

State of Utah Children's Health Insurance Program (CHIP) Five-Year Pharmacy Analysis

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1. Introduction

Established as part of the 1998 Utah State legislative session, the State of Utah's Children's Health Insurance Program (CHIP) delivers much-needed health insurance to children that are not eligible for Medicaid and who are below certain poverty levels. Initially, CHIP was funded with \$5.5 million from the Tobacco Settlement Agreement along with a four-to-one match from the federal government. That amount has subsequently been increased to \$7 million during the 2003 legislative session, which will allow for increased enrollment into the plan.

Public Employees Health Program (PEHP) has been a partner in providing healthcare with the State of Utah's Department of Health (DOH) since the inception of CHIP. PEHP was established in 1977 as a non-profit, self-funded trust that is managed by the Utah Retirement System (URS). In addition to the CHIP population, other groups that PEHP administers are State of Utah, Salt Lake County, Salt Lake City and various other school districts and municipalities throughout the state of Utah. Since PEHP has been involved with CHIP from the inception in 1998, a five-year study of pharmacy utilization and costs will be conducted to determine five-year trends and utilization patterns.

2. Methodology

Since the State of Utah's CHIP program was established August 1998, pharmacy claims that were incurred for the period October 1998 through September 2003 were analyzed. This provides for a five-year period for the analysis, and all the claims data were pulled with three months of runout. Therefore, no completion factors were applied to the data. In addition, allowed amounts (claim amounts permitted under the PEHP negotiated contracts) were used throughout the analysis. Since copays are different between CHIP and the State of Utah, allowed amounts will provide for a better comparison between the groups.

Areas of investigation will include descriptive statistics and trend analysis. The descriptive statistics section will investigate areas such as total costs and total scrip written for the five-year period for various segmentations of CHIP, which will include pharmaceutical therapeutic chapters. The therapeutic chapters are categorized in Table 1.

Table 1. Therapeutic Chapters

Anti-Infectives, Systemics
Antineoplastic & Immunosuppressants
Cardiovascular, Hypertension & Antilipemic Agents
CNS, Psych, Neurology & Autonomic
Dermatologicals/Topical Therapy
Diagnostics & Miscellaneous
Ear, Nose & Throat Medications
Endocrine/Diabetes
Gastroenterology
Obstetrics & Gynecology
Ophthalmology
Other Miscellaneous
Respiratory, Allergy, Cough & Cold
Rheumatology & Musculoskeletal
Urologicals
Vitamins, Hematinics & Electrolytes

These therapeutic chapters were based on the Medco Health 2003 Universal Formulary.¹ Demographic detail will also be provided based on gender and age groups. The four age groups selected are under 2 years of age, 2-5 years of age, 6-10 years of age and 11-18 years of age.

Trends will be determined over the five-year period for the total CHIP population as well as for subgroups based on the per-member-per-month (PMPM) values. The PMPM values are calculated on a 12-month average. In addition to the CHIP population, costs/utilization/trends will also be provided for the State of Utah population for children under 18 years old for comparison purposes.

3. Discussion

Eligibility for CHIP is established based upon poverty level. For the State of Utah, plan levels are 100-150 percent of the federal poverty level (FPL), 151-200 percent of the FPL or status as a Native American. For the year 2003, the Health and Human Services (HHS) annual poverty levels are presented in Table 2.

Table 2. Federal Poverty Levels, 2003²

Family Unit	48 Contiguous States & D.C.	Alaska	Hawaii
1	\$8,980	\$11,210	\$10,330
2	12,120	15,140	13,940
3	15,260	19,070	17,550
4	18,400	23,000	21,160
5	21,540	26,930	24,770
6	24,680	30,860	28,380
7	27,820	34,790	31,990
8	30,960	38,720	35,600
<i>Additional person add</i>	<i>3,140</i>	<i>3,930</i>	<i>3,610</i>

Effective October 1999, Health Care Financing Administration (HCFA) directed that CHIP waive all cost sharing for the Native American population. Therefore, an additional marker was added to separate the Native American claims from the other poverty levels.

In an effort to control costs and to provide coverage throughout the State of Utah, two separate networks are available to CHIP participants based upon residence. In the urban area (the Wasatch Front, including Provo, Salt Lake City and Ogden), an HMO type of network is available for the CHIP participant. In rural areas, a PPO type of network is available. No selection between the two plans may be made for participants that have selected PEHP as the carrier of choice. Since the inception of CHIP, PEHP has been the only carrier that has provided coverage in the rural areas of the state. During the early years, there were multiple carriers that provided services in

the urban areas. Subsequently, coverage has been reduced to only two carriers. As of July 2003, 61 percent of the enrollment was in the urban areas, and 39 percent of the enrollment was in the rural areas.

For the State of Utah, plan levels along with the pharmacy benefits are detailed in Table 3. Note that all the copays and co-insurance apply to 30 days' supply. As a comparison, State of Utah members pay a co-insurance amount of 25 percent for preferred drugs and 50 percent for non-preferred drugs with a \$5 minimum copay.

Table 3. CHIP Rx Benefits

	100-150% FPL	151-200% FPL	Native American
Preferred	\$1 copay	\$5 copay	No cost
Non-Preferred/Compound	\$3 copay	50% of discounted cost	No cost
Mail Order	Not Covered	Not Covered	Not Covered

The analysis presented will incorporate the subdivisions based on poverty level and residence location in addition to the comparison between CHIP and the State of Utah.

4. Results

Results will be divided into two sections. The first section will deal with descriptive statistics for CHIP and the corresponding statistics for the State of Utah where appropriate. Section 2 will investigate the trends experienced over the study.

4.1 Descriptive Statistics

In an effort to provide a benchmark on the magnitude of claims over the five-year study period, Table 4 provides the total Rx spend as well as the total number of scrips written. As can be seen, on both the Rx spend and utilization, CHIP is approximately 60 of the child population for the State of Utah.

Table 4. Cost & Utilization Summary

Group	Total 5 yr	Total 5 yr Scrips
CHIP	\$ 9,033,503	242,044
State of Utah	\$14,931,727	382,377

Breaking the data out further into gender and age groups, claims and utilization based on gender is consistent between the two groups as can be seen from Tables 5 and 6. The only notable difference is that for the 6-10 years of age group, CHIP has both a higher total cost and utilization than the State of Utah on a percentage basis.

Table 5. Gender Summary

Group	Sex	Total 5 yr	%	Total 5 yr Scrips	%
CHIP	F	\$ 3,968,786	44%	115,134	48%
	M	\$ 5,064,717	56%	126,910	52%
	Total:	\$9,033,503	100%	242,044	100%
State of Utah	F	\$ 6,562,610	44%	180,291	47%
	M	\$ 8,369,117	56%	202,086	53%
	Total:	\$14,931,727	100%	382,377	100%

Table 6. Age Group Summary

Group	Age Group	Total 5 yr	%	Total 5 yr Scrips	%
CHIP	under 2 years	\$ 214,389	2%	11,227	5%
	2-5 years	\$ 974,500	11%	43,148	18%
	6-10 years	\$ 2,397,803	27%	65,801	27%
	11-18 years	\$ 5,446,810	60%	121,868	50%
	Total:	\$9,033,502	100%	242,044	100%
State of Utah	under 2 years	\$ 687,131	5%	33,971	9%
	2-5 years	\$ 1,470,062	10%	59,696	16%
	6-10 years	\$ 2,495,715	17%	70,117	18%
	11-18 years	\$ 10,278,819	69%	218,593	57%
	Total:	\$14,931,727	100%	382,377	100%

Claims for both CHIP and the State of Utah were segregated by therapeutic chapter, and the resulting claims and scrips written are provided in Tables 7 and 8. The chapters in these two tables are sorted by decreasing total amount of claims dollars

paid. When the chapters are ranked based on total drug spend for the five-year period, there is no significant difference for the distribution of costs between the therapeutic chapters. A similar analysis of scrips written yields the same result. An interesting note is that 50 percent of the drug spend for both CHIP and the State of Utah are comprised of three chapters: (1) anti-infectives, systemics; (2) respiratory, allergy, cough & cold; and (3) CNS, psycho and neurology.

Table 7. Therapeutic Chapter Summary (CHIP)

Group	Chapters	Total 5 yr	%	Total 5 yr Scrips	%
CHIP	<i>Anti-Infectives, Systemics</i>	\$ 1,861,072	21%	70,649	29%
	<i>Respiratory, Allergy, Cough & Cold</i>	\$ 1,696,244	19%	46,915	19%
	<i>CNS, Psych, Neurology</i>	\$ 1,629,565	18%	37,512	15%
	<i>Cardio, Hypertension & Antilipemic</i>	\$ 943,642	10%	20,514	8%
	<i>Dermatologicals/Topical Therapy</i>	\$ 876,764	10%	17,407	7%
	<i>Endocrine/Diabetes</i>	\$ 555,023	6%	6,213	3%
	<i>Gastroenterology</i>	\$ 332,979	4%	5,120	2%
	<i>Ophthalmology</i>	\$ 229,889	3%	6,325	3%
	<i>Ear, Nose & Throat Medications</i>	\$ 223,263	2%	7,186	3%
	<i>Diagnostics & Miscellaneous</i>	\$ 220,102	2%	2,269	1%
	<i>Rheumatology & Musculoskeletal</i>	\$ 169,487	2%	10,395	4%
	<i>Obstetrics & Gynecology</i>	\$ 130,391	1%	4,819	2%
	<i>Other Miscellaneous</i>	\$ 101,982	1%	1,195	<1%
	<i>Antineoplastic & Immunosuppressants</i>	\$ 23,374	<1%	232	<1%
	<i>Urologicals</i>	\$ 22,690	<1%	580	<1%
<i>Vitamins, Hematinics & Electrolytes</i>	\$ 17,034	<1%	4,713	2%	

Table 8. Therapeutic Chapter Summary (State)

Group	Chapters	Total 5 yr	%	Total 5 yr Scrips	%
State of Utah					
	<i>Anti-Infectives, Systemics</i>	\$ 3,110,551	21%	119,712	31%
	<i>CNS, Psych, Neurology & Autonomic</i>	\$ 2,636,405	18%	58,042	15%
	<i>Respiratory, Allergy, Cough & Cold</i>	\$ 2,446,339	16%	65,374	17%
	<i>Dermatologicals/Topical Therapy</i>	\$ 2,075,495	14%	36,743	10%
	<i>Cardio, Hypertension & Antilipemic</i>	\$ 1,255,689	8%	28,614	7%
	<i>Endocrine/Diabetes</i>	\$ 1,080,102	7%	6,758	2%
	<i>Gastroenterology</i>	\$ 556,997	4%	9,348	2%
	<i>Ear, Nose & Throat Medications</i>	\$ 340,516	2%	12,199	3%
	<i>Ophthalmology</i>	\$ 314,723	2%	10,778	3%
	<i>Obstetrics & Gynecology</i>	\$ 270,230	2%	8,893	2%
	<i>Rheumatology & Musculoskeletal</i>	\$ 225,284	2%	13,980	4%
	<i>Diagnostics & Miscellaneous</i>	\$ 201,617	1%	2,031	1%
	<i>Other Miscellaneous</i>	\$ 145,304	1%	1,329	<1%
	<i>Antineoplastic & Immunosuppressants</i>	\$ 107,241	1%	500	<1%
	<i>Vitamins, Hematinics & Electrolytes</i>	\$ 83,810	1%	7,089	2%
	<i>Vaccines, Toxoids, Antisera</i>	\$ 45,686	<1%	50	<1%
	<i>Urologicals</i>	\$ 35,737	<1%	937	<1%

The majority of claims and scrips written are for the rural area (60 percent). This may be attributed to the fact that PEHP is the sole carrier that provides coverage in the rural area. Table 9 provides the breakout for this division.

Table 9. Urban/Rural Summary

Group	Rural/Urban	Total 5 yr	%	Total 5 yr Scrips	%
CHIP	<i>Rural</i>	\$ 5,310,483	59%	146,390	60%
	<i>Urban</i>	\$ 3,723,020	41%	95,654	40%

In addition, claims can be segregated by FPL and Native American status. As one would expect, there is a higher proportion of claims within the lower level plan (100-150 percent FPL) and a negligible amount for Native Americans. This holds true for both total claim amounts and scrips written. The detail is provided in Table 10.

Table 10. Poverty Level Summary

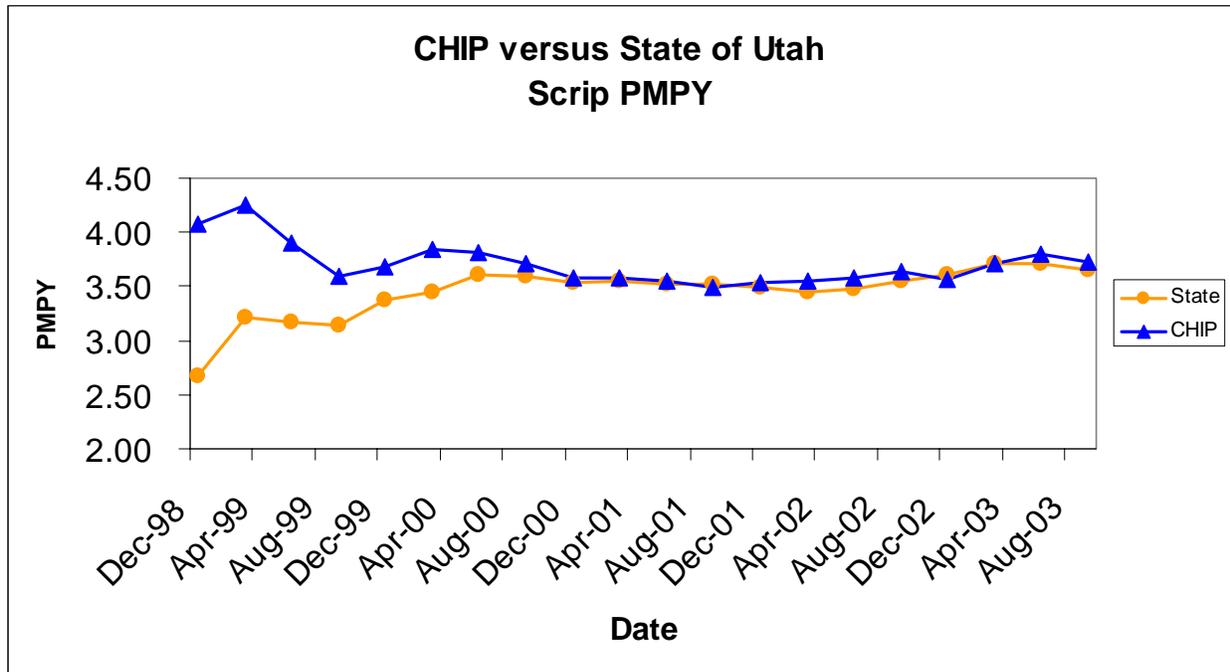
Group	Plan	Total 5 yr	%	Total 5 yr Scrips	%
CHIP	100-150% FPL	\$ 6,282,257	70%	155,932	64%
	150-200% FPL	\$ 2,641,715	29%	81,336	34%
	Native American	\$ 109,531	1%	4,776	2%

4.2 Trends

This section will present trends that have been experienced over the five-year period. Trends based on PMPM and scrip per member per year (PMPY) will be presented. For each area, time series analysis was conducted, and the corresponding time series will be provided. If not stated, the analysis was done using least squares. In the case of least squares, the corresponding r-squared value will also be given.

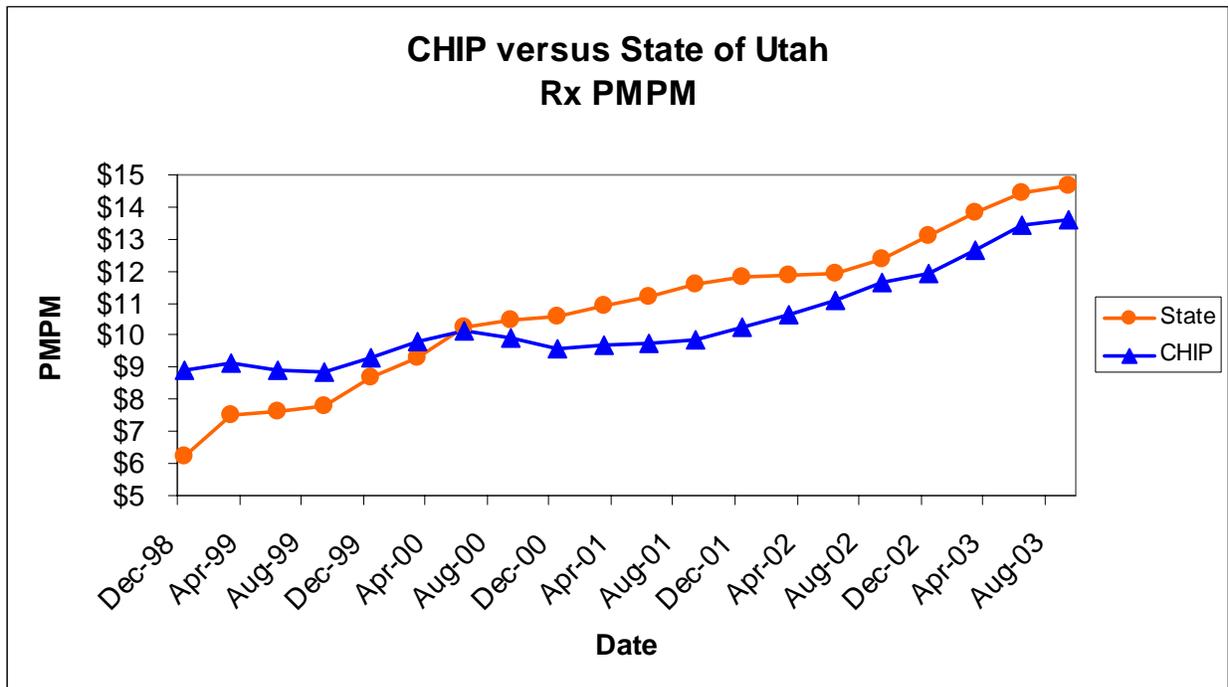
Over the most recent two-year period, scrips written for both CHIP and the State of Utah are essentially flat with approximately 3.5 scrips PMPY. Initially, CHIP had approximately a 60 percent higher PMPY than the State. After two years, both PMPY values converged to a common value. It is uncertain why the State's PMPY started out lower than the limit of 3.5 scrips at the beginning of the study period since at that point, the population was mature. It is understandable why CHIP had higher costs at the onset of the study. This can be attributable to the fact that since this might have been the first time that many of the CHIP members had access to healthcare, the sudden demand would have inflated the PMPY value higher than what would have been expected. The least squares equation for the CHIP population is $y_{CHIP} = -0.0178t + 3.8938$ ($r^2 = 0.2924$) and for the State is $y_{State} = 0.0315t + 3.1193$ ($r^2 = 0.5834$). The time series is presented in Figure 1.

Figure 1. CHIP Versus State of Utah Scrip PMPY



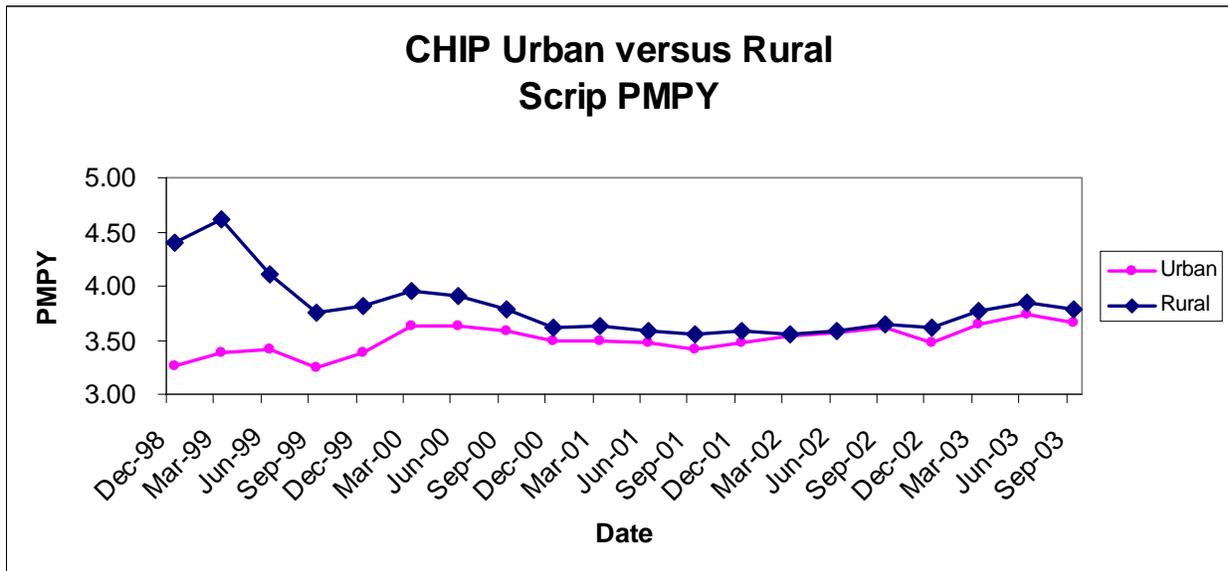
With regard to PMPM values for the five-year study, both the CHIP and the State of Utah have exhibited similar trends. A similar scenario holds at the onset of the study period with the PMPM as was seen in the PMPY for the scrips written. CHIP was initially higher, but then after approximately one and a half years, the State's PMPM was the higher of the two costs. Since June 2000, both groups have increased uniformly. From that point, costs have increased approximately 35 percent over the period from December 2000 through September 2003. For the entire period, costs for CHIP have increased 51.8 percent and for the State have increased 106 percent. The least squares equation for CHIP is $y_{CHIP} = 0.2264t + 8.0732$ ($r^2 = 0.8328$) and for the State is $y_{State} = 0.3944t + 6.6673$ ($r^2 = 0.9675$). The time series is presented in Figure 2.

Figure 2. CHIP versus State of Utah Rx PMPM



Concentrating only on CHIP, the first analysis will compare utilization and costs between the urban and rural population of CHIP. As mentioned above, CHIP exhibited sudden demand initially. When the claims are segregated by urban and rural, this increase becomes very pronounced for the rural members. However, the urban members don't possess this trait. Urban claims remained fairly constant throughout the five years with only a slight increase in claims PMPY. Conversely, Figure 3 illustrates that rural claims PMPY started high and then gradually converged to the long-term PMPY of approximately 3.5 scrips. One possible explanation may be an issue of access to healthcare for rural members. In the urban areas, people tend to have other avenues for healthcare (i.e., community health clinics and charity care) when they do not have funds available. These alternative resources may not be available for the rural areas. The least squares equation for urban is $y_{urban} = 0.0154t + 3.3455$, ($r^2 = 0.4896$) and for rural is $y_{rural} = -0.0311t + 4.1318$, ($r^2 = 0.4111$).

Figure 3. CHIP Urban versus Rural



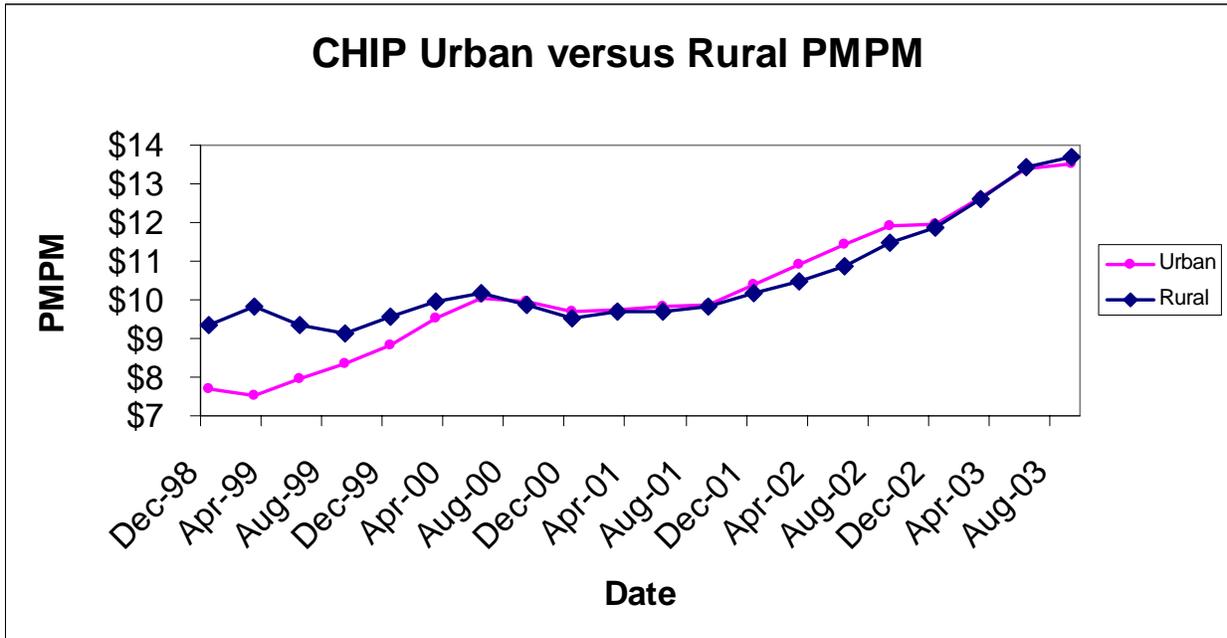
Similarly, a higher PMPM value exists for the rural members but then quickly converges towards the urban PMPM value. From December 2000, the 35 percent trend to September 2003 is similar to what was found earlier. For the entire five-year period, urban costs increased 74 percent, and rural costs increased 43 percent. The lower trend for rural is due to the fact that since the PMPM started out at a higher value, the slope of the least squares line would not be as steep, so, therefore, this translates to a lower overall increase. The least squares equation for urban is

$$y_{urban} = 0.2913t + 7.1988, (r^2 = 0.9367)$$

$$y_{rural} = 0.1973t + 8.4556, (r^2 = 0.7231).$$

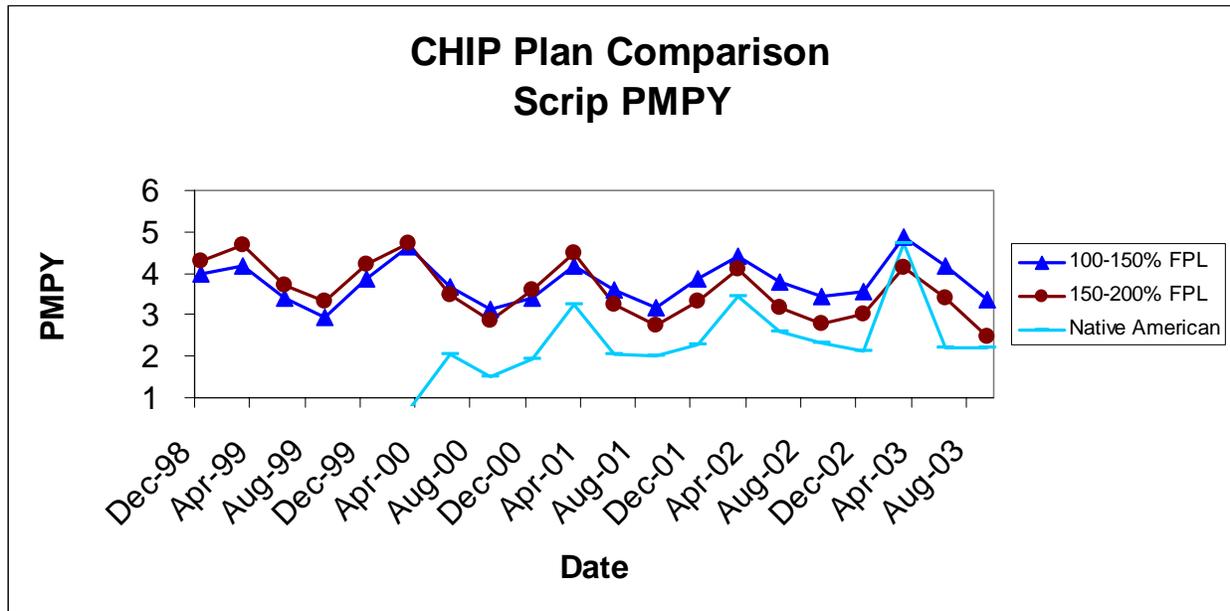
The time series is presented in Figure 4.

Figure 4. CHIP Urban versus Rural PMPM



Next, the breakout by plan (i.e., FPL and Native American) will be investigated. An interesting artifact results from this breakout with regard to the scrip PMPY. There are definite peaks for scrip PMPY for the period ending March and troughs for the period ending September. This suggests that seasonality may be present. No attempt to de-seasonalize the data was done for this analysis. The overall increase of scrip PMPY for the five-year period remained fairly constant throughout. The least squares equation for the 100-150 percent FPL is $y_{100-150\% FPL} = 0.0102t + 3.6755$, ($r^2 = 0.0138$), for the 150-200 percent FPL is $y_{150-200\% FPL} = -0.0609t + 4.2291$, ($r^2 = 0.2839$) and for the Native American population is $y_{Native American} = 0.0996t + 1.0627$, ($r^2 = 0.238$). The time series is presented in Figure 5.

Figure 5. CHIP Plan Comparison Scrip PMPY



When looking at the claims PMPM, the seasonality that was present in the scrip PMPY doesn't emerge. In fact, over the five-year period, all three plans show a linear trend. It is noted that the Native American population's PMPM is consistently lower than the other two plans. The 100-150 percent FPL PMPM is approximately 2.75 times the Native American PMPM and the 150-200 percent FPL PMPM is approximately two times the Native American PMPM. When comparing the 100-150 percent FPL with the 150-200 percent FPL, the 100-150 percent FPL is about one-third higher than the 150-200 percent FPL. For the entire five-year period, the 100-150 percent FPL PMPM increased at a quicker pace (68 percent) than the 150-200 percent FPL PMPM (29 percent). The least squares equation for the 100-150 percent FPL is

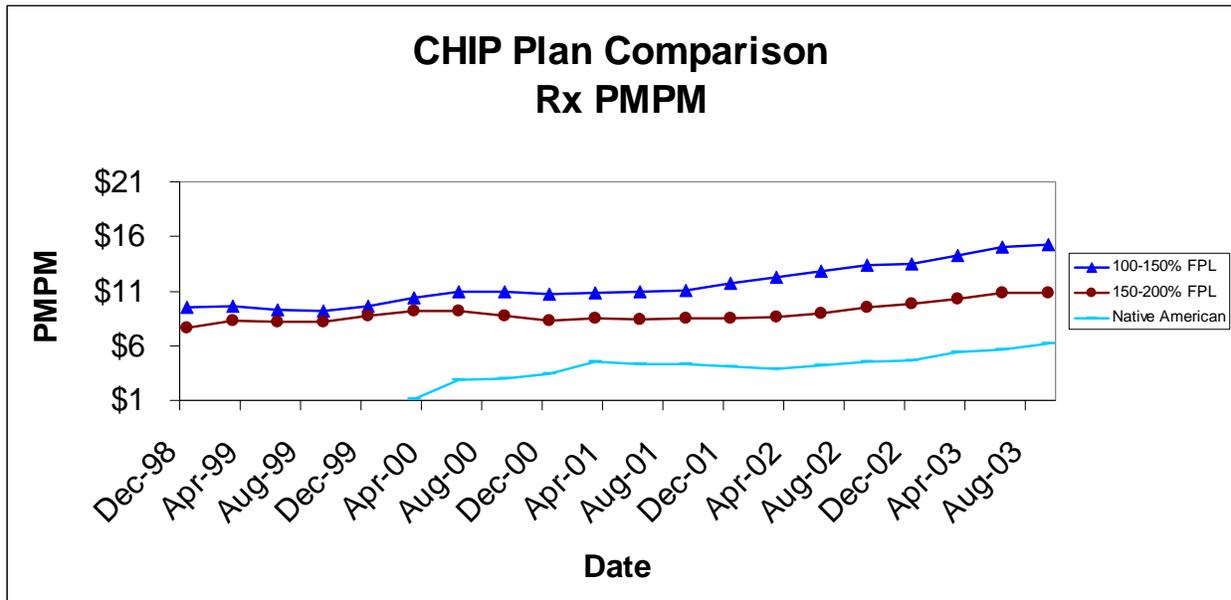
$$y_{100-150\% \text{ FPL}} = 0.3102t + 8.3227, (r^2 = 0.9191),$$

$$\text{for the 150-200 percent FPL is } y_{150-200\% \text{ FPL}} = 0.1182t + 7.7189, (r^2 = 0.64)$$

$$\text{and for the Native American population is } t_{\text{Native American}} = 0.2473t + 0.9256, (r^2 = 0.7986).$$

The time series is presented in Figure 6.

Figure 6. CHIP Plan Comparison Rx PMPM



5. Conclusions

Overall, CHIP utilization and costs are in line with what would be expected for a population of children. This study demonstrates that there was not a significant difference between CHIP and the State of Utah children. When viewed alone, some differences in cost did emerge for the CHIP groups with regard to economic status (i.e., FPL). However, this is what one would expect to see when controlling for household income level. Furthermore, seasonality was noticed in script PMPY for income level when it wasn't evident when controlling for urban versus rural. When viewed between urban and rural, there was no significant difference between utilization and costs.

The results presented were exploratory in nature. Areas for future research could encompass investigation of the seasonality for poverty level scrip PMPY or comparison of Utah's CHIP population with similar programs in other states.

References

Federal Register, Vol. 68, No. 26, February 7, 2003, pp. 6456-6458.

“2003 Medco Health Universal Formulary,” 2003. Medco Health Solutions, Inc.

State of Utah Department of Health, <http://health.utah.gov/chip/reports.html>.