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Report to Congressional Requesters

April 2023

MIDWIVES

Information on Births, Workforce, and Midwifery Education

GAO-23-105861

Highlights

Highlights of GAO-23-105861, a report to congressional requesters

April 2023

MIDWIVES

Information on Births, Workforce, and Midwifery Education

Why GAO Did This Study

Each year in the U.S., hundreds of individuals die from complications related to pregnancy or childbirth, and tens of thousands experience unexpected outcomes such as heart failure. In 2022, GAO reported that research showed more than half of rural counties lacked hospital-based services for pregnant people. GAO also reported on persistent racial and ethnic disparities in maternal death and severe maternal morbidity. Maternal health care providers, such as midwives, can play a critical role in improving maternal health outcomes. GAO was asked to examine midwifery education and access to midwifery care.

This report describes information on midwife-attended births, the midwifery workforce, and any challenges to obtaining midwifery care; information on students of midwifery education programs, any midwifery educational challenges, and available federal financial support; and any challenges to measuring the quality of maternal health care, including midwifery care.

GAO analyzed data from federal agencies and midwifery education and provider organizations, and reviewed research on midwifery care and education. GAO also interviewed a non-generalizable selection of 15 stakeholders knowledgeable about midwifery care and education, and eight researchers and officials from federal agencies about maternal care quality measures.

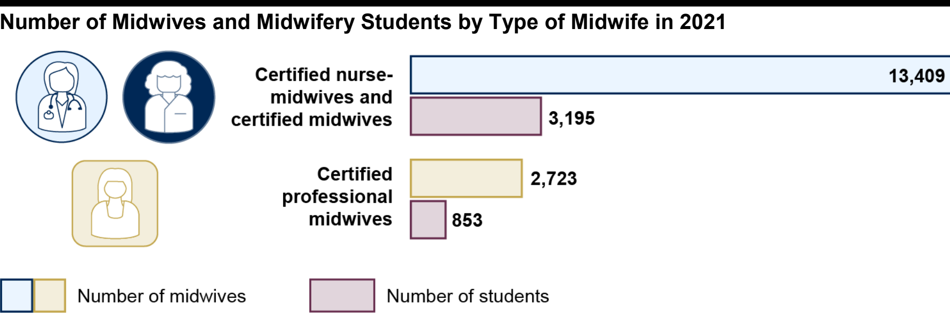
The Department of Health and Human Services provided technical comments, which GAO incorporated as appropriate.

View GAO-23-105861. For more information, contact Jessica Farb at (202) 512-7114 or farbj@gao.gov.

What GAO Found

Among other services, midwives attend births and provide care during pregnancy and the postpartum period. According to a National Partnership for Women and Families report, midwives can help improve the quality of maternal care and improve outcomes associated with pregnancy and birth. There are three types of midwives with certification in the U.S. Among other differences, certified nurse-midwives and certified midwives primarily attend births in hospitals, while certified professional midwives primarily attend births in birth centers and homes.

Number of Midwives and Midwifery Students by Type of Midwife in 2021



Source: GAO analysis of data from American Midwifery Certification Board, North American Registry of Midwives, Accreditation Commission for Midwifery Education, and Midwifery Education Accreditation Council (data); GAO (icons). | GAO-23-105861

Data show that in 2021, 12 percent of all births were attended by a midwife, and the number of births attended by midwives and the number of practicing midwives have increased in recent years. However, stakeholders GAO interviewed and research reports GAO reviewed identified various challenges to obtaining and providing midwifery care. For example:

- Pregnant people may face challenges obtaining midwifery care, such as insurance policies that do not cover midwives or do not list midwives in their provider directories.
- Midwives may face challenges providing care, including variations by state in limitations on their scope of practice, such as whether their work needs to be supervised by physicians.

Data from accrediting organizations show the number of students enrolled in midwifery education programs generally increased in recent years. According to stakeholders GAO interviewed, students may face challenges accessing midwifery education, including educational costs and limited availability of clinical training placements. Agencies within the Department of Health and Human Services have scholarship and loan repayment programs for nurse-midwifery students and certified nurse-midwives, but these students and midwives make up a small percentage of those supported by these programs.

According to researchers and agency officials GAO interviewed, challenges to measuring the quality of maternal care include the difficulty attributing the quality of care to a specific provider because care is provided in teams and occurs over the course of pregnancy and delivery.

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Abbreviations

AHRQ	Agency for Healthcare Research and Quality
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
HHS	Department of Health and Human Services
HRSA	Health Resources and Services Administration
IHS	Indian Health Service

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441 G St. N.W.
Washington, DC 20548

April 26, 2023

Congressional Requesters

Each year in the U.S., hundreds of individuals die from complications related to pregnancy or childbirth. In addition, tens of thousands experience unexpected outcomes related to labor and delivery, such as heart failure, which in turn can lead to significant short- or long-term health consequences (known as severe maternal morbidity). Questions have been raised about access to health care providers, including in rural and underserved areas, which could further exacerbate maternal death and morbidity. In 2022, we reported that research showed more than half of rural counties lacked hospital-based services for pregnant people.[1] In addition, we reported that there have been persistent racial and ethnic disparities in maternal death and severe maternal morbidity. We found that these disparities increased during the COVID-19 pandemic, as the maternal death rate for Black or African American individuals was disproportionally higher compared with White individuals, and the maternal death rate for Hispanic or Latino individuals increased significantly.[2]

Maternal health care providers, including obstetricians, family physicians, and midwives, play a critical role in improving maternal health outcomes and reducing racial and ethnic outcome disparities. In particular, according to a report from the National Partnership for Women and Families, research indicates that midwives can help improve the quality of maternal care and improve health outcomes.[3] In addition, midwives may help fill shortages in maternal health providers. Midwives attend births in a variety of settings (such as hospitals and homes) and provide care during pregnancy and the postpartum period. They also provide a range of other health care services, including primary and gynecological care and reproductive health services.

[1]GAO, *Maternal Health: Availability of Hospital-Based Obstetric Care in Rural Area*s, GAO-23-105515 (Washington, D.C.: Oct. 19, 2022).

[2]GAO, *Maternal Health: Outcomes Worsened and Disparities Persisted During the Pandemic*, GAO-23-105871 (Washington, D.C.: Oct. 19, 2022). See also Centers for Disease Control and Prevention, *Maternal Mortality Rates in the U.S.* (2020).

[3]National Partnership for Women and Families, *Improving Our Maternity Care Now Through Midwifery* (Oct. 2021): 2-3, 6, 9, accessed Mar. 11, 2022, https://www.nationalpartnership.org/our-work/health/maternity/midwifery.html.

Various federal agencies within the Department of Health and Human Services (HHS) have efforts underway to gather information about maternal health outcomes and to help improve access to providers. For example, HHS agencies provide financial support to students and health care providers to incentivize working in areas with few providers, and collect and report data on maternal health, including on the quality of care provided. In addition, within HHS, the Centers for Medicare & Medicaid Services (CMS) oversees the Medicaid program, which pays for over 40 percent of all U.S. births.[4]

You asked us to examine any barriers to pregnant people seeking midwifery care and any barriers to students interested in becoming midwives. Additionally, you asked us to examine any limitations on data collection and existing quality measures regarding maternal health outcomes.

In this report, we describe

1. trends in midwife-attended births, characteristics of the midwifery workforce, and any challenges related to obtaining and providing midwifery care;
2. trends and characteristics of students in and graduates of midwifery education programs, any educational challenges, and available federal financial support; and
3. any challenges to measuring the quality of maternal care, including midwifery care.

To describe trends in midwife-attended births, we analyzed 2016 through 2021 data from the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics' National Vital Statistics System.[5] These were the most recent data at the time of our review. To describe characteristics of the midwifery workforce, we obtained data from publicly available reports published by organizations that certify midwives from 2019 through 2021, which were the most recent data available at the time of our review. To describe trends and characteristics of students in and graduates of midwifery education programs, we obtained data from 2016

[4]Medicaid is a joint federal-state program that finances health care coverage for low income and medically needy individuals and is one of the nation's largest health care programs.

[5]Unless otherwise noted, all comparisons highlighted in the text are statistically significant at the 95 percent confidence level.

through 2021, which were the most recent data available from organizations that accredit midwifery education programs. We also obtained 2016 through 2021 data on students and certified nurse-midwives who received federal financial support. To assess the reliability of the data we analyzed, we reviewed data documentation and interviewed relevant officials about the data and determined that the data were reliable for our purposes.

To obtain information on any challenges related to obtaining or providing midwifery care and midwifery education, we interviewed stakeholders who identified challenges for different groups—pregnant people, midwives themselves, and students in midwifery education programs. We identified stakeholders by searching the internet to identify organizations that represent midwifery providers, accredit midwives, or accredit midwifery education programs and by asking for recommendations from other stakeholders we interviewed. We interviewed a non-generalizable selection of 15 stakeholders who represented accrediting and credentialing organizations, professional associations, maternal health or midwife advocacy groups, midwives, and academic institutions. We also reviewed selected research that we identified through background research or that were provided by agency officials or stakeholders. Our review included approximately 40 published research reports that covered topics on the midwifery workforce, midwifery education programs, maternal health outcomes, and birth settings, among others.

To describe any challenges to measuring the quality of maternal care, including midwifery care, we interviewed officials from HHS agencies and a non-generalizable selection of eight academic researchers knowledgeable about maternal care quality measures. We identified these eight researchers through background research and suggestions from other experts in the field. We asked these researchers about challenges to measuring the quality of care of midwives and strengths and limitations of the data used for maternal care quality measures, among other things. In addition, we interviewed officials from the National Quality Forum and reviewed relevant reports it has published.[6] Additional details about our scope and methodology are in appendix I. Appendix II provides details on selected maternal health quality measures.

[6]National Quality Forum is a nonprofit organization that evaluates and endorses health care quality measures.

We conducted this performance audit from February 2022 to April 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Midwifery Care

Midwives provide a range of health care services, including primary and gynecological care; reproductive health services; and care during pregnancy, childbirth, and the postpartum period. These services may include conducting comprehensive assessments and providing diagnoses and treatments, conducting physical examinations, prescribing medications, and interpreting laboratory and diagnostic tests. Many midwives attend births as the primary provider to deliver the baby and manage the postpartum period. In addition, some midwives assist in surgeries and perform other procedures, like ultrasounds.

According to the American College of Nurse-Midwives, there are several characteristics of midwifery.[7] These include a focus on pregnancy and birth as normal physiological processes, which do not require medical intervention in the absence of medical complications. For example, midwives often use non-medical techniques to manage pain during labor, such as hot and cold compresses, tubs and showers, and massage. Midwives tend to provide prenatal care to pregnant people who are at low-risk of developing medical complications. If a pregnant person develops complications during pregnancy or labor and delivery that fall outside the scope of the midwife's practice, the midwife may transfer care to a physician, such as an obstetrician.

Types of Midwives with Certification

Most midwives become certified by meeting educational and clinical requirements and passing an exam fielded by certification organizations.[8] The scope of care provided by midwives with certification varies

[7]The American College of Nurse-Midwives is the professional association that represents certified nurse-midwives and certified midwives.

[8]There are other midwives who are not certified (who are sometimes called traditional or lay midwives), and the regulations overseeing them vary by state. Unless otherwise noted, we did not include noncertified midwives in our analysis because there were not comparable data.

depending on the state in which the midwife practices and the type of midwife. For example, according to a National Academies of Sciences, Engineering, and Medicine report, certain types of midwives may practice independently in some states, whereas in other states, midwives are required to be supervised by a physician when providing care.[9]

There are three types of midwives with certification: (1) certified nurse-midwives, (2) certified midwives, and (3) certified professional midwives. The first two types of midwives tend to practice in hospitals and take the same certification exam. The third type—certified professional midwives—generally attends births in homes and birth centers. There is also variation in state licensure and Medicaid coverage among the three types of midwives with certification. (See fig. 1.)

Figure 1: Characteristics of Midwives with Certification

Type of midwife with certification	Minimum degree required for certification	Certifying organization	State licensure	Birth setting	Medicaid coverage
Certified nurse-midwife	Graduate degree	American Midwifery Certification Board	All 50 states, the District of Columbia, and United States territories	Primarily attend births in hospitals, also attend births in birth centers and homes	All states and the District of Columbia
Certified midwife	Graduate degree	American Midwifery Certification Board	8 states	Primarily attend births in hospitals, also attend births in birth centers and homes	4 states
Certified professional midwife	High school diploma or equivalent	North American Registry of Midwives	36 states and the District of Columbia	Primarily attend births in homes and birth centers	13 states

Source: GAO analysis of information from the American College of Nurse-Midwvies, North American Registry of Midwives, and National Academy for State Health Policy (data); GAO (icons). | GAO-23-105861

[9]National Academies of Sciences, Engineering, and Medicine, *Birth Settings in America: Improving Outcomes, Quality, Access, and Choice* (Washington, D.C.: The National Academies Press, 2020). https://doi.org/10.17226/25636.

Midwifery Education

Pathways to become a midwife with certification vary by the type of midwife. (See fig. 2.)

Figure 2: Pathways for Midwifery Education and Certification, by Type of Midwife

Midwifery education program

Academic coursework at an accredited education program and clinical work

Degree needed upon entry

Midwifery education coursework

Clinical requirements

Certification earned

Nursing degree before or during program

Bachelor's degree

Academic coursework at a graduate-level program accredited by the Accreditation Commission for Midwifery Education[a]

Clinical work with a qualified preceptor[b]

Certification exam

Certified nurse-midwives

Certified midwives

High school diploma or equivalent

Academic coursework at a program accredited by the Midwifery Education Accreditation Council[c]

Clinical work with a qualified preceptor[b]

Apprenticeship or training with a preceptor in a competency-based program[d]

Certification exam

Certified professional midwives

Source: GAO analysis of information from the American College of Nurse-Midwives and North American Registry of Midwives (data); GAO (images). | GAO-105861

[a]According to an official from the Accreditation Commission for Midwifery Education, as of January 2023, there are 43 midwifery education programs accredited by the Accreditation Commission for

Midwifery Education for students seeking to become certified nurse-midwives. Two of these programs also train students to become certified midwives.

[b]A preceptor is a practicing midwife who agrees to supervise and teach students at clinical sites where students apply their knowledge and skills in a clinical setting.

[c]According to an official from the Midwifery Education Accreditation Council, as of January 2023, there are 11 education programs accredited by the Midwifery Education Accreditation Council for students seeking to become certified professional midwives.

[d]Some individuals choose to pursue a path different from a midwifery education program to become a certified professional midwife. This path is a competency-based program where an individual works as an apprentice to a preceptor.

Midwifery education programs generally include coursework on subjects such as prenatal and postpartum care, medical complications during pregnancy, and gynecological and reproductive health. In addition, these programs require clinical training where students work with experienced midwives—often called preceptors—to develop the technical skills to provide care.

Quality Measures for Maternal Care

Several federal agencies within HHS collect and track data for maternal care quality measures. For example:

- CMS collects information on various health care measures, including maternal health care. For example, CMS collects data from states on the percentage of pregnant people who had a prenatal visit within a certain time period and subsequently delivered.
- Agency for Healthcare Research and Quality (AHRQ) oversees the development of the Consumer Assessment of Healthcare Providers and Systems surveys for hospital patients or those enrolled in certain health insurance plans. These surveys ask about patients' experiences with a range of health care services, including providers and hospitals, with the aim to improve patient care.
- CDC's National Center for Health Statistics collects birth and death data and provides guidance to health care providers on how to complete birth and death certificates, from which data are used to calculate measures such as "low birthweight" and "maternal mortality rate."

In addition, federal agencies contract with the National Quality Forum, which is a nonprofit organization that evaluates and endorses quality measures. The National Quality Forum's endorsement determines which measures should be recognized as the best available measure for a given aspect of care.

Federal agencies, researchers, and other stakeholders use a variety of types of measures to assess the quality of maternal care. One type of

quality measure—process measures—shows whether steps or processes of care that have been proven to benefit patients are followed correctly. Another type of measure—outcome measures—reports the actual results of care. Patient experience measures use perspectives from the person receiving the care and are often obtained through surveys. See table 1 for examples of these types of quality measures. Additional examples of maternal care quality measures are in appendix II.

Table 1: Examples of Maternal Care Quality Measures

Measure	Description	Type of measure
Timeliness of prenatal care	Percentage of births to people who received prenatal care beginning in the first trimester	Process
Low birthweight	Percentage of births with birthweight less than 2500 grams	Outcome
Patient-centered contraceptive counseling	Percent of patients who report the highest possible score of patient experience in their contraceptive counseling with a health care provider	Patient experience

Source: National Quality Forum. | GAO-23-105861

Births Attended by Midwives and the Number of Midwives Increased; Reported Challenges to Obtaining and Providing Care Include Payment Issues and Practice Limitations

The number of births attended by all types of midwives increased from 2016 through 2021. The number of midwives with certification also increased in recent years. Stakeholders we interviewed and research we reviewed reported challenges that pregnant people may face obtaining midwifery care, including insurance coverage and affordability issues, and challenges midwives may face providing midwifery care, including limitations on scope of practice.

Midwives Attended About 12 Percent of All Births in 2021, Reflecting an Increase since 2016

Our analysis of CDC data shows that in 2021, births attended by all types of midwives totaled over 430,000, which comprised 11.9 percent of all

births.[10] This represents an increase from 2016 when births attended by all types of midwives were about 380,000 and comprised 9.6 percent of all births. (See fig. 3.) In particular, from 2020 through 2021, total births increased by about 50,000, and births attended by all types of midwives comprised almost half—47.0 percent or about 23,600—of that increase.

Figure 3: Number and Percentage of Total Births Attended by Midwives, 2016-2021

Number of births (in thousands)

500
450
400
350
300
250
200
150
100
50
0

	2016	2017	2018	2019	2020	2021
Percentage of total births attended by midwives	9.6	9.9	10.2	10.7	11.4	11.9

Births attended by other types of midwives[a]

Births attended by certified nurse-midwives or certified midwives

Source: GAO analysis of Centers for Disease Control and Prevention, National Center for Health Statistics data. | GAO-23-105861

[a]"Other types of midwives" includes certified professional midwives in addition to noncertified midwives.

Geographic distribution of births attended by midwives. There was wide variation in the proportion of births attended by all types of midwives by state in 2021, the most recent year of available CDC data. The

[10]We analyzed CDC's National Vital Statistic Systems data, which categorize midwives into two groups: (1) certified nurse-midwives or certified midwives, which include advanced practice registered nurses and (2) other midwives, which include certified professional midwives and noncertified midwives. We use the term "all types of midwives" to refer to both these categories of midwives from the CDC data. According to documentation from CDC, there is evidence that the number of births attended by certified nurse-midwives or certified midwives is understated, largely due to difficulty in correctly identifying the birth attendant when more than one provider is present at the birth.

proportion of births attended by all types of midwives varied from 1.1 percent of all births in Arkansas to 31.9 percent in Alaska. (See fig. 4.) A table showing the percentage of midwife-attended births by state is in appendix III.

Figure 4: States with the Five Highest and Five Lowest Percentages of Midwife-Attended Births, 2021

Five highest percentages of midwife-attended births

Five lowest percentages of midwife-attended births

Source: GAO analysis of Centers for Disease Control and Prevention, National Center for Health Statistics data (data); MapResources (map). | GAO-23-105861

Variation in the proportion of births attended by all types of midwives may be due to differences in how midwifery practice is regulated in each state, among other possible reasons. For instance, in 2021, midwives attended about 26.4 percent of births in New Hampshire, where midwives can

practice independently and do not require physician supervision.[11] In Louisiana, midwives have a limited scope of practice and attended about 3.6 percent of births.[12]

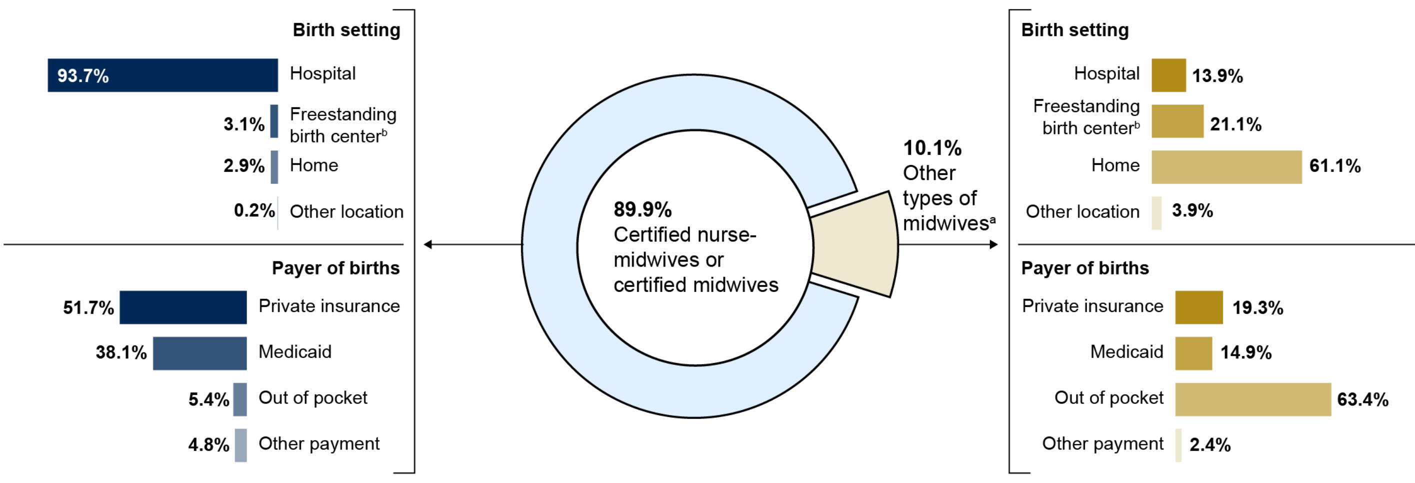
Differences among settings and payers of midwife-attended births. According to our analysis of CDC data, there was variation in birth settings for pregnant people by type of midwife. In particular, births attended by certified nurse-midwives or certified midwives had a higher percentage taking place in the hospital and had a higher percentage being paid for by private insurance or Medicaid. In contrast, births attended by other types of midwives had a higher percentage taking place at home or in freestanding birth centers and had a higher percentage being paid out of pocket by the pregnant people themselves.[13] (See fig. 5.)

[11]Midwives other than nurse-midwives are required to consult a physician when there are significant deviations from normal or when there is a medical emergency. N.H. Rev. Stat. Ann. § 326-D:2 (2021).

[12]Certified nurse-midwives must have a collaborative practice agreement with a licensed physician in order to perform medical diagnoses and prescribe treatments. La. Stat. Ann. § 37:913 (2019). Midwives can provide care only to patients whom a physician has determined to be normal for pregnancy and childbirth and at low risk for medical complications. La. Stat. Ann. § 37:244 (2012).

[13]A freestanding birth center is a healthcare facility that is not attached to a hospital and uses a midwifery model of care to provide services during pregnancy, labor and delivery, and the postpartum period.

Figure 5: Percentage of Births Attended by Certified Nurse-Midwives or Certified Midwives and Other Types of Midwives by Birth Setting and Payer of Birth, 2021



Source: GAO analysis of Centers for Disease Control and Prevention, National Center for Health Statistics data. | GAO-23-105861

Note: In 2021, for our analysis of birth setting, we included 390,203 births attended by certified nurse-midwives and certified midwives and 43,770 births attended by other types of midwives. There were 11 births that had an unknown birth setting that we excluded from our analysis. For our analysis of payer, we included 386,528 births attended by certified nurse-midwives and certified midwives and 42,780 births attended by other types of midwives. There were 4,686 births that had an unknown payer that we excluded from our analysis.

[a]"Other types of midwives" includes certified professional midwives in addition to noncertified midwives.

[b]A freestanding birth center is a health care facility that is not attached to a hospital and uses a midwifery model of care to provide services during pregnancy, labor and delivery, and the postpartum period.

Race and ethnicity of people with births attended by midwives. In 2021, the race and ethnicity of pregnant people with births attended by certified nurse-midwives or certified midwives was similar to the race and ethnicity of people with births attended by all providers.[14] (See fig. 6.) For example, among births attended by certified nurse-midwives or certified midwives, 23.2 percent were to Hispanic or Latino pregnant people compared with 24.4 percent of births attended by all types of providers. However, pregnant people with births attended by other types of midwives were more likely to be White (not Hispanic or Latino), less likely

[14]With the exception of the Native Hawaiian or Other Pacific Islander (not Hispanic or Latino) group, all other races or ethnicities had statistically significant differences in their distribution among all births and among births by certified nurse-midwives or certified midwives. However, all differences were small (within 3 percentage points).

to be Black or African American (not Hispanic or Latino), and less likely to be Hispanic or Latino.

Figure 6: Race and Ethnicity of Pregnant People with Births Attended by All Providers Compared with Midwives, 2021

Source: GAO analysis of Centers for Disease Control and Prevention, National Center for Health Statistics data. | GAO-23-105861

Note: "All providers" includes midwives. Race and ethnicity is based on the race and ethnicity of the pregnant person. American Indian or Alaskan Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, and Multiracial do not include Hispanic or Latino persons.

[a]"Other types of midwives" includes certified professional midwives in addition to noncertified midwives.

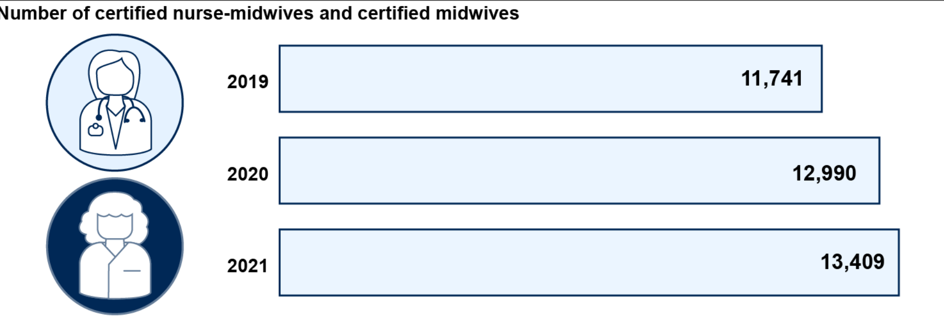
The Number of Midwives with Certification Increased in Recent Years

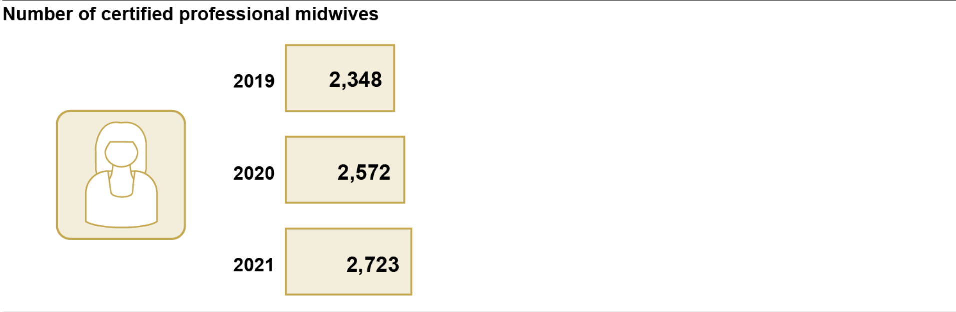
From 2019 through 2021, the number of certified nurse-midwives and certified midwives increased by 14 percent.[15] In the same period of time, the number of certified professional midwives increased by a similar amount—about 16 percent.[16] (See fig. 7.)

[15]These data are from the American Midwifery Certification Board, which is the organization that certifies certified nurse-midwives and certified midwives. We did not include midwives without certification in our analysis of the midwifery workforce.

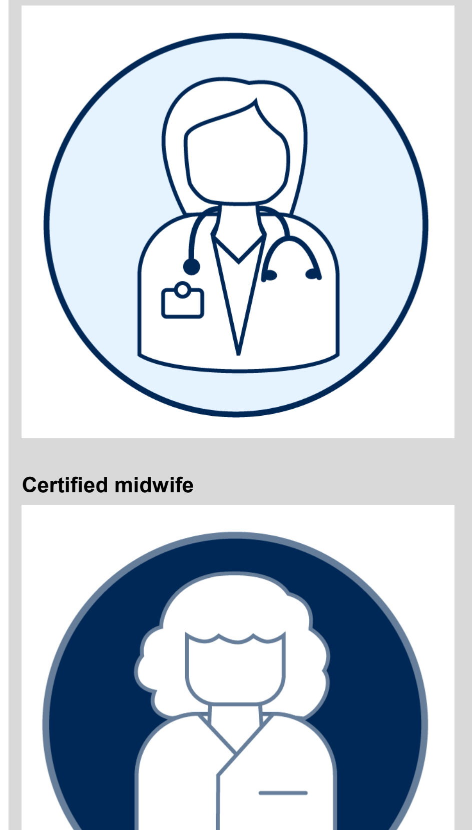
[16]These data are from the North American Registry of Midwives, which is the organization that certifies certified professional midwives.

Figure 7: Number of Midwives with Certification, by Type of Midwife, 2019 through 2021





Source: GAO analysis of the data from the American Midwifery Certification Board and the North American Registry of Midwives (data); GAO (icons). | GAO-23-105861



Source: GAO. | GAO-23-105861

Certified nurse-midwives and certified midwives. There were approximately 13,400 of these types of midwives in 2021. About 99 percent of these midwives were certified nurse-midwives. In addition, nearly all of these midwives were women, and the majority were between 30 and 59 years old. Most of these midwives were White (not Hispanic or Latino), and a higher proportion of midwives were White (not Hispanic or Latino) compared with estimates of the White population in the U.S. general population. (See table 2.)

Table 2: Race and Ethnicity of Certified Nurse-Midwives and Certified Midwives Compared with Estimates for the U.S. General Population, 2021

	Percentage of certified nurse-midwives and certified midwives	Percentage of estimates of the U.S. general population
Race		
American Indian or Alaska Native	0.6	0.9
Asian	1.7	5.9
Black or African American	7.3	12.9
Native Hawaiian or other Pacific Islander	0.2	0.2
White	84.9	71.7
More than one race	1.0	3.6
Other race	1.3	4.9
Race unknown	3.2	n/a
Ethnicity		
Hispanic or Latino	5.0	18.9
Not Hispanic or Latino	90.3	81.1
No data or did not respond	4.7	n/a

Source: GAO analysis of the data from the American Midwifery Certification Board and the U.S. Census Bureau's American Community Survey. | GAO-23-105861.

Notes: In 2020, the U.S. Census Bureau implemented changes to the question about race on the 2020 American Community Survey and urged caution when making comparisons of 2020 and 2021 data with those from prior years. Because the American Community Survey 1-year data estimates for 2021 displayed anomalies for certain race and ethnicity categories, they may not be appropriate for an analysis between 2016 and 2021. Instead, for 2020 and 2021, GAO projected race and ethnicity estimates by adjusting the 2019 population estimates based on the compound average growth rates between 2016 and 2019. While 2016-2021 data are described elsewhere in this report, this table only shows 2021 data.

Percentages do not add to 100 because of rounding.

Certified professional midwife

Source: GAO. | GAO-23-105861

Certified professional midwives. In 2021, there were over 2,700 certified professional midwives, an increase of about 16 percent from 2019.[17] An official from the certification organization for certified professional midwives said that the COVID-19 pandemic may have led to delays in students being able to meet educational requirements, leading to a delay in sitting for the certification exam. As a result, the increase could be due in part to students whose education was delayed earlier in the pandemic taking the certification exam in 2021. Demographic information was not available for certified professional midwives.[18]

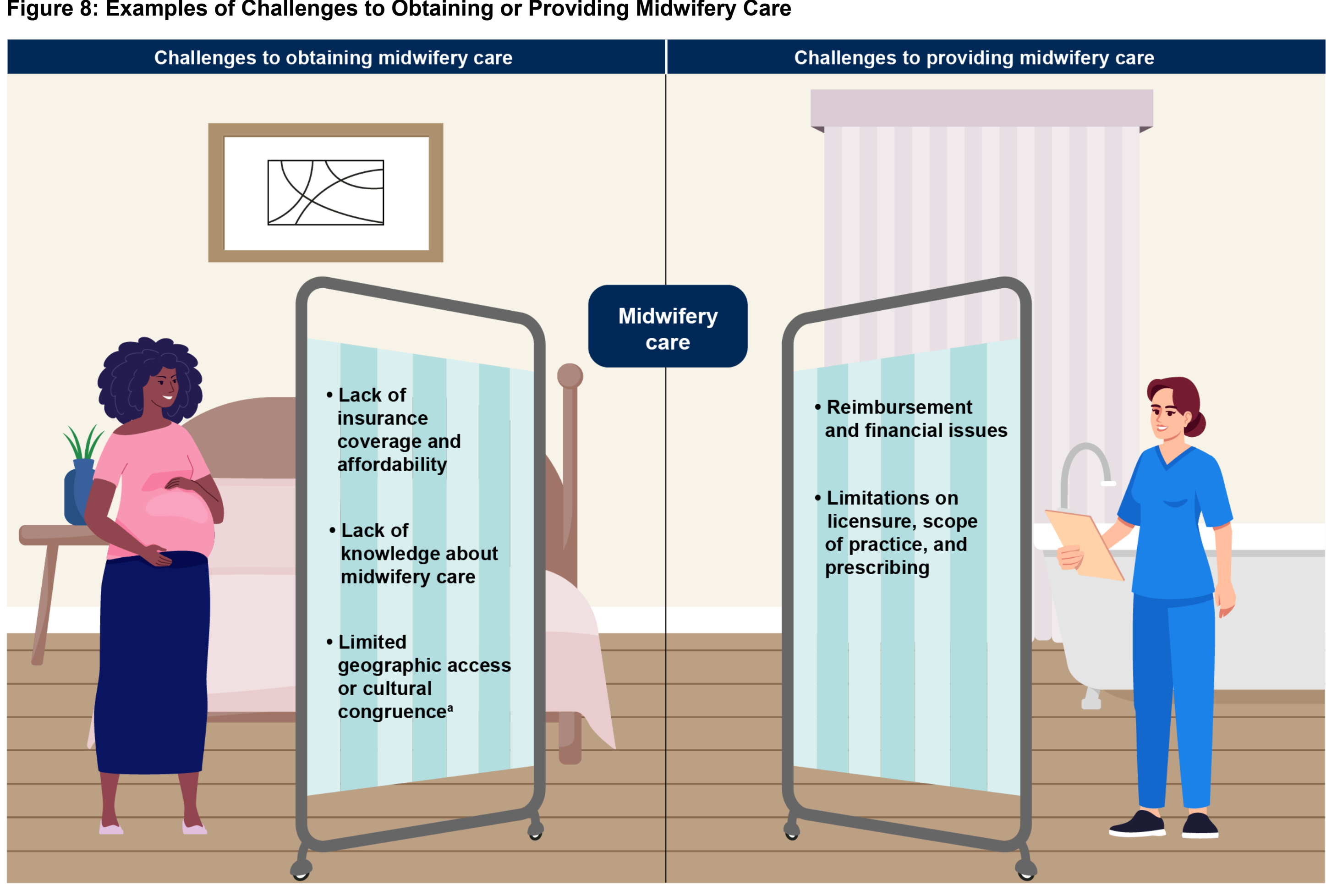
Reported Challenges to Obtaining Midwifery Care Include Payment Issues; Reported Challenges to Providing Care Include Practice Limitations

The stakeholders we spoke with and research articles we reviewed identified several challenges that pregnant people may face in obtaining midwifery care and midwives may face in providing care. (See fig. 8.)

[17]The certification organization for certified professional midwives—North American Registry of Midwives—reports both the total number of midwives with the certified professional midwifery certification and the total number of midwives with active certifications. We reported the number of active certifications and excluded those retired or with expired status.

[18]Officials from the certification organization for certified professional midwives said they collect some demographic information from certified professional midwives, but this information is optional and thus is incomplete.

Figure 8: Examples of Challenges to Obtaining or Providing Midwifery Care



Source: GAO analysis of expert stakeholder interviews and relevant research (data); GAO (background images); charactervectorart/bsd studio/stock.adobe.com (character images). | GAO-23-105861

[a]Culturally congruent care occurs when there is a fit between a health care practice or provider and a patient's relevant cultural values. This can include sharing a language, a racial or ethnic identity, a sexuality or gender identity, or other cultural values.

Examples of challenges to pregnant people obtaining midwifery care include:

Lack of insurance coverage and affordability. Pregnant people may be unable to afford midwifery care, especially when insurance does not cover it. Although Medicaid requires coverage for services provided by certified nurse-midwives, it does not require coverage for services

provided by other types of midwives.[19] According to seven stakeholders we spoke with and three research studies we reviewed, some insurance companies do not cover midwifery care.[20] When this occurs, pregnant people must pay out of pocket or choose a different type of provider covered by their insurance, according to two research reports and three stakeholders. For example:

- A 2014 survey of insurance companies found that some insurance plans did not include certified nurse-midwives (20 percent of plans), certified midwives (60 percent), or certified professional midwives (65 percent) in their provider networks.[21] This survey found that some insurance companies did not cover the services of certified nurse-midwives outside of hospitals. For example, 24 percent of the survey respondents did not cover certified nurse-midwife services in birth centers, and 56 percent did not cover their services in home births.
- Two research studies found that lack of or limited insurance coverage for births outside of hospitals creates financial challenges for pregnant people who want to give birth at home or in birth centers—settings in which births are primarily attended by midwives.[22] The 2014 survey of insurance companies found that 47 percent of companies did not cover birth centers, and three stakeholders said pregnant people may be unable to pay out of pocket for birth centers. Additionally, a 2021

[19]See 42 U.S.C. § 1396d(a)(17).

[20]See Eva H. Allen et al., *Building and Supporting a Black Midwifery Workforce in Oklahoma: Findings and Recommendations from an Expedited Review* (Washington, D.C.: Urban Institute, Apr. 2022), 8, accessed June 30, 2022, https://www.urban.org/research/publication/building-and-supporting-black-midwifery-workforce-oklahoma; National Academies of Science, Engineering, and Medicine, *Birth Settings in America: Outcomes, Quality, Access, and Choice* (Washington, D.C.: The National Academies Press, 2020), 77, 80. https://doi.org/10.17226/25636; National Partnership for Women and Families, *Improving our Maternity Care Now Through Community Birth Settings* (Apr. 2022): 20, accessed June 30, 2022, https://www.nationalpartnership.org/our-work/health/maternity/community-birth-settings.html.

[21]See American College of Nurse-Midwives, *Ensuring Access to High Value Providers, ACNM Survey of Marketplace Insurers Regarding Coverage of Midwifery Services* (Sept. 2014): ii, 5, 11-12, accessed Dec. 2, 2022, https://www.midwife.org/ACNM/files/ccLibraryFiles/Filename/000000004394/EnsuringAccesstoHighValueProviders.pdf.

[22]See National Academies of Science, Engineering, and Medicine, *Birth Settings in America*, 48-49, 75, 80; National Partnership for Women and Families, *Community Birth Settings*, 15-16, 20.

survey of 42 states found that 17 did not cover home births under Medicaid.[23]

Lack of knowledge about midwifery care. Nine stakeholders we spoke with said pregnant people may not seek midwifery care because they do not know what midwifery care entails or know it is available to them. Three stakeholders told us and the 2014 survey of insurance plans found that some insurance networks do not list midwives in their directories of health care providers, even if midwifery care is covered by that insurance.[24] This can make it difficult for individuals to know that midwifery care is an option for them to consider or to find a midwife.

Limited geographic access or cultural congruence. Four stakeholders we spoke with and two research studies we reviewed said pregnant people may wish to use midwives, but midwives may not be available where they live.[25] According to an additional research report, 55 percent of counties in the U.S. in 2019 did not have a practicing certified nurse-midwife.[26]

Four stakeholders we spoke with also said it can be a challenge for pregnant people seeking culturally congruent care to find midwives who meet their preferences.[27] Both HHS and the American Nurses Association have identified culturally appropriate health services as an effective tool in

[23]See American College of Nurse-Midwives, *Ensuring Access to High Value Providers,* 18; Usha Ranji, et al., *Medicaid Coverage of Pregnancy-Related Services: Findings from a 2021 State Survey* (San Francisco, Ca.: Kaiser Family Foundation, May 2022): 12, accessed on Jan. 23, 2023, https://www.kff.org/report-section/medicaid-coverage-of-pregnancy-related-services-findings-from-a-2021-state-survey-report/.

[24]See American College of Nurse-Midwives, "Ensuring Access to High Value Providers," 6.

[25]See Susan A. Krause, Susan A. DeJoy, and Heather Z. Sankey, "Innovations in Midwifery Education: The Academic Medical Center Model," *Journal of Midwifery & Women's Health*, vol. 64, no. 5 (2019): 650. https://doi.org/10.1111/jmwh.12989; National Partnership for Women and Families, *Midwifery*, 12.

[26]This report also found that individuals living in rural areas delivered babies with certified nurse-midwives and certified midwives 12.5 percent less often than individuals living in urban areas. Additionally, 3 percent of rural counties and 17 percent of urban counties had at least one birth center. See Christina Brigance et al., *Nowhere to Go: Maternity Care Deserts Across the U.S.*, (March of Dimes, 2022): 12, 14, 16, accessed Nov. 9, 2022, https://www.marchofdimes.org/research/maternity-care-deserts-report.aspx.

[27]Culturally congruent care occurs when there is a fit between a health care practice or provider and a patient's relevant cultural values. This can include sharing a language, a racial or ethnic identity, a sexuality or gender identity, or other cultural values.

reducing health inequities and have established national standards for culturally congruent care as a best practice.[28] For example, the principal HHS standard is providing care and services that are “responsive to diverse cultural health beliefs and practices, preferred languages, health literacy, and other communication needs.” However, three stakeholders said pregnant people who are underrepresented may not have access to culturally congruent midwifery.[29] For example, one professor of nursing said there may be only three or four practicing midwives of color in a state.

The stakeholders we spoke with and the research reports we reviewed also identified challenges midwives can face providing care. Examples of challenges to midwives providing care include:

Reimbursement and financial issues. Nine stakeholders we spoke with and five research studies we reviewed noted that reimbursement issues can be a challenge to providing midwifery care.[30] In particular, five stakeholders and three reports we reviewed said in some states, insurance companies and Medicaid reimburse midwives at a lower rate than physicians for the same services, which can make it difficult for midwives to provide care, especially to low-income pregnant people.[31] For example:

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[28]See Department of Health and Human Services, *National Standards for Culturally and Linguistically Appropriate Services (CLAS) in Health and Health Care*, accessed Dec. 1, 2022, https://thinkculturalhealth.hhs.gov/clas/standards; Lucy Marion et al., “Implementing the New ANA Standard 8: Culturally Congruent Practice,” *OJIN: The Online Journal of Issues in Nursing,* vol. 22, no. 1 (2016): 1. https://doi.org/10.3912/OJIN.Vol22No01PPT20.

[29]We use the term “underrepresented” in this report when summarizing statements from multiple stakeholders and research studies that used a variety of terms to describe specific populations. When describing challenges to obtaining or providing midwifery care, stakeholders and research reports used the terms “Black,” “people of color,” and “LGBTQ,” among others.

[30]See Allen et al., *Black Midwifery Workforce,* 3, 8; National Academies of Science, Engineering, and Medicine, *Birth Settings in America*, 77; National Partnership for Women and Families, *Community Birth Settings*, 15, 20; National Partnership for Women and Families, *Midwifery,* 3, 13; Saraswathi Vedam et al., “Mapping Integration of Midwives Across the United States: Impact on Access, Equity, and Outcomes,” *PLoS ONE,* vol. 13, no. 2 (Feb. 21, 2018): 2. https://doi.org/10.1371/journal.pone.0192523.

[31]See Allen et al., *Black Midwifery Workforce,* 8; National Partnership for Women and Families, *Community Birth Settings*, 15; National Partnership for Women and Families, *Midwifery,* 13.

- One stakeholder—a director of a birth center—and two reports we reviewed said Medicaid's low payment rates discourage some midwives from providing care to Medicaid beneficiaries.[32] One midwife said that when reimbursement rates are low, midwives may have to take on more clients than preferred to maintain a financially viable practice.
- Three stakeholders we spoke with said malpractice insurance can be a financial burden for midwives, especially for midwives who provide care outside of a hospital setting. According to a stakeholder representing a professional association, some institutions take care of malpractice insurance for the certified nurse-midwives who work in them. In contrast, midwives practicing outside of hospitals may have to obtain their own malpractice insurance. This stakeholder said few insurance companies offer malpractice insurance for certain types of midwives, such as certified professional midwives. However, Medicaid or insurance companies may require midwives to have malpractice insurance to be reimbursed, according to one research report and one midwife we spoke with.[33]

Limitations on licensure, scope of practice, and prescribing. Six stakeholders we spoke with and four research studies we reviewed noted that federal and state regulations of midwifery practice can restrict the care that midwives provide.[34] For instance, two research reports found some states do not license certain types of midwives, such as certified midwives and certified professional midwives, which restricts the practice of those types of midwives.[35] According to a stakeholder from a midwifery credentialing organization, insurance companies and Medicaid will not reimburse unlicensed certified professional midwives.

Limitations on scope of practice vary by state and by type of midwife. For example, one study noted some states require certified nurse-midwives to

[32]See Allen et al., *Black Midwifery Workforce*, 8; National Partnership for Women and Families, *Community Birth Settings*, 15.

[33]See National Academies of Science, Engineering, and Medicine, *Birth Settings in America*, 77.

[34]See Allen et al., *Black Midwifery Workforce,* 8; National Academies of Science, Engineering, and Medicine, *Birth Settings in America*, 10, 46, 62; National Partnership for Women and Families, *Midwifery,* 13-14; Vedam et al., "Mapping Integration of Midwives," 2-3.

[35]See National Academies of Science, Engineering, and Medicine, *Birth Settings in America,* 5; National Partnership for Women and Families, *Midwifery,* 12.

have a collaborative agreement with a physician.[36] A stakeholder from a maternal health advocacy group said needing a collaborative agreement can make practicing difficult because it requires midwives to have an established professional relationship with a physician to provide midwifery care. One research report and one stakeholder also noted some states require certified nurse-midwives to be under physician supervision while providing care. The research report stated that locations that restrict the practice of certified nurse-midwives and certified midwives, such as through physician supervision requirements, are associated with fewer practicing midwives.[37] Additionally, two research studies and a stakeholder from a midwife advocacy group said some states restrict certified midwives and certified professional midwives from carrying or administering certain medications, such as medicine to treat excessive bleeding during birth.[38]

Number of Midwifery Students Generally Increased in Recent Years; Reported Challenges Include Educational Costs and Limited Clinical Training Placements

The number of students enrolled in midwifery education programs generally increased in recent years, according to data from the organizations that accredit midwifery education programs. Students face challenges to accessing education, including educational costs and limited availability of clinical training placements for midwifery students, according to stakeholders we interviewed and research reports we reviewed. Both the Health Resources and Services Administration (HRSA) and the Indian Health Service (IHS) have financial support programs that provide scholarships or loan repayment for certified nurse-midwives, among other health care providers.

The Number of Students in Midwifery Education Programs Increased, although Size of Increase Depended on Type of Program

Data from the organizations that accredit midwifery education programs show that the number of students generally increased in recent years. In addition, in 2021, there were more students enrolled in programs for certified nurse-midwifery and certified midwifery education than students enrolled in programs for certified professional midwifery education. (See fig. 9.)

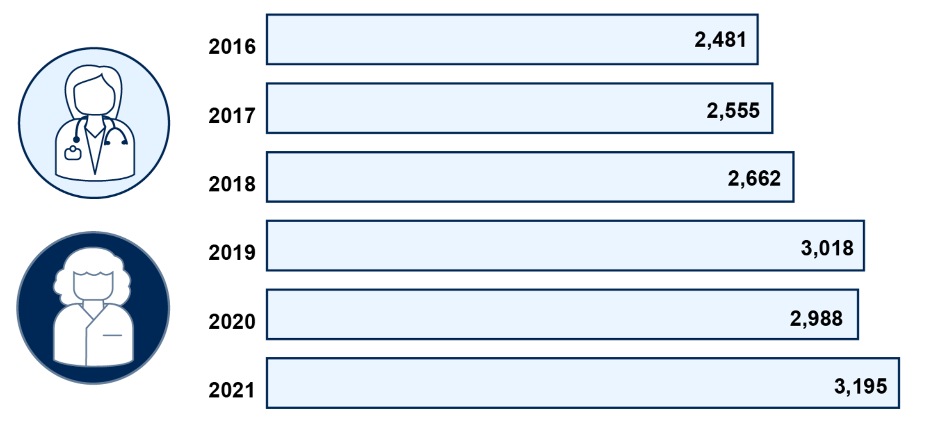
[36]See National Partnership for Women and Families, *Midwifery,* 13-14.

[37]See National Partnership for Women and Families, *Midwifery,* 13.

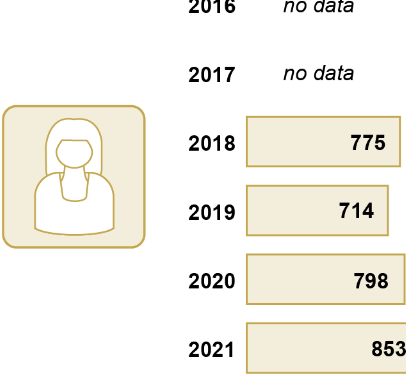
[38]See National Academies of Science, Engineering, and Medicine, *Birth Settings in America*, 62; National Partnership for Women and Families, *Midwifery,* 13, 15.

Figure 9: Number of Students in Certified Nurse-Midwifery and Certified Midwifery Education Programs and in Certified Professional Midwifery Programs, 2016 to 2021

Students in certfied nurse-midwifery or certified midwifery education programs



Students in certfied professional midwifery education programs



Source: GAO analysis of data from the Accreditation Commission for Midwifery Education and the Midwifery Education Accreditation Council (data); GAO (icons). | GAO-23-105861

Note: Data on students in certified professional midwifery education programs were only available for 2018 through 2021.

Students in Midwifery Education Programs

Certified nurse-midwife

Certified midwife

Source: GAO. | GAO-23-105861

Students in certified nurse-midwifery and certified midwifery programs. From 2016 through 2021, the number of students enrolled in certified nurse-midwifery and certified midwifery education programs generally increased each year. During this time period, the increase was 28.8 percent.[39] In 2021, there were 3,195 students. According to an official from the Accreditation Commission for Midwifery Education, as of January 2023, there were 43 midwifery education programs. These education programs are primarily for students seeking to become certified nurse-midwives. Two of these programs also prepare students to become certified midwives.

The majority of students enrolled in certified nurse-midwifery and certified midwifery education programs were White (not Hispanic or Latino). From 2016 through 2021, there was a 92.7 percent increase in the number of midwifery students who were Black or African American (not Hispanic or Latino) as well as a 72.3 percent increase in the number of Hispanic or Latino midwifery students. There were smaller changes in other race and ethnicity categories during this time period.

In 2021, the proportion of White (not Hispanic or Latino) students enrolled in certified nurse-midwifery and certified midwifery education programs was higher compared with estimates of the White population in the U.S. general population. In addition, Black or African American (not Hispanic or Latino) midwifery students were generally a smaller proportion of midwifery students compared with estimates of the Black or African American (not Hispanic or Latino) population in the general population until 2019. In 2021, they accounted for 15.7 percent of the midwifery student population even as they represented 12.4 percent of the estimated general population.[40] (See table 3.)

[39]These data are from the Accreditation Commission for Midwifery Education, which is the organization that accredits education programs for students seeking to become certified nurse-midwives and certified midwives.

[40]The data collected by the Accreditation Commission for Midwifery Education combines race and ethnicity together. For our analysis, we used comparable race and ethnicity data from the U.S. Census Bureau's American Community Survey.

Table 3: Race and Ethnicity of Students in Certified Nurse-Midwifery and Certified Midwifery Education Programs Compared with the U.S. General Population, 2021

	Percent of students	Percent of estimates of the U.S. general population
American Indian or Alaska Native	0.6	0.7
Asian	2.6	5.8
Black or African American	15.7	12.4
Hispanic or Latino	7.6	18.9
Native Hawaiian or other Pacific Islander	0.3	0.2
White	66.2	59.2
Two or more races	3.9	2.6
Race/ethnicity unknown or other race	3.0	0.3

Source: GAO analysis of the data from the Accreditation Commission for Midwifery Education and the U.S. Census Bureau's American Community Survey. | GAO-23-105861

Notes: The race categories of American Indian or Alaskan Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White do not include Hispanic or Latino persons.

In 2020, the U.S. Census Bureau implemented changes to the question about race on the 2020 American Community Survey and urged caution when making comparisons of 2020 and 2021 data with those from prior years. Because the American Community Survey 1-year data estimates for 2021 displayed anomalies for certain race and ethnicity categories, they may not be appropriate for an analysis between 2016 and 2021. Instead, for 2020 and 2021 GAO projected race and ethnicity estimates by adjusting the 2019 population estimates based on the compound average growth rates between 2016 and 2019. While 2016-2021 data are described elsewhere in this report, this table only shows 2021 data.

Percentages do not add to 100 because of rounding.

Certified professional midwife

Source: GAO. | GAO-23-105861

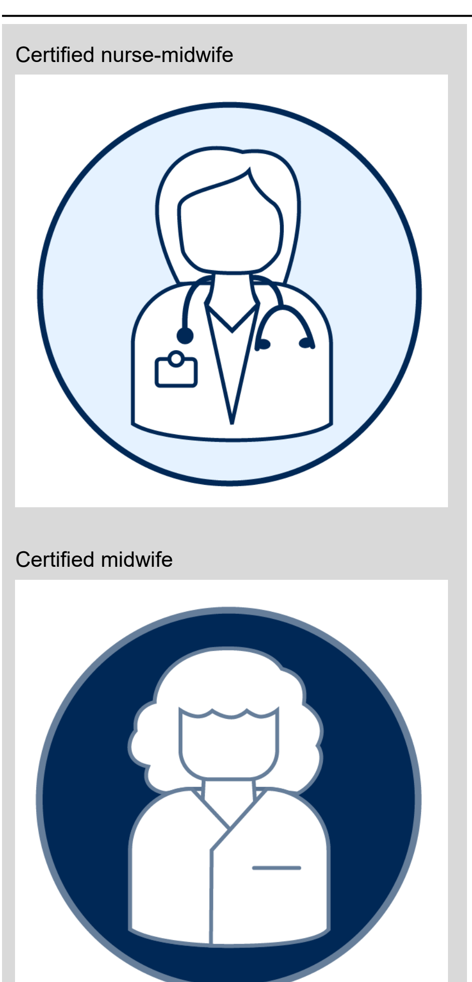
Students in certified professional midwifery programs. The number of students enrolled in certified professional midwifery education programs decreased in 2019 and then increased in 2020 and 2021. Overall, from 2018 through 2021, the increase was 10.1 percent.[41] In 2021, there were 853 students enrolled in these programs. According to an official from the Midwifery Education Accreditation Council, as of January 2023, there were 11 certified professional midwifery education programs. The official also said that race and ethnicity information was not available on students of certified professional midwifery education programs.[42]

Graduates of Midwifery Education Programs

In recent years, the number of graduates of certified nurse-midwifery and certified midwifery education programs generally increased. In contrast, the number of graduates of certified professional midwifery education programs decreased.

[41]These data are from the Midwifery Education Accreditation Council, which is the organization that accredits midwifery education programs for students seeking to become certified professional midwives. These data were not available for years earlier than 2018, and thus we were unable to report on the number of students in these education programs prior to 2018.

[42]The official from the Midwifery Education Accreditation Council said they do not collect demographic information for privacy reasons, as many of the programs have a small number of students, who could be easily identified by their demographic information.



Source: GAO. | GAO-23-105861

Graduates of certified nurse-midwifery and certified midwifery programs. Graduates of these programs increased by 17 percent from 2016 through 2021, with a decrease in the number of graduates in 2020. (See table 4.) An official from the Accreditation Commission for Midwifery Education told us that some education programs reported to them that the COVID-19 pandemic affected students' ability to complete program requirements for graduation. The official also told us that students generally take about 2 to 3 years—depending on the type of degree—to complete these education programs.

Table 4: Number of Graduates of Certified Nurse-Midwifery and Certified Midwifery Education Programs, 2016 through 2021

	2016	2017	2018	2019	2020	2021
Graduates of certified nurse-midwifery and certified midwifery programs	654	673	683	763	653	765

Source: GAO analysis of data from the Accreditation Commission for Midwifery Education. | GAO-23-105861

Source: GAO. | GAO-23-105861

Graduates of certified professional midwifery programs. Graduates of these programs decreased by 28.6 percent from 2018 to 2021. In 2018, there were 147 graduates, and in 2021, there were 105 graduates.[43] An official from the Midwifery Education Accreditation Council told us that there were delays in students being able to graduate from their programs due to the COVID-19 pandemic. The official explained, for example, students had a harder time completing their clinical training requirements because some clinical sites stopped taking students, and other sites reduced opportunities for students as a way to maintain social distancing and prevent exposure.

Reported Challenges to Midwifery Education Include Educational Costs and Availability of Clinical Training Placements

The stakeholders we spoke with and the research we reviewed identified several challenges for students in midwifery education programs. These challenges include educational costs, the availability of clinical training opportunities, and racism and a lack of diversity in midwifery programs.

Educational costs of midwifery programs. According to all stakeholders we interviewed and four research studies we reviewed, the costs associated with a midwifery education program can be a challenge for students.[44] One stakeholder from a midwifery accrediting organization said the most common reason students give for not enrolling in or completing midwifery education programs is lack of funding. According to two research studies we reviewed and eight stakeholders we spoke with,

[43]These data were not available for 2019. An official from the Midwifery Education Accreditation Council told us that data on graduates were not available for this year as they were not collected, but data collection resumed in years following 2019.

[44]See appendix I for details about the stakeholders we interviewed. Allen et al., *Black Midwifery Workforce,* 7-8; Kristin J. Effland et al., "Incorporating an Equity Agenda into Health Professions Education and Training to Build a More Representative Workforce," *Journal of Midwifery & Women's Health,* vol. 65 (2020): 157. https://doi.org/10.1111/jmwh.13070; Renee Mehra et al., "Racism is a Motivator and a Barrier for People of Color Aspiring to Become Midwives in the United States," *Health Services Research* (2022): 6-8. https://doi.org/10.1111/1475-6773.14037; Susan A. Krause, Susan A. DeJoy, and Heather Z. Sankey, "Innovations in Midwifery Education: The Academic Medical Center Model," *Journal of Midwifery & Women's Health*, vol. 64, no. 5 (2019): 650. https://doi.org/10.1111/jmwh.12989.

midwifery students often have to balance living expenses, such as child care, with the cost of tuition.[45]

Additionally, six stakeholders and two research studies noted the financial burdens can particularly affect students from underrepresented groups.[46] For example, one survey of underrepresented people who were interested in becoming midwives found that 58 percent of respondents reported that the cost of tuition was a barrier to becoming a midwife.[47]

Limited availability of preceptors and clinical training sites. Stakeholders we interviewed and research we reviewed indicated challenges for midwifery students in finding clinical sites or preceptors—practicing midwives who agree to supervise and teach students at clinical sites—to meet their educational requirements. For example:

- Thirteen stakeholders we spoke with and five research reports on midwifery education and workforce said there is an insufficient number of preceptors or clinical sites for midwifery students.[48] This limitation can adversely affect students enrolled in midwifery education programs. For instance, one director of a midwifery education program said enrolled students could wait up to a year for a clinical spot; another stakeholder said waiting for clinical spots can delay midwifery students' graduation. A report from a midwifery professional association found that delaying graduation can cause

[45]See Allen et al., *Black Midwifery Workforce,* 8, 22; Mehra et al., "Racism is a Motivator and a Barrier," 6, 8.

[46]See Effland et al., "Incorporating an Equity Agenda," 157; Mehra et al., "Racism is a Motivator and a Barrier," 6. We use the term "underrepresented" in this report when summarizing statements from multiple stakeholders and research studies that used a variety of terms to describe specific populations. When describing challenges in midwifery education, stakeholders and research reports used the terms "Black," "Indigenous," "students of color," "LGBTQ," "low income," and "marginalized communities," among others.

[47]See Mehra et al., "Racism is a Motivator and a Barrier," 6.

[48]See Allen et al., *Black Midwifery Workforce,* 8; American College of Nurse-Midwives, *Midwifery Education Trends Report* (2015), 5, 8, accessed June 30, 2022, http://www.midwife.org/Trends-in-Midwifery-Education; Krause, DeJoy, and Sankey, "Innovations in Midwifery Education," 650; Mehra et al., "Racism is a Motivator and a Barrier," 7; National Partnership for Women and Families, *Community Birth Settings*, 15.

financial hardship for students because they have to pay for additional semesters of school.[49]

- Two stakeholders and one research study noted that the lack of compensation for preceptors may contribute to the limited number of clinical training sites.[50] These stakeholders and reports said many preceptors are not paid to train students. A 2012 survey of members of a midwifery professional association found that 62 percent of preceptors were not paid for training midwifery students.[51]
- Three stakeholders and two research reports noted that there is limited federal funding to support midwifery preceptors or midwifery students at clinical training sites.[52] HRSA officials identified two nursing education programs they administer that provide some funding for nurse-midwifery training.[53] According to HRSA officials, four certified nurse-midwives received funding under these programs during the academic year 2020-2021.

Racism and lack of diversity. Stakeholders we spoke with and research we reviewed noted students who are underrepresented face additional challenges in midwifery education programs. For example:

[49]See American College of Nurse-Midwives, "Preceptors for Midwifery Clinical Education: A Call to Action in This Unprecedented Time" (Oct. 2020), accessed Jan. 23, 2023, https://www.midwife.org/preceptors-for-midwifery-clinical-education-a-call-to-action-in-this-unprecedented-time.

[50]See American College of Nurse-Midwives, *Midwifery Education Trends Report*, 3.

[51]See Elaine Germano et al., "Factors that Influence Midwives to Serve as Preceptors: An American College of Nurse-Midwives Survey," *Journal of Midwifery & Women's Health,* vol. 59, no. 2 (Apr. 2014): 170. https://doi.org/10.1111/jmwh.12175.

[52]See National Partnership for Women and Families, *Community Birth Settings,* 15; National Partnership for Women and Families, *Midwifery,* 12. The professional association for certified nurse-midwives and certified midwives said that two midwifery education programs receive some federal support for clinical training sites because they are at academic medical centers, hospitals affiliated with a medical school that provide graduate medical education training. A significant amount of funding for graduate medical training comes from federal programs, primarily through HHS.

[53]These programs are the Advanced Nursing Education: Nurse Practitioner Residency Program and the Advanced Nursing Education: Nurse Practitioner Residency Integration Program. According to HRSA officials, these programs have been funded since 2019 and 2020, respectively.

- Five stakeholders and three research studies reported that students can experience racism from fellow students and faculty.[54] Additionally, eight stakeholders and three research studies said a lack of diversity in midwifery education programs can make underrepresented students feel isolated or unsupported.[55] A survey of underrepresented people who were interested in becoming midwives reported that 38 percent of respondents said a lack of midwives with the same racial identity as the respondent was a barrier to entering a midwifery education program.[56]
- Seven stakeholders and three studies noted challenges with preceptors and clinical training sites. For example, six of these stakeholders and one article identified the lack of diversity among preceptors at clinical training sites as a barrier for students.[57] Four stakeholders and one report said students of underrepresented groups have a hard time finding clinical training sites that will accept them. Additionally, three stakeholders and two studies we reviewed said that when underrepresented students do find preceptors, they may be subjected to racism at their clinical sites.[58] One of these studies and two of these stakeholders we spoke with noted that students may feel they have to endure racism at their clinical sites because they have no other options due to the limited number of clinical training opportunities.[59]

[54]See Allen et al., *Black Midwifery Workforce,* 8, 23; Effland et al., "Incorporating an Equity Agenda," 149; Mehra et al., "Racism is a Motivator and a Barrier," 6-8.

[55]See Effland et al., "Incorporating an Equity Agenda," 151; Mehra et al., "Racism is a Motivator and a Barrier," 6; Karline Wilson-Mitchell and Manavi Handa, "Infusing Diversity and Equity into Clinical Teaching: Training the Trainers," *Journal of Midwifery & Women's Health*, vol. 61, no. 6 (2016): 726. https://doi.org/10.1111/jmwh.12548.

[56]See Mehra et al., "Racism is a Motivator and a Barrier," 6.

[57]See Mehra et al., "Racism is a Motivator and a Barrier," 6-7.

[58]See Allen et al., *Black Midwifery Workforce,* 23; Effland et al., "Incorporating an Equity Agenda," 149, 155.

[59]See Allen et al., *Black Midwifery Workforce,* 23.

Some Federal Financial Support Exists for Nurse-Midwifery Students and Certified Nurse-Midwives

Certified nurse-midwife

Source: GAO. | GAO-23-105861

Both HRSA and IHS have programs to provide financial support for a range of health care providers, including certified nurse-midwives. HRSA and IHS provide scholarships for students training to become health care providers, including those enrolled in education programs for certified nurse-midwives.[60] In addition, HRSA and IHS provide loan repayment for providers, including certified nurse-midwives, after they have completed their education and training.

HRSA financial support. Nurse-midwifery students and certified nurse-midwives can receive financial support through HRSA's scholarship and loan repayment programs.[61] Certified midwives, certified professional midwives, and other midwives who are not licensed nurses are not eligible for this support. Scholarship programs provide financial support for tuition to students accepted or enrolled in education programs to become certified nurse-midwives. In exchange, these students commit to working at an eligible health care facility for a minimum of 2 years after graduation. Loan repayment programs provide financial support to repay education loans for certified nurse-midwives who have completed their education program and are working at an eligible facility generally for at least 2 years.

HRSA officials told us that awards to midwifery students and certified nurse-midwives represent about 1 percent of all eligible students and providers who receive awards through these programs. The number of midwifery students and certified nurse-midwife awardees was relatively stable from fiscal years 2016 through 2020. In fiscal year 2021, however, the number of awardees increased 91 percent from 2016. HRSA officials said that the reason for the increase in the number of awardees in 2021 was additional appropriations provided under the American Rescue Plan Act of 2021 for these scholarship and loan repayment programs.[62] As a

[60]We analyzed information on HRSA's and IHS's scholarship and loan repayment programs, which provide funding directly to individuals. We did not include information on other support that HRSA provides to schools. In addition, we did not include financial support that might be available for students and graduates from other federal agencies, such as the Department of Education.

[61]HRSA administers programs that offer loan repayment and scholarships to providers. The National Health Service Corps offers loan repayment and scholarships to clinicians in exchange for providing primary, dental, or mental health care at certain designated clinical sites, and the Nurse Corps provides loan repayment and scholarships to licensed nurses in exchange for working in a critical shortage facility. We included both of these Corps in our analysis.

[62]Pub. L. No. 117-2, §§ 2602, 2603, 135 Stat. 4, 44.

result, HRSA was able to provide financial support to more awardees across a wide range of provider types, including nurse-midwifery students and certified nurse-midwives. In addition, HRSA officials told us that, in fiscal year 2020, HRSA used some of its funding to prioritize scholarship and loan repayment awards specifically for women's health providers, including certified nurse-midwives.

Of the nurse-midwifery students and certified nurse-midwives who received this financial support, the vast majority received support through the loan repayment program rather than the scholarship program. Although the amount of funding that an individual awardee receives can vary, in fiscal year 2021, 346 total nurse-midwifery students and certified nurse-midwives were awarded about $14.75 million in financial support through HRSA's scholarship program or loan repayment program. (See table 5.)

Table 5: Number of Nurse-Midwifery Students and Certified Nurse-Midwife Awardees of HRSA's Scholarship and Loan Repayment Programs, Fiscal Year 2016 to 2021

Number of nurse-midwifery students and certified nurse-midwives	2016	2017	2018	2019	2020	2021
Loan repayment program awardees	176	171	158	187	238	324
Scholarship program awardees	5	8	13	17	18	22
Total	**181**	**179**	**171**	**204**	**256**	**346**
Total funding (in millions)	**$4.82**	**$5.02**	**$6.64**	**$5.19**	**$7.90**	**$14.75**

Source: GAO analysis of data from the Health Resources and Services Administration (HRSA). | GAO-23-105861

Note: Data in this table are from HRSA's National Health Service Corps scholarship and loan repayment programs and Nurse Corps scholarship and loan repayment programs and include the different types of these scholarship and loan repayment programs that may be specific to certain communities or areas, such as rural facilities. Students training to become certified nurse-midwives and certified nurse-midwives are eligible for this support; certified midwives, certified professional midwives, and other midwives are not eligible for this support.

Additional details, including demographic characteristics of midwifery students and certified nurse-midwives who were awarded financial support from HRSA, are in appendix IV.

IHS financial support. IHS offers financial support to students and heath care providers through scholarship and loan repayment programs. Certified nurse-midwives are among a wide range of providers who can

receive this financial support.[63] Students who are both enrolled in an education program to become a certified nurse-midwife and a member of a federally recognized tribe can apply for financial support through IHS's Health Professions scholarship program. Certified nurse-midwives are eligible for IHS's loan repayment program regardless of whether they have a tribal affiliation. Individuals who receive financial support through IHS's Health Professions scholarship and loan repayment programs must commit to working at an eligible IHS or tribal facility for a certain amount of time—for at least 2 years—in exchange for the financial support.

IHS data show that for academic years 2016 through 2021, a total of nine midwifery students received about $400,200 in financial support through IHS's scholarship program. During fiscal years 2016 through 2021, a total of 23 certified nurse-midwives received about $872,200 in financial support through the loan repayment program. IHS officials told us that awards to midwifery students make up about 1.1 percent of students that were awarded support through IHS's scholarship program in the 2022-2023 academic year, and certified nurse-midwives represent about 0.3 percent of all eligible providers who received awards through IHS's loan repayment program in fiscal year 2022.

Reported Challenges to Measuring the Quality of Maternal Care, Including Midwifery Care

Quality measure researchers and federal officials we interviewed noted certain challenges to measuring the quality of maternal care in general, including attributing care to a specific provider and a lack of patient experience measures. They said that these challenges also arise when trying to assess the quality of midwifery care specifically. In addition, some of these challenges may be inherent to maternal care being provided over many months from multiple providers. They also stated that solutions to better measure maternal health outcomes may require changes to how data are collected, which could be expensive or burdensome.

Attributing the quality of care to a specific provider. A pregnant person will typically interact with a number of different providers, who may include midwives, during pregnancy and delivery as maternal care spans

[63]All other types of midwives—certified midwives, certified professional midwives, and others—are not eligible for this IHS support. We included federal financial support available from IHS for students or graduates of midwifery education programs in our analysis. We did not include financial support that might be available for students and graduates from other federal agencies, such as the Department of Education.

Characteristics of Quality Measures

Data Sources

Quality measures rely on different types of data sources. For example, birth certificate data are used for certain quality measures, such as "low birthweight." Other sources of data include patient medical records and claims data. Claims data are from the documentation that providers submit to receive payment for their services.

Types of Quality Measures

Each quality measure focuses on different aspects of care, such as processes, health outcomes, or patient experiences.

- Process measures show whether steps or processes of care that have been proven to benefit patients are followed correctly, such as the percentage of pregnant people who receive prenatal care beginning in the first trimester.
- Outcome measures report the actual results of care, such as the percent of births with birthweight less than 2500 grams.
- Patient experience measures record perspectives from the person receiving the care and are often obtained through surveys.

Source: GAO analysis of information from the National Quality Forum, Centers for Medicare and Medicaid Services, and GAO. | GAO-23-105861

across many months. For example, midwives may work in conjunction with other providers, such as obstetricians, to provide care to a pregnant person. As a result, attributing maternal or birth outcomes to any one type of provider, such as a midwife, may not be appropriate. According to one researcher, since maternal care is often delivered by provider teams, the quality measure is not assessing any single provider, but measuring the quality of the team providing the care.

Even in situations where comparisons across providers might be appropriate, data for certain quality measures are collected in a way that does not distinguish between individual providers or type of provider, such as midwives. For example, CMS officials said that they are not able to stratify by provider type the state-provided data that are used for certain Medicaid quality measures.[64] Although states can obtain data by specific providers, states currently only submit to CMS their state-wide total numbers for the year instead of more detailed data. CMS officials also noted the need to balance what data can be reported by states with what data might be too burdensome for states to report. Therefore, CMS cannot address or measure the quality of individual providers or provider types from the Medicaid data states currently submit.

According to eight researchers and agency officials, there are also challenges to identifying care provided by midwives using measures based on birth certificate data, which CDC collects from the states.[65] CDC documentation notes that the number of births attended by certified nurse-midwives or certified midwives is understated due to challenges in correctly identifying the birth attendant when more than one provider is present at the birth. According to this documentation, anecdotal evidence suggests that some hospitals require that a physician be reported as the attendant even when no physician is physically present at midwife-attended births.

[64]CMS identified, as part of a broader set of quality measures for voluntary reporting by state Medicaid and Children's Health Insurance Program agencies, nine measures to support CMS's maternal health efforts. CMS uses these measures to evaluate progress towards the improvement of maternal health within Medicaid and Children's Health Insurance Program. Although the reporting of this data is currently voluntary, beginning in fiscal year 2024, states are required to report certain Medicaid quality measures. See Bipartisan Budget Act of 2018, Pub. L. No. 115-123, § 50102, 132 Stat. 64, 175.

[65]Birth certificate data do not distinguish between certified professional midwives and midwives without certification, but group these midwives into one category of "other midwives." This means that the data cannot be used to distinguish the quality of care across the different types of midwives.

CDC officials said that they have not conducted any work to determine the degree of potential undercounting in this area. Moreover, CDC officials said that changes to the way birth certificate data are collected to identify the specific type of health care provider who attended a birth or provided a service would require consensus among the states and would likely be very expensive.

Lack of patient experience measures. Seven researchers we spoke with noted that maternal care quality measures do not include patient experience measures related to maternal care in general. Two of these researchers noted that patient experience measures do not include midwifery care in particular. These could include measures of whether the pregnant person reported being treated with dignity and respect.

A 2021 report by the National Quality Forum found a lack of patient experience measures throughout the maternal care experience, specifically in capturing patient experiences of racism, discrimination, unequal treatment, and implicit bias. According to this report, patient experiences of care represent critical data that will facilitate better understanding of care delivered—or not delivered—to improve outcomes. In particular, the report stated that patient experience measures could be one strategy to understand racial and ethnic disparities in maternal health outcomes.

Federal agencies collect data for certain quality measures on patient experience, but these measures are limited in their ability to capture patient experience on maternal care generally, and midwifery care specifically. Examples include:

- The different versions of the Consumer Assessment of Healthcare Providers and Systems surveys do not distinguish between maternal and other types of care. As a result, they currently cannot be used to assess the experiences of maternal care specifically. AHRQ oversees the development of these surveys, which are used to obtain patient experiences from a range of health care providers, including hospitals and physicians. AHRQ officials noted that they are examining the possibility of adding general maternal care questions to the Consumer Assessment of Healthcare Providers and Systems surveys.
- The Pregnancy Risk Assessment Monitoring System survey, which CDC oversees, collects information on maternal experiences. However, questions cannot be tied to specific providers or types of providers, such as midwives. This survey asks people about smoking, domestic violence, and contraception usage postpartum, but it does

not ask questions related to whether people were treated with respect during their care. CDC officials said that they are updating some of the questions on this survey, including whether care during pregnancy was respectful, but the questions will not be specific to provider type.

- The nine Medicaid and the Children's Health Insurance Program measures related to maternal health that CMS tracks do not include a patient experience measure.[66] CMS officials noted that they are interested in adding patient experience measures for maternal care. They also said the process for adding new measures depends on a workgroup made up of Medicaid and the Children's Health Insurance Program stakeholders and quality measure experts.

Other challenges to measuring quality. One way quality measures can be used is to compare care across providers or hospitals. From these measures, pregnant people may be able to assess where to obtain care and from whom. However, researchers noted challenges to measuring the quality of care across providers and birth settings. For example:

- **Challenges comparing midwifery care with care delivered by other providers.** Four researchers we spoke with noted that comparing the quality of midwifery care with other forms of care, particularly care provided by physicians, may be misleading due to differences in the populations of pregnant people those respective providers treat. One researcher explained that midwives generally see people who are likely to have low-risk births, and pregnant people who are at a higher risk for adverse outcomes may be transferred to an obstetrician. As a result, comparing outcome measures across different provider types may not be appropriate given the potential differences in the patient populations.
- **Limited measurement of birth outcomes outside of a hospital setting.** Certain midwives attend births mostly in freestanding birth centers and home settings. Obtaining information on these births may be more difficult, since some maternal quality measures focus exclusively on hospital care. For instance, the measures "exclusive breast milk feeding" and "unexpected complications in term newborns"

[66]The Children's Health Insurance Program is a public insurance program established in 1997 that finances health care for over 9 million low-income children whose household incomes do not qualify them for Medicaid. States have flexibility in structuring their Children's Health Insurance Programs under broad federal requirements, and their income eligibility limits vary.

do not include babies not born in hospitals.[67] The National Quality Forum report found that births outside of a hospital setting, such as births in freestanding birth centers or home births, are not easily monitored or measured because they are not easily captured by existing data.

Agency Comments

We provided a draft of this report to the Department of Health and Human Services for review and comment. HHS provided technical comments, which we incorporated as appropriate.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the Secretary of Health and Human Services and appropriate congressional committees. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or farbj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs are on the last page of this report. GAO staff who made major contributions to this report are listed in appendix V.

Jessica Farb
Managing Director, Health Care

[67]Exclusive breast milk feeding is defined as the number of newborns exclusively fed breast milk during the newborn's entire hospitalization. Unexpected complications in term newborns is defined as the percent of infants with unexpected newborn complications (e.g., neonatal death, severe respiratory complications) among full-term newborns with no preexisting conditions.

List of Requesters

The Honorable Jamie Raskin
Ranking Member
Committee on Oversight and Accountability
House of Representatives

The Honorable Alma S. Adams, Ph.D.
House of Representatives

The Honorable Shontel Brown
House of Representatives

The Honorable Cori Bush
House of Representatives

The Honorable Jasmine Crockett
House of Representatives

The Honorable Robin L. Kelly
House of Representatives

The Honorable Summer Lee
House of Representatives

The Honorable Gwen Moore
House of Representatives

The Honorable Ayanna Pressley
House of Representatives

The Honorable Lauren Underwood
House of Representatives

Appendix I: Details on Methodology and Data Sources

This appendix provides additional details on the methodology and data sources we used. To describe information on midwife-attended births and the midwifery workforce, and any challenges to obtaining and providing midwifery care, we analyzed several data sources, interviewed provider groups and individual providers, and reviewed articles. Table 6 provides additional details on the data sources, years of data analyzed, and key variables that we used for these analyses. To assess the reliability of the data we analyzed, we reviewed data documentation and interviewed relevant officials about the data and determined that the data were reliable for our purposes.

Table 6: Data Sources, Years, and Key Variables or Analysis Conducted on Midwife-Attended Births and the Midwifery Workforce

Analysis	Data source	Years of data analyzed	Key variables or analysis conducted
Trends and characteristics of births attended by midwives	Centers for Disease Control and Prevention National Center for Health Statistics' National Vital Statistics System	2016 through 2021	Number and percentage of births by type of provider Race and ethnicity of the pregnant person, birth setting, and payer of birth by type of midwife
Trends and characteristics of midwives	Publicly available reports from the American Midwifery Certification Board—the organization that certifies certified nurse-midwives and certified midwives[a]	2019 through 2021	Number of and changes over time in certified nurse-midwives and certified midwives Race and ethnicity of these midwives
	Data from the U.S. Census Bureau's American Community Survey	2019 Projected estimates for 2020 and 2021[b]	Comparison of demographic characteristics of midwives with estimates of the distribution of the general population[c]
	Publicly available reports from the North American Registry of Midwives[d]	2019 through 2021	Number of and changes over time in certified professional midwives Demographic information was not available for this type of midwives

Source: GAO analysis of data sources related to midwife-attended births and midwives. | GAO-23-105861

[a]The publicly available reports used were: American Midwifery Certification Board, "2019 Demographic Report" (Aug. 19, 2019), accessed Aug. 3, 2022, https://www.amcbmidwife.org/docs/default-source/reports/demographic-report-201943ccaa1339164404a37c6993684dcd64.pdf?sfvrsn=9dd255e5_2; "2020 Demographic Report" (Aug. 19, 2020), accessed Apr. 25, 2022, https://www.amcbmidwife.org/docs/default-source/reports/demographic-report-2019.pdf?sfvrsn=23f30668_4; "2021 Demographic Report" (Dec. 31, 2021), accessed May 17, 2022, https://www.amcbmidwife.org/docs/default-source/reports/demographic-report-2021.pdf?sfvrsn=cac0b1e8_2.

[b]In 2020, the U.S. Census Bureau implemented changes to the question about race on the 2020 American Community Survey and urged caution when making comparisons of 2020 and 2021 data with those from prior years. Because the American Community Survey 1-year data estimates for 2021 displayed anomalies for certain race and ethnicity categories, they may not be appropriate for an analysis between 2016 and 2021. Instead, for 2020 and 2021 GAO projected race and ethnicity

estimates by adjusting the 2019 population estimates based on the compound average growth rates between 2016 and 2019.

[c]GAO used estimates of the distribution of the U.S. general population for the comparison as this comparison had two primary purposes—comparing the demographics of certified nurse-midwives and certified midwives with other workers and comparing the demographics of these midwives with people who may seek midwifery care. Although some of the people in this group are not of working age or are not of the typical age of people who may give birth, GAO opted to use the general population so as to not exclude people who are not within a specific age range. For example, if GAO only used the U.S. general population older than 18, there may be some people under 18 who may give birth and seek care from a midwife.

[d]The publicly available reports used were: North American Registry of Midwives, "2019 Annual Report," accessed Aug. 5, 2022 ,https://narm.org/pdffiles/2019NARMAnnualReport.pdf; "2020 Annual Report," accessed Aug. 5, 2022, https://narm.org/pdffiles/2020NARMAnnualReport.pdf; "2021 Annual Report," accessed June 21, 2022, https://narm.org/pdffiles/2021NARMAnnualReport.pdf.

To describe information on students and graduates of midwifery education programs, barriers to individuals in these programs, and available federal financial support, we analyzed multiple data sources, interviewed provider groups and individual providers, and reviewed published research studies. Table 7 provides additional details on the data sources, years of data analyzed, and key variables we used for these analyses. To assess the reliability of the data we analyzed, we reviewed data documentation and interviewed relevant officials about the data and determined that the data were reliable for our purposes.

Table 7: Data Sources, Years, and Key Variables or Analysis Conducted on Students and Graduates of Midwifery Education Programs and Available Federal Financial Support

Analysis	Data source	Years of data analyzed	Key variables or analysis conducted
Trends and characteristics of students and graduates of midwifery education programs	Data from the Accreditation Commission for Midwifery Education—the organization that accredits education programs for certified nurse-midwifery and certified midwifery	2016 through 2021	Number of and changes over time in students of this type of midwifery education programs Race and ethnicity of students in this type of midwifery education programs Number of and changes over time in graduates of this type of midwifery education programs
	Data from the U.S. Census Bureau's American Community Survey	2016 through 2019 Projected estimates for 2020 and 2021[a]	Comparison of demographic characteristics of students in certified nurse-midwifery and certified midwifery education programs with the general population[b]

Analysis	Data source	Years of data analyzed	Key variables or analysis conducted
	Data from the Midwifery Education Accreditation Council	2018 through 2021	Number of and changes over time in students of this type of midwifery education programs Number of and changes over time in graduates of this type of midwifery education programs Demographic information was not available for students and graduates of this type of midwifery education programs
Available federal financial support	Data from the Health Resources and Services Administration (HRSA) on certified nurse-midwives who were awarded support from its National Health Service Corps or Nurse Corps scholarship or loan repayment programs	Fiscal year 2016 through 2021	Number of and changes over time in certified nurse-midwives who were awarded support through HRSA's scholarship or loan repayment programs Race and ethnicity of certified nurse-midwives who received this support
	Data from the U.S. Census Bureau's American Community Survey	2016 through 2019 Projected estimates for 2020 and 2021[a]	Comparison of demographic characteristics of certified nurse-midwives who received this support[b]
	Data from the Indian Health Service (IHS) on nurse-midwifery students or certified nurse-midwives who were awarded support from its scholarship or loan repayment programs	Academic year 2016 through 2021 for scholarship program Fiscal year 2016 through 2021 for loan repayment program	Number of nurse-midwifery students or certified nurse-midwives who were awarded support IHS's scholarship or loan repayment programs

Source: GAO analysis of data sources related to midwifery education programs and federal financial support available. | GAO-23-105861

[a]In 2020, the U.S. Census Bureau implemented changes to the question about race on the 2020 American Community Survey and urged caution when making comparisons of 2020 and 2021 data with those from prior years. Because the American Community Survey 1-year data estimates for 2021 displayed anomalies for certain race and ethnicity categories, they may not be appropriate for an analysis between 2016 and 2021. Instead, for 2020 and 2021 GAO projected race and ethnicity estimates by adjusting the 2019 population estimates based on the compound average growth rates between 2016 and 2019.

[b]GAO used estimates of the U.S. general population for comparison with students of midwifery education programs and certified nurse-midwives who received support through HRSA's scholarship and loan repayment programs. GAO used the U.S. general population for other comparisons of demographic characteristics and wanted to ensure consistency across analyses.

To describe any challenges to obtaining and providing midwifery care, as well as to obtaining midwifery education, we conducted semi-structured interviews with 15 stakeholders with expertise in midwifery care and education and reviewed selected research. We identified the stakeholders by researching the organizations that represent midwifery providers, accredit midwives, or accredit midwifery education programs. We also identified stakeholders to interview by asking for recommendations from other stakeholders we interviewed. The stakeholders included officials

from two midwifery education accrediting organizations, one midwifery credentialing organization, two midwifery professional associations, three maternal health or midwife advocacy groups, three midwives, and four individuals at academic institutions, including specifically within a midwifery education program. (See table 8.)

Table 8: Stakeholders for Semi-structured Interviews, by Category

Type of stakeholder	Stakeholder description
Accrediting organization	Accreditation Commission for Midwifery Education
	Midwifery Education Accreditation Council
Credentialing organization	North American Registry of Midwives
Professional association	American College of Nurse-Midwives
	National Association of Certified Professional Midwives
Maternal health or midwife advocacy group	National Black Midwives Alliance
	National Partnership for Women and Families
	March for Moms
Midwife	Certified nurse-midwife and director of a birth center
	Certified nurse-midwife who provides care within the Indian Health Service
	Certified professional midwife and director of a perinatal family support organization
Individuals at academic institutions	Professor of nursing
	Professor of sociology
	Director of midwifery education program (2)

Source: GAO stakeholder interviews. | GAO-23-105861

As part of these interviews, we asked stakeholders about any challenges related to midwifery care and education. Specifically, we asked about any challenges individuals face when seeking midwifery care, any challenges midwives face when providing care, and any challenges that may be significant for underrepresented groups. We also asked about any challenges to midwifery education, including any challenges that individuals face in enrolling in or completing midwifery education programs, any challenges that midwifery education programs face in educating students, and any challenges that may be significant for underrepresented groups. The views of the stakeholders are not generalizable.

In addition, to describe any challenges to obtaining and providing midwifery care, as well as to obtaining midwifery education, we identified selected research by conducting internet searches, identifying research cited in other work, and reviewing research recommended by agency

officials or stakeholders. Our review included approximately 40 published research reports that covered topics including the midwifery workforce, midwifery education programs, maternal health outcomes, and birth settings. The materials we reviewed included peer-reviewed articles, policy briefs, and nonprofit publications. These reports were published from May 2013 through October 2022.

Appendix II: Selected Maternal Care Quality Measures

This appendix provides descriptions of selected maternal care quality measures from several federal agencies and the National Quality Forum maintain.[1]

The Centers for Medicare & Medicaid Services identified a core set of nine quality measures for voluntary reporting by state Medicaid and Children's Health Insurance Program agencies to support its efforts to measure and evaluate progress toward improvement of maternal and perinatal health in Medicaid. (See table 9.)

Table 9: CMS Maternal and Perinatal Measures for Medicaid and Children's Health Insurance Program, 2022

Measure	Description
Live births weighing less than 2,500 grams	Percentage of births with birthweight less than 2,500 grams
Well-child visits in the first 30 months of life	Percentage of children 30 months old who had at least two well-child visits with a primary care physician in the last 15 months
Prenatal and postpartum care: timeliness of prenatal care	Percentage of deliveries that received a prenatal care visit in the first trimester or within 42 days of enrollment
Prenatal and postpartum care: postpartum care	Percentage of deliveries that had a postpartum visit on or between 21 and 56 days after delivery
Contraceptive care – postpartum women ages 15 to 20	Percentage of women ages 15 through 20 who had a live birth, the percentage that is provided an effective method of contraception within 3 and 60 days of delivery
Contraceptive care – postpartum women ages 21 to 44	Percentage of women ages 21 through 44 who had a live birth, the percentage that is provided an effective method of contraception within 3 and 60 days of delivery
Contraceptive care – all women ages 15 to 20	Percentage of women ages 15 through 20 at risk of unintended pregnancy who are provided an effective method of contraception
Contraceptive care – all women ages 21 to 44	Percentage of women ages 21 through 44 at risk of unintended pregnancy who are provided an effective method of contraception
Low-risk cesarean delivery	Percent of cesarean deliveries among low-risk first births

Source: Centers for Medicare & Medicaid Services (CMS), National Quality Forum, and National Committee for Quality Assurance. | GAO-23-105861

The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ program maintains quality measures, which are standardized, evidence-based measures of health care quality that can be used with administrative data found in hospital discharge files, according to AHRQ officials. As of October 2022, AHRQ maintains six quality measures regarding maternal health. (See table 10.) In addition to these measures, AHRQ publishes the National Healthcare Quality and

[1]National Quality Forum, which federal agencies contract with, is a nonprofit organization that evaluates and endorses quality measures.

Disparities report that includes data on maternal morbidity, preeclampsia, and severe postpartum hemorrhage.[2]

Table 10: AHRQ Maternal Health Quality Measures

Measure	Description
Cesarean delivery rate, uncomplicated	Measures the rate of cesarean deliveries among all people with uncomplicated deliveries
Vaginal birth after cesarean delivery rate, uncomplicated	Measures the rate of vaginal deliveries that occur among people with prior cesarean who had an uncomplicated delivery
Primary cesarean delivery rate, uncomplicated	Measures the rate of first-time cesarean deliveries among all people with uncomplicated deliveries
Obstetric trauma rate – vaginal delivery with instrument	Measures the rate of third and fourth degree obstetric injuries among people who underwent instrument-assisted delivery, such as with forceps[a]
Obstetric trauma rate – vaginal delivery without instrument	Measures the rate of third and fourth degree obstetric injuries among people who underwent delivery without instrument assistance[a]
Neonatal blood stream infection rate	Measures the rate of health care-associated bloodstream infections that occur among newborns

Source: Agency for Healthcare Research and Quality (AHRQ), Quality Indicators™. | GAO-23-105861

[a]Third degree vaginal tears are those in which tears extend into the muscle that surround the anal sphincter; fourth degree vaginal tears are those that extend through the anal sphincter. Both typically require repair in an operating room setting under anesthesia and take weeks to heal. Both may result in long-term consequences, including incontinence and painful intercourse.

The Centers for Disease Control and Prevention (CDC) collects data from states and territories as part of the National Vital Statistics System, the most complete source of data on births and deaths in the U.S., according to CDC. CDC uses the National Vital Statistics System to track maternal and infant health measures. (See table 11.)

Table 11: CDC Selected Maternal and Infant Health Measures from National Vital Statistics Systems

Measure	Description
Early prenatal care	Percentage of pregnant women who receive prenatal care beginning in the first trimester
Smoking – pregnancy	Percent of women who smoke during pregnancy
Low-risk cesarean deliveries	Percent of cesarean deliveries among low-risk first births
Low birthweight	Percentage of live births weighing less than 2,500 grams
Maternal mortality rate	Maternal deaths (during and up to 42 days postpartum) per 100,000 live births

Source: Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, and National Quality Forum. | GAO-23-105861

[2]Preeclampsia is a complication of pregnancy in which a person has high blood pressure and other findings, including headaches, abdominal pain, and abnormal blood tests.

The National Quality Forum's Perinatal and Women's Health Standing Committee oversees a portfolio of measures used to advance the accountability and quality of perinatal and women's health services. As of August 2022, there were 13 measures within the perinatal and women's health portfolio. (See table 12.)

Table 12: National Quality Forum Measures within the Perinatal and Women's Health Standing Committee Portfolio

Measure	Description
Chlamydia screening in women	Percentage of women 16–24 years of age who were identified as sexually active and who had at least one test for chlamydia during the measurement year
Elective delivery	Patients with elective vaginal deliveries or elective cesarean births at >= 37 and < 39 weeks of gestation completed
Incidence of episiotomy	Percentage of vaginal deliveries during which an episiotomy is performed
Cesarean birth	Number of low-risk babies delivered by cesarean birth
Exclusive breast milk feeding	Number of newborns exclusively fed breast milk during the newborn's entire hospitalization
Unexpected complications in term newborns	Percent of infants with unexpected newborn complications (e.g. neonatal death, severe respiratory complications) among full term newborns with no preexisting conditions
Low birthweight	Percentage of births with birthweight less than 2,500 grams
Contraceptive care – postpartum	Percent of women ages 15 through 44 who had a live birth and provided a moderately or most effective method of contraception or a long-acting reversible method of contraception
Contraceptive care – most and moderately effective methods	Percent of women ages 15 through 44 at risk of unintended pregnancy who are provided a moderately or most effective method of contraception
Contraceptive care – access to long-acting reversible method of contraception	Percentage of women ages 15 through 44 at risk of unintended pregnancy who are provided a long-acting reversible method of contraception
Patient-centered contraceptive counseling	Percent of patients who report the highest possible score of patient experience in their contraceptive counseling with a health care provider

Source: National Quality Forum. | GAO-23-105861

Note: The National Quality Forum has 13 measures in their perinatal and women's health portfolio. The measures elective delivery and exclusive breast milk feeding both have separate electronic measures, which are included as part of these 13 measures.

Appendix III: Additional Details on the Percentage of Midwife-Attended Births by State, 2021

This appendix provides additional details on the number and percentage of midwife-attended births across the states and the District of Columbia for 2021.

Table 13: Number and Percentage of Midwife-Attended Births by State, 2021

State	Number of midwife-attended births	Number of births with known provider	Percentage of midwife-attended births
Alabama	1,381	58,054	2.4%
Alaska	2,988	9,366	31.9%
Arizona	10,010	77,909	12.8%
Arkansas	392	35,959	1.1%
California	57,350	420,055	13.7%
Colorado	9,979	62,928	15.9%
Connecticut	4,234	35,669	11.9%
Delaware	2,186	10,482	20.9%
District of Columbia	1,132	8,659	13.1%
Florida	32,116	216,236	14.9%
Georgia	20,832	124,053	16.8%
Hawaii	1,596	15,555	10.3%
Idaho	3,472	22,359	15.5%
Illinois	12,217	132,156	9.2%
Indiana	6,656	79,805	8.3%
Iowa	4,752	36,835	12.9%
Kansas	2,303	34,705	6.6%
Kentucky	5,686	52,214	10.9%
Louisiana	2,061	57,363	3.6%
Maine	2,542	12,003	21.2%
Maryland	8,601	68,215	12.6%
Massachusetts	12,347	69,120	17.9%
Michigan	12,056	104,965	11.5%
Minnesota	9,990	64,347	15.5%
Mississippi	847	35,155	2.4%
Missouri	4,959	69,451	7.1%
Montana	1,660	11,231	14.8%
Nebraska	1,909	24,602	7.8%
Nevada	2,000	33,678	5.9%
New Hampshire	3,333	12,622	26.4%

State	Number of midwife-attended births	Number of births with known provider	Percentage of midwife-attended births
New Jersey	10,283	101,479	10.1%
New Mexico	5,707	21,391	26.7%
New York	23,127	210,570	11.0%
North Carolina	18,485	120,079	15.4%
North Dakota	642	10,065[a]	6.4%
Ohio	13,777	129,770	10.6%
Oklahoma	2,369	48,381	4.9%
Oregon	9,772	40,912	23.9%
Pennsylvania	23,639	132,596	17.8%
Rhode Island	2,034	10,456	19.5%
South Carolina	4,092	57,161	7.2%
South Dakota	1,101[a]	11,361[a]	9.7%
Tennessee	8,982	81,715	11.0%
Texas	19,745	373,529	5.3%
Utah	6,816	46,708	14.6%
Vermont	1,599	5,384	29.7%
Virginia	15,090	95,810	15.7%
Washington	13,596	83,762	16.2%
West Virginia	2,486	17,139	14.5%
Wisconsin	8,322	61,778	13.5%
Wyoming	720	6,235	11.5%

Source: GAO analysis of Centers for Disease Control and Prevention (CDC), National Center for Health Statistics data. | GAO-23-105861

Note: State is the state of maternal residence. GAO only included births where the provider was known. Births in which the provider was unknown ranged from 0 percent to 0.4 percent of total births by state. Margins of error at the 95 percent confidence level for the percentage of midwife-attended births ranged from 0.07 to 1.22 percentage points by state. Midwife-attended births includes births by certified nurse-midwives, certified midwives, certified professional midwives, noncertified midwives, and advanced practice registered nurses.

[a]Data for North Dakota and South Dakota differ slightly from CDC's official numbers because GAO obtained data from CDC WONDER, which is publicly available and suppresses counts less than 10 to protect personal privacy. As such, differences between CDC's official numbers and CDC WONDER data are small and do not substantially affect the findings.

Appendix IV: Additional Details on Federal Financial Support from the Health Resources and Services Administration

This appendix provides additional details on federal financial support from the Health Resources and Services Administration's scholarship and loan repayment programs, including details on demographic characteristics of nurse-midwifery students and certified nurse-midwives who received support.

Table 14 provides details on the percent of applicants who were awarded financial support in these programs. Table 15 provides details on awardees by race compared with the estimates of the U.S. general population. Table 16 provides details on awardees by ethnicity compared with estimates of the U.S. general population.

Table 14: Percentage of All Certified Nurse-Midwives Who Applied and Were Awarded Financial Support through the HRSA Scholarship or Loan Repayment Programs, Fiscal Years 2016 through 2021

	2016	2017	2018	2019	2020	2021
Percent of all certified nurse-midwife applicants who were awarded a HRSA scholarship or loan repayment	23.8%	20.9%	26.2%	25.9%	37.4%	58.1%

Source: GAO analysis of the Health Services and Resources Administration (HRSA) data. | GAO-23-105861

Note: These data are from HRSA's applicant data and are for all certified nurse-midwives who applied for one of HRSA's National Health Service Corps and Nurse Corps scholarship and loan repayment programs.

Table 15: Number and Percent of Certified Nurse-Midwife Awardees of HRSA Scholarship and Loan Repayment Programs by Race Compared with Estimates of the U.S. General Population, Fiscal Years 2016 through 2021

	American Indian or Alaska Native	Asian	Black or African American	Native Hawaiian or Other Pacific Islander	White	Multiple races	Other race or race not specified or not disclosed	Total
2016								
Number of awardees	0	4	27	0	132	8	10	**181**
Percentage of awardees	0.0%	2.2%	14.9%	0.0%	72.9%	4.4%	5.5%	**100.0%**
Estimated percentage of U.S. general population	0.8%	5.4%	12.7%	0.2%	72.6%	3.2%	5.1%	**100.0%**
2017								
Number of awardees	1	1	22	0	141	8	6	**179**
Percentage of awardees	0.6%	0.6%	12.3%	0.0%	78.8%	4.5%	3.4%	**100.0%**

	American Indian or Alaska Native	Asian	Black or African American	Native Hawaiian or Other Pacific Islander	White	Multiple races	Other race or race not specified or not disclosed	Total
Estimated percentage of U.S. general population	0.8%	5.6%	12.7%	0.2%	72.3%	3.3%	5.1%	**100.0%**
2018								
Number of awardees	1	0	20	0	139	7	4	**171**
Percentage of awardees	0.6%	0.0%	11.7%	0.0%	81.3%	4.1%	2.3%	**100.0%**
Estimated percentage of U.S. general population	0.9%	5.6%	12.7%	0.2%	72.2%	3.5%	5.0%	**100.0%**
2019								
Number of awardees	1	1	27	0	148	14	13	**204**
Percentage of awardees	0.5%	0.5%	13.2%	0.0%	72.6%	6.9%	6.4%	**100.0%**
Estimated percentage of U.S. general population	0.9%	5.7%	12.8%	0.2%	72.0%	3.5%	5.0%	**100.0%**
2020								
Number of awardees	0	4	34	0	182	17	19	**256**
Percentage of awardees	0.0%	1.6%	13.3%	0.0%	71.1%	6.6%	7.4%	**100.0%**
Estimated percentage of U.S. general population	0.9%	5.8%	12.8%	0.2%	71.9%	3.5%	5.0%	**100.0%**
2021								
Number of awardees	2	8	42	0	253	17	24	**346**
Percentage of awardees	0.6%	2.3%	12.1%	0.0%	73.1%	4.9%	6.9%	**100.0%**
Estimated percentage of U.S. general population	0.9%	5.9%	12.9%	0.2%	71.7%	3.6%	4.9%	**100.0%**

Source: GAO analysis of Health Resources and Services Administration (HRSA) data and the Census Bureau's American Community Survey data. | GAO-23-105861

Notes: Numbers do not sum to 100 due to rounding.

The data on numbers and percentages of certified nurse-midwife awardees are for HRSA's National Health Service Corps and Nurse Corps scholarship and loan repayment programs. These data are for fiscal years 2016 to 2021. In 2020, the U.S. Census Bureau implemented changes to the question about race on the 2020 American Community Survey and urged caution when making comparisons of 2020 and 2021 data with those from prior years. Because the American Community Survey 1-year data estimates for 2021 displayed anomalies for certain race and ethnicity categories, they may not be appropriate for an analysis between 2016 and 2021. Instead, for 2020 and 2021, GAO projected race and ethnicity estimates by adjusting the 2019 population estimates based on the compound average growth rates between 2016 and 2019.

Table 16: Number and Percent of Certified Nurse-Midwife Awardees of HRSA Scholarship and Loan Repayment Programs by Ethnicity Compared with Estimates of the U.S. General Population, Fiscal Years 2016 to 2021

	Hispanic or Latino	Not Hispanic or Latino	Ethnicity not specified or disclosed	Total
2016				
Number of awardees	13	162	6	**181**
Percentage of awardees	7.2%	89.5%	3.3%	**100.0%**
Estimated percentage of the U.S. general population	17.8%	82.2%	—	**100.0%**
2017				
Number of awardees	14	161	4	**179**
Percentage of awardees	7.8%	89.9%	2.2%	**100.0%**
Estimated percentage of the U.S. general population	18.1%	81.9%	—	**100.0%**
2018				
Number of awardees	15	153	3	**171**
Percentage of awardees	8.8%	89.5%	1.8%	**100.0%**
Estimated percentage of the U.S. general population	18.3%	81.7%	—	**100.0%**
2019				
Number of awardees	18	165	21	**204**
Percentage of awardees	8.8%	80.9%	10.3%	**100.0%**
Estimated percentage of the U.S. general population	18.4%	81.6%	—	**100.0%**
2020				
Number of awardees	23	208	25	**256**
Percentage of awardees	9.0%	81.3%	9.8%	**100.0%**
Estimated percentage of the U.S. general population	18.7%	81.4%	—	**100.0%**
2021				
Number of awardees	32	299	15	**346**
Percentage of awardees	9.3%	86.4%	4.3%	**100.0%**
Estimated percentage of the U.S. general population	18.9%	81.1%	—	**100.0%**

Source: GAO analysis of Health Resources and Services Administration (HRSA) data and the Census Bureau's American Community Survey data. | GAO-23-105861

Notes: Numbers do not sum to 100 due to rounding.

The data on numbers and percentages of certified nurse-midwife awardees are for HRSA's National Health Service Corps and Nurse Corps scholarship and loan repayment programs. These data are for fiscal years 2016 to 2021. In 2020, the U.S. Census Bureau implemented changes to the question about race on the 2020 American Community Survey and urged caution when making comparisons of 2020 and 2021 data with those from prior years. Because the American Community Survey 1-year data estimates for 2021 displayed anomalies for certain race and ethnicity categories, they may not be appropriate for an analysis between 2016 and 2021. Instead, for 2020 and 2021. GAO projected race and ethnicity estimates by adjusting the 2019 population estimates based on the compound average growth rates between 2016 and 2019.

Appendix V: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

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