

TRENDS IN THE SUPPLY AND DISTRIBUTION OF OBSTETRIC CARE IN NORTH CAROLINA, 1998

Overview

This fact sheet examines the supply and distribution of health care professionals who provided obstetric care¹ in North Carolina in 1998. The demographic and practice characteristics of active physicians and non-physician practitioners who delivered obstetric care in that year are described using data from the North Carolina Board of Medical Examiners, the North Carolina Board of Nursing, the North Carolina Midwifery Joint Committee, and the North Carolina Center for Nursing.

Background

Research has associated a lack of adequate obstetric care with increased infant mortality, low birth weight and poor maternal and child health outcomes (Nesbitt, 1997, HRSA, 1992). Despite this awareness, persistent inequalities in the availability of obstetric care exist across the nation (Lishner et al., 1999). Various factors affect the availability of obstetric care, particularly in rural areas; these include hospital closures, health professional shortages, prohibitive obstetric malpractice insurance rates, liability concerns and the discontinuation of obstetric services by individual professionals (HRSA, 1992). In response to these pressures, marketplace trends, and state regulatory activity, the face of obstetric care is changing.

While physicians continue to provide the majority of obstetric care in the United States, the number of other health care professionals [certified nurse-midwives (CNMs), nurse-practitioners (NPs) and physician assistants (PAs)], providing obstetric care has increased steadily during the last decade. In 1989, physicians attended 96% of all births nationally; by 1997, this percentage had decreased to 92% of births. During the same period, the percentage of births attended by midwives² increased from 3.7% in 1989 to 7%³ in 1997 (NCHS, 1999, Curtin, 1999). A similar change has occurred in North Carolina. In 1989, 98% of live births were attended by a physician in a hospital setting, and 1.6% were attended by a certified nurse midwife (SCHS, 1989). By 1998, 92% of live births were attended by a physician, and 7.5% were attended by a certified nurse midwife (SCHS, 1998).

Physicians Providing Obstetric Care in North Carolina

In 1998, there were 15,135 licensed physicians actively practicing in North Carolina. Approximately 75% (11,133) of these physicians responded to questions on the North Carolina Medical Board's licensure form about the provision of obstetric services.⁴ Among those who responded, 1,004 (9%) physicians reported that they provided obstetric services (i.e., deliveries and/or prenatal care) in North Carolina, or 1.0 physicians per 10,000 women between 15 and 44 years of age. Of the 1,000 obstetrically active physicians, 78% (783) provided prenatal care and attended births, 16.4% (165) provide prenatal care only, and 5.6% (56) only attended births (**Figure 1**). ▶

Figure 1.
**Physicians Providing Obstetric Care in North Carolina,
1994 and 1998**

	1994*	1998
Attending Births	896	839
Providing Prenatal Care		948
Providing Prenatal Care and Attending Births		783
Attending Births Only		56
Providing Prenatal Care Only		165
Total Obstetrically Active Physicians (attending births and/or providing prenatal care)		1,004

Source: North Carolina Health Professions Data System, 1998

*Note: No question about the provision of prenatal care appeared on the 1994 physician licensure renewal form.

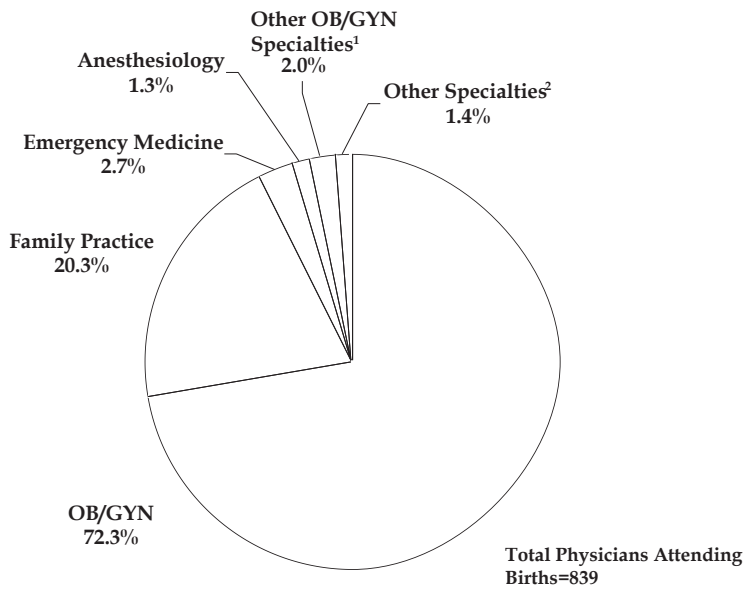
¹Throughout this fact sheet, the term obstetric care is used to include care given during a woman's pregnancy (i.e. prenatal care) and during the birth of her child (i.e. delivery).

²While this percentage includes certified nurse midwives as well as other midwives, all of the growth in midwife-attended births has been for certified nurse midwives. The number of births attended by other midwives actually decreased over the same period.

³There is some evidence that the actual number of births attended by CNMs is higher than the figures reported on birth certificates (Curtin, 1999). This may be partly due to confusion about which practitioner to enter on the birth certificate when more than one is supervising the birth.

⁴Response rates for the data presented in this fact sheet vary from 72-100%. Percentage calculations are based on the number of providers who responded to questions about the provision of obstetric care services.

Figure 2: Specialties of North Carolina Physicians Attending Births, 1998



Despite a 17.6% increase in the overall physician supply in North Carolina since 1994, the number of physicians attending births decreased from 896 in 1994 to 839 in 1998. (See **Figure 1** on previous page.)

Physician Specialty

Seventy-two percent of physicians attending births in 1998 specialized in Obstetrics/Gynecology (OB/GYN), and 20.3% of the physicians specialized in Family Practice (FP). Physicians in Emergency Medicine, Anesthesiology, other OB/GYN specialties⁵ and other specialties⁶ accounted for the remainder (**Figure 2**). ◀

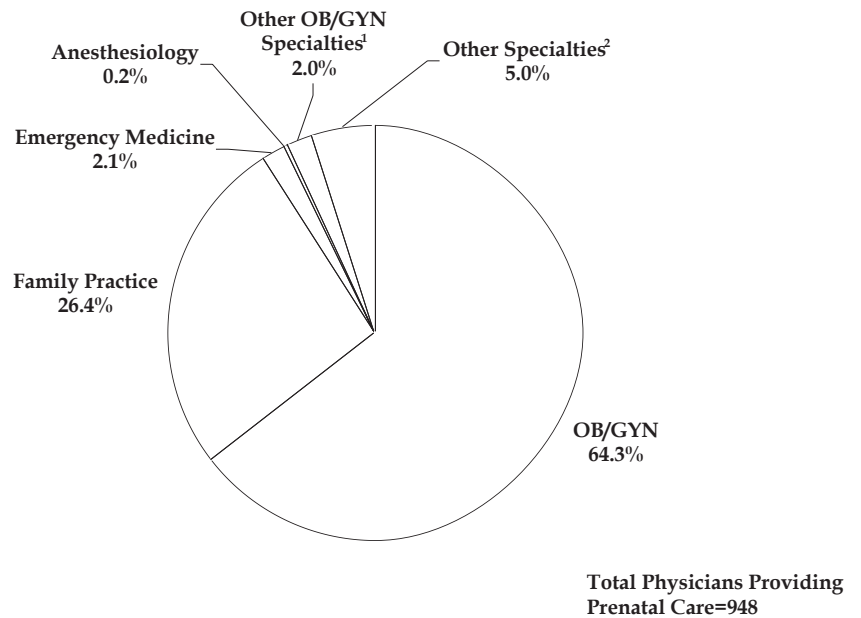
Less than a third (30%) of specialists in Emergency Medicine and 9% of specialists in Anesthesiology who delivered babies also provided prenatal care, suggesting that some deliveries were in emergency situations.

¹Other OB/GYN specialties include maternal and fetal medicine, reproductive endocrinology, neonatal-perinatal medicine, obstetrics, and gynecology.
²Other specialties include general surgery, internal medicine, pediatrics, pediatric hematology-oncology, general practice and nephrology.
 Source: North Carolina Health Professions Data System, 1998

Between 1994 and 1998, the percentage of OB/GYNs attending births remained constant at 87%, while the percentage of FP physicians delivering babies declined from 15.2% (213) in 1994 to 11.8% (170) in 1998. The majority of physicians providing prenatal care in 1998 specialized in OB/GYN (64.3%) or in FP (26.4%). Prenatal care was also provided by physicians in Emergency Medicine, Pediatrics, Internal Medicine and Maternal and Fetal Medicine (**Figure 3**). ▶

In 1998, a larger percentage of FP physicians provided prenatal care than attended births (17.3% versus 11.8%). Only a slight difference existed for OB/GYN physicians; 88.3% of OB/GYN physicians were providing prenatal care compared to 87.7% attending births. Of the physicians who provided only prenatal care, over half (52%) were FP physicians.

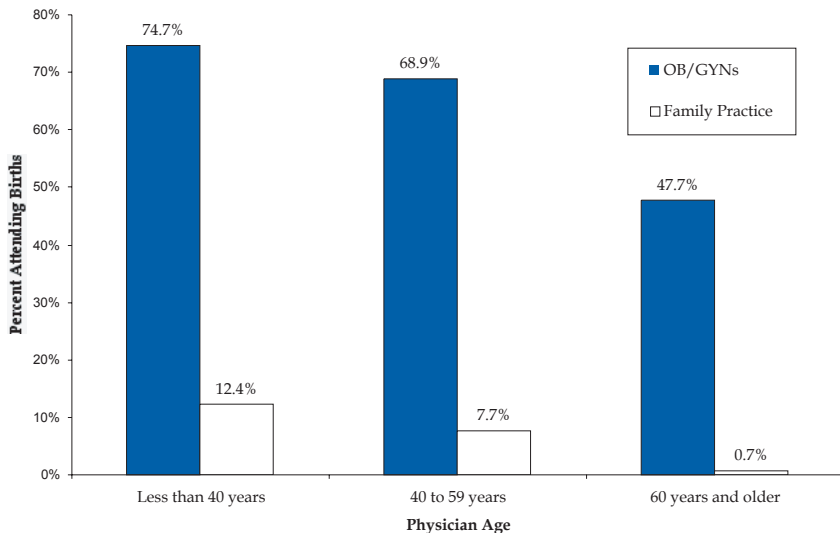
Figure 3: Specialties of North Carolina Physicians Providing Prenatal Care, 1998



¹Other OB/GYN specialties include maternal and fetal medicine, reproductive endocrinology, neonatal-perinatal medicine, obstetrics, and gynecology.
²Other specialties include endocrinology, gastroenterology, infectious disease, internal medicine, medical microbiology, pediatric hematology-oncology, public health, psychiatry, pediatric cardiology, nephrology, general practice, and surgery.
 Source: North Carolina Health Professions Data System, 1998

³Other OB/GYN specialties are maternal and fetal medicine, reproductive endocrinology, and neonatal/perinatal medicine, obstetrics, and gynecology.
⁴Other specialties are general surgery, pediatrics, internal medicine, pediatric hematology-oncology and nephrology.

Figure 4: Percent of Total OB/GYN and Family Practice Physicians Who Attend Births by Age Group, 1998



Source: North Carolina Health Professions Data System

The proportion of OB/GYN and FP physicians attending births in 1998 declined with increasing age. Seventy-five percent of OB/GYN physicians and 12.4% of FP physicians under 40 years of age attended births compared to 47.7% of OB/GYNs and 0.7% of FPs over the age of 60 (Figure 4). ◀

Physician Practice Settings

Of the physicians attending births in 1998, 63.0% indicated that their primary employment location was a group practice, 10.4% were in a hospital⁷, 10.2% were in solo practice, and 9.9% practiced in a medical school or parent university. A small percentage of the physicians attending births practiced in a free-standing clinic (2.3%) or in a staff or group HMO (2.0%). Among second and third practice locations, the most common employment location was a group practice, followed by a hospital.

Geographic Distribution of Obstetrically Active Physicians in 1998

In 1998, 57 fewer physicians were attending births than in 1994. A larger share of this loss occurred in non-metropolitan counties, where there was a 12.2% (29) decrease compared to a 4.3% drop (28) in metropolitan counties.

A slightly higher percentage of the physicians in non-metropolitan counties were attending births in 1998 than their metropolitan counterparts (8.3% versus 7.3%, respectively). The same was true for prenatal care (9.6% versus 8.2%). A larger percentage of physicians attending births in non-metropolitan areas were family physicians (26.9%) compared to metropolitan areas (18.1%). This is consistent with the distribution of FPs; 19% of non-metropolitan physicians are FPs compared to 11.7% of physicians in metropolitan counties.

Figure 5: Counties without a Physician Who Attends Births, 1998

Counties without a Physician Attending Births in 1998	Designation	Physician Providing Prenatal Care in 1998?	Physician Attending Births in 1994?
Alexander	Metropolitan	No	No
Currituck	Metropolitan	No	No
Davie	Metropolitan	Yes	No
Gates	Non-metropolitan	No	No
Graham	Non-metropolitan	No	No
Hyde	Non-metropolitan	No	Yes
Jones	Non-metropolitan	Yes	No
Madison	Metropolitan	Yes	No
Northampton	Non-metropolitan	Yes	Yes
Pamlico	Non-metropolitan	No	No
Pender	Non-metropolitan	No	Yes
Stokes	Metropolitan	No	No
Tyrrell	Non-metropolitan	No	No
Yancey	Non-metropolitan	No	Yes

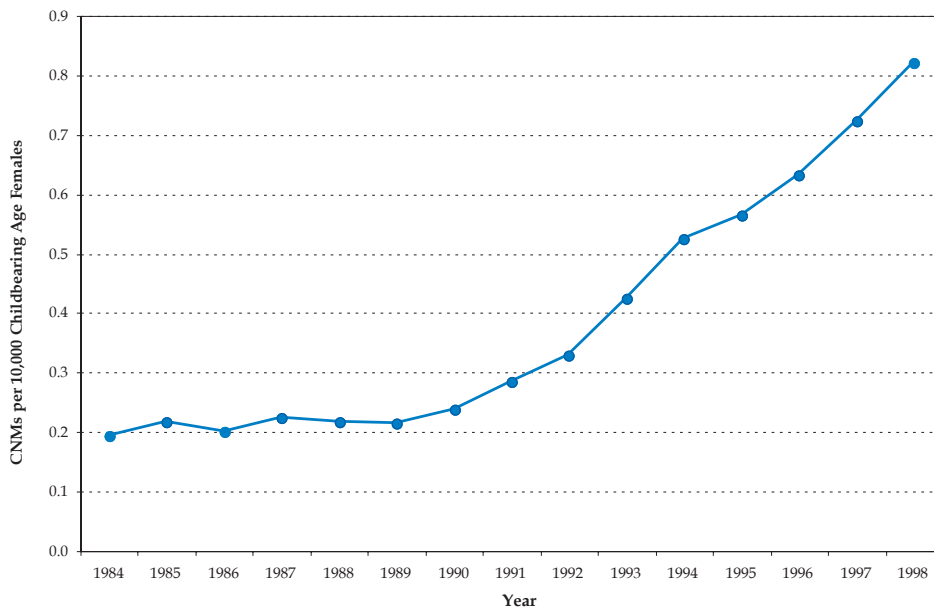
Note: Includes primary, second and third practice locations.
Source: North Carolina Health Professions Data System, 1998

In 1998, 14 counties (9 non-metropolitan, 5 metropolitan) did not have a physician who reported attending births at any practice location (Figure 5). ◀ In 10 of these 14 counties, no physicians reported providing prenatal care. Four counties lost obstetric services between 1994 and 1998; all of these were non-metropolitan. Polk County was the only county in 1998 in which physicians reported attending births but no physician reported providing prenatal care.

⁷Includes hospital emergency room and outpatient department.

Non-Physician Practitioners Providing Obstetric Care

Figure 6: Certified Nurse Midwives (CNMs) per 10,000 Childbearing Age* Females, 1984-1998



Source: North Carolina Midwifery Joint Committee, 1999. Figures include all licensed active, instate certified nurse midwives.

*Childbearing age: 15-44 years

Certified Nurse Midwives (CNMs) Providing Obstetric Care in North Carolina

The supply of certified nurse midwives providing obstetric care in North Carolina has more than tripled⁸ from 29 in 1984 to 138 in 1998. The fastest growth in supply occurred between 1991 and 1994, when the ratio of actively practicing CNMs in North Carolina per 10,000 childbearing age (15-44 years) females nearly doubled from .28 in 1991 to .53 in 1994 (Figure 6). ◀

Certified Nurse Midwife Practice Settings

According to data from the NC Center for Nursing⁹, the majority of certified nurse midwives (87%) in 1998 were employed by one employer, but practiced in multiple settings. Over

half of CNMs worked in a hospital, over half in a medical practice setting, one-third in health departments, and nearly 12% in publicly-funded clinics¹⁰.

Other employment settings identified were hospital out-patient (16.1%), School of Nursing or Medicine (8.8%), birth center (4.4%), "other" setting (5.8%), and HMO (0.7%). Forty-seven percent of active CNMs have been in practice between 0-5 years, 19.7% between 6-10 years, and 34% for more than 10 years.

Geographic Distribution of Obstetrically Active Certified Nurse Midwives in 1998

In 1998, CNMs had active practice locations in 40 counties¹¹. The counties with the highest ratio of CNMs per 10,000 women of childbearing age were Martin (7.6), Haywood (5.3) and Jackson (4.5) counties. In terms of raw counts, the highest number of CNMs in 1998 was found in Pitt, Mecklenburg and Orange counties, each had 10 CNMs. Nearly 70% of the CNMs (95) were located in metropolitan areas. Forty-one percent of the CNMs (56) were located in counties designated by the federal government as either part or whole county Health Profession Shortage Areas (HPSAs).

Provision of Obstetric Care in North Carolina by Physicians, Certified Nurse Midwives and Local Health Departments

Combining the data on the geographic distribution of physicians, certified nurse midwives and local county health departments yields a more complete picture of the distribution of obstetric care services in North Carolina in 1998.

Figure 7 shows, by county, where prenatal care was available in 1998, either by a physician, certified nurse midwife or local county health department. Figure 8 illustrates which counties had an employment location of a CNM or physician who attended births in 1998.¹² The maps should be interpreted with caution because they do not illustrate the intensity of obstetric services provided because data on the number of hours of obstetric care by provider type were not available.

⁸Data are from the North Midwifery Joint Committee, 1999.

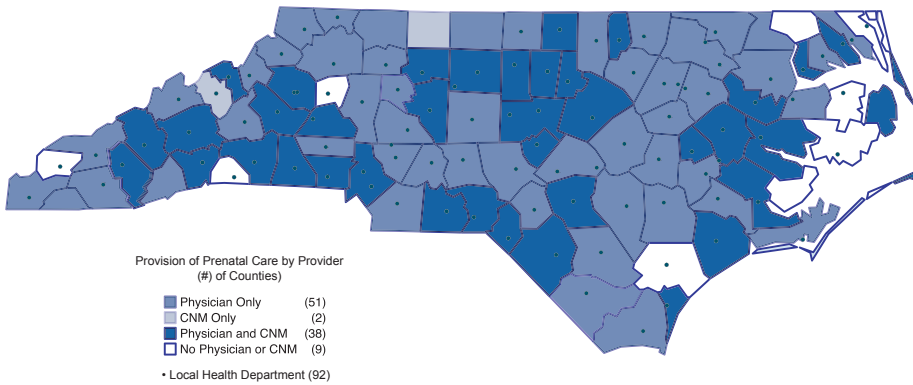
⁹Data are from the 1998 NC Center for Nursing publication entitled, "North Carolina Trends in Nursing: 1982-1998", December 1999 and "Nurse Midwives in North Carolina", May 1999.

¹⁰Since most CNMs work in multiple practice settings, these percentages do not sum to 100%. The percentages are based on a denominator of 137 practicing CNMs.

¹¹Data are from the North Carolina Midwifery Joint Committee.

¹²Physician data include primary, secondary and other practice locations; CNM data are for primary location only.

Figure 7
Provision of Prenatal Care by Physicians, Certified Nurse Midwives (CNMs), and Local Health Departments, North Carolina Counties, 1998



Source: N.C. Medical Board, 1998; North Carolina Department of Health and Human Services, Division of Public Health, 1998; North Carolina Midwifery Joint Committee, 1998. Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Note: Physician data include primary, secondary, and other practice locations. CNM data are for primary location only. There were 17 physicians providing prenatal care who did not provide a primary practice address. For these physicians, the business address was used.

In 1998, physicians provided prenatal care in 89 of North Carolina's counties (Figure 7). ◀

Two counties had only a CNM and nine counties had neither a CNM nor physician provider of prenatal care. Local health departments provided prenatal care in seven of these nine counties. Gates and Pamlico counties did not have a physician, certified nurse midwife or local health department that provided prenatal care in 1998.

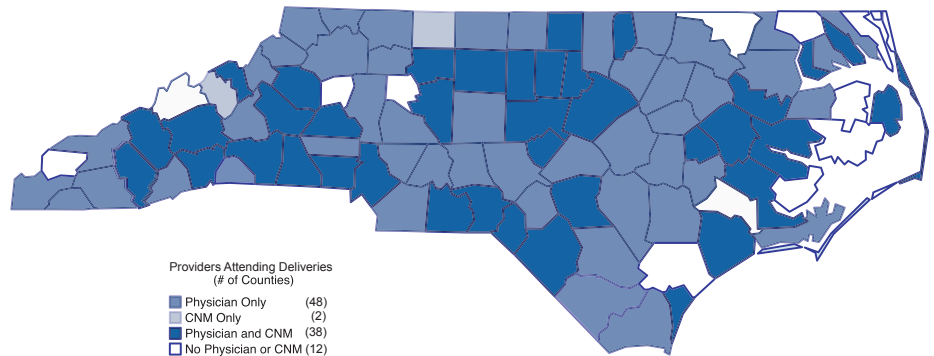
Eighty-six counties had a physician who attended births; two had a CNM provider only and twelve counties had neither a physician nor a midwife (Figure 8). ▼

Physician Assistants (PAs) and Nurse Practitioners (NPs)

Other non-physician providers increasingly involved in the provision of prenatal care in North Carolina are physician assistants (PAs) and nurse-practitioners (NPs). In 1998, there were 1,474 active, instate PAs compared to 726 in 1989. The number of nurse practitioners in the state also grew significantly, from 497 NPs in 1989 to 1,321 in 1998.¹³ Of the active, instate PAs, 6.1% (90) reported that they provided prenatal care in 1998.¹⁴

In that year, the largest percentage of PAs providing prenatal care specialized in Family Practice (38.9%) followed by OB/GYN (26.7%), emergency medicine (11.1%), public health (5.6%), general practice (3.3%), and internal medicine (3.3%). A larger percentage of nurse practitioners provided prenatal care than physician assistants.¹⁵ In 1998, 15.5% of active, instate NPs reported that they provided prenatal care. Of these NPs, 56.1% specialized in OB/GYN, 24.9% specialized in Family Practice, 7.8% specialized in gynecology, and 6.8% specialized in public health. Fourteen percent of the NPs specializing in Family Practice provided prenatal care, and 89.8% of NPs specializing in OB/GYN provided prenatal care.

Figure 8.
Physicians and Certified Nurse Midwives (CNMs) Attending Births, North Carolina Counties, 1998



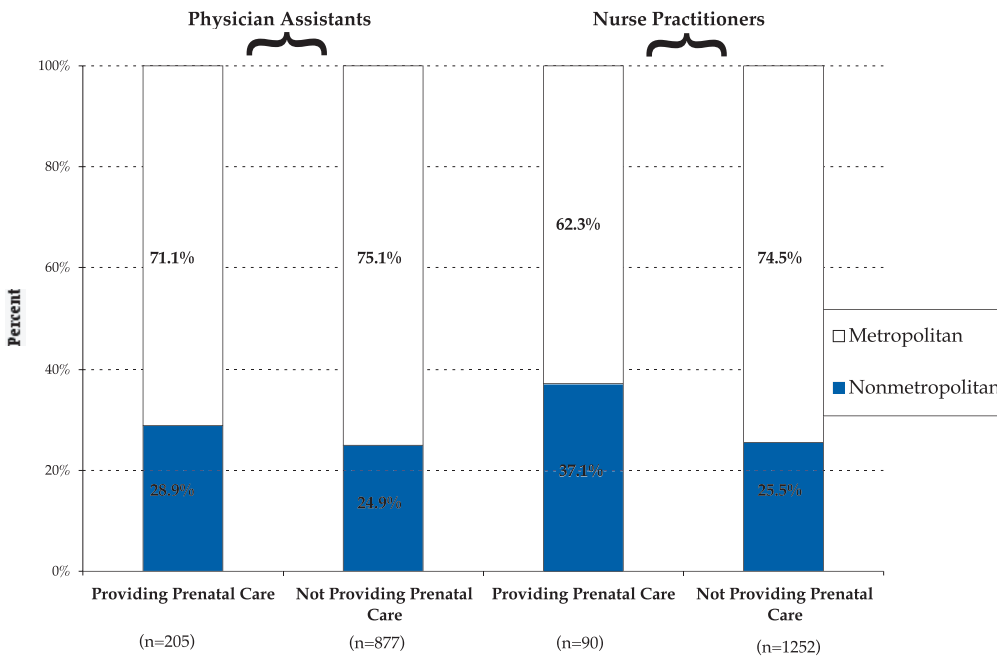
Source: N.C. Medical Board, 1998. North Carolina Department of Health and Human Services, Division of Public Health, 1998; North Carolina Midwifery Joint Committee, 1998. Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Note: Physician data include primary, secondary, and other practice locations. CNM data are for primary location only.

¹³The physician assistant and nurse practitioner data are from the NC Medical Board licensure files, 1989-1998. The data include all active, instate PAs and NPs.
¹⁴Of the 1,474 active, instate PAs in North Carolina, 91.4% (1,342) responded to questions on the 1998 NC Medical Board licensure renewal form regarding prenatal care.
¹⁵Of the 1,321 active, instate NPs in North Carolina, 81.9% (1,082) responded to questions on the 1998 NC Medical Board licensure renewal form regarding prenatal care.

▼ **Figure 9** shows that a slightly higher percentage of PAs who provided prenatal care in 1998 practiced in non-metropolitan areas than PAs who did not provide prenatal care (28.9% versus 24.9%).

Figure 9: Metropolitan/Non-metropolitan Distribution of Nurse Practitioners and Physician Assistants Who Provide Prenatal Care, 1998



Source: North Carolina Health Professions Data System, 1998

Similarly, 37.1% of NPs who provided prenatal care in that year were located in non-metropolitan areas compared to 25.5% of NPs who did not provide prenatal care.

PA and NP Practice Settings

Physician assistants and nurse practitioners identified a variety of facility types in which they had their primary practices in 1998. Thirty-one percent of the PAs providing prenatal care practiced in a group office, 25.6% practiced in a hospital¹⁶, 20.0% practiced in a free-standing clinic, and 5.6% practiced in a solo practitioner’s office (Figure 10). ▼

Other facility types where PAs provided prenatal care in 1998 were medical school or parent university (3.3%), locum tenens (3.3%), other (3.3%), telemedicine (1.1%), and group or staff model HMO (1.1%).

For nurse practitioners who provided prenatal care, "other" facility type was identified by the largest percentage (30.7%). Group office (27.8%), free-standing office clinic (14.6%), solo practitioner’s office (9.3%) and hospital (9.3%) were also identified. Only 3.4% of NPs identified staff or group model HMOs as the facility type for their primary practice.

Figure 10: Nurse Practitioners and Physician Assistants Providing Prenatal Care by Primary Location Facility Type, 1998

Facility Type	PAs (n=90)	NPs (n=205)
Group Office	31.1%	27.8%
Free Standing Clinic	20.0%	14.6%
Hospital	25.6%	9.3%
Solo Practitioner's Office	5.6%	9.3%
Staff/Group Model HMO	1.1%	3.4%
Medical School/University	3.3%	1.5%
Locum Tenens	3.3%	0.0%
Nursing Home	0.0%	0.5%
Telemedicine	1.1%	0.0%
Other	3.3%	30.7%
Unknown	5.6%	2.9%
Total	100.0%	100.0%

Source: North Carolina Health Professions Data System, 1998

¹⁶Includes hospital outpatient departments, emergency room, and other.

Conclusions

This findings brief has shown that North Carolina had a relatively good supply of obstetric care practitioners in 1998. Prenatal care was available in 1998 from a physician, certified nurse midwife or local health department in all but two counties of the state. Physicians or certified nurse midwives attended births in 88 counties. The distribution of practitioners who attended births in 1998 was somewhat problematic, with eight counties in the eastern part of the state lacking a provider.

Despite the availability of practitioners, North Carolina had one of the highest infant mortality rates in the country in 1997 with 9.2 infant deaths per 1,000 live births (U.S. range 4.3 to 10.6) (National Center for Health Statistics, June 1999). Another measure that may indicate a lack of adequate obstetric care is the incidence of low-birth weight babies. In 1997, North Carolina ranked 41st with 8.8% of babies born weighing less than 5.5 pounds (U.S. range 5.5% to 10.2%) (National Center for Health Statistics, April 1999).

These findings suggest a need to look beyond simple measures that equate access to obstetric care with availability of health care providers. Research is needed into how well the needs of women at high risk for poor birth outcomes are being met by available practitioners. Practitioners may not be able to meet the full spectrum of needs of women seeking obstetric care because women at risk for high infant mortality often require a range of services that require referral to another health care provider who may not be available in the area (i.e. to treat a substance abuse problem or domestic violence situation). Language and cultural barriers may exist. The recent release of the Census 2000 data show an increasingly diverse population in North Carolina; it may be necessary to look more closely at how well the supply of services provided in certain regions of the state match the needs of its citizens. More information on the intensity and content of services provided by practitioners would also yield a more complete picture.

More research is needed into why women who fall into risk categories for high infant mortality rates may not be accessing obstetric care services. When, and how often, a woman receives care may be dependent on her ability to pay for services or her knowledge about the importance of prenatal care. It may also be influenced by a lack of choice among practitioners, and the availability of prenatal services (i.e. waiting times or office hours).

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Findings Brief



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