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RESEARCH ARTICLE

Public Programs

Changes in Per Member Per Month Expenditures after Implementation of Florida's Medicaid Reform Demonstration

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Objective. To determine the impact of Florida's Medicaid Reform Demonstration on per member per month (PMPM) Medicaid expenditures.
Data. Florida Medicaid claims data from the two fiscal years before implementation of the Demonstration (FY0405, FY0506) and the first two fiscal years after implementation (FY0607, FY0708) from two reform counties and two nonreform counties.
Study Design. A difference-in-difference approach was used to compare changes in expenditures before and after implementation of reforms between the reform counties and the nonreform counties.
Data Extraction. Medicaid claims and eligibility files were extracted for enrollees in the reform and nonreform counties and collapsed into monthly amounts (N= 16,875,467).
Principal Findings. When examining the entire population, the reforms had little impact on PMPM expenditures, particularly among SSI enrollees. PMPM expenditures for SSI enrollees increased by an additional U.S.$0.35 in the reform counties compared with the nonreform counties and increased by an additional U.S.$2.38 for Temporary Assistance for Needy Families (TANF) enrollees. An analysis that limited the sample to individuals with at least 3 or 6 months of observations pre- and postimplementation, however, showed reduced PMPM expenditures of U.S.$11.15–U.S.$19.44 PMPM for both the SSI and TANF populations.
Conclusions. Although Medicaid reforms in Florida did not result in significant reductions in PMPM expenditures when examining the full population, it does appear that expenditure reductions may be achieved among Medicaid enrollees with more stable enrollment, who have more exposure to managed care activities and may have more health care needs than the overall Medicaid population.

Key Words. Medicaid, managed care, financial analysis

Medicaid is the principal state and federal program that finances the health and medical care of low-income families, some elders, and people with disabilities who meet eligibility requirements, do not have health insurance, and otherwise cannot pay for their health care. In the 2006–2007 fiscal year (FY0607), Florida Medicaid served three million people, with expenditures of approximately U.S.$14 billion (Kaiser Commission on Medicaid and the Uninsured 2007; National Association of Budget Office 2008). For the 2008–2009 fiscal year (FY0809), Florida Medicaid expenditures are estimated at U.S.$6,619 per eligible enrollee for a total of U.S.$15 billion (Agency for Health Care Administration 2008; Williams 2009). Given budget challenges in Florida and other states, expansion of Medicaid-managed care is an attractive alternative because it can potentially control costs by ensuring appropriate health care utilization, and, by providing insurance through private health plans, potentially making Medicaid more similar to commercial coverage (LewinGroup 2009). Most studies on the impact of Medicaid-managed care have focused on health care access and utilization (Eberly et al. 2010; Zuckerman et al. 2002; Garrett et al. 2003; Garrett and Zuckerman 2005; Cook 2007; Burns 2009a, b) and results have been mixed. However, despite the strong belief among policy makers in the ability of managed care to reduce health care costs, its economic impact has not been as well explored. In 2004, the LewinGroup published a report that synthesized findings from 24 studies examining the effect of the implementation of managed care programs on Medicaid savings throughout the United States (LewinGroup 2009). According to this report, the majority of Medicaid-managed care programs resulted in cost savings; however, the savings ranged from only 0.5 to 20 percent. Moreover, Medicaid-managed care programs led to higher enrollee satisfaction and improved access. The report concluded that the savings are generally attributed to reductions in inpatient utilization and prescription drug expenditures.

In an attempt to control escalating costs and improve the Medicaid system, the Florida Legislature authorized a demonstration that would become known as "Medicaid Reform" in Senate Bill 838. A Section 1115 waiver was sought and approved in 2005. The demonstration began on July 1, 2006,

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and was approved for initial pilot implementation in two counties. Broward and Duval counties were selected for the initial pilot implementation because of the large number of Medicaid enrollees in those counties and their willingness to participate in the demonstration. The reforms to Florida's Medicaid program were based on empowering consumers to take control of their health care, providing more choices for consumers, and enhancing the health status of Medicaid enrollees through increased health literacy and incentives to engage in healthy behaviors. Furthermore, a key objective of Florida's Medicaid demonstration included making the delivery of medical care in Medicaid more reflective of the processes and approaches operative in the private sector. The reforms required Medicaid enrollees to choose either a Health Maintenance Organization (HMO) or a Provider Service Network (PSN), which were allowed to offer customized benefit packages. The benefit packages were subject to tests of actuarial equivalency and benefit sufficiency. Medicaid enrollees in the nonreform counties could voluntarily choose between an HMO or fee-for-service (FFS) primary care case management (PCCM) within 30 days of initial enrollment in Medicaid, but they were automatically assigned to either an HMO or PCCM if they had not voluntarily enrolled within 30 days. Medicaid beneficiaries in residential care facilities, children with special health care needs, and enrollees who also received Medicare benefits were not required to select a managed care plan.

HMOs participating in the Medicaid demonstration are paid a capitation payment that is risk adjusted to reflect the relative health care status of their enrollees. Reform capitation rates are based on specific principles and policies applied to FFS historical data in identifiable areas. That rate is then risk adjusted to reflect the medical circumstances of a particular plan's enrollees, based on the enrollees' age, gender, and use of prescription medications that serves as an indicator of certain chronic diseases. The technical approach to this adjustment is based on the calculation of risk scores using the Medicaid Rx risk adjustment model devised by researchers at the University of California, San Diego (Gilmore et al. 2001). For the first 2 years of the demonstration, a risk corridor was mandated so that risk adjustment was limited to $\pm$ 10 percent of the original base rate. PSNs participating in Florida Medicaid are paid on an FFS basis.

In order to facilitate enrollee selection of a health plan, Florida Medicaid created the Choice Counseling process. Choice Counseling is a comprehensive counseling program designed to provide the education and outreach necessary to assist Medicaid enrollees with making a health plan choice that best fits their specific needs and to promote healthy lifestyles in order to reduce

minority health disparities. Another key element was the creation of an Enhanced Benefits Rewards (EBR) program, which offered financial incentives to participate in specific health promotion and illness prevention activities such as dental visits, vision exams, wellness visits, PAP screening, mammography screening, and colorectal screening (Agency for Health Care Administration 2009). When enrollees complete an EBR activity, funds are placed in their account and can be utilized for purchasing certain over-the-counter items at any Florida Medicaid participating pharmacy.

A key goal of the demonstration has been to achieve greater predictability in Florida's Medicaid expenditures, with the ultimate objective of improved capacity to manage program costs (Agency for Health Care Administration 2005; Snipes 2009). The objective of this study is to assess the degree to which Florida's Medicaid reform initiative has impacted per member per month (PMPM) expenditures.

METHODS

Analytic Approach

The basic analytic approach is to compare changes in expenditures in the reform counties to changes in expenditures in comparable counties in Florida that were not participating in the demonstration. This difference-in-difference approach takes into account changes in Medicaid expenditures that may have been occurring in Florida regardless of the reform demonstration. The expenditures examined do not include administrative costs incurred by Florida's Agency for Health Care Administration (AHCA). Changes in expenditures between the two fiscal years before the implementation of reforms (FY0405 and FY0506) and the first 2 years of the reform (FY0607 and FY0708) in the two urban reform counties of Broward and Duval (the "reform counties") were measured and compared with changes in two other Florida urban counties, Hillsborough and Orange Counties (the "nonreform counties"). Broward County includes urban communities north of Miami, such as Fort Lauderdale and Hollywood. Duval County is in Northeast Florida and is the location of Jacksonville. Hillsborough County is located in the central west section of Florida and includes the city of Tampa. Orange County is located in central Florida and includes the city of Orlando. The urbanity, population size, and demographics of Hillsborough and Orange Counties are generally similar to those of Broward and Duval Counties.

The nonreform counties are also reasonably comparable in terms of their Medicaid programs and enrollment characteristics during the period immediately preceding the demonstration, although the nonreform counties have a higher percentage of African American enrollees and a lower percentage of Latino enrollees (see Table 1). Hillsborough and Orange Counties do not have any PSN market penetration, so in the comparisons, MediPass (Florida's PCCM program) enrollment is used as a proxy for PSN enrollment, since both are paid on an FFS basis. Enrollees in Duval did not have a PSN plan option until Medicaid Reform was implemented in September 2006. For the 2 years before the demonstration, the HMO market penetration rate for both the reform and nonreform counties was over 50 percent, with the nonreform counties having a slightly higher HMO presence. Compared with the nonreform counties, the reform counties had a slightly higher MediPass/PSN enrollment, partly due to the absence of PSNs in the nonreform counties. In general, the proportion of HMO and PSN/MediPass enrollment for the Reform counties compared with the nonreform counties was similar for both years before the demonstration program initiation. While the difference in demographic and program characteristics are acknowledged, the two non-

Table 1: Sample Demographics

	Mean (%)	
	Reform Counties (Broward and Duval)	*Nonreform Counties (Hillsborough and Orange)*
	N= 8,095,300	*N= 8,753,088*
Age	23.2	24.2
Caucasian	30.2	31.6
African American	46.8	30.6
Latino	13.4	27.3
Male	45.4	45.3
TANF	87.0	83.4
SSI	13.0	16.6
Enrolled in HMO	57.8	58.8
Enrolled in FFS/PCCM/PSN	42.2	41.2

Notes. The unit of observation in a person month. Because the data represent the complete population of interest, all differences are significant. PSNs only operated in the reform counties after implementation of reform. Before implementation of reform, Medicaid enrollees in the reform counties had to select either an HMO, PCCM, or traditional FFS. Enrollees in the nonreform counties selected from HMOs, PCCM, or FFS in all time periods. FFS/PCCM/PSN are combined because they are all paid on an FFS basis.

FFS, fee-for-service; HMO, Health Maintenance Organization; PCCM, primary care case management; PSN, provider service networks.

reform counties selected for this analysis provide reasonable comparators for the difference-in-difference methodology.

Data

To calculate prereform expenditures, all facility, medical, and pharmacy claims or analogous HMO capitation payment amounts were obtained for all Medicaid enrollees who lived at least 1 month in Broward or Duval County and were in an eligibility category that would have made them eligible to participate in the demonstration had it existed during FY0405 or FY0506. This included individuals with eligibility based on Supplemental Social Security Income (SSI) and children and families with eligibility through Temporary Assistance for Needy Families (TANF). Individuals eligible through SSI or TANF are considered mandatory participants in the demonstration. Certain individuals, including dually eligible (participating in both Medicaid and Medicare) and pregnant women, were not required to participate in the demonstration but could voluntarily participate. To ensure genuine comparability, those enrollee months where individuals were voluntarily eligible for the waiver and/or special services (e.g., AIDS waiver, Statewide Inpatient Psychiatric Program [SIPP] services, etc.) or included retroactive eligibility were not included in the calculations. In addition, children who received services through a special program for children with special health care needs were excluded from the calculations. Because many individuals moved in and out of Duval and Broward Counties and/or changed eligibility during this time, only those months where the individual lived in one of the reform counties and was in a reform eligible category were used to calculate baseline PMPM expenditures.

The analysis used a person-month approach, meaning each observation corresponds to expenditures by a person in a month. Therefore, each individual could contribute up to 24 member-months used in the prereform calculations (one for each month of the two fiscal years). Using this method, the final prereform sample from Broward and Duval Counties included 5,152,099 member-months, with 656,855 eligible through SSI (36 percent enrolled in HMO, 60 percent enrolled in PCCM, and 4 percent in FFS) and 4,495,244 eligible through TANF (50 percent enrolled in HMO, 48 percent enrolled in PCCM, and 2 percent in FFS). To calculate reform expenditures, all payments made to HMOs and PSNs for reform enrollees who were enrolled for at least 1 month during FY0607 and FY0708 (the first 2 years of the demonstration) were included. For PSNs, PMPM expenditures were the sum of all paid

amounts for claims in a given month, including a monthly patient case management fee paid to PSN providers, while for HMOs the PMPM expenditures were simply the monthly risk-adjusted capitated premiums. Months where individuals were eligible for waiver and/or special services or which included retroactive eligibility were not included in the prereform or reform calculations. As with the prereform sample, each observation corresponds to expenditures for a person in a month, meaning each individual could contribute up to 22 member-months in the calculations (the reform health plans did not begin enrolling individuals until September 1, 2006). In the first year of the demonstration, the Medicaid population in the reform counties was transitioned over a period of several months into reform health plans. The transition was completed in April 2007 (Agency for Health Care Administration 2007). This resulted in a final reform sample of 2,943,201 member-months from FY0607 and FY0708 combined, with 394,764 eligible through SSI (59 percent enrolled in HMO and 41 percent in PSN) and 2,548,437 eligible through TANF (74 percent enrolled in HMO and 26 percent in PSN).

As indicated above, overall time trends for the Medicaid expenditures were accounted for by including expenditures for enrollees in the nonreform counties. The same selection criteria for enrollees and services used for the calculation of PMPM expenditures in the reform counties were used to calculate PMPM expenditures for enrollees in the nonreform counties. This resulted in a final nonreform sample of 4,768,599 member-months for FY0405–FY0506, with 762,920 eligible through SSI (51 percent enrolled in HMO and 49 percent in PCCM) and 4,005,679 eligible through TANF (61 percent enrolled in HMO and 39 percent enrolled in PCCM), and 3,984,489 member-months for FY0607–FY0708, with 686,506 eligible through SSI (49 percent enrolled in HMO and 51 percent enrolled in PCCM) and 3,297,983 enrolled through TANF (60 percent enrolled in HMO and 40 percent enrolled in PCCM).

Statistical Analysis

First, unadjusted differences in average PMPM expenditures between the reform period and the prereform period were calculated for the reform counties and the nonreform counties, and then the difference in difference (reform counties difference minus nonreform counties difference) was calculated. These differences were calculated separately for SSI and TANF enrollees and calculations were done on the full sample and with the top 5 percent of observations removed to diminish the influence of outliers.

The subjects are a complete database of the eligible Medicaid enrollees germane to this analytic question, as distinct from a random sample. We examine the change in average expenditures for all enrollees in the reform and nonreform counties, in the prereform and reform period, and not an individual's expenditure change over time. It was not practical to examine individual changes over time because of the high rate of turnover among Medicaid enrollees. Examining individual changes over time would greatly limit the sample.

Next, a series of multivariate analyses was conducted to better understand the pattern of changes in expenditures after controlling for any differences in age, race, or gender between the nonreform and reform counties. As with the univariate analysis, the multivariate analysis used a difference-in-difference approach. These analyses examined whether the change in PMPM expenditures over time significantly differed between the reform versus nonreform counties. The data were highly skewed with long tails, and a log transformation did not allow the data to approach normality. As a result, several different panel data models were estimated to determine which model achieved the best fit. The models estimated included both one-part and two-part models, generalized estimating equations (GEEs) using a gamma family with a log link, a log-linear random effects regression, and linear regression using untransformed PMPM expenditures, but with the top 5 percent of observations removed to reduce skewness and kurtosis. Because expenditures were calculated on a PMPM basis, the unit of analysis is a person-month. Thus, an individual could provide up to 48 observations to the analyses. All models used the XT procedures of *Stata* to account for correlation of observations over time (StataCorp 2007). The one-part GEE model using the gamma family with a log link and random effects displayed adequate model fit and although this model does not have the same precision as a log-linear model in the presence of long tails, it produces consistent estimates and precision is not a serious issue given the extremely large sample size used in the analysis (Manning and Mullahy 2001). Thus, the results presented focus on the gamma regression model.

The model includes a variable for time ("time" coded as months 1–48), a dummy variable for whether the observation was from the post implementation period of FY0607–FY0708 (referred to as "post"), a dummy variable indicating whether the observation was from one of the counties that participated in reform (referred to as "reformcounty"), an interaction of time and post (time × post), an interaction of time and reform county (time × reformcounty), a dummy variable indicating that the observation was from the post-

period and a reform county (post × reformcounty), and an interaction of time, postperiod, and reform county (time × post × reformcounty). This model estimates separate slopes pre- and postreform for both the reform and nonreform counties and specifically tests whether the differences in slopes pre- and postimplementation of reform is different between the reform and nonreform county (indicated by the coefficient for time × post × reformcounty). The model also indicates whether there was a shift in the intercept in the reform counties once the demonstration was implemented (indicated by the coefficient for post × reformcounty). The estimated equation is

$$\begin{aligned} \textit{PMPM Expenditures}_{it} = \exp(&\beta_0 + \textit{Time}_t\beta_1 + \textit{Post}_i\beta_2 + \textit{reformcounty}_i\beta_3 \\ &+ \textit{Time}_t \times \textit{Post}_i\beta_4 + \textit{Time}_t \times \textit{reformcounty}_i\beta_5 \\ &+ \textit{Post}_i \times \textit{reformcounty}_i\beta_6 + \textit{Time}_t \times \textit{Post}_i \\ &\times \textit{reformcounty}_i\beta_7 + \textit{Age}\beta_8 + \textit{Gender}\beta_9 + \textit{Race}\beta_{10} + \varepsilon_{it}) \end{aligned}$$

where ε_{it} follows a gamma distribution and "exp" signifies the log link. Thus, β_6 indicates the difference in the intercept for the period after implementation of reform for observations from reform counties and β_7 tests whether the change in the slope pre- and postimplementation of reform was significantly different for the reform counties than for the nonreform counties. This equation was estimated separately for enrollees in SSI and TANF.

Next, the estimated equation was used to predict PMPM expenditure in the pre- and postimplementation of demonstration period for both nonreform and reform counties. The approach taken was to assume that everyone in the sample (enrollees in nonreform and reform counties) was either in the reform counties or the nonreform counties and then predict expenditures for each of the time periods. This allows the demographics to be identical for the estimation samples and simulates what would have happened if everyone were either in a nonreform plan or everyone was in a reform plan. The difference in predicted expenditures pre- and postimplementation is then calculated for reform and nonreform groups separately and then the difference of this difference is calculated between the reform and nonreform counties.

Although it was not possible to examine an individual's change in expenditures between the prereform and reform period, two additional analyses were conducted where, first, the sample was limited to individuals who contributed at least three person-months of observations in both the prereform and reform periods and, second, the sample was limited to individuals who contributed at least six person-months of observations in the prereform and reform periods. These analyses assessed the change in expenditures among

enrollees with more stable Medicaid enrollment and who received Medicaid services in both the prereform and reform periods.

RESULTS

Unadjusted results are presented in Table 2. Average PMPM expenditures for SSI enrollees in the reform counties were U.S.$82 lower in the first 2 years of the demonstration (FY0607–FY0708), compared with FY0405–FY0506. In the nonreform counties, average PMPM expenditures for SSI enrollees were U.S.$150 higher in FY0607–FY0708 compared with FY0405–FY0506. Thus, relative to the nonreform counties, expenditures for SSI enrollees in the reform counties were lower by U.S.$232 PMPM during the first 2 years of the demonstration, compared with the 2 years immediately prior. For TANF enrollees in reform counties, average PMPM expenditures were the same in the first 2 years of the demonstration compared with the 2 years prior. However, for TANF enrollees in nonreform counties, average PMPM expenditures were U.S.$10 higher in FY0607–FY0708 compared with FY0405–FY0506. Therefore, relative to nonreform counties, Medicaid expenditures in the

Table 2: Unadjusted Changes in PMPM Expenditures between Reform and Nonreform Counties with and without the Top 5% of Observations Removed

	Broward/Duval		*Hillsborough/ Orange*		*Difference-In-Difference*	
	Reform Counties		*Nonreform Counties*		*Nonreform–Reform*	
Full sample	*SSI*	*TANF*	*SSI*	*TANF*	*SSI*	*TANF*
Prereform	865	131	683	126		
Reform	783	131	833	136		
Reform–prereform	– 82	0	150	10	232	10
Top 5% removed						
Prereform	433	72	408	78		
Reform	563	102	472	84		
Reform–prereform	130	30	64	6	– 66	– 24

Notes. Prereform period is FY0405–FY0506.

Reform period is FY0607–FY0708.

PMPM, per member per month; SSI, supplemental social security income; TANF, temporary assistance for needy families.

Table 3: Multivariate Analysis of PMPM Expenditures for SSI Enrollees

	Coefficient	*95% CI*	*p-Value*
Time	0.006	0.005, 0.007	<.001
Post	0.070	0.025, 0.114	.002
Reformcounty	0.163	0.139, 0.187	<.001
Time × post	−0.002	−0.003, −0.0003	.020
Time × reformcounty	−0.002	−0.003, −0.0005	.005
Post × reformcounty	0.023	−0.055, 0.101	.563
Time × post × reformcounty	−0.001	−0.004, 0.001	.365

PMPM, per member per month; SSI, supplemental social security income.

reform counties were U.S.$10 PMPM less during the first 2 years of the demonstration compared with the 2 years prior. However, when the top 5 percent of observations are removed (Table 2), PMPM expenditures increased to a greater extent in the reform counties compared with the nonreform counties for both SSI and TANF populations.

Next, multivariate analyses controlling for the impact of sociodemographic factors such as age, gender, and race on enrollee expenditures was conducted for SSI enrollees and TANF enrollees (Tables 3 and 4). As mentioned previously, the coefficient for post × reformcounty shows the shift in the intercept that occurred for enrollees in reform counties after implementation of the demonstration and the coefficient for time × post × reformcounty indicates whether the change in the trend in expenditures after implementation of the demonstration in the reform counties was significantly different from the change in the trend over the same time period for the nonreform counties. For SSI enrollees (Table 3), the coefficient for post × reformcounty was 0.023, but

Table 4: Multivariate Analysis of PMPM Expenditures for TANF Enrollees

	Coefficient	*95% CI*	*p-Value*
Time	0.004	0.003, 0.005	<.001
Post	0.576	0.543, 0.609	<.001
Reformcounty	0.060	0.046, 0.073	<.001
Time × post	−0.019	−0.020, −0.017	<.001
Time × reformcounty	−0.003	−0.004, −0.002	<.001
Post × reformcounty	−0.169	−0.219, −0.119	<.001
Time × post × reformcounty	0.009	0.007, 0.010	<.001

PMPM, per member per month; TANF, temporary assistance for needy families.

Table 5: Adjusted Changes in PMPM Expenditures between Reform and Nonreform Counties

	Broward/Duval		*Hillsborough/Orange*		*Diffference-In-Difference*	
	Reform Counties		*Nonreform Counties*		*Nonreform–Reform*	
	SSI	*TANF*	*SSI*	*TANF*	*SSI*	*TANF*
Prereform	864.04	132.09	764.60	133.98		
Reform	883.82	158.51	784.03	158.02		
Reform–prereform	19.78	26.42	19.43	24.04	0.35	2.38

PMPM, per member per month; SSI, supplemental social security income; TANF, temporary assistance for needy families.

was not statistically significant ($p = .563$) while the coefficient for time × post × reformcounty was $-.001$ and was also not statistically significant ($p = .365$). However, when the slope and intercept effects are tested jointly, there is a significant impact ($\chi^2(2) = 11.25$, $p = .004$). Because of the offsetting effects of the slope and intercept, the predicted expenditures are compared with assess the overall impact. The predicted PMPM expenditures if everyone was in the reform counties (Table 5) was U.S.$864.04 (SE = 0.25) before the demonstration and U.S.$883.82 (SE = 0.56) afterwards, an increase of U.S.$19.78 (SE = 0.03). If everyone had been in the nonreform counties, PMPM expenditures would have been U.S.$764.60 (SE = 0.22) during the period before the demonstration and U.S.$784.03 (SE = 0.22) for the period after, an increase of U.S.$19.43 (SE = 0.014). Thus, the difference in the change in expenditures between the reform and nonreform counties was U.S.$0.35. Although this difference is statistically significant ($\chi^2(2) = 11.25$, $p = 0.004$), the very small effect size suggests that there was essentially no effect of the demonstration on PMPM expenditures among SSI enrollees. In the additional analyses that limit the sample to only those SSI enrollees with at least 3 or 6 months of observations in both the prereform and reform periods, some differences emerged (full results available from the authors upon request). In the analysis limited to people with at least 3 months of observations in the prereform and reform period, the difference in the change in expenditures was U.S.$11.15, while the difference in the change in expenditures was U.S.$19.44 when limited to individuals with at least 6 months of observations in both time periods. So when the analysis is limited to individuals with at least some

observations in both the prereform and reform periods, it appears that some expenditure reductions are observed in the reform counties.

For TANF enrollees (Table 4), the coefficient for post × reformcounty was −0.169 ($p<.001$) and the coefficient for time × post × reformcounty was 0.009 ($p<.001$), suggesting that there was lower PMPM expenditures in reform counties initially, but expenditures were increasing at a greater rate in the reform counties than in the nonreform counties. The slope and intercept effects are jointly statistically significant ($\chi^2(2) = 1003$, $p<.001$). Because these are offsetting effects, it is important to examine the overall impact by assessing the predicted expenditures (Table 5). If everyone was in the reform counties, the PMPM expenditures in the demonstration period would have been U.S.$132.09 (SE = 0.02), while they would have been U.S.$158.51 (SE = 0.02) after implementation of reform, a difference of U.S.$26.42 (SE = 0.01). If everyone had been in the nonreform counties, on the other hand, the PMPM expenditures during the predemonstration period would have been U.S.$133.98 (SE = 0.02), while they would have been U.S.$158.02 (SE = 0.02) in the postreform period, a difference of U.S.$24.04 (SE = 0.01). Thus, the difference in the difference is U.S.$2.38 (SE = 0.005), suggesting that the demonstration results in greater PMPM expenditures for TANF enrollees than what would have occurred in the absence of the demonstration. In the sensitivity analyses that limit the analysis to only TANF enrollees with at least 3 or 6 months of observations in both the prereform and reform periods, the results change. In the analysis limited to people with at least 3 months of observations in the prereform and reform periods, the difference in the change in expenditures was U.S.$15.84, while the difference in the change in expenditures was U.S.$13.44 when limited to individuals with at least 6 months of observations in both time periods. So when the analysis is limited to individuals with at least some observations in both the prereform and reform periods, it appears that some expenditure reductions are observed in the reform counties for the TANF population as well.

Finally, one of the stated goals of the reforms was to improve predictability of expenditures. It appears that variability in expenditures improved in the reform counties compared with the nonreform counties. In the reform counties, the standard deviation of PMPM expenditures for SSI enrollees was U.S.$3,080 in the prereform period and U.S.$2,126 after reform, while in the nonreform counties, variability increased, with the standard deviation going from U.S.$2,331 prereform to U.S.$2,513 postreform. Similarly, in the reform counties, the standard deviation of PMPM expenditures for TANF enrollees decreased from U.S.$819 to U.S.$491 between the prereform and reform

period, but increased from U.S.$736 to U.S.$907 over the same time period in the nonreform counties.

DISCUSSION

After adjusting for demographic differences in the multivariate analysis that included the full population of enrollees, there was essentially no impact of the demonstration on PMPM expenditures for SSI enrollees, and slightly higher PMPM expenditures among TANF enrollees. Although the unadjusted results mirror those of other state Medicaid programs that have implemented managed care and found savings among the SSI population (LewinGroup 2009), the adjusted results for Florida's demonstration diverges from those in previous studies, showing essentially no reduction in expenditures. This divergence from previous studies examining the impact of Medicaid-managed care may be due to differences in adjustment methods, but unfortunately this is difficult to assess because the majority of previous studies were conducted by consulting groups that do not provide detailed descriptions of their estimation procedures. However, a study of SSI Medicaid beneficiaries using the Medical Expenditure Panel Survey was consistent with our main findings, concluding that the implementation of managed care did not result in lower spending for this population (Burns 2009a, b). It should be noted, though, that some reductions in expenditures were observed when the analysis was limited to individuals who had a minimum number of months of Medicaid enrollment in both the prereform and reform periods, suggesting that the reforms may achieve expenditure reductions among enrollees with more stable Medicaid enrollment. Because of this differential effect, there is clearly some selection or other phenomenon occurring. One possible explanation is that individuals with more stable Medicaid enrollment are sicker than individuals with less stable coverage and a minimum number of months of exposure to managed care are necessary to achieve reductions in expenditures.

It is also important to understand that this study does not look at what is driving the observed changes in expenditures. It is possible that reform plans are providing more preventive care than nonreform plans, which costs more in the short run but may reduce the need for expensive acute care services such as emergency room visits and inpatient stays in the long run. Unfortunately, encounter data were not available from HMOs at the time this study was conducted, so it is impossible to examine changes in use of specific services for the majority of patients enrolled in reform health plans. As a result,

this study only looked at the association of the reforms with PMPM expenditures incurred by the state. Previous studies that examined cost savings from managed care have consistently shown cost savings being driven by decreases in utilization of inpatient services (LewinGroup 2009).

It is critically important that the limitations of this analysis be understood. First, this study only examined expenditures for the first two fiscal years of the demonstration; thus, it is not known whether the observed trends in expenditures will be sustained over time. In addition, this analysis did not measure changes in expenditures for individual enrollees, pre- and postdemonstration implementation. The PMPM expenditure calculations during the predemonstration period refer to enrollees during that time period, a different group of individuals than those who are the basis for calculating PMPM expenditures in the postreform period. For instance, case mix might have varied over these periods. However, given that the analyses were limited to individuals enrolled in Medicaid through SSI and TANF, the same exclusion criteria were applied in all time periods, and a difference-in-difference approach is used, it is unlikely that case-mix differences are driving these results.

Additionally, the expenditures were calculated solely from claims and monthly capitated premium payments. The PSNs under reform are operating on an FFS basis while the HMOs are paid monthly risk-adjusted premiums directly from Florida's Agency for Health Care Administration. Therefore, the expenditure amounts attributed to the HMO enrollees do not measure expenditures for direct care provided to enrollees. Expenditures for direct care provided to capitated enrollees cannot be calculated until encounter data are available for all HMOs participating in the demonstration. Because of the absence of encounter data at the time this analysis was completed, it is difficult to determine the source of the observed decreases in unadjusted expenditures and whether this is attributable to appropriate management of care by the plans or other factors such as a possible reduction in services (e.g., specialty care, emergency room, hospitalizations). This will be important to know in order to determine whether observed decreases in expenditures are due to a more efficient provision of care by the HMOs and PSNs participating in reform, or from reduced access to care. Also, the data do not include out-of-pocket payments by enrollees, so it is not possible to know whether the reforms changed out-of-pocket cost burden in this population. It is also important to note that the demonstration expenditures noted in this analysis do not include expenditures incurred to administer Reform activities such as the Choice Counseling Program or the Enhanced Benefit Rewards program; nor does it include the costs to health plans to participate in the demonstration

(e.g., maintaining/updating contracts, reporting, etc.). Administrative costs such as these were not provided to the study team as part of the evaluation. Finally, this study focused on care provided to enrollees living in two urban areas. It is not known at this time what the impact will be for enrollees living in rural areas.

Although expenditure reductions were not evident after adjustment in this study in the full population, reductions were observed among enrollees with more stable enrollment. It is important to continue to monitor the impact of these reforms on expenditures. Other Medicaid-managed care programs have consistently shown cost savings to increase over time, with savings tending to be larger during the third and fourth years relative to the first couple of years after implementation of managed care (LewinGroup 2009). Thus, it is possible that expenditure reductions in the full population will not be realized until the demonstration program is in its third, fourth, or fifth year. Future research will also assess whether HMOs or PSNs are controlling costs better in Florida's Medicaid program, which will help policy makers in the future decide on the best model for provision of care to their Medicaid enrollees. Such ongoing analysis may be especially salient with reference to the PSNs, because they manifest several attributes of Accountable Care Organizations.

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SUPPORTING INFORMATION

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Appendix SA1: Author Matrix.

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