A Study Design Exploring **Virtual Service Delivery** in Home Visiting

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Acknowledgments

Introduction

Research has suggested that high-quality implementation of evidence-based home visiting programs increases the odds of achieving the best outcomes for children and families.[1] However, there is little consensus in the field regarding the critical elements of home visiting program implementation quality and how they may lead to improved outcomes for families and children.[2] The Measuring Implementation Quality in Maternal, Infant, and Early Childhood Home Visiting (MIECHV)-Funded Evidence-Based Home Visiting Programs project, a collaboration between Child Trends and James Bell Associates ("the research team"), under the direction of the Health Resources and Services Administration and the Administration for Children and Families, seeks to address these gaps.

For this project, the research team ("we") conducted a literature review on what is known about implementation quality.[a] The team also developed a conceptual framework depicting the various factors that are hypothesized to contribute to implementation quality across levels of the home visiting system (e.g., family, home visitor, community context).[b] We engaged MIECHV awardees and other home visiting experts throughout this project to ensure our work is relevant and applicable in the field. The final phase of this project is the development of study design reports that outline potential research plans to address identified awardee needs with respect to measuring program implementation quality. All of these study designs—which represent a wide range of research questions, methods, and target audiences—are aimed at deepening our understanding of the factors that may contribute to implementation quality in the home visiting field.

The study design presented in this report focuses on the types of supports necessary to implement services virtually while maintaining implementation quality and model fidelity. This study design primarily relates to the thread of "adequate resources, tools, and time" included in the conceptual framework (see figure 1). This thread addresses the resources (e.g., procedures, policies, manuals), data systems and tools, technology resources (e.g., laptops, cellphones), and time home visitors need to perform tasks and provide services to families; however, the approach outlined in this report can easily be applied to an examination of virtual service delivery in relation to other quality threads and considerations.

> ## Study Overview
>
> **Aim:** Identify supports needed to deliver high-quality virtual services
>
> **Design:** Concept mapping
>
> **Data sources:** Web-based focus prompt and rating focus statement
>
> **Sample:** MIECHV state awardees and tribal grantees, local program staff, community representatives, and families.
>
> **Technical skill level:** Moderate
>
> **Estimated cost:** Between $28,000–$47,000
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> **Estimated time needed:** 6 months

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[a] Sparr, M., Goldberg, J., Thomson, A., Ryan, K., Kane, M., & Haas, M. (2021). *Quality Considerations Across Levels of the Home Visiting System: A Literature and Measure Review*. Washington, DC: Health Resources and Services Administration, U.S. Department of Health and Human Services.

[b] Crowne, S., Rosinsky, K., Goldberg, J., Sparr, M., Ulmen, K., and Huz, I. (2021). *A Conceptual Framework for Implementation Quality in Home Visiting*. Washington, DC: Health Resources and Services Administration, U.S. Department of Health and Human Services.

Figure 1. Home Visiting Implementation Quality Conceptual Framework
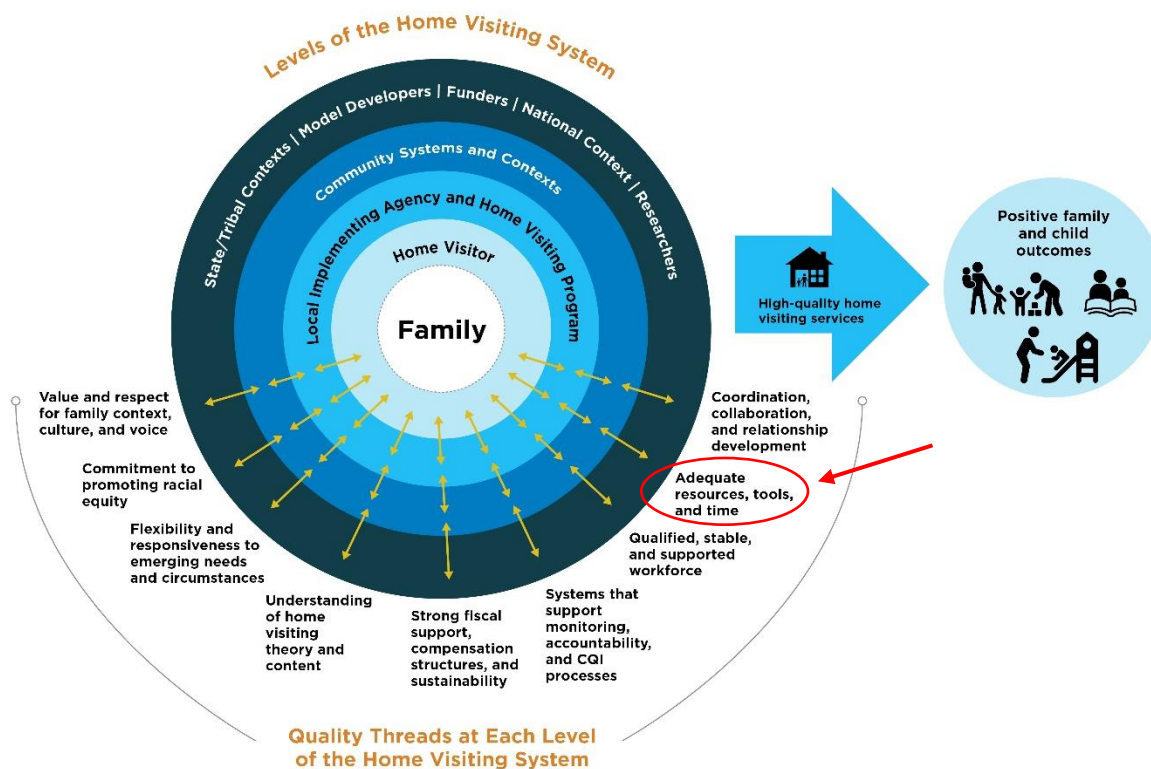
Note: CQI stands for continuous quality improvement.
Source: Crowne, S., Rosinsky, K., Goldberg, J., Sparr, M., Ulmen, K., and Huz, I. (2021). *A Conceptual Framework for Implementation Quality in Home Visiting.* Washington, DC: Health Resources and Services Administration, U.S. Department of Health and Human Services.

Due in large part to the unexpected need to deliver services virtually during the COVID-19 pandemic, the home visiting field raised questions about how to effectively provide home visiting services virtually. And given that virtual service delivery is likely to continue—perhaps in conjunction with or in addition to in-person visits—this topic is both relevant and important to explore. This study's goal is to provide home visiting administrators with the information they need to deliver high-quality virtual services more successfully. The study, which employs a concept mapping approach, is designed to elicit this information from MIECHV awardees and tribal grantees, local program staff, community representatives, and families—all of whom have been directly involved in providing or receiving virtual services during the pandemic and have practical, firsthand experience from which to draw. As the field moves forward with virtual service delivery in an intentional manner rather than in response to a global pandemic, the need to carefully consider the necessary supports, structures, and resources to implement services virtually while maintaining implementation quality and model fidelity is paramount. Although this study design touches on other components of home visiting implementation, such as supervision, its focus is on virtual delivery of services to *families* (e.g., home visits, contact with families between home visits, parent support groups, assistance with service access and coordination). A similar approach could be taken to focus on other aspects of home visiting implementation, including supervision.

In this report, we present a research question related to implementation quality and model fidelity in virtual home visiting service delivery. We then summarize prior studies on virtual service delivery in home visiting and propose a study design approach to answer the research question. We include information about the

sample needed, data sources and measurement options, and an analysis plan. We conclude with practical considerations, implications of findings, and a summary of next steps.

Key Terms

Home visiting system: System of policies, contexts, agencies, and entities that influence and/or are a part of home visiting service delivery and dynamically affect one another. This includes federal, tribal, state, model, and community contexts; local implementing agencies and home visiting program contexts; home visitors; and families.

Implementation quality: Presence of structures, supports, procedures, and processes at each level of the home visiting system that directly or indirectly support expected outcomes.

Model fidelity: Adherence to model expectations and requirements.

Quality considerations: Structures, supports, procedures, and processes that shape how programs are designed, implemented, monitored, and maintained. Example quality considerations include availability of data systems, technical assistance and professional development, program monitoring, organizational climate, workforce supports, staff well-being, and ability to facilitate family engagement in and use of program services.

Supports: Resources, structures, policies, guidelines, relationships, and practices at each level of the home visiting system.

Virtual service delivery: Services, not limited to a visit, provided through telephone calls, videoconferences, or text messages. Note that the existing statute[i] defines a *virtual home visit* as a home visit that is conducted solely by the use of electronic communication and telecommunications technology.

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[i]The Health Resources and Services Administration considers a virtual visit, as defined in statute through the Consolidated Appropriations Act of 2021 and the American Rescue Plan Act of 2021, as "a home visit, as described in an applicable service delivery model, that is conducted solely by the use of electronic information and telecommunications technologies."

Research Question(s)

This study design aims to answer the following research question:

What supports are needed across the home visiting system to provide home visiting services virtually while maintaining implementation quality and fidelity?

Within this question are four subquestions:

1.   What supports do families need to engage in and effectively utilize virtual service delivery?

2.   What supports do home visitors need to effectively provide virtual services?

3.   What supports do local implementing agencies (LIAs) and home visiting programs need to facilitate and incorporate virtual service delivery into their implementation systems?

4.   What supports do state/territory MIECHV awardees and tribal grantees need to monitor the implementation and impact of virtual service delivery?

In subsequent sections, we present example prompts to help address specific aspects of implementation quality and fidelity across levels of the home visiting system. We provide guidance on using the conceptual framework and quality considerations to tailor the research questions, subquestions, and prompts to aspects of implementation quality or fidelity of particular interest.

Overview of Prior Work in This Topic Area

Even prior to the COVID-19 pandemic, studies examined how virtual service delivery could be used in home visiting. For example, in 2015 the University of Southern California Telehealth Clinic piloted the use of an online videoconferencing platform to deliver Parents as Teachers to families who were ineligible for in-person home visits due to location or scheduling conflicts. Results demonstrated that services provided virtually were implemented with fidelity to the home visiting model in supervision, training, and curriculum delivery. Results also showed high parent satisfaction with virtual services and reported that families did not have to discontinue services due to residential moves.[3, 4] Researchers at the University of California Los Angeles conducted a randomized controlled trial of a virtual version of Families OverComing Under Stress for Early Childhood (FOCUS-EC), a home visiting program designed for military families with children ages 3 to 5. FOCUS-EC seeks to help families overcome challenges related to a parent's military service by strengthening resilience and promoting positive parent-child interactions. Services were delivered to families through online home visits using a videoconferencing platform. The study found greater improvements in parent and child outcomes for those participating in the virtual FOCUS-EC program compared with those in self-guided online parent education. Results across both parent-reported and observational measures indicated that virtual delivery of FOCUS-EC led to significant and sustained positive improvements in child behavior, parenting practices, and parent-child interaction. The study also found that participation in virtual FOCUS-EC reduced parent symptoms of posttraumatic stress disorder.[5] It is important to note that while these studies demonstrate the benefits of virtual service delivery, neither study directly compared virtual service delivery to in-person home visiting.

The switch to primarily virtual services during the COVID-19 pandemic further increased the field's interest in understanding virtual service delivery for home visiting. In April 2020, O'Neill and colleagues surveyed 1,312 home visiting programs across the nation, representing 30 different models, and found that as a direct result of the COVID-19 pandemic, 88 percent of programs had stopped offering in-person visits. Most programs had rapidly converted to using telephone calls, interactive videoconferencing, text messages, and, to a lesser extent, social media to provide home visiting services.[6] Since the onset of the pandemic, there have been several efforts to explore the challenges and benefits of this unexpected switch to virtual services; some of these efforts are summarized below.

After transitioning to virtual service delivery in March 2020, the Florida Maternal, Infant, and Early Childhood Home Visiting (FL MIECHV) Program evaluated its perinatal home visiting programs to understand the impact of the transition. Results showed that most FL MIECHV staff felt supported and confident in the transition to virtual home visiting. Respondents shared that they were motivated by working with engaged families and that they received support for virtual service delivery from colleagues and other community agencies.[7]

Likewise, the First 5 California Home Visiting Workforce Study administered surveys and completed interviews with program staff and families across the state of California to learn about the shift from in-person to virtual home visiting. Although results indicated that virtual home visits were going well overall, respondents also noted challenges, including stress levels, the inability to physically see families in their homes, and a need for cellular data, Wi-Fi, devices, and technical supplies. Home visitors reported receiving support around the transition to virtual visits, including training and ongoing guidance on technology use. Although families acknowledged challenges with technology, they generally felt they were able to stay in contact and engaged with their home visitors.[8] However, home visitors found that their work was more challenging than prior to the pandemic, and more than 25 percent of home visitors reported experiencing

high levels of depressive symptoms and stress. Home visitors and supervisors also reported that due to the pandemic, they were working almost twice as much during the evenings and weekends. Despite these additional stressors, most home visitors did not express a change in their level of job satisfaction, and plan to stay in their current position for at least the next year.[9]

In November 2020, Traube administered to home visiting programs in Los Angeles County a survey inquiring about their experiences with virtual home visiting. Seventy-five home visiting managers and 172 home visitors participated. Home visiting managers reported barriers to family engagement that included—

- Distractions in the home

- Multiple children in the home

- Balancing schedules of school-aged children

- Remembering appointments

- Limited internet bandwidth

- Challenges around virtual consent, enrollment, and data collection[10]

Last, in September and November 2020, the Home Visiting Applied Research Collaborative (HARC) sought to understand how virtual services were being implemented; it recruited home visitors nationally to complete surveys, participate in video recordings of virtual visits, and participate in interviews. Home visitors reported challenges implementing virtual visits, including—

- Difficulties engaging the child in the visit

- Having to use different strategies to engage families and children virtually, such as coaching

- Difficulty in collaborating with families[11]

More research is needed that examines which structures, supports, and resources must be in place across multiple levels of the home visiting system to provide effective virtual services while maintaining implementation quality and program fidelity. The study design outlined in this report addresses this need.

Design Approach

The proposed approach for this study is concept mapping. Concept mapping offers a structured approach to analyzing and visually organizing study participant views on a specific topic, to identify emerging themes and examine relationships between themes. Concept mapping typically involves five main phases: (1) preparation, (2) brainstorming, (3) structuring, (4) analysis, and (5) interpretation.[12] Each phase is described in more detail in subsequent sections of this report. This approach has successfully been used in home visiting to understand new home visitor and supervisor views on how best to support families participating in services to prevent child abuse.[13] Concept mapping has also been used in home visiting to identify key components of fidelity for the Nurse Family Partnership model.[14] Other fields have also employed concept mapping to identify key concepts endorsed by experts to inform model building and measure development. For example, Soellner et al. (2017) used concept mapping with experts to pinpoint key aspects of "health literacy" that undergirded development of a conceptual model, model testing, and measure development.[15]

We believe that concept mapping is particularly well suited for answering the proposed research questions. First, it offers a collaborative, participatory study design that allows input from multiple participant groups. For the study design outlined in this report, involving representatives from multiple groups (such as families, home visitors, local program staff, community representatives, state/territory and tribal MIECHV leads, and technical assistance and professional development providers) allows for the inclusion of a wide range of perspectives, while also minimizing data collection burden for any one participant group. Concept mapping

is also beneficial in providing mixed methods results that have more nuanced qualitative insights; it also yields quantitative findings that shed light on the associations between concepts and the importance of concepts across stakeholder groups. Finally, concept mapping helps make concrete those abstract concepts that may lack strong evidence or expansive research bases from which to draw.

Potential challenges for this approach include obtaining participant buy-in and interest in the study and sustaining participant involvement and input across study phases; however, this challenge can be minimized by reducing overall burden on participant groups by asking them to join select study phases. This challenge may also be addressed by identifying liaisons or representatives for each participant group who support participant involvement and help promote equity and balance issues related to power dynamics. For example, family liaisons or a nominated family representative could help support family involvement in the study and ensure all families' voices and perspectives are heard. Another potential challenge is ensuring that all populations are represented within and across different types of stakeholders. It is possible that some communities that have felt disenfranchised in the past understandably do not see a benefit to study participation. Offering alternative forms of study recruitment and engagement (e.g., one-on-one targeted discussions, use of trusted community representatives as liaisons) may be necessary to ensure equitable representation. Finally, it is important to exercise caution when considering if the findings and perspectives of representatives for a given participant group are representative of the entire group. Key findings and perspectives should be shared with additional members of each participant group (e.g., sharing findings with families that did not participate in the study) to assess relevancy and applicability, and then approaches can be refined as necessary.

To prepare for this study design, a facilitator—who will oversee the concept mapping process—and an advisory group—that oversees some or all phases of concept mapping—must be identified. The facilitator could be an external consultant or an internal staff member. Likewise, members of the advisory group can include external advisors and/or internal staff members. In collaboration with the advisory group, the facilitator is responsible for providing overall guidance and direction for the concept mapping process and facilitating meetings. Facilitators should have strong interpersonal skills and experience leading meetings, engaging diverse groups of stakeholders, building consensus, and supporting decision-making processes. Facilitators should also know the context of home visiting systems, home visiting services, and local community considerations. Advisory group members should also have knowledge of state- and local-level home visiting contexts. We recommend that, at a minimum, the facilitator has hands-on experience with concept mapping.

Sample

For this study, we recommend inclusion of the following groups:

- **Invited Participant Group.** Representatives and potential beneficiaries across multiple levels of a state, tribal, or territory home visiting system. Potential representatives and beneficiaries include—
  - Families
  - Local program staff
  - Community leaders, representatives of community service agencies or entities
  - State/tribal/territory program staff
  - Federal MIECHV staff
  - Model representatives, if the model(s) implemented has state-level representatives
  - State, tribal, or territory technical assistance and professional development providers

- **Subgroup of Invited Participants.** A representative subset of participants from the invited participant group who commit to being involved in all phases of a concept mapping project, including brainstorming, idea synthesis, sorting, rating, and analysis. Select members of this subgroup could also participate in the preparation phase.

- **Advisory Group.** A smaller group that assumes an oversight and advisory role for some or all phases of the project. Members could include external consultants/advisors and/or internal staff. The advisory group should also include some members of the subgroup of invited participants.

- **Facilitator(s).** The person(s) who will supervise the concept mapping process. This person(s) could be an external consultant or an internal staff member.

Samples within each of the groups outlined above should represent the diversity of families and staff within the home visiting system. Particularly for the invited participant group, the sample should be intentionally selected to represent a wide range of different perspectives and experiences. Considerations may include accounting for—

- Families with different perspectives and experiences of home visiting (e.g., families that accepted virtual home visiting services, families that declined virtual services)

- The diversity of families served (e, g., family configuration, race/ethnicity, gender, child age)

- Staff with different roles (e.g., project directors, supervisors, home visitors, intake staff, state and tribal MIECHV leads) and the diversity of staff within and across programs (experience, education, race/ethnicity, age)

- The diversity of programs (e.g., program size, locale, model[s] implemented)

All study team members will need to complete trainings on privacy and confidentiality. All study team members will be responsible for explaining the study to participants, ensuring their participation is voluntary, and maintaining their confidentiality. If the study requires Institutional Review Board (IRB) approval, additional requirements like written documentation of consent may be required. Studies may require IRB approval if they meet the definition of research, involve human subjects, include interaction or intervention with human subjects, or involve access to identifiable private information. *Research* can be defined as a systematic investigation designed to develop or contribute to generalizable knowledge. Studies designed solely to inform quality improvement efforts do not typically need IRB approval. At a minimum, evaluators should obtain verbal consent from all participants.

If possible, sample sizes for each group should ensure representation of all LIAs in both the invited participant group and the subgroup of invited participants. It is not necessary that all participants take part in every phase of concept mapping. For example, to minimize burden, families may participate in only the larger invited participant group and join select study phases.

The sample size for each group will vary. The invited participant group could include a large, diverse sample of up to 50 participants. Sample sizes for the invited participant group will depend on the size of the LIAs in terms of the number of staff employed and the number of families served, to ensure adequate representation of all groups and inclusion of a wide variety of viewpoints. For example, the sampling approach may aim to represent approximately 15 percent of staff employed and families served at each LIA or home visiting program. Table 1 presents an example of how this sampling approach could work. The subgroup of invited participants could include 15 to 20 participants (typically a minimum of 10 participants). The facilitator and advisory group could include a small sample of just 4 or 5 people.

Table 1. Example Sampling Approach

LIA or home visiting program	Total number of staff employed	Total number staff to invite	Total number of families served	Total number of families to invite	Total number for invited participant group
#1	15	3	50	8	11
#2	10	2	30	5	7
#3	2	1	20	3	4
#4	1	1	10	2	3
Total		**7**		**18**	**25**

Concept Mapping Process

In this section we describe the key activities for each of the five concept mapping phases.

Phase 1: Preparation

Activities during the preparation phase primarily focus on recruitment (for suggested sampling, see above section) and planning; namely, developing one or more "focus prompts" to be used in the second phase.

Developing a Focus Prompt

The focus prompt is the statement (or statements) that will be used to elicit participant feedback during the brainstorming phase. The total number of focus prompts selected and administered will depend on the sample size for participant groups and the scope of the study. Each focus prompt can produce up to 100 statements to sort and rate, depending on participant sample sizes. Thus, using many focus prompts results in more statements and substantially more work in later study phases. Alternatively, several more specific focus prompts could be combined into a single focus prompt that covers a broad range of topics and multiple levels of the home visiting system. For example, a single focus prompt may be stated as follows:

"Generate short phrases or sentences that describe the supports families, home visitors, LIAs, home visiting programs, and state/territory MIECHV awardee and tribal grantee staff need to provide virtual services while maintaining implementation quality and model fidelity."

Typically, in concept mapping, all participants are invited to respond to the same set of prompts, but it is also possible to tailor focus prompts to specific participant groups. In the case of this study design, different focus prompts that address different aspects of implementation quality or fidelity—and that are applicable to select groups of participants—may be necessary. It is also possible to use the conceptual framework (see figure 1) to tailor focus prompt(s) to the aspect of implementation quality or fidelity you are most interested in exploring in relation to virtual service delivery. However, we suggest limiting the number of prompts and selecting from only a few, depending on the aspect of implementation quality or fidelity and level of the home visiting system of most interest. See table 2 for relevant example focus prompts.

Table 2. Example Focus Prompts

Level of home visiting system	Example focus prompts _Generate short phrases or sentences that describe…_	Respondents from invited participant group to include
Families	• What families need to fully engage and participate in virtual services • What families need to be able to benefit from virtual services • What families want from virtual services • Why families may prefer virtual services • What families need to have equitable access to virtual services	• Families • Home visitors • LIA and home visiting program staff • Local community representatives
Home visitors	• What home visitors need to effectively recruit and enroll families in virtual services • What home visitors need to follow model expectations and requirements during virtual service delivery • What home visitors need to effectively engage families in virtual services • What home visitors need to develop relationships and partnerships with families during virtual services • What home visitors need to successfully adapt services for virtual service delivery • What home visitors need to provide services virtually while maintaining their own professional and personal well-being	• Home visitors • LIA and home visiting program staff • Local community representatives • Technical assistance and professional development providers • State/territory MIECHV awardee and tribal grantee staff • Model representatives
LIAs and home visiting programs	• What LIAs and home visiting programs need to provide ongoing support and coaching to home visitors using virtual service delivery • What LIAs and home visiting programs need to effectively adapt program services for virtual service delivery • What LIAs and home visiting programs need to provide high-quality, consistent supervision to home visitors using virtual service delivery • What LIAs and home visiting programs need to maintain positive organizational climates and workplaces during virtual service delivery	• Home visitors • LIA and home visiting program staff • Technical assistance and professional development providers • State/territory MIECHV awardee and tribal grantee staff • Model representatives

Level of home visiting system	Example focus prompts *Generate short phrases or sentences that describe…*	Respondents from invited participant group to include
	• What LIAs and home visiting programs need to monitor and evaluate virtual service delivery • What LIAs and home visiting programs need to maintain effective and ongoing communication during virtual service delivery • What LIAs and home visiting programs need to carry out quality improvement activities during virtual service delivery	
State/territory MIECHV awardees and tribal grantees	• What state/territory or tribal staff need to develop partnerships to promote effective virtual service delivery • What state/territory or tribal staff need to provide funding and policies that support virtual service delivery • What state/territory or tribal staff need to provide coordinated technical assistance and professional development for effective virtual service delivery • What state/territory or tribal staff need to monitor and evaluate virtual service delivery	• State/territory MIECHV awardee and tribal grantee staff • Model representatives

Once focus prompts have been developed, they can be administered to participants using a web-based form, with space for participants to give open-ended responses.

Phase 2: Brainstorming

The goal during this phase is for participants to brainstorm thoughts and ideas in response to the focus prompt(s). The procedure is as follows:

The first step is to send the focus prompt(s) to all participants in the invited participant group using a web-based form. Participants will respond to the focus prompt on their own and send their statements back via the web-based form.

After responses to the open-ended focus prompt are gathered, a subset of participants, including the facilitator, advisory group, and participants from the subgroup of invited participants, help sort statements into similar categories based on emerging themes and remove duplicates. This effort, typically performed by the group, can be completed in person or virtually, in one session, and is guided by the facilitator. The minimum number of sorters is 10.[16] The facilitator guides participants to review responses from the focus prompt(s) and group similar responses into broader emerging themes, to provide a more manageable set of statements from the responses; the final set of statements is typically limited to less than 100.

Phase 3: Structuring

Next, participants perform two "structuring" tasks. The first is to sort the final set of statements into similar conceptual groups. At this point, respondents are instructed to group the statements into piles "that make sense to them." Parameters for this process are as follows: statements cannot be sorted into one pile, and one statement cannot be sorted into more than one pile. We find an electronic process for categorizing statements preferable, as it allows multiple participants who may be geographically dispersed to be reached. Typically, participants from the invited participant group handle this task, although a subset of participants from the invited participant group may be selected to minimize burden.

The second structuring task is for the invited participant group to rate the final set of statements using a rating focus statement.

Participants complete both structuring tasks on their own, typically at one time point.

Rating Focus Statement

Participants use the rating focus statement to rate the importance and feasibility of the final set of statements. Ratings should be collected electronically, if possible, for easier input and analysis in subsequent study phases. Participants provide separate ratings for importance and separate ratings for feasibility. Example rating focus statements include the following:

"Rate each statement in terms of its general importance in supporting virtual service delivery on a 5-point scale, where '1' indicates 'Not at all important,' '3' means 'Moderately important,' and '5' indicates 'Extremely important.' When you provide your response, please consider how important the statement is in general and for most cases; we recognize there may be exceptions to this rating for specific scenarios (such as different types of families or different topics addressed during virtual service delivery)."

"Rate each statement in terms of its feasibility on a 5-point scale, where '1' indicates 'Not at all feasible,' '3' means 'Moderately feasible,' and '5' indicates 'Extremely feasible.' When you provide your response, please consider how feasible the statement is in general and for most cases; we recognize there may be exceptions to this rating for specific scenarios (such as different types of families or different topics addressed during virtual service delivery)."

The rating focus statement form could also include basic demographic information about participants, such as participant role (family, home visitor, supervisor, program manager, state or tribal MIECHV lead), LIA name, geographic community, model implemented, program size, race, ethnicity, primary child age, and primary language spoken in the home.

Phase 4: Analysis

After data collection, multiple steps (outlined below) are completed to analyze and visualize results. The Concept System Incorporated software (groupwisdom) was developed to accomplish the sequence of analyses outlined below and can do all the analyses described here; general-purpose statistical programs can also be used. Both SPSS (SPSS Inc., 2005) and SAS (SAS Institute, 2005) can carry out multidimensional scaling and hierarchical cluster analysis. Beyond them are numerous multidimensional scaling routines available online that will require some level of programming skill or advanced statistical knowledge to implement. This phase typically includes the advisory group and the facilitator. Results from this phase are shared with the invited participant group in Phase 5 to aid in interpretation of findings.

1. The similarity matrix shows how frequently statements were sorted together. The purpose of the similarity matrix is to give a visual presentation of which statements participants sorted together

most often. Figure 2 shows an example similarity matrix for a small number of statements. The asterisks indicate how many respondents (50 percent) sorted the statements of "materials to complete parent-child activities" and "stable internet access" together. A similarity matrix for more statements would be more complex; figure 2 gives a simple example of what a similarity matrix may look like and how it is interpreted.

Figure 2. Example Similarity Matrix

| 0% to 100% (15 respondents)						
Tablets						
100	Professional development					
90	90	**Materials to complete parent-child activities**				
70	70	80	Coaching			
60	60	**50**	50	**Stable internet access**		
60	60	50	50	100	Policies for what counts as a virtual visit	

2. Multidimensional scaling provides a visualization of the sorting data, by plotting statements that were frequently sorted together closer to one another and plotting statements further away from one another if they were not frequently sorted together. This approach is another way to visualize sorting data to inform the identification of clusters and emerging themes, completed in this next step of analysis. Hierarchical cluster analysis is then used to group statements that are closest to one another to identify clusters, which represent emerging themes of the statements. Figure 3 shows an example of multidimensional scaling and hierarchical cluster analysis. In this example, statements that were frequently sorted together are grouped together into clusters and labeled with emerging themes. The numbers show the position of the clusters.

Figure 3. Example Hierarchical Cluster Analysis[17]
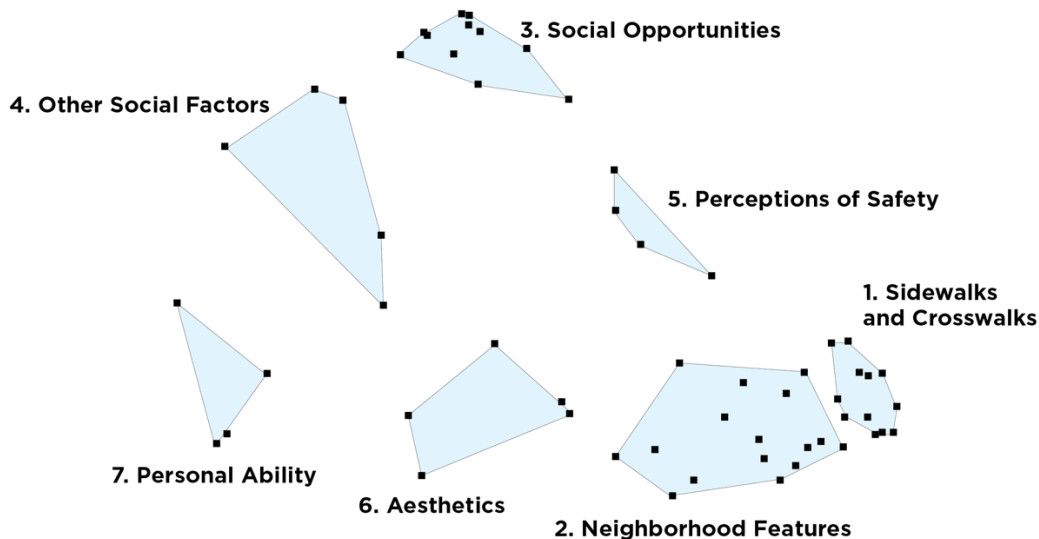
3. Go-Zones also give a visual representation of average ratings provided to individual statements within clusters. Figure 4 presents an example of go-zone visual representation. The go-zone maps how statements were rated relative to their importance and feasibility. Statements displayed in the upper right quadrant are rated high in both importance and feasibility.

Figure 4. Example Go-Zone Visual Representation[18]
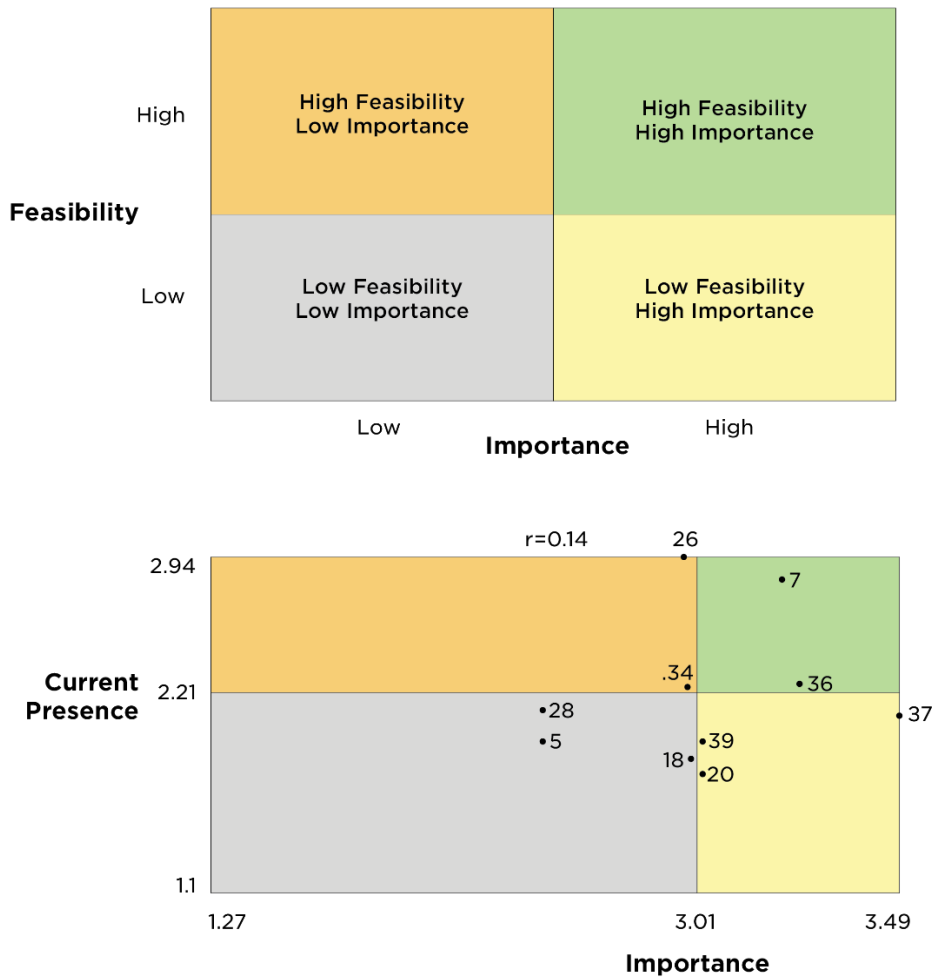
4. Pattern matching is another approach, which can be used to run results separately by participant role or according to participant demographic factors. Pattern matching allows researchers to compare results between separate participant roles or compare results over time.

Phase 5: Interpretation

In this step, the facilitator and advisory group present findings (which might include the original final set of statements, the list of clusters/themes identified from the final set of statements, similarity matrix, hierarchical cluster analysis, or go-zones) to participants to facilitate examination and naming of the emerging clusters/themes from statements. Once the emerging clusters/themes are identified and named, the facilitator works with participants to consider which clusters/themes are most salient. One approach might include examining which clusters/themes are rated as most important and determining whether those
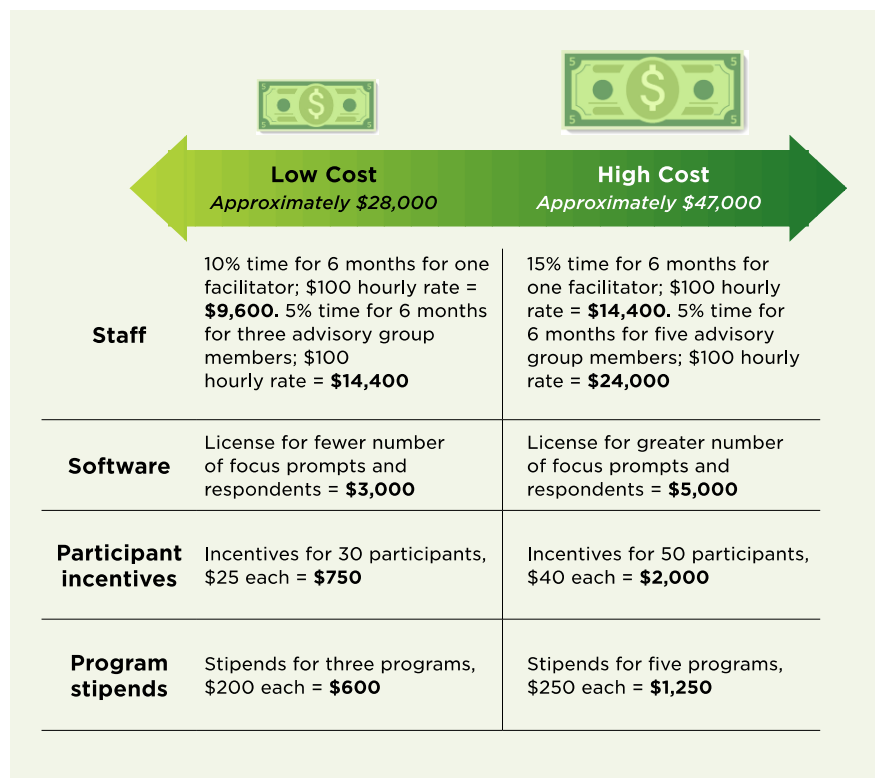
same clusters/themes are also rated as feasible. If clusters/themes are rated as important but not feasible, the facilitator might help participants consider why statements were rated low for feasibility and identify opportunities for removing barriers to increase feasibility—especially for statements rated high in importance. The facilitator can also guide participants to consider the implications of emerging clusters/themes and detect potential action steps in response to emerging clusters/themes. For example, if an emerging cluster/theme includes home visitors reporting a need for specialized training on implementing model components virtually, then participants can consider (1) what types of training are necessary, (2) what trainings are currently available, and (3) any next steps to address the identified need.

Practical Considerations

Several costs are associated with this study approach, including reimbursement for the facilitator and advisory group. If the facilitator and members of the advisory group are internal staff members, the facilitator will need between 10 and 15 percent salary coverage, and advisory group members will need approximately 5 percent salary coverage, to fulfill their roles across the duration of the study. Another expense is the software, which can cost approximately $3,000 to $5,000 depending on sample size. We also recommend that incentives be offered to those stakeholders who are allowed to accept them. At a minimum, families should be offered an incentive (e.g., gift cards of between $25 and $40 depending on the number of study phases in which families participate). If LIAs cannot accept individual incentives, stipends could be provided to sites for their staff's participation ($200–$250 per site depending on the number of study phases in which they participate).

Based on the assumptions outlined above and possible sample sizes for each participant group, the cost for implementing this study design is between $28,000 and $46,650. See figure 5 for specific assumptions for this budget estimate.

Figure 5. Cost Considerations for Study Implementation

	Low Cost Approximately $28,000	**High Cost** Approximately $47,000
Staff	10% time for 6 months for one facilitator; $100 hourly rate = **$9,600.** 5% time for 6 months for three advisory group members; $100 hourly rate = **$14,400**	15% time for 6 months for one facilitator; $100 hourly rate = **$14,400.** 5% time for 6 months for five advisory group members; $100 hourly rate = **$24,000**
Software	License for fewer number of focus prompts and respondents = **$3,000**	License for greater number of focus prompts and respondents = **$5,000**
Participant incentives	Incentives for 30 participants, $25 each = **$750**	Incentives for 50 participants, $40 each = **$2,000**
Program stipends	Stipends for three programs, $200 each = **$600**	Stipends for five programs, $250 each = **$1,250**

It is worth noting that the software used for concept mapping may have multiple uses; therefore, the costs associated with the software can create efficiencies and help prepare agencies for carrying out similar work on other topics. For example, the software and concept mapping phases can be used for strategic planning purposes or to gather input from home visiting constituents, implementing partners, and beneficiaries as part of continuous quality improvement activities.

Internal staff (or hired external consultants/advisors) will need strong facilitation skills as well as some familiarity in qualitative coding and basic quantitative analysis skills. Staff will also require experience, familiarity, and comfort in using the groupwisdom, or similar software, to complete analysis. Last, the facilitator and advisory group must possess the skills and experience for successfully recruiting participants and engaging them in the study; this includes the ability to communicate the benefits of their participation, safeguards for confidentiality and voluntary participation, and the advantages and intended use of study findings.

Depending on the number of focus prompts used in the study, all study phases can be completed in approximately 6 months. See table 3 for an anticipated timeline by each study phase.

Table 3. Example Timeline for Completing Study Phases

Study Phase	Months					
	1	2	3	4	5	6
1: Preparation	x					
2: Brainstorming		x				
3: Structuring			x	x		
4: Analysis					x	
5: Interpretation					x	x

Use of Findings

Entities across multiple levels of the home visiting system can use the cluster analysis and go-zones visual data. Examples of how the findings may be used, by the four research questions and levels of the home visiting system provided in the conceptual framework of quality in home visiting, are outlined below. Cluster analysis and go-zones visually representing participant statements and their sorting and rating of statements will help leadership identify participant-driven themes related to the research questions below.

Research Question 1: What supports do families need to engage in and effectively utilize virtual service delivery? Concept mapping findings will identify emerging themes and the priority assigned to themes across participant groups. Depending on the focus prompt used, findings can also show emerging themes related to what families hope to gain from participating in virtual services and why they may prefer them. These findings may have implications for community-level efforts, (such as access to stable and reliable internet/connectivity, and local efforts, such as providing families with the necessary materials—like tablets or parent-child interaction activity materials—to successfully engage in virtual services. Last, findings related to what families hope to gain from virtual services (to include the kinds of content, relationships, and topics families want from virtual services) can inform the necessary skills, knowledge, and competencies home visiting staff need to successfully implement virtual service delivery.

Research Question 2: What supports do home visitors need to effectively provide virtual services? Findings will help identify the types of supports various participant groups feel are necessary for home visitors to effectively deliver virtual services. Emerging themes can inform the types of training, professional

development, coaching, and supervision that home visitors need to successfully implement virtual services. Findings may also speak to the kinds of guidance home visitors need to maintain model fidelity during virtual service delivery.

Research Question 3: What supports do LIAs and home visiting programs need to facilitate virtual service delivery and incorporate virtual service delivery into their implementation systems? Concept mapping findings will identify emerging themes related to the types of supports at the level of LIAs and home visiting programs that participants deem necessary. This feedback can inform policies, guidelines, technical assistance, and professional development provided by state- or tribal-level entities. These findings may also inform contractual requirements and budgeting practices, to ensure that contract language and budgets do not interfere with LIA and home visiting program ability to deliver virtual services.

Research Question 4: What supports do state/territory MIECHV awardees and tribal grantees need to monitor the implementation and impact of virtual service delivery? Concept mapping findings will identify emerging themes related to the types of supports state/territory MIECHV and tribal grantees need. These discoveries can inform policies, guidelines, funding, technical assistance, and professional development provided by funders, model developers, and national organizations/efforts that support home visiting.

Further, concept mapping has been used to develop logic models, strategic plans, and conceptual frameworks.[19] For example, the Hawaii Department of Health employed concept mapping to engage stakeholders and subject matter experts in identifying community and system factors that affect behaviors related to tobacco, nutrition, and physical activity.[20] Findings from focus prompts across the levels of the home visiting system can inform the development of statewide strategic plans for continuing virtual service delivery beyond the COVID-19 pandemic; full incorporation of virtual service delivery into implementation systems; and the development of a framework for priority areas to guide current and future research efforts related to virtual service delivery.

Conclusions and Next Steps

This report provides general guidance for a study approach to understand what supports are needed, across the home visiting system, to successfully provide home visiting services virtually. This approach is an important first step in getting a better understanding of common challenges, barriers, and necessary supports related to virtual service delivery. As the study approach outlined in this report is exploratory in nature, future work may be needed to explore additional topics, including—

- Design, development, and testing the efficacy of professional development and coaching for home visitors to support virtual service delivery

- Research to examine which components of home visiting can most effectively be implemented virtually

- Options for providing supervision and coaching to home visitors virtually

- Considerations for providing other home visiting services (such as parent socializations) virtually

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