

STATE MEDICAID PRESCRIPTION DRUG EXPENDITURES FOR MEDICARE–MEDICAID DUAL ELIGIBLES

APPENDIX

SOURCES AND METHODS FOR ESTIMATES OF STATE-BY STATE PRESCRIPTION DRUG EXPENDITURES FOR DUAL ELIGIBLES

This Appendix describes the methodology and data sources we used to produce state-by-state estimates of Medicaid prescription drug expenditures for dual eligibles. The key components of our estimates are (1) the number of people dually eligible for Medicaid and Medicare in each state and (2) the annual Medicaid prescription drug expenditures per dual eligible in each state. We multiply these two components to compute the total prescription drug expenditures for dual eligibles in each state.

We have data for the number of dual eligibles for all states, but we were able to obtain accurate information for the Medicaid prescription drug expenditures per dual eligible for only 23 states. Therefore, we estimate the Medicaid prescription drug expenditures per dual in the other 27 states and the District of Columbia, as described below. Finally, because the most reliable information for the number of dual eligibles and for Medicaid expenditures for prescription drugs is based on data from earlier years, we projected estimates for 2002.

Number of Dual Eligibles

We begin by estimating the number of dual eligibles in each state. For this analysis, dual eligibles are defined as individuals who are covered by Medicare and Medicaid and are eligible to receive full Medicaid benefits. We do not include restricted Medicaid beneficiaries (often called “Qualified Medicare Beneficiaries” and “Specified Low-Income Beneficiaries”), because Medicaid only pays for the premium and cost-sharing for these individuals. Thus, Medicaid costs would not be affected even if Medicare did cover their prescription drug costs.

We have data for the number of dual eligibles receiving full Medicaid benefits in 1999 for 46 states and the District of Columbia, based on the Medicaid Statistical Information System (MSIS), and we have the number of all dually eligible beneficiaries for 1998 through 2001 from CMS’ Third-Party Premium Billing File (“The Buy-In File”).^{*} The MSIS data are a more comprehensive source, as the Third Party Premium Billing File only includes those for whom the state paid the Medicare premium and does not

^{*} We draw these data from Ellwood and Quinn (2002).

distinguish between those receiving full and restricted Medicaid benefits.[†] However, data from the Third Party Billing File do provide useful information about the trends in the number of dual eligibles over time. Therefore, we estimate the number of dual eligibles per state for 2002 by starting with the more comprehensive MSIS data for 1999. We then project the 1999 estimates forward to 2002 (and backward to 1998), using the annual growth rates for each state based on the 1998 to 2001 Buy-In File data and a growth rate for 2001 to 2002 equal to the state's average growth rate from 1998 to 2001.[‡] Our state-by-state estimates of the number of duals eligibles each year from 1998 through 2002 are shown in Table A1, along with the percentage increase in the number of dual eligibles between 1998 and 2002 for each state.

Table A1. Estimated Number of Beneficiaries Dually Eligible for Medicare and Medicaid

State	1998	1999	2000	2001	2002	Growth in Dual Eligibles from 1998 to 2002
Alabama	95,404	101,213	106,105	109,728	114,971	21%
Alaska	7,066	7,525	8,293	8,712	9,343	32%
Arizona	43,146	45,293	48,745	54,933	59,565	38%
Arkansas	77,711	78,607	78,655	79,966	80,734	4%
California	730,475	744,919	772,321	800,296	825,047	13%
Colorado	47,573	49,162	50,667	51,951	53,498	12%
Connecticut	61,744	62,305	64,171	68,588	71,054	15%
Delaware	7,481	8,332	9,228	9,996	11,011	47%
D.C.	16,781	15,523	16,593	17,082	17,215	3%
Florida	282,330	291,421	309,320	321,875	336,274	19%
Georgia	145,222	145,997	150,235	154,657	157,946	9%
Hawaii	18,662	19,406	20,119	20,373	20,980	12%
Idaho	7,303	7,766	8,426	9,114	9,813	34%
Illinois	122,431	125,483	129,981	135,437	140,076	14%
Indiana	68,524	72,246	76,051	80,211	84,534	23%
Iowa	42,754	43,421	44,506	45,354	46,255	8%
Kansas	36,595	37,850	38,597	39,178	40,081	10%
Kentucky	101,407	107,255	111,239	113,336	117,630	16%
Louisiana	96,740	97,974	97,958	99,141	99,956	3%
Maine	33,042	34,992	36,614	37,735	39,445	19%

[†] States receive federal matching payments if they buy in for categorically needy groups but not for other dual eligibles. States are, therefore, less likely to buy in for noncategorically needed groups.

[‡] For the four states for which MSIS data from Ellwood and Quinn (2002) are not available, we use data from the 1998 Buy-In File. While data from the Buy-In File tend to understate the total number of beneficiaries (because they only include those for whom the state paid the Medicare premium), they overstate the number of beneficiaries receiving full Medicaid benefits. Thus, the number of total dually eligible beneficiaries on the Buy-In File tends to be similar, on average, to the number of dual eligibles receiving full Medicaid benefits according to the MSIS data in Ellwood and Quinn (2002).

State	1998	1999	2000	2001	2002	Growth in Dual Eligibles from 1998 to 2002
Maryland	57,964	60,446	60,943	64,298	66,572	15%
Massachusetts	164,429	169,961	181,006	186,146	194,028	18%
Michigan	159,291	163,855	168,885	172,389	176,991	11%
Minnesota	66,537	69,990	73,846	77,866	82,055	23%
Mississippi	106,159	106,246	107,703	119,472	124,403	17%
Missouri	109,212	113,883	117,548	121,292	125,609	15%
Montana	11,451	11,917	12,376	12,645	13,071	14%
Nebraska	27,130	29,071	31,046	31,937	33,728	24%
Nevada	12,368	13,219	13,717	14,876	15,822	28%
New Hampshire	14,828	16,372	17,417	20,763	23,255	57%
New Jersey	123,716	126,603	128,786	131,461	134,149	8%
New Mexico	24,462	25,513	26,499	28,039	29,345	20%
New York	496,583	509,416	527,758	542,215	558,345	12%
North Carolina	188,405	194,101	200,480	204,795	210,571	12%
North Dakota	10,810	11,109	11,423	12,193	12,694	17%
Ohio	157,210	157,285	150,658	155,362	154,822	-2%
Oklahoma	58,711	61,919	62,154	62,885	64,356	10%
Oregon	50,322	53,669	57,036	60,638	64,527	28%
Pennsylvania	175,286	187,678	195,026	201,865	211,616	21%
Rhode Island	24,544	25,841	28,019	30,451	32,724	33%
South Carolina	98,291	102,325	104,919	108,722	112,441	14%
South Dakota	10,828	10,969	11,066	11,217	11,350	5%
Tennessee	165,902	172,455	175,669	177,533	181,601	9%
Texas	334,491	346,449	354,821	364,401	374,957	12%
Utah	12,966	13,619	14,136	14,583	15,166	17%
Vermont	17,665	18,102	18,355	19,103	19,609	11%
Virginia	86,330	88,566	89,924	90,481	91,912	6%
Washington	66,967	69,492	73,566	72,349	74,273	11%
West Virginia	30,214	32,223	33,012	33,910	35,245	17%
Wisconsin	94,416	94,000	93,787	93,844	93,655	-1%
Wyoming	4,967	5,179	5,440	5,632	5,873	18%
U. S. Total	5,006,845	5,160,162	5,326,844	5,503,026	5,682,198	13%

Notes: The number of dual eligibles in 1999 was drawn from MSIS data, as reported by Ellwood and Quinn, 2002. Excludes those eligible for only restricted Medicaid benefits. (Estimates for Arkansas, Hawaii, Kentucky, and Pennsylvania were not available from Ellwood and Quinn (2002) and were drawn from CMS' Third-Party Premium Buy-In File.) The number of dual eligibles in 1998, 2000, and 2001 were projected from the 1999 data using each state's yearly growth rate in the number of duals according to CMS' Buy-In File. The number of duals in 2002 was estimated using the state's average annual rate of growth from 1998-2001 according to CMS' Third-Party Premium Buy-In File.

Estimating 1998 Prescription Drug Expenditures per Dual Eligible

We have estimates for annual Medicaid prescription drug expenditures for *all* dual eligibles for 23 states for 1998 from Mathematica Policy Research's (MPR) State Medicaid Research Files (SMRF) Validation Tables, which are based on individual-level Medicaid claims data.[§] The denominator for the per-dual estimates on these tables includes *all* dual eligibles (not only those who receive full Medicaid benefits, but also those who receive restricted Medicaid benefits). However, because those with restricted Medicaid benefits are not entitled to the Medicaid prescription drug benefit, they presumably would not have any expenditures for Medicaid prescription drugs. Therefore, we adjust the SMRF Medicaid drug expenditures per-dual so the denominator includes only those who received full Medicaid benefits. To do this, we multiply the SMRF per-dual prescription drug spending by the ratio of all dual eligibles to those eligible for full Medicaid benefits, as reported in Ellwood and Quinn (2002).

These 23 states represent approximately 36 percent of all dual eligibles who qualify for full Medicaid benefits in 1998. As shown on Table A2, the prescription drug expenditures per full dual eligible in 1998 range from \$1,065 (New Mexico) to \$1,998 (Washington). Average prescription drug expenditures per full dual eligible for these states are \$1,555 (weighted by the number of dual eligibles in the state).^{**}

[§] For Pennsylvania and Idaho, we only have 1996 and 1997 State Medicaid Research Files data. For these states, we take 1997 data and trend it forward to 1998, using the CMS National Health Expenditure Projections' growth rate in per capita prescription drug expenditures from 1997 to 1998.

^{**} These estimates exclude people in managed care; however, because very few dual eligibles are in managed care, we believe our estimates would be similar even if those in managed care were included.

Table A2. Comparing Predicted and Actual Medicaid Prescription Drug Spending per Dual Eligible Beneficiary

State	Regression Variables Used to Predict Medicaid Prescription Drug Spending per Dual							Percentage Difference Between Predicted and Actual Spending per Dual ^g
	1998 Actual Medicaid Prescription Drug Spending per Full Dual ^a	1998 Medicaid Prescription Drug Spending per Beneficiary ^b	1998 Ratio of Full Duals to Medicaid Prescription Drug Beneficiaries ^c	1998 Percentage Medicaid Beneficiaries Who Are Blind or Disabled ^d	1999 Percentage Dual Eligibles Who Are Blind or Disabled ^e	1998 Predicted Spending per Full Dual ^f	1998 Predicted Spending per Dual ^f	
Alabama	1,100	599	0.24	26%	47%	1308	1308	19%
Alaska	1,586	752	0.16	11%	41%	1824	1824	15%
Arizona		na	na	14%	52%	1581	1581	
Arkansas	1,115	574	0.30	24%	42%	1294	1294	16%
California		587	0.28	14%	41%	1440	1440	
Colorado		749	0.32	18%	38%	1536	1536	
Connecticut		1722	0.57	14%	37%	2163	2163	
Delaware		715	0.11	14%	42%	1835	1835	
D.C.		599	0.29	21%	51%	1201	1201	
Florida	1,687	921	0.28	20%	45%	1664	1664	-1%
Georgia	1,156	460	0.18	19%	49%	1294	1294	12%
Hawaii		1230	0.58	10%	42%	1596	1596	
Idaho	1,865	633	0.08	18%	45%	1710	1710	-8%
Illinois		608	0.13	16%	51%	1530	1530	
Indiana		1006	0.21	15%	39%	1999	1999	
Iowa	1,518	684	0.20	16%	40%	1661	1661	9%
Kansas	1,699	762	0.23	19%	44%	1602	1602	-6%
Kentucky	1,638	746	0.24	29%	42%	1528	1528	-7%
Louisiana		639	0.18	23%	33%	1715	1715	
Maine	1,731	884	0.24	20%	48%	1638	1638	-5%
Maryland		842	0.33	19%	45%	1504	1504	
Massachusetts		811	0.27	21%	52%	1444	1444	
Michigan	1,337	634	0.27	20%	53%	1247	1247	-7%
Minnesota	1,750	854	0.33	14%	38%	1677	1677	-4%
Mississippi	1,234	629	0.29	27%	48%	1239	1239	0%
Missouri	1,906	1081	0.31	15%	37%	1944	1944	2%
Montana		723	0.20	17%	43%	1656	1656	
Nebraska		637	0.19	13%	38%	1692	1692	
Nevada		678	0.24	17%	36%	1645	1645	
New Hampshire	1,869	787	0.21	12%	38%	1807	1807	-3%

	Regression Variables Used to Predict Medicaid Prescription Drug Spending per Dual						
	1998 Actual Medicaid Prescription Drug Spending per Full Dual ^a	1998 Medicaid Prescription Drug Spending per Beneficiary ^b	1998 Ratio of Full Duals to Medicaid Prescription Drug Beneficiaries ^c	1998 Percentage Medicaid Beneficiaries Who Are Blind or Disabled ^d	1999 Percentage Dual Eligibles Who Are Blind or Disabled ^e	1998 Predicted Spending per Full Dual ^f	Percentage Difference Between Predicted and Actual Spending per Dual ^g
State	1	2	3	4	5	6	7
New Jersey	1,706	1375	0.40	19%	42%	1978	16%
New Mexico	1,065	430	0.25	14%	50%	1173	10%
New York		759	0.28	18%	41%	1581	
North Carolina		610	0.25	17%	34%	1595	
North Dakota	1,734	733	0.29	15%	34%	1669	-4%
Ohio		919	0.22	16%	39%	1875	
Oklahoma		na	na	14%	32%	1581	
Oregon		592	0.34	9%	41%	1368	
Pennsylvania	1,843	904	0.30	21%	42%	1643	-11%
Rhode Island		1369	0.55	20%	45%	1653	
South Carolina		560	0.24	17%	36%	1521	
South Dakota		668	0.23	18%	43%	1533	
Tennessee		na	na	18%	55%	1581	
Texas		432	0.18	12%	23%	1752	
Utah	1,738	542	0.10	11%	46%	1633	-6%
Vermont		749	0.30	12%	39%	1608	
Virginia		741	0.22	18%	37%	1716	
Washington	1,998	891	0.24	13%	37%	1868	-6%
West Virginia		557	0.11	22%	38%	1664	
Wisconsin	1,548	1049	0.43	23%	50%	1431	-8%
Wyoming	1,610	527	0.15	15%	41%	1568	-3%
U.S. Average	1,555	700	0.27	18%	41%	1581	2%

^a Spending per dual drawn from SMRF validation tables, and adjusted to represent those with full Medicaid benefits.

^b Health Care Financing Review *Medicare and Medicaid Statistical Supplement 2000*: Tables 98 and 99. Arizona, Oklahoma and Tennessee were missing reliable data for Medicaid spending per beneficiary; for these states, we set predicted spending per dual equal to the national average spending per dual.

^c Computed by dividing the estimated number of duals in 1998 (see Table A1) by the number of Medicaid beneficiaries receiving prescription drug services (based on the Health Care Financing Review *Medicare and Medicaid Statistical Supplement, 2000*).

^d Data from HCFA 2080 Reports as shown at <http://www.statehealthfacts.kff.org>.

^e Based on MSIS data as reported by Ellwood and Quinn (2002).

^f Predicted from regression of Medicaid prescription drug spending per dual (column 1) on Medicaid prescription drug spending per beneficiary (column 2) the ratio of duals to Medicaid prescription drug beneficiaries (column 3), the percentage Medicaid beneficiaries that are blind and disabled (column 4) and the percentage of duals that are blind and disabled (column 5). The regression was weighted by the number of full duals in 1998 (Table A1, column 1).

^g Reflects percentage difference of column 6 and column 1.

For the other 27 states and the District of Columbia, we do not have SMRF data pertaining to the Medicaid costs per dual eligible. However, we have information closely related to Medicaid costs for dual eligibles for each state. Most important, we have the 1998 overall Medicaid prescription drug expenditures for all states except for Arizona, Oklahoma, and Tennessee and the number of beneficiaries receiving prescription drug services from the Health Care Financing Review's *Medicare and Medicaid Statistical Supplement, 2000*. We also have information about the fraction of each state's Medicaid population and dually eligible population that was blind or disabled. We use these data to predict the prescription drug expenditures per dual in states without SMRF data.

For those states for which we have SMRF data pertaining to the Medicaid prescription costs per dual eligible, we use regression analysis to estimate the relationship between Medicaid prescription drug costs per dual eligible (Table A2, column 1), Medicaid prescription drug expenditures per beneficiary (column 2), the ratio of full dual eligibles to Medicaid beneficiaries (column 3), the percentage of Medicaid beneficiaries who are blind or disabled (column 4), and the percentage of dual eligibles who are blind or disabled (column 5). The regression is weighted by the number of dual eligibles in each state (column 1, Table A1). Finally, we use the coefficients from this regression to predict the Medicaid costs per dual eligible in the states for which we did not have SMRF data (Table A2, column 6). Note that for Arizona, Oklahoma, and Tennessee, data pertaining to the Medicaid prescription drug expenditures per beneficiary are missing. Therefore, we set the predicted expenditures per beneficiary to \$1581, the weighted average of the predicted expenditures per dual in the other states.

The accuracy of the predictions can be assessed by comparing the actual data obtained directly from SMRF data for Medicaid prescription drug spending per dual (in column 1) with the estimate we would obtain if we use the equation based on the regression results (column 6). For example, based on the regression results, Florida's predicted Medicaid drug spending would be \$1,664; according to the 1998 SMRF data, their actual spending is \$1,687. For most states, predicted spending is within 10 percent of the state's actual spending (column 7).

Projecting Estimates to 2002

To project total Medicaid prescription drug expenditures per dual eligible for each state in 2002, we begin with the actual spending in 1998 for states for which SMRF data are available and our estimates of the 1998 spending for states for which SMRF data are not available. As Table A3 shows, we project these estimates to 2002 expenditure levels using the projected growth in per capita prescription drug expenditures between 1998 and 2002 from the most recent National Health Expenditure projections (see www.cms.hhs.gov/statistics/nhe/projections-2001/t11.asp). According to these

projections, per capita drug expenditures will increase by about 78 percent between 1998 and 2002. We multiply our projections of the number of dual eligibles by our projections of the expenditures per dual eligible to arrive at the estimate of the total Medicaid prescription drug spending for duals in 2002 for each state (Table A3, column 4). We compute the state share of these expenditures (Table A3, column 5) by multiplying total Medicaid expenditures by the State Medical Assistance Percentage.

Table A3. Estimated Number of Beneficiaries Dually Eligible for Medicare and Medicaid

	Projected 2002 Medicaid Prescription Drug Spending per Dual Eligible		2002 Dual Eligibles with Full Medicaid Benefits ^c	Medicaid Prescription Drug Spending for Dual Eligibles (1,000s)	
	Based on Actual 1998 SMRF Data ^a	Based on Predicted 1998 Data ^b		Total ^d	State Share ^e
Alabama	1,958		114,971	225,128	66,525
Alaska	2,823		9,343	26,373	12,393
Arizona		2,814	59,565	167,626	58,703
Arkansas	1,985		80,734	160,278	43,852
California		2,563	825,047	2,114,897	1,027,840
Colorado		2,735	53,498	146,307	73,154
Connecticut		3,851	71,054	273,624	136,812
Delaware		3,267	11,011	35,968	17,984
District of Columbia		2,137	17,215	36,796	11,039
Florida	3,003		336,274	1,009,956	440,038
Georgia	2,058		157,946	325,107	133,294
Hawaii		2,841	20,980	59,599	26,021
Idaho	3,321		9,813	32,584	9,443
Illinois		2,724	140,076	381,507	190,753
Indiana		3,558	84,534	300,811	114,188
Iowa	2,702		46,255	124,982	46,418
Kansas	3,024		40,081	121,187	48,232
Kentucky	2,916		117,630	342,965	103,095
Louisiana		3,054	99,956	305,219	90,650
Maine	3,082		39,445	121,556	40,624
Maryland		2,677	66,572	178,212	89,106
Massachusetts		2,571	194,028	498,862	249,431
Michigan	2,379		176,991	421,082	183,760
Minnesota	3,116		82,055	255,661	127,831
Mississippi	2,196		124,403	273,244	65,333
Missouri	3,393		125,609	426,179	165,954
Montana		2,948	13,071	38,538	10,471
Nebraska		3,012	33,728	101,598	41,096

	Projected 2002 Medicaid Prescription Drug Spending per Dual Eligible		2002 Dual Eligibles with Full Medicaid Benefits ^c	Medicaid Prescription Drug Spending for Dual Eligibles (1,000s)	
	Based on Actual 1998 SMRF Data ^a	Based on Predicted 1998 Data ^b		Total ^d	State Share ^e
Nevada		2,929	15,822	46,342	23,171
New Hampshire	3,327		23,255	77,357	38,679
New Jersey	3,037		134,149	407,449	203,725
New Mexico	1,896		29,345	55,638	15,000
New York		2,814	558,345	1,570,994	785,497
North Carolina		2,839	210,571	597,871	230,419
North Dakota	3,087		12,694	39,184	11,806
Ohio		3,338	154,822	516,837	213,040
Oklahoma		2,814	64,356	181,109	53,554
Oregon		2,435	64,527	157,106	64,099
Pennsylvania	3,280		211,616	694,126	314,786
Rhode Island		2,943	32,724	96,297	45,789
South Carolina		2,707	112,441	304,415	93,334
South Dakota		2,729	11,350	30,969	10,551
Tennessee		2,814	181,601	511,058	185,821
Texas		3,119	374,957	1,169,642	465,868
Utah	3,094		15,166	46,928	14,078
Vermont		2,862	19,609	56,113	20,728
Virginia		3,054	91,912	280,686	136,273
Washington	3,556		74,273	264,150	131,098
West Virginia		2,961	35,245	104,376	25,812
Wisconsin	2,756		93,655	258,067	106,917
Wyoming	2,866		5,873	16,833	6,402
U.S.	2,768	2,836	5,680,196	15,989,392	6,820,486

^a Prescription drug spending per dual eligible was drawn from MPR's 1998 SMRF Validation Tables (see Appendix Table A2, Column 1). Data were adjusted to represent spending per full dual eligible and projected to 2002 using growth in per-capita prescription drug expenditures according to CMS' National Health Expenditure Projections.

^b Predicted 1998 drug spending (shown in Table A2, column 6) was projected to 2002 using growth in per capita drug expenditures according to CMS' National Health Expenditure Projections. Available at <http://www.cms.hhs.gov/statistics/nhe/projections-2001/t11.asp>.

^c Based on 1999 MSIS data as reported in Ellwood and Quinn (2002) and projected forward using the average annual rate of growth from 1998–2001 according to CMS' Third-Party Premium Billing File.

^d These costs were calculated by multiplying either the projected actual or the projected predicted prescription drug costs per dual eligible by the projected number of dual eligibles.

^e Computed by multiplying the total Medicaid prescription drug spending for dual eligibles by the Fiscal Year 2002 State Medical Assistance Percentage. (State Medical Assistance Percentage is equal to 100% minus the Federal Medical Assistance Percentage, as drawn from <http://www.aspe.hhs.gov/health/finap02.htm>.)

Overall, we estimate that federal and state Medicaid spending on prescription drugs for dual eligibles will be \$16 billion in 2002, before manufacturer's rebates (shown in Table A.3, column 4, and in Table 1 in the Issue Brief). This represents about 48 percent of the total pre-rebate Medicaid prescription drug spending for 2002 of \$33 billion. The state share of these expenditures is just under 43 percent for all states combined, or 6.8 billion (Table A.2, column 5, and Table 1 in the Issue Brief).^{††}

^{††} Our overall estimate of \$33 billion in total pre-rebate Medicaid expenditures for prescription drugs in 2002 derives from the CMS National Health Expenditures estimate for 2002 of \$28.1 billion (CMS 2002, Table 11). Based on discussions with CMS staff, we increase that amount by 17.5 percent to add back the manufacturer's rebates, thus making the overall estimate consistent with our \$16 billion estimate of pre-rebate dual eligibles drug costs. (Stacy Dale telephone discussion with Katherine Levit of CMS, October 31, 2002.) We do not present state-by-state estimates of total Medicaid prescription drug spending for 2002 because the currently available state-by-state data do not include most prescription drugs purchased through MCOs. In the aggregate, MCO spending on Medicaid prescription drugs accounts for about 20 percent of total Medicaid prescription drug expenditures, and it is included in the aggregate CMS estimates. That percentage varies widely from state to state in ways that currently available data do not permit us to estimate with confidence. Because few dual eligibles are enrolled in managed care, our estimates of dual eligibles' drug costs should not be significantly affected by the absence of MCO drug data.