

Medicaid in the Inner City: The Case of Maternity Care in Chicago

JAMES W. FOSSETT,¹
JANET D. PERLOFF,¹
JOHN A. PETERSON,²
and PHILLIP R. KLETKE³

¹ *State University of New York at Albany*; ² *University of Illinois*;

³ *American Medical Association*

THE AVAILABILITY OF PHYSICIAN CARE TO LOWER-income groups has long been thought to be influenced by eligibility for Medicaid and the level of reimbursement to physicians who treat Medicaid patients. State and federal governments have historically attempted to improve the accessibility of physician services by expanding the population eligible for Medicaid. Some states have also increased payments to physicians for service to Medicaid patients. These initiatives have been supported by much research showing that Medicaid patients visit physicians more frequently than uninsured patients and that raising physician reimbursement increases physician participation in Medicaid.

The largest and most recent of such efforts has been a major expansion of Medicaid coverage, which significantly increases the number of women potentially eligible for Medicaid coverage of prenatal care, delivery, and postpartum care (Newacheck and McManus 1987; Children's Defense Fund 1988). Medicaid coverage is now mandated by 1990 for all pregnant women and infants in families with incomes below the poverty level, with states having the option to expand eligibil-

ity to 185 percent of the poverty level and to simplify and expedite eligibility determination (Children's Defense Fund 1987, 1988). A number of states have coupled these eligibility expansions with modest increases in reimbursement for obstetric services to encourage physician acceptance of Medicaid patients (Lewis-Idema 1988). Further expansions of the range of age and income groups eligible for Medicaid have been proposed by the Bush administration, congressional leaders, and a variety of interest groups.

While there is much support for these efforts, the efficacy of relying on expansions of eligibility and reimbursement as the primary means of improving access to prenatal care seems increasingly open to question. Economic and demographic changes in many American cities over the last twenty years have sharply altered the problem of improving access to physician services for lower-income groups. The increasing concentration of lower-income groups, particularly black and Hispanic households, in increasingly homogenous areas in most large cities and the increasingly divergent economics of caring for private and Medicaid patients under these circumstances may dramatically limit the availability of care for inner-city Medicaid patients.

This article examines this relation between demography, physician supply, and Medicaid policy in Cook County, Illinois, which overlies Chicago. Our conclusions are pessimistic. Medicaid obstetric patients already eligible prior to recent expansions, particularly black and Hispanic households eligible for Aid to Families with Dependent Children (AFDC), as well as many newly eligible minority, poor households, have become residentially concentrated in depressed areas on the city's south and west sides with exceptionally severe maternal and child health problems. Access to maternity care in these areas is constrained by lack of physicians rather than by lack of Medicaid participation. Because of the lack of private patients, the number of private office-based obstetricians and gynecologists (OB/GYNs) relative to the population in these areas is less than one-quarter that in Chicago's more prosperous areas. The few office-based OB/GYNs who do practice in the inner city treat such a large number of Medicaid patients that there is potential cause for concern about the quality of care. Expanding Medicaid eligibility or increasing Medicaid reimbursement may improve access to care for "near-poor" women, who are residentially dispersed across more prosperous areas which contain large numbers of office-based OB/GYNs. These changes are unlikely to have any effect on access to care in

Chicago's poorest areas, however, since many, if not most, women are already Medicaid eligible and almost all physicians already accept very large numbers of Medicaid patients. More concerted efforts to increase the supply of providers in depressed areas, possibly by increased support for such institutional providers as community health centers, public and nonprofit clinics, and hospital outpatient departments, will be necessary to improve access to care in these areas.

Trends in Medicaid Patient Location

One of the major demographic developments in American cities over the last twenty years has been a dramatic increase in the geographic concentration of lower-income groups, particularly black and Hispanic households. Overall levels of residential segregation between blacks and whites have remained unchanged since 1970 in most large cities and declined in many smaller cities (Massey and Denton 1987). By contrast, the spatial concentration of the minority poor in increasingly racially and economically homogeneous areas has increased sharply in older northeastern and midwestern cities, as well as in older or more depressed southern and western cities, such as Atlanta, Birmingham, Miami, Los Angeles, and Tampa (Wilson 1987; Ricketts and Sawhill 1987; Nathan and Adams 1989). By contrast with earlier ghettos (Wirth 1926), which were racially or ethnically homogeneous, but economically diverse, these areas lack working- or middle-class residents.

The economic and demographic processes associated with this increased concentration of the minority poor have been described in detail elsewhere and need only be summarized here (Kasarda 1985; Wilson 1987). Many cities have experienced dramatic employment declines in manufacturing and retail industries, which have increasingly relocated out of the country, to lower-cost states, or to suburban areas. This dispersion of entry-level, lower-skill jobs has severely handicapped lower-income minority groups, who lack the training to compete for more geographically accessible skilled positions and have been prevented by inadequate transportation and suburban housing opportunities from following employment into suburban areas. These groups have experienced sharp increases in unemployment and welfare dependency and equally sharp declines in income relative to upper-income groups, rents, and housing prices. This increase in relative poverty has

been particularly severe among younger black women with children, who have experienced a dramatic decline in their economic position compared to the late 1960s (Duncan and Rodgers 1989). Declining relative income has further restricted housing choices and produced dramatic increases in the concentration of lower-income groups in economically and spatially isolated areas. This concentration has been intensified by the moving out of increasing numbers of working- and middle-class blacks, many of whom have been able to gain access to employment and housing opportunities outside traditional ghetto areas.

This spatial and economic isolation has produced increased geographic concentrations of the poorest Medicaid obstetric patients, who are overwhelmingly black unmarried heads of AFDC households. Members of this group are disproportionately at risk for adverse pregnancy outcomes stemming from poverty, drug and alcohol abuse, poor diet, and a variety of other factors (Institute of Medicine 1985), making them heavy potential users of maternity services and the group for whom access to adequate prenatal care is the most critical. The increased geographic concentration of this group has sharply altered the problem of providing adequate prenatal care to Medicaid patients in ways that are not readily addressed by traditional policy means of altering Medicaid eligibility and physician reimbursement. Pre-expansion Medicaid clients appear to have become increasingly concentrated residentially, while recent attempts to expand access have focused on better-off groups who are more spatially dispersed.

The Case of Chicago

Chicago has been widely cited as a prototype of this process of residential concentration of the minority poor. As discussed at length by Wilson (1987) and others, the city's lower-income population became increasingly concentrated over the 1970s in large depressed areas on the city's south and west sides. The percentage of the city's poverty population living in areas with more than 40 percent of the population below the poverty level doubled between 1970 and 1980 (Nathan and Adams 1989), and the geographic size of these areas increased by more than 50 percent (Greene 1988). While there are no comparable data available to measure changes in the residential location of Medicaid clients potentially in need of obstetric care over this same period, it seems a virtual certainty that these clients became more concentrated as well.

Members of this group, most of whom were Medicaid eligible prior to recent expansions, are overwhelmingly single, black AFDC mothers. They are the poorest of the low-income population, the least likely to have nonwelfare income, and the most likely to experience discrimination, stemming from race, welfare status, and numbers of children, in Chicago's intensely segregated housing market. They are thus among the least likely of the low-income population to locate housing outside of ghetto areas and may be more residentially concentrated in such areas than the poverty population as a whole.

To measure more recent demographic changes in a fashion that allows the evaluation of the accessibility of obstetric care for pre-expansion poor, newly eligible poor, and potentially eligible near-poor Medicaid patients, one must shift the geographic level of measurement. Post-1980 census data on the location of AFDC recipients, OB/GYNs who do and do not accept Medicaid patients, and newly or potentially Medicaid-eligible income groups are not available for census tracts or the community areas used in Wilson's analysis, but are available or estimable for ZIP code areas. ZIP code areas are not ideal for detailed analysis of either physician or population location, since they are appreciably larger than census tracts or community areas and are defined without reference to recognized neighborhood boundaries. They are, however, the only subcounty unit for which all the data of interest are available (see appendix note 1).

Given data limitations, the location of Medicaid recipients prior to recent eligibility expansions can be most feasibly measured by the location of AFDC recipients, since this group contained most pre-expansion Medicaid-eligible women of child-bearing age. The number of AFDC recipients is not an ideal measure of the potential demand for Medicaid obstetric services. It includes children, who ideally should be excluded. This measure also excludes "medically needy" women who are eligible for Medicaid, but not AFDC, so its size may understate the absolute demand for Medicaid obstetric services in any given area. Since the medically needy population is only about one-fifth the size of the AFDC population (Illinois Department of Public Aid 1985), however, its distribution across ZIP codes would have to differ dramatically from that of AFDC recipients for the distribution of all Medicaid clients to differ significantly from that of AFDC recipients. Such a large deviation is extremely unlikely. Since medically needy Medicaid clients are only slightly more prosperous than AFDC Medicaid clients, 90 percent

of whom have no nonwelfare income, and are similar in race and other factors that influence residential location, their distribution across ZIP codes is likely to be very similar, if not precisely identical, to that of AFDC clients. The pre-expansion distribution of AFDC clients across ZIP codes is thus a good indication of the relative demand for Medicaid obstetric services.

In 1985 AFDC-eligible Medicaid clients, the bulk of pre-expansion eligibles, particularly of black and Hispanic households, were exceptionally concentrated residentially. Table 1 displays data by race or ethnicity on the percentage of AFDC recipients, both adults and children,

TABLE 1
Residential Location of Persons Receiving AFDC, by Percentage AFDC, and City/Suburban Status of ZIP Code, Cook County, 1985

Percentage AFDC in ZIP	Number of ZIP codes ^a	Total AFDC persons	White AFDC persons	Black AFDC persons	Hispanic AFDC persons
<u>Less than 5% AFDC</u>					
Suburbs	46	3.8%	19.7%	1.7%	1.8%
Chicago	<u>18</u>	<u>3.3</u>	<u>17.0</u>	<u>.9</u>	<u>4.9</u>
Subtotal	64	7.1%	36.7%	2.6%	6.7%
<u>5-15% AFDC</u>					
Suburbs	3	3.4	5.1	3.5	1.6
Chicago	<u>15</u>	<u>19.2</u>	<u>30.4</u>	<u>16.5</u>	<u>22.5</u>
Subtotal	18	22.6%	35.5%	20.0%	24.1%
<u>15-25% AFDC</u>					
Suburbs	1	2.2	1.3	2.7	.3
Chicago	<u>9</u>	<u>31.3</u>	<u>18.4</u>	<u>28.4</u>	<u>62.5</u>
Subtotal	10	33.5%	19.8%	31.1%	62.8%
<u>Greater than 25% AFDC</u>					
Chicago	<u>8</u>	<u>36.9%</u>	<u>8.0%</u>	<u>46.2%</u>	<u>6.4%</u>
Total	100	100%	100%	100%	100%
County total		467,281	52,534	355,137	56,262

Source: Illinois Department of Public Aid 1985b.

^a Some ZIP codes have been aggregated; see text for details.

who resided in ZIP codes with varying proportions of AFDC recipients. Over one-third of the county's AFDC population, and almost one-half of the black AFDC recipients, resided in eight ZIP codes where more than 25 percent of the population received AFDC. These ZIP codes, located in two large clusters on Chicago's south and west sides, manifest exceptionally severe maternal and child health problems. As shown in Table 2, these areas accounted for less than one-half of the live births in Chicago in 1984, but produced almost two-thirds of the infant deaths, including three-quarters of the postneonatal deaths, and over 60 percent of low-weight births and births to teen-aged mothers. Infant mortality rates in these areas were almost twice those in the balance of Chicago, with postneonatal mortality rates being over three times higher.

White AFDC recipients, by contrast, were significantly more decentralized. Over one-quarter of white AFDC recipients were suburban, compared with less than 8 percent of black and 4 percent of Hispanics. More than one-third of white AFDC recipients, compared with less than 3 percent of black and 7 percent of Hispanic recipients, resided in areas where less than 5 percent of the population are AFDC recipients, and over 70 percent resided in areas where AFDC recipients constituted less than 15 percent of the population.

TABLE 2
Comparative Maternal and Child Health Measures in Eight Poorest ZIP
Codes and Balance of Chicago, 1984

Measure	Percentage in poorest ZIP codes ^a	Rates	
		Poorest ZIP codes	Balance of city
Live births	47.8%	—	—
Infant deaths	63.8	21.9	11.4
Neonatal deaths	57.9	12.6	8.4
Postneonatal deaths	74.8	9.4	2.9
Low-weight births	60.0	13.3	8.1
Births to teen-aged mothers	69.8	28.0	11.1

Source: Chicago Department of Health. Death rates are per 1,000 live births; low birth weight and teen birth rates are percentage of all live births.

^a Includes all community areas contained in whole or in part in ZIP codes 60609, 60612, 60621, 60624, 60636, 60637, 60644, and 60653.

To compare the location of these earlier Medicaid clients with newly and potentially Medicaid-eligible groups, regression analysis was used to construct estimates of the 1987 population in each ZIP code below the poverty level, between 100 and 150 percent of the poverty level, and between 150 and 200 percent of the poverty level. Census data from 1980 on the poverty status of ZIP code populations were regressed on several income, race, and age characteristics. Separate equations were estimated for city and suburban ZIP codes for each income group (see appendix note 2). The resulting regression weights were then applied to 1987 estimates of the same income, race, and age characteristics developed by Urban Decision Systems, a major marketing data firm, to produce estimates of the percentage of the population in the same income groups in 1987. Since these estimates cannot be disaggregated by age or sex, they are at best rough approximations of the location of groups affected by expansion of Medicaid eligibility to higher-income pregnant women and children, but there is no reason to suspect that more precise estimates would yield appreciably different results.

These estimates indicate that residential dispersion clearly increases with income among newly or potentially Medicaid-eligible groups. Table 3 presents a comparison of the concentration of 1985 AFDC recipients with our estimates of the county's poverty population and households with incomes up to 200 percent of the poverty level. The "near poor," now potentially eligible for Medicaid, are much more evenly dispersed between city and suburbs and between upper- and lower-income ZIP codes than either AFDC recipients or the city's poor population. Almost 45 percent of the population with incomes between 150 and 200 percent of the poverty level resides in ZIP codes where 5 percent or less of the population were AFDC recipients, compared with one-fifth of the poor and less than one-tenth of AFDC recipients. This "near-poor" population likely contains larger proportions of whites and two-parent households with stable employment and family structures than either AFDC clients or the poverty population, which, together with higher incomes, should provide them with a broader range of housing choices.

By contrast, only about one-ninth of the 150 to 200 percent group is located in ZIP codes with the greatest AFDC concentrations, compared with over one-quarter of the poor and three-eighths of the AFDC recipients. Residential segregation between blacks and whites in Chicago does not decline appreciably as income increases, suggesting that the poor and those members of the two upper-income groups who re-

TABLE 3
Residential Location of Income Groups by Percentage AFDC, and
City/Suburban Status of ZIP Code, Cook County, 1985-1987

Percentage AFDC in ZIP	AFDC persons (1985)	Estimated poverty population (1987)	Estimated population between 100-150% poverty (1987)	Estimated population between 150-200% poverty (1987)
<u>Less than 5% AFDC</u>				
Suburbs	3.8%	10.9%	24.1%	28.2%
Chicago	<u>3.3</u>	<u>10.8</u>	<u>9.2</u>	<u>16.6</u>
Subtotal	7.04%	21.7%	33.2%	44.8%
<u>5-15% AFDC</u>				
Suburbs	3.4	2.1	4.3	3.4
Chicago	<u>19.2</u>	<u>25.3</u>	<u>21.0</u>	<u>21.4</u>
Subtotal	22.6%	27.3%	25.3%	24.8%
<u>15-25% AFDC</u>				
Suburbs	2.2	.9	2.0	.9
Chicago	<u>31.3</u>	<u>25.2</u>	<u>23.2</u>	<u>18.4</u>
Subtotal	33.5%	26.1%	25.3%	19.4%
<u>Greater than 25% AFDC</u>				
Chicago	<u>36.9%</u>	<u>28.1%</u>	<u>16.3%</u>	<u>11.1%</u>
Total	100%	100%	100%	100%

Source: Table 1 and authors' estimates; see text for details.

side in areas of concentrated AFDC enrollment may be disproportionately black and those in suburban or higher-income city areas may be disproportionately white (Massey and Denton 1989). Anglo-Hispanic segregation, by contrast, appears to decline at upper-income levels, suggesting that the Hispanic "near poor" may be more residentially dispersed than their black counterparts.

The best available evidence, in short, suggests that the poorest Medicaid patients in Cook County, particularly black and Hispanic AFDC households, are disproportionately concentrated in severely depressed areas in Chicago where much of the population is currently enrolled or

eligible for Medicaid. Many newly eligible non-AFDC poor and "near-poor" minority households also reside in these areas. By contrast, white AFDC and non-AFDC poor who are newly eligible, and members of "near-poor" groups for whom Medicaid eligibility is now optional or contemplated, are more broadly dispersed between city and suburbs and across more prosperous areas. We now turn to an examination of the consequences of location for access to obstetric care.

The Supply of Care for Medicaid Patients

These demographic trends have considerable consequences for the level and type of office-based obstetric care to which Medicaid clients at different income levels have access. Unlike specialists, primary-care physicians draw the bulk of their patients from the area surrounding their practices (Kletke and Marder 1987). Demand for care among lower-income groups, especially lower-income women, has repeatedly been found to be more elastic with respect to distance and travel time than for upper-income groups (Dutton 1986; Acton 1976; Institute of Medicine 1985), suggesting that the geographic proximity of physician care, particularly obstetric care, is critical to its use. Since physicians are more likely to locate in upper-income areas with large numbers of private patients (Kletke and Marder 1987; Kindig et al. 1987), the extent to which upper- and lower-income patients are residentially segregated is a major determinant of the availability of obstetric care to lower-income groups.

The residential concentration of the lowest-income Medicaid patients dramatically reduces their access to "mainstream" physician care in practices which serve both public and private patients. The moving out of middle- and working-class households, who are more likely to have private health insurance, from lower-income areas limits the number of practice locations which offer physicians access to both public and private patients and may have largely eliminated any demographic base for "mainstream" practices accessible to Medicaid patients who reside in inner-city areas. There is considerable evidence of a long-term decline in the supply of physicians in low-income areas in many cities, as physicians have followed private patients to suburban locations (Kindig et al. 1987; Miller, Miller, and Adelman 1978; Guzick and Jahiel 1976). As a result, the only private, office-based obstetric care to which

AFDC-related Medicaid eligibles or those non-AFDC poor added by recent eligibility expansions have access may be high-volume Medicaid practices whose practice styles may differ appreciably from those in other areas. AFDC-related eligibles outside inner city areas, the newly eligible non-AFDC poor, and potentially eligible near-poor patients in more prosperous areas may have appreciably better access to mainstream care.

OB/GYN Supply in Cook County

This article examines the availability of obstetric care to Medicaid patients from private OB/GYNs providing care in an office setting (see appendix note 3). It excludes care provided in hospital outpatient clinics, community health centers, and other public and nonprofit clinics. In addition, since the data available on the levels of care to Medicaid patients provided by private, office-based family and general practitioners included only practice totals, it was not possible to distinguish between prenatal and other types of care provided by these physicians. Anecdotal evidence suggests that these generalist physicians may provide prenatal care in inner-city areas, which may compensate at least partially for the lack of specialty care. The significance of this omission is difficult to assess. General practitioners have no formal obstetric training and, particularly in large urban areas such as Chicago, frequently lack obstetric admitting privileges at local hospitals and, therefore, cannot perform deliveries. Hence, it is unlikely that these physicians provide large amounts of maternity care. Furthermore, their lack of obstetric training and their inability to provide continuous care through delivery suggests that they should not be considered as part of the supply of available maternity care. Family practitioners have formal training in obstetrics, but national survey evidence indicates that many of these physicians, particularly in urban areas, are reducing the obstetric portions of their practices in response to recent increases in malpractice premiums (American Medical Association Council on Long-range Planning and Development 1988). To the extent that these findings apply in Chicago, the amount of prenatal care from these specialists may be limited.

The location of private, office-based OB/GYNs in Cook County is largely driven by function, with more specialized physicians being located in central areas accessible to a large population base. OB/GYNs

with less specialized practices, by contrast, are more broadly dispersed. Two-thirds of the office-based OB/GYNs in Cook County practice in predominantly residential areas. The remaining one-third practice in the Loop, Chicago's downtown, or in the areas around major hospitals, which are the centers of specialized perinatal networks. OB/GYNs practicing in the Loop or around perinatal centers are more likely than those in residential areas to have practices oriented around the treatment of specialized problems, such as infertility or conditions requiring surgical correction. These physicians largely receive patients on referrals from other doctors, and provide a small amount of prenatal care to patients without these problems. Their central location downtown or around major hospitals provides them with access to a larger population base than that required by OB/GYNs in residential areas, who are more likely to provide prenatal care to the larger number of patients without specialized problems.

This article focuses on the availability of obstetric care in residential areas. Only about one-half of the OB/GYNs practicing in the Loop or around perinatal center hospitals accepted any Medicaid patients over the period under consideration here. Those that accepted such patients saw far fewer than physicians in residential areas with comparable numbers of AFDC recipients, but Medicaid patients in these areas were more concentrated in larger practices than in residential areas (see appendix note 4). While we cannot completely distinguish care from specialized and nonspecialized OB/GYNs, the bulk of prenatal care to Medicaid patients without specialized problems in these areas appears to be provided directly by hospitals (Illinois Department of Public Health 1989) or by a small number of larger practices. Since physicians in residential areas provide the bulk of prenatal care to women without highly specialized problems and control access to specialized services through referrals, their role is more central to the maternity care available to the overwhelming majority of Medicaid patients.

Obstetric Care in Residential Areas

There are very large differences in the availability of obstetric care between inner-city areas and those with smaller numbers of AFDC patients. About two-thirds of the OB/GYNs practicing in primarily residential areas practice in areas where less than 5 percent of the population are AFDC recipients, while only about 2 percent practice in severely distressed

areas. Table 4 displays average OB/GYN-to-population ratios for total and AFDC populations for residential ZIP codes with varying concentrations of AFDC clients as well as the Loop and the ZIP codes containing the major perinatal centers. Physician-to-population ratios are also displayed for the estimated population below the poverty level and below 200 percent of the poverty level.

The accessibility of obstetric care is strongly and inversely related to the fraction of the population receiving AFDC. The ratio of OB/GYNs relative to total population, displayed in the first column, is almost four times higher in residential ZIP codes where less than 5 percent of the population receives AFDC than in inner-city areas. The disparity in physician-to-AFDC population ratios, listed in the second column, is even larger, although the small number of AFDC recipients in some suburban areas suggests these figures should not be taken literally (see appendix note 5). To put the figures in the table in perspective, there are fewer than a dozen OB/GYNs who are the only local source of private, office-based obstetric care for over 136,000 AFDC recipients who

TABLE 4
 Mean Private, Office-based OB/GYN-to-population Ratio for
 Total Population and Other Groups, by ZIP Code Type
 and Percentage AFDC, 1986

Type of ZIP and percentage AFDC	Mean number of OB/GYNs per 1,000 population in indicated group:			
	Total population	AFDC persons	Poverty population	Population with income below 200% poverty level
Loop/perinatal center	.64	106.8	3.7	1.7
Residential				
Less than 5% AFDC	.11	40.26	1.7	.57
5-15% AFDC	.10	1.71	.42	.24
15-25% AFDC	.07	.35	.21	.13
25% + AFDC	<u>.03</u>	<u>.07</u>	<u>.05</u>	<u>.04</u>
Average	.10	27.2	1.26	.433
County average	.15	34.4	1.48	.546

Source: AMA Physician Masterfile, table 1, authors' estimates.

reside in the 6 poorest residential ZIP codes; while in the most prosperous residential areas there are over 250 office-based OB/GYNs and approximately 33,000 AFDC recipients.

These figures indicate that expanding eligibility will have dramatically different effects on the proximity of care for new and potential Medicaid eligibles who reside in relatively prosperous areas and those in inner-city areas. Expansion of eligibility to twice the poverty level will produce a physician-to-eligible-population ratio in more prosperous areas approximately ten times that for eligibles in depressed areas, suggesting that newly eligible obstetric patients in better-off areas will be more likely to convert their eligibility into access.

In severely depressed areas, the limited supply of office-based obstetric care is a major constraint on improvements in access to pre-expansion, new, or potentially eligible Medicaid patients. There are very few physicians relative to the number of patients, and expanding Medicaid eligibility without increasing the number of providers is likely to diminish the accessibility of care, as increased numbers of patients seek care from a fixed number of providers. Newly eligible patients in the inner city are likely to experience difficulty in converting eligibility into access because there are so few providers. In more prosperous areas, where there are more physicians relative to the number of eligible patients, the availability of care is largely driven by the willingness of physicians to accept Medicaid patients. We now turn to an examination of this question.

Medicaid Participation

A variety of studies have found that physicians' propensity to participate in Medicaid is influenced by the characteristics of the areas surrounding their practices, the availability of private patients, and the relation between Medicaid reimbursement and their usual charges for care, as well as personal preferences and qualifications (Perloff, Kletke, and Neckerman 1986, 1987; Sloan, Cromwell, and Mitchell 1978). While OB/GYNs have been found to participate in Medicaid at lower levels than other primary care physicians (Mitchell and Shurman 1984; Orr and Forrest 1985; Sloan, Cromwell, and Mitchell 1978), OB/GYNs practicing in inner-city areas should be more likely to accept Medicaid patients than physicians in more prosperous areas.

Table 5 presents data on OB/GYN participation in various areas and

TABLE 5
 Mean Percentage of OB/GYNs Accepting Medicaid Patients and Ratio
 of Participating Physicians to Indicated Population by ZIP
 Code Type and Percentage AFDC, 1986

	Percentage of OB/GYNs accepting Medicaid	Mean number of OB/GYNs accepting Medicaid patients per thousand indicated population		
		AFDC recipients	Poverty population	Population with income less than 200% of poverty
Loop/perinatal centers	53.1%	13.5	1.29	.85
Residential				
Less than 5% AFDC	31.0	6.9	.442	.145
5-15% AFDC	50.6	.60	.261	.134
15-25% AFDC	71.6	.27	.170	.100
Greater than 25% AFDC	100.0	.07	.047	.035

the resulting accessibility of care to pre-expansion, new, and potentially eligible Medicaid patients (see appendix note 6). Physician participation is strongly related to the size of the AFDC population. Fewer than one-third of the OB/GYNs in residential areas with few AFDC recipients accept Medicaid patients in appreciable numbers, as compared with 100 percent of those in areas with the highest proportion of AFDC clients. By contrast, however, the ratio of participating OB/GYNs to AFDC recipients in more prosperous areas is, on average, ten times that in Chicago's inner city, suggesting that AFDC recipients in more prosperous areas have better geographic access to obstetric care than those in the most depressed areas. While a small proportion of OB/GYNs in these more prosperous areas accept Medicaid patients, there are more physicians than in more depressed areas, so that current Medicaid recipients in these areas have access to a larger number of OB/GYNs willing to accept them as patients.

The combination of expanded eligibility and increased Medicaid fees seems most likely to have a positive effect on the accessibility of obstetric care for the now potentially eligible "near-poor" patients who reside in more prosperous areas. While a small proportion of OB/GYNs in these areas accept any Medicaid patients and many only accept small

numbers, the larger number of physicians relative to the number of new eligibles, particularly if combined with increases in Medicaid reimbursement, may make a larger number of physicians willing to accept Medicaid patients or expand the number they see. These near-poor patients are disproportionately white and have stable employment and family structures, which should make them acceptable patients to OB/GYNs concerned about being "inundated" with Medicaid patients or the potential loss of private patients (Fossett et al. 1989). This combination of higher reimbursement and socially acceptable patients has been found to foster greater Medicaid participation by OB/GYNs (Mitchell and Shurman 1984).

By contrast, access to prenatal care for pre-expansion or newly eligible non-AFDC poor Medicaid patients in severely depressed areas is not likely to be enhanced by either expanded eligibility or changes in reimbursement. Since all OB/GYNs already accept Medicaid patients, fee increases are unlikely to improve access unless they are large enough to induce physicians to relocate to these areas, which seems unlikely at best. Expanded eligibility for Medicaid is more likely to increase the number of inner-city patients seeking care from the limited number of Medicaid practices which are the only available private office-based obstetric care in these areas.

Practice Size and Quality

There are dramatic differences in the scale of Medicaid practices in upper- and lower-income areas. Table 6 records data on two different measures of Medicaid practice size—the number of Medicaid patients seen in 1986 by the average OB/GYN accepting such patients, and the number of Medicaid patients seen in practices where the average Medicaid patient receives care. The average OB/GYN accepting Medicaid patients in the most prosperous areas saw fewer than 100 Medicaid patients, and the average Medicaid patient received care in a practice with 150 Medicaid patients. By contrast, the average OB/GYN in areas with the largest concentration of Medicaid patients billed for close to 1,400 Medicaid patients in 1986, and the average Medicaid patient in these areas received care from a practice with a Medicaid load of over 1,600 patients. These figures indicate that Medicaid patients in more prosperous areas are more likely to receive office-based care from "mainstream" practices with both public and private patients, while the bulk

TABLE 6

Average Number of Medicaid Patients Seen by Participating OB/GYNs and Size of Medicaid Practice Patronized by Average Medicaid Patient by ZIP Type and Percentage AFDC, Cook County, 1986

Type of ZIP and percentage AFDC	Average number of Medicaid patients per participating OB/GYN	Number of Medicaid patients in practice patronized by average Medicaid patient
Loop/perinatal centers	91.1	212
Residential		
Less than 5% AFDC	76.2	152
5-15% AFDC	165.7	354
15-25% AFDC	485.9	950
Greater than 25% AFDC	1365.4	1629

of patients in more depressed areas are limited to physicians who see very large numbers of Medicaid patients and very few, if any, private patients.

These dramatic differences in patient volume are at least suggestive of differences in practice patterns and potentially in the quality of care between "mainstream" and inner-city practices—a concern increasingly noted by public agencies both in Chicago and elsewhere (Pratt 1985; Illinois Department of Public Aid 1989; New York City Commission on the Future of Child Health 1989). Past research on the quality of care received by Medicaid patients has produced contradictory and inconclusive results (Cromwell and Mitchell 1980, 1984; Wyszewianski and Donabedian 1981), so there is currently little basis for assessing the quality of care received by Medicaid obstetric patients in different settings or defining the practice volume at which quality becomes problematic. There are several circumstantial factors, however, which suggest both cause for concern over the quality of care in large Medicaid practices and the need for further investigation of the quality and content of care available to Medicaid patients in different settings.

First, physicians practicing in areas where there are large numbers of Medicaid patients and few, if any, private patients confront strong financial incentives to develop practice styles which differ in significant ways from those of mainstream physicians. There is evidence that the high practice costs and low Medicaid fees relative to prevailing charges

in large urban areas create strong incentives to expand practice capacity in order to realize economies of scale in the treatment of Medicaid patients and bring down average visit costs by spreading practice costs over a larger number of patients (Fossett and Peterson 1989a). Physicians thus have strong incentives to see as many patients as possible and to limit preventive care and counseling, which lengthen visit times without providing additional revenue and compromise physicians' ability to realize economies of scale (Fossett and Giertz 1988). These findings are consistent with further evidence that larger Medicaid practices employ larger numbers of nurses and other auxiliary personnel (which increases practice capacity), have lower costs (for most specialties) and net revenues per visit, but higher patient volumes and shorter appointments, than practices with few Medicaid patients (Cromwell and Mitchell 1980) and with other evidence which suggests that physicians whose practices contain large numbers of minorities provide less preventive care than other physicians (Gemson, Elinson, and Messeri 1988).

Second, a rough comparison indicates that practice volumes in large Medicaid practices are, in fact, dramatically larger than those maintained by "mainstream" OB/GYNs with large practices. We cannot directly measure the volume of prenatal visits in these practices because of Illinois' "global-fee" system in which prenatal care and delivery are billed together. Even under extremely conservative assumptions, however, the average OB/GYN Medicaid patient load in inner-city areas implies an annual volume of prenatal visits from Medicaid patients alone well above the total practice volumes of most "mainstream" OB/GYNs. While "mainstream" practice volumes vary widely, surveys by the American College of Obstetricians and Gynecologists indicate that only about 20 percent of OB/GYNs perform as many as 20 deliveries per month (American College of Obstetricians and Gynecologists 1988). If each of these patients received the ACOG-recommended 14 prenatal care visits, a "mainstream" OB/GYN with a large practice would provide approximately 3,100 prenatal visits per year. By contrast, an assumption that one-half the patients in the average inner-city practice are pregnant implies a "recommended" volume of almost 8,900 prenatal care visits; a more realistic assumption that 70 percent are pregnant produces a volume of almost 12,500 visits. These calculations may overstate the volume of inner-city visits, however, since lower-income patients tend to start prenatal care later in pregnancy and may receive less total care than "mainstream" patients. A recent study

of prenatal care use by poor women in inner-city Chicago neighborhoods, for example, found that 57 percent of women received less than the ACOG-recommended amount of prenatal care, with an average shortfall of 6 visits (Perloff, Morris, and Thoma 1989). Adjusting earlier assumptions to reflect this lower volume of use produces an estimated volume of between 6,800 and 9,600 prenatal visits in the average inner-city practice, or between two to three times the volume in a large mainstream practice (see appendix note 7).

These calculations can hardly be considered conclusive. Some of these differences in volume of visits almost certainly reflect increased efficiency in practice organization designed to maximize practice volumes and realize economies of scale rather than lower quality care. Particularly at higher volumes, however, this level of office visits is also not inconsistent with patient “churning”—large numbers of short visits where the care provided is largely perfunctory. An assumption that these physicians see nothing but Medicaid patients and have office hours comparable to mainstream physicians—a presumption that appears reasonable on the basis of past research (Cromwell and Mitchell 1980)—implies an average visit time of 6 to 9 minutes in high-volume Medicaid practices, well below the 15-minute average reported by “mainstream” OB/GYNs in large metropolitan areas (American Medical Association 1988). The potential for superficial or low-quality care under these circumstances is particularly high for Medicaid patients, who are more likely to be at high risk for adverse pregnancy outcomes and hence as a group may require more intensive preventive care than “mainstream” patients (U.S. Public Health Service 1989). Perhaps more important, unlike their higher income counterparts, Medicaid patients may lack the education or sophistication to know they are receiving low-quality care. While these figures are crude and circumstantial at best, they raise a number of important unanswered questions and suggest the need for greater research attention to the quality and content of care in high-volume inner-city Medicaid practices.

Third, available evidence also suggests that inner-city physicians are less well-credentialed than mainstream physicians. Much research has shown that physicians who accept large numbers of Medicaid patients are more likely to be foreign medical graduates (FMGs) and are less likely to be board certified than “mainstream” physicians (Perloff, Kletke, and Neckerman 1986, 1987; Sloan, Cromwell, and Mitchell 1978). This lack of mainstream credentials is consistent with anecdotal

evidence that these physicians are not actively involved in local perinatal referral networks and lack admitting privileges at major hospitals. This professional isolation from the "mainstream" medical community may deprive physicians of any regular means of staying abreast of advances in treatment and limit the effectiveness of the desire to maintain a favorable reputation with colleagues as a mechanism for fostering adherence to proper standards of care.

While it should be re-emphasized that these arguments are circumstantial, the concentration of women who are both more likely to be at risk for pregnancy complications and adverse outcomes and less likely to be informed consumers of care in a small number of high-volume private, office-based practices makes the question of the quality of care in these practices particularly critical. The combination of strong financial incentives to limit preventive care, exceptionally high practice volumes relative to large mainstream practices, and less well-credentialed physicians in inner-city areas suggests a strong need for greater attention by both researchers and policy makers to the quality and content of prenatal care in large Medicaid practices.

Policy Consequences

Demographic and economic changes in many American cities have altered the problem of access to maternity care for lower-income women. Movements in the location of jobs, changes in the location of black working- and middle-class households, and restrictions on the housing choices of lower-income groups have increasingly concentrated poor minority households, who compose the bulk of current Medicaid obstetric patients, in severely depressed inner-city communities. This limited number of practice locations which draw on both private and Medicaid patients has provided most office-based physicians with strong financial incentives to establish practices in prosperous areas largely inaccessible to poor households. The current access problems of lower-income groups are largely the result of an inadequate supply of physicians in the areas where they reside, rather than the result of decisions by physicians not to accept Medicaid patients for reasons that are largely financial.

While changes in Medicaid eligibility and increases in reimbursement may improve access to obstetric care for more residentially dis-

persed "near-poor" women, these policy changes are insufficient to affect access to care for the large numbers of pre-expansion and newly eligible women residing in isolated inner-city communities. Access to office-based physicians in these areas is unlikely to be affected appreciably by expanding eligibility or raising Medicaid reimbursement to physicians, since almost all physicians in these areas already accept large numbers of Medicaid patients. Improved access to physician services rather requires increases in the number of physicians. Achieving this increase in supply solely through Medicaid fee increases would require that reimbursements be increased to the point where physicians would be willing to relocate or to establish practices in such areas rather in more prosperous neighborhoods with larger numbers of privately insured patients. While precise estimates are difficult to make, Medicaid reimbursement for an uncomplicated delivery amounted to less than one-half the typical private payment over the period under consideration here (Illinois Department of Public Aid 1989), suggesting that fees would have to be better than doubled to equalize reimbursement between public and private patients. Given the low professional status of caring for Medicaid patients, the widespread, if apparently mistaken, beliefs that "the poor sue more" (Institute of Medicine 1989) and are more difficult patients, it would likely require Medicaid reimbursements appreciably above private levels to make OB/GYNs indifferent to the choice of a ghetto or other location. Reimbursement increases of this level seem politically improbable; more modest increases seem likely to provide windfall profits to existing providers.

Expanding support for such institutional providers as inner-city hospitals and academic medical centers, community health centers, and local public health clinics offer more promising alternatives for increasing provider supply in severely depressed inner-city communities. These providers are generally located in lower-income areas and represent a significant foundation upon which to build an expanded inner-city primary health care system. Hospital outpatient clinics and quasi-public nonprofit agencies such as community health centers represent a particularly good investment of resources because they have been demonstrated to expand the availability of care to Medicaid patients in otherwise underserved inner-city communities (Fossett, Peterson, and Ring 1989; Fossett and Peterson 1989b). In addition, public health clinics and community health centers offer care which is readily accessible (Rosenbaum 1986), effective in reducing hospitalization rates and

lengths of stay (Rosenbaum 1986; Geiger 1984; Ginzburg and Ostow 1985), and capable of improving perinatal health outcomes (Geiger 1984; Davis et al. 1987; Handler et al. 1989).

Expansion of inner-city institutional settings can be accomplished, in part, through changes in federal and state Medicaid policy. Institutional providers will benefit significantly from expansions in Medicaid eligibility that will provide payment for services that may have been previously uncompensated. This increased support may also reduce the incentives to private hospitals to transfer pregnant women to public hospitals for reasons that are largely economic (Handler et al. 1988).

It is very much open to question, however, whether this additional revenue will be sufficient to enable these agencies to expand their capacity to provide care. Many inner-city hospital outpatient departments have closed, and others have come under considerable financial pressure as a result of cost increases and the loss of private patients, as well as the burden of caring for the uninsured. In addition, many public and nonprofit agencies have historically experienced difficulty paying salaries adequate to attract OB/GYNs, and the virtual elimination of the National Health Service Corps scholarship program has deprived them of a major source of affordable physicians. Inner-city capacity could be increased through careful re-examination by state Medicaid programs of the methods used to reimburse outpatient clinics and community health centers. Some states pay such providers on a fee-for-service basis while others rely on inclusive rates (Lewis-Idema 1989). In either instance, the goal should be to ensure that reimbursement methods fully reflect the resource costs associated with provision of services.

In addition, state Medicaid agencies should increase their attention to the supply of providers in inner-city areas. Historically, Medicaid agencies have devoted little attention to this problem. Lack of provider participation in Medicaid has been a cause for occasional concern, but Medicaid agencies have made few attempts to influence the overall quantity and quality of providers available to those eligible. This passive stance understates the influence that Medicaid agencies can have on the supply and the quality of prenatal care available in the inner city. State Medicaid agencies might offer reimbursement incentives for the provision of prenatal care to residents of underserved communities, and provide reimbursement for the services of mid-level practitioners. In addition, as some states are now doing, Medicaid agencies could es-

establish quality-of-care standards for Medicaid-participating providers that would include the expectation that providers assess the risk level of Medicaid-eligible pregnant patients and ensure that they obtain prenatal care appropriate to their level of risk. As the major purchaser of health care in inner cities, Medicaid has a critical role in improving perinatal outcomes, and a more aggressive stance toward influencing the health care infrastructure in inner cities, therefore, seems appropriate.

State Medicaid agencies should also become more aggressive in developing collaborations with other agencies directly concerned with problems of provider supply to develop programs to meet the needs of the underserved. These might include programs to subsidize the malpractice costs of obstetricians locating in underserved communities, new state loan-repayment programs designed to attract health care personnel into underserved communities, and programs offering new incentives for community hospitals and academic medical centers to establish comprehensive ambulatory care sites in underserved communities.

Other incentives to expand the capacity of inner-city health care settings include further increases in federal appropriations to the Title V Maternal and Child Health Block Grant, which is targeted to medically underserved women and children, and to the Migrant and Community Health Center Program. While there have been modest increases in appropriations to the Maternal and Child Health Block Grant in recent years, appropriations declined in real terms by 14 percent between 1979 and 1989. As a result, fewer than one-half of all states are able to offer comprehensive prenatal care on a statewide basis (Rosenbaum, Hughes, and Johnson 1988). Similarly, during the early 1980s budget reductions by the Reagan administration resulted in the closure of more than 200 health centers (Geiger 1984), and in 1988 the Community and Migrant Health Center Program was funded at a level adequate to support only 550 such centers (Children's Defense Fund 1989). Small core-operating grants, reduced funding for categorical prevention programs, diminished numbers of National Health Service Corps placements, and dwindling Medicaid reimbursement levels, as well as the burden of providing care to the uninsured, have placed many centers in severe financial distress. Increased federal appropriations would enable the Migrant and Community Health Center Program to fund more centers, as well as to provide the more generous core-operating grants that would enable these institutions to expand and strengthen

their maternity services. More directly, expansion of the "Infant Mortality Initiative" begun in 1988 would enable community health centers to expand the levels of prenatal care they provide.

Finally, inner-city capacity could be expanded by reinstatement of the National Health Service Corps (NHSC) scholarship program and development of new federal and state loan-repayment programs designed to attract graduating physicians and nurses into the nation's primary health care shortage areas. Phase-out of the NHSC scholarship program began during the Reagan administration and has been predicted to result soon in severe manpower problems in many underserved communities (Davis et al. 1987). By 1988 only 40 scholarships were awarded, compared with more than 4,300 in 1980. Currently, the NHSC has approximately 3,300 medical professionals in the field, but by 1990 that number is expected to decline to 900 (Children's Defense Fund 1989), a reduction of over 70 percent. Recent congressional action has reduced this rate of decline slightly, but this will only marginally offset earlier program cuts.

In conclusion, large disparities in physician supply between rich and poor areas reduce the likelihood that Medicaid eligibility expansions will result in improved access to care for the inner-city poor. They also potentially undercut the efficacy of more ambitious proposals now under discussion in many academic and policy circles to alter Medicaid eligibility more dramatically or to replace it altogether with a more comprehensive financing system that would guarantee universal eligibility. While universal eligibility will achieve the important objective of removing financial obstacles to obtaining care, it will not expand the supply of providers available in severely depressed inner-city communities. Maternal and child health problems are currently most severe, and access to care is most problematic, in those areas where large proportions of women of childbearing age are already eligible for Medicaid-funded care. Improving access to adequate maternity care in depressed inner-city areas is a complex task that requires attention to the availability of nutrition and substance-abuse counseling and other nonmedical services, as well as insuring that patients are able to make use of available services and are motivated to do so. At an irreducible minimum, however, this task requires increases in the number of physicians. Unless eligibility expansions are closely coupled with concerted efforts to increase the supply of providers in these communities, expanded eligibility, whether through Medicaid or some other scheme,

cannot fully succeed in increasing the number of women who are better able to obtain prenatal care.

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Address correspondence to: James W. Fossett, Assistant Professor, Department of Public Administration and Policy, Graduate School of Public Affairs, State University of New York at Albany, 135 Western Avenue, Albany, NY 12222.

Appendix Notes

1. In order to prevent extreme values for physician-to-population ratios and other measures of access in the Loop, Chicago's central business district, and other commercial areas which contain large numbers of physicians, but few residents, so-called "point ZIPs" and other smaller ZIP codes were aggregated with contiguous ZIPs until the combined populations exceeded 25,000. This aggregation produced a total of exactly 100 ZIPs and ZIP aggregations in Cook County, with 50 being located wholly or primarily inside Chicago and 50 in suburban Cook County. These units are generally appreciably larger than the 77 Chicago community areas, which are aggregations of census tracts that roughly correspond to neighborhood boundaries; they are analyzed in Wilson's (1987) work and widely used by Chicago service agencies for data collection and analysis and program organization. For a fuller discussion of the use of ZIP codes and a description of the aggregation methodology, see Kletke and Marder 1987.
2. The estimating equations for the percentage of the population below the poverty level included the percentage of households with income below \$7,500, the percentage of the population that was black, and the percentage of the population less than five years of age. The equation for the percentage of the population between 100 and 150 percent of the poverty level included the percentage of households with income between \$5,000 and \$10,000 and the same race and age variables. The suburban equation for the percentage of the population with incomes between 150 and 200 percent of the poverty level included the percentage of households with income between \$10,000 and \$15,000; and separate variables for the percentage of the population less than the age of 5, over 65, and of Spanish origin. The city equation included only the income variable and the percentage of the population less than the age of 5. The 1987 equations included adjustments to the income categories to allow for inflation in the poverty level between 1980 and 1987. The 1987 poverty estimates were also scaled upward to correspond to independent and more reliable estimates of the poverty population for the city and suburban Cook County by the research staff of the Northern Illinois Planning Commission.

3. The use of "office based" in this article differs slightly from its meaning in the AMA Masterfile and in common parlance. The Illinois Department of Public Aid's (IDPA) Medicaid records count physician care at the site where it is provided rather than by the primary occupation of the physician providing the care, which is the basis for classification in the Masterfile. A medical school faculty member, for example, who treats Medicaid patients in a part-time private practice will bill IDPA for "office-based" care, even though he or she may not be listed in the Masterfile as an "office-based" physician. To compensate for these differences, we use the term "office based" to refer to all physicians in an area *except* the Masterfile categories of interns, residents, hospital fellows, and salaried hospital staff physicians, who bill the IDPA for services to Medicaid patients through the hospital which employs them and are not counted in the data reported here. Staff OB/GYNs at community health centers and other governmental and nonprofit clinics, who also generally bill through the institution which employed them, are also excluded from both the counts of office-based OB/GYNs and those of Medicaid participating physicians.
4. The average OB/GYN in the Loop or around a perinatal center hospital saw fewer than 100 Medicaid patients in 1986, as compared to over 1,300 in residential areas. The Gini coefficient, a measure of the concentration of Medicaid patients across all office-based OB/GYNs in a Zip code, is appreciably higher in the Loop and in Zip codes containing perinatal centers than in residential areas with comparable numbers of AFDC recipients, indicating a higher degree of concentration in nonresidential areas.
5. The average ZIP code where less than 5 percent of the population are AFDC recipients includes 514 AFDC recipients, too small a population base to make physician-to-population ratios reliable, and an average of 5 private, office-based OB/GYNs. By contrast, the residential ZIP codes where more than one-quarter of the population are AFDC recipients contain an average of 22,750 AFDC recipients and less than two private office-based OB/GYNs, excluding staff physicians at community health centers and other public or nonprofit clinics.
6. Participation is defined here as billing for more than 20 Medicaid patients in calendar year 1986. This limitation follows earlier studies (Held, Holahan, and Carlson 1982; Fossett and Peterson 1989a) in defining as nonparticipants physicians who have only incidental or sporadic contact with the program.
7. A referee has suggested that these high patient numbers and volume of visits may reflect billings by more than one member of a group practice under one provider number—a common practice under other insurers. While this possibility cannot be completely ex-

cluded in every case, it seems unlikely to have a large impact on our results. Like most states, Illinois does not assign provider numbers to group practices and requires that billings be made by individual physicians, who have the option of assigning payment to another business entity, such as a group practice. No group practices appear on the Illinois Department of Public Aid's listing of OB/GYNs with provider numbers in Cook County. This referee also suggests that health department clinics or community health centers, whose physicians may not have admitting privileges, may refer women to private physicians for the final stages of prenatal care and delivery. Under Illinois' global-billing system, this would result in physicians receiving fees for deliveries without providing prenatal care, causing our calculations to overstate the volume of visits. At least in Chicago, this occurs only infrequently, if at all. Community health centers have OB/GYNs with admitting privileges on staff, and most referrals involve high-risk patients, who are referred not to private physicians, but to perinatal outpatient facilities at the University of Illinois and Cook County hospitals (Illinois Department of Public Health 1989; Handler et al. 1989).