Wisconsin State Planning Grant

HIPP Program-Wide Cost-Effectiveness Evaluation

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TABLE OF CONTENTS

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Project Summary

The benefits of premium assistance programs include the ability to leverage employer contributions, keep family members together, limit crowd-out, ease transition from public to private coverage, strengthen the private insurance market and eliminate the stigma of public programs. Wisconsin's Health Insurance Premium Payment (HIPP) program was implemented in 1999 with these goals in mind. The aim of this analysis is to determine the extent to which the program successfully leverages employer contributions in a manner that is cost-effective to the Medicaid program.

HIPP program-wide cost-effectiveness evaluations have been completed on a fiscal year basis by the Division of Health Care Financing (DHCF). This cost-effectiveness test compares premium payments plus wrap-around benefits to the BadgerCare capitation rate. (The wrap-around payments represent fee-for-service (FFS) Medicaid payments for services not covered under the enrollee's employer-sponsored coverage). Building upon the existing evaluation framework, APS conducted a cost-effectiveness analysis for calendar year (CY) 2003. This analysis differs from the DHCF's annual analysis in a number of ways. In order to improve the accuracy of the estimates, we used age-/gender-adjusted capitation rates rather than using a single capitation rate for all HIPP participants in a given rate region. In addition, our analysis considered new variables and data sources.[1]

Data Sources

No single data source contains all the elements required for our analysis. In fact, five distinct sources were used to complete the analysis – three were needed to structure the enrollment database alone. A listing of the sources follows; detailed descriptions of each are located in *Appendix A*.

1) EDS HIPP unit enrollment spreadsheet
2) BadgerCare HIPP Payouts/Manual Checks/Voids for SFY 2003 and SFY 2004
3) MEDS Recipient ODS universe
4) Capitation rate tables
5) MEDS Claims Analysis universe

Method

A summarized description of the analysis method follows. Details can be found in *Appendix B*.

Because no existing data source contained all the enrollment information required for this analysis, our first step was to create a CY 2003 enrollment database. There are three data sources

[1] A detailed accounting of differences between the current analysis (CY 2003) and those completed by DHCF (SFY 03 and SFY 04) is located in *Appendix C*.

containing information on HIPP eligibility/enrollment: the EDS HIPP unit enrollment spreadsheet, the BC HIPP Payouts and the MEDS Recipient ODS universe. All were used at some point in the creation of the enrollment database. The EDS HIPP unit enrollment spreadsheets were used as the basis for the development of the program enrollment roster, the BC HIPP Payouts were used to determine monthly enrollment and the MEDS Recipient ODS universe was used to identify family members comprising a case and to assign those members to the demographic groups required for the capitation rate calculation. At each step of the process, discrepancies among the data sources were discovered; examples of these data inconsistencies are noted in *Appendix B*.

During the creation of the enrollment database, 106 cases (and 362 associated family members) were found to have a premium payment for one or more month during CY 2003; these 468 participants form the enrollment roster from which the rest of the analysis is based.

Each case member was assigned a monthly capitation rate based on their demographic information. The monthly rate was multiplied by the number of HIPP-enrolled months in 2003 to produce the total capitation cost for that member. The total capitation cost for all members in the case was summed to produce the total capitation cost for the case. In total, $438,084.30 in capitation costs were assigned to the CY 2003 HIPP cases.

Premium payments were calculated using the BC HIPP Payout data. During the course of determining monthly HIPP eligibility, premium payments were attributed to CY 2003 months. All premiums attributed to 2003 months were summed for each case to produce the total premiums paid for that case. In CY 2003, a total of $192,869.95 in premium payments was spent on the 106 cases (and 362 associated family members) we analyzed.

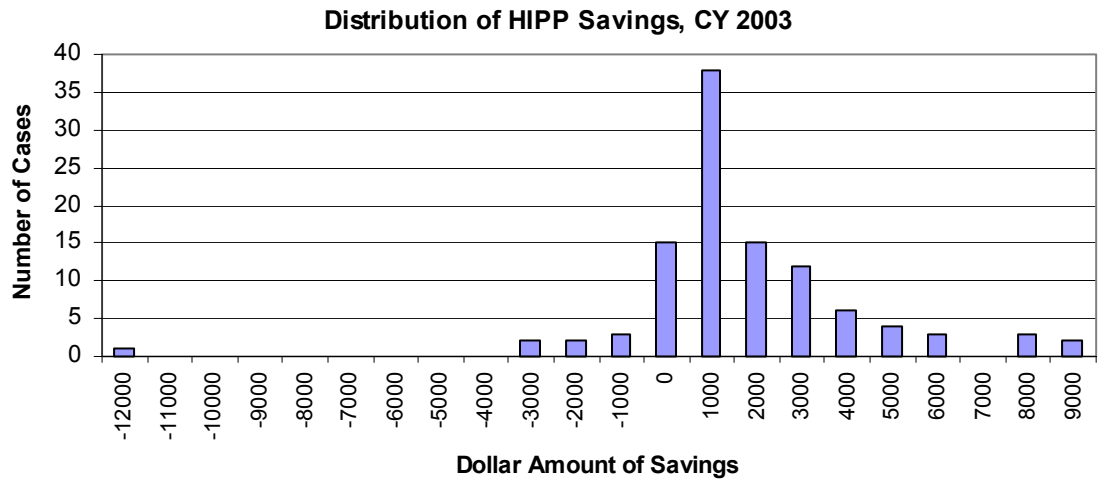
The MEDS Claims Analysis universe was used to extract wrap-around costs for HIPP enrollees. Wrap-around costs for each case member were summed to the case head level. $115,777.08 in wrap-around costs were retrieved for 340 recipients (of 468). There were wrap-around costs for all but 9 of the 106 cases.

Total savings were calculated at the case level by subtracting the premium payments and wrap-around costs from the capitation payments. The costs of administering the program were not included in the cost savings calculation. According to this analysis, the HIPP program saved $129,437.27 during CY 2003.

Findings

The HIPP program saved $129,437.27 during CY 2003 – an average of $1,221.11 for each of the 106 cases. This savings represents the difference between what the HIPP case would have cost under managed care (capitation payments) and the actual costs incurred during HIPP enrollment (premiums paid and wrap-around claims). This analysis does not account for any costs associated with administering the HIPP program; rather, it represents savings associated with the utilization of health care services covered under Medicaid.

The vast majority of cases (83 of 106) had cost savings in 2003 ranging from $26.64 to $8,538.03. Twenty-three cases did not result in savings and had losses ranging from $2.59 to $12,441.10. While there was one case that generated significant losses ($12,441.10), it is an extreme outlier (the case with the second greatest loss was $3,282.02). As shown on the following chart, the amount of savings per case was relatively normally distributed around the mean.



A Pearson correlation calculation was used to determine which, if any, of the case characteristics had a strong influence on the amount of savings. The monthly savings for each case (total savings in 2003 divided by the number of months enrolled in HIPP in 2003) was compared to the following case characteristics: number of adults in case, number of children in case, case size, employer contribution percent, insurance type (HMO or PPO), calculated (projected) monthly savings and average monthly premium. All comparison variables were gathered from the EDS HIPP unit enrollment spreadsheet with the exception of the average monthly premium which was calculated during the cost-effectiveness analysis. The following table displays the correlation coefficients that resulted. When examining this table, keep in mind that the maximum coefficient value is 1.0 and the higher the coefficient, the stronger the relationship between the variables. (Coefficients for the insurance type (HMO or PPO) and employer contribution percent comparisons are not displayed because the results were not statistically significant.)

	# Adults	# Children	Total Case Size	Projected Monthly Savings	Average Monthly Premium
2003 Monthly Savings	.318	.387	.444	.472	-.197

[The projected monthly savings represents the amount that the HIPP unit system estimated that the case would save on a monthly basis; this calculation is done at the time of program enrollment. The 2003 monthly savings is that which was calculated in this cost-effectiveness analysis.]

As the table illustrates, none of the case variables analyzed are strongly correlated with the 2003 monthly savings. The variable correlated most strongly with the 2003 monthly savings was the projected monthly savings. However, this relationship can best be described as a moderate correlation. (The correlation value should be >0.5 to be deemed a strong correlation.) As both variables (2003 monthly savings and projected monthly savings) intend to represent the savings associated with the case, some might expect the correlation between the two to be stronger. However, the weakness of the correlation is not surprising as it likely highlights the differences in methods used to calculate the savings figures.

One difference between the cost savings calculation methods is the capitation rate used. The HIPP unit system does not use an age/gender adjusted capitation rate when calculating projected savings. Instead, a single rate region-level rate is applied to all members of the case, regardless of age or gender. Therefore, for every additional case member, there is a directly proportional increase in the projected capitation rate (which results in a greater likelihood of savings). In contrast, the 2003 savings were calculated using age/gender adjusted capitation rates. Children, except for those <1, tend to have lower capitation rates than adults. Additional case members (particularly children) may not result in a significantly higher projected capitation payments because they are comparatively 'cheaper' than adults.

Another difference between the methods is the treatment of wrap-around costs. While the wrap-around costs used in the 2002 analysis reflect actual participant history, the wrap-around costs used in the HIPP unit system calculation are merely estimates (as actual costs are not available prior to program enrollment).

Conclusion

The results of this analysis confirm what has been found in previous analyses – the HIPP program results in savings to the Medicaid program. Although reflective of different time frames, our savings estimate ($129,437.27 in CY 2003) is similar to that calculated by the DHCF ($175,477.93 in SFY 03 and $217,722,20 in SFY 04).[2]

[2] A detailed accounting of differences between the current analysis (CY 2003) and those completed by DHCF (SFY 03 and SFY 04) is located in *Appendix C*.

These findings do not identify any case characteristics that significantly impact cost-effectiveness. As stated previously, neither case size nor projected monthly savings are strongly correlated with the actual savings calculated for CY 2003. There was insufficient information to determine whether or not employer contribution percent or insurance type was correlated with savings.

Although not directly related to the eventual cost savings findings, mention must be made of the data available to complete this analysis. The lack of a single comprehensive enrollment database presents a significant barrier to updating this analysis as well as conducting routine program monitoring. In addition, the inconsistencies between available data sources are disconcerting – especially with regard to key issues such as the determination of members included in a case and monthly enrollment.

As originally planned, this analysis will be followed by an evaluation of the case-by-case cost-effectiveness determination process (referenced in the preceding section [HIPP unit system]). Only then will we have the information required to analyze the effect of recommended policy changes on HIPP enrollment and subsequent Medicaid cost savings.

Appendix A

Data Sources

1) EDS HIPP unit enrollment spreadsheet
   a) Excel format
   b) Contains four worksheets (Current HIPP Enrollees, Elig Future Enrlmnt, No Longer HIPP, Never Bought In)
   c) Contains the following data fields: Case Name, Case Number, County Code, Employer ID, Employer Name, Type of Health Plan, Ins. Co. Name, All Covered Members, Covered Members (who cost effectiveness was run on), % Employer Pays, Family of E/D Premiums, Employee's Monthly Share, Monthly Savings, Health and Supp-Dental indicators, Reimbursed entity (WW, Emp, Ins. Co.), Policy Start Date, Policy End Date, Notes/Reason for ending.
   d) Current through August 2004
   e) Provided by Bonnie Reigel (EDS)

2) BadgerCare HIPP Payouts/Manual Checks/Voids for SFY 2003 and SFY 2004
   a) Excel format
   b) One file for each SFY. Each file contains one worksheet.
   c) Contains the following data fields: CCN/MICR, Check Write date (payment/cycle date), Case # (Medicaid recipient ID of HIPP case head), Review/Check Date (refers to the time period for which the payment is being issued or in the case of a voided check then the check's original payment date), Payout Amount, Manual Check Amount, Void Amount.
   d) Provided by Pat Pulsfus (EDS)

3) MEDS Recipient ODS universe
   a) Business Objects universe containing the complete set of recipient eligibility data (Operational Data Set) from the MMIS system.
   b) Complete universe documentation available elsewhere.

4) Capitation rate tables
   a) Excel format
   b) Separate files for BadgerCare and AFDC/Healthy Start. Multiple worksheets in each file.
   c) For the 2003 BadgerCare rates, the 'All Services' rates from the sheet titled "Addendum VII – F CORRECTED for Dane County Relativities on 12/10/02 : CY 2003 BadgerCare Capitation Rates - by Age and Gender, including Hospital Outpatient Increase" was used.
   d) For the 2003 AFDC/Healthy Start rates, the 'All Services' rates from the sheet titled "Addendum VII – C: CORRECTED for Dane County Relativities : CY 2003 Final AFDC/HS Child Capitation Rates by Age/Gender & Rate Region Including HOP" was used.
   e) Provided by Dan Ryan (DHCF).

5) MEDS Claims Analysis universe

a) Business Objects universe containing the most commonly requested claim data elements in a structure that is optimized for analysis. This universe is used for creating claims summary queries. At present, the Claims Analysis universe consists of all claims and adjustments to a claim finalized since January 1, 1995.
b) Complete universe documentation available elsewhere.

Appendix B

Method

1) Create calendar year (CY) 2003 enrollment database

   Create list of cases enrolled in the HIPP program at any time in CY 2003 and determine which months they were enrolled.

   The EDS HIPP unit enrollment spreadsheets were used as the basis for the development of the program enrollment roster. This data source was chosen for a number of reasons including 1) It is the source used to generate summary enrollment reports and 2) It contains information that the other sources do not such as employer contribution percent. The sheets containing current enrollees (as of August 2004, # = 189) and past enrollees (# = 122) were combined in Excel and exported to Access. All data contained on the Excel sheets were transferred to the Access database.

   After developing a list of all possible 2003 HIPP enrollees (preceding paragraph), it was necessary to determine enrollment on a monthly basis. For the purposes of this analysis, it was important to assign monthly enrollment only where there was evidence of active enrollment in the HIPP program. Because of the inconsistencies between the Policy Start and End Date fields in the EDS HIPP unit enrollment spreadsheets and the BC HIPP Payout data, it was determined that the Policy Start Date and Policy End Date fields were insufficient to determine monthly enrollment. Selected discrepancies follow.

   a) BC HIPP payouts prior to EDS HIPP unit spreadsheet enrollment date:

Case Number	EDS Enroll Date	Payouts Begin
0000000001	12/1/03	7/1/03

   b) BC HIPP payouts after EDS HIPP unit spreadsheet end date:

Case Number	EDS End Date	Payouts Ended
0000000002	5/31/03	7/31/2003

   c) EDS HIPP unit spreadsheet shows enrollment in 2003, but no payouts were made in 2003:

Case Number	EDS Enroll Date	EDS End Date
0000000003	6/1/02	6/1/03

   d) BC HIPP payouts in 2003, but no record of enrollment on EDS HIPP unit spreadsheet:

Case Number	Payouts Begin	Payouts End
0000000004	5/1/03	6/1/03

Consideration was given to using the Recipient ODS universe (specifically, the Recipient Insurance Coverage folder) to determine monthly enrollment. In some cases, the information found in the ODS universe mirrored what was found on the EDS HIPP unit enrollment spreadsheets, in some cases it mirrored the BC HIPP Payout data, and in some cases it was different from both. Examples follow.

a) Recipient ODS insurance data and BC HIPP Payout data consistent, but different from EDS HIPP unit enrollment spreadsheet:

Case Number	EDS Enroll Date	Payouts Begin	ODS Insurance Begin Date
0000000005	7/1/03	9/1/03	9/1/03

b) EDS HIPP unit enrollment spreadsheet and BC HIPP Payout data consistent, but different from Recipient ODS insurance data:

Case Number	EDS Enroll Date	Payouts Begin	ODS Insurance Begin Date
0000000006	8/15/03	8/1/03	None

c) EDS HIPP unit enrollment spreadsheet and Recipient ODS insurance data consistent, but different from BC HIPP Payout data:

Case Number	EDS Enroll Date	Payouts Begin	ODS Insurance Begin Date
0000000007	3/1/02	3/1/03	3/1/02

Ultimately, the BC HIPP Payouts were determined to be the "gold standard" for monthly enrollment. HIPP cases were identified as enrolled in the HIPP program in a given month only if there was evidence of a premium payment for that month. This determination process was completed manually.

106 cases on the EDS HIPP unit enrollment spreadsheet were found to have a premium payment for one or more month during CY 2003; these 106 cases form the enrollment roster from which the rest of the analysis is based.

<u>For each of the 106 cases with one or more month of enrollment in CY 2003, identify all family members that comprise the case.</u>

The EDS HIPP unit enrollment spreadsheets display the number of members that comprise each case, but do not provide the Medicaid IDs (nor any other identifying information) about the individual members. Similarly, the BC HIPP Payout data contains only case IDs (no family member IDs). Therefore, an alternate data source was necessary.

The MEDS Recipient ODS universe was used to identify family members comprising a case.

a) The following information was extracted for each case and family member: Case Number, Recipient ID, Eligibility Begin Date, Eligibility End Date, Last Name, First Name, Date of Birth, Gender, County/Agency Code, Medical Status Group, HMO Rate Region Code.

b) The following conditions were applied: [Eligibility Begin Date <=12/31/2003] and [Eligibility End Date >= 1/1/2003] and [Recipient ID in list Personal Recipient ID or Case Number in list Personal Recipient IDs].
c) The Personal Recipient IDs table was comprised of the IDs of the 106 case members who had one or more month of HIPP enrollment in CY 2003.
d) These conditions purposely do not limit the results to recipients with BadgerCare eligibility. Doing so would under-represent the case size as many family members are covered under the case's employer-sponsored policy, but are not BadgerCare-eligible (but rather are Medicaid-eligible under AFDC, Healthy Start or another Medicaid program).
e) This method does not produce case sizes exactly matching those listed on the EDS HIPP unit enrollment spreadsheet. Of the 106 total cases, 36 case sizes differ between the MEDS Recipient ODS universe query results and the EDS HIPP unit enrollment spreadsheet. Of the 36 cases with differing case sizes, the EDS HIPP unit size is larger that the query results in 14 cases and smaller in 22 cases. The data sources available do not provide the information needed to reconcile these differences. Attempts to do so using the insurance information available in the Recipient ODS universe were unsuccessful.

468 recipients were identified as being associated with HIPP case (106 case heads and 362 family members).

Assign each case member (case head and associated family members) to the demographic groups requisite for capitation rate calculation.

Each recipient was assigned a single rate region and eligibility category based on the eligibility data gathered in the aforementioned Recipient ODS universe query. If case members were associated with more than one rate region or medical status group during their HIPP enrollment period, they were assigned to the one accounting for the greatest percentage of their HIPP enrollment time. For example, if a person resided in rate region 6 for 9 months and in rate region 5 for the remaining 3 months, they were assigned to rate region 6. Rate region assignment was consistent among case members; all recipients associated with a given case head were assigned to the same rate region.

Eligibility category assignment varied as the medical status group dictated. Case members were assigned to either BadgerCare or AFDC/Healthy Start. It is interesting to note that 4 case heads were assigned to the AFDC/Healthy Start category, rather than BadgerCare, per the available eligibility information. Their eligibility information (per the Recipient ODS universe query) follows.

a) Assigned to AFDC/Healthy Start because member was Healthy Start-eligible 7 of 12 months in 2003. (Member was enrolled in HIPP all 12 months in 2003.)

Case Number	Eligibility Begin Date	Eligibility End Date	Medical Status Group
0000000008	9/1/02	1/31/03	BadgerCare
	2/1/03	8/31/03	Healthy Start
	9/1/03	8/31/05	BadgerCare

b) Assigned to AFDC/Healthy Start because member was Healthy Start-eligible all 6 months of 2003 HIPP enrollment period. (Member was enrolled in HIPP Jan-Jun 2003.)

Case Number	Eligibility Begin Date	Eligibility End Date	Medical Status Group
0000000009	12/1/02	6/30/03	Healthy Start

c) Assigned to AFDC/Healthy Start because member was Healthy Start-eligible all 2 months of 2003 HIPP enrollment period. (Member was enrolled in HIPP Nov-Dec 2003.)

Case Number	Eligibility Begin Date	Eligibility End Date	Medical Status Group
00000000010	11/1/03	2/29/04	Healthy Start

d) Assigned to AFDC/Healthy Start because member was AFDC-eligible all 5 months of 2003 HIPP enrollment period. (Member was enrolled in HIPP Aug-Dec 2003.)

Case Number	Eligibility Begin Date	Eligibility End Date	Medical Status Group
0000000011	7/1/03	1/31/04	AFDC

Each case member was assigned an age and age group based on their age as of 12/31/2003. Age groups differ based on eligibility category because of the structure of the capitation rate tables. BadgerCare age groups are<1, 1-14, 15-20, 21-34, 35-44 and 45+. AFDC/Healthy Start age groups are <1, 1-5, 6-14, 15-20, 21-34 and 35+.

1) Calculate capitation costs.

Build a capitation rate reference table for 2003.

An Access table was created using the information provided by Dan Ryan (in Excel format).

Calculate the total capitation costs for each case.

Each case member was assigned a monthly capitation rate based on their demographic information. The monthly rate was multiplied by the number of HIPP-enrolled months in 2003 to produce the total capitation cost for that member. The total capitation cost for all members in the case was summed to produce the total capitation cost for the case.

In total, $438,084.30 would have been spent on capitation payments had the HIPP enrollees not been enrolled in HIPP.

2) Calculate premium payments.

   The BC HIPP Payout data was used for premium payment information. During the course of determining monthly HIPP eligibility, premium payments were attributed to CY 2003 months. All premiums attributed to 2003 months were summed for each case to produce the total premiums paid for that case.

   In CY 2003, a total of $192,869.95 in premium payments was spent on the 106 cases we analyzed.

3) Calculate wrap-around costs.

   The MEDS Claims Analysis universe was used to extract wrap-around costs for HIPP enrollees.
   a) The following information was extracted for each case and family member: Recipient ID and Amount Paid.
   b) The following conditions were applied: [Detail Status Code in list C, E] and [From Date of Service between 1/1/2003 and 12/31/2003] and [Recipient ID = SPGCOSTALLIDS]
   c) The SPGCOSTALLIDS table was comprised of the IDs of the 468 case members who had one or more month of HIPP enrollment in CY 2003 (includes 106 case heads and 362 associated family members).

   Claims data were exported to Access. Wrap-around costs for each case member were summed to the case head level.

   $115,777.08 in wrap-around costs were retrieved for 340 recipients (of 468). There were wrap-around costs for all but 9 of the 106 cases.

4) Calculate total savings.

   Total savings were calculated at the case level by subtracting the premium payments and wrap-around costs from the capitation payments. The costs of administering the program were not included in the cost savings calculation.

   According to this analysis, the HIPP program saved $129,437.27 during CY 2003.

Appendix C

Comparison of Methods/Results

Tables 1 and 2 compare the results of the current analysis (CY 2003) to those completed for similar periods by the DHCF (SFY 2003 and SFY 2004). The differences in results between the periods can be explained in large part by the differences in analysis methods.

Table 1	CY 2003	SFY 2003	SFY 2004
# Cases	106	94	156
# Participants	468	356	574
# Participants per Case	4.4	3.8	3.7
# Enrolled Months	842	714	1017
# Months per Case	7.9	7.6	6.5

The number of participants per case is higher in the current analysis (CY 2003) than in either of DHCF analyses (FY 2003 and FY 2004). This most likely due to the inclusion of non-BadgerCare family members in the CY 2003 analysis (non-BadgerCare family members are not included in the DHCF analyses).

The number of enrolled months per case is also higher in the current analysis than in either of DHCF analyses. This difference can be attributed to the data used to determine monthly enrollment. In both the current and DHCF analyses, cases were deemed to be enrolled in HIPP in months that a premium was payed. Premium payment data from outside the analysis period were available in the current analysis, but were not available to DHCF. Therefore, in the current analysis, we were able to identify premiums paid outside of CY 2003 that were attributable to CY 2003 months. For example, premium payments made in January of 2004 were attributed to December 2003 if appropriate.

Table 2	CY 2003	SFY 2003	SFY 2004
Total Capitation	$438,084.30	$378,500.14	$543,638.88
Capitation per Participant	$936.08	$1,063.20	$947.11
Capitation per Month	$520.29	$530.11	$534.55
Total Premiums	$192,869.95	$143,106.15	$245,950.23
Premiums per Case	$1,819.53	$1,522.41	$1,576.60
Premiums per Month	$229.06	$200.43	$241.84
Total Wrap	$115,777.08	$59,916.06	$79,966.45
Wrap per Participant	$247.39	$168.30	$139.31
Wrap per Month	$137.50	$83.92	$78.63
Total Savings	$129,437.27	$175,477.93	$217,722.20
Savings per Case	$1,221.11	$1,866.79	$1,395.66
Savings per Month	$153.73	$245.77	$214.08

The capitation costs per participant and per month are lower in the current analysis than in the DHCF analyses. This can be explained by the difference in capitation calculation methods. Age and gender-adjusted capitation rates were used in the CY 2003 analysis, while rate region-level rates were used in the DHCF FY analyses. The rate region-level rates tend to be higher than the age-/gender-adjusted rates for children, but less than the age-/gender-adjusted rates for adults. Consequently, the rate region rates over-estimate the capitation costs for children and under-estimates the capitation costs for adults.

The premium payments per case and per month are higher in CY 2003 than in the DHCF FY analyses. This finding is explained by the availability of premium payment data from outside the analysis period (as explained in the paragraph immediately preceding Table 2).

The wrap-around costs per participant and per month are significantly higher in the current analysis than in the DHCF analyses. One explanation for this may be claims lag. While the DHCF analyses were completed soon after the end of the FY (accounting for a three-month claim lag), the current analysis was completed over a year after the end of CY 2003.

Finally, the savings calculated in the current analysis (CY 2003) are lower than those calculated for FY 2003 and FY 2004. This can be explained by the methodological differences explained above. The method used for the current CY 2003 analysis resulted in lower capitation costs, higher premium payments and higher wrap-around costs than the DHCF FY analyses – which in turn resulted in lower overall program savings.

In conclusion, variations in the method employed result in significant differences in findings. To obtain the most accurate picture of program-wide cost savings, we recommend that future cost-effectiveness analyses utilize methods similar to what was used in the present analysis.