a very broad and large challenge that was initially difficult to define more specifically. The HCD consultant suggested that there may have been benefit for design teams to initially use HCD with a smaller challenge. The HCD consultant further explained, "They're using a lot of these tools and techniques for the first time, and it's something so vague for the first time and it takes a lot longer time to do each of the steps. Something more scaled down would have given them a quick success and confidence before tackling a bigger problem… They're where they need to be on their current project, but I wonder if it would have been different or helped to give them a preview of the path ahead." Despite the size and complexity of each agency's challenge, all of the HCD consultants said the process used was a great fit for the challenge their design team targeted.

Design teams were also hopeful about their solutions, though they were still in the process of testing them at the time of data collection. Design team members from the Denver and Santa Clara teams discussed how their solution was guided by end user input, and that leadership is invested in moving the work forward and providing the resources needed to ensure its use with end users. Design team members from Washington noted that relevant stakeholders had given them positive feedback on their proposed solution. One design team member went on to explain how they would continue to engage their end user in the future to keep their product relevant and usable (i.e., translate the video series they developed into other languages their clients speak).

An HCD consultant, however, expressed concerns that their team's proposed solution may not fully address the challenge they set out to tackle, due in part to organizational and feasibility constraints. Another HCD consultant also noted constraints related to the structure of their program and available financial and staffing resources. Nonetheless, HCD consultants described the design teams as being inspired to address the full scope of the challenge and empowered to tackle the next best thing—a more defined, controlled piece of the challenge.

**End Users are Likely to Adopt the Solution**

Interviews with HCD consultants and design team members suggested that they were hopeful about their solutions working. Design team members at all sites, however, emphasized the need for solutions to be properly advertised and promoted to their intended end user and made easily accessible, or there could be risk that the solutions might not fully reach their intended audiences. One HCD consultant flagged that in order for their team's solution to become a success, all stakeholders would need to be made aware of and support the proposed solution: "A lot depends on how these other key players interact with this process. They need to recommend these resources, otherwise this would become a [solution] that exists but people don't know about."

**Systems are in Place to Measure Progress Toward Desired Outcomes**

In interviews, HCD consultants and design team members were asked how the success of their solutions will be measured and whether there are any data monitoring systems being used (see Table 8). Although all design teams were considering what would happen after they launch their solutions, no agency had formalized details about how they will track their desired outcomes. This may be due, in part, to design teams not having reached the last phase of HCD implementation.

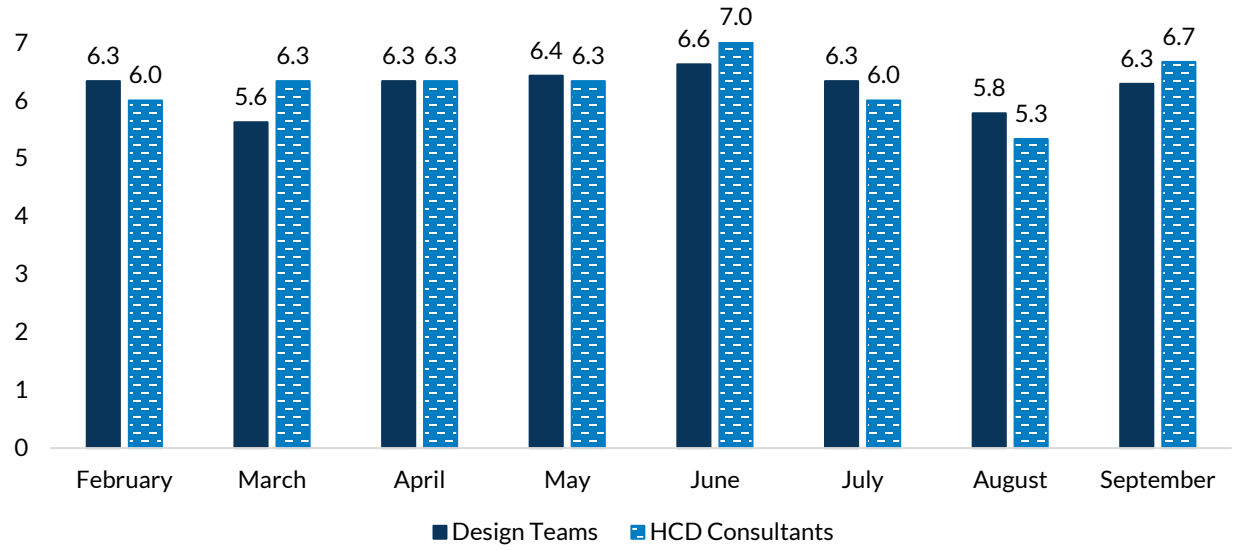
**Table 8.** Long-term outcomes to be measured, by agency

| | Challenge to be addressed | Long term outcomes to be measured |
|---|---|---|
| **Denver** | TANF cliff effect | Decrease in return to TANF after exit |
| **Santa Clara** | Employee engagement | Increased staff engagement and well-being |
| **Washington** | Completion of child support order modifications | Increase the number of completed order modifications among parents initially requesting a modification |

Source: Interviews with HCD consultants and design teams

There is no objective data about agency progress, but design team members and HCD consultants were asked about their perceived progress thus far. The Monthly Design Team and HCD Consultant Logs show that perceived progress increased over the first half of the pilot study and decreased over the summer (after the Design Thinking Workshop), before increasing again in September (see Figure 16, below). During interviews, design team members reported that, after these workshops, the process of synthesizing ideas and coming up with a solution to pursue was hard, so it felt like progress slowed.

**Figure 16.** Perceptions of progress toward the design team's HCD goals, averaged across sites




Source: Monthly Design Team Log, HCD Consultant Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot). Over time, the range of average HCD consultant ratings was 6.1-6.3 and the range of design team ratings was 5.9-6.6.

## Box 14. Integrated Findings

### *Short-term outcomes for end users*

Design teams believed their chosen solutions were relevant and usable and they were hopeful about end users adopting their solutions as long as the solution reached the end user.

## Long-Term Outcomes

To address this construct, interviewers collected data on: (1) indicators of sustainability of the HCD process in the original project and in other projects taken on by design team members in their day-to-day work responsibilities, unrelated to the pilot study work and (2) if desired improvements were obtained in the challenge targeted by the HCD approach. While the original Theory of Change notes that sustainability of the HCD process was not measured in the evaluation, this topic came up during interviews, and thus information regarding project sustainability is discussed below.

**Sustainability of the HCD Process in the Original Project and Beyond**

At the time of data collection, no design team had reached the phase where they would implement their proposed solution. Therefore, it is not possible to assess if there will be improvements in agencies' outcomes of interests for end users. However, during HCD consultant and design team interviews, indicators of sustainability were identified (for a high-level summary, see Table 9, below).

- **Denver.** Indicators of success include the incorporation of HCD into the agency's strategic plan; use of HCD principles in other areas of work unrelated to the pilot study; and the agency's decision to

use HCD to make decisions related to the best use of TANF reserves. One design team member explained, "In an organization, if it doesn't have that fluidity and openness at all levels of leadership, it would just be a nice project that happens for a short period of time. We were committed to not having that happen… We've had a ton of nice projects that become a binder on a shelf—we wanted this to inform change we wanted to see."

- **Santa Clara.** An indicator of sustainability was that design team members used HCD principles in other areas of their work unrelated to the pilot study. One design team member noted, "My definition of success for this agency is to have this continue--to have this live on so we can apply HCD across the agency for different challenges. That will be our measure of success."
- **Washington.** Indicators of sustainability were the incorporation of HCD into the agency's strategic plan; design team members' incorporation of end user feedback into other areas of their work unrelated to the pilot study; and the team's plans to continue to use HCD principles on future challenges. One design team member shared, "A lot of the work has been contained to our team, so it hasn't had time to cause joyful infection in others yet." The interviews also illuminated important political context that also serves as an indicator of sustainability—their governor has demonstrated interest and support for the implementation of HCD, which design team members believe will help propel their current and future HCD related work and keep HCD as a priority in their agency.

**Table 9.** Observed indicators of sustainability, by agency

| | Challenge to be addressed | Observed indicators of sustainability |
|---|---|---|
| **Denver** | TANF cliff effect | Building HCD into strategic plan, using HCD to determine how to best use TANF funding, using HCD principles in other work |
| **Santa Clara** | Employee engagement | Using HCD principles in other work |
| **Washington** | Completion of child support order modifications | Incorporating HCD into strategic plan, governor supportive of HCD, incorporating end user feedback into other workgroups, using HCD principles in other work |

Source: Interviews with design teams

## Box 15. Integrated Findings

### *Long-term outcomes*

- All agencies demonstrated indicators of future sustainability specific to agencies and the challenges they were solving.
- All design teams detailed how they had begun implementing HCD principles in other areas of their work unrelated to the pilot study.

## Unexpected Outcomes

During the interviews, design team members were asked if they experienced any unexpected outcomes from implementing HCD. One such outcome was that agencies developed or refined their incentive processes so they could show appreciation to stakeholders and end users who supported their work. In addition, one design team identified a preferred platform for virtual engagement with community members (Zoom), and the agency developed a policy based on this finding. Although unexpected, this need for processes to compensate and engage end users is a logical facilitator of HCD implementation. Without such systems, the engagement of end users will likely be more difficult, which jeopardizes a design team's ability to demonstrate key HCD principles.

# Key Findings

Given the extensive data collected and described in this report, this section summarizes key findings of the evaluation based on integrating findings across measures. These are related to, but not directly aligned with, our initial research questions, which are answered concisely in Appendix C. The following are the most salient findings from across research questions.

1. **HCD can be evaluated systematically in human services programs with a variety of theoretically-driven data collection tools, although more work is needed in measure development**. This pilot study used a systematic evaluation approach. It began with clear and specific research questions, identified key constructs and how they may be related based upon the extant literature, and operationalized each construct with measurement tools. In the absence of established measures in the field, all our evaluation tools were developed for this pilot study. A mixed methods approach and data triangulation across multiple time points, measures, and reporters promoted understanding of how HCD can be evaluated in human services. This pilot study provides initial evidence of the reliability as well as validity of tools developed in this project, with clear room for future revision and validation. More specifically:

    a) Data collected through multiple methods yielded largely similar findings, providing support for the validity of the tools. For example, it was common to hear of explicit examples of skills or activities in interviews that aligned with the log ratings provided by design team members and HCD consultants.

    b) Reliability was supported by the consistency of log ratings repeated by several respondents every week or month across eight months.

    c) Discrepancies between reporters may reflect important differences in perspectives and inform which measures may be more useful for assessing different types of information (i.e., where the HCD consultant's knowledge is needed for accurately responding to detailed questions about HCD activities).

    d) It was difficult to reliably assess demonstration of the HCD principles and distinguish them from an HCD mindset. Definitions are described below that may be helpful for future evaluations.

    e) Evidence of a surprisingly high level of HCD mindset across design teams at the beginning of the pilot study raised questions about how this construct is measured and to what extent this may pre-exist in human services programs prior to HCD training and coaching.

2. **With expert training and coaching, design teams demonstrated HCD principles and implemented a range of HCD techniques with different challenges, end users, and contexts**. In this project, design teams received approximately 7-9 hours per week of consultation and direct support from an HCD consultant and a content expert, in addition to three full days of initial training. With this capacity-building support, which was rated highly, design teams demonstrated HCD principles and appeared to use HCD techniques effectively, as evidenced by the following:

   a) HCD consultant ratings of design teams' use of techniques consistently met or exceeded 6 on a 1-7 scale for seven of eight months.

   b) Design team logs reflect implementation of a range of activities in 4 of the 5 phases of the HCD process (there was inadequate time for the Implement and Refine phase).

   c) Across the three sites, average design team ratings of use of HCD principles exceeded 6 on a 1-7 scale for three principles (Principle 1: demonstrate empathy for end users; Principle 5: consider end users' needs, preferences, and context; and Principle 6: collaborative team process) and exceeded 5 for the other three principles (Principle 2: engagement of end users and stakeholders in the design process; Principle 3: incorporate end user and stakeholder feedback in testing and revising solutions; and Principle 4: generate, test, and revise potential solutions, going back to earlier steps as needed).

   d) Based on the Implementation Assessment, all three design teams were considered to be successfully implementing three principles (>75% of indicators in place, a threshold shown to predict positive outcomes).[77] One agency was considered to evidence all six principles; one agency evidenced five and one agency evidenced three principles.

   e) Interviews with design team members and HCD consultants provide numerous exemplars of how the principles and strategies were effectively used. These qualitative data also help explain some variability in application of principles across time and raise questions about whether all principles apply equally throughout the HCD process.

   Although there was some variability in HCD implementation across sites, there were more similarities as evaluated in this project despite different challenges, end users, contexts, and consultants. Such similarities might be expected given that design teams received very similar training and coaching, with similar timeline constraints. However, these findings suggest that the HCD process can be well-defined and consistently implemented for future evaluations. There was also evidence that suggests that design teams in human services programs that are new to HCD can learn to use it within one project over the course of a year for a reasonably complex challenge. Moreover, multiple sources of data indicate that this implementation was successful, even in the context of ongoing barriers, including an unprecedented pandemic.

3. **From early in the evaluation, design team members demonstrated an HCD mindset, including empathy for end users, openness to different opinions and perspectives, and new ways of identifying challenges and brainstorming.** Based on the operationalization of an HCD mindset in the initial Theory of Change, an HCD mindset was defined as 1) empathy for end users, 2) openness to different opinions and perspectives, and 3) new ways of identifying challenges and brainstorming. These constructs also overlap with some of the HCD principles, specifically Principles 1 (demonstrating empathy for end users) and 4 (using an iterative process), but they are separated for conceptual clarity (see below for further discussion). Evidence of an HCD mindset is as follows:

    a) All design teams demonstrated at least 80 percent of the core mindset elements on the Implementation Assessment, which assessed similar but slightly reworded components to those specified in the Theory of Change (i.e., "truly understands feelings and perspectives of the end user," "openness to trying new ideas," and "comfortable with uncertainty").

    b) Empathy for end users was also demonstrated in the HCD Consultant and Design Team Monthly Log ratings of empathy for end users (all design teams scored greater than or equal to 6 on a 1 to 7 scale). Of note, these ratings were high from the beginning of the project and were generally consistent throughout its duration.

    c) New ways of identifying challenges and brainstorming was rated highly by HCD consultants and design team members (greater than or equal to 6 on a 1 to 7 scale in seven of the eight months).

    d) During interviews, design team members expressed high motivation and interest in engaging end users and stakeholders that was not always fully realized due to various logistical barriers, including pandemic-related barriers. Design team members also described actively seeking diverse end user perspectives, thinking "more creatively" and being more "open to new solutions and the idea of iteration" rather than trying to make their initial ideas work.

    e) An additional aspect of an HCD mindset identified (which was not formally assessed but added to our revised Theory of Change) was a *bias toward action*.

4. **Design teams demonstrated capacity for HCD through using strategies competently, building c onfidence, developing processes to support sustainability, and addressing challenges that arose.** There was evidence of an increase in design team confidence in and capacity for HCD over the 8 months of the evaluation period. Design teams also developed capacity by creating new processes to support HCD implementation and address challenges. More specifically:

    a) As reported in interviews, one of the most critical facilitators for engaging end users effectively was the ability to provide incentives to them to encourage input and participation. Two of the three design teams created new processes for this purpose by leveraging leadership support and providing non-monetary incentives when gift cards could not be provided.

    b) Design teams reported ongoing challenges to HCD implementation that varied across the period of evaluation and interfered with their work, with an average rating of "somewhat

interfered" every month. Staff time was the biggest barrier, as was expected; recruiting end users was also frequently identified. Interestingly, however, the HCD consultants rated interference consistently lower than did the design teams. Interviews reflected that design teams limited the impact of these barriers with creative thinking, support from their agency leadership, and guidance from the HCD consultants and content experts.

c) There was indication that design team members' confidence in implementing HCD techniques increased over time from an average score of 5.3 in the first two months of the project to an average of 6.2 in the last two months. Variability in ratings across time suggest that a dip around the time of the Design Thinking Workshop, after which confidence and perceived progress increased.

5. **HCD was found to be useful and relevant in addressing disparate challenges across three sites, and each site had interest in continuing to use HCD in some way.** Optimism about the solutions that had been identified and were being tested at the time of this evaluation was strong, and HCD was considered to be relevant for each design team's specific challenge. Evidence provided from monthly logs completed by HCD consultants and design team members, as well as in interviews, is as follows:

   a) Both the HCD consultants and design team members reported that the HCD approach was well suited to the challenges they sought to address, with nearly all monthly ratings related to this question at or above 6 on a 1 to 7 scale. Specifically, a design team member and an HCD consultant described HCD's focus on end users as being particularly relevant for solving complicated challenges that have not been solved using more traditional methods in the past.

   b) Interviews with the HCD consultants and design team members suggested that design team members were findings ways to incorporate their HCD mindset and principles into other aspects of their work beyond the pilot study. Design team members shared excitement about using an HCD mindset and strategies, and two of the three agencies had plans to incorporate HCD into their agency's strategic plans. However, concerns were also expressed about feasibility with respect to the time required for implementation of the full HCD process in the future.

   c) After the formal evaluation was completed, all design teams formalized plans and were pursuing funding to continue their HCD work in some way.

# Discussion

This project contributes to current understanding of how HCD can be evaluated within a human services context. In particular, it formalized a Theory of Change, developed new evaluation tools and tested methods, and identified key findings regarding the value of building capacity for HCD implementation. The evaluation process was systematic and included preregistration with the Center for Open Science to enhance transparency and objectivity, and consultation with a team of HCD experts to strengthen the validity of our methods and conclusions. Agencies selected challenges to address with HCD that were very difficult, and the design teams were also new to HCD, which is typical for the human services field at this time. Nonetheless, this is considered a descriptive exploratory study[78] and lessons learned must be considered in the context in which it was conducted; they should not be generalized. More specifically:

- We included only three sites that were selected for their readiness and likelihood of successful HCD implementation.
- Training and coaching were designed to reflect a capacity-building approach and were provided fully virtually.[k]
- The project was conducted during the COVID-19 pandemic, which both increased demands on participating agencies and decreased staff capacity.
- Evaluation activities did not begin before the initial HCD Primer Training; thus, findings may not reflect change from a true baseline.
- Given that the primary focus was capacity-building, and that full implementation was not completed by the time data collection for the evaluation concluded, findings do not reflect the impact of the HCD process itself.

Despite these limitations, findings suggest that there is clear influence of HCD training and coaching on design team members' capacity for approaching challenges that may be beneficial in and of itself. However, there was the indication in qualitative data that there may be organizational and feasibility constraints around implementation. This is a challenge that may be exacerbated within human services agencies, or public agencies more broadly, and should be explored in future research.

## Theory of Change

As noted, this project included the development of a Theory of Change to describe the process by which HCD may influence expected outcomes, which was based on a review of the literature.[79] This informed the evaluation approach and the assessment tools that were developed, a particular strength of this work. This model can be used by others to drive more theoretically-based research in this area. Based upon this pilot study, several refinements were made to our original Theory of Change (see Figure 17 below).

- **Inputs:**
    - Defined program readiness as leadership support, investment in providing needed resources, and interest in engaging end users, which were embedded in the selection process.
    - Modified subject matter "expert" to "expertise," reflecting that this is important but could be provided in different ways other than by having a specific individual in this role.

[k] There are other models of training and coaching that may be provided by HCD experts that this project did not assess.

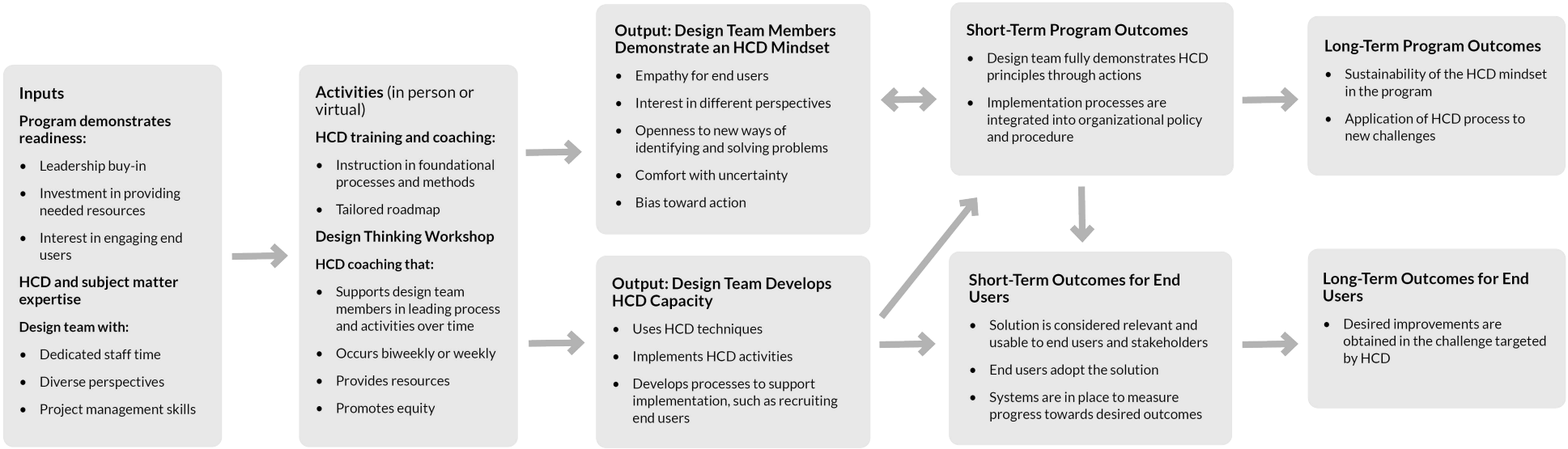
- Identified key characteristics of a design team needed for HCD implementation, including adequate time, diverse perspectives, and project management skills.

- **Activities:**
  - Specified that training and coaching may be in-person or virtual, and that it should include information about foundational process and activities as well as a program-specific roadmap for the design team's specific challenge.
  - Specified that coaching should include components identified as critical in this project: 1) supporting design team members in developing skills, 2) providing HCD resources (like templates and examples), and 3) promoting equity.

- **Outputs:**
  - Added processes to support implementation as part of a design team's HCD capacity, such as systems for providing incentives to end users.
  - Re-conceptualized an HCD mindset as an output rather than an outcome, given that some human services programs may demonstrate a pre-existing high level of this type of thinking and approach to challenges before training in HCD. Future research might consider assessing the extent to which this pre-exists as an input.
  - Indicated that an HCD mindset and demonstration of HCD principles likely influence each other bidirectionally. That is, a mindset may contribute to use of principles, and experience using the principles may influence one's mindset.
  - Identified one additional aspect of an HCD mindset that emerged from interviews (bias toward action) and explicitly identified comfort with uncertainty in the Theory of Change.

- **Outcomes:**
  - Moved HCD principles from an indicator of HCD capacity and output to a program outcome, and specified full demonstration of the principles requires both an HCD mindset and HCD capacity in the design team.
  - Clarified that HCD principles should be demonstrated through actions, which helps to differentiate the principles from an HCD mindset.
  - Added application of HCD processes into organizational policies and procedures as a new program outcome to achieve long-term outcomes.
  - Clarified that the long-term outcome for the program is sustainability of the HCD mindset in the program and application of the HCD process to new challenges.

**Figure 17.** Revised Theory of Change



It is also important to note that the duration of this project did not allow for assessment of outcomes for end users or impact of solutions implemented, thus there is no data to evaluate those aspects of the model. Further specification and/or revisions may be indicated based on future application.

Another useful area for future investigation would be to identify mechanisms of change in HCD that can be discriminated from similar components in other problem solving and change management approaches (e.g., Improvement Science, Breakthrough Series Collaborative). Based upon the learning in this project, full demonstration of the HCD principles appears to be a core component of the process. It is also possible that there may be unique aspects of an HCD mindset that provide unique value, such as a bias toward action.

# Evaluation Tools and Methods

As previously noted, all of the data collection tools and interviews referenced in this report were created specifically for this project. However, they were grounded in the current literature and a theoretical model, using a systematic evaluation approach. This work may be useful for moving HCD evaluation beyond questions that can be answered by case studies of implementation and toward other research questions that require more rigorous methods. Validation of these and other HCD evaluation tools is not only useful for research, but may help shift organizational priorities, and even metrics, for success.[80] To support this work, the following are specific lessons learned related to the evaluation approach used for this project:

- Use of multiple informants was valuable for particular types of information where perceptions may differ. For example, the use of three reporters on each design team to create an average score was more reliable than a single reporter's perception may have been. In addition, it was important to know when the HCD consultants had different views of the design teams' work than design team members did themselves.
- Some types of information may not require multiple informants. For example, information about HCD activities appeared to be more consistently provided by the HCD consultant than design team members, likely because design team members' understanding of the activities was more variable.
- Interviews could be streamlined to focus on information that may be harder to fully capture in quantitative ratings, such as confidence, plans for the future, and facilitators/barriers.
- Given the relative consistency of ratings related to an HCD mindset over time, monthly reports may not be necessary. The caveat to this is that there were notable changes around the time of the Design Thinking Workshop that others may be interested in exploring in the future.
- HCD principles were not assessed reliably over time in this project due to varying understanding of whether they were applicable at all phases. Conceptually, it may be more meaningful to evaluate the demonstration of principles at the end of a project, when there is adequate information about the solution created and implemented, and principles can be fully assessed.
- Measurement of the HCD principles and mindset should occur prior to any training to obtain a true baseline measure.

## Differentiating the HCD Principles from an HCD Mindset

As noted, it was a challenge to differentiate an HCD mindset from HCD principles in this evaluation, which was related to measure limitations as well as a lack of conceptual clarity in the field. Although the HCD principles put forth by ISO (ISO Standard No. 9241-210:2019) are well-established and widely used, they were intended to promote project implementation, not to be used as a measurement tool. In operationalizing the principles for this project, they were not clearly defined in a manner that was distinct

from a mindset. This is particularly relevant for Principle 1 (understand end users and stakeholders) and Principle 5 (considers end users' entire experience),[l] where some of the items we measured could be interpreted to reflect an individuals' approach or mindset. Additionally, both a mindset and principles were assessed via self-report on the Monthly Design Team Logs, which may have exacerbated this overlap.

In reviewing the findings and consulting with the team of experts, it was determined that the HCD mindset be defined as the thoughts, perceptions, and beliefs with which a team approaches solving a challenge. Assessment of an HCD mindset should be done prior to any HCD training, as there is indication that aspects such as empathy may pre-exist in human services programs. The HCD principles can then be defined in more objective or observable ways that reflect a design team's *actions*. These definitions would contribute to the refinement of future measures of these important constructs, which are interrelated but distinct.

## Specific Measure Considerations

Given the extensive data collected, the potential advantages and disadvantages of the different tools became clear, which may inform future HCD evaluation efforts in the human services context. Different tools and informants might be used for different research questions or objectives (see Table 10).

**Table 10.** Advantages and disadvantages of HCD4HS evaluation tools

| Method or tool | Advantages | Disadvantages |
|---|---|---|
| **Activity logs** | • Provide rich data on how the HCD process is being implemented<br>• Useful for assessing experiences that may change across time | • High time burden for participants<br>• Potential for misunderstanding of items contributing to inconsistencies across participants |
| **Interviews** | • Provide context to ratings, help identify barriers and unexpected themes, and explain discrepancies | • Individual interview format and thematic analysis are resource intensive |
| **Implementation Assessment** | • Quantifies key elements of the HCD process, mindset, and principles in a comprehensive manner<br>• Allows for comparison across programs<br>• Could be used to show change across time | • Group interview format is resource intensive and may encourage participants to respond in a desirable manner<br>• May have ceiling effects as currently worded (i.e., may not accurately measure high levels of implementation) |

There may be particular value to assessing HCD principles through: (1) a facilitated interview with key design team members, with multiple questions for each principle (similar to the Implementation Assessment), and (2) observations from a neutral party to assess the degree to which principles are demonstrated via the actions of design team members. There are existing measures of design thinking for

[l] Note that these definitions are from Rosinsky et al. (2022) and differ in subtle but important ways from the ISO 9241 principles, which appear to emphasize the nature of the design in these two principles.

individuals, such as the Design Thinking Questionnaire.[81] However, within the context of human services, there is a need for a design thinking measure to assess teams, not just individuals, which appears to be the primary focus of work to date. Measures of related constructs like creativity in the business context (e.g., Competency Based Creative Agency Scale[82]) and innovation self-efficacy in engineering[83] could also be adapted for application within human services programs.

In considering the utility of the tools used in this project, some limitations must be acknowledged. Beyond the small sample size (three sites) in which the tools were piloted, our timeline did not allow for the evaluation of how well these tools may predict successful implementation of a solution and whether the original challenge of interest was solved. Moreover, it was not possible to fully assess the later stages of the HCD process (Test and Iterate; Implement and Refine). It is also important to note that there are other approaches to evaluation that were not included in the current project that could be useful to consider in future work. In particular, more objective measures (e.g., interactions with end users, review of implementation products and notes, observation of design team activities) might have added additional insight or even modified the conclusions.

### Box 16. Recommendations to Advance HCD Evaluation in Human Services

- Use theoretical models to design and test HCD initiatives.
- Test applicability of related measures from other fields.
- Standardize measures of key constructs, like an HCD mindset, organizational capacity for HCD, and quality of implementation.
- Evaluate the extent to which more easily measured outputs, like an HCD mindset or demonstration of principles, may predict end user outcomes.
- Allow adequate time for the HCD solutions to be fully implemented and follow up to assess sustainability and any unanticipated outcomes.

## Implications of Findings for HCD Implementation in Human Services

Beyond the evaluability of HCD within human services, this project generated information that may be useful for informing learning agendas for others interested in implementing HCD in this context.

- Program readiness, including leadership support and adequate staff capacity and resources, was a critical component for successful implementation of HCD in this project, similar to the broader literature on implementation of other programs and change initiatives.
- Fully virtual training and coaching were viable and effective based on feedback from design team members and HCD consultants. This approach gives more people access to national experts and resources.
- HCD implementation takes extensive time for new learners and involves regular challenges, albeit ones that can generally be overcome with persistence, skill, and adequate support. This may be important to communicate to interested programs to help set realistic expectations and ensure readiness for full engagement.

- The capacity-building approach used in this project where staff received training and coaching to implement HCD with the ongoing support of a dedicated HCD consultant appeared to have clear strengths and was well-received by the design team participants (although the approach was not compared to other ways of implementing HCD). Although the investment with this approach may initially be higher, it is expected to enhance sustainability and generalizability of the HCD process within an organization. Given this cost, it may be helpful to train design teams by working on a smaller, more manageable challenge before using HCD for complex challenges.
- Content expertise in the programmatic or policy area challenge being addressed by design teams from outside of the human services program appears to have value, although it is not clear that having a specific individual in a content expert role is critical or how best to match the expert's skills to the needs of the agency.
- There was indication of a decrease in design teams' use of techniques and demonstration of an HCD mindset immediately following the Design Thinking Workshop, which is understandable given that stage of the HCD process is particularly challenging. However, it may be useful for design teams to anticipate and engage additional supports or coaching as needed during this phase of the HCD process.
- Equity was intentionally integrated into the HCD training and coaching through a variety of approaches, and design team members reported that this was well-aligned with their way of working. However, design team members also experienced many challenges fully engaging end users and obtaining input from a diverse group of stakeholders throughout the project. This is an important area for future initiatives to prioritize, which should theoretically optimize HCD outcomes.

# Conclusion

The HCD4HS project developed an approach for evaluating capacity-building to support HCD implementation within three agencies addressing different challenges related to human services delivery. Acknowledging the specific context of this work related to agencies' high level of initial readiness and the unique demands of the pandemic, there are important lessons learned that may inform future HCD evaluation. An HCD capacity-building approach was quite feasible for the selected agencies, which were highly satisfied with the training and coaching they received. Evaluation data provide evidence that design teams members can learn HCD and effectively implement HCD strategies, develop processes to support sustainability, and address challenges that arise. Human services program staff may demonstrate some preexisting aspects of an HCD mindset, like empathy, although a bias toward action may need more development. What is unclear is the extent to which HCD capacity will result in full implementation of the solutions design teams developed through the HCD process and translate into positive impact for end users. Additionally, although HCD as implemented within this pilot study appeared generally useful for three very different challenges in different organizations, it is certainly possible that it may be better suited for some challenges and contexts than others.

This project also demonstrates the evaluability of HCD within human services with operationalization of key constructs in a theoretical model to inform multi-method measures. The HCD4HS project highlights the value of different assessment approaches and identifies specific areas for future research, including work to further operationalize the HCD principles and mindset and validate research tools. This report, along with the associated literature review developed as part of this project,[84] is intended to help advance the use and evaluation of HCD within the human services context.

# Appendix A. Glossary of Terms

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| **Accessibility** | Accessibility is the concept of whether a product or service can be used by everyone—however they encounter it. Accessibility focuses on people with disabilities (vision, movement, thinking, remembering, learning, communicating, hearing, mental health, social relationships, and more). |
| **Analytics** | Analytics refers to the statistical analysis of data or information. A common example of analytics is to measure human behavior on a website by analyzing data points like how long they are on the site, where they click, where they came from, and what search terms they use, etc. Analytics from other sources like organizational program data can also be used to help identify patterns. They help us better understand and interpret patterns of behavior with the products and services we use. |
| **Assumption** | An assumption is a thing that is accepted as true or certain, without proof. |
| **Bias** | A bias is a tendency, inclination, or prejudice toward or against something or someone. An interviewer might inadvertently bias an interviewee's answers by asking a "loaded" question, in which the desired answer is presupposed in the question. |
| **Brainstorming** | Brainstorming is defined as an idea creation method for generating a large number of creative ideas in a short period of time. |
| **Co-creation** | Co-creation is the active involvement of end users in the design and decision-making process. It includes specific activities like reviewing needs or user stories, iterating on prototypes, etc.<br><br>See also: *Concept posters, Storyboards, Service blueprints, Rapid prototyping* |
| **Cognitive walkthrough** | A cognitive walkthrough is a usability method that steps through the many actions people need to take to achieve a goal. Use cognitive walkthroughs when<br>- you want to test how intuitive the steps of a process are,<br>- you don't have an interactive prototype yet,<br>- you want to assess whether you've captured every piece of the experience your users would expect to be a part of your design. |

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| **Concept** | A concept is an idea with a rationale that supports how the solution you are designing will overcome a problem or challenge. A concept is more polished and has more details than an idea. It's a thought-out idea that designers want to test with the people they are designing for to gain feedback and challenge their assumptions. The concept is what they begin to build prototypes around. |
| **Concept poster** | A concept poster is a worksheet used to solidify an idea and prepare to share that idea. It includes space to define who the concept is for, what the challenge solves, how it works, known issues, and planning tools.<br><br>See also: *Storyboards, Service blueprints, Rapid prototyping, Co-creation sessions* |
| **Conceptualize & Prototype** | Conceptualize and Prototype is a phase in the HCD process. This is a "focus" phase where you develop a limited set of ideas and do more evaluative processes to make sure things work. This is creative and converging at the same time.<br><br>See also: *Human-centered design* |
| **Context** | The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood. Context describes external elements that surround and influence design. These items can be physical and non-physical, as well as cultural. |
| **Continual user feedback** | Continual user feedback is a built-in system or plan for continuous product or service improvement based on collecting and acting on feedback from the people using the product or service. |
| **Design** | Design consists of the processes we use to create things, as well as the form of those things themselves. |
| **Design principles** | Design principles are the key characteristics your "solution" must address or incorporate to be successful (based on what you've learned). Use design principles when you need reminders of constraints and goals that influence design decisions. |

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| **Design Thinking Workshop** | A Design Thinking Workshop is a hands-on, activity-based session that has a defined problem area, is focused on doing over discussing, and generates solutions in the form of prototypes.<br><br>See also: *Prototype* |
| **Designer** | Anyone participating in creating or altering a process, product, service, or experience.<br><br>See also: *Stakeholder, User* |
| **Diary study** | Diary study is a research method that asks users to record daily events, tasks, and perceptions around a given subject in order to gain insight into their habits, behavior, and needs over time. |
| **Empathy** | Empathy is the ability to recognize, understand, and share the thoughts and feelings of another person. Empathy enables us to understand not only our users' immediate frustrations but also their hopes, fears, abilities, limitations, reasoning, and goals. |
| **Equity** | Equity refers to proportional representation (by background, skills, expertise, perspective, etc.) in access to the same opportunities. Equity involves distributing resources based on the needs of the recipients. |
| **Equity pause** | An "equity pause" is a pause in the design or planning process to reflect, remind ourselves of our goals, and name what we might do better in support of equity and inclusion. |
| **Ethnography** | Ethnography is a qualitative research method of observing users in their natural habitat rather than in a lab to understand their behavior. Use ethnography when you need an in-depth understanding of the people you are designing for and how their context affects their experience. |
| **Experience maps** | An experience map is a visualization of all the experiences that a "generic" person goes through in order to accomplish a goal. This experience is agnostic of a specific business or product. It's used for understanding general human behavior. |

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| **Facilitation** | Facilitation is the art of moving a group of people through meetings, planning sessions, or training and successfully achieving a specific goal. |
| **Facilitator** | A facilitator is a researcher who works with a person or group to moderate a discussion or activity in order to collect feedback and information. |
| **Focus group** | A focus group is a moderated group discussion that typically involves between 5-10 participants. Use focus groups to learn about users' attitudes, beliefs, desires, and reactions to concepts. |
| **Governance** | Governance is the system or a set of guidelines that guide the maintenance of a technology or a service.<br><br>See also: *Governance framework, Governance plan* |
| **Governance framework** | A governance framework is the structure of governance and reflects the interrelated relationships, factors, and other influences on the technology or service being governed.<br><br>See also: *Governance, Governance plan* |
| **Governance plan** | A governance plan is a set of rules, responsibilities, and processes put into place to guide the maintenance of a technology or a service.<br><br>See also: *Governance, Governance framework* |
| **High-fidelity (hi-fi) prototype** | High-fidelity (hi-fi) prototypes are highly functional and interactive concepts. They are very close to the final product, with most of the necessary design elements and components developed and integrated. Hi-fi prototypes are often used in the later stages to test usability and identify issues in the workflow and visual experience.<br><br>See also: *Low fidelity (lo-fi) prototype* |
| **How Might We (HMW)** | "How might we" (HMW) questions are short questions that launch brainstorms. "How Might We?" is a positive, actionable question that frames the challenge but does not point to any one solution. HMWs create a seed that is broad enough that there is a wide range of solutions but narrow enough that the team has some helpful boundaries. |

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| **Human-centered design (HCD)** | Human-centered design is a process and a mindset to iteratively addressing complex challenges by facilitating the design of solutions with those who will ultimately use the solution. |
| **Ideation** | Ideation is a creative process where designers generate ideas in sessions. Participants gather with open minds to produce as many ideas as they can to address a problem statement in a facilitated, judgment-free environment. |
| **Implement & Refine** | Implement and Refine is a phase in the HCD process. To implement and refine is to bring the solutions to life and plan for ways to continue to get user feedback post-launch with the intention of continuing to improve and adapt the solution over time.<br><br>See also: *Human-centered design* |
| **Insights** | Insights are ideas or anecdotes expressed as succinct statements that serve to interpret patterns in research findings. Insights offer a new perspective, even if they are not new discoveries. |
| **Interviews** | Interviews are in-depth sessions with users, customers, and people who know what is going on in the community first-hand. Use interviews to gather information on users' feelings, goals, motivations, and daily routines or understand how people use a product, program, or service. |
| **Iterate** | Iteration is the steady refinement of a design based on user testing and other evaluation methods. |
| **Landscape analysis** | A landscape analysis, or comparative analysis, is a process of identifying peers or related efforts and reviewing their approaches to identify trends, strengths, and weaknesses. Use landscape analysis to understand what approaches are already being used by others and any strengths, weaknesses, or lessons learned. |
| **Launch roadmap** | A launch roadmap is a visual tool communicating a rollout that includes all teams involved and outlines pre-launch, launch, and post-launch tasks. |
| **Longitudinal** | "Longitudinal" describes something that happens over a period of time. |

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| **Longitudinal study** | A longitudinal study is a study that captures data over a period of time (days, week, months, or years) to understand the long-term effects of changes in products, processes, or environment.<br><br>See also: *Diary study* |
| **Low fidelity (lo-fi) prototypes** | Low-fidelity (lo-fi) prototyping is a quick and easy way to translate high-level design concepts into tangible and testable experiences. The first and most important role of lo-fi prototypes is to check and test functionality rather than the visual appearance of the product.<br><br>See also: *High-fidelity (hi-fi) prototypes* |
| **Message testing** | Message testing is a research method to assess how clear and impactful communication will be. Use message testing when you want to evaluate written, audio, or visual content or when you have multiple message prototypes and need to understand which messaging achieves your goals better. |
| **Metrics** | Metrics are the data that we collect during a usability study. Metrics help answer the research questions you have posed. The most basic measures are based on the definition of usability as a quality metric:<br><br>- success rate (whether users can perform the task at all),<br>- the time a task requires,<br>- the error rate, and<br>- users' subjective satisfaction.<br><br>See also: *Usability testing* |
| **Participatory design** | Participatory design is an approach that brings customers into the heart of the design process. In participatory design, the end users of a product, service, or experience take an active role in co-designing solutions for themselves.<br><br>See also *Co-creation sessions* |
| **Persona** | A persona is a generalized representation of the people you are designing to summarize characteristics, behaviors, needs, expectations, and more. They aren't necessarily a real individual but are constructed using real information and data based on real users. |

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| **Pilot study** | To pilot a study is to launch a high-fidelity prototype with a small sample to evaluate the design. Use pilot studies when you've iterated enough to have a fully fleshed out design with all its features, and you want to test your prototype for any remaining issues to address before launching the solution more broadly. |
| **Problem statement** | Problem statements explain the user's need and goal and contribute to a "How Might We" question. Use problem statements to explain what we're trying to solve. |
| **Prototype** | A prototype is a model or artifact built to test a concept with users in order to learn from them. A prototype helps designers understand, explore, and communicate what it feels like to engage with a solution in real working conditions rather than theoretical conditions. |
| **Qualitative research** | Qualitative research focuses on research methods that help to uncover an in-depth understanding of something. It often includes methods like interviews, focus groups, observation, and open-ended questions. Qualitative research helps us understand the what, why, and how. |
| **Quantitative research** | Quantitative research emphasizes the statistical, mathematical, or numerical analysis of data. Quantitative research helps us measure trends. |
| **Rapid prototyping** | Rapid prototyping is an iterative process of mocking up the future state of a system, like a website or application. Rapid prototyping consists of cycles of prototyping and review or testing. The rule of thumb is to prototype 20 percent of the interface used 80 percent of the time. This allows you to focus on the crucial interactions and features.<br><br>See also: *Concept posters, Storyboards, Service blueprints, Co-creation sessions, Prototype* |
| **Research question** | A research question is any question that a research project sets out to answer. Choosing a research question is an essential element of both quantitative and qualitative research. |
| **Roadmap** | A roadmap is a strategic plan that defines a goal or desired outcome and includes the major steps or milestones needed to reach it. It serves as a communication tool, a high-level document that helps articulate strategic thinking—the why—behind both the goal and the plan for getting there. |

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| **Scenario** | Scenarios are stories that designers create to show how users might act to achieve a goal in a system or environment. Designers make scenarios to understand users' motivations, needs, barriers, and more in the context of how they would use a design and to help ideate, iterate, and test optimal solutions.<br><br>See also: *Designer* |
| **Service blueprint** | A service blueprint is a diagram that visualizes the relationships between different service components—people, props (physical or digital evidence), and processes—that are directly tied to touchpoints in a specific customer journey.<br><br>See also: *Concept posters, Storyboards, Rapid prototyping, Co-creation sessions* |
| **Stakeholder mapping** | Stakeholder mapping is a way of diagramming the network of people who have a stake in a system or process. Use stakeholder mapping to document the relationships, needs, and interactions of people impacted by the design or determine who to involve in the design process. |
| **Stakeholders** | People who have the power to affect or are affected by the design.<br><br>See also: *Designer, User, Stakeholder mapping* |
| **Storyboard** | Storyboards are a visual representation of a user's experience with a product or problem space. They document the important acts of the experience as if telling them like a story. |
| **Study** | A study is a detailed investigation and analysis of a subject or situation. |
| **Survey** | A survey is a research method used for collecting data from users by asking them to respond to a questionnaire (online, paper, or phone). Use surveys when you need a snapshot of a user population at a relatively low cost or need many responses quickly from a geographically dispersed population or to quantify insights from qualitative research. |
| **Synthesis** | Synthesis a collaborative process of sensemaking, which leads to creating a coherent summary of all the data gathered during research. Synthesis involves bringing together, sharing, and organizing what you've learned. Synthesis is best done collaboratively, with multiple disciplines and stakeholders representing different perspectives and areas of expertise. |

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| **Synthesize and Generate Solutions** | During this phase of HCD, the team synthesizes the research findings to fully understand the challenge from the perspective of the end user and generates insights that can lead to new or creative solutions or opportunities for change.<br><br>See also: *Human-centered design* |
| **Task** | The procedures that include goals, steps, skills, start state, inputs, end state, and outputs required to accomplish an activity. They can be organized into larger tasks, such as driving to work, and sub-tasks such as opening the car door. |
| **Test & Iterate** | The Test & Iterate phase of HCD is all about trying out your designs in progress with the people you are designing for and then immediately applying what you learn to make changes to your design. As soon as you start building drafts or prototypes of your design, you can start testing and iterating.<br><br>See also: *Human-centered design* |
| **Usability** | Usability is a measurement of how easy or difficult it is for people to use something they want or need to interact with. |
| **Usability testing** | Usability testing is a task-based method where you observe participants as they try to use your product or service to complete tasks. Participants think out loud, and you often interview them afterward about their experience.<br><br>See also: *Metrics* |
| **User** | Those who will, directly and indirectly, interact with the thing you're building, those who are experiencing the challenge you are working to solve.<br><br>See also: *Designer, Stakeholder* |
| **User experience (UX)** | User experience is every aspect of the user's interaction with a product, service, or company that makes up the user's perceptions of the whole. User experience design is concerned with all the elements that make up the experience of interacting with a product or service. |
| **User scenarios** | See also: *Scenarios* |

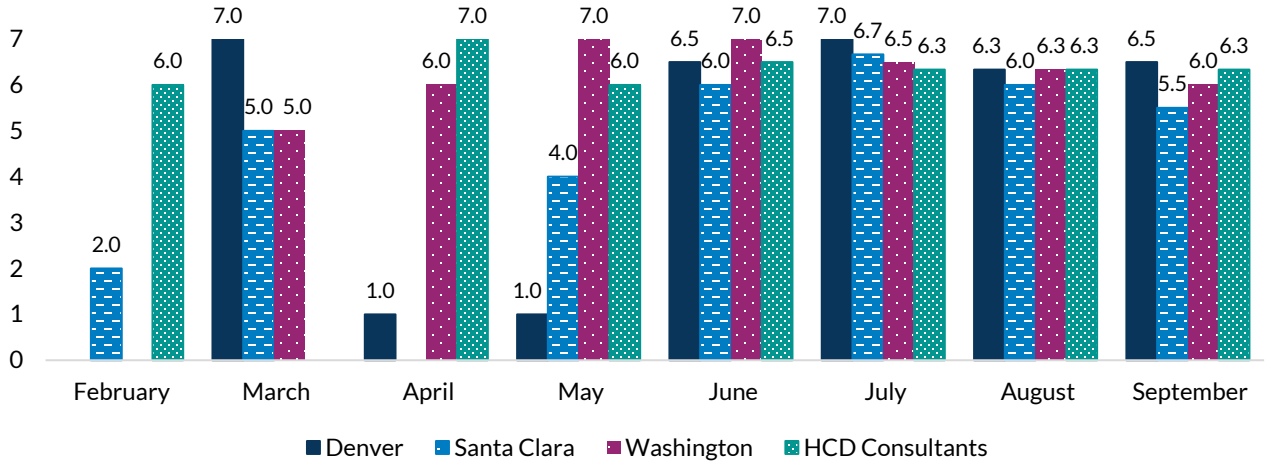
# Appendix B: Supplemental Figures and Tables

**Table B-1.** Number of design team members reporting "Our team engages end users and other stakeholders in the design process" was not applicable each month

| Month | Number of design team members reporting "not applicable" (out of 9) |
|---|---|
| **February** | 5 |
| **March** | 3 |
| **April** | 1 |
| **May** | 1 |
| **June** | 0 |
| **July** | 0 |
| **August** | 1 |
| **September** | 0 |

Source: Monthly Design Team Log

**Figure B-1.** Perceptions of the extent to which design teams incorporated feedback from end users and stakeholders in testing and revising solutions, averaged among raters



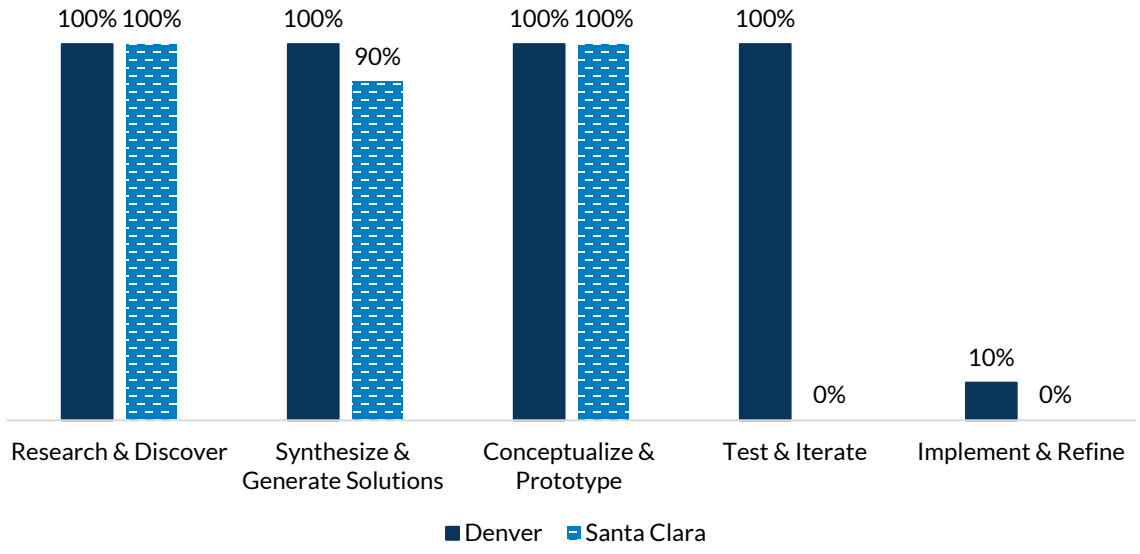

Source: HCD Consultant Log, Monthly Design Team Log
Note: Scale is 1 (not at all); 4 (somewhat); 7 (a lot).

**Table B-2.** Number of design team members reporting "Our team incorporates feedback from end users and stakeholders in testing and revising solutions" was not applicable each month

| Month | Number of design team members reporting "not applicable" (out of 9) |
|---|---|
| **February** | 8 |
| **March** | 5 |
| **April** | 7 |
| **May** | 4 |
| **June** | 1 |
| **July** | 1 |
| **August** | 2 |
| **September** | 1 |

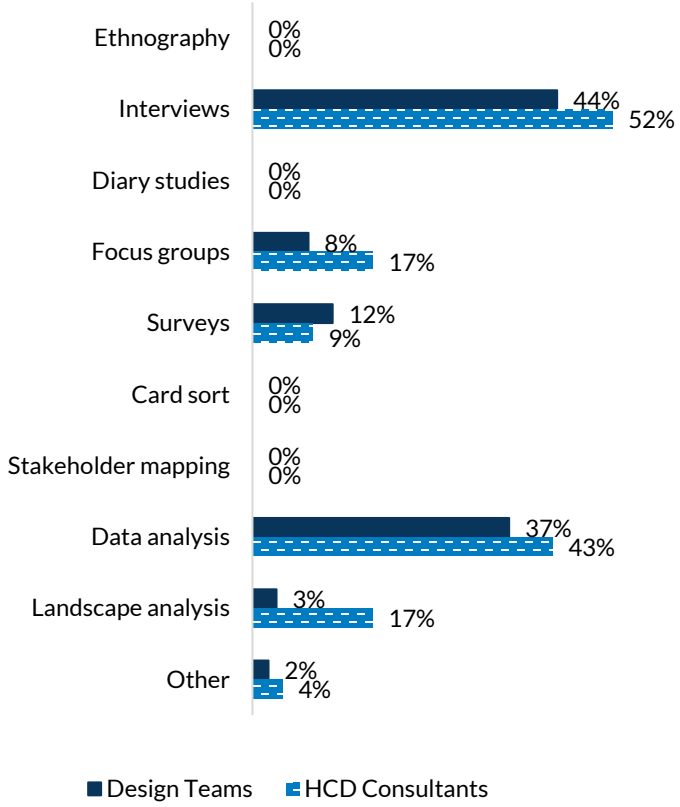
Source: Monthly Design Team Log

**Figure B-2.** Extent of implementation of HCD phases



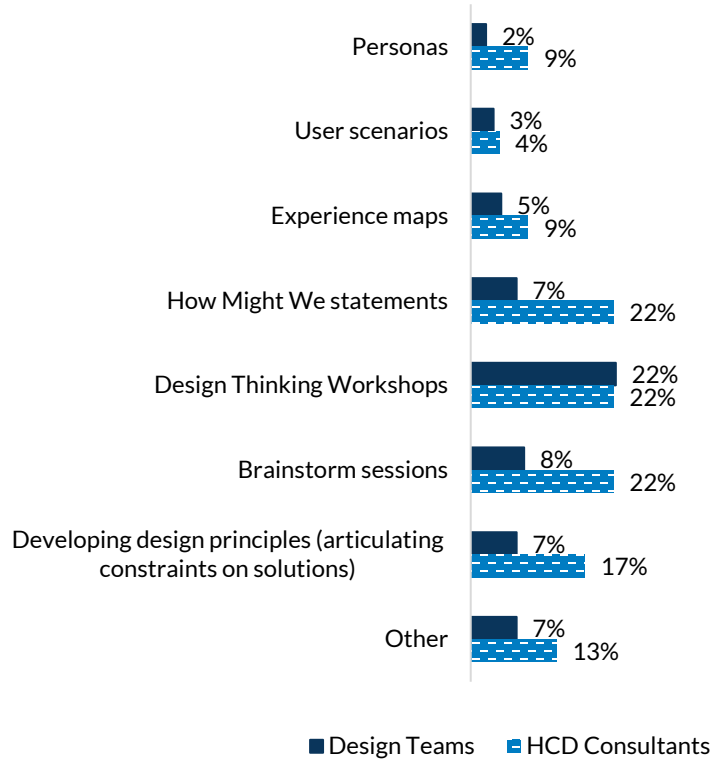

Source: Implementation Assessment

**Figure B-3.** Research & Discover: Percentage of time activities occurred, averaged across sites



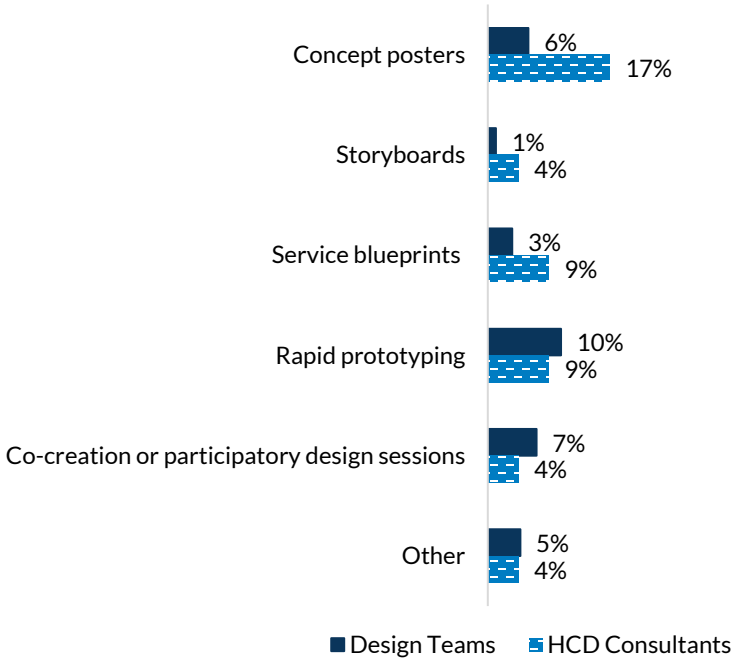

Source: Weekly Design Team Log, HCD Consultant Log

**Figure B-4.** Synthesize & Generate Solutions: Percentage of time activities occurred, averaged across sites



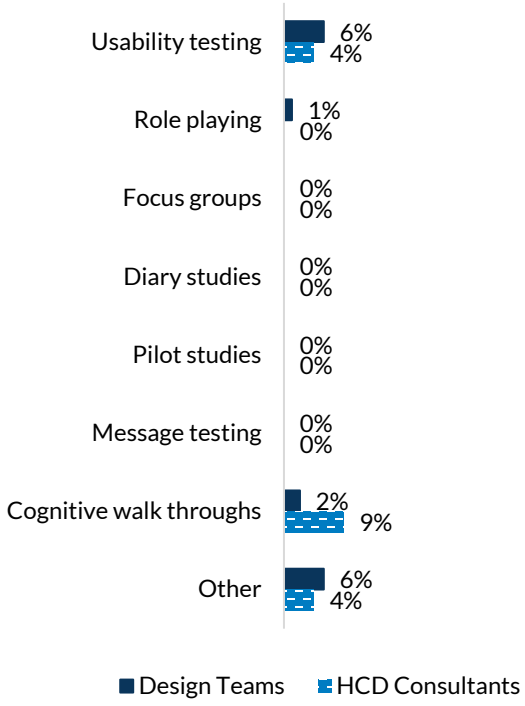

Source: Weekly Design Team Log, HCD Consultant Log

**Figure B-5.** Conceptualize & Prototype: Percentage of time activities occurred, averaged across sites



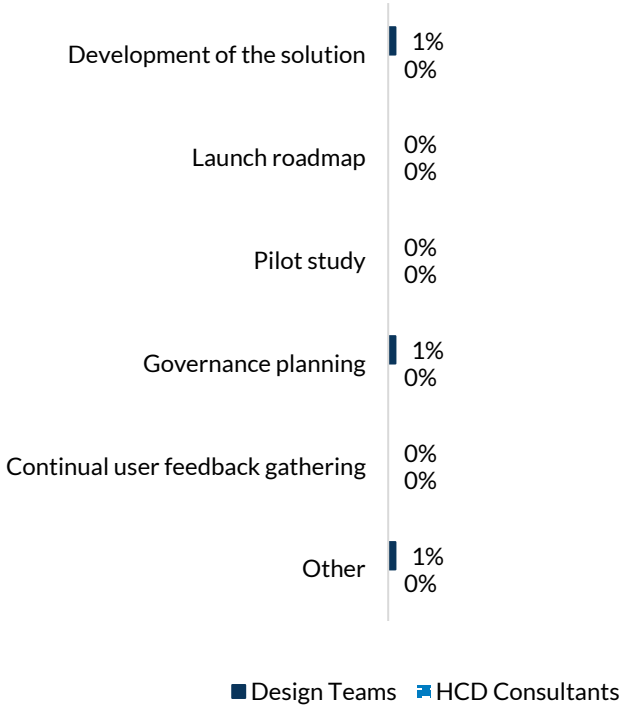

Source: Weekly Design Team Log, HCD Consultant Log

**Figure B-6.** Test & Iterate: Percentage of time activities occurred, averaged across sites




Source: Weekly Design Team Log, HCD Consultant Log

**Figure B-7.** Implement & Refine: Percentage of time activities occurred, averaged across sites




Source: Weekly Design Team Log, HCD Consultant Log

# Appendix C. Summary of Findings by Research Question

**Table C-1.** Summary of findings by research question

| Research question | Finding |
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| **1: What types of challenges within ACF programs are best suited for an HCD approach?** | |
| What types of challenges did programs want to address with an HCD approach? How were these similar/different across programs? | The three sites addressed very disparate challenges: TANF cliff effect, staff engagement, and completion of child support order modifications. However, given that there were only three sites, we cannot fully address which types of challenges within the broad range of ACF programs may be best suited for HCD. |
| What progress did programs show in addressing challenges they identified? | Design teams progressed through the Research & Discover, Synthesize & Generate Solutions, and Conceptualize & Prototype phases. At the time of the evaluation, all design teams were testing/preparing to test their prototype and had not yet implemented a solution to their challenge, although were hopeful about doing so. |
| **2: What resources are required to implement HCD approaches in ACF programs?** | |
| What resources did programs use to implement HCD? Which specific resources were perceived as necessary for facilitating HCD implementation? Which were helpful (but not necessarily critical)? Which were not helpful? | Design teams identified project management, leadership support, and incentives as critical resources.<br>Other resources design teams identified as helpful included having diverse perspectives on the team, technology resources, access to HCD expertise and tools, strategic engagement of stakeholders, and alignment with organizational culture/priorities.<br>The content expert role received mixed feedback, with some design team members not finding the role helpful. |
| To what extent did HCD design team members experience support from executive leadership and buy in from other relevant staff? | All design teams experienced strong leadership support, which they described as critical to the pilot study's success. Teams were also able to generate buy in from other relevant staff. |
| How were resources similar or different across programs? | All design teams used similar resources, notably staff time, leadership support, and strong design teams. |

| | |
|---|---|
| **3: What systemic or cultural barriers may make implementation a challenge, and can those be mitigated?** | |
| What barriers made HCD implementation a challenge and how did programs address those barriers? | Design teams reported time and capacity, recruitment of end users, incentives, organizational structures and processes, end user confidentiality, and the COVID-19 pandemic as primary barriers.<br><br>Design teams addressed most barriers with strategies such as bringing in more team members, setting up new incentive processes, changing recruitment practices, and communicating with leadership. However, time constraints remained a significant challenge. |
| How did barriers to implementation differ across the participating programs? | All design teams faced common barriers, albeit to differing degrees. |
| **4: What does HCD implementation look like?** | |
| What HCD activities did the design teams complete during implementation? | All design teams participated in an HCD Primer (24 hours) followed by 11 months of training and coaching from an HCD consultant (average of 5 hours/week) and content expert (average of 2-4 hours/week). All training and coaching were provided virtually.<br><br>Design teams spent the most time on earlier HCD phases. Within each phase, some activities were more frequently used than others. |
| How did implementation of the HCD process differ across the participating programs? | Implementation of HCD was similar across design teams as expected, given the structure of this pilot study. |
| How did the HCD training and coaching inform HCD design team's HCD mindset? | Design teams demonstrated an HCD mindset. Design team members found the "coaching, not doing" model of consultation important for helping them remain focused on HCD principles and implement the HCD mindset. |
| How helpful was the HCD training and coaching? | Design teams were highly satisfied with the HCD training and coaching, although the value of the content expert was less clear. |
| To what extent did design teams effectively use HCD techniques? | Design teams appeared to effectively use HCD techniques and design teams generally became more confident in implementing HCD over time. |

| | |
|---|---|
| To what extent did each design team demonstrate the HCD principles? Which principles were more and less difficult to demonstrate? | Design teams clearly demonstrated the following principles: understanding end users and stakeholders, considering entire end user experience, and collaborating across disciplines. Design teams did not demonstrate the following principles as fully as other principles in part because later phases of HCD implementation had not been completed: end user/stakeholder engagement throughout, testing and revising solutions based on end user and stakeholder feedback, and iterative and nonlinear processes. |
| **5: How can the HCD approach be evaluated in order to better understand outcomes of interest to ACF? Can HCD be evaluated to determine whether or not this approach is more or less successful than traditional approaches?** | |
| What tools did our project team use to evaluate the HCD process? Which ones seemed most valuable for future evaluations? | This project used weekly and monthly logs, interviews, and an Implementation Assessment. All data collection tools used for this pilot study are a step forward in evaluating HCD, but should continue to be refined.<br><br>Evaluations of HCD implementation for large complex challenges like the ones in this study should be conducted over a longer time period (more than 1 year) to capture implementation of the solution and outcomes for end users.<br><br>In order to compare HCD to similar approaches in a meaningful way, measures need to be validated and unique components of HCD identified through more theoretically-driven research. |
| **6: What criteria are defined as successful outcomes when evaluating this process?** | |
| What objective measure of success did design teams identify for their challenge? | Criteria that could be used to define successful implementation based on the Theory of Change developed for this study include: demonstration of an HCD mindset, development of HCD capacity, demonstration of HCD principles in action, integration of HCD implementation into organizational policies and procedures, and development of relevant and usable solutions that end users adopt and for which progress is monitored on an ongoing basis.<br><br>Design teams defined successful outcomes for their challenges based on the challenge being addressed. |
| How did they track these outcomes? By the end of the study, were systems in place to measure progress toward desired outcomes? | No agency had a system in place for tracking outcomes at the time this evaluation ended. |
| Is the solution considered relevant and usable? | HCD consultants and design team members considered proposed solutions to be generally relevant and usable, with some concerns expressed about addressing the full challenge and organizational/feasibility constraints. |

| | |
|---|---|
| Are end users likely to adopt the solution? Why or why not? | Design teams were hopeful about end users adopting the solution given the process used, as long as the solution reached the end user. |
| **7: Were improvements observed on outcomes of interest for end users?** | |
| Were improvements observed on the outcomes of interest? If so, what factors seemed to be associated with this improvement? | As design teams did not get to the "Implement and Refine" phase, no outcome improvements for end users occurred. |
| Did improvements on outcomes of interest vary by program? If so, how? What contributed to any variation? | As design teams did not get to the "Implement and Refine" phase, no outcome improvements for ends users occurred. |
| **8: Were improvements observed within the organization?** | |
| To what extent did design team members adopt an HCD mindset? | All design teams demonstrated an HCD mindset by demonstrating empathy; openness to the opinions and perspectives of end users and others; and adopting new ways of identifying challenges, brainstorming, and trying different ideas. They also demonstrated a bias toward action. |
| Did programs notice unexpected improvements in outcomes? | An unexpected positive outcome was the development of a new incentive process at one agency, and a gained understanding at another agency that Zoom is the preferred platform for virtual engagement with community members (ex. more accessible), which led to the organization developing a policy based on this finding. |

# Appendix D. Data Collection Measures and Recommended Changes to Project-Specific Measures

**Table D-1.** Data collection measures and corresponding suggested modifications

| Data source | Content | Frequency | Reporter | Suggested modifications |
|---|---|---|---|---|
| **Logs and repeated ratings** | Activities completed | Weekly | HCD consultant | Provide definitions to promote more accurate and consistent responses; ask the design team lead to confirm the HCD consultant's responses |
| | Ratings of HCD principles | Monthly | HCD consultant and 3 people from each design team | Clarify questions and directions to promote more accurate and consistent responses |
| | Barriers | Monthly | 3 people from each design team | Provide more varied list of barriers to reflect learnings from this pilot study |
| | What is working well/not working well | Monthly | HCD consultant and 3 people from each design team | N/A |
| **Interviews (end of pilot)** | Goals for the work, details about the HCD process and activities, resources required, facilitators, barriers, perceived outcomes of the process, plans for the future | At end of implementation | HCD consultant and 3 people from each design team | N/A |
| **Implementation assessment (end of pilot)** | Demonstration of principles, extent of implementation of each phase, demonstration of mindset | At end of implementation | 3 people from each design team | Clarify language so questions are more consistently interpreted |

# HCD Consultant Log

Month _____ Site _____ Name_____

This monthly log will help us learn about your experience providing support to your assigned site and your site's experience with the HCD process. Your participation in this survey is voluntary and you may stop participating at any time. If there is a question you do not want to or do not feel comfortable answering, you can skip to the next question. Any personally identifiable information will be kept confidential among our project team. Your responses will be combined with responses from others and may be shared in published documents. What we learn about each site's experiences may be attributed to the site. We will not identify who said what. However, because of the relatively small number of sites and staff who are participating, there is a possibility a response could be attributed correctly to you. By continuing, you agree to participate in this survey.

1. How much time did you spend working directly with this team on average, per week, during the past month (this is time spent working with the sites directly, such as time spent on coaching calls, observing/participating in design team meetings, and attending design team activities/events)?:
   [Drop down menu]
   - <1 hour
   - 1 - <2 hours
   - 2 - <3 hours
   - 3 - <4 hours
   - 4 - <5 hours
   - 5 - <6 hours
   - 6 - <7 hours
   - 7 - <8 hours
   - 8 - <9 hours
   - 9 - <10 hours
   - 10 hours or more

2. How much additional indirect time did you spend supporting this team, on average per week, during the past month (this is all other time you spent on this project that does not involve interacting with sites directly, such as preparing for meetings with sites, reviewing deliverables or design solutions, corresponding with teams over email, and analyzing insights)?
   [Drop down menu]
   - <1 hour
   - 1 - <2 hours
   - 2 - <3 hours
   - 3 - <4 hours
   - 4 - <5 hours

- 5 - <6 hours
- 6 - <7 hours
- 7 - <8 hours
- 8 - <9 hours
- 9 - <10 hours
- 10 hours or more

3. In what ways did you support the team during the past month? (Please select all that apply)
   - ☐ HCD primer
   - ☐ Virtual technical assistance meeting
   - ☐ Design thinking workshop
   - ☐ Design team activity
   - ☐ Ad-hoc or unscheduled support
     - ☐ Support over email
     - ☐ Support over phone or video conference

     Please briefly describe the topic(s) of support provided. [Textbox]

   - ☐ Other (please specify) _____

The next set of questions will ask you to specify the activities the design team engaged in during the past month.

4. For the activities that the design team engaged in, please select the design phases that they fall under. (Please select all that apply).
   - ☐ Research and Discover
     - What activities from the Research and Discovery phase are you aware of that the design team engaged in during the past month?
       - ☐ Ethnography
       - ☐ Interviews
       - ☐ Diary studies
       - ☐ Focus groups
       - ☐ Surveys
       - ☐ Card sort
       - ☐ Stakeholder mapping
       - ☐ Data analysis
       - ☐ Landscape analysis
       - ☐ Other

- ☐ Synthesize and Generate Solutions
  - What activities from the Synthesize and Generate Solutions phase are you aware of that the design team engaged in during the past month?
    - ☐ Personas
    - ☐ User scenarios
    - ☐ Experience maps
    - ☐ How Might We statements
    - ☐ Design thinking workshops
    - ☐ Brainstorm sessions
    - ☐ Developing design principles (articulating constraints on solutions)
    - ☐ Other
- ☐ Conceptualize and Prototype
  - What activities from the Conceptualize and Prototype phase are you aware of that the design team engaged in during the past month?
    - ☐ Concept posters
    - ☐ Storyboards
    - ☐ Service blueprints
    - ☐ Rapid prototyping
    - ☐ Co-creation or participatory design sessions
    - ☐ Other
- ☐ Test and iterate
  - What activities from the Test and Iterate phase are you aware of that the design team engaged in during the past month?
    - ☐ Usability testing
    - ☐ Role playing
    - ☐ Focus groups
    - ☐ Diary studies
    - ☐ Pilot studies
    - ☐ Message testing
    - ☐ Cognitive walk throughs
    - ☐ Other
- ☐ Implement and Refine

- What activities from the Implement and Refine phase are you aware of that the design team engaged in during the past month?
  - ☐ Development of the solution
  - ☐ Launch roadmap
  - ☐ Pilot study
  - ☐ Governance planning
  - ☐ Continual user feedback gathering
  - ☐ Other

Please rate on a scale of 1-7 the extent to which you agree with the following statements for the past month.

| | Not at all 1 | 2 | 3 | Somewhat 4 | 5 | 6 | A lot 7 | Not applicable |
|---|---|---|---|---|---|---|---|---|
| 5. The design team has made progress on their HCD goals. | | | | | | | | |
| 6. The design team effectively uses HCD techniques. | | | | | | | | |
| 7. The design team works collaboratively with each other. | | | | | | | | |
| 8. The design team engages their end users and stakeholders (e.g. other staff, and executive leadership) in the design process. | | | | | | | | |
| 9. The design team incorporates feedback from end users and other stakeholders in testing and revising solutions. | | | | | | | | |
| 10. The design team generates, tests and revises potential solutions, going back to earlier steps as often as needed (i.e., uses an iterative process). | | | | | | | | |
| 11. The design team tries new ideas and new ways of identifying challenges and brainstorming. | | | | | | | | |

| | Not at all 1 | 2 | 3 | Somewhat 4 | 5 | 6 | A lot 7 | Not applicable |
|---|---|---|---|---|---|---|---|---|
| 12. The design team demonstrates empathy for end users. | | | | | | | | |
| 13. The team considers end users' needs, preferences, and context. | | | | | | | | |
| 14. Barriers have interfered with the design team's work. | | | | | | | | |
| 15. The HCD approach to problem-solving is well suited to this team's challenge. | | | | | | | | |

16. Please specify any barriers the team is encountering (Please select all that apply):
    - ☐ Lack of time
    - ☐ Lack of institutional or leadership support
    - ☐ Lack of other resources
    - ☐ Other [text box]
    - ☐ None

17. What is working well for this design team? [Text box]

18. What is not working well for this design team? [Text box]

# Content Expert Log

Month _____ Site _____ Name_____

This monthly log will help us learn about your experience providing support to a site engaged in Human Centered Design (HCD) and about your role in the HCD design process.

Your participation in this survey is voluntary and you may stop participating at any time. If there is a question you do not want to or do not feel comfortable answering, you can skip to the next question. Any personally identifiable information will be kept confidential among our project team. Your responses will be combined with responses from others and may be shared in published documents. What we learn about each site's experiences may be attributed to the site. We will not identify who said what. However, because of the relatively small number of sites and staff who are participating, there is a possibility a response could be attributed correctly to you. By continuing, you agree to participate in this survey.

1. How much time on average did you spend working directly with the design team per week, during the past month (this is time spent working with the design team in absence of the HCD consultant, observing/participating in design team meetings, and attending design team activities/events or providing consultation):
   [Drop down menu in half hour intervals]
   - No time
   - Less than 30 minutes
   - 30 minutes – <1 hour
   - 1 hour – <1.5 hour
   - 1.5 hour – <2 hours
   - 2 hours – <2.5 hours
   - 2.5 hours – <3 hours
   - 3 hours – <3.5 hours
   - 3.5 hours – <4 hours
   - 4 hours or more

2. How much time on average did you spend working directly with the HCD consultant per week, during the past month (this is time spent working with the HCD consultant directly in absence of the design team):
   [Drop down menu in half hour intervals]
   - No time
   - Less than 30 minutes
   - 30 minutes – <1 hour
   - 1 hour – <1.5 hour
   - 1.5 hour – <2 hours
   - 2 hours – <2.5 hours
   - 2.5 hours – <3 hours

- 3 hours – <3.5 hours
- 3.5 hours – <4 hours
- 4 hours or more

3. How much time on average did you spend working directly with the HCD consultant and design team (together) per week, during the past month (such as time spent on coaching calls or design thinking primer/workshop):
   [Drop down menu in half hour intervals]
   - No time
   - Less than 30 minutes
   - 30 minutes – <1 hour
   - 1 hour – <1.5 hour
   - 1.5 hour – <2 hours
   - 2 hours – <2.5 hours
   - 2.5 hours – <3 hours
   - 3 hours – <3.5 hours
   - 3.5 hours – <4 hours
   - 4 hours or more

4. How much additional indirect time did you spend supporting this team, on average per week, during the past month (this is all other time you spend on this project that does not involve interacting with the design team or HCD consultant directly, such as preparing for meetings with the design team or HCD consultant, reviewing deliverables or design solutions, corresponding with the team or HCD consultant over email, and analyzing insights)?
   [Drop down menu in half hour intervals]
   - No time
   - Less than 30 minutes
   - 30 minutes – <1 hour
   - 1 hour – <1.5 hour
   - 1.5 hour – <2 hours
   - 2 hours – <2.5 hours
   - 2.5 hours – <3 hours
   - 3 hours – <3.5 hours
   - 3.5 hours – <4 hours
   - 4 hours or more

5. In what ways did you support the team during the past month? (Please select all that apply)
   - ☐ Virtual technical assistance meetings
   - ☐ Participated in design team activities
   - ☐ Support provided to the design team outside of regular meetings

- Who initiated support?
  - ☐ Design team reached out to me
  - ☐ I reached out to the design team
- Please briefly describe the topic(s) of support provided. [Textbox]

☐ Support provided to the HCD consultant outside of regular meetings

- ☐ Who initiated support?
  - ☐ HCD consultant reached out to me
  - ☐ I reached out to the HCD consultant
- ☐ Please briefly describe the topic(s) of support provided. [Textbox]

☐ Other (please specify) _____

6. How was your expertise most helpful to the design team this month? [Text box]

7. What challenges have you faced in your role this month? [Text box]

# Monthly Design Team Log

Date_____ Team Member completing log _____

This monthly log is used for us to learn about your own and your team's experience using human-centered design (HCD) in a little more depth. This log should be completed separately by three design team members, including the individual who completes the weekly log and ideally someone on the team in a leadership position in the agency.

1. What have you learned about HCD in the past month? [Text box]

Please rate on a scale of 1-7 the extent to which you agree with the following statements for the past month.

| | Not at all 1 | 2 | 3 | Somewhat 4 | 5 | 6 | A lot 7 | Not applicable |
|---|---|---|---|---|---|---|---|---|
| 2. Our team has made progress towards our goals. | | | | | | | | |
| 3. Our team feels confident about using HCD techniques. | | | | | | | | |
| 4. Our team works collaboratively with each other. | | | | | | | | |
| 5. Our team engages end users and other stakeholders (e.g. other staff, and executive leadership) in the design process. | | | | | | | | |
| 6. Our team incorporates feedback from end users and stakeholders in testing and revising solutions. | | | | | | | | |
| 7. Our team generates, tests, and revises potential solutions, going back to earlier steps as often as needed (i.e., uses an iterative process). | | | | | | | | |
| 8. Our team tries new ideas and new ways of identifying challenges and brainstorming. | | | | | | | | |

| | Not at all 1 | 2 | 3 | Somewhat 4 | 5 | 6 | A lot 7 | Not applicable |
|---|---|---|---|---|---|---|---|---|
| 9. Our team demonstrates empathy for end users. | | | | | | | | |
| 10. Our team considers end users' needs, preferences, and context. | | | | | | | | |
| 11. Barriers have interfered with our work. | | | | | | | | |
| 12. The HCD approach to problem-solving is well suited to our challenge. | | | | | | | | |

13. Please specify any barriers your team is encountering (select all that apply):
    - ☐ Lack of time
    - ☐ Lack of institutional or leadership support
    - ☐ Lack of other resources
    - ☐ Other [Text box]
    - ☐ None

14. What is working well for your team? [Text box]

15. What is not working well for your team? [Text box]

16. What have you learned so far from your HCD experience about approaching and solving difficult challenges in your work? [Text box]

# Weekly Design Team Log

Date_____ Team Member completing log _____

This weekly log is used for us to learn about your team's experiences using human-centered design (HCD). Please select one person from your team to fill out the log on behalf of your team. We encourage the team member who is filling out the log to consider the input of other team members, to make sure all voices are incorporated in this log.

Your participation in this survey is voluntary and you may stop participating at any time. If there is a question you do not want to or do not feel comfortable answering, you can skip to the next question. Any personally identifiable information will be kept confidential among our project team. Your responses will be combined with responses from others and may be shared in published documents. What we learn about each site's experiences may be attributed to the site. We will not identify who said what. However, because of the relatively small number of sites and staff who are participating, there is a possibility a response could be attributed correctly to you. By continuing, you agree to participate in this survey.

In this section, you will be asked to describe the activities/tools your team engaged in during the past week. First you will be asked to specify the activities/tools you engaged in. You will then be asked to describe your experience using each of the activities/tools you selected.

1. Please select the design phases that the activities/tools your team conducted this week were conducted in.
    - Research and Discover
        - Please select the names of the activities/tools your team engaged in from the Research and Discovery phase.
            - ☐ Ethnography
            - ☐ Interviews
            - ☐ Diary studies
            - ☐ Focus groups
            - ☐ Surveys
            - ☐ Card sort
            - ☐ Stakeholder mapping
            - ☐ Data analysis
            - ☐ Landscape analysis
            - ☐ Other
    - Synthesize and Generate Solutions
        - Please select the names of the activities/tools your team engaged in from the Synthesize and Generate Solutions phase.
            - ☐ Personas
            - ☐ User scenarios

- ☐ Experience maps
- ☐ How Might We statements
- ☐ Design thinking workshops
- ☐ Brainstorm sessions
- ☐ Developing design principles (articulating constraints on solutions)
- ☐ Other

- Conceptualize and Prototype
  - Please select the names of the activities/tools your team engaged in from the Conceptualize and Prototype phase.
    - ☐ Concept posters
    - ☐ Storyboards
    - ☐ Service blueprints
    - ☐ Rapid prototyping
    - ☐ Co-creation or participatory design sessions
    - ☐ Other
- Test and iterate
  - Please select the name of the activities/tools your team engaged in from the Test and Iterate phase.
    - ☐ Usability testing
    - ☐ Role playing
    - ☐ Focus groups
    - ☐ Diary studies
    - ☐ Pilot studies
    - ☐ Message testing
    - ☐ Cognitive walk throughs
    - ☐ Other
- Implement and Refine
  - Please select the name of the activities/tools your team engaged in from the Implement and Refine phase.
    - ☐ Development of the solution
    - ☐ Launch roadmap
    - ☐ Pilot study
    - ☐ Governance planning
    - ☐ Continual user feedback gathering

- ☐ Other

[PROGRAMMING NOTE: FOR EACH ACTIVITY/TOOL SELECTED, QUESTIONS 2 AND 3 BELOW WILL APPEAR]

2. Were end users included in this activity/tool?
    - Yes
    - No
3. Please enter the number of team members who were involved in this activity/tool: [Text box]
4. What worked well this week? [Text box]
5. What was challenging this week? [Text box]
6. Do you have anything else to say about this week? [Text box]

# HCD Consultant Interview Protocol

## Introduction

Thank you for taking the time to talk with us. My name is **[NAME],** and this is **[NAME]**. We work for Child Trends. We are interested in speaking with the Human Centered Design (HCD) consultants who participated in the study of the application of HCD, to learn more about your experiences consulting on and supporting the design process.

We are speaking with key staff in each of the three sites participating in this study. This includes agency leadership, key members of the design team, and other consultants who worked to support the design process. Overall, our hope is that the information you, your colleagues, and other sites provide will give us insight into the broader applicability of HCD for other programs.

Your participation in this interview is voluntary and you may stop participating at any time. If there is a question you do not want to or do not feel comfortable answering, please let us know and we will skip to the next question. Any personally identifiable information will be kept confidential among the HCD4HS project team. Your responses will be combined with responses from others who are participating in these interviews and may be shared in published documents. What we learn about each site's experiences may be attributed to the site. We will not identify who said what. However, because of the relatively small number of sites and staff who are participating in this project, there is a possibility a response could be attributed correctly to you.

As we're talking today, please keep in mind there are no right or wrong answers to the questions we're going to ask. You're the expert, and we want to hear your honest answers—positive or negative. Honest feedback will help us the most and will help other sites in the future consider HCD in their work.

We will take notes and record the interview, so we can make sure that we don't miss important details. If you would like us to turn off the recorder at any point, please ask and we will do so. Only the project team will have access to the recordings. Once we capture all the information on paper, we will delete the recordings. Our discussion will take roughly an hour.

Do you have any questions before we get started?

Do you agree to participate in this interview, and do you agree to be recorded?

## Background

1. Let's start by talking briefly about your role at Anthro-Tech and work you've done that you think is most relevant to this project.

## Goals for HCD Pilot

2. Please describe your understanding of the challenge the agency you worked with was facing that they sought to address through this pilot.

## HCD Process and Intervention

3. During this project, you filled out a log every month, and we have noted that you supported the team in the following ways: [Interviewer, please list out activities noted in Q3 the HCD Consultant log.] How would you describe your role in these activities/processes?

a. How did this vary, if at all, at different points in the process? Can you provide examples of key points in the design process where you feel your support of the site was especially important in informing their design work?

b. Thinking about the technical assistance you provided to the site, what worked well, and why?

c. Thinking about the technical assistance you provided to the site, what didn't work so well, and why?

d. What challenges, if any, were there in working with the site?

4. We know that participating in this process requires that design team members work collaboratively as a team. Please describe how the design team you were supporting worked together.

    a. What do you think worked well in this team?

        i. What do you think contributed to that?

    b. What didn't work so well in this team?

        i. What do you think contributed to that?

5. Using HCD to design and implement new solutions can be complicated. We are curious to hear what resources were required to make this process work.

    a. When you think about the resources you just mentioned, which ones were especially helpful for the site?

    b. Which ones were helpful but less critical? Which ones were not helpful?

6. Thinking about this project as a whole, what worked well?

    a. [For additional probes, please reference HCD consultant monthly logs of what worked well for design teams (Q16), particularly if there are notes that need further elaboration]

    b. To what extent did the design team shift their mindset in using HCD principles in their work?

7. Thinking about this process as a whole, what were the barriers that interfered with the design team's work? What barriers did the site encounter in participating in this process?

    a. How did they address or overcome these barriers?

    b. [For additional probes, please reference HCD consultant monthly logs of what is not working well for design teams (Q17), particularly if there are notes that need further elaboration.]

8. [Note to interviewer: Please review monthly logs prior to interview and note any ratings that you would like to explore more in depth and that seem particularly interesting and need more context.]
You also rated several statements on a monthly basis, from a scale of 1-7, and we'd like to ask follow-up questions on some of the ratings you provided related to how the team worked, as well as end user involvement.

## Design of Solution to Problem

9. Please briefly describe the solution that was designed.

10. What are the strengths and weaknesses, from your perspective, of the solution that was designed?
    a. Was the team able to use user feedback to iterate and refine the solution? Tell me how that process went.

## Working with the Content Expert Consultant

11. Describe your work with the content expert consultant.
    a. What role did they play in the HCD process as a whole, from your perspective? Tell me more.

## Effectiveness of HCD

12. In measuring progress towards the team's outcome of interest, how did the team use data to determine if there was progress?

13. To what extent do you think that the HCD design team made progress on their outcomes of interest? Tell me more.

## Final Reflections

14. As you reflect on your work with the site, how good a fit was this challenge for the HCD process, in your opinion?

15. What, if anything, would you suggest to improve or enhance the role that design consultants could play in future engagements like this?

16. Is there anything else you'd like to share with us today?

Thank you for your time and for your honest feedback today. This will be of great use for the HCD field and others interested in participating and implementing a design approach to challenges.

# Executive Leadership and Design Team Interview Protocol

## Introduction

Thank you for taking the time to talk with us. My name is **[NAME],** and this is **[NAME]**. We work for Child Trends, a nonprofit research center in Washington, D.C. We are interested in speaking with design team members who participated in the study of the application of Human Centered Design (HCD), to learn more about your experiences with the design process.

We are speaking with key staff in each of the three sites participating in this study. This includes agency leadership, key members of the design team, and the consultants who worked with your agency to support the design process. Overall, our hope is that the information you, your colleagues, and the other sites provide will give us insight into the broader applicability of HCD for other programs.

Your participation in this interview is voluntary and you may stop participating at any time. If there is a question you do not want to or do not feel comfortable answering, please let us know and we will skip to the next question. Any personally identifiable information will be kept confidential among our project team. Your responses will be combined with responses from others who are participating in these interviews and may be shared in published documents. What we learn about each site's experiences may be attributed to the site. We will not identify who said what. However, because of the relatively small number of sites and staff who are participating, there is a possibility a response could be attributed correctly to you.

As we're talking today, please keep in mind there are no right or wrong answers to the questions we're going to ask. You're the expert, and we want to hear your honest answers—positive or negative. Honest feedback will help us the most and will help other sites in the future consider HCD in their work.

We will take notes and record the interview, so we can make sure that we don't miss important details. If you would like us to turn off the recorder at any point, please ask and we will do so. Only the project team will have access to the recordings. Once we capture all the information on paper, we will delete the recordings. Our discussion will take about an hour.

Do you have any questions before we get started?

Do you agree to participate in this interview, and do you agree to be recorded?

## Background

1. Let's start by talking about your role or job at [Agency]. I would love to know more about your job at [Agency] and how long you have held this position.

## Goals for HCD Pilot

2. Next, we'd like to discuss how [Agency]'s involvement in the HCD pilot began. Let's start with the process of submitting a nomination for the HCD pilot. Can you tell me more about what your involvement was in the decision to submit a nomination for the HCD pilot or in the preparation of the nomination?
    a. [If involved]: What do you remember about why you/your team was interested in participating in the pilot?
    b. [If not involved]: Do you know who was involved in the decision? Tell me more. [Skip to Question 4]

3. [If involved] Can you tell me about the challenge your agency was facing at the time that you wanted to address through this pilot. [Use the following probes as needed to prepare the respondent for the HCD process as some of this information may already be available.]
    a. What made [insert answer from Question 3] a challenge?
    b. What prior attempts had your organization made to address this challenge, and to what extent were those attempts effective?
    c. Why did you think that HCD would be an appropriate fit for this challenge?
    d. How did your understanding and articulation of the challenge change or evolve during the course of the HCD project?

## HCD Process and Intervention

### Role and Experiences Participating in the Pilot **(non-executive leaders only)**

4. There were several steps you participated in as part of the HCD design process. Your team filled out a log every week, and we have noted that you participated in the following HCD activities: [Interviewer, please list out activities noted in the design team log]. How would you describe your role and involvement in these activities/processes?
5. Which activities did you find most useful? Why?
6. Thinking about your team's work over the five-month period, how would you describe that process?
    a. Can you tell me more about what worked well? [For additional probes, please reference answers provided in weekly logs of "what worked well" and ask probes for further clarification and deeper perspective]
    b. Can you tell me more about any challenges you or your team experienced? [For probes, please reference weekly logs of "what was challenging," and ask probes for further clarification and deeper perspective] * Note to interviewer: distinguish between COVID related challenges and non-COVID related challenges.
    c. [For challenges noted] What do you think could be done to address [list barriers participant mentions]? Was your team able to overcome this barrier?
7. Using HCD to design and implement new solutions can be complicated. We are curious to hear what resources were required to make this process work.
    a. When you think about the resources you just mentioned, which ones were especially helpful for the site?
    b. Which ones were helpful but less critical? Which ones were not helpful?
8. We'd like to know more about how your team worked together. As a reminder, your name will not be tied to any of your answers, and we're looking for honest feedback.
    a. What do you think went well with the way your team worked together?
        i. What do you think contributed to that?
    b. What didn't go so well in your team?
        i. What do you think contributed to that?

c. Would you say that the team changed in any way over the course of the project?

9. We are also interested in how your team involved and interacted with end users of the solution you've being designing. Can you describe some of the key ways you did that? [Interviewer, reference activities noted in the weekly logs involving end users].
   a. Was this different from how your agency has worked with end users before? If so, how?
   b. What was most useful or valuable about engaging end users?
   c. What was most challenging about involving and interacting with end users? Do you have thoughts about what might have helped with this?
10. We know that executive leadership influences how new initiatives or approaches to problem solving are implemented and sustained in organizations. Describe what the support/involvement from executive leadership looked for your agency during the pilot process.
   a. [For each support noted] How helpful was it and did it make a difference in the HCD team's work?
   b. For other organizations in the future doing this kind of work, what kind of support do you think a team needs from executive leadership to be most effective?

## Role and Experiences Participating in the Pilot **(executive leaders only)**

11. Tell me about your role or involvement in the HCD pilot process.
   a. What kind of support, if any, did you provide to the team?
   b. What kind of support do you think an HCD Design Team needs to be most effective when engaging in this type of work?
   c. Did supporting the team require you to make any changes to administrative practices, procedures, or accountability? If so, tell me more.
12. Using HCD to design and implement new solutions can be complicated. We are curious to hear what resources were required to make this process work.
   a. When you think about the resources you just mentioned, which ones were especially helpful for the site?
   b. Which ones were helpful but less critical? Which ones were not helpful?
13. Thinking about [Agency]'s participation over the five-month period, what are some factors that made it easier for your site to participate in the HCD pilot process? Are there other factors that you think would help sites participate in the HCD process?
14. What do you think the barriers are in participating in the HCD process? *Note to interviewer: distinguish between COVID barriers and non-COVID barriers
   a. What do you think could be done to help with [list barriers participant mentions]? Tell me more.

## Design and Implementation of the Intervention **(non-executive leaders only)**

15. Please describe the HCD solution you designed:
   a. How did your team decide on this solution in particular?
   b. In what ways do you feel like your solution is relevant for end users?

c. How likely do you think it will be that your end users will adopt your solution?

## HCD Design Consultants and Content Expert Consultants

16. We'd now like to shift gears and talk about your work with consultants, [HCD consultant name] and [Content Expert consultant name] over the past five months. We'll start with [HCD consultant name], your HCD consultant. Tell me about what it was like to work with [HCD consultant name]?
    a. How would you describe the level of support provided by your HCD consultant? (too little, just right, not enough). Tell me more.
    b. What was helpful about your work with them?
17. Now, let's talk about your work with your content expert consultant, [list Content Expert consultant name]. What was it like to work with [Content Expert consultant name]?
    a. How would you describe the level of support they provided (too little, just right, not enough)? Tell me more.
    b. What was helpful about your work with them?
    c. What recommendations do you have for other sites working with content expert consultants in similar roles?
18. Now, let's think back to some of the initial trainings you had in the first month of this process. You had two trainings, one primer workshop and one design thinking workshop. How helpful were the primer and design thinking workshops? What specifically was helpful?
    a. Now that you have some experience with the HCD process, is there anything you think could have been done differently in those trainings that would be more helpful? Tell me more.

## Implementation Process Outcomes (non-executive leaders)

Note to interviewer: Please review monthly logs prior to interview and note any ratings that you would like to explore more in depth and that seem particularly interesting and need more context.

19. [If filled out monthly logs] You also completed monthly logs, and we'd like to ask follow-up questions on some of the ratings you provided. [Interviewer will ask questions they have from reviewing monthly logs here].

## Effectiveness of HCD on Key Outcomes

20. What did your team identify as a key outcome of interest? In other words, what were you trying to change in developing a solution?
    a. What did your team use to measure change or movement? How did you track this data?
        i. Was this new data collection, use of existing measures, or some combination?
        ii. [if new or combination] What was this process of collecting/tracking data like?
    b. Did your team make movement on your key outcome of interest?
        i. Why or why not? [Probe: What data supports this?]
    c. What do you think about the progress your team made towards the outcome of interest you identified?
21. Were there any unexpected positive or negative outcomes that resulted from the HCD design process? If so, please explain.

22. Are there any plans to continue to implement the design you developed, even though the pilot study has ended? Tell me more.

## Broader Applicability of HCD

23. Do you think the HCD approach to problem-solving was well suited to addressing the challenge you wanted to solve? Why/why not?
24. What broader changes, if any, do you think have occurred in your team or organization that you think are a result of participation in the pilot?
25. Do you have any plans to address other problems in your agency with HCD? Why or why not?

## Final Reflections

26. Having gone through this process, how would you describe HCD to a colleague who didn't know anything about it?
27. Are there lessons learned or advice you would like to share with others interested in designing or implementing an HCD solution?
28. Anything else you'd like to share with us today?

Thank you for your time and for your honest feedback today. This will be of great use for the HCD field and others interested in participating and implementing a design approach to challenges.

# Implementation Assessment

**HCD Implementation Assessment**
Developed by Murray, Boyd, and Rosinsky
with input from consultants Corcoran, de Castillo, Johnson, and Sandfort

Site Name: _____ Date: _____ Interviewer: _____

***Instructions to HCD design team members (to be sent out via email with the measure itself, not administration instructions):*** *In preparation for our upcoming meeting, when we'll formally complete the HCD Implementation Assessment as a group, please feel free to review the questions and consider your individual responses (although there is no need to write down your responses).* ***However, please don't discuss your individual responses with others on the HCD design team until we meet.*** *This will ensure we make the most meaningful and efficient use of time when we complete this as a team. We will use the following scale when completing all items:*

> ***No or Not in Place (0):*** *No activities or elements are in place and/or this has not yet been started.*
> ***Sometimes or Partially In Place (1):*** *Some activities or elements are in place and/or initiated.*
> ***Yes or Fully In Place (2):*** *All dimensions of the activity or element are in place and there is clear evidence to support this.*

**Administration Protocol**

The facilitator reads each question aloud and asks all participants to vote whether the item is "Yes or Fully In Place" (2), "Sometimes or Partially In Place" (1), or "No or Not In Place" (0). Individuals will first be given a moment to consider their individual vote. The facilitator will then ask individuals to simultaneously indicate their vote using their fingers (i.e., 0 fingers, 1 finger, 2 fingers). The facilitator will prompt simultaneous public polling by stating, "*ready*, *set*, *vote*." If voting is unanimous, the facilitator will immediately move on to the next question. If voting is not unanimous, then the facilitator will facilitate a brief discussion to see if modified consensus can be reached, using strategies to ensure that all voices at the table are heard. "Modified consensus" means that all individuals in the group agree to move forward with a single group vote (0, 1, or 2) and can support that vote outside the context of the original group, even if individual members have or had a dissenting vote. The facilitator will ask for examples of "evidence to support" for each indicator to help the group come to an agreement. The facilitator will clarify the meaning of each question as needed to assist in the determination of a response. Consistent with the NIRN Capacity Assessment after which this is modeled, data should thereby be comparable across teams and sites.

**Consent Language**

Your participation in this focus group is voluntary and you may stop participating at any time. If there is a question you do not want to or do not feel comfortable answering, please let us know and we will skip to the next question. Any personally identifiable information will be kept confidential among our project team. Your responses will be combined with responses from others and may be shared in published documents. What we learn about each site's experiences may be attributed to the site. However, we will not identify who said what. However, because of the relatively small number of sites and staff who are participating, there is a possibility a response could be attributed correctly to you.

Do you agree to participate in this focus group, and do you agree to be recorded?

HCD Design Team Members Participating in Interview (Name and Role; note specifically if end user):

Who are the identified end users?

Who are the other stakeholders?

*The HCD design team in its full composition will be referenced in this assessment as the "team," which does not need to include end users.*

**Principles**

| Principle 1: Understanding End Users and Stakeholders | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 1. The team actively works to understand the needs, feelings, and experiences of the people for whom the solution is being designed (i.e., "end users"). | | | |
| 2. The team regularly expresses genuine care and concern for the identified end users. | | | |
| 3. The team considers the perspective of others who "have a stake in" the solution but may not be directly affected by it (i.e., stakeholders such as program managers, funders, service providers). | | | |
| 4. The team considers broader systems contexts including racial/ethnic injustice in identifying the problem and understanding the context in which end users live. | | | |

| Principle 2: End User and Stakeholder Engagement throughout the Process | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 5. End users are directly involved in the entire design process from start to finish. | | | |
| 6. End users help define the problem to be addressed. | | | |
| 7. End user needs are prioritized in the initial design of the solution. | | | |
| 8. End users help brainstorm solutions. | | | |
| 9. End user feedback and testing (beyond simply asking them what they think) helps refine the design solution. | | | |
| 10. Stakeholder feedback is considered in the design process. | | | |
| 11. End users' feedback is given more weight than stakeholder feedback. | | | |

| Principle 3: Testing and Revising Solutions | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 12. Information is collected from end users on how the potential solution addresses the problem they identified. | | | |
| 13. Stakeholders (other than end users) give feedback on how the potential solution could work (i.e., "feasibility") from their perspective. | | | |
| 14. Multiple methods are used to collect end user feedback, including observing their use of the potential solution. * | | | |
| 15. Data are gathered on end users' satisfaction with the potential solution. | | | |

*A score of '2' requires observational or behavioral methods; a score of '1' is used for other methods.

| Principle 4: Iterative and Nonlinear Process | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 16. As the team engages in the design process, they are open to gathering more research and doing more brainstorming and testing when needed. | | | |
| 17. The team considered the need to redefine the problem as additional information was gathered and learned. | | | |
| 18. The team designs, tests, and revises potential solutions as many times as needed to effectively address the problem or challenge for end users. | | | |

| Principle 5: Design Solution Considers the Entire User Experience | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 19. The solution considers end users' feelings, motivation, and preferences. | | | |
| 20. The solution takes into consideration important aspects of the end users' context (culture, resources, and organizations) where it will be used. | | | |
| 21. The solution considers different places in the process where the solution could be implemented and its potential effects. | | | |
| 22. The solution considers barriers that may interfere with how end users may be able to use it. | | | |

| Principle 6: Collaborative Multi Disciplinary Team | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 23. The team includes individuals with different professional roles (i.e., a designer, researcher, program manager). | | | |
| 24. The team includes individuals with different perspectives on the challenge being addressed (e.g., community members, other social sectors, etc.). | | | |
| 25. Team members are encouraged to share different views and perspectives in meetings. | | | |
| 26. All perspectives are fully considered, regardless of the person who holds that perspective (or their "power" on the team). | | | |
| 27. The team listens and shares ideas respectfully when perspectives differ. | | | |
| 28. When perspectives on the team differ, decisions are made based on feedback gathered from end users. | | | |
| 29. Team members are motivated to work toward team goals rather than individual goals. | | | |

**HCD Activities**

| Research and Discovery Activities<br>*Note that "research" is defined as intentionally gathering input and information.* | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 30. The team conducts research (e.g., interviews, focus groups, observations, surveys) to understand the end user, their goals, and contexts. | | | |
| 31. The team gathers information to better understand past efforts to solve the problem. | | | |
| 32. The team develops initial solutions based on this research (instead of their initial assumptions). | | | |
| 33. The team conducts discovery activities to better understand the context and constraints of stakeholders beyond the end users. | | | |

| Synthesize and Generate Solutions | | | |
|---|---|---|---|
| **To what extent were the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 34. Research is analyzed and summarized in a way that helps the team understand the problem from the end user's perspective (e.g., could be interview clips; does not have to be fancy graphs and charts). | | | |
| 35. The team considers how possible solutions align with the organizational and broader environmental context (such as existing structures, processes, and values). | | | |
| 36. When brainstorming solutions, the team focuses first and foremost on how desirable they may be to end users. | | | |
| 37. The team prioritizes ideas based on feasibility and sustainability. | | | |
| 38. The team develops "design parameters," or rules for the solution, based on what was learned through research (e.g., if end users are staff who are already overburdened, any solution must not result in a net workload increase). | | | |

| Conceptualize and Prototype | | | |
|---|---|---|---|
| **To what extent are the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 39. A rough draft of the solution (or "prototype") is created before the final solution is developed. | | | |
| 40. Prototypes are shared with end users to collect feedback. | | | |
| 41. End user feedback is incorporated. | | | |
| 42. Prototypes are shared with stakeholders to collect feedback. | | | |
| 43. Stakeholder feedback is incorporated, although not at the expense of end user preferences and needs. | | | |
| 44. Very rough prototypes are tested before more polished prototypes are tested. | | | |

| Test and Iterate | | | |
|---|---|---|---|
| **To what extent are the following practices in place?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 45. Possible solutions are evaluated by end users to determine what is working well, what needs improvement, and why. | | | |
| 46. Solutions are tested with end users using methods such as usability tests, interviews, focus groups, diary studies, or role playing. | | | |
| 47. Data are gathered regarding end users' ability to understand and use the solution, their satisfaction with the solution, and likelihood of adopting it. | | | |

| Implement and Refine | | | |
|---|---|---|---|
| **To what extent are the following practices in place?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 48. The design team develops a plan for implementing the chosen solution. * | | | |
| 49. There is a process for end users to provide continuous feedback on the solution. | | | |
| 50. The solution is tried out on a small scale first, before being implemented more widely. | | | |
| 51. Plans for introducing the solution are developed, including any marketing, communication, and needed training methods. | | | |
| 52. A framework is developed to make sure the solution will be sustained. | | | |

*Score of 2 requires this in writing.

**HCD Mindset**

| | | | |
|---|---|---|---|
| **To what extent were the following indicators present?** | ***Not In Place (0)*** | ***Partially In Place (1)*** | ***Fully In Place (2)*** |
| 53. The team is interested in and open to trying new and creative ideas. | | | |
| 54. The team truly understands the feelings and perspectives of the end users. | | | |
| 55. The team is comfortable with uncertainty about the problem and solutions and avoids "jumping to conclusions." | | | |

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