

# Prenatal, delivery, and infant care under Medicaid in three States

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*Medicaid services and expenditures were analyzed for care during the prenatal, delivery, and post-delivery periods in three States—California, Georgia, and Michigan. Uniform data were used from the Health Care Financing Administration's Medicaid Tape-to-Tape project, 1983-84. Results indicate that from 16 to 24 percent of all births in the States of the study, during the study period, were financed by Medicaid. Overall, the study showed that more than*

*one-half of expenditures for the study population were for the delivery hospitalization, and less than 12 percent were for prenatal care. As expected, a substantial portion of expenditures were for high-cost deliveries, up to 41 percent of total delivery payments. From 33 to 41 percent of total Medicaid expenditures for Aid to Families with Dependent Children were for pregnancy, delivery, and newborn care in 1983.*

## Introduction

The Medicaid program is the Nation's primary source of financing medical care for low-income women and their children. A lack of uniform reporting systems across States has hindered efforts to perform comparative analyses of Medicaid expenditures for pregnancy and infant care. In addition to a lack of information on expenditures, relatively little has been known about the actual number of women and infants who receive Medicaid services and the types of Medicaid services they receive.

Information presented in this article is from the Medicaid Tape-to-Tape project (Health Care Financing Administration, 1983-84). The Tape-to-Tape project contains unique, person-based information on all services covered by Medicaid since 1980 in several States.

In this study, Medicaid-financed deliveries from California, Georgia, and Michigan for the month of October 1983 were identified, and health services expenditure measures were developed and analyzed. We divided services associated with these deliveries into three periods: prenatal (January 1983 through the date preceding delivery admission); delivery hospitalization; and post-delivery (date following delivery hospitalization discharge through October 31, 1984).

This study complements previously analyzed aggregate, cross-sectional Medicaid data on services related to pregnancy and infant care by analyzing person-based data. Information from this analysis may be useful in current policy debates on financing of cost-effective health services for low-income pregnant women and infants.

## Goals of the study

The purpose of this study was twofold. Because relatively little information is available on utilization

of and expenditures associated with pregnancy and post-delivery care under Medicaid, we designed this study to demonstrate the possibility of using Medicaid secondary data files to further study such care. Using those data files, we provide additional information on the following aspects of Medicaid-financed pregnancy and post-delivery care:

- The number of deliveries covered by Medicaid.
- The volume and type of Medicaid services received by women during the prenatal period.
- The Medicaid charges and payments for those services.
- The length of stay, charges, and payments for delivery hospitalizations financed by Medicaid.
- The type and volume of Medicaid services received by women and their infants during the post-delivery period.
- Total Medicaid expenditures for prenatal, delivery, and post-delivery care.

## Review of previous studies

The Alan Guttmacher Institute (AGI) has conducted a number of studies on the role of the Medicaid program in the financing of pregnancy and infant care. Based on data from the 1984 Current Population Survey, Gold and Kenny (1985) of AGI report that 9 percent of women of childbearing age receive publicly funded support through Medicaid. Their analysis also found that in 1984 Medicaid covered only 43 percent of women of childbearing age whose annual family income was less than \$5,000 and 31 percent of those with incomes between \$5,000 and \$9,999.

AGI estimated that average Medicaid expenditures per delivery for obstetrical care were \$2,200 during the period 1984-85. These ranged from a low of \$1,310 in Louisiana to a high of \$3,520 in Tennessee. The proportions of total births that were covered by Medicaid ranged from an estimated 3.1 percent in Alaska to 24.3 percent in California (Kenney, Torres, Dittes et al., 1986). According to AGI, 17 percent of total U.S. births are financed by Medicaid (Alan Guttmacher Institute, 1987).

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Rodgers (1986) estimated that Medicaid expenditures for women who delivered in 1987 would average \$2,850. This average consisted of \$1,600 for hospital care, \$500 for physician fees, \$100 for pregnancy-related care, and \$600 for non-pregnancy-related care. These estimates were derived from projections of Medicaid fees in various States, rather than from actual per-person expenditures, which were not readily available.

Several State-specific studies have examined Medicaid expenditures for obstetrical-related care. Schramm, Land, and Dutton (1984), in a study evaluating the cost effectiveness of prenatal care, studied Medicaid prenatal care expenditures in Missouri for 1981-82. For mothers deemed to have adequate prenatal care (as defined for the Schramm study as beginning by the fourth month of pregnancy and consisting of at least eight prenatal visits), the average Medicaid expenditure was \$1,580 for maternal care and \$1,249 for infant care. Expenditures for mothers with inadequate prenatal care were lower (\$1,455) and only marginally higher for their infants (\$1,264). Despite this finding, the authors concluded that prenatal care was a reasonable investment. They found that expenditures associated with providing adequate prenatal care were small in comparison to the overall budget for mothers and newborns. They concluded that providing adequate prenatal care apparently contributed to reducing low birthweight and, possibly, neonatal mortality rates.

A 1984 study in New York compared cost to the State of a normal obstetrical episode with the cost for a newborn with severe medical problems. Infants born without serious medical problems cost the State an average of \$2,316, but average expenditures for infants experiencing complications were \$8,635. Although there were four times as many infants without serious complications, total expenditures were higher for infants with complications (Fanning, Gallagher, and Zelterman, 1987).

Medicaid is not the only source of pregnancy-related funding for low-income women. Newacheck (1987) estimated that in 1984 approximately 5 million women of childbearing age and below the poverty level were not covered by Medicaid. Based on findings of the 1980 National Medical Care Utilization and Expenditure Survey the Alan Guttmacher Institute (1987) reported that 40 percent of low-income (below 100 percent of the Federal poverty level) women who received prenatal care in 1980 were covered by Medicaid all of the year and 23 percent were covered part of the year. Another 23 percent had no health insurance coverage during the year. Of the remaining 14 percent, 10 percent had private coverage all year and 4 percent had private coverage during part of the year.

### **Medicaid eligibility policy**

To be eligible for Medicaid, a pregnant woman must meet several criteria. She must be in one of the categories of individuals covered by Medicaid, and her

income and assets must fall below the levels set by her State of residence.

In 1983, all States were required to provide Medicaid coverage to pregnant women who received cash assistance under Aid to Families with Dependent Children (AFDC). In addition, States could opt to provide Medicaid coverage to several other groups of pregnant women: pregnant women who would be eligible for AFDC if the child were already born; pregnant women in two-parent families where the principal earner was unemployed; pregnant women in working two-parent families; and pregnant teenagers under the "Ribicoff" child option. Persons meeting these categorical criteria were eligible if they also met their State's AFDC income and asset level. States had complete discretion in setting income and asset levels for eligibility determination for AFDC and, thus, Medicaid.

States could also choose to operate a medically needy program. Under such a program, categorically eligible pregnant women whose incomes were above the State's AFDC income level could qualify for Medicaid. The medically needy income level was set by the States and could be no higher than 133 percent of the AFDC payment standard. Medical expenses were subtracted from income prior to eligibility determination. Thus, otherwise eligible persons could spend down to medically needy levels if they experienced substantial medical expenses. A complicated pregnancy or delivery could, for example, result in a marginally poor or middle income family qualifying for a State's medically needy program.

Eligibility options and income levels in the three study States in 1983 are presented in Table 1. California was the most generous State in terms of coverage options. The State also operated a medically needy program. California income standards were among the Nation's highest.

Georgia had the most restrictive program of the three States in 1983. During the first half of the year, the State did not cover any of the optional groups; thus, only those women eligible for AFDC cash assistance were eligible for Medicaid. In July 1983, however, Georgia expanded coverage to pregnant women with no eligible children. This was the first of several eligibility expansions Georgia adopted for pregnant women and infants during the mid-1980's. Georgia's income level for AFDC cash assistance was lower than that of the other two States at 28 percent of the Federal poverty level. The State had no medically needy program in operation during the study period.

Michigan (as did California) covered all optional eligibility groups, with the exception of pregnant women in two-parent working households. Michigan income levels, not as generous as California, were approximately 58 percent of the Federal poverty level for both AFDC and medically needy families of four. Michigan's medically needy program covered only persons with incomes above the cash assistance level who experienced high medical expenses causing them to spend down to medically needy eligibility levels.

**Table 1**  
**Optional Medicaid-covered eligibility groups,**  
**qualifying income levels, and selected**  
**Medicaid optional benefits: California, Georgia,**  
**and Michigan, 1983**

Group, income level, and benefit	California	Georgia	Michigan
<b>Optional groups</b>			
Pregnant women with no eligible children	X	<sup>1</sup> X	X
Pregnant women in two-parent families	X	O	O
Pregnant women in unemployed two-parent families	X	O	X
Pregnant teenagers ("Ribicoff" option)	X	O	X
Medically needy	X	O	X
<b>Monthly qualifying income levels (family of four)</b>			
AFDC cash assistance	\$625	\$238	\$492
Medically needy	834	NA	492
Federal poverty level	848	848	848
<b>Benefits</b>			
Dental services	X	O	X
Prescribed drugs	X	X	X
Emergency hospital services	X	O	X
Clinic services	X	O	X

<sup>1</sup>In July 1983, Georgia expanded coverage to pregnant women with no eligible children.

NOTES: X is offered. O is not offered. NA is not applicable. AFDC is Aid to Families with Dependent Children.

SOURCES: Hill, I.: *Broadening Medicaid Coverage of Pregnant Women and Children: State Policy Responses*. National Governors' Association, Center for Policy Research. Washington, Feb. 1987; Social Security Administration: *Characteristics of State Plans for Aid to Families with Dependent Children*. In effect October 1, 1983. SSA Pub. No. 80-21235. Office of Family Assistance. Washington. U.S. Government Printing Office, 1984; Health Care Financing Administration: *Medicaid Services State by State*. In effect October 1, 1983. HCFA Pub. No. 02155-84. Office of Intergovernmental Affairs. Washington. U.S. Government Printing Office, Oct. 1983.

### Recent Medicaid eligibility expansions

Coverage of pregnant women and infants by State Medicaid programs has changed substantially since 1983. Brief explanations of those changes follow:

*Deficit Reduction Act of 1984*—Required States to cover income-eligible pregnant women without other children and women in unemployed two-parent families. States were also required to cover all income-eligible children born after September 30, 1983. This latter provision assured coverage of newborns in families meeting the State income eligibility criteria.

*Consolidated Omnibus Budget Reconciliation Act of 1985*—Required States to provide Medicaid services to all pregnant women meeting State AFDC income and asset requirements regardless of family structure. Newborns and their mothers were also to be provided coverage for 60 days following birth.

*Omnibus Budget Reconciliation Act of 1986*—Allowed States the option of covering pregnant women and their children who had incomes below the Federal poverty level and providing continuous eligibility throughout pregnancy regardless of changes

in family income. OBRA 1986 also allowed States to waive the assets test and offer presumptive eligibility to pregnant women to avoid potential delays in obtaining Medicaid coverage during pregnancy.

*Omnibus Budget Reconciliation Act of 1987*—Extended the OBRA 1986 optional coverage of pregnant women and their children up to 185 percent of the Federal poverty level.

*Medicare Catastrophic Coverage Act of 1988*—Required States to implement the OBRA 1986 optional coverage of pregnant women and their children up to 100 percent of the Federal poverty level.

### Medicaid benefits

A number of benefits are federally required under State Medicaid programs. Mandated services of concern to pregnant women and infants include inpatient and outpatient hospital, rural health clinic, laboratory, radiology, physician, and family planning services. Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) services for young children are also required of State Medicaid programs.

Several optional benefits of importance to pregnant women and infants exist. These include dental, drug, emergency hospital, and clinic services. The provision of clinic services allows States to offer pre- and post-delivery care in various types of freestanding clinics. A recent AGI report stated that one-third of the women whose deliveries were covered by Medicaid had their first prenatal care visit in a freestanding clinic (Alan Guttmacher Institute, 1987).

Optional benefits provided by the three study States in 1983 are identified in Table 1. States may impose limits on both mandatory and optional services. The only significant limit in any of the study States was Georgia's limit on the number of physician visits. During 1983, Georgia reimbursed physicians for a maximum of 12 visits per year (except where physicians were paid a single global fee which included delivery). Copayments for Medicaid pregnancy or infant care were prohibited by the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982.

### Medicaid payment for health services

Medicaid payment methods for hospital inpatient services varied among the three study States. Each State had implemented some form of prospective hospital payment by 1983. California instituted a method of selective contracting for hospital services during the year. Bids were received for fixed per diem rates, and the State negotiated rates separately with each hospital. Because most areas of the State were under selective contracting for services by October 1983, hospital expenditures in this study generally were determined by these hospital-specific per diem rates.

Michigan's payment system involved the use of a ratio of costs to charges with stringent limits on allowable costs. This rate was based on the hospital's

previous cost experience. Although the methods for determining payment rates varied significantly, California and Michigan payment schemes were similar during 1983 in that hospitals were paid a fixed rate per day regardless of the costs or charges for medical care provided.

Georgia changed its hospital payment system during 1983. By October, most hospitals received a fixed rate per Medicaid discharge, up to a certain number of discharges. Beyond that number, the hospital was paid a reduced rate per discharge to discourage excessive admissions. The rate was not determined by the patient's diagnosis or medical costs, rather it was based on each hospital's historical cost experience. This resulted in different rates per discharge for each facility.

Two methods of payment for physician services for pregnant women were in place in the States. Medicaid services were paid on either a traditional fee-for-service basis, where each service was billed and paid for separately, or by using a "global fee" method.

Global fee payment is based on a preestablished rate for services during pregnancy and, often, delivery. States differ significantly in the degree to which they establish limits on, for example, the number of prenatal visits required in the global fee package. Many States are now developing more stringent guidelines regarding global fee packages.

Few limits were placed on global fee billing practices in the study States during 1983. Physicians were allowed to bill for a particular pregnancy using either a fee-for-service or global fee. In California and Georgia, the physician's charge for delivery was also included in the global fee. The number of prenatal visits to be covered by the global fee was unspecified in all three States.

Global fees, unlike fee-for-service bills, prohibit an accurate analysis of the number of services provided during pregnancy. Analyses of services for prenatal care visits in this study are derived from fee-for-service billing only. The expenditure analyses include both types of bills. In Michigan, global fees covered

only prenatal care making it possible to separate prenatal and delivery care service expenditures. In California and Georgia, global fees covered physician prenatal care and delivery services. It was not possible to separate all prenatal and delivery care service expenditures in California or Georgia.

All three States had fixed, statewide fee schedules for physicians paid on a fee-for-service basis. These schedules were based on the State's own procedure coding system. Providers were paid a prespecified amount according to the procedure (or visit) code on the claim, regardless of the amount charged for the service.

Hospital outpatient departments and clinics were also paid on a fee-schedule basis in California and Michigan. In Georgia, however, outpatient departments were paid on a cost basis and clinics were not covered.

Payment methods in place for pregnancy-related services during October 1983 in the three study States are summarized in Table 2. Also provided are payment rates for selected services.

### Non-Medicaid prenatal services

Medicaid was not the only source of financing for pregnancy-related services for low-income women in the study States in 1983. State and local health agencies were another important source of care. Many of these agencies received Maternal and Child Health (MCH) block grant funds. There were no mandatory reporting requirements for these agencies during the study period, and uniform data reporting on the number of visits by client across States are scarce.

A voluntary reporting system of services provided with MCH block grant funds is maintained by the Association of State and Territorial Health Officials (ASTHO) Foundation. ASTHO (1985) estimates that MCH programs provide substantial services, especially prenatal care, to low-income women and their children. These services undoubtedly interrelate with

**Table 2**  
**Medicaid reimbursement approaches for selected obstetrical services:**  
**California, Georgia, and Michigan, October 1983**

Service	California	Georgia	Michigan
Inpatient hospital	Per diem rate; hospital-specific, based on selective contracting	Per-discharge rate; hospital-specific, based on prior cost	Hospital-specific, based on prior cost
Outpatient hospital	Fee schedule	Cost-based	Fee schedule
Fee for intermediate visit	\$13	Varies by hospital	\$11
Clinic	Fee schedule	Not covered	Fee schedule
Fee for intermediate visit	\$18		\$11
Physician	Fee schedule	Fee schedule	Fee schedule
Fee for intermediate visit	\$16	\$15	\$11
Global fee	Fee schedule	Fee schedule	Fee schedule
Normal delivery	\$458	\$340	<sup>1</sup> \$360
Cesarean section	\$745	\$459	<sup>1</sup> \$471

<sup>1</sup>Obtained by adding the global fee for prenatal care (\$145) to the fee for delivery.

SOURCES: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project; Sawyer, D., Ruther, M., Pagan-Berlucchi, A., and Muse, D.: *Medicare and Medicaid Data Book*, 1983. Health Care Financing Program Statistics. HCFA Pub. No. 03156. Health Care Financing Administration. Washington. U.S. Government Printing Office, Dec. 1983; Personal communications with the States.

**Table 3**

**Number and percent of women receiving prenatal care financed through State or local health agencies and number and percent with Medicaid-financed deliveries: California, Georgia, and Michigan: Fiscal year 1983**

State	Total State deliveries, <sup>1</sup> 1983	Women receiving prenatal care from State or local health agencies		Medicaid deliveries	
		Total <sup>2</sup>	Percent of total deliveries	Total <sup>3</sup>	Percent of total deliveries
California	436,143	13,611	3.1	98,328	22.5
Georgia	90,032	29,266	32.5	14,244	15.8
Michigan	133,118	5,003	3.8	31,968	24.0

<sup>1</sup>(National Center for Health Statistics, 1985).

<sup>2</sup>(Association of State and Territorial Health Officials Foundation, 1985).

<sup>3</sup>Estimated from data from the Medicaid Tape-to-Tape project (Health Care Financing Administration, 1983-84).

Medicaid. The degree of this interrelationship, however, has not been fully studied.

The number of women reported by ASTHO to have received prenatal care from MCH block grant-funded agencies in fiscal year 1983 in the study States are shown in Table 3. The total number of deliveries in each State, and the number of Medicaid-funded deliveries in 1983 also are shown. MCH-funded clinics were relatively more important as a source of prenatal care in Georgia than in California or Michigan. Georgia's Medicaid program, as noted previously, did not cover clinics during the study period.

**Data and methods**

The States participating in the Medicaid Tape-to-Tape project voluntarily submit copies of claims payment data tapes to the Health Care Financing Administration. Because Medicaid Management Information Systems (MMIS) and claims payment procedures vary by State, files submitted to HCFA are restructured to enhance the comparability of file contents and data definitions and to allow cross-State comparative analyses. Unfortunately, Medicaid claims and enrollment files are not submitted in a manner that facilitates the analysis of pregnancy and infant care.

**Selection of study population**

All October 1983 delivery hospitalizations paid for by Medicaid in California, Georgia, and Michigan were included in the study. California, Georgia, and Michigan were chosen because of the variation among their respective State populations and the range of their respective Medicaid program characteristics. October was chosen to allow for the capture of services during the assumed prenatal period, 9 to 10 months prior to delivery, and for a full year period following delivery while staying within 2 calendar years. Data from the National Center for Health Statistics (NCHS) indicate that October 1983 births were one-twelfth of all births nationally that year (National Center for Health Statistics, 1985), and

therefore the selection of October probably did not introduce a seasonal bias in the volume of births.

Deliveries were identified using diagnosis codes on the Medicaid hospital claims. A range of codes that indicated either a pregnancy or delivery, such as "certain conditions originating in the perinatal period," were included. This broad range of codes was used to avoid the possibility of underrepresenting Medicaid-financed deliveries. Diagnosis codes for fetal deaths were included, and abortions were excluded. Howell, Brown, and Reeves (1989) provide further description of the specific diagnostic codes included in the study.

Identification of mothers and infants proved complex. Procedures for processing hospital and physician claims for mothers and infants differ greatly both by State and within States. This is because of differences in establishing a child's Medicaid eligibility independent of its mother. In these three States, at times a child's eligibility was established at delivery. In other cases, the mother and child were grouped for the delivery hospitalization only. In still other cases, maternal and child claims were grouped for a longer period of time. For this reason, it was necessary to identify pairs of mothers and infants. Mothers and infants whose claims were not grouped on one claim were linked by their Medicaid case numbers. Multiple births were linked in a similar manner.

In some instances, identification of pairs of mothers and infants required manual examination of claims. For example, hospital claims with a pregnancy code and no associated infant records were manually examined to identify evidence of infant care under the mother's identification number. Some delivery claims for infants were not associated with mother's claims; in these cases, the mother was identified after an examination of eligibility records in the same Medicaid case.

Claims for mothers and infants were retained if their records met any of the following criteria:

- An enrollment record in their case indicated a date of birth during October 1983.
- A claim date of birth was October 1983.
- A claim had an exact delivery diagnosis during October 1983.

Table 4

**Number of Medicaid deliveries and percent of total deliveries: California, Georgia, and Michigan, 1983 and United States, 1984**

Item	Deliveries				
	California	Georgia	Michigan	3-State total	United States, 1984 <sup>1</sup>
Medicaid, October 1983 <sup>2</sup>	8,194	1,187	2,664	12,045	—
Estimated total Medicaid, 1983 <sup>3</sup>	98,328	14,244	31,968	144,540	648,000
Total for 1983 (all payers) <sup>4</sup>	436,143	90,032	133,118	659,293	3,853,000
Percent Medicaid	23	16	24	22	17

<sup>1</sup>(Alan Guttmacher Institute, 1987).

<sup>2</sup>(Health Care Financing Administration, 1983-84).

<sup>3</sup>This estimate is derived by multiplying the monthly total for October by 12.

<sup>4</sup>(National Center for Health Statistics, 1985).

- Manually examined claims had an infant record following a pregnancy-related hospitalization.

There were 12,699 mother and infant linked pairs identified in the initial file. Further screening of cases by the methods described above reduced this number to 12,045.

Our methods resulted in excluding some Medicaid-covered deliveries. These included:

- Those for which the diagnosis codes were missing.
- Those that had no matching eligibility records (e.g., some cases with a retroactive determination of eligibility for the mother).
- Those that were not submitted to the State Medicaid agency for payment within 1 year of the delivery hospitalization.
- Deliveries and services covered by health maintenance organizations (HMO's). These include all services for residents of Santa Barbara and Monterey Counties in California where capitation plans were in operation during the study period.

Following the selection of the study population, Medicaid claims were extracted for services falling within one of three analytic periods based on the claim's date of service. These periods were:

*Prenatal*—Services from January 1, 1983, to the day preceding the date of admission for the delivery hospitalization.

*Delivery*—Services from the admission to discharge date of the delivery hospitalization (mother and infant combined). For cases in which mother and infant had different delivery hospital discharge dates, the last day of the delivery hospitalization was defined as the discharge date for either the mother or infant, whichever occurred later.

*Post-delivery*—Services for both the mother and infant from the day of the delivery hospitalization discharge date to October 31, 1984.

Only those women whose October 1983 deliveries were covered by Medicaid, and only those whose services were paid by Medicaid, are included. Utilization rates are based on all women in the study regardless of length of enrollment prior to or following delivery.

## Classification of services

Using provider type and specialty codes, services were grouped into several categories: inpatient hospital, outpatient hospital (including emergency room), freestanding clinic, and physician services (obstetricians, pediatricians, and all others). Physician care provided to hospitalized patients was grouped with hospital care, and that provided on an outpatient basis was grouped with ambulatory care. Laboratory and radiology services were identified only where they were billed separately from ambulatory or hospital services.

## Findings

### Number of Medicaid deliveries

The number of Medicaid-financed deliveries in each of the study States and nationally is provided in Table 4. We estimate that there were approximately 144,540 Medicaid-financed births in the three States in 1983.<sup>1</sup>

In California and Michigan, Medicaid accounted for nearly one-quarter of all State births during 1983. The Georgia percentage was lower, 16 percent. Together, the three States represented approximately 17 percent of all Medicaid births nationally in 1983.

### Prenatal services and expenditures

Utilization rates for various types of services during the prenatal period are shown in Table 5. The data are for all Medicaid-covered services for those women whose delivery was covered by Medicaid regardless of their length of eligibility during pregnancy.

The use of ambulatory services during the prenatal period is shown. As discussed earlier, global fee billing significantly reduces the detail available on the composition of services received. The percent of women with a global fee bill ranged from 49.1 percent in Georgia to 63.7 percent in Michigan.

<sup>1</sup>As noted previously, October 1983 was representative of other months during 1983 in terms of number of births (National Center for Health Statistics, 1985).

**Table 5**  
**Percent of mothers who used specified Medicaid services during the prenatal period: California, Georgia, and Michigan, October 1983 deliveries**

Type of service	California	Georgia	Michigan
<b>Ambulatory care</b>			
Percent with any care <sup>1</sup>	77.5	82.3	90.5
Percent with global fee	51.1	49.1	63.7
Percent with at least one fee-for-service visit	59.7	65.5	63.8
Average number of fee-for-service visits	3.5	3.7	3.0
Percent with a laboratory service	67.3	62.3	80.6
Percent with a radiology service	42.7	33.4	60.1
<b>Inpatient hospital care</b>			
Percent with a stay	8.6	11.8	20.0
Mean number of stays	0.1	0.2	0.3
<b>Dental care</b>			
Percent with a visit	19.5	9.5	7.6
Mean number of visits	1.1	0.6	0.1
<b>Prescriptions</b>			
Percent with a prescription	57.3	53.7	75.4
Mean number of prescriptions	2.2	3.0	4.7

<sup>1</sup>Includes care billed globally.

NOTES: Prenatal care includes services from January 1, 1983, through the day preceding the delivery hospitalization. Ambulatory care includes services from physicians, outpatient departments, and clinics.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project.

The percent of women in the study who used any prenatal ambulatory care service ranged from 77.5 percent in California to 90.5 percent in Michigan. These percentages include both global and fee-for-service billings.

The percent of women who had at least one fee-for-service visit was 59.7 percent in California, 65.5 percent in Georgia, and 63.8 percent in Michigan. Women included in these percentages may also have had an unknown number of visits billed globally.

The average number of fee-for-service visits ranged from 3.0 in Michigan to 3.7 in Georgia. Because globally billed visits were excluded, these data understate the actual number of visits. Also, some women were not enrolled for their entire pregnancy, and some visits may have been excluded from Medicaid payment. To reduce these biases, we examined Medicaid service utilization during the prenatal period for women who had no global fee bill (Table 6).

The prenatal period is shown in three trimesters, and rates are based on women enrolled in each period (Table 6). Of those without global fee bills enrolled in the first trimester, 55.7 to 64.2 percent received at least one Medicaid service. These women averaged from 1.0 to 1.3 ambulatory visits during the trimester. The use of services was similar for the second trimester and was higher in the third. Between 20 and

**Table 6**  
**Medicaid services during the prenatal period for women without global fee bills: California, Georgia, and Michigan, October 1983 deliveries**

Trimester and service	California	Georgia	Michigan
<b>First trimester</b>			
Percent of mothers ever enrolled who received services	55.7	61.6	64.2
Ambulatory visits per enrollee	1.0	1.3	1.3
Medicaid expenditures per enrollee	\$105	\$125	\$144
<b>Second trimester</b>			
Percent of mothers ever enrolled who received services	66.1	68.3	71.3
Ambulatory visits per enrollee	1.3	1.7	0.9
Medicaid expenditures per enrollee	\$118	\$142	\$137
<b>Third trimester</b>			
Percent of mothers ever enrolled who received services	69.9	71.5	79.2
Ambulatory visits per enrollee	2.0	2.5	1.5
Medicaid expenditures per enrollee	\$248	\$269	\$261

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project.

30 percent of women did not have a fee-for-service claim in the 3 months prior to the delivery month.

Laboratory services are also a routine part of preventive prenatal care (Table 5). The percentage of women who received a laboratory service during the prenatal period ranged from 62.3 percent in Georgia to 80.6 percent in Michigan. Again, billing practices complicate this analysis because laboratory services may be billed either separately or as part of another type of visit.

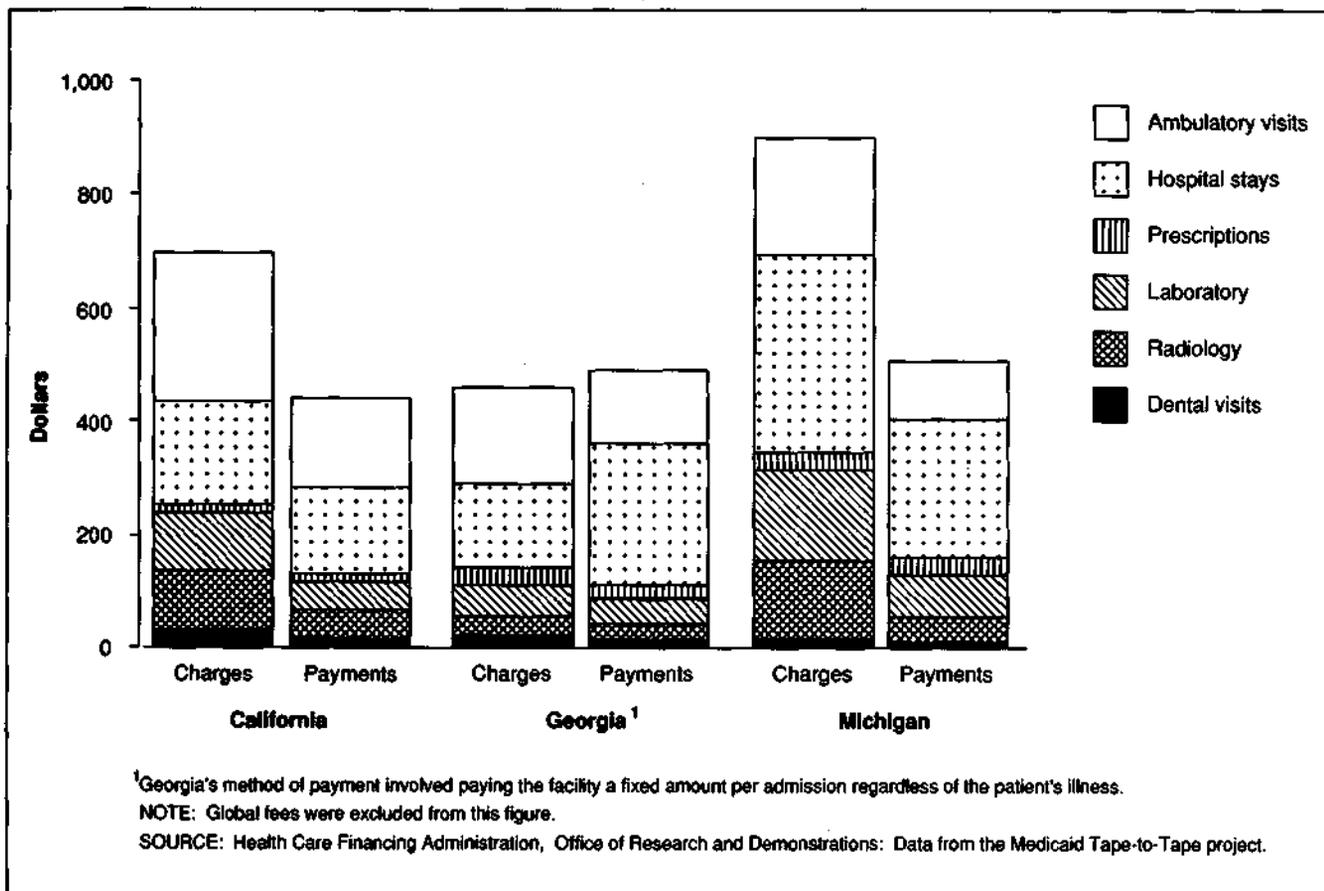
The percentage of delivering women receiving prenatal radiology services ranged from 33.4 percent in Georgia to 60.1 percent in Michigan. The percentage of women with prescription drug claims during the prenatal period ranged from 53.7 percent in Georgia to 75.4 percent in Michigan. Drug claims included prenatal vitamins in Georgia and Michigan. California, in which 57.3 percent of women had a prescription drug claim, did not provide coverage of prenatal vitamins in 1983.

The use of inpatient hospital services during the prenatal period indicates serious health problems during pregnancy. From 8.6 percent of women in California to 20 percent of women in Michigan had inpatient hospital admissions during the prenatal period.

Average fee-for-service charges and Medicaid payments for prenatal care by service type are displayed in Figure 1. The averages are based on the entire study population of women who delivered in October 1983, regardless of their length of eligibility prior to delivery.

Average fee-for-service charges during the prenatal period ranged from \$904 in Michigan to \$454 in

**Figure 1**  
**Average charges and Medicaid payments for prenatal care: California, Georgia, and Michigan, October 1983 deliveries**



Georgia. Actual Medicaid payments for prenatal care were less diverse for these States, \$441 per person in California and \$507 in Michigan.

For most services, charges were uniformly higher than payments across States. Charges were about two times as high as payments for ambulatory, laboratory, and radiology services in California and Michigan. However, Georgia paid more for hospital services (\$252) than was charged (\$148). This was because of Georgia's unusual form of hospital payment in which hospitals were paid a fixed amount per admission regardless of the patient's illness.

Total charges and payments for prenatal care were higher in Michigan than in the other States. This was because Michigan mothers used hospital services at a higher rate during the prenatal period (Table 5). Also, longer lengths of eligibility during the prenatal period contributed to the differences. Average length of prenatal eligibility was 5.9 months in California, 5.6 in Georgia, and 6.7 in Michigan (Howell, Brown, and Reeves, 1989).

### Delivery hospitalization services and expenditures

Length of delivery hospitalization ranged from an average of 3.4 days in California to 4.8 days in

**Table 7**  
**Characteristics of Medicaid delivery hospitalizations: California, Georgia, and Michigan, October 1983 deliveries**

Characteristic	California	Georgia	Michigan
Length of stay in days:			
Mean	3.4	4.4	4.8
Mode	2.0	3.0	3.0
Percent normal delivery <sup>1</sup>	50.3	47.7	36.0
Percent cesarean section	<sup>2</sup> 21.2	11.1	19.4
Percent with discharge of mother prior to infant discharge	17.6	7.4	13.0
Percent of infants using intensive care	6.0	9.2	5.7
Average charge	\$3,807	\$2,559	\$4,150
Average Medicaid payment	\$2,462	\$2,094	\$2,764
Ratio of charges to payments	1.6	1.2	1.5

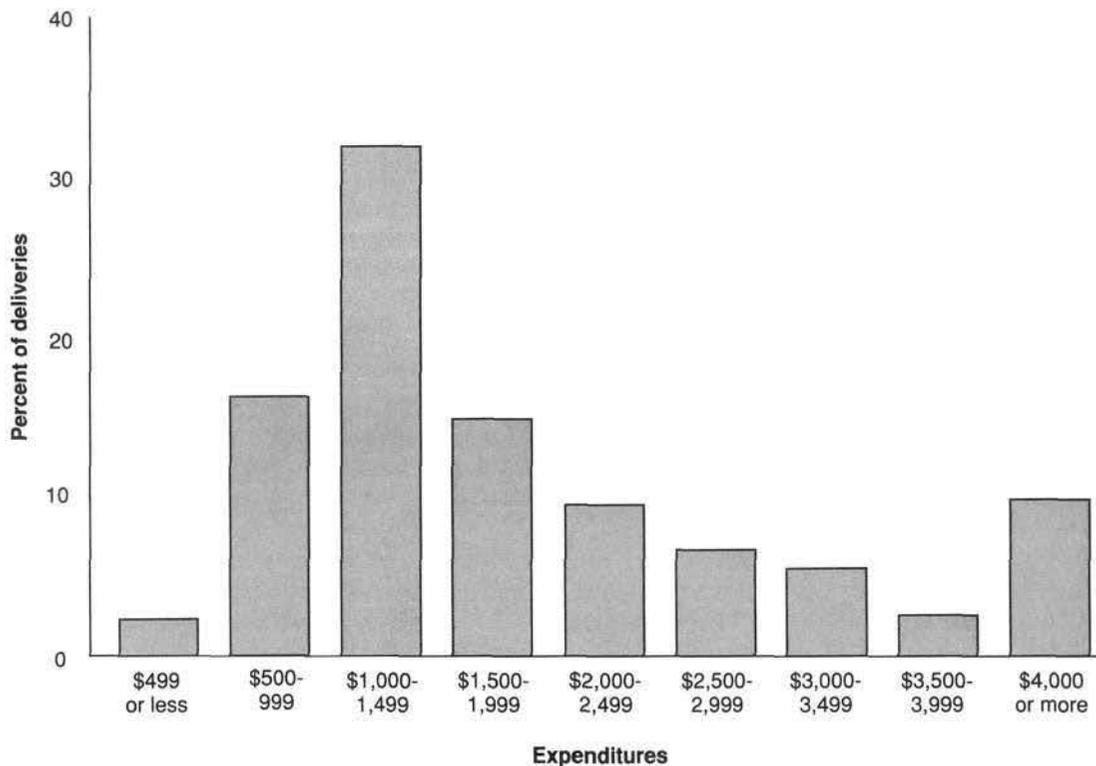
<sup>1</sup>Code of 850 from *International Classification of Diseases, 9th Revision, Clinical Modification, Sept. 1980.*

<sup>2</sup>California reports a cesarean section rate of 21.2 for Medicaid deliveries in 1984. No data were available from the Medicaid Tape-to-Tape project data base.

Michigan (Table 7). The modal stay was 2 days in California and 3 days in Georgia and Michigan. These observed Medicaid delivery hospitalization lengths of stay were similar to all deliveries nationwide. The

Figure 2

Percent of Medicaid deliveries, by delivery hospitalization expenditures: California, October 1983



SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project.

1984 National Hospital Discharge Survey reported an average delivery hospitalization stay of 3.4 days and a median of 2.5 days (Alan Guttmacher Institute, 1987).

For study purposes, a normal delivery was defined as one with a principal diagnosis of code 650 in *International Classification of Diseases, 9th Revision, Clinical Modification, 1980*. Recognizing potential coding biases, the percent of study deliveries that were coded as normal ranged from 36.0 percent in Michigan to 50.3 percent in California. The National Hospital Discharge Survey cites a national rate of normal deliveries of 40.9 percent in 1984. On the other hand, there were no complications reported on 70.9 percent of deliveries reported in the 1980 National Natality Survey (Alan Guttmacher Institute, 1987). Differing definitions of a normal delivery and methods of obtaining information contribute to the variation in these national rates.

Deliveries coded as cesarean sections accounted for 11.1 percent of all Georgia deliveries and 19.4 percent of Michigan deliveries. Data on cesarean sections were not available in California. The State, however, reported a cesarean section rate of 21.2 percent for Medicaid-financed deliveries in 1984 (State of California, 1987). Coding anomalies or Georgia's method of paying hospitals may account for that

State's comparatively low rate of cesarean sections. Nationally, AGI (1987) reported 21.1 percent of all deliveries were by cesarean section, similar to the California and Michigan rates.

The most frequent delivery complications for the three States include: trauma to perineum or vulva in delivery, fetal problems affecting management of the mother, abnormal or soft tissues of the pelvis, disproportion, early labor, umbilical cord complications, problems with amniotic cavity or membrane, and other complications of labor and delivery (Howell, Brown, and Reeves, 1989).

Two proxy indicators of serious infant complications at delivery were analyzed. One indicator is the frequency of discharge of the mother prior to that of the infant. The percent of cases in which the infant remained hospitalized after the mother's discharge ranged from 7.4 percent in Georgia to 17.6 percent in California (Table 7).

Use of neonatal intensive care services is also an indicator of infant complications. The percent of infants with charges for intensive care services ranged from 5.7 percent in Michigan to 9.2 percent in Georgia. Because these States did not pay hospitals on the basis of charges, intensive care services may be underreported.

As shown in Table 7, the average charge per delivery hospitalization ranged from \$2,559 in Georgia to \$4,150 in Michigan. Average payments were more similar across States, \$2,094 in Georgia to \$2,764 in Michigan. Distributional differences, which are illustrated in Figures 2 through 4, undoubtedly reflect the different hospital payment methods used in each State. In California and Michigan, hospitals were paid a prospective per diem rate. Thus, in those States, expenditures varied by length of stay. In California, for example, shorter, lower-cost stays were more common and expenditures for almost 40 percent of stays were in the range of \$1,000 to \$1,499. In contrast, in Michigan there were almost equal proportions of stays in three categories: \$1,000-1,499, \$1,500-1,999, and \$2,000-2,499. Recall that average length of stay was more than 1 day longer in Michigan than in California (Table 7).

In Georgia, hospitals were paid a prospective per-case rate regardless of patient length of stay or diagnosis. Figure 3 showing Georgia data is, therefore, unrelated to length of stay or services during hospitalization. Instead it illustrates the range of per-case payment rates used in the State and the relative concentration of deliveries in hospitals with rates in the specified ranges. A large proportion

(about 40 percent) had per-stay expenditures in the \$1,500-1,999 range. Some hospitals were paid at substantially higher rates for each delivery hospitalization, with more than 10 percent in the \$2,500-2,999 range. Again, those payments were not necessarily related to higher rates of delivery complications or longer lengths of stay.

### High-cost deliveries

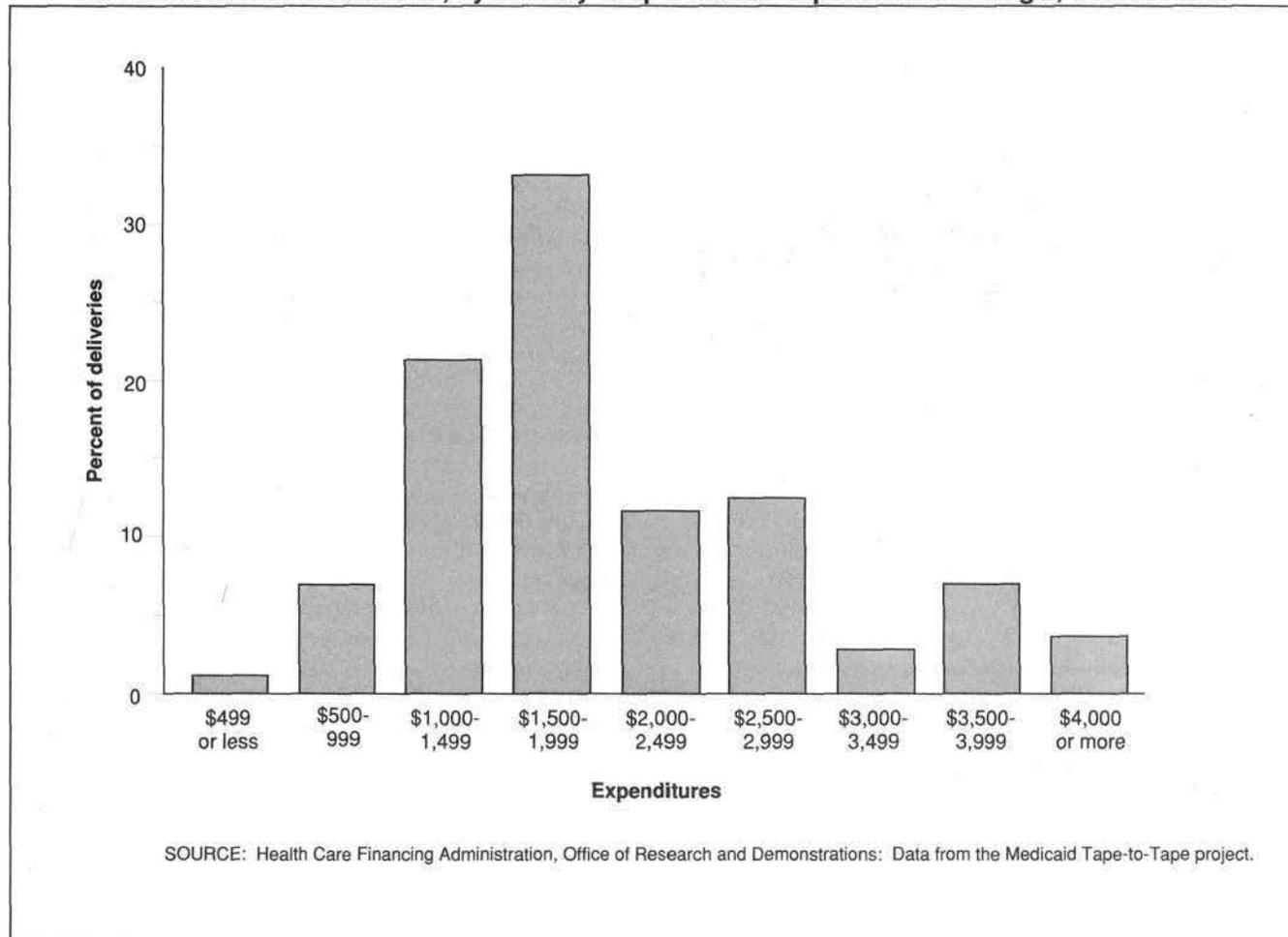
For study purposes, deliveries over \$4,000 were considered "high cost." These deliveries differed from other deliveries in terms of length of stay and diagnosis. The characteristics of these high-cost deliveries are outlined in Table 8.

There were 814 high-cost deliveries in California, 44 in Georgia, and 304 in Michigan. Georgia's inclusion of all but exceptionally high-cost deliveries in a fixed, per-case payment system may account for the relatively low number reported in that State. Average lengths of stay for these deliveries ranged from 11.3 days in California to 22.8 days in Georgia. The maximum lengths of stay were quite long, from 91 days in Georgia to 193 days in California.

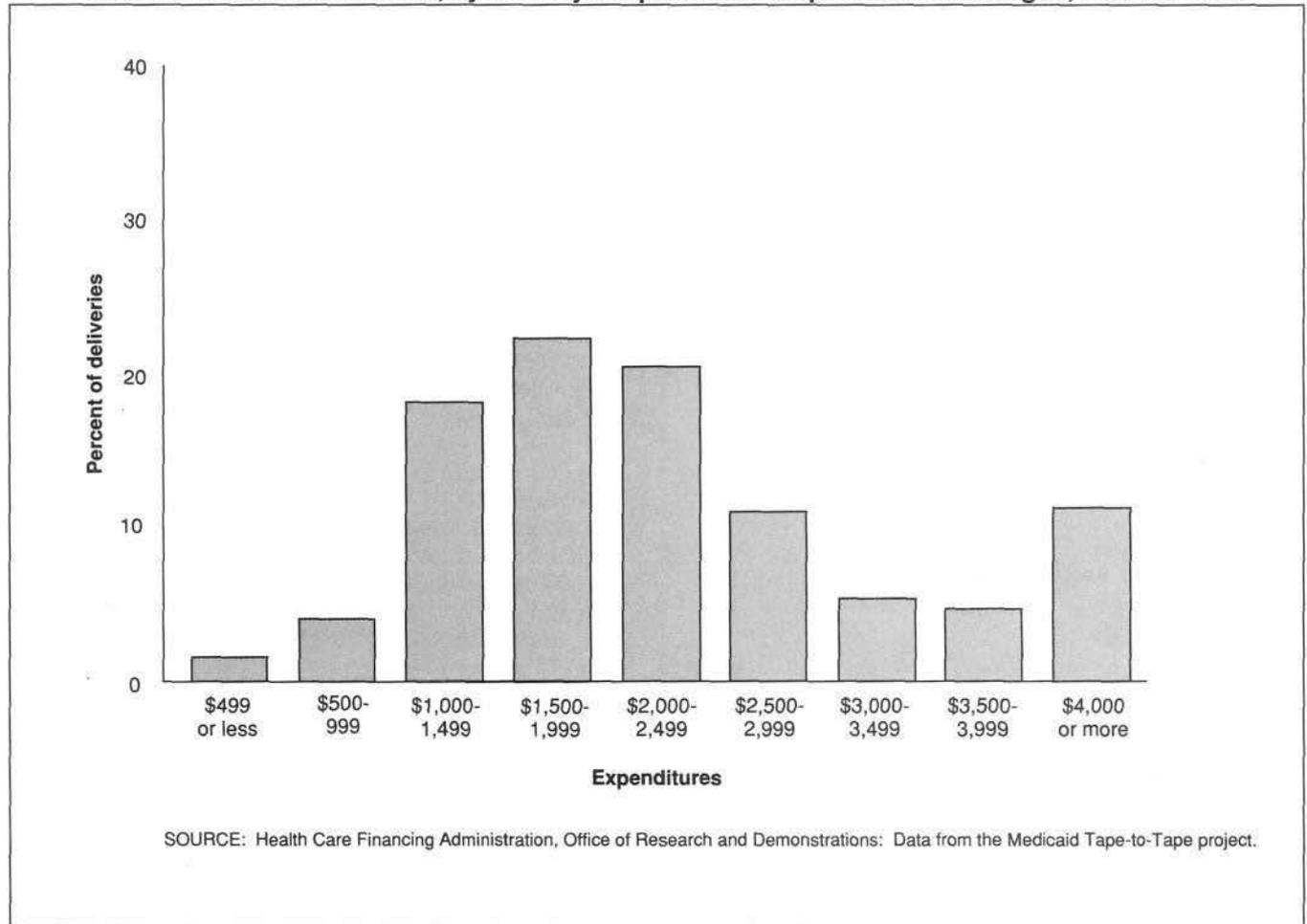
These high-cost deliveries were a significant portion of total Medicaid payments for delivery in California

Figure 3

Percent of Medicaid deliveries, by delivery hospitalization expenditures: Georgia, October 1983



**Figure 4**  
**Percent of Medicaid deliveries, by delivery hospitalization expenditures: Michigan, October 1983**



**Table 8**  
**Characteristics of high-cost Medicaid deliveries: California, Georgia and Michigan, October 1983**

Characteristic	California	Georgia	Michigan
Number of high-cost deliveries	814	44	304
Percent of all October deliveries	9.9	3.7	11.4
Length of stay in days:			
Minimum	2	2	2
Maximum	193	91	127
Mean	11.3	22.8	14.7
Percent cesarean section	NA	18.2	63.2
Percent with discharge of mother prior to infant discharge	62.6	79.5	46.7
Percent of infants using intensive care	46.3	54.5	31.6
Average charge	\$15,609	\$16,161	\$12,756
Average Medicaid payment	\$10,142	\$6,551	\$8,563
Percent of total Medicaid payments for October deliveries	40.9	11.6	35.3

NOTES: High-cost deliveries were those with Medicaid expenditures of \$4,000 or more. Expenditures are for all Medicaid-covered services during hospitalization, including physician visits. NA is not applicable.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project.

and Michigan. The percent of total Medicaid payments for these deliveries was 40.9 percent in California and 35.3 percent in Michigan. Average payments for these deliveries ranged from \$6,551 in Georgia to \$10,142 in California. Once again, Georgia's payment method masked the impact of these deliveries in that State.

A majority of infants with high-cost deliveries remained in the hospital after their mother's discharge. In Michigan, 63.2 percent of high-cost deliveries were by cesarean section. From approximately one-third to one-half, depending on the State, had claims for intensive care services.

### Post-delivery services and expenditures

The use of services during the post-delivery period, is shown in Table 9. As explained earlier, it was not possible to separate care provided to mothers and infants in this period, so their service use is grouped in the table. The vast majority of mothers and infants received Medicaid-financed services following the delivery hospitalization. Women and infants during the post-delivery period had a consistently higher level of service use than did the general AFDC population, with approximately 90 percent using some care in all

**Table 9**

**Percent of Medicaid-enrolled mothers and infants who used specified services during the post-delivery period: California, Georgia, and Michigan, 1983-84**

Type of service	California	Georgia	Michigan
<b>Ambulatory care</b>			
Percent with any care	89.8	88.0	93.4
Percent with an ambulatory visit	88.8	85.2	91.9
Average number of visits	12.3	7.5	13.6
Percent with a laboratory service	72.1	70.9	79.0
Percent with a radiology service	39.3	37.0	54.5
<b>Inpatient hospital care</b>			
Percent with a stay	19.0	22.9	27.4
Mean number of stays	0.3	0.3	0.4
<b>Dental care</b>			
Percent with a visit	31.1	21.1	23.4
Mean number of visits	2.6	1.3	0.2
<b>Prescriptions</b>			
Percent with a prescription	80.1	83.8	88.8
Mean number of prescriptions	7.0	8.6	11.5

NOTES: Includes services from discharge date for delivery hospitalization to October 31, 1984, for both mother and infant. Ambulatory care includes services from physicians, outpatient departments, and clinics.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project.

States. Among the general AFDC adult and child population, the percent using any service in 1984 was 77.3 in California, 74.6 in Georgia, and 78.7 in Michigan (Health Care Financing Administration, 1984).

In addition, inpatient hospital service utilization among women and infants during the year after delivery was higher than that of the general AFDC population. Approximately one-quarter had post-delivery inpatient stays in Georgia and Michigan, while the percentage was slightly lower in California. The percentage of the total AFDC population with an inpatient hospital admission during 1984 was 8.7 in California, 10.8 in Georgia, and 8.9 in Michigan (Health Care Financing Administration, 1984).

Post-delivery care expenditures are shown in Figure 5. Average charges and payments per mother and child were twice as high in this period as they were in the prenatal period. Possible explanations for this include the longer timeframe included in the post-delivery period (12 months), the higher proportion of women and infants enrolled in the post-delivery period, and the grouping of maternal and infant expenditures. Inpatient services represented approximately one-half of all post-delivery charges and payments in each of the States.

**Total Medicaid expenditures**

The data provide a unique opportunity to assess the total cost of Medicaid care for the prenatal, delivery, and post-delivery periods. This may be useful for planning capitation programs for obstetrical services or for projecting the cost of various Medicaid expansions which cover prenatal and infant care.

Average Medicaid expenditures for the total prenatal, delivery, and post-delivery periods and for global fees are shown in Figure 6. The average total expenditure for care during all those periods ranged from \$3,933 in Georgia to \$4,632 in California to \$4,816 in Michigan. Recalling previously presented data, Michigan's higher expenditure was primarily because of more expensive delivery hospitalizations and higher rates of hospital admissions in the prenatal and post-delivery periods. Georgia's lower expenditures are a result of lower charges for care in that State.

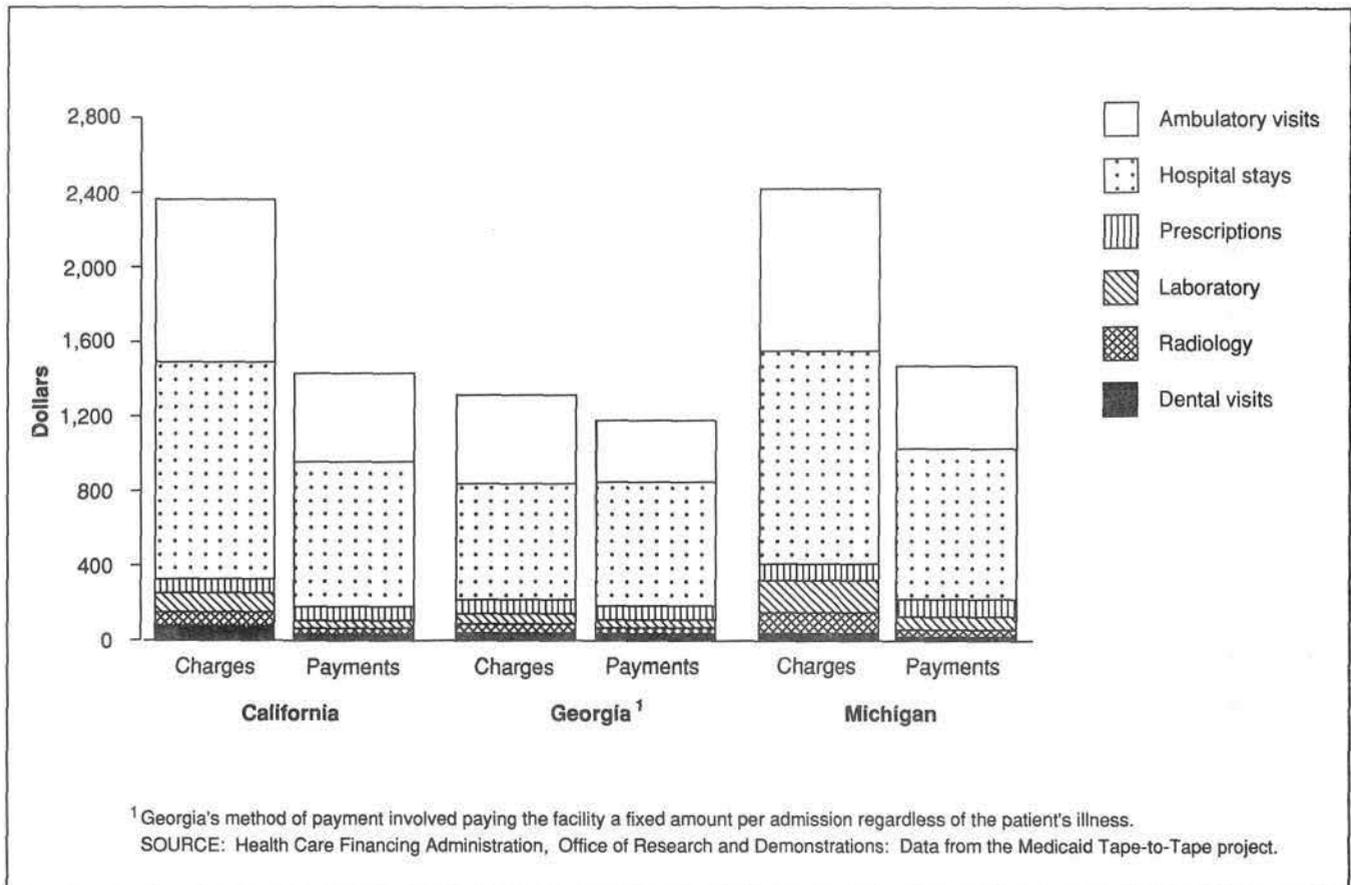
The proportion of expenditures for each period was similar across States, although the presence of global fee billing complicates the analysis. In Michigan, the prenatal period accounted for 10.5 percent of expenditures excluding the global fee of 1.6 percent. In California and Georgia, those percentages were 9.5 percent and 12.3 percent, respectively, for prenatal care and an additional 6.6 percent and 4.7 percent, respectively, for the global fee. So it is clear that in all States expenditures during the prenatal period were a small proportion of total Medicaid expenditures. In all States, expenditures averaged approximately \$500 for prenatal care including ambulatory care, hospital care, laboratory services, radiology services, and all other services.

Slightly more than one-half of the expenditures for the entire period were allocated to the delivery hospitalization in all three States. Care for the delivery for both mother and infant cost from \$2,094 (Georgia) to \$2,764 (Michigan). Care in the post-delivery period accounted for about 30 percent of expenditures ranging from an average of \$1,170 in Georgia to \$1,467 in Michigan.

We used these expenditure totals to develop an estimate of the proportion of total Medicaid expenditures that could be attributed to pregnancy, delivery, and post-delivery care for the AFDC population in these three States in 1983. These results are presented in Table 10. The number of AFDC adult and child enrollees in 1983 is shown for each State. These totals were derived from routine annual Tape-to-Tape tabulations. The number of deliveries is also shown based on the estimates in Table 4. From these we calculated the proportion of AFDC adults that were delivering mothers in 1983: 10.8 percent (California); 13.1 percent (Georgia); and 9.0 percent (Michigan). The States were thus remarkably similar in the proportion of adults who delivered in a given year. Similarly, we calculated the proportion of AFDC infants and the results also showed that the

Figure 5

Average charges and Medicaid payments for post-delivery care: California, Georgia, and Michigan, October 1983 deliveries



States were similar: 6.9 percent (California); 6.1 percent (Georgia); and 5.7 percent (Michigan).

A parallel calculation was made of the proportion of Medicaid expenditures that were devoted to pregnancy, delivery, and post-delivery care. Because mothers and infants cannot be separated, adults and children were combined. Total AFDC expenditures were derived from routine tabulations. Annual expenditures for obstetrical care were estimated using a methodology explained in another report (Howell, Brown, and Reeves, 1989).

Although mothers and infants accounted for about 10 percent or less of AFDC adult and child enrollees, their Medicaid expenditures were a much higher proportion of all AFDC Medicaid expenditures: 39.2 percent (California); 40.8 percent (Georgia); and 33.4 percent (Michigan).

### Summary and conclusions

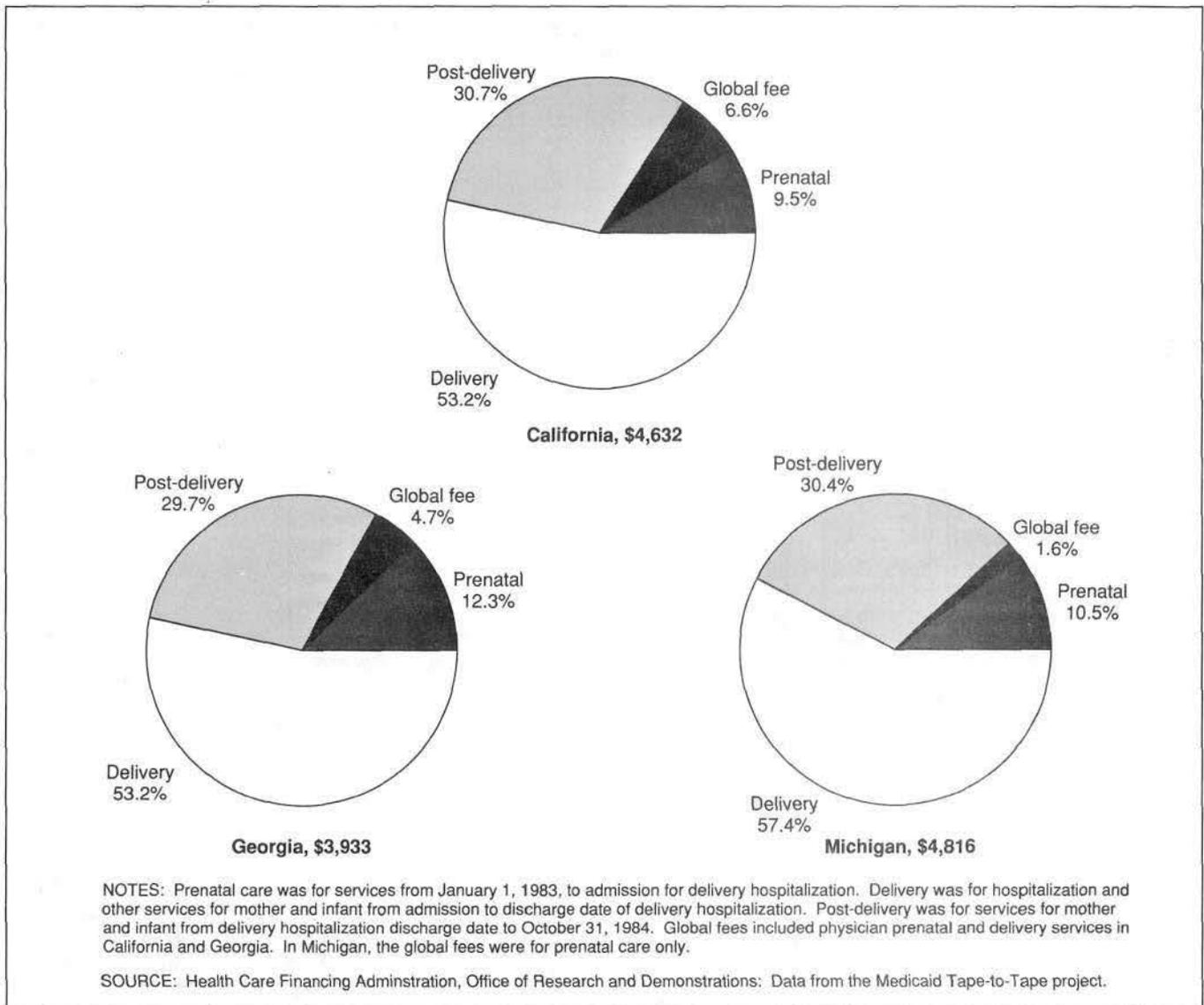
A range of information has been presented on 12,045 Medicaid-financed deliveries in California, Georgia, and Michigan during October of 1983. The study is of particular interest for several reasons. We have demonstrated a methodology for the analysis of routinely collected Medicaid data for research on prenatal, delivery, and post-delivery care. We have

also provided information on the services received by and expenditures for Medicaid-enrolled pregnant women and their infants during the prenatal, delivery, and post-delivery periods. Such information will complement existing data in that it allows for a cross-State comparative analysis of an estimated one-quarter of U.S. births financed by Medicaid in 1983. Medicaid care during the study period is also of interest because it predates, for the most part, many of the recent Medicaid eligibility changes affecting pregnant women and infants. The methodology used may assist in the development of an analytic framework with which to assess the impact of these recent changes.

Several issues concerning service utilization by enrolled women during pregnancy were addressed in the study. Analysis of the rate of prenatal ambulatory care visits, although of great interest given its assumed relationship to infant outcomes, was quite difficult because of the frequent use of global fee billing. The majority of women appear to have received some Medicaid-financed ambulatory services during the prenatal period, but the average number of visits was rather low. As expected, service use increased by trimester throughout pregnancy. A little more than one-half of those women enrolled in Medicaid and whose delivery would ultimately be covered by

Figure 6

Distribution of average Medicaid expenditures: California, Georgia, and Michigan, October 1983 deliveries



Medicaid received an ambulatory visit service during the first trimester. This suggests a need to assure that women both enroll and receive services early in pregnancy. Additionally, approximately one-quarter of the women whose October deliveries were covered by Medicaid did not have an ambulatory visit financed by Medicaid in the 3 months prior to delivery, a period when use would be expected by almost all pregnant women. Some women probably received services from providers who did not submit claims to the Medicaid program.

A majority of women also had claims for laboratory services, radiology services, and prescription drugs. Up to 20 percent (in Michigan) had an inpatient hospitalization claim during pregnancy. The frequent use of radiology and prescription drugs also suggests that pregnancy complications were present for many women covered by Medicaid.

The percent of Medicaid deliveries that were reported as normal was about the same as the national average for all deliveries. Most delivery hospitalizations financed by Medicaid had expenditures under \$2,500 and were relatively short in length (approximately 3 days). High-cost deliveries, however, accounted for more than one-third of total delivery expenditures in California and Michigan, but only 9 percent in Georgia because of its per-case reimbursement system.

As expected, Medicaid expenditures for prenatal, delivery, and infant care represented a substantial proportion of expenditures for AFDC enrollees in 1983, approximately one-third in all States. More than one-half of those expenditures were allocated to the delivery hospitalization and a majority of the remainder to post-delivery care in each State. Less than 15 percent of expenditures were for prenatal care in any State and, of those expenses, more than

Table 10

**Obstetrical care expenditures as a proportion of total AFDC Medicaid expenditures: California, Georgia, and Michigan, 1983**

Item	California	Georgia	Michigan
Number of AFDC adults <sup>1</sup>	914,304	108,397	354,258
Number of AFDC children	1,428,103	234,163	559,004
Estimated number of total deliveries	98,328	14,244	31,968
Percent of AFDC women who delivered in the year	10.8	13.1	9.0
Percent of AFDC children born in the year	6.9	6.1	5.7
Adult (male and female) and child AFDC Medicaid expenditures in thousands	\$1,155,134	\$163,131	\$460,837
Estimated obstetrical and newborn care Medicaid expenditures in thousands	\$452,702	\$55,609	\$153,894
Percent of total AFDC Medicaid expenditures for obstetrical and newborn care	39.2	40.8	33.4

<sup>1</sup>The percent of AFDC adults who are female differs by State. In 1983, the percentages were California, 75.0 percent; Georgia, 96.7 percent; and Michigan, 76.1 percent.

<sup>2</sup>An explanation of this estimate is provided in Howell, Brown, and Reeves (1989).

NOTE: AFDC is Aid to Families with Dependent Children.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Medicaid Tape-to-Tape project.

one-half were of a nonroutine nature (e.g., radiology or inpatient hospital care).

Overall, the three States were remarkably similar in their service use and expenditure patterns.

Expenditures for delivery hospitalizations were the major part of the costs associated with pregnancy, delivery, and newborn care in all States. States were similar in the proportion of the AFDC adult population who delivered, even though eligibility options for pregnant women were quite different. It does not appear that variations in expenditures for prenatal, delivery, and infant care explain (to any extent) differences across States in total Medicaid expenditures. For the measures observed, the Medicaid programs of these three widely differing States provided very similar care for pregnant women and infants during 1983.

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