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PROJECT REPORT

FINAL REPORT

Data Sources for Conducting Research on Doula Services and Related Outcomes

Prepared for
The Office of the Assistant Secretary for Planning and Evaluation (ASPE)
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by
NORC at the University of Chicago

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OFFICE OF THE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION

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Executive Summary

Background. Maternal health outcomes in the U.S. lag behind other high-income countries, with 50,000 women annually experiencing severe—and often preventable—complications during pregnancy and childbirth. One key strategy to improve U.S. maternal health is to strengthen the systems of care and support provided to women during pregnancy, labor and delivery, and the postpartum period. Emerging evidence indicates that providing pregnant women and mothers with access to doula services can help improve maternal and infant health outcomes. Doulas are trained, nonclinical professionals who provide emotional, physical and informational guidance throughout the birthing experience. For example, doulas can provide physical support during labor by assisting with positioning and breathing techniques; informational support by explaining complicated medical information; and emotional support by listening and providing encouragement. Despite these potential benefits, use of doula services in the U.S. remains low. Understanding the relationship between doula services and health outcomes is an important step in building the evidence base for doula services. Yet, there is no comprehensive U.S. public or private database describing doula services. Additional documentation on data sources related to doula services on maternal and infant outcomes is needed.

Objective of the Report. To document 1) data sources that health services researchers can use to study the relationship between doula services and maternal and infant health outcomes; 2) gaps in doula-related data and opportunities to enhance the data infrastructure; and 3) examples of potential research priorities that the doula-related data infrastructure could support related to maternal and infant health outcomes.

Methods. A targeted web-based environmental scan, supplemented with a scan of peer-reviewed and gray literature was conducted to 1) compile information on data sources that can be used for research on doula services and 2) to identify example research questions and outcomes that can advance the evidence base on the relationship between doula services and maternal and infant outcomes.

Results. The environmental scan revealed eight data sources that can be used to study relationships between doula services and maternal and infant health. Data sources vary with respect to data characteristics, data access, and availability of doula-relevant indicators and maternal and infant outcomes. First, regarding data characteristics, the sources have mixed types of funding (federally funded sources, n=4), geographical coverage (national or multi-state coverage, n=5), representativeness of geographical unit (n=3), and periodicity of data collection (varied across sources). Most data sources (n=6) are survey data, and nearly all (n=7) contain cross-sectional data. Second, regarding data access, three data sources are publicly available, and five data sources include restricted use data. Third, the information on doula services is very limited across data sources, with most sources only capturing whether doula services were received (n=7). Further, while the data sources include various maternal and infant outcomes, many of these outcomes are primarily physical and offer few longer-term outcomes. Lastly, five data sources include patient-reported outcomes (PROs) that largely focus on perceptions of maternal care, but offered limited PROs related to doula-services specifically.

Conclusion. The identified data sources reveal several opportunities to enhance data infrastructure. First, existing data can expand the richness of doula-related indicators by including a larger array of doula care indicators (e.g., type of support provided) and data on doula processes (i.e., composition of the care team). Robust indicators of doula-relevant care variables can help researchers draw

connections between specific characteristics of doula care and maternal and infant health outcomes. Second, existing data can expand the range of maternal outcomes related to doula services, including PROs and maternal mental health. Including such outcomes in doula-relevant data sources would emphasize the patient perspective and experiences of mothers receiving doula care. Lastly, data infrastructure efforts can create data linkages in existing doula-relevant data to assess relationships between doula services and longitudinal maternal outcomes. These enhancements can promote future areas of health outcomes research that can expand the current evidence base examining doula services and add richness to researchers' understanding of doula services and maternal and infant health.

1. Introduction

U.S. maternal health remains a critical public health issue. More than 50,000 women in the U.S. experience severe complications during pregnancy and childbirth.¹ The U.S. also has the highest maternal mortality rate among high-income countries with close to 700 maternal deaths in 2023.² The Centers for Disease Control and Prevention (CDC) estimates that 80% of these pregnancy-related deaths are preventable.^{3,4} A key strategy to improving maternal health is to strengthen the systems of care and support provided to women during pregnancy, labor and delivery, and the postpartum period. This includes providing mothers with access to multidisciplinary teams of health care professionals that can provide clinical services as well as emotional, physical, and informational support throughout the birthing experience.⁵ Doulas, as trained, nonclinical professionals, can provide this nonclinical support while working alongside obstetricians, nurses, midwives, and other health care providers.^{6,7} For example, doulas provide physical support during labor by assisting with positioning and breathing techniques; informational support by explaining complicated medical information; and emotional support by listening and providing encouragement. In the U.S., doulas may be independent professionals hired directly by patients, or they may practice in hospital- or community-based programs.⁸

Research suggests that the use of doula services is associated with improvements in maternal and infant health outcomes, such as shorter duration of labor, reduced likelihood of caesarean birth,⁹ positive infant care behaviors,¹⁰ and higher rates of breastfeeding initiation.¹¹ In addition, doulas can enhance patient care by advocating for birthing parents, facilitating communication with clinicians, and helping to navigate the health care system.^{12, 13} Despite these benefits, use of doulas in the U.S. remains low.¹⁴

Understanding the available data (and aspects such as timeliness and level of detail) to study relationships between doula services and maternal and infant health outcomes is critical for advancing health services research on this issue, toward increasing the uptake of doula services. The goal of this report is to describe the existing data infrastructure for conducting health outcomes research related to doula services and identify data gaps and opportunities for improving or enhancing this data infrastructure.

1.1 Objectives and Structure of the Report

This report describes the findings of a qualitative assessment of the doula-relevant data infrastructure and considerations for its expansion and enhancement. This project is guided by the following questions:

1. What existing data sources can be used by researchers to study health outcomes related to doula services? How are doula services coded or documented in these data sources?
2. What is the extent to which data sources include patient-reported outcomes (PROs) relevant to doula care? What are the gaps in the doula-related data infrastructure and opportunities for improvement?
3. What are examples of research domains related to doula care that this data source guide could help researchers explore?

This report is intended for a health services researcher audience, including governmental and nongovernmental researchers interested in doula-focused health outcomes research. The subsequent sections of the report are organized as follows: the **Methods** section provides an overview of the data

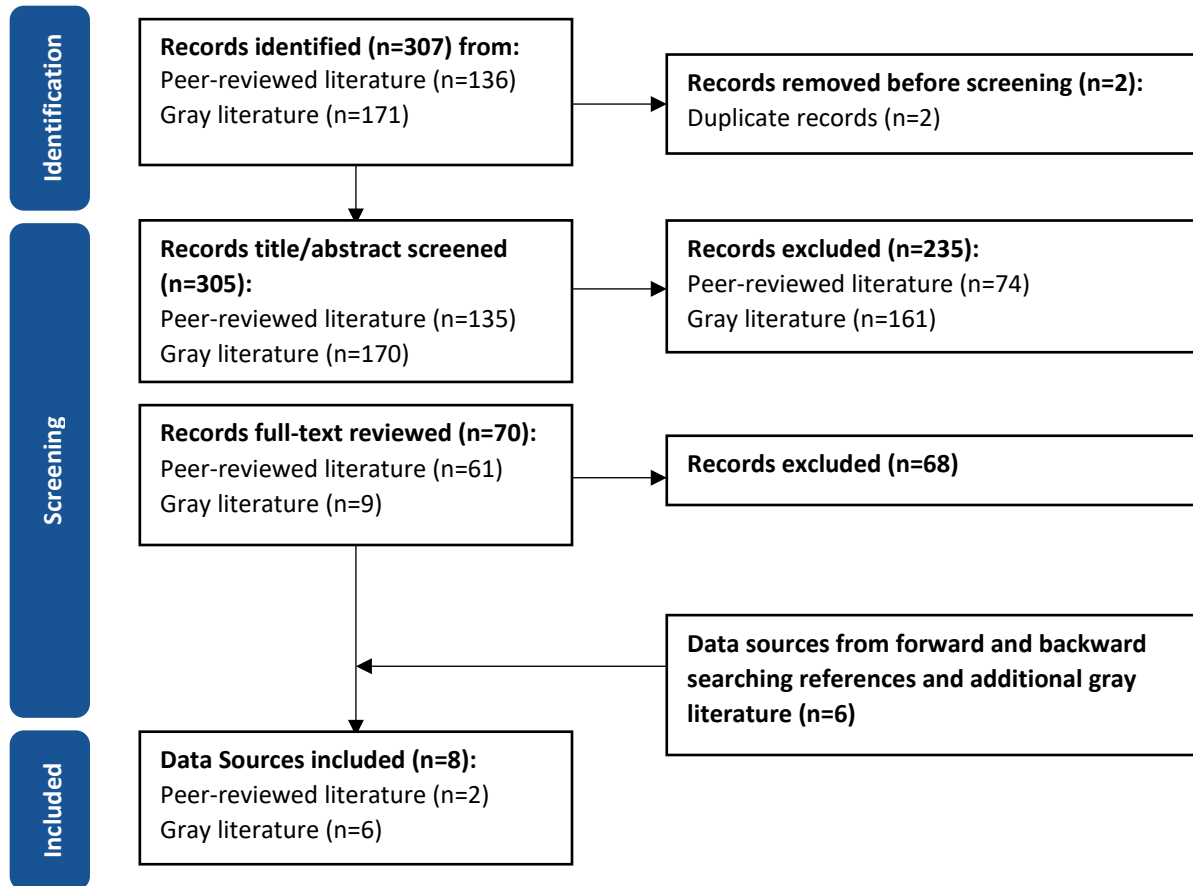
collection methods, including implementation of an environmental scan to identify data sources; the **Findings on Data Sources** section describes the identified data sources for doula-relevant health outcomes research, available outcomes of interest, data access and linkage options, and strengths and limitations of the identified data sources; the **Discussion** section describes considerations for improving and enhancing the doula-related data infrastructure and presents examples of potential research priorities; and the report ends with a short **Conclusion** section. The report also contains supplementary appendices, described in the sections that follow.

2. Methods

Our approach for identifying existing doula-relevant data sources, as well as data gaps and opportunities for enhancing the data infrastructure, included an environmental scan. The scan involved a web-based search for existing doula-related data sources, supplemented by a targeted search of peer-reviewed and gray literature, to identify relevant sources. The search focused on articles from 2019-2025 to ensure data sources abstracted from the literature were relevant to the current landscape of doula care and maternal health research. In conducting the web scan, we prioritized websites of HHS agencies, national associations supporting doulas, and national clinical research networks (see **Appendix A, Exhibit A1** for a list of reviewed websites). We then performed a targeted search using prespecified keywords to scan for additional doula-relevant data sources (see **Appendix A, Exhibit A2** for a list of keywords used). Finally, using the same keywords, we conducted targeted searches in PubMed and Google Scholar for peer-reviewed and gray literature to identify any additional data sources used in articles that reviewed or assessed doula-relevant outcomes. The review of peer-reviewed and gray literature also identified examples of potential research priorities that the doula-related data infrastructure could support (see **Appendix A, Exhibit A3** for inclusion and exclusion criteria).

Articles identified in the literature search underwent a two-step screening process: 1) title and abstract review and 2) full text review for inclusion in this study. Articles were excluded for several reasons, including: not doula-related, incorrect document type, no discussion of dataset, and doula service recipients residing outside of the U.S. After all articles were screened, we reviewed the references of included articles to include additional relevant articles identified through a backward reference searching process. Details on the article selection process are illustrated in **Exhibit 1**. Information from included data sources and articles was abstracted into a spreadsheet inventory to facilitate synthesis and analysis. The fields in the inventory are shown in **Appendix A, Exhibit A4**.

Exhibit 1: Article Selection Process



3. Findings on Data Sources

Through the environmental scan, we identified eight data sources that can be used for doula-focused health outcomes research. We list the data sources in **Exhibit 2**, including brief descriptions and timespan. For more details on each data source, please see the inventory published at <https://aspe.hhs.gov/>. In the following sections, we describe the characteristics of the data sources shown in **Exhibit 2** and summarize the collection of doula indicators and maternal and infant health outcomes. We also outline data access options for each of the identified data sources and discuss their strengths and limitations.

Exhibit 2: List of Identified Doula Data Sources

Data Source Name and Brief Description	Timespan
DONA Master Data File Cross-sectional data on births supported and reported by DONA-certified doulas.	2000-2013
First Baby Study* Prospective cohort study investigating the association between mode of delivery at first childbirth and subsequent fecundity and fertility among pregnant women in Pennsylvania. Funded by the National Institutes of Health (NIH).	2009-2014

Data Source Name and Brief Description	Timespan
Healthcare Integrated Research Database (HIRD®) Proprietary database containing health-related information for people currently and formerly enrolled in commercial, Medicare, and Medicaid health plans in the U.S.	2006-Ongoing
HealthConnect One: Doula Data Platform* Online program monitoring and evaluation tool focused on prenatal care, labor and birth, and postpartum care for births supported by community-based doulas. Funded by the Health Resources and Services Administration (HRSA).	2008-2012
Listening to Mothers California Survey Cross-sectional survey of birth experiences among women giving birth in California hospitals in 2016.	2016
Listening to Mothers National Survey Cross-sectional survey capturing information on mothers' experiences with pregnancy, childbirth, the postpartum period, and infancy.	2002, 2006, 2013, 2025 is upcoming
Medicaid Claims Data* Administrative data detailing medical services provided to Medicaid beneficiaries. As of April 2025, 27 states plus Washington, DC, have or plan to implement Medicaid coverage for doula care. Funded by Centers for Medicare & Medicaid Services (CMS).	1999-Ongoing
Pregnancy Risk Assessment Monitoring System (PRAMS)* Cross-sectional survey administered to women who have recently given birth that captures topics related to their pregnancy, birth, postpartum care, and new infant. Funded by the CDC.	2016-2022

* Indicates federal initiative

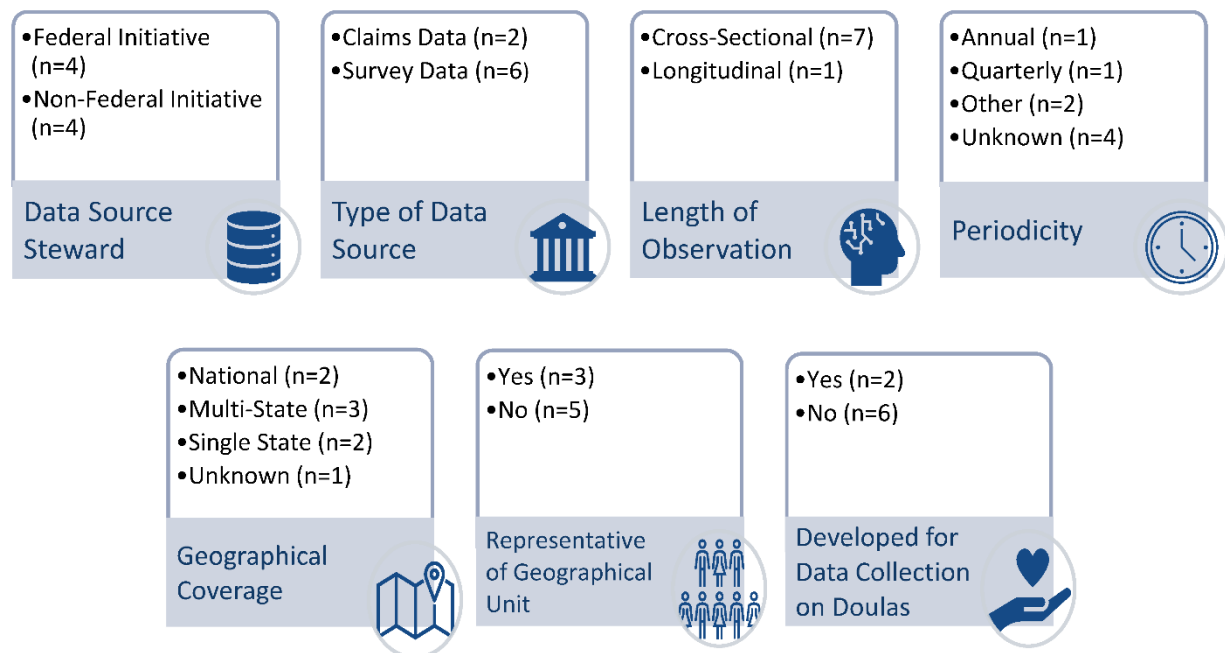
3.1 Characteristics of Data Sources

Robust data sources with information about doulas are needed to understand the effectiveness of doula services.¹⁵ Additionally, having access to a range of data types (e.g., survey, administrative, health care utilization data), as well as different lengths of observation (e.g., cross-sectional, longitudinal), periodicity (i.e., annual, every two years), and geographic variation can help researchers gather a more comprehensive understanding of the impacts of doula services.^{16,17}

The general characteristics of the eight data sources identified in our environmental scan are shown in **Exhibit 3**. Half (n=4) are federally funded by CDC, CMS, HRSA, and NIH, and a majority (n=6) are survey data. Nearly all (n=7) sources contain cross-sectional data, with one exception, the First Baby Study, which tracks maternal and infant outcomes among women over a 3-year follow-up period. Periodicity of data collection for the identified sources varies, with most sources collecting data intermittently with no fixed intervals. In terms of scope, five of the data sources have national or multi-state geographical coverage. Three data sources have data that are representative of their respective geographical units.

*Even though all data sources contain variables about doula services, only two were developed specifically for data collection on doulas (**DONA Master Data File** and **HealthConnect One: Doula Data Platform**).*

Exhibit 3: Select Characteristics of Doula-Relevant Data Sources



3.2 Available Doula Indicators in Data Sources

There is a need to expand the research data infrastructure to track and monitor the provision of doula services to fully understand their impact.¹⁸ The inclusion of doula indicators in data sets is an important first step, as it allows researchers to assess relationships between receipt of doula services and maternal and infant health outcomes.⁵

All the data sources identified in the environmental scan, by design, contain at least one variable related to doula care. In most cases, the only available information was if a doula was present at birth. Only two data sources (i.e., the national and California-based Listening to Mothers surveys) capture mothers' experiences with doula care, and only two data sources (i.e., DONA Master Data File and HealthConnect One:

Doula Data Platform) capture specifics about the types of doula support provided. We categorized the available doula variables in the identified data sources into three domains: receipt of doula services, availability/awareness/desire for doula services, and extent of doula support (see **Exhibit 4**). For more details on the doula variables for each data source, please see the inventory published at <https://aspe.hhs.gov/>.

Three data sources contain multiple types of doula variables that can be leveraged for health outcomes research:

- **The DONA Master Data File** contains variables describing receipt of doula services, availability of doula services, and extent of doula support provided to mothers.

- **The Listening to Mothers National Survey** contains variables describing receipt of doula services and awareness and/or desire for doula services.

- **The HealthConnect One: Doula Data Platform** contains variables describing receipt of doula services and extent of doula support provided to mothers.

Exhibit 4: Available Doula Variables in Identified Data Sources

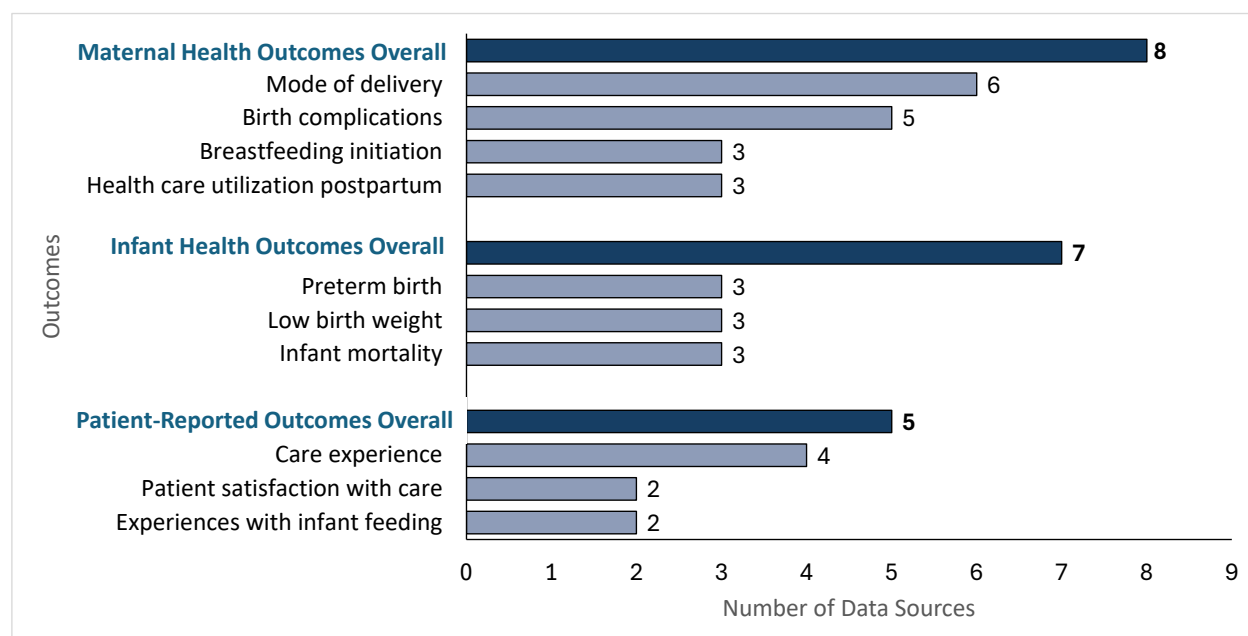
Doula Variable Domain	Data Source	Doula Variable
Receipt of Doula Services	All identified data sources	- Received doula services (i.e., home visitor, doula present prior to, during, or after delivery) - Payment source for doula services (i.e., self-pay, hospital, third-party reimbursement, volunteer, other, unknown) - Quality of supportive care received from care partners, including doulas (i.e., rating from 1 [poor] to 4 [excellent])
Availability/Awareness/Desire for Doula Services	- DONA Master Data File - Listening to Mothers National Survey	- Source of referral to doula (i.e., hospital, DONA International, other, unknown) - Awareness and understanding of doula services as a type of caregiver available during pregnancy (i.e., clear understanding of doula as a type of caregiver, awareness of doula as a type of caregiver but no clear understanding, no awareness of doula as a type of caregiver) - Desire for doula services (if doula not used at current birth)
Extent of Doula Support	- DONA Master Data File - HealthConnect One: Doula Data Platform	- Length (in hours) of doula support - Number of prenatal and postpartum doula visits - Timing of prenatal and postpartum doula visits

In survey data sources, respondents are typically asked who provided support during labor or birth, with doulas as one of the response options, or they are asked a yes or no question about whether a doula came to the home as a home visitor during pregnancy. In claims data sources, receipt of doula services prior to delivery, during delivery, or after delivery is identified through billing codes such as Current Procedural Terminology (CPT) codes, Healthcare Common Procedure Coding System (HCPCS) codes, and CMS taxonomy codes for doula services, or through unique National Provider Identifier codes for doulas. These codes vary slightly by state and may require modifiers for telehealth visits.

3.3 Available Health Outcomes in Data Sources

Through data collection on a range of outcomes, researchers can continue to study the full impact of doula services. In this section we outline maternal health, infant health, and PROs included in the identified data sources. The most commonly available outcomes across data sources for each outcome category are shown in **Exhibit 5**. For more details on outcomes, please see the inventory published at <https://aspe.hhs.gov/>.

Exhibit 5: Most Commonly Available Outcome Measures in Identified Data Sources



It is important to study maternal health outcomes in the context of doula services to inform best practices in maternity care and establish the relationship between doula services and maternal and infant morbidity and mortality.⁵ Early identification and treatment of conditions during pregnancy and the postpartum period can help prevent long-term health issues for women.¹⁹ Additionally, current evidence shows that maternal health can impact a child's health in the child's early years.²⁰ Maternal health outcomes assessed in the broader literature include the physical, emotional, and mental health of mothers during pregnancy, childbirth, and the postpartum period.²¹ All eight of the identified data sources contain maternal health outcomes relevant to doula services across the pregnancy, labor and delivery, and the postpartum period. Pregnancy outcomes include receipt of childbirth education. Labor and delivery outcomes focus heavily on mode of birth (i.e., vaginal versus cesarean delivery) and other outcomes, including rates of induction and use of epidurals or other pain medication. Postpartum

*Compared to other included data sources, the **Listening to Mothers national and California surveys** are data sources with substantial information on maternal health, infant health, and patient-reported outcomes for doula-focused research. These surveys capture extensive patient-reported information on types of care received and health outcomes during the pregnancy, labor and delivery, and the postpartum periods. Importantly, these surveys also capture mothers' satisfaction with the care they received.*

outcomes mainly include breastfeeding initiation, post-discharge complications and postpartum mental health outcomes (e.g., depression, post-traumatic stress disorder), and comorbid conditions (e.g., high blood pressure, diabetes). Less common postpartum outcomes include severe maternal morbidity and birth control use after delivery. The identified data sources also capture health care utilization outcomes across the pregnancy, labor and delivery, and the postpartum periods, centering on receipt of prenatal care, postpartum visit attendance (including emergency department visits), and access to social support and/or emotional resources.

Similar to maternal health outcomes, improving **infant health outcomes** at birth can have long-term effects on a child’s health and development.^{22,23} Infant health outcomes in existing literature include the capture of infant mortality, birth weight, preterm birth, postpartum outcomes, and developmental milestones. All data sources, except for PRAMS, contain infant health outcomes relevant to studying doula services across the labor and delivery and postpartum periods, as well as outcomes related to infant development. Common labor and delivery outcomes include premature birth and low birth weight. A less commonly captured labor and delivery outcome is fetal monitoring during labor, only available in the DONA Master Data File. Postpartum outcomes include infant mortality, skin-to-skin contact within the first hour post-birth, and maternal-child bonding. The identified data sources also capture infant health care utilization outcomes, focusing on the number of postpartum pediatric visits and infant emergency department visits. Finally, two data sources—the First Baby Study and Medicaid claims data—capture outcomes related to infant development, infant substance exposure, and interaction with the foster care system.

Studying **PROs** goes beyond objective measures and provides a deeper understanding of the impact of doula services on the patient.²⁴ PROs come directly from the patient and can be used to assess clinical outcomes, patient experience, and patient satisfaction.²⁵ Five of the eight identified data sources—PRAMS, the DONA Master Data File, the Listening to Mothers national and California surveys, and the First

*While they do not include patient-reported outcomes, **Medicaid claims** are a robust source of administrative data capturing maternal and infant outcomes, including presence of chronic conditions, delivery outcomes, severe maternal morbidity, and health care utilization for both mother and infant.*

Baby Study—contain PROs relevant to studying doula services. Outcomes related to perceptions of labor and delivery experience focus on mothers’ experiences during the pregnancy, labor and delivery, and the postpartum period; experiences with infant feeding; and mothers’ attitudes about their most recent pregnancy. The Listening to Mothers surveys also capture the perceived receipt of respectful care during birth. While the DONA Master Data File is completed by doulas, it includes a PRO of labor duration as reported by the mother to the doula.

3.4 Data Access

Availability of data is critical for researchers to effectively study doula services. Publicly available data enhances the reproducibility and transparency of research results.²⁶ Three of the eight identified data sources contain publicly available data: Listening to Mothers National Survey, Listening to Mothers California Survey, and the First Baby Survey. The remaining data sources are restricted access, requiring additional steps to access the data, such as data use agreements, applications to request data, and contacting the data steward. **Exhibit 6** indicates how to access each data source and provides information on data costs when known.

Exhibit 6: Data Access Information for Doula Data Sources

Publicly Available Data Sources		
Data Source	Costs	Access Information
First Baby Survey	None	Data and documentation are available via the Data Sharing for Demographic Research project . Researchers must create an account with the Institute for Social Research at the University of Michigan and comply with the terms of use, including citing the data source.
Listening to Mothers California Survey	None	Data and documentation for both the Listening to Mothers national and California surveys are available to researchers via the Odum Institute's Dataverse at the University of North Carolina. Researchers must complete a brief form, providing their email address and organizational affiliation, and share how they intend to use the data. Additionally, researchers must comply with the Dataverse Community Norms , including citing the data source.
Listening to Mothers National Survey		

Restricted-Access Data Sources		
Data Source	Costs	Access Information
DONA Master Data File	Unknown	Researchers can reach out to DONA International about data access.
Healthcare Integrated Research Database (HIRD®)	Yes	Access to HIRD is managed by Carelon Research and is available to specific organizations through licensing agreements and collaborative partnerships. Researchers can contact rwe@carelon.com for data access.
HealthConnect One: Doula Data Platform	Unknown	The Doula Data platform is no longer active because funding for the community-based doula program ended in 2012. Researchers can contact HealthConnect One about data access.
Medicaid Claims Data (for states reimbursing doula services)	Yes	Transformed Medicaid Statistical Information System (T-MSIS) data can be accessed through ResDAC , which requires a data use agreement and fee. State-level claims data can also be accessed through state Medicaid agencies. Contact information for the Medicaid director of each state is available via the National Association of Medicaid Directors . The process and fees vary by state. ²⁷
PRAMS	None	PRAMS questionnaires and recent codebooks are publicly available via the PRAMS website . To access data and additional codebooks, researchers must submit the online PRAMS Automated Research File Data Portal Access Form . Once approved by CDC, researchers will receive an email to create a Secure Access Management System (SAMS) account on CDC's SAMS portal, which then requires approval to gain access.

3.5 Strengths and Limitations of Identified Data Sources

In terms of strengths, **most data sources (n=5) collected PROs**, mainly focused on maternal experiences during pregnancy, labor, and delivery. For example, PRAMS collects data regarding maternal attitudes and feelings about mothers' most recent pregnancies and their experiences with pregnancy, labor and delivery, and the postpartum period care; the DONA Master Data File contains data regarding mothers'

experiences with labor. Utilizing data sources that contain PROs can facilitate research to understand patients' perspectives on health outcomes and care experiences to inform quality improvement.²⁸

Another strength of the data sources is that they capture a **wide range of maternal health outcomes**. Most data sources capture outcomes across the continuum of care, including the pregnancy, labor and delivery, and the postpartum periods, enabling comprehensive research on maternal health. The maternal health outcomes also include various health care utilization metrics such as receipt of prenatal care, emergency department visits, and receipt of social and emotional support services. Finally, half the data sources (n=4) were **developed using perspectives from doulas and other community stakeholders** (e.g., recent mothers). Incorporating these key perspectives during the data development process helps ensure the resulting measures are more relevant, impactful, and meaningful to the broader community and generate research that is better aligned with real-world experiences.

A key identified limitation is that the data sources generally have **few variables relating to doula care**. Most of the available doula-related measures encompass whether a doula was involved during pregnancy, labor, or delivery, with only three sources capturing additional detail about the doula support provided or about mothers' opinions of doula services. The lack of richness in doula variables limits the ability of researchers to examine the full impact of doula care, particularly pertaining to maternal experiences. Another limitation is that only a **few of the data sources include a broad range of infant health outcomes**, making it difficult to assess the relationship between doula services and infant health beyond birth. Only two survey sources, First Baby Study and HealthConnect One, contain infant outcome measures beyond mortality, preterm birth, or low birth weight. These sources include measures related to maternal-infant bonding, overall infant health, and pediatric care visits.

There are inherent limitations related to data types. Most of the data sources are survey data (n=6), which are subject to recall bias, nonresponse bias, and sampling limitations. Most surveys (5 of 6) are cross-sectional, which limits the ability to assess longer-term outcomes related to doula services. In addition, within claims data, some services may be underreported,²⁹ and researchers are restricted to studying only services that are reimbursable by the payer and submitted for reimbursement. Finally, only a few of the data sources (n=2) are nationally representative. Most are limited to state or local populations, which constrains generalizing findings from these data sources to the national population.

4. Discussion

The environmental scan found eight data sources that can be used to study the relationship between doula services and maternal and infant health outcomes. However, the information on doula services is very limited, with most sources only capturing whether doula services were received. Below we outline three key considerations for improving or enhancing the doula-related data infrastructure and describe examples of research priorities that researchers can focus on for advancing the evidence base for doula care. We conclude the section by noting study limitations.

4.1 Considerations to Strengthen the Doula-Related Data Infrastructure

I. Expanding doula-relevant variables in existing data. Enhancing researchers' capabilities to examine the associations between doula services and maternal and infant health outcomes can expand the scope of doula-relevant variables captured in existing data. This expansion can include 1) a larger array of

indicators that capture the use of doula care and 2) collecting data on doula service processes, such as composition of the maternity care team.

Including a larger array of indicators in data sources to capture use of doula care. Doulas provide various forms of support over the course of the perinatal period.³⁰ For example, doulas can provide physical support during labor (e.g., assistance with positioning and breathing techniques), informational support (e.g., explaining complicated medical information), or emotional support (e.g., listening and providing encouragement).³⁰ Despite the comprehensive nature of doula care, none of the identified data sources capture specifics about the different types of doula support. Moreover, doula support services can vary in duration and frequency.³¹ Yet, duration was only captured by the DONA International Data Project (i.e., length in hours of doula support) and frequency was only captured by the HealthConnect One: Doula Data Platform (i.e., number and timing of prenatal/postpartum doula visits). These data limitations reflect gaps in doula research conducted to date. A recent 2023 scoping review, for example, found that most doula-related studies have only assessed outcomes depending on whether or not mothers had a doula present during labor.¹² Therefore, including a larger array of indicators to capture the use of doula care could enhance the richness of doula data for future study.

Robust indicators of doula care can help researchers identify connections between specific characteristics of doula care and maternal and infant health outcomes. Specific research questions could include:

☑ Are specific types of doula support (e.g., physical, informational, emotional) associated with distinct maternal and infant outcomes?

☑ Are there are optimal points to use doula services during the perinatal period that can enhance the benefits of doula care?

Collecting data on doula service processes, such as the composition of the maternity care team. The integration of doulas in the care team and other process factors are important contributors to improved maternal health outcomes.³⁰ For example, maternity care dynamics are emerging as an important area of study for doula research, given that team interactions, processes, and institutional partnerships among doulas, nurses, physicians, and other clinical staff can influence pregnancy-related care.³²

Capturing doula interactions and processes within maternity care teams can improve researchers' ability to study:

☑ The extent to which care team composition and coordination impact maternal care.

☑ Whether patient care is negatively impacted by hospital policies that hinder doula coordination with maternity care team.³⁰

However, none of the identified data sources captured data on the doula's role on maternity care teams and/or the composition of the care team. Enhanced data on maternity care team dynamics could include adapted items drawn from validated measures assessing interprofessional collaboration among maternity care teams (e.g., communication, role clarity, maternity care team attitudes).³³ This type of enhancement would improve researchers' ability to study whether the composition of maternity care teams and coordination between doulas and clinical providers impacts maternal and infant health outcomes.

II. Expanding the range of maternal outcomes in doula data. In addition to expanding doula-relevant indicators, data infrastructure could enhance the collection of a wider range of maternal outcomes in doula data. These could include 1) PROs and 2) maternal mental health outcomes.

Improving the representation of PROs in doula-relevant data sources. A second recent 2024 scoping review on U.S. doula programs and outcomes revealed that outcomes that have been typically studied in relationship to doula care are predominantly clinical, despite the fact that doulas are not clinical providers.³⁰ This does not reflect other important potential benefits of doula care, such as patient satisfaction, maternal well-being and self-worth, improved communication with physicians on the care team, prenatal expectations about childbirth, and more.^{30,34,35, 36} These findings in the broader literature are reflected in our assessment of identified data sources. Across the identified data sources, there is an emphasis on clinical outcomes. Only the Listening to Mothers National Survey and First Baby Study include other important outcomes such as patient preferences for and satisfaction with doula care. These types of outcomes present important opportunities for expanding the current doula-related data infrastructure to include more nonclinical outcomes.

Including patient-reported outcomes in doula-relevant data sources would emphasize the patient perspective and experiences of mothers receiving doula care. Outcomes could include:

✓ *Patient-reported trust in the care team³⁶ adapted to explicitly include doulas*

✓ *Patient-reported satisfaction with doula care, whether patient concerns were addressed during care team visits, and infant attachment*

Capturing maternal mental health outcomes during the perinatal period. There is continued emphasis on promoting positive mental health of mothers during the perinatal period to improve maternal and infant health.³⁷ However, given the aforementioned focus on clinical outcomes, only the First Baby Study in our identified data sources included mental health outcomes (i.e., stress, post-traumatic stress disorder, depression). This is consistent with existing research to date that suggests the study of psychological benefits of doulas is limited.³⁸ For example, another 2024 scoping review³⁹ noted a significant gap in peer-reviewed literature exploring the role of doulas in addressing maternal mental health challenges. Specifically, the evidence assessing doula support and mental health challenges is still

Enhancing data through linkages could enable longitudinal analysis such as:

✓ *Comprehensive economic analyses using Medicaid claims on long-term health system utilization, given that existing analyses have focused on utilization outcomes during the prenatal period and labor and birth.*

✓ *Long-term maternal health benefits (e.g., doula support associated with increased breastfeeding rates, in turn lowering maternal cancer risk)*

in its early stages. The authors noted that the few published studies are not based on rigorous study design, suggesting a need for studies that have larger sample sizes and greater scientific rigor. Including more variables assessing maternal mental health in large datasets could provide the basis for these studies.

III. Linking existing doula-relevant data to generate longitudinal data for research. Creating data linkages in existing doula-relevant data sources could enhance the data infrastructure in several meaningful ways. Existing literature has traditionally focused on birth-related outcomes such as reduced cesarean births.⁴⁰

Yet, as emphasized in recent maternal health literature,⁴¹ doulas influence maternal and infant health beyond birth and delivery. Despite the importance of assessing long-term impacts of doula services, only the First Baby Study included longitudinal data in the identified data sources. This suggests an important opportunity to enhance existing data sources through data linkages. As noted in the scan, several data sources contain identifiers or geographic variables that enable linkages to other data sources, including PRAMS, Medicaid claims data, HIRD, and the Listening to Mothers National Survey. These identifiers could be leveraged to create linkages that would capture the use of doula services at one timepoint and health services use and/or outcomes at later points. These identifiers could be used to create linkages, potentially in conjunction with electronic health records data, which would capture the use of doula services at one timepoint and subsequent health services use or outcomes at later points. Together, these linkages could enhance future study on longer term associations between doula services and maternal and infant health.

*An additional data source could be used for health outcomes research if linked to sources of patient outcomes data. The **Doula Data Consortium Time Use Study** includes cross-sectional data collected in 2023 by HealthConnect One to track how 32 doulas from six community-based doula organizations across the U.S. spent their time on activities pertaining to doula services. Data from the Doula Data Consortium Time Use Study are publicly available via [Tableau dashboard](#).*

4.2 Limitations of this Report

We recognize some limitations of the environmental scan. First, although we used a systematic approach to selecting search terms and inclusion criteria, we may have missed some sources of doula services data. Second, the level of detail provided on each data source varied and, in some cases, may be incomplete, due to variation in the type and level of documentation on data sources that were publicly available to us. For example, in some cases, sources were not accompanied by accessible data dictionaries that described their contents, format, and periodicity.

5. Conclusion

This report and inventory of data sources can facilitate the study of relationships between doula services and maternal and infant outcomes and highlights promising advances and ongoing challenges. The resources and guidance that emerged from this report support research focused on doula services and illuminate opportunities and strengths of the data sources available. While eight identified doula-related data sources exist, persistent gaps also exist, including a lack of richness in doula-relevant variables, an emphasis on clinical maternal and infant health outcomes, and limited options to assess longitudinal relationships. Such gaps hinder researchers from fully studying relationships between doula services to maternal and infant outcomes, which in turn reduces the evidence available to support these services, ultimately reducing the potential benefits to patients.

Despite gaps in existing data sources, there are promising areas where data can be enhanced for future study. For example, expanding the richness of doula-related indicators, including patient-reported and maternal mental health outcomes in datasets, and creating linkages to enable assessing longitudinal outcomes will enhance the capabilities of doula researchers. Such enhancements could enable studying distinct priority topics such as whether maternity care team dynamics impact patient care, the extent to which doulas may address mothers' mental health challenges, and whether doula services are

associated with longer-term maternal health outcomes and care utilization. This report and inventory has potential to advance the field of doula research and enhance the experiences of those receiving doula care. This research could expand the current evidence base examining doula services, add richness to our understanding of doula services and maternal and infant health, and may present novel approaches to increase uptake of and better integrate doula services throughout U.S. health systems.

Appendix A. Environmental Scan Methods

Exhibit A1. Websites Prioritized During Web Scan

HHS Agency Websites
Agency for Healthcare Research and Quality (AHRQ)
Catalog.data.gov
Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS)
CMS' data.cms.gov
HRSA's Maternal and Child Health Bureau (MCHB)
National Institutes of Health (NIH) National Institute of Child Health and Human Development (NICHD)
Doula-Relevant Websites
Association of Maternal & Child Health Programs (AMCHP)
Childbirth and Postpartum Professional Association
Doulas of North America (DONA) International
HealthConnect One
National Clinical Research Networks
NIH RePORTER
PCORnet

Exhibit A2. Literature Search Terms

Search Term Category	Example Terms
Doulas	"Doula*"; "Doulas"[MAJR]; "labor coach"; "birth worker"; "doula care"
Patient-Centered Outcomes Research	"Patient-centered care"[MeSH]; "patient-centered outcomes research"; "patient-centered"; "patient outcome assessment"[MeSH]; "patient engagement"; "patient-centered comparative effective research"; "PCOR"; "patient-centered CER"
Data	"Database"; "dataset"; "data source"; Data Collection / methods*[MeSH]; "Database Management Systems"[MeSH]; "data infrastructure"; "inventory"; "linkage"; "dashboard"; "Dashboard Systems"[MeSH]; data collection[MeSH Terms]; "Medicaid/statistics and numerical data"[MAJR]; "Medicaid"[MAJR]; "Medicaid"; "Maternal Health/statistics and numerical data"[MAJR]; "Doulas/statistics and numerical data"[MeSH]
Reviews	"review"[Publication Type]; "systematic review"[Publication Type]; ("systematic review"[Title]; "systematic literature review"[Title]; "systematic scoping review"[Title]; "meta-analysis"[Title]; "scoping review"[Title])

Exhibit A3. Literature Search Inclusion and Exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
Publication Year	Peer-reviewed journal articles: 2019-present Grey literature: 2019-present	Peer-reviewed journal articles: Before 2019 Grey literature: Before 2019
Document Type	Peer-reviewed journal articles: Primary and secondary data analyses, scoping review, meta-analyses/systematic reviews Grey literature: Reports, working papers, evaluation studies, white papers, conference proceedings, presentations, case studies, fact sheets, issue briefs, and government documents	Grey literature: Opinion pieces
Language	English	Non-English
Source	Academic, expert, evaluator	News outlet
Population	U.S.-based recipients of doula services and their children	Recipients of doula services not based in the U.S.
Focus	Datasets and databases capturing information on doula services and related outcomes, information on how doula services are documented, strengths and limitations of the data sources, health outcomes research questions, and outcomes of interest to advance research on doula services	No discussion of dataset or database examples, measured outcomes, or data-related considerations

Exhibit A4: Fields in the Doula Services Data Source Inventory

Fields related to Characteristics	Fields related to Size and Scope	Fields related to Access and Linkages	Fields related to Doula Services and Health Outcomes	Fields related to Other Topics
▪ Data source name ▪ Data source steward ▪ Data source URL ▪ Federally or Non-Federally Funded ▪ Data type (claims, survey) ▪ Observation length (e.g., cross-sectional/longitudinal) ▪ Years of data collection ▪ Periodicity of data collection	▪ Nationally representative/national coverage ▪ Included U.S. states ▪ Lowest geographic level included	▪ Publicly available (Yes/No) ▪ Access costs ▪ Linkable to other data sources (Yes/No)	▪ Examples of maternal health outcomes ▪ Examples of infant health outcomes ▪ Inclusion of PROs (Yes/No) ▪ If yes, description of PROs	▪ Strengths of data source ▪ Gaps or limitations of data source

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