

The Effects of Florida's Medicaid Eligibility Expansion for Pregnant Women

ABSTRACT

Objectives. This is a study of the effects on prenatal care and birth outcomes of Florida's July 1989 expansion in the Medicaid income eligibility threshold for pregnant women.

Methods. Concurrent and longitudinal comparisons were performed with matched birth and death certificates, hospital discharge data, Medicaid eligibility records, and records from county health departments for women giving birth from July 1988 to June 1989 (n = 56 101) or in calendar year 1991 (n = 78 421). Measures included amount and timing of prenatal care and rates of low birthweight and infant deaths.

Results. The Medicaid expansion led to greater access and improved birth outcomes. For example, the rate of low-birthweight infants among low-income women without private insurance fell from 67.9 to 61.8 per 1000, while it remained unchanged for low-income women with private insurance. Women in the expansion group who used county health departments had fewer low-birthweight infants than those using other delivery systems.

Conclusions. The benefits from the Florida expansion appear to be greater than those reported for other states. The role of the public health delivery system may account for some of Florida's success. (*Am J Public Health*. 1998;88:371-376)

Stephen H. Long, PhD, and M. Susan Marquis, PhD

Introduction

The reduction of infant mortality became a policy priority for the federal and state governments in the latter months of 1986.^{1,2} Since then, publicly financed perinatal care and delivery systems have undergone radical changes. In 1987, state Medicaid programs started to implement a series of far-reaching eligibility expansions to improve access to prenatal care for low-income women and thereby to improve birth outcomes and infant health. By July 1994, all states made Medicaid benefits available to pregnant women and infants with income below 133% of the federal poverty level, and 33 states used optional authority to set the income thresholds for eligibility at higher levels.

Earlier studies measuring the effects of providing Medicaid coverage to uninsured pregnant women have produced mixed results.¹ Those that have measured the effects in a population after expansion of the availability of public insurance to low-income women have concluded that the expansion did not result in improved care or birth outcomes.^{3,4} However, these measures may be diluted because the comparison groups included women who were not directly affected by the expansions and because temporal controls were lacking or limited.

Studies making concurrent comparisons between pregnant women enrolled in public insurance programs and uninsured women have provided some evidence of improved prenatal care access and birth outcomes for those with public insurance coverage.^{4,5} Such comparisons may be biased if women enrolling in the public insurance programs differ from those remaining uninsured in ways that are not accounted for. In particular, these studies

have not adjusted for income or health differences that are important correlates of use and outcomes.^{6,7}

Moreover, the benefits of removing financial barriers to care can be realized only if eligible women enroll in Medicaid, enroll early in pregnancy and use prenatal care services. In addition, the content and scope of prenatal care, not just the quantity of care, is believed to be an important factor in birth outcomes.⁸ Several studies have found better outcomes for low-income women who received prenatal care from the public health system, which provides coordinated maternity care and related support services, than for other women.⁹⁻¹³

Our objective was to study whether pregnant women newly entitled to Medicaid coverage received more or earlier prenatal care and whether their birth outcomes were improved, controlling for the potential effects of selection bias and secular trends that may have biased earlier studies. We studied the experience in Florida, a good study site for several reasons. It is a populous state with about 200 000 births each year. In October 1987, Florida significantly expanded Medicaid eligibility for pregnant women, becoming one of the first states to take advantage of the option that was authorized by Congress to provide Medicaid benefits to pregnant women with income below poverty level. Two years later, in July 1989,

The authors are with RAND, Washington, DC.

Requests for reprints should be sent to Stephen H. Long, PhD, RAND, 1333 H St, NW, Washington, DC 20005.

This paper was accepted July 2, 1997.

Note. The views expressed here are those of the authors and should not be attributed to the Health Care Financing Administration, the March of Dimes Birth Defects Foundation, or RAND.

the state further expanded eligibility for pregnant women by increasing the income threshold to 150% of poverty level.² The state also adopted other strategies to ensure that women who were made eligible by the expansions gained coverage under the program.² If the expansions were effective in improving access, such improvements would most likely be found in a state such as Florida, which aggressively implemented the program change and which offered a large study population.

Methods

We studied births in Florida occurring in the baseline year July 1988 through June 1989—the 12-month period just prior to the expansion of eligibility to women with income between 100% and 150% of poverty level—and in calendar year 1991, the second year after the expansion was implemented. We chose the baseline year so that women with income below poverty level who delivered during that year would have been eligible for Medicaid throughout their pregnancy under the October 1987 expansion. We chose 1991 as the postexpansion period to allow time for the new eligibility policy to be implemented.

Data came from Florida birth and death certificates, hospital discharge abstracts, Medicaid eligibility files and claims files, records for prenatal services provided to each pregnant woman treated at a county health department in the state, and the 1990 US Census.¹⁴ The birth and fetal death records provided information about the mother's demographic characteristics, the amount and timing of prenatal care, the birthweight of the newborn, and infant deaths. The hospital discharge data provided information to identify the primary payer for the delivery—our principal measure of a woman's source of insurance.

The Medicaid eligibility data allowed us to distinguish reasons for entitlement and, in particular, to classify separately pregnant women covered by Medicaid because they were receiving Aid to Families with Dependent Children (AFDC) cash assistance and those covered by the Medicaid income expansions. From the county health department records, we constructed summary records for each episode of prenatal care provided through the county health departments over the study period. These 4 data sets were linked by specially constructed computer algorithms.¹⁴ Finally, information from the 1990 Census on the income and poverty status of residents in each Florida zip code area was added to the

file in order to develop a control measure for income status, as we discuss later.

We present 2 parallel analyses. First, we compare access to prenatal care and birth outcomes for low-income women who did not have private insurance coverage—whether enrolled in Medicaid or uninsured—before and after the expansion. Second, we compare concurrent prenatal care access and birth outcomes for women enrolled in Medicaid and low-income uninsured women.

The pre-postexpansion comparison compares 2 similar populations and so is not confounded by selection bias, but it could be confounded by secular changes over the period. To control for these possible confounders, we also examine changes in prenatal care use and birth outcomes for low-income women who had private insurance and so were not affected by the Medicaid expansions.

The pre-postexpansion comparison includes both the effect on the number of women enrolled in Medicaid and the per-person effect of gaining Medicaid coverage on use of services and birth outcomes. To measure the latter effect alone, our concurrent analysis compares women of different insurance statuses. We control for demographic and health differences and other selection effects as described below.

Comparison Groups

We compared 4 groups of pregnant women: women enrolled in Medicaid under the eligibility expansion (group 1); those enrolled in Medicaid because of their participation in AFDC (group 2); uninsured women and those with nonprivate third-party coverage other than Medicaid who resided in low-income areas (group 3); and those with private insurance who resided in low-income areas (group 4).

The comparison of groups 1 and 2 with group 3 is our measure of the effect of Medicaid participation on access for low-income pregnant women. The contrast group 3 does not precisely correspond to the group of interest—uninsured women who are Medicaid-eligible—because of data limitations. First, the hospital discharge data do not distinguish between the uninsured and those who are covered by other nonprivate third-party payers (except Medicaid). However, data from the 1988 National Maternal and Infant Health Survey suggest that more than two thirds of women in this group are uninsured, and hereafter we refer to these as uninsured women. Second, we do not have a direct measure of the women's income. As a proxy for Medicaid

income eligibility, we measured outcomes for women who lived in low-income areas, defined as areas in which more than 30% of the population had a family income below 150% of poverty (the threshold of the Medicaid expansion in 1989). This definition encompassed the poorest quintile of neighborhoods. On average, more than 40% of the population in these neighborhoods had income below the threshold.

Differences between the 2 Medicaid populations (groups 1 and 2) measure selection differences between Medicaid enrollment groups. We interpret differences between the AFDC Medicaid population and the low-income uninsured population as a measure of the insurance effect of Medicaid, controlling for self-selection into the expansion population that might be related to pregnancy. The fourth group provides a control for temporal change in the pre-postexpansion analysis.

We also make comparisons between Medicaid beneficiaries who used county health departments for their prenatal care and those who used other providers. In the results we present, we categorize a woman according to where she received the majority of her prenatal care visits. Users of the county health department system are women who used the clinics for at least half of their prenatal visits. Our results were not sensitive to this definition.

We use the hospital discharge data to define insurance status for most women. However, we use the Medicaid eligibility files to determine Medicaid participation. The 20% of women with a hospital discharge record designating Medicaid as primary payer who did not have a Medicaid eligibility record were classified as uninsured. To the extent that we have erroneously categorized some Medicaid beneficiaries as uninsured, our estimates of the differences between the groups are attenuated and we are less likely to find effects.

Outcome Measures

The outcomes that we examine are prenatal care use and birth outcomes. Specifically, we examine whether any prenatal care was obtained, the timeliness of initiating care among those who sought care, and the number of prenatal care visits for those receiving care. Timeliness is defined as receiving care prior to the third trimester. In addition, we include 2 summary measures of the adequacy of care: the Kessner Index¹⁵ and the Kotelchuck Index.¹⁶ Neither index reflects the content of care, which many analysts cite as an important correlate of birth outcomes.⁸

However, we indirectly investigate the effect of the scope and content of care on birth outcomes by comparing Medicaid recipients who used the county health departments for their care with women using the private delivery system. The specific outcomes we examine are low birthweight (less than 2500 g), very low birthweight (less than 1500 g), and infant death (death within the first year after birth).

Sample

Our analysis includes women with a live birth for whom we could find a matching hospital discharge record. We exclude fetal deaths; they account for only about 0.5% of all deliveries in a year. We also exclude births of less than 500 g (0.15% of records). Our analysis is restricted to women whose birth record includes information with which to calculate the key outcome measures and demographic characteristics. This restriction eliminated 5.4% of records in our matched file in the baseline period and 5.2% of records for 1991. The final analysis sample included 56 101 women in the baseline period and 78 421 women in 1991.

Analysis

We use regression analysis to control for demographic differences between our contrast groups. Indicators for insurance status measure the effect of payer on the outcomes. The indicators in the model distinguish among the comparison groups. In addition to the insurance indicators, the explanatory variables in the regression models measure the mother's age (younger than 18 years, 18–19, 20–24, 25–29, 30–34, 35 or older), education (fewer than 12 years, 12, 13–15, 16 or more), race (White, Black, other), marital status, previous live births, and whether the birth was a singleton birth. For 1991, we also include measures of ethnicity (non-Hispanic, Mexican, Puerto Rican, Cuban, Central or South American, Haitian, other Hispanic) and whether the mother had one or more of 16 medical history risk factors indicated on the vital statistics record, such as anemia, diabetes, or hypertension. These variables were not coded on the vital statistics files for the earlier period.

We fitted ordinary least squares regression for the number of prenatal care visits. For the other outcome variables, which are dichotomous, we fitted logistic regression. (The regression coefficients are in an appendix that is available on request from the authors.) We use the regression model

to predict the outcomes for a woman with standardized characteristics in each comparison group. The standard is a woman whose characteristics assume the average value of these characteristics for women in the Medicaid expansion population in 1991. We report the predicted values in the results below.

Results

Pre-Postexpansion Comparison

The 1989 expansion led to a substantial shift in the source of payment for deliveries in Florida. The number of deliveries covered by Medicaid increased by 47% (from 47 000 to 70 000) from the 12 months preceding the expansion to calendar year 1991.¹⁷ Most of the additional Medicaid financing served to cover women who otherwise would have been uninsured.¹⁷

Access to prenatal care for the target population—low-income women without private insurance—improved significantly after the Medicaid eligibility expansion (Table 1). In 1991, 1.6% of these women went without prenatal care services, compared with 2.3% in the 12 months prior to the income threshold expansion. Among those receiving care, fewer delayed care until late in their pregnancy after the expansion (4.8% vs 6.8%), and they had more prenatal care visits than in the preexpansion period (11.1 vs 10.5 visits). Overall, these women were less likely to have inadequate prenatal care in 1991 than in the period before the expansion, as measured by the two indices of adequacy.

We found significant improvements for privately insured low-income women on 4 of the 5 access measures, indicating that other factors in Florida contributed to improved access. The magnitude of the improvement, however, was greater among low-income women without private insurance than among the privately insured. This suggests that the expansion did improve access for the target population.

Birth outcomes also improved over the study period for low-income women without private insurance; statistically significant reductions were found in the number of low-birthweight babies (61.8 vs 67.9 per 1000) and in the number of infant deaths (5.9 vs 7.3 per 1000). Again we see evidence of secular trends, although not statistically significant improvements were noted for the privately insured. Moreover, the magnitude of the decrease in the number of low-birthweight babies for those without private insurance is substantially greater

than the magnitude of the decrease for the privately insured. The comparison of the change between the 2 groups is not statistically significant, however.

Concurrent Contrasts

Prenatal care use. Women enrolled in the Medicaid expansion program used more prenatal care than women living in low-income areas who were without Medicaid or private health insurance. In both study periods, the Medicaid beneficiaries were less likely to forgo prenatal care (Table 2). The proportion not receiving prenatal care ranged from 1.3% to 1.4% for the Medicaid expansion group, significantly less than the rate of 3.4% to 3.7% for uninsured women. Among those seeking care in 1991, the percentage of Medicaid beneficiaries initiating care late in pregnancy (4.7%) was below the rate for uninsured women (5.4%); however, there was not a significant difference in timeliness in the baseline period. Women in the Medicaid expansion group who obtained prenatal care had more visits than the uninsured women in each period. Medicaid beneficiaries were less likely to receive inadequate care than were low-income uninsured women, under both measures of adequacy. We obtained similar results when we restricted our Medicaid sample to women in low-income areas; thus, the results do not appear to be due to a confounding of unmeasured characteristics that are associated with both access and the income of the residence area.

The results also do not appear to be due to the selection of healthier women or those who are more disposed to seek prenatal care into the Medicaid expansion population. We found similar differences between women who were enrolled in Medicaid because they received AFDC cash assistance and uninsured women. To test for possible bias in our selection estimate that would arise if some women who applied for pregnancy benefits were designated as AFDC recipients, we also contrasted the expansion population with AFDC recipients who enrolled in the program prior to pregnancy, and we obtained similar results.

Although providing Medicaid benefits to low-income women appears to increase their use of prenatal services relative to what they would be expected to use if uninsured, still the Medicaid recipients in our sample did not receive the level of prenatal care obtained by privately insured women (Tables 1 and 2). On all of our measures in both periods, Medicaid recipients had poorer access to care than the privately insured.

TABLE 1—Trends in Prenatal Care And Birth Outcomes for Low-Income Women, by Insurance Status: Florida, July 1988 through June 1989 and Calendar Year 1991

	July 1988 through June 1989		1991		Change	
	Without Private Insurance ^a (n = 44 539)	With Private Insurance ^b (n = 11 562)	Without Private Insurance ^a (n = 68 273)	With Private Insurance ^b (n = 10 148)	Without Private Insurance ^a	With Private Insurance ^b
Predicted prenatal care^c						
No prenatal care, %	2.3	0.8	1.6*	0.7	-0.7	-0.1
Care initiated in third trimester, %	6.8	2.6	4.8*	1.5*	-2.1	-1.1
No. visits per user	10.5	11.7	11.1*	12.2*	0.6	0.5
Inadequate care, %						
By Kessner Index ¹⁵	9.4	3.5	6.8*	2.5*	-2.6	-1.0
By Kotelchuck Index ¹⁶	36.7	20.7	22.6*	8.8*	-14.1	-11.8 [†]
Predicted birth outcomes^c						
No. low-birthweight babies per 1000	67.9	55.4	61.8*	54.7	-6.1	-0.7
No. very-low-birthweight babies per 1000	8.7	9.0	8.6	8.7	-0.1	-0.3
No. infant deaths per 1000 ^d	7.3	8.6	5.9*	7.2	-1.4	-1.4

^aPregnant women enrolled in Medicaid or with "other" payer living in areas with more than 30% of the population with income below 150% of poverty.

^bPregnant women with private insurance living in areas with more than 30% of the population with income below 150% of poverty.

^cValues have been standardized to reflect the characteristics of women in the Medicaid expansion population in 1991. Predictions control for mother's age, education, race, marital status, parity, and whether the birth was a singleton birth.

^dEstimates of infant deaths among children born in 1991 are based on infant deaths occurring in 1991, in the absence of 1992 death certificates. They have been adjusted to total deaths for 1991, with the ratio of all infant deaths to deaths in the calendar year of birth based on 1988 through 1990 observations.

*Significantly different from July 1988 through June 1989 estimate, $P = .050$

[†]Change differs significantly from change for those without private insurance, $P = .05$.

Birth outcomes. The rate of low- and very-low-birthweight infants and the rate of infant deaths were generally lower among women enrolled in the Medicaid expansion program than among the uninsured (Table 2). However, only the difference in the incidence of low-birthweight infants in 1991 is statistically significant; in that year, the rate of low-birthweight infants per 1000 was 60.6 for the expansion population vs 68.2 for the uninsured. Women enrolled in AFDC also had better birth outcomes than the uninsured; we found statistically better outcomes for this group on all 3 measures in the baseline period and on the low-birthweight measure in 1991.

The infant death rate for our analysis sample is lower than the infant death rate for all births because we disproportionately excluded infant deaths from our sample by excluding observations with missing birthweights. However, our estimates of differences in the death rates among payer groups are not affected by this exclusion. We verified this by producing estimates (not reported) of infant death rates by payer for all births as well as for the analysis sample.

Role of different delivery systems. The additional prenatal care financed by Medicaid that resulted from the expansion of eli-

gibility to more low-income women was provided largely by county health departments.¹⁷ As shown in Table 3, this may have been an important factor in the better outcomes for the expansion population compared with the uninsured. The rate of low-birthweight infants per 1000 among the mothers in the Medicaid expansion group who used the county health departments was 49.9, vs 70.4 for the other mothers in the expansion group. The incidence of very-low-birthweight infants and infant deaths was also significantly lower among women in the Medicaid expansion group who used county health departments for their prenatal care than among similar women who obtained their care in another delivery system. We found better outcomes for women using the county health departments even though they initiated care later and had fewer visits than women using other delivery systems.

Because the county health departments made special efforts to enroll low-income pregnant women in the Medicaid expansion program, there may be differences between users of the 2 delivery systems not accounted for by our control variables that might explain this result. However, women using county health departments who were

enrolled in Medicaid because of their AFDC eligibility also had better birth outcomes than similar women using another delivery system.

The finding also is not a result of referrals to another delivery system for women at risk of poor birth outcomes. Our estimates are adjusted for a measure of medical risk factors. In addition, we obtained similar results (not shown) when we compared outcomes for women who received any of their prenatal care in a county health department with outcomes for all other Medicaid recipients.

Discussion

Findings from the Florida Expansion Compared with Findings from Other Studies

The Florida Medicaid eligibility expansion from 100% of poverty to 150% of poverty led to a large increase in Medicaid enrollment by pregnant women who otherwise would have lacked insurance coverage to pay for their prenatal care and delivery. Access improved after this expansion for low-income women who did not

TABLE 2—Comparison of Prenatal Care and Birth Outcomes for Women Enrolled in Medicaid and Low-Income Uninsured Women: Florida, July 1988 through June 1989 and Calendar Year 1991

	July 1988 through June 1989			1991		
	Medicaid Expansion (n = 10 032)	Medicaid AFDC (n = 20 645)	Other Low-Income ^a (n = 13 862)	Medicaid Expansion (n = 27 786)	Medicaid AFDC (n = 32 630)	Other Low-Income ^a (n = 7 857)
	Predicted prenatal care^b					
No prenatal care, %	1.4 [†]	1.9*	3.7 [†]	1.3 [†]	1.6*	3.4 [†]
Care initiated in third trimester, %	7.3 [†]	6.4*	7.0 [†]	4.7	4.6	5.4 [†]
No. visits per user	11.0	10.9	9.8 [†]	11.2	11.2	10.6 [†]
Inadequate care, %						
By Kessner Index ¹⁵	8.9 [†]	8.3*	11.2 [†]	6.4	6.5	9.4 [†]
By Kotelchuck Index ¹⁶	35.2 [†]	33.9*	41.5 [†]	22.5	22.1	24.7 [†]
	Predicted birth outcomes^b					
No. low-birthweight babies per 1000	67.2	65.1	72.1 [†]	60.6	61.3	68.2 [†]
No. very-low-birthweight babies per 1000	8.9	7.8	9.9 [†]	9.2	8.1	9.1
No. infant deaths per 1000 ^c	6.9	6.6	8.5 [†]	6.5 [†]	5.0*	6.7

Note. AFDC = Aid to Families with Dependent Children.

^aPregnant women with "other" payer living in areas with more than 30% of the population with income below 150% of poverty.

^bValues have been standardized to reflect the characteristics of women in the Medicaid expansion population in 1991. Predictions control for mother's age, education, race, marital status, parity, and whether the birth was a singleton birth.

^cEstimates of deaths occurring in 1991 adjusted to include deaths occurring in 1992. (See Table 1 for details.)

*Significantly different from Medicaid expansion population, $P = .05$.

[†]Significantly different from Medicaid AFDC population, $P = .05$.

have private insurance. Our results also consistently point to improved birth outcomes as a result of the expansion—specifically, a reduced incidence of low-birthweight infants.

We come to stronger conclusions about the benefits of the expansion than most previous researchers. Is this because our methods are more precise, because Florida differs from other states, or both? We believe the answer is both.

Large sample sizes are needed to precisely measure the birth outcomes we were trying to study, because they are very rare events. Florida represented an opportunity to have large enough samples to find effects if they were present and to stratify to more homogeneous subgroups to refine the comparisons. Moreover, our use of area income to identify the subset of women who are most likely to be uninsured and eligible under the expansion and our controls for selection are methodological improvements over other studies.

The Florida experience, however, may differ from those of other states. Most of the additional prenatal care financed by Medicaid was accommodated in the county health departments. From our finding of better birth outcomes among Medicaid enrollees using county health departments than among those using another delivery system, it appears that the county health department expansion was an important

feature of the Florida intervention. Without it, the improvements probably would have been more modest. The better birth outcomes among those in the public delivery system occurred despite later initiation of care and fewer prenatal clinical visits for this population. This result suggests the importance of the care coordination and expanded nonclinical services that the public system offers. Direct examination of the role of these services in birth outcomes for low-income women is an area for further research.

Policy Implications

Policymakers have proposed major changes in federal funding for Medicaid and public health, most of which would control the growth of federal spending and provide the states with greater flexibility to use federal funds as they see fit. In this context; our findings are important.

First, they suggest that the expansions may indeed have had an impact, at least in some states. As policymakers consider spending reductions, they should be cautious about cutting back on eligibility for the expansion population.

Second, the results emphasize the interrelationship of expanding insurance coverage and providing for a delivery system to accommodate people's needs. Some states have accompanied eligibility expansion

sions with fee increases for prenatal care services to try to remove barriers to office-based care. Some are emphasizing enrollment in managed care. Some states have financed their Medicaid expansions, in part, by a contraction of their public health systems, assuming that the increased financial access provided by Medicaid would lead more low-income women to use the private delivery system.¹ Although increasing financial access would be expected to have beneficial effects, our results suggest that it is not clear what the ultimate outcome of these trends will be, especially in states with a strong tradition of direct delivery through the public health system. Birth outcomes might deteriorate if these efforts to shift care to the private sector are not complemented by programs to provide the non-clinical support services to pregnant women that the public health system now provides.

Several of our findings suggest that, despite its contributions, the Florida intervention may not have achieved the full potential of such efforts. Even by 1991, about half of the women who became eligible for Medicaid-paid deliveries did not become eligible during their first trimester. Moreover, there remained a significant gap between Medicaid-eligible women and low-income privately insured women in use of prenatal care and in birth outcomes.

Our study provides new information about the Medicaid expansions in one state.

TABLE 3—Prenatal Care and Birth Outcomes for Women Enrolled in Medicaid Using Different Delivery Systems: Florida, Calendar Year 1991

	Medicaid Expansion Population		Medicaid AFDC Population	
	County Health Department (n = 12 504)	Other Delivery System (n = 15 282)	County Health Department (n = 13 900)	Other Delivery System (n = 18 730)
Predicted prenatal care^a				
Care initiated in third trimester, %	6.2	3.7*	6.6	4.2*
No. visits per user	10.7	11.8*	10.5	11.7*
Inadequate care, %				
By Kessner Index ¹⁵	6.7	4.1	7.2	4.6*
By Kotelchuck Index ¹⁶	25.5	18.8*	27.3	21.3*
Predicted birth outcomes^a				
No. low-birthweight babies per 1000	49.9	70.4*	54.6	69.9*
No. very-low-birthweight babies per 1000	6.9	10.9*	6.4	9.5*
No. infant deaths per 1000 ^b	4.3	6.0*	3.8	4.2

Note. AFDC = Aid to Families with Dependent Children.

^aValues have been standardized to reflect the characteristics of women in the Medicaid expansion population in 1991. Predictions control for mother's age, education, race, marital status, parity, and whether the birth was a singleton birth.

^bEstimates of deaths occurring in 1991 adjusted to include deaths occurring in 1992. (See Table 1 for details.)

*Significantly different from county health department, *P* = .05.

However, national policy cannot be based on one case study alone. It will take study of more states with varied circumstances to fully evaluate the effects of this major initiative in Medicaid from the last decade that is still playing out over this one. □

Acknowledgments

This research was supported by a cooperative agreement from the Health Care Financing Administration (18-C-90113/9-01) and a grant from the March of Dimes Birth Defects Foundation.

The authors thank Florida's Agency for Health Care Administration and its Department of Health and Rehabilitative Services for providing data. Ellen Harrison performed expertly in constructing the analysis files; Nancy Allen assisted with the Medicaid data. We are grateful to many people who commented on earlier drafts, particularly Feather Davis, Ted Joyce, Genevieve Kenney, Charles Mahan, Sara Rosenbaum, and two anonymous referees.

References

1. *The Medicaid Expansions For Pregnant Women and Children*. Washington, DC: Alpha Center; 1995.
2. Hill IT. *Implementing the Medicaid Expansions for Pregnant Women: The Experience in Florida*. Washington, DC: Health Systems Research Inc; 1995.
3. Piper JM, Ray WA, Griffin MR. Effects of Medicaid eligibility expansion on prenatal care and pregnancy outcome in Tennessee. *JAMA*. 1990;264:2219-2223.
4. Haas JS, Udvarhelyi S, Morris CN, Epstein AM. The effect of providing health coverage to poor uninsured pregnant women in Massachusetts. *JAMA*. 1993;269:87-91.
5. Braveman P, Bennett T, Lewis C, Egerter S, Showstack J. Access to prenatal care following major Medicaid eligibility expansions. *JAMA*. 1993;269:1285-1289.
6. Starfield B et al. Race, family income, and low birth weight. *Am J Epidemiol*. 1991;134:1167-1174.
7. Rosenzweig MR, Schultz TP. The behavior of mothers as inputs to child health: the determinants of birth weight, gestation, and rate of fetal growth. In: Fuchs VR, ed. *The Economic Aspects of Health*. Chicago, Ill: University of Chicago Press; 1982.
8. Starfield B, Shapiro S, Weiss J, et al. *The Effectiveness of Medical Care: Validating Clinical Wisdom*. Baltimore, Md: Johns Hopkins University Press; 1985.
9. Buescher PA, Smith C, Holliday JL, Levine RH. Source of prenatal care and infant birth weight: the case of a North Carolina county. *Am J Obstet Gynecol*. 1987;156:204-210.
10. Buescher PA, Roth MS, Williams D, Goforth CM. An evaluation of the impact of maternity care coordination on Medicaid birth outcomes in North Carolina. *Am J Public Health*. 1991;81;1625-1629.
11. Buescher PA, Ward NI. A comparison of low birth weight among Medicaid patients of public health departments and other providers of prenatal care in North Carolina and Kentucky. *Public Health Rep*. 1992;107:54-59.
12. Clarke LL, Miller MK, Vogel WB, Davis KE, Mahan CS. The effectiveness of Florida's "improved pregnancy outcome" program. *J Health Care Poor Underserved*. 1991; 4:117-132.
13. Thompson D, Dimperio D, Humphries RG, Grigg CM, Mahan CS. *Low Birth Weight Rates For Florida Medicaid Recipients Receiving Prenatal Care in Public Health Units Compared to Those Receiving Care Elsewhere*. Tallahassee, Fla: Florida Department of Health and Rehabilitative Services; 1993.
14. Harrison ER, Long SH, Marquis MS. *Evaluation of a Medicaid Eligibility Expansion in Florida: Developing the Database*. Santa Monica, Calif: RAND; 1996. MR-702-HCFA/MOD.
15. Kessner DM, Singer J, Kalk CE, Schlessinger ER. *Infant Death: An Analysis by Maternal Risk and Health Care*. Washington DC: Institute of Medicine and National Academy of Sciences; 1973.
16. Kotelchuck M. An evaluation of the Kessner Adequacy of Prenatal Care Index and a proposed Adequacy of Prenatal Care Utilization Index. *Am J Public Health*. 1994;84: 1414-1420.
17. Long SH, Marquis MS. *The Effects of the Florida Medicaid Eligibility Expansion for Pregnant Women*. Washington, DC: RAND; 1995.