Do Provider Service Networks Result in Lower Expenditures Compared with HMOs or Primary Care Case Management in Florida's Medicaid Program?

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Objective. To determine the impact of Florida's Medicaid Demonstration 4 years post-implementation on per member per month (PMPM) Medicaid expenditures and whether receiving care through HMOs versus provider service networks (PSNs) in the Demonstration was associated with PMPM expenditures.

Data. Florida Medicaid claims from two fiscal years prior to implementation of the Demonstration (FY0405, FY0506) and the first four fiscal years after implementation (FY0607-FY0910) from two urban Demonstration counties and two urban non-Demonstration counties.

Study Design. A difference-in-difference approach was used to compare changes in enrollee expenditures before and after implementation of the Demonstration overall and specifically for HMOs and PSNs.

Data Extraction. Claims data were extracted for enrollees in the Demonstration and non-Demonstration counties and collapsed into monthly amounts ($N = 26,819,987$ person-months).

Principal Findings. Among SSI enrollees, the Demonstration resulted in lower increases in PMPM expenditures over time ($40) compared with the non-Demonstration counties ($186), with Demonstration PSNs lowering PMPM expenditures by $7 more than HMOs. Savings were also seen among TANF enrollees but to a lesser extent.

Conclusions. The Medicaid Demonstration in Florida appears to result in lower PMPM expenditures. Demonstration PSNs generated slightly greater reductions in expenditures compared to Demonstration HMOs. PSNs appear to be a promising model for delivering care to Medicaid enrollees.

Key Words. Administrative data uses, health care costs, Medicaid, health care organizations and systems

Medicaid programs struggle to control costs and many are experimenting with alternative delivery models. The Affordable Care Act includes several provisions related to Medicaid, such as Accountable Care Organizations, Medicaid Health Homes, bundled payments, and community-based collaborative care networks (U.S. House of Representatives 2010). For decades, Florida's Medicaid program has experimented with different reforms (Duncan et al. 2008), including the development of contractual relationships with organizations that include many of the functions and activities now envisioned for accountable care organizations (ACOs) and community-based collaborative networks. Through the past decade, these piloted models have converged into the current provider service networks (PSNs), and they are active in five counties through a Section 1115 waiver (Coughlin et al. 2008; Landry, Lemak, and Hall 2011). The waiver included risk-adjustment to HMO capitation rates and authorizing the PSN as option enrollees could select as their managed care organization (Agency for Health Care Administration 2005). Since 2005, Florida PSNs have been paid on a discounted fee-for-service basis with shared savings. Approximately 300,000 enrollees receive care through a mix of Medicaid HMOs and PSNs in the Demonstration being conducted through the waiver.

The Florida Medicaid PSNs share many of the accountable care attributes identified in the literature and can be considered "ACO-like" organizations, specifically: the provision of care across a continuum to a defined population, the ability to support comprehensive performance measurement, the identification of specific performance targets, payment mechanisms that encourage quality improvements and cost reduction, strong primary care medical home base, prospective planning, and health information technology to support care coordination and quality improvement (Coughlin et al. 2008; Devers and Berenson 2009; Shortell, Casalino, and Fisher 2010). Like ACOs, each PSN is responsible for a defined patient population and held accountable for cost and quality performance. The organizational, financial, and legal requirements of the PSNs are nearly identical to those for Medicare Shared Savings ACOs and Pioneer ACOs. The state pays PSNs a per member per

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month administrative fee and pays PSN providers on a fee-for-service basis. If PSNs achieve cost savings in a particular time period, they receive additional payments (a portion of the savings). If PSNs do not achieve cost savings, they must return a portion of the administrative fees. Thus, PSNs are at risk for the administrative fees, not the total cost of care. This is similar in some ways to the Medicare Shared Savings ACO model in which ACOs share savings but are not at risk for losses (one-sided risk). Unlike ACOs, PSNs are not yet accountable for total cost of care and payments are not tied to quality performance. Like the ACO approach, however, the original PSN legislation called for PSNs to move to risk-adjusted capitation after a 3-year transition period (the same language is used for Pioneer ACOs). Subsequent Florida legislation allowed PSNs to remain fee-for-service. So far, no PSNs have moved to risk-adjusted capitation and no payments are based on quality performance measures. The PSNs are all not-for-profit entities that operate only in Florida and only enroll Medicaid beneficiaries.

Their parent organizations are either safety-net hospitals or large physician group practices that predominately serve Medicaid patients. In summary, PSNs share some of the features of ACOs and the experience in Florida over the past several years is likely to be informative for the initial years of the Medicare ACO models being implemented nationally.

In addition to the PSNs, Florida Medicaid beneficiaries in the Demonstration counties can choose Medicaid HMOs, which are paid a risk-adjusted monthly premium to provide all care to enrollees. The experience in Florida Medicaid provides an opportunity to examine these different organizational models (HMO vs. PSN).

Differences in organization structure, reimbursement approach, ownership, and populations served could result in differences in expenditures across the two plan types. In particular, the PSN model is similar to many emerging ACOs, in that providers (either safety-net hospital systems or physician networks) are the owners and drivers of these plans. In addition, the PSN financial approach includes discounted fee-for-service payments with shared savings potential. Finally, in these organizations, quality measures were required and publicly reported by plan name and county during the demonstration.

Across the rest of the state, Medicaid beneficiaries can also choose a Medicaid HMO or enroll in a primary care case management program (PCCM), called MediPass. Care for enrollees in MediPass is provided on a fee-for-service basis, with primary care providers serving as gatekeepers (Johnson et al. 2010). However, the gatekeeper function under MediPass is relatively minimal (compared with that in HMOs) as there are essentially no

incentives for primary care providers to monitor referrals for specialty and other care. The HMOs in non-Demonstration counties are not paid risk-adjusted premiums as they are in the Demonstration counties. So, in the non-Demonstration counties, MediPass and HMOs are not subject to the same reimbursement mechanisms as in the Demonstration counties and, consequently, may have higher expenditures. Table 1 includes a summary of the characteristics of Florida PSNs, Medicaid HMOs, and MediPass.

A previous study examining Florida's Medicaid's Demonstration compared per member per month (PMPM) expenditures in the Demonstration counties with those in non-Demonstration counties 2 years after implementation and found no significant impact of the Demonstration on PMPM expenditures (Harman et al. 2011), but it did not look at the effect of enrolling in a PSN versus an HMO in the Demonstration counties. In this study, we use a similar analytic approach to examine changes in PMPM expenditures 4 years after implementation for all Demonstration plans and specifically between PSNs and HMOs in the urban Demonstration counties and compare those changes in expenditures to those observed in two matched non-Demonstration counties.

METHODS

Analytic Approach

The analytic approach for this study was to compare changes in expenditures in the Demonstration counties to changes in expenditures in two comparable counties that were not participating in the Demonstration. This difference-in-difference approach takes into account changes in Medicaid expenditures that may have been occurring regardless of the Demonstration. The expenditures examined only include direct payments for medical care or capitates premiums and do not include administrative costs incurred by Florida's Agency for Health Care Administration (AHCA). Changes in expenditures between the baseline period, which is defined as the two fiscal years before the implementation of the Demonstration (FY0405 and FY0506), and the first 4 years of the Demonstration (FY0607 through FY0910) in the two urban Demonstration counties of Broward and Duval were measured and compared with changes in two other Florida urban counties, Hillsborough and Orange Counties (the "non-Demonstration counties") over the same time period. Duval County is in Northeast Florida and is the location of Jacksonville. Broward County includes urban communities north of Miami, such as Fort Lauderdale and

Table 1:   Comparing PSN, HMO, and MediPass Models

	PSN	*HMO*	*MediPass*
Business Case	Existing Medicaid provider networks take on insurance functions and direct care for patients; costs saved without insurer/third party	Firms assemble networks and care management models to increase quality and reduce costs using capitated payment model	Support primary care physician role in managing care for patients
Beneficiary Choice	Could choose PSN or HMO or would be assigned	Could choose PSN or HMO or would be assigned	Not an option in Reform counties
Beneficiary Eligibility Categories	Required for TANF and SSI. Optional for others	Required for TANF and SSI. Optional for others	All eligibility categories
Benefits	Standard FL Medicaid Benefit; could not customize benefits or copayments	Standard FL Medicaid Benefit plus opportunity to revise annually in limited areas (must verify sufficiency and actuarial equivalency)	Standard FL Medicaid Benefit; could not customize benefits or copayments
Geographic Region	5 Counties (2 urban; 3 rural)	Statewide (not all counties)	Statewide (all counties)
MCO Ownership	Florida only; not-for-profit only; Safety Net Hospital Systems, Physician Networks	Varied, including multistate firms, publicly traded, and not-for-profit, diversified product lines	Federal/state government
Payment Model: State to MCO	Fee-for-service to providers; Administrative fees (PMPM) to MCO	Risk-adjusted, capitated payments to MCO	Fee-for-service to providers; case management fee to Primary Care Physicians (PMPM)
Payment Model: MCO to Providers	Fee-for-service directly to individual providers (none at risk)	Varies: capitated and FFS (some at risk)	Fee-for-service directly to providers. None at risk
Risk	One-sided risk (for Administrative Fees Only based on cost savings)	Full risk after 3 years of pilot (risk corridors during pilot phase)	None

Table 1. *Continued*

	PSN	*HMO*	*MediPass*
Quality Monitoring	CAHPS, HEDIS, and HEDIS-like measures reported publicly by PSN; QI program required	CAHPS, HEDIS and HEDIS-like measures reported publicly by HMO; QI program required	CAHPS data reported publicly in aggregate annually
Market Share in Pilot Counties 2006–2010	29–46%	54–71%	NA in Pilot Counties

CAHPS, Consumer Assessment of Health Plans; HEDIS, Health Effectiveness Data and Information Set; MCO, Managed Care Organization; QI, quality improvement.

Hollywood. Orange County is located in central Florida and includes the city of Orlando. Hillsborough County is located in the central west section of Florida and includes the city of Tampa. The urbanity, population size, and demographics of Hillsborough and Orange Counties are generally similar to those of Broward and Duval Counties.

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

Data

To calculate baseline expenditures, all facility, medical, and pharmacy claims or analogous HMO capitation payment amounts were obtained for all

Table 2: Population Demographics in Demonstration and Non-Demonstration Counties

	Demonstration Counties		Non-Demonstration Counties		
	Broward	*Duval*	*Hillsborough*	*Orange*	*Florida Total*
Population, 2008 estimate	1,751,234	850,962	1,180,784	1,072,801	18,328,340
Persons under 5 years old, 2007	6.5%	7.7%	7.2%	7.6%	6.3%
Persons under 18 years old, 2007	23.6%	25.9%	24.8%	25.3%	22.2%
Persons 65 years old and over, 2007	14.3%	10.5%	11.7%	9.6%	17.0%
Female persons, 2007	51.4%	51.5%	50.7%	50.2%	50.9%
White persons, 2007	69.6%	64.5%	78.2%	72.3%	80.0%
Black persons, 2007	25.3%	29.9%	16.6%	20.8%	15.9%
American Indian and Alaska Native persons, 2007	0.4%	0.4%	0.5%	0.5%	0.5%
Asian persons, 2007	3.0%	3.5%	3.0%	4.4%	2.3%
Native Hawaiian and Other Pacific Islander, 2007	0.2%	0.1%	0.1%	0.2%	0.1%
Persons reporting two or more races, 2007	1.4%	1.6%	1.6%	1.8%	1.3%
Persons of Hispanic or Latino origin, 2007	23.4%	6.0%	22.4%	24.3%	20.6%
White persons not Hispanic, 2007	48.1%	59.5%	57.6%	50.4%	60.8%
High school graduates, percent of persons age 25+, 2000	82.0%	82.7%	80.8%	81.8%	79.9%
Bachelor's degree or higher, percent of persons age 25+, 2000	24.5%	21.9%	25.1%	26.1%	22.3%
Median household income, 2007	$52,504	$49,175	$50,485	$50,988	$47,804
Per capita money income, 1999	$23,170	$20,753	$21,812	$20,916	$21,557
Persons below poverty, 2007	11.4%	12.4%	11.6%	11.6%	12.1%

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 for Medicare and Medicaid 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 waiver and/or special services (e.g., AIDS waiver, Statewide Inpatient Psychiatric Program 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 Demonstration counties and was in a Demonstration 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 baseline calculations (one for each month of the two fiscal years; mean = 6.4 months). Using this method, the final baseline cohort 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 expenditures for the Demonstration period, all payments made to HMOs and PSNs for Demonstration enrollees who were enrolled for at least 1 month during the period between FY0607 and FY0910 (the first 4 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, whereas 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 baseline or Demonstration calculations. As with the baseline data, each observation corresponds to expenditures for a person in a month, meaning each individual could

contribute up to 46 member months (mean = 9.1 months) in the calculations (the Demonstration health plans did not begin enrolling individuals until September 1, 2006). In the first year of the Demonstration, the Medicaid population in the Demonstration counties was transitioned over a period of several months into Demonstration health plans. The transition was completed in April 2007 (Duncan et al. 2011). This resulted in a final reform cohort of 7,358,380 member months from FY0607 to FY0910 combined, with 913,633 eligible through SSI (59 percent enrolled in HMO and 41 percent in PSN) and 6,444,747 eligible through TANF (69 percent enrolled in HMO and 31 percent in PSN).

Overall time trends for the Medicaid expenditures were accounted for by including expenditures for enrollees in the selected non-Demonstration counties. The same selection criteria for enrollees and services used for the calculation of PMPM expenditures in the Demonstration counties were used to calculate PMPM expenditures for enrollees in the non-Demonstration counties. For non-Demonstration counties, individuals had an average of 5.3 months of eligibility during the baseline period and 10.8 months during the Demonstration period. This resulted in a final non-Demonstration cohort 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/FFS), and 9,713,330 member months for FY0607-FY0910, with 1,617,095 eligible through SSI (57 percent enrolled in HMO and 43 percent enrolled in PCCM/FFS) and 8,096,235 enrolled through TANF (69 percent enrolled in HMO and 31 percent enrolled in PCCM/FFS).

Statistical Analysis

First, unadjusted differences in average PMPM expenditures between the Demonstration period and the baseline period were calculated for PSN and HMO enrollees combined and separately for the Demonstration counties and the non-Demonstration counties, and then the difference in the difference (Demonstration counties' difference minus non-Demonstration counties' difference) was calculated. These differences were calculated separately for SSI and TANF enrollees and calculations were done on the full population and with the top 5 percent of observations removed to diminish the influence of outliers.

The subjects (cohorts) 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 eligible enrollees in

the Demonstration and non-Demonstration counties, in the baseline and Demonstration 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 cohort size and the ability to generalize the results.

Next, a series of multivariate analyses were conducted to better understand the pattern of changes in expenditures after controlling for any differences in age, race, or gender between the non-Demonstration and Demonstration counties, as well as differences between HMO and PSN enrollees. The models also included the individual's risk score as a covariate, to control for differences in health status between enrollees in the Demonstration and non-Demonstration counties and between PSNs and HMOs in the Demonstration counties. These scores were calculated using the Medicaid Rx methodology, which measures health status using pharmacy claims (http://medicaidrx.ucsd.edu/), and used by Florida's Medicaid program to risk-adjust capitation rates to HMOs, but were calculated for enrollees in the Demonstration and non-Demonstration counties during the Demonstration period. As with the univariate analysis, the multivariate analysis used a difference-in-difference approach. These analyses examined whether the change in per member per month expenditures over time significantly differed between the Demonstration versus non-Demonstration counties with both combined and separate estimates for PSN versus HMO enrollment in the Demonstration 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 (GEE) 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 70 observations to the analyses. All models used the XT procedures of Stata 10.0 to account for correlation of observations over time (Stata-Corp 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 cohort size used in the analysis (Manning and Mullahy 2001).

Thus, the results presented focus on the one-part gamma regression models that included all observations (i.e., top 5 percent included).

The model that combined HMO and PSN enrollees includes a variable for time ("time" coded as months 1 through 70), a dummy variable for whether the observation was from the Demonstration period of FY0607-FY0910 (referred to as "post"), a dummy variable indicating whether the observation was from one of the counties that participated in the Demonstration (referred to as "reformcounty"), an interaction of time and post (time*post), an interaction of time and a dummy variable indicating enrollment in a Demonstration (time*reformcounty), a dummy variable indicating that the observation was from the postperiod and a Demonstration county (post*reformcounty), and an interaction of time, postperiod, and Demonstration enrollment (time*post*reformcounty). This model estimates separate slopes for baseline and Demonstration periods for both the Demonstration and non-Demonstration counties and specifically tests whether the differences in slopes to the baseline period and the postimplementation period of the Demonstration is different from those for the non-Demonstration counties (indicated by the coefficient for time*post*reformcounty). The model also indicates whether there was a shift in the intercept in the Demonstration counties once the Demonstration was implemented (indicated by the coefficients for post*reformcounty). The estimated equation is as follows:

$$
\begin{aligned}
\text{PMPM Expenditures}_{it} = \exp(& \beta_0 + \text{Time}_t \cdot \beta_1 + \text{Post}_i \cdot \beta_2 + \text{Reformcounty}_i \\
& \cdot \beta_3 + \text{Time}_t^*\text{Post}_i \cdot \beta_4 + \text{Time}_t^*\text{Reform county}_i \\
& \cdot \beta_5 + \text{Post}_i^*\text{Reformcounty}_i \cdot \beta_6 + \text{Time}_t^*\text{Post}_i^* \\
& \text{Reformcounty}_i \cdot \beta_7 + \text{RiskScore} \cdot \beta_8 + \text{Age} \cdot \beta_9 \\
& + \text{Gender} \cdot \beta_{10} + \text{Race} \cdot \beta_{11} + \epsilon_{it})
\end{aligned}
$$

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 the Demonstration for observations from Demonstration counties and β_7 tests whether the change in the slope pre- and postimplementation of the Demonstration was significantly different for the Demonstration counties than for the observations from the non-Demonstration counties. This equation was estimated separately for enrollees in SSI and TANF.

To examine whether the impact of the demonstration on PMPM expenditures significantly differed for enrollees in Demonstration HMOs versus PSNs, a second model was estimated that was similar to the previous equation

except that separate slopes and intercepts were estimated for PSN and HMO:

$$
\begin{aligned}
\text{PMPM Expenditures}_{it} = \exp(&\beta_0 + \text{Time}_t \cdot \beta_1 + \text{Post}_i \cdot \beta_2 + \text{Reformcounty}_i \\
&\cdot \beta_3 + \text{Time}_i^*\text{Post}_i \cdot \beta_4 + \text{Time}_t^*\text{PSN}_i \cdot \beta_5 + \text{Time}_t^* \\
&\text{HMO}_i \cdot \beta_6 + \text{Post}_i^*\text{PSN}_i^* \cdot \beta_7 + \text{Post}_i^*\text{HMO}_i^* \cdot \beta_8 \\
&+ \text{Time}_t^*\text{Post}_i^*\text{PSN}_i \cdot \beta_9 + \text{Time}_t^*\text{Post}_i^*\text{HMO}_i \\
&\cdot \beta_{10} + \text{RiskScore} \cdot \beta_{11} + \text{Age} \cdot \beta_{12} + \text{Gender} \\
&\cdot \beta_{13} + \text{Race} \cdot \beta_{14} + \epsilon_{it})
\end{aligned}
$$

Thus, β_7 and β_8 indicate the difference in the intercept for the period after implementation of the Demonstration for observations from Demonstration PSNs and HMOs and β_9 and β_{10} tests whether the change in the slope pre- and postimplementation of the Demonstration was significantly different for the Demonstration PSNs and HMOs than for the observations from the non-Demonstration counties.

Next, the estimated equation was used to predict PMPM expenditure in the pre- and postimplementation of Demonstration period for both non-Demonstration enrollees and for all enrollees in the Demonstration counties and then separately for enrollees in Demonstration PSNs and HMOs. The approach taken was to assume that everyone in the population (enrollees in non-Demonstration and Demonstration counties) was either in the Demonstration county or non-Demonstration county for the first model and in the Demonstration PSNs or HMOs or in the non-Demonstration counties in the second model and then predict expenditures for each of the time periods. This allows the demographics to be identical for the estimation cohorts and simulates what would have happened if everyone were either in a non-Demonstration plan or everyone was in a Demonstration PSN and/or HMO. The difference in predicted expenditures pre- and postimplementation is then calculated for Demonstration all together and for PSN and HMO groups and the non-Demonstration groups separately and then the difference of this difference is calculated between the Demonstration counties together and separately for PSNs and HMOs and in the non-Demonstration counties.

RESULTS

There were some differences in the demographics and health status between Medicaid enrollees in HMOs and PSNs in the Demonstration counties. For SSI enrollees in the Demonstration counties, 26.3 percent were African

American in HMOs compared to 11.5 percent in PSNs, and 21.4 percent were classified as a race other than Caucasian or African American in HMOs compared to 8.8 percent in PSNs. SSI enrollees in HMOs were also slightly younger on average compared with PSNs (33.5 vs. 35.5) and had lower risk scores on average (0.32 vs. 0.77). The enrollees were similar in the proportion of Latino enrollees (2.6 percent vs. 2.1 percent) and in the proportion that were male (50.1 percent vs. 51.1 percent). For TANF enrollees in the Demonstration counties, 35.4 percent were African American in HMOs compared to 13.4 percent in PSNs, 10.8 percent of HMO enrollees were Latino compared to 3.9 percent of PSN enrollees, and 5.1 percent of HMO enrollees were classified as other race compared to 1.5 percent of PSN enrollees. TANF-HMO enrollees also had lower risk scores on average than PSN enrollees (0.20 vs. 0.44). TANF enrollees were similar in terms of age (10.9 vs. 10.3) and male gender (44.6 percent vs. 45.5 percent).

Before adjusting for differences in the enrollee populations between the Demonstration and non-Demonstration counties, it appears that average PMPM expenditures were better controlled in the Demonstration counties than the non-Demonstration counties, with the largest difference observed among PSN enrollees (see Table 3). The change in PMPM expenditures for

Table 3:   Unadjusted Changes in PMPM Expenditures

| | Broward/Duval | | Hillsborough/ Orange | | Difference-In-Difference | |
| | Demonstration Counties | | Non-Demonstration Counties | | Demonstration—Non-Demonstration | |
	SSI	*TANF*	*SSI*	*TANF*	*SSI*	*TANF*
All plans						
Baseline	865	131	683	126	263	35
Demonstration	764	118	845	148		
Demonstration-Baseline	−101	−13	162	22		
HMO						
Baseline	668	126	512	118	150	31
Demonstration	676	115	670	138		
Demonstration-Baseline	8	−11	158	20		
PSN and MediPass						
Baseline	982	137	860	139	279	36
Demonstration	889	126	1046	154		
Demonstration-Baseline	−93	−11	186	15		

PMPM, per member per month. Baseline period is FY0405 and FY0506. Demonstration period is FY0607 through FY0910.

SSI enrollees in the Demonstration counties was $263 less than the change in PMPM expenditures in the non-Demonstration counties. When looking at Demonstration HMO and PSN enrollees separately, the change in PMPM expenditures for SSI enrollees in HMOs in the Demonstration counties was $150 less than the change in PMPM expenditure for similar enrollees in HMOs in the non-Demonstration counties, whereas the change in PMPM expenditures for SSI enrollees in PSNs in the Demonstration counties was $279 less than the change in PMPM expenditures for similar MediPass enrollees in the non-Demonstration counties. The change in PMPM expenditures for all TANF enrollees in the Demonstration counties was $35 less than the change in the non-Demonstration counties. The change in PMPM expenditure for TANF enrollees in HMOs in the Demonstration counties was $31 less than the change for TANF-HMO enrollees in the non-Demonstration counties, whereas the change in PMPM expenditures for TANF-PSN enrollees in the Demonstration counties was $36 less than the change for TANF-MediPass enrollees in the non-Demonstration counties.

Relative reductions in expected expenditures remain after adjusting for demographic differences ($p < .001$ in all cases; see Figure 1), although the magnitude of the difference between the Demonstration and non-Demonstration counties is not as large as the unadjusted differences, with PMPM expenditures for SSI enrollees increasing by $40 in the Demonstration counties, but increasing by $186 in the non-Demonstration counties (see Figure 1). Expenditures for enrollees in Demonstration HMOs increased by $40 and increased by $33 for enrollees in Demonstration PSNs (see Table 4). Thus, for SSI enrollees, PSNs appear to be reducing expenditures by $153 compared to the

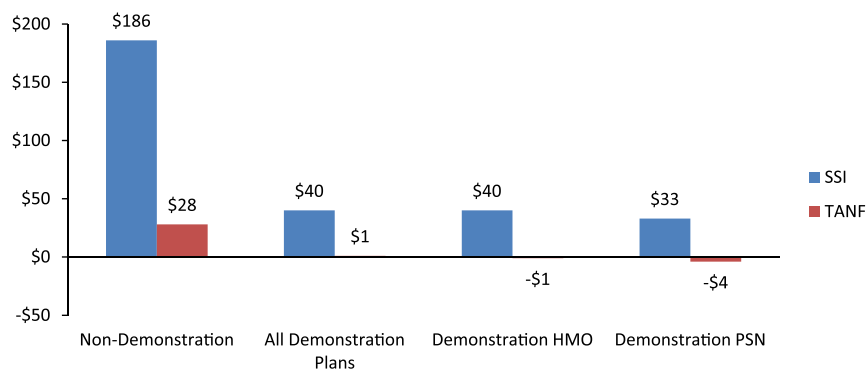Figure 1:   Change in Adjusted Per Member Per Month Expenditures

Table 4:   Multivariate Analysis of Per Member Per Month Expenditures for SSI Enrollees

	Coefficient	*95% CI*		*p-value*
Time	.0058	.0050	.0065	<.001
Post	.1672	.1474	.1871	<.001
Reform	.2176	.1968	.2384	<.001
Time*Post	−.0054	−.0063	−.0045	<.001
Time*HMO	−.0027	−.0039	−.0014	<.001
Time*PSN	.0004	−.0007	.0015	.476
Post*PSN	.1119	.0701	.1538	<.001
Post*HMO	1.3582	1.3199	1.3965	<.001
Time*Post*PSN	−.0082	−.0096	−.0067	<.001
Time*Post*HMO	−.0316	−.0331	−.0301	<.001
Risk score	.0251	.0224	.0279	<.001
Male	.0204	.0068	.0340	.003
Race/ethnicity				
White (reference)	–	–	–	–
Black	−.2308	−.2497	−.2118	<.001
Latino	−.1784	−.2005	−.1563	<.001
Other race	−.2344	−.2523	−.2165	<.001
Age				
Age <1	1.2415	1.1966	1.2863	<.001
Age 1–5	−.5059	−.5289	−.4828	<.001
Age 6–13	−.8746	−.8906	−.8585	<.001
Age 14–20	−.7274	−.7423	−.7125	<.001
Age 21–54 (reference)	–	–	–	–
Age 55–64	−.0497	−.0651	−.0343	<.001
Age 65+	−.3588	−.3881	−.3294	<.001

non-Demonstration counties and HMOs appear to be reducing expenditures by $146. Similarly, PMPM expenditures for TANF enrollees decreased by $1 for HMO enrollees in the Demonstration counties and decreased by $4 for PSN enrollees in the Demonstration counties, but increased by $28 in the non-Demonstration counties (see Table 5). For TANF enrollees, PSNs appear to be reducing expenditures by $32 compared to the non-Demonstration counties, whereas HMOs appear to be reducing expenditures by $29 compared to the non-Demonstration counties. The multivariate analysis showed that the Demonstration initially increased average PMPM expenditures for SSI enrollees, as shown by the positive coefficients for post*HMO and post*PSN ($p < .001$ in both cases), but that there was a downward trend in expenditures over time for both PSN and HMO enrollees, as shown by the negative coefficients for time*post*HOM and time*post*PSN ($p < .001$ in both cases) compared to the non-Demonstration counties, suggesting that the

Table 5:   Multivariate Analysis of Per Person Per Month Expenditures for TANF Enrollees

	Coefficient	95% CI		p-value
Time	.0027	.0021	.0032	<.001
Post	.0924	.0788	.1061	<.001
Reform	.0860	.0745	.0975	<.001
Time*Post	−.0016	−.0022	−.0010	<.001
Time*HMO	.0004	−.0004	.0012	.357
Time*PSN	−.0018	−.0026	−.0010	<.001
Post*PSN	−.0180	−.0478	.0118	.238
Post*HMO	1.4806	1.4579	1.5033	<.001
Time*Post*PSN	−.0030	−.0040	−.0021	<.001
Time*Post*HMO	−.0358	−.0367	−.0349	<.001
Male	−.0573	−.0623	−.0522	<.001
Risk score	.0387	.0363	.0411	<.001
Race/ethnicity				
White (reference)	–	–	–	
Black	−.2041	−.2114	−.1968	–
Latino	−.1322	−.1404	−.1241	<.001
Other race	−.2033	−.2152	−.1914	<.001
Age				
Age <1	.3323	.3235	.3411	<.001
Age 1–5	−.7591	−.7665	−.7516	<.001
Age 6–13	−.9394	−.9469	−.9320	<.001
Age 14–20	−.6157	−.6241	−.6073	<.001
Age 21–54 (reference)	–	–	–	–
Age 55–64	.3396	.2910	.3881	<.001
Age 65+	.2230	−.0607	.5066	.123

Demonstration was able to "bend the cost curve." Similar findings, but with smaller magnitudes, were observed for the TANF enrollees, although there was no shift in intercept for PSNs (p = .238), with downward trends observed over time for both PSNs and HMOs (p < .001 in both cases).

An additional analysis was conducted that was limited to only those individuals with at least 3 or 6 months of Medicaid eligibility in both the pre-Demonstration period (July 1, 2004—June 30 2006) and Demonstration period (September 1, 2006—July 1, 2010). This was done to determine if the impact of the Demonstration was different among those individuals with more stable Medicaid enrollment. When limited to these individuals, it appears that the Demonstration counties controlled costs better than the non-Demonstration counties for both the SSI and TANF populations, although the cost reductions were smaller among SSI enrollees compare with the full cohort ($67 vs $205), and were larger for the TANF population ($54 vs $32).

Detailed results are not presented here, but they are available from the authors upon request.

DISCUSSION

It appears that both HMOs and PSNs participating in the Medicaid Demonstration counties in Florida are controlling PMPM expenditures better than the non-Demonstration counties, lowering expenditures by approximately $200 PMPM for SSI enrollees and by approximately $30 PMPM for TANF enrollees. In addition, Demonstration PSNs are generating slightly larger reductions in expenditures than Demonstration HMOs. Although PSNs had only marginally greater reductions in expenditures relative to HMOs in the Demonstration counties, previous studies have shown that the PSNs in the Demonstration counties also had slightly greater levels of enrollee satisfaction with their health care, health plan, personal doctor, and with specialty care compared with Demonstration HMOs (Duncan et al. 2010).

An earlier analysis of Florida's Medicaid Demonstration found essentially no impact in PMPM expenditures when examining expenditures during the first 2 years postimplementation of Florida's Medicaid Demonstration (Harman et al. 2011). Given the relatively large savings observed in this analysis of 4 years after Florida's Medicaid Demonstration implementation, it appears that it may take several years before cost reductions can be realized. This concept is supported by the multivariate models, which consistently demonstrated an initial increase in expenditures in the Demonstration counties (i.e., an upward shift in the intercept), but bent the cost curve downward, lowering the rate of increase in expenditures compared with the non-Demonstration counties. However, it will be important to continue to examine expenditures to determine if the current observed trends continue.

In addition, this analysis has some important limitations that must be considered when interpreting the results. First, this study only examined expenditures for direct care and capitated premiums, and it did not examine utilization of specific services. Therefore, it is not known if the observed reductions in expenditures were due to more efficient provision of care or by limiting access to care. At the time of this study, encounter data from HMOs were not available to examine patterns of utilization. Further research is necessary to learn more about exactly how the observed reductions in expenditures were achieved. This study also did not include the administrative costs incurred by the AHCA, which administers Florida's Medicaid program. However,

payments made by AHCA to PSNs, HMOs, and MediPass providers for management of Medicaid enrollees were included in the calculations. Also, the data do not include out-of-pocket payments by enrollees, so it is not possible to know if the Demonstration changed out-of-pocket cost burden in this population.

An additional limitation is that this analysis did not measure changes in expenditures for individual enrollees, pre- and post-Demonstration implementation. The PMPM expenditure calculations during the pre-Demonstration 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 post-Demonstration period. In addition, because individuals selected into plans and were not randomized, there is the potential for selection bias. There were some observed differences in demographics and risk scores between HMOs and PSNs and the non-Demonstration counties, and case mix might have varied over these periods. Given that there were differences in observed variables, it is likely that there were also some differences in unobserved characteristics that were related to both choice of health plan and expenditures. 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, the multivariate analyses controlled for demographics and risk scores, and a difference-in-difference approach is used, it is unlikely that case mix and other differences in unobserved factors are driving these results.

Although these limitations exist, this study demonstrates that 4 years into the Demonstration project in Florida's Medicaid program, reductions in expenditures are being achieved. The slightly greater reductions in expenditures among PSNs combined with better patient experiences among PSN enrollees relative to HMO enrollees found in an earlier study (Duncan et al. 2010) point to PSNs as a promising model for delivering care to Medicaid enrollees. Exactly why PSNs perform differently remains unclear at this point. Further research can uncover the extent to which the organizational structure, mission, and payment arrangements are directly or indirectly linked to lower expenditures. It will be important to continue to monitor the program to see if lower expenditures are maintained and also to determine how reductions in expenditures are being achieved.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Martrix.