

## Trends and Patterns in the Use of Prescription Drugs Among Medicaid Beneficiaries: 1999 to 2009

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**M**edicaid is a major purchaser of prescription drugs, accounting for nearly 18 percent of national prescription drug expenditures in 2005 and for nearly 8 percent since then.<sup>1</sup> In this issue brief, we highlight some noteworthy trends and patterns in the use and costs of prescription drugs for Medicaid beneficiaries between 1999 and 2009. Our findings are drawn from a series of detailed annual state-by-state and national tables and accompanying chartbooks that Mathematica prepared for the Centers for Medicare & Medicaid Services (CMS) for 1999 and 2001 to 2009. This brief focuses on drug use by nondual beneficiaries (those eligible for Medicaid only) because, starting in 2006, dual eligibles (those eligible for both Medicare and Medicaid) began obtaining almost all their prescription drugs through Medicare, and thus their Medicaid drug expenditures have been minimal since then. The highlighted trends include changes in the volume of drugs used per person, changes in drug costs per person, and changes in the use of generic drugs. We focus in particular on drug use and costs for beneficiaries with disabilities and chronic illnesses, whose drug use is much more extensive than that of children and nondisabled adults. Among specific drug types, antipsychotics accounted for 15 percent of total Medicaid drug expenditures for all beneficiaries combined in 2009, and for 25 percent of the total growth in these expenditures between 1999 and 2009. Other costly drugs in 2009 were antiasthmatics and antivirals, which each accounted for about 8 percent of Medicaid's total drug expenditures in 2009.

### Introduction

This issue brief provides a summary of trends and patterns in Medicaid prescription drug use and costs over 10 years. It is based on a series of state-by-state and national tables (called statistical compendiums) that Mathematica prepared for CMS for 1999 and 2001 to 2009. These tables are described in more detail in the “Background on the Data” section at

### About This Series

The MAX Medicaid policy issue brief series highlights the essential role MAX data can play in analyzing the Medicaid program. MAX is a set of annual, person-level data files on Medicaid eligibility, service utilization, and payments that are derived from state reporting of Medicaid eligibility and claims data into the Medicaid Statistical Information System (MSIS). MAX is an enhanced, research-friendly version of MSIS that includes final adjudicated claims based on the date of service, and data that have undergone additional quality checks and corrections. CMS produces MAX specifically for research purposes. For more information about MAX, please visit: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAX-GeneralInformation.html>.

the end of this brief, and they can be found on the CMS web site at the link provided there. Mathematica also prepared chartbooks for each of those years, which are available on the same site. The two exhibits in this brief are taken from the chartbook for 2009.<sup>2</sup>

### Medicaid Prescription Drug Use and Costs in 2009

Medicaid provided health insurance coverage for nearly 42 million beneficiaries in 2009, 6 million of whom were also enrolled in Medicare (2009 Statistical Compendium, Table 2). State Medicaid programs spent \$22.4 billion on fee-for-service (FFS) prescription drugs for all enrollees in 2009, which was just under 10 percent of total Medicaid expenditures in that year (2009 Statistical Compendium, Tables N1a and 3). Over 95 percent of Medicaid drug expenditures that year were for

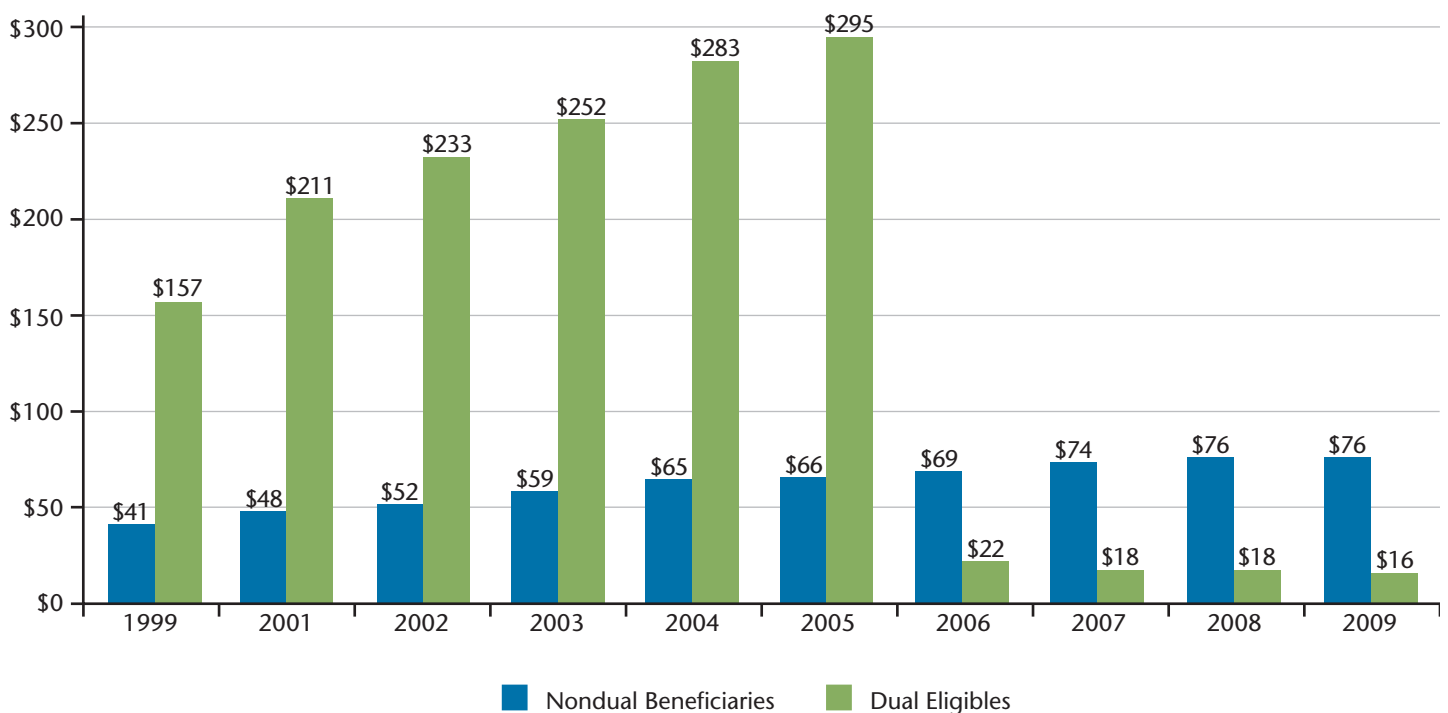
beneficiaries eligible only for Medicaid, while just under 5 percent was spent on drugs for dual eligibles, who began obtaining almost all their prescription drugs from Medicare in 2006 (2009 Statistical Compendium, Tables ND6 and D6). Exhibit 1 shows the impact of this change in drug coverage on Medicaid’s average per-person monthly drug expenditures.

The use of low-cost generic drugs in Medicaid has risen sharply since 2003, from 50 percent of total prescriptions in that year to 75 percent in 2009 (Exhibit 2). While generic drugs accounted for 75 percent of Medicaid prescriptions in 2009, they accounted for less than 20 percent of total drug costs in that year (2009 Statistical Compendium, Table 5). This increasing use of generic drugs has been a factor in the slower growth

of Medicaid prescription drug expenditures since 2004, which is discussed further below.

Prescription drug costs per person varied by enrollee characteristics. Beneficiary characteristics include, in addition to age and sex, the widely used Medicaid “basis of eligibility” categories (children, adults, disabled, and aged). Among Medicaid-only beneficiaries, annual drug costs per person in 2009 were highest for those in the disabled eligibility category (\$2,773), while the costs for children (\$227) and nondisabled adults (\$304) were much lower (2009 Chartbook, Exhibit 45). Annual costs for beneficiaries in the aged eligibility category were also high (\$1,262), but these enrollees accounted for less than 1 percent of Medicaid-only beneficiaries because almost all of them were dual eligibles.

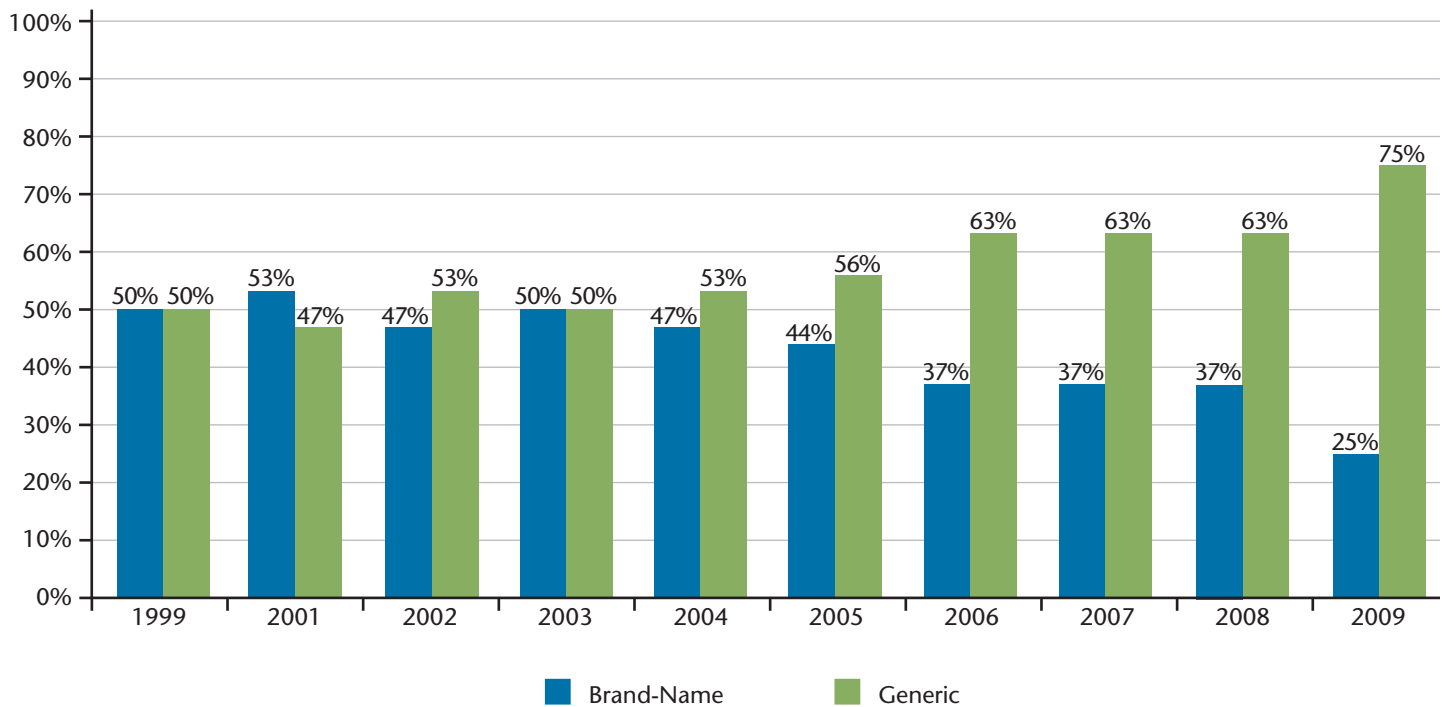
**Exhibit 1. Average Monthly Pharmacy FFS Reimbursement per Medicaid Beneficiary, Nondual Beneficiaries and Dual Eligibles, 1999 and 2001 to 2009**



Source: This graph is based on the information contained in Tables ND4 and D4 of the 1999 and 2001 to 2009 Statistical Compendiums. The 2009 Statistical Compendium was prepared for 44 states and the District of Columbia. FFS pharmacy reimbursement information for the remaining states is not included because they did not submit complete data to CMS for 2009. The graph is adapted from Exhibit 37 in the 2009 Chartbook.

Notes: Dual eligibles are beneficiaries who had Medicare as well as Medicaid FFS pharmacy benefits during any month of Medicaid enrollment. Nondual beneficiaries include beneficiaries who were never dually eligible or were dually eligible but never had Medicaid FFS pharmacy benefits. Refer to Table 1 in the 2009 Statistical Compendium for more information about how we determined dual eligibility status. The pharmacy reimbursement amount is the amount Medicaid reimbursed pharmacies, including dispensing fees minus beneficiary co-payment. Reimbursement amounts are gross amounts prior to the receipt of rebates from drug manufacturers to states. Monthly reimbursement amounts were calculated by dividing the total reimbursement among all beneficiaries in the study population by the total number of benefit months of those beneficiaries. Benefit months are months during which beneficiaries had FFS pharmacy benefit coverage.

## Exhibit 2. Brand-Name and Generic Drugs as a Percentage of All Medicaid Drug Claims, 1999 and 2001 to 2009



Source: This graph is based on the information contained in Table 5 of the 1999 and 2001 to 2009 Statistical Compendiums. The 2009 Statistical Compendium was prepared for 44 states and the District of Columbia. FFS pharmacy reimbursement information for the remaining states is not included because they did not submit complete data to CMS for 2009. The graph is adapted from Exhibit 40 in the 2009 Chartbook.

Note: Brand-name drugs, sometimes called “innovator single-source drugs,” are drugs whose patents have not yet expired. Off-patent brand-name drugs, sometimes called “innovator multiple-source drugs,” are brand-name drugs whose patents have expired. Generic drugs, sometimes called “non-innovator multiple-source drugs,” are off-patent drugs manufactured and sold by companies other than the original patent holder. For information about this classification method, see <http://www.medi-span.com/medi-span-electronic-drug-file.aspx>.

### Notable Trends Between 1999 and 2009

The number of Medicaid-only beneficiaries rose from 23.3 million in 1999 to 35.9 million in 2009, but almost all of this growth occurred between 1999 and 2004. The number remained essentially unchanged between 2004 and 2009 (2009 Chartbook, Exhibit 43). To keep enrollment trends separate from prescription drug use and cost trends, this issue brief focuses primarily on use and costs per enrollee. Some noteworthy per-enrollee trends include the following:

- **Although the number of prescription drugs used by each enrollee did not rise much between 1999 and 2009, the average costs per enrollee nearly doubled.** Fifty-four percent of Medicaid-only beneficiaries had at least one filled prescription during 2009, which was nearly unchanged from 55 percent in 1999. Similarly, the average annual number of prescriptions per beneficiary only grew from 6.4 in 1999 to 6.9 in 2009 (2009 Chartbook, Exhibits 38 and 39). The average annual costs per beneficiary rose

dramatically, however, from \$298 in 1999 to \$572 in 2009—an increase of 192 percent.

- **Most of the increase in costs per enrollee occurred between 1999 and 2004, after which the trend toward greater use of generic drugs began to temper the rise in costs.** Annual costs per Medicaid-only enrollee grew by 69 percent from 1999 to 2004 (from \$298 to \$504) but by only 13 percent from 2004 to 2009 (from \$504 to \$572) (2009 Chartbook, Exhibit 36). This slowdown occurred at the same time as the use of generic drugs began to grow substantially. As a percentage of all Medicaid drug claims for all beneficiaries combined, generic drugs grew from 50 percent in 1999 to just 53 percent in 2004, but then rose sharply, reaching 75 percent in 2009 (Exhibit 2).
- **Annual drug expenditures per enrollee by eligibility group remained fairly stable between 2004 and 2009.** Annual per-enrollee costs for Medicaid-only beneficiaries with disabilities and chronic illnesses rose from \$2,457 in

2004 to \$2,773 in 2009, an increase of 12.9 percent, somewhat below the increase in the consumer price index over that period (13.6 percent). Annual expenditures for children rose from \$183 in 2004 to \$227 in 2009 (a 24 percent increase), while annual expenditures for nondisabled adults declined from \$316 in 2004 to \$304 in 2009 (a 4 percent decrease) (2009 Chartbook, Exhibit 45).

- **Antipsychotics were the most costly drug group for all Medicaid beneficiaries combined, representing 10.6 percent of total Medicaid drug costs in 1999 and 14.6 percent in 2009, and accounting for 25 percent of the total expenditure growth between 1999 and 2009.** Total Medicaid spending for all drugs for all beneficiaries rose from \$15.6 billion in 1999 to \$21.5 billion in 2009, with the growth in costs for antipsychotics (from \$1.65 billion in 1999 to \$3.15 billion in 2009) accounting for 25 percent of the total growth (1999 and 2009 Statistical Compendiums, Tables 6 and 7). The average cost for each antipsychotic medication rose from \$120 in 1999 to \$274 in 2009, an increase of 128 percent (Table 7 in 1999 and 2009).
- **The second- and third-most costly drug groups (antiasthmatics and antiviral drugs) accounted for 16 percent of all Medicaid drug costs for all beneficiaries combined in 2009 and for 35 percent of the total expenditure growth between 1999 and 2009.** Antiasthmatics, which accounted for 8 percent of total Medicaid spending in 2009, represented 19 percent of the total expenditure growth between 1999 and 2009. Antiviral drugs, which also accounted for 8 percent of total Medicaid spending in 2009, represented 16 percent of the total expenditure growth during that time.

## A Closer Look at Some Specific Drug Types and Beneficiaries

As just noted, some types of drugs are especially costly for Medicaid, and their use by particular types of beneficiaries may warrant a closer look. Tables ND.7A to ND.7D in the statistical compendium for each year provide detailed information on use and costs by age, sex, and eligibility category for the top 10 drug groups in each year, ranked by total annual expenditures for the drug group. All the comparisons in this section come from those tables, which focus just on Medicaid-only beneficiaries (nonduals).

### Antipsychotics

- **There were substantial increases in the use of antipsychotics among children age 5 and under in the disabled eligibility category between 1999 and 2009.** Although

these children account for less than 3 percent of all children age 5 and under in Medicaid, we focus on them because antipsychotic drug use is highly concentrated in the disabled eligibility category across all age groups. In this age and eligibility group, there is higher use among males age 5 and under than among females:

- The percentage of male children age 5 and under in this eligibility group using antipsychotics increased from 1.4 percent in 1999 to 3.0 percent in 2009 (up 114.3 percent); for females, the percentage of users increased from 0.7 percent in 1999 to 1.2 percent (up 71.4 percent).
- The average monthly costs per male child in this age and eligibility group increased from \$34 in 1999 to \$80 in 2009 (up 135.8 percent), while the costs for female children increased from \$33 in 1999 to \$73 in 2009 (up 119.0 percent).

### Antiasthmatics

- **Between 1999 and 2009, the use of antiasthmatics increased sharply among nondisabled children age 6 to 14, with no significant difference in the rate of increase between males and females.**
  - The percentage of nondisabled males age 6 to 14 using antiasthmatics rose from 11.5 percent in 1999 to 21.4 percent in 2009 (up 86.1 percent), while among females the percentage using these drugs increased from 9.0 to 16.7 percent over the same period (up 85.6 percent).
  - The average monthly costs of antiasthmatics for males in this group rose from \$8 per person in 1999 to \$24 in 2009 (up 194 percent), while the costs for females increased from \$7 to \$23 over that period (up 204.1 percent).

### Ulcer Drugs

- **Although use of ulcer drugs among disabled beneficiaries age 21 to 64 did not increase much between 1999 and 2009, average monthly costs per person grew by over 50 percent.**
  - The percentage of disabled male beneficiaries age 21 to 64 using ulcer drugs grew slightly from 22.1 percent in 1999 to 23.0 percent in 2009. Similarly, the percentage of females in this group using these drugs grew from 34.2 percent in 1999 to 37.1 percent in 2009.
  - In contrast, the average monthly costs per person rose by 50.6 percent for males and by 59.8 percent for females over this period.

## Antidiabetics

- **Use of antidiabetic drugs among disabled beneficiaries age 21 to 64 only saw a moderate increase between 1999 and 2009, but the average monthly costs per person doubled.**
  - The percentage of disabled male beneficiaries ages 21 to 64 using antidiabetics was 14.4 percent in 1999 and 19.7 percent in 2009.
  - The percentage of disabled female beneficiaries using these drugs was 24.2 percent in 1999 and 29.5 percent in 2009.
  - During the same period, the average monthly costs per person rose by 105.2 percent for males in this group and by 102.6 percent for females.

## Antidepressants

- **Use of antidepressants among nondisabled female beneficiaries age 21 to 44 (most of whom are mothers) did not rise much between 1999 and 2009, nor did the average monthly costs per person.** Both measures rose during the middle of that period, however, before declining to 1999 levels.
  - In 1999, 9.3 percent of nondisabled female beneficiaries ages 21 to 44 used antidepressants, and 9.5 percent used these drugs in 2009, although the percentage increased to as high as 12.8 percent in 2004 before starting to decline.
  - The average monthly costs per beneficiary fell from \$21 in 1999 to \$20 in 2009, although they rose to \$26 in 2004 before starting to decline.

## Potential Reasons for These Trends and Patterns

The possible reasons behind these trends vary by the type of drug. Increases in use may be fueled by changes in clinical practices and guidelines, drug advertising and marketing, and the availability of new drugs that may work better or have fewer side effects than older drugs. Likewise, costs may be driven up by high prices for new drugs or down by the more widespread use of generics. Researchers, market analysts, and others have explored these reasons to varying degrees. Some of the explanations include the following:

- **Antipsychotics.** Several factors may have contributed to the rise in the cost and use of antipsychotics. For example, there is substantial evidence that older and less costly generic versions of antipsychotics can be as effective as brand-name “atypical” antipsychotics, which are newer

and more costly, but providers have continued to prescribe the more expensive brand-name drugs.<sup>3</sup> There is also ample evidence that antipsychotics are being overprescribed for very young children.<sup>4</sup>

- **Antiasthmatics.** As discussed earlier, there was a sharp rise in the use of antiasthmatics by disabled children age 6 to 14 between 1999 and 2009. There is evidence that non-Medicaid children do not always adhere to their antiasthmatic regimens, due in part to the high cost of these drugs.<sup>5</sup> (A generic version of Singulair, for example, did not become available until 2012.<sup>6</sup>) But the MAX data indicate that this problem may not be as pronounced in Medicaid because Medicaid beneficiaries pay little or none of the cost for these drugs.
- **Antidiabetics.** Medicaid’s high per-person cost for antidiabetics (which doubled between 1999 and 2009) appears to be fueled in part by overuse of costly brand-name drugs when an inexpensive generic—metformin, widely used for decades—may be more effective for many patients and has fewer side effects.<sup>7</sup>
- **Ulcer drugs.** The 50 percent rise from 1999 to 2009 in Medicaid per-person expenditures for ulcer drugs was driven in part by the widespread use of heavily advertised brand-name drugs like Prilosec and Nexium. These drugs have low-cost generic alternatives, but Medicaid beneficiaries may not have a financial incentive to choose them.<sup>8</sup> Many states require generic substitution when comparable generic drugs are available, however, which may limit the ability of Medicaid beneficiaries to choose the higher-cost options.<sup>9</sup>

## Conclusion

With almost all prescription drug use by dual eligibles now the responsibility of Medicare, and with Medicaid prescription drug use concentrated heavily among nondual beneficiaries in the disabled eligibility category, states may want to focus on drug use and costs among beneficiaries in this eligibility category. Trends over time, like those presented in this issue brief, can be especially illuminating because they can highlight areas of potential overuse, underuse, or inappropriate use that may be less apparent in one-year snapshots.

A September 2011 issue brief from Mathematica (available at [http://www.mathematica-mpr.com/publications/PDFs/health/prescriptiondrug\\_ib.pdf](http://www.mathematica-mpr.com/publications/PDFs/health/prescriptiondrug_ib.pdf)) provides more detail on ways in which states can address prescription drug use and costs among Medicaid beneficiaries with disabilities and chronic illnesses, most of whom are in the disabled eligibility category.<sup>10</sup>



## Background on the Data

### Statistical Compendiums

Under contract with CMS, Mathematica has developed 51 detailed tables showing 2009 Medicaid pharmacy-benefit use and reimbursement data for states, the District of Columbia, and the nation as a whole, as well as similar tables for 1999 and 2001 to 2009. For 2009, 14 tables show data for nondual Medicaid beneficiaries, and 14 comparable tables show data for dual eligibles. There are also 7 tables that focus on all Medicaid beneficiaries and 6 supplemental tables on dual eligibles. Finally, there are 8 national comparison tables showing state-by-state comparisons based on a number of key measures included in the full set of tables, as well as 2 tables showing rates of capitated managed care penetration by state for duals and nonduals. The full set of tables, a “statistical compendium,” is available online in PDF and Excel formats: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MedicaidPharmacy.html>.

### Chartbooks

Mathematica has also developed chartbooks showing Medicaid pharmacy-benefit use and reimbursement for each year (available at the same website as the tables) based on data in the tables for 2009 and earlier years. The chartbook for 2009 contains 57 exhibits (two tables and 55 graphs) that highlight major features and comparisons for 2009 and trends since 1999.

### Medicaid Analytic eXtract (MAX) files

Mathematica developed the state-by-state pharmacy tables for the statistical compendium based on MAX files for 2009 and earlier years. The MAX files were prepared by Mathematica for CMS from Medicaid claims and eligibility data that states submitted electronically through MSIS. The MAX files link claims data on all Medicaid services to beneficiary eligibility files, creating a “person summary file” for each beneficiary. The pharmacy tables in the compendium include data for all months in which beneficiaries had fee-for-service Medicaid coverage in each year. They do not include data for months in which beneficiaries received prescription drug coverage through capitated managed care plans because the MAX files often do not include complete and accurate encounter data for enrollees in these plans. About 35 percent of all nondual Medicaid beneficiaries were in comprehensive capitated managed care plans all year in 2009, but only 28 percent of nondual aged/disabled beneficiaries—who have the highest rate of prescription drug use—were in such plans, and their enrollment was concentrated heavily in about 15 states. Appendix Tables A.3 and A.6 in the statistical compendium provide state-by-state details on the percentage of nondual and dual-eligible beneficiaries enrolled in these capitated plans.

## Endnotes

<sup>1</sup> Centers for Medicare & Medicaid Services. “NHE Tables: Table 16, Retail Prescription Drug Expenditures: Levels, Annual Percent Change, and Percent Distribution by Source of Funds, Selected Calendar Years, 1970-2011.” Available at [<http://cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/tables.pdf>]. Accessed March 6, 2013.

<sup>2</sup> Bagchi, Ann D., James Verdier, and Dominick Esposito. “Chartbook: Medicaid Pharmacy Benefit Use and Reimbursement in 2009.” Washington, DC: Mathematica Policy Research, December 21, 2012.

<sup>3</sup> Friedman, Richard A. “A Call for Caution on Antipsychotic Drugs.” *New York Times*, September 24, 2012.

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<sup>5</sup> Gordon, Serena. “High Out-of-Pocket Costs for Kids’ Asthma Drugs Could Pose Dangers.” *Health Day*, March 27, 2012; Rank, Matthew A., Juliette T. Leisinger, Jeanette Y. Ziegenfuss, Megan E. Branda, Kaiser G. Lim, Barbara P. Yawn, James T. Li, and Nilay D. Shah. “Asthma Expenditures in the United States Comparing 2004 to 2006 and 1996 to 1998.” *American Journal of Managed Care*, vol. 18, no. 9, September 2012, pp. 499-504.

<sup>6</sup> Mitchell, Steve. “New Generic Singulair Could Save Asthma Sufferers Big Bucks.” *Consumer Reports*, August 6, 2012.

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<sup>8</sup> Gill, Lisa. “Overprescribed and Overpriced: Just Say ‘No’ to Nexium.” *Consumer Reports*, October 29, 2009; Consumers Union. “Consumer Reports Best Buy Drugs. The Proton Pump Inhibitors: Comparing Effectiveness, Safety, and Price.” Yonkers, NY: Consumers Union, May 2010.

<sup>9</sup> Shrank, William H., Niteesh K. Choudhry, Jessica Agnew-Blais, Alex D. Federman, Joshua N. Liberman, Jun Liu, Aaron S. Kesselheim, M. Alan Brookhart, and Michael A. Fischer. “State Generic Substitution Laws Can Lower Drug Outlays Under Medicaid.” *Health Affairs*, vol. 29, no. 7, July 2010, pp. 1383-1390.

<sup>10</sup> Verdier, James M., Ann D. Bagchi, and Dominick Esposito. “Prescription Drug Use and Cost Among Medicaid Beneficiaries with Disabilities and Chronic Illnesses.” Washington, DC: Mathematica Policy Research, September 2011.

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