



Rx Price Watch Report

November 2014

Trends in Retail Prices of Brand Name Prescription Drugs Widely Used by Older Americans 2006 to 2013

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By

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AARP's Public Policy Institute informs and stimulates public debate on the issues we face as we age. Through research, analysis and dialogue with the nation's leading experts, PPI promotes development of sound, creative policies to address our common need for economic security, health care, and quality of life.

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EXECUTIVE SUMMARY

Retail prices for widely used brand name prescription drugs increased substantially faster than general inflation in every year from 2006 to 2013. In 2013, retail prices for 227 brand name prescription drugs widely used by older Americans, including Medicare beneficiaries, increased by an average of 12.9 percent. In contrast, the general inflation rate was 1.5 percent over the same period. Brand name drug prices have routinely increased much faster than general inflation over the past 10 years—the entire period during which the AARP Public Policy Institute has been publishing this report series.

Increases in the retail price of brand name prescription drugs have a corresponding impact on the cost of therapy for the individual and all other payers. In 2013, the average cost of therapy for a brand name prescription drug, based on the market basket in this study, was nearly \$3,000 per year. Almost two-thirds of older Americans take three or more prescription drugs on a chronic basis. Consequently, those older adults who use three brand name prescription drugs are likely to have experienced an average annual retail cost of drug therapy of more than \$8,800 in 2013.

If recent trends in brand name drug price increases continue unabated, the cost of drugs will prompt increasing numbers of older Americans to stop taking necessary medications. This will lead to poorer health outcomes and higher health care costs in the future.

Overview of Findings

- In 2013, retail prices for 227 widely used brand name prescription drugs increased by 12.9 percent. This increase was notably higher than any annual increase in the prior 7 years, which ranged from 5.7 percent to 12.3 percent.
- Brand name drug prices increased more than eight times faster than general inflation in 2013 (12.9 percent versus 1.5 percent).
- The average annual cost for one brand name medication used on a chronic basis was nearly \$3,000 in 2013.
 - For a consumer who takes three brand name prescription drugs on a chronic basis, the annual cost of therapy would have been more than \$8,800 during 2013—more than double the cost seen 8 years earlier.
- Between January 2006 and December 2013, retail prices for 140 chronic use brand name drugs that have been on the market since the beginning of the study increased cumulatively over 8 years by an average of 113.0 percent.
 - The cumulative general inflation rate in the U.S. economy was 18.4 percent during the same 8-year period.
- Retail prices increased in 2013 for 97 percent (219 of 227) of the widely used brand name prescription drug products in the study's market basket. All but two of these retail price increases (217 of 227) exceeded the rate of general economic inflation in 2013.

- Retail prices for all 32 of the drug manufacturers with at least two brand name drug products in the study’s market basket increased faster than the rate of general inflation (1.5 percent) in 2013.
 - Twenty-two drug manufacturers, including the “All Other” category, had average annual price increases for their brand name drugs of 10 percent or more during 2013.
- All but two of the 46 therapeutic categories of brand name drug products had average annual retail price increases that exceeded the rate of general inflation in 2013, with price increases by therapeutic category ranging from 4.2 percent to 41.1 percent.

Brand Name Prescription Drug Price Increases Affect Individual Consumers and Public Insurance Programs

This report shows that average annual increases in the retail prices of widely used brand name prescription drugs have consistently exceeded the general inflation rate. In fact, the difference between the rate of brand name drug price increases and the rate of general inflation has been widening over the past 8 years.

Brand name drug price increases translate into higher out-of-pocket costs, especially for consumers who pay a percentage of drug costs (coinsurance) rather than a fixed dollar amount (copayment). Higher prices are usually passed along to consumers in the form of increased premiums, higher deductibles, and other forms of cost sharing.

Prescription drug price increases also affect taxpayer-funded programs like Medicare and Medicaid. For example, the Medicare Payment Advisory Commission recently attributed the majority of “excess” growth in Medicare Part D spending to growth in the average price of drugs provided to enrollees. Higher government spending driven by large price increases eventually affects all Americans in the form of higher taxes, cuts to public programs, or both.

Policy makers interested in reducing the impact of brand name prescription drug prices should focus on options that balance the need for pharmaceutical innovation with the need for improved health and the financial security of consumers and taxpayer-funded programs like Medicare and Medicaid.

RX PRICE WATCH REPORT: TRENDS IN RETAIL PRICES OF BRAND NAME PRESCRIPTION DRUGS USED BY OLDER AMERICANS 2006 TO 2013

AARP's Public Policy Institute finds that average retail price increases for brand name prescription drugs widely used by older Americans, including Medicare beneficiaries, far outstripped the price increases for other consumer goods and services between 2006 and 2013. Brand name drug prices have routinely increased much faster than general inflation over the past 10 years—the entire period since the beginning of our report series on prescription drug prices in 2004.¹ In 2013, the average annual increase in retail prices² for 227 brand name prescription drugs widely used by older Americans including Medicare beneficiaries was 12.9 percent, and was notably higher than the rate of increase observed during any of the prior 7 years (i.e., 2006 to 2012), which ranged from 5.7 percent to 12.3 percent. In contrast, the rate of general inflation in the U.S. economy was 1.5 percent in 2013.

Increases in the retail price of brand name prescription drugs have a corresponding impact on the cost of drug therapy for the individual and all other payers. In 2013, the average annual retail cost of drug therapy for a prescription drug, based on the market basket in this study, was nearly \$3,000 per year. Almost two-thirds of older Americans take three or more prescription drugs on a chronic basis.³ Consequently, those older

¹ The AARP Public Policy Institute in its Rx Price Watch series provides reports with separate analyses of the price changes for three different segments of the pharmaceutical market: brand name, generic, and specialty drug products. These three market baskets are important because a different mix of drug manufacturers typically makes the drug products in each segment and the drug products are subject to unique market dynamics, pricing, and related behaviors. In addition, the Rx Price Watch series also reports the price change for an overall market basket (i.e., brand name, generic, and specialty drug products combined) to reflect the overall market impact of drug price changes. Some critics have argued that the brand name price index report alone overstates the effect of drug price changes on the overall prescription drug market. Those critics argue that an overall measure should include the effect of generic prescription drug price competition and the impact of generic substitution. This is precisely why the AARP Rx Price Watch series of reports also provides an overall market basket (including brand name, generic, and specialty drug products) to examine the price change impact for the overall prescription drug market. While this overall perspective is useful for those interested in understanding the industrial economics of the entire prescription drug market, consumers have proven to be considerably more interested in the price trend for the specific products that they are taking as an individual rather than all drug products on the market. In addition, separate analyses of the different market segments (i.e., brand name, generic, and specialty drug products) is important because they represent very unique and distinct segments in the prescription drug market and they provide an indication of policy changes that may be warranted in the various market segments. Previous reports from this series are on the AARP website at http://www.aarp.org/health/medicare-insurance/info-04-2009/rx_watchdog.html and <http://www.aarp.org/rxpricewatch>.

² The retail prices used in this report are drawn from Truven Health's MarketScan® Commercial Database and MarketScan® Medicare Supplemental Database (Truven Health MarketScan® Research Databases). The prices reflect the total price for a specific prescription that a pharmacy benefit manager (PBM) bills to a specific health plan for consumers enrolled in employer-sponsored or government-sponsored (i.e., Medicare or Medicaid) health plans and not simply the out-of-pocket cost (such as the copay) which a consumer would pay at the pharmacy. These amounts may or may not reflect what the PBM paid the pharmacy or the usual and customary price that a pharmacy would charge a cash pay consumer for the same prescription.

³ Q. Gu, C.F. Dillon, and V.L. Burt, "Prescription Drug Use Continues to Increase: U.S. Prescription Drug Data for 2007–2008," NCHS Data Brief No. 42, September 2010.

adults who use three brand name prescription drugs are likely to have experienced an average annual retail cost of drug therapy of more than \$8,800 in 2013.

Prescription drug price increases also affect employers, private insurers, and taxpayer-funded programs like Medicare and Medicaid. For example, the Medicare Payment Advisory Commission recently attributed the majority of “excess” growth in Medicare Part D spending to growth in the average price of drugs provided to enrollees.⁴ Spending increases driven by high and growing drug prices will eventually affect all Americans in some way. Those with private health insurance will pay higher premiums and cost sharing for their health care coverage⁵ and, over time, it could also lead to higher taxes and/or cuts to public programs to accommodate increased government spending.

This report presents annual and 8-year cumulative price changes through the end of 2013. The first set of findings shows *annual* rates of change in retail prices for widely used brand name drugs from 2006 through 2013, using both rolling average and point-to-point methods (see Appendix A). The point-to-point method examined the distribution of price changes and differences in average percent changes in retail prices for individual drug products, specific manufacturers, and specific therapeutic categories. The second set of findings summarizes the *cumulative* impact of brand name drug retail price changes that have taken place across the entire 8-year period from 2006 through 2013.

FINDINGS

I. Brand Name Price Trends for Most Widely Used Prescription Drugs

The annual percent change in retail prices for brand name prescription drugs has consistently increased substantially faster than general inflation in recent years.

- Retail prices for the 227 brand name drug products⁶ most widely used by older Americans rose 12.9 percent in 2013 (Figure 1).⁷
- The average annual retail price increase in 2013 for these brand name prescription drug products was more than eight times higher than the rate of general inflation (12.9 percent vs. 1.5 percent).⁸
- The average annual retail price increase for brand name prescription drug products in 2013 (12.9 percent) was more than two times higher than the average annual brand name drug price increase in 2006 (5.7 percent).

⁴ Medicare Payment Advisory Commission, “Report to the Congress: Medicare Payment Policy, Chapter 14: Status Report on Part D,” March 2014.

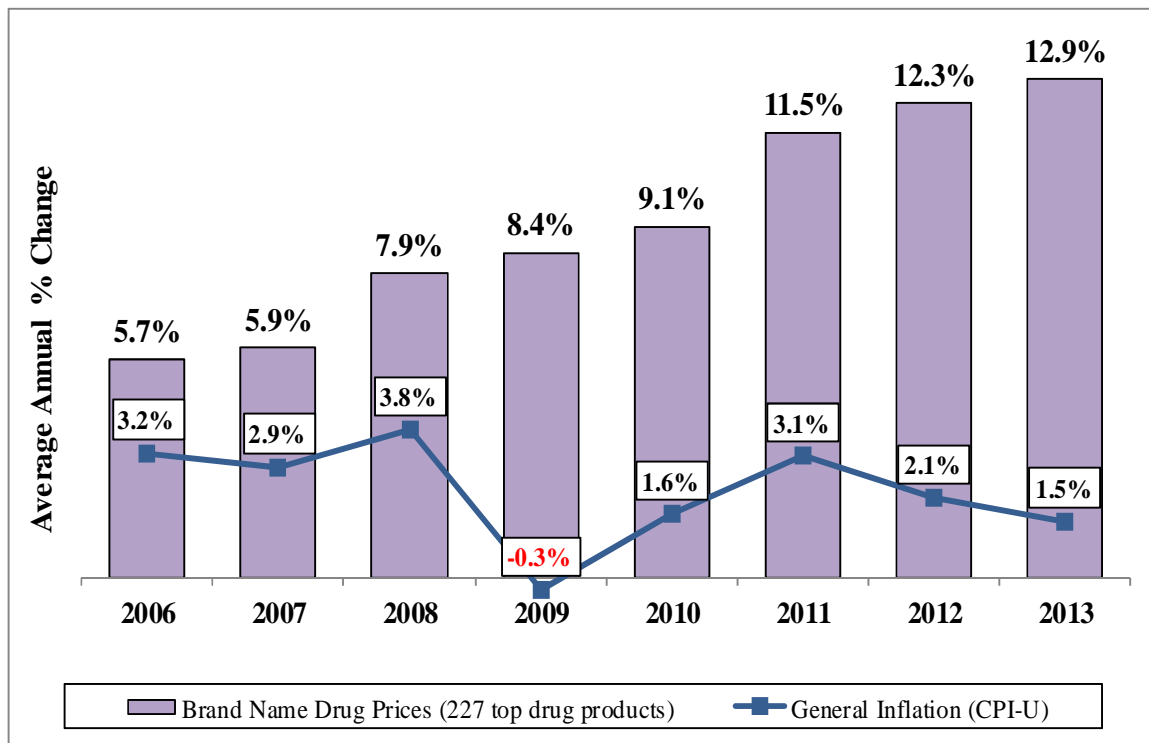
⁵ D.I. Auerbach and A.L. Kellermann, “A Decade of Health Care Cost Growth Has Wiped Out Real Income Gains for an Average U.S. Family,” *Health Affairs*, Vol 30(9) (2011): 1630-1636.

⁶ The market basket for this analysis had 227 brand name prescription drug products. Some critics of the Rx Price Watch reports have suggested that brand name drug products in our market basket that subsequently face generic competition should be excluded from this analysis because they may be skewing the results upward. However, when only the 169 brand name drug products with no generic competition are considered, the average annual price change was 13.2 percent in 2013—higher than the 12.9 percent price trend shown in this report (for additional information and analysis, see Appendix B).

⁷ When measured as a 12-month rolling average and weighted by actual 2011 retail prescription sales to older Americans ages 50 and above, including Medicare beneficiaries.

⁸ The general inflation rate used in this report is based on the average annual rate of change in the Consumer Price Index-All Urban Consumers for All Items (seasonally adjusted) (CPI-U), Bureau of Labor Statistics series CUSR0000SA0.

Figure 1. Average Annual Brand Name Drug Prices Continue to Grow Substantially More than General Inflation in 2013



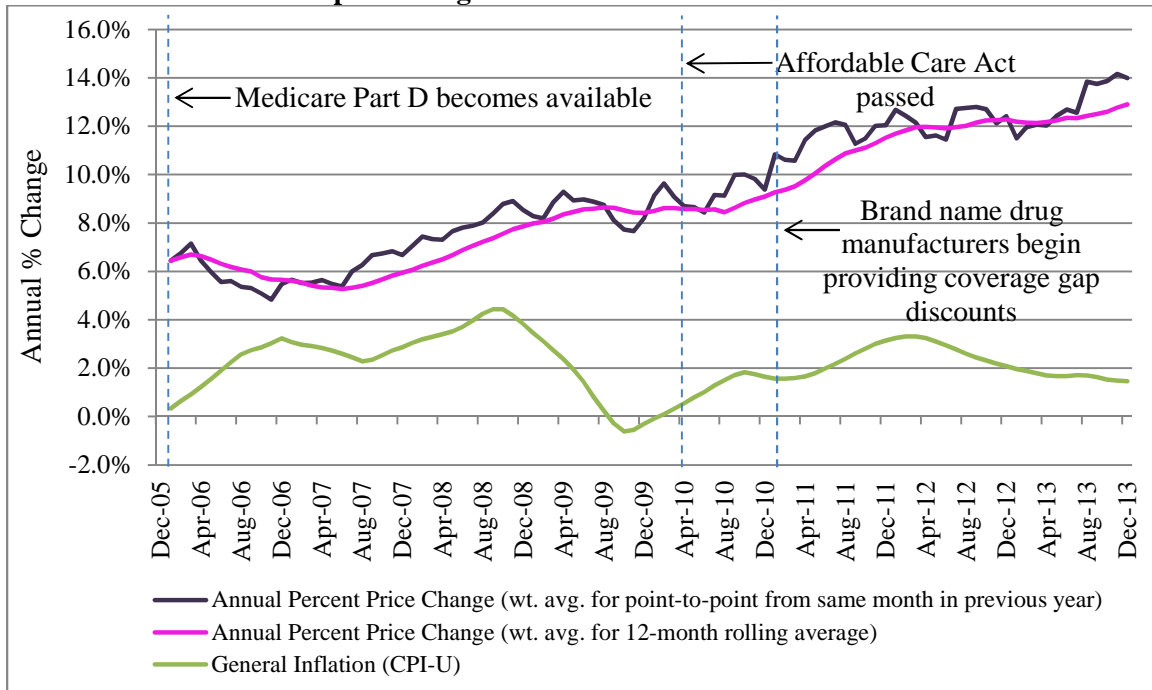
Note: Calculations of the average annual brand name drug price change include the 227 drug products most widely used by older Americans (see Appendix A).
 Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

The annual retail price change for brand name drug products reported in Figure 1 averages annual point-to-point price changes for each month in a 12-month period (referred to as a *rolling average* change), smoothing over the entire year the annual change in brand name drug price that occurs for a single month (referred to as an annual *point-to-point* change).

Figure 2 shows the percent change in brand name drug prices for each month compared with the same month in the previous year. This trend is shown alongside the 12-month rolling average to allow more detailed examination of the rate and timing of retail brand name drug price changes over the entire study period. This analysis reveals three broad trends since implementation of the Medicare Part D program:

- The retail price of brand name drug products has steadily increased over time since 2006;
- Brand name drug price increases at the retail level have been substantially higher than the rate of general inflation; and
- The gap between the rate of brand name drug price change and the rate of change in general inflation has substantially widened over the period from 2006 to 2013. This gap has ranged from a less than two-fold difference in 2006 to a nearly nine-fold difference in 2013.

Figure 2. Rolling Average and Point-to-Point Changes in Retail Prices for Most Widely Used Brand Name Prescription Drugs Were Well Above Inflation from 2006 to 2013



Note: Calculations of the average annual brand name drug price change include the 227 drug products most widely used by older Americans (see Appendix A). Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

The cost of brand name drug therapy reached nearly \$3,000 per drug per year in 2013.

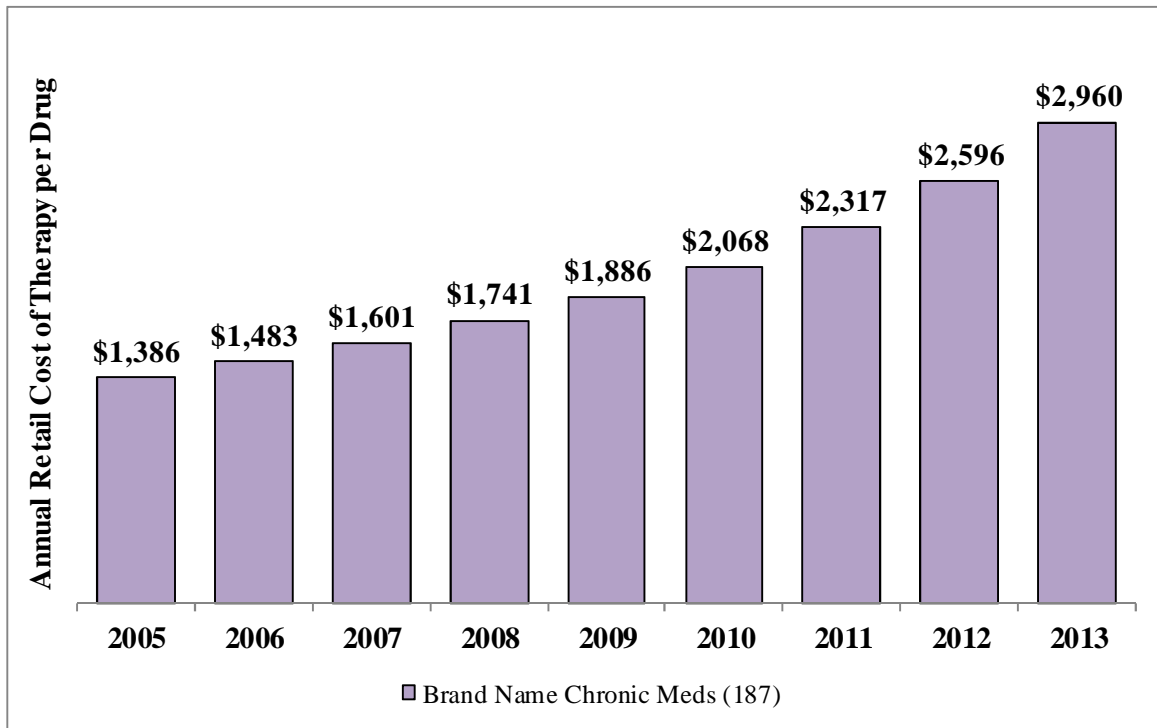
Figure 3 presents the retail price for widely used brand name drugs indicated for treating chronic conditions when the price is expressed as an average annual cost of therapy per drug.

- The average cost of therapy was nearly \$3,000 per drug per year for brand name prescription drugs at the retail level in 2013.
 - This average annual cost (\$2,960) is more than double the average annual cost (\$1,386) for a brand name drug in 2006, the year Medicare implemented Part D.

Almost two-thirds of older Americans take three or more prescription drugs in a given year.⁹ If they used brand name drugs to treat their chronic conditions, they would have experienced an average annual retail cost of drug therapy of \$8,880 for three drugs in 2013.

⁹ Q. Gu, C.F. Dillon, and V.L. Burt, “Prescription Drug Use Continues to Increase: U.S. Prescription Drug Data for 2007–2008,” NCHS Data Brief No. 42, September 2010.

Figure 3: The Average Annual Cost of Brand Name Drugs Grew Substantially in 2013



Note: Calculations of the average annual brand name drug price change include the 187 drug products most widely used by older Americans for chronic conditions (see Appendix A). Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

II. Eight-Year Cumulative Retail Price Changes for Most Widely Used Brand Name Prescription Drugs, 2006 to 2013

This AARP report tracked brand name drug prices at the retail level for the 8-year period from December 31, 2005, to December 31, 2013. Seventy-three percent (165 of 227)¹⁰ of the widely used drugs in the original brand name market basket were on the market for the entire 8-year period (i.e., the end of 2005 through the end of 2013). About 85 percent (140 of 165) of those drug products were used to treat chronic conditions and to analyze 8-year price trends among widely used brand name drug products.

Cumulatively, the average retail price for these 140 widely used brand name drug products increased 113.0 percent over 8 years, compared with an 18.4 percent increase for general inflation in the same period. This means that brand name drug prices went up more than six times the rate of general inflation during this period.¹¹

¹⁰ The market basket for this analysis had 227 brand name prescription drug products. Some critics of the Rx Price Watch reports have suggested that brand name drug products in our market basket that subsequently face generic competition should be excluded from this analysis because they may be skewing the results upward. However, when only the 169 brand name drug products with no generic competition are considered, the average annual price change was 13.2 percent in 2013—higher than the 12.9 percent price trend shown in this report (for additional information and analysis, see Appendix B).

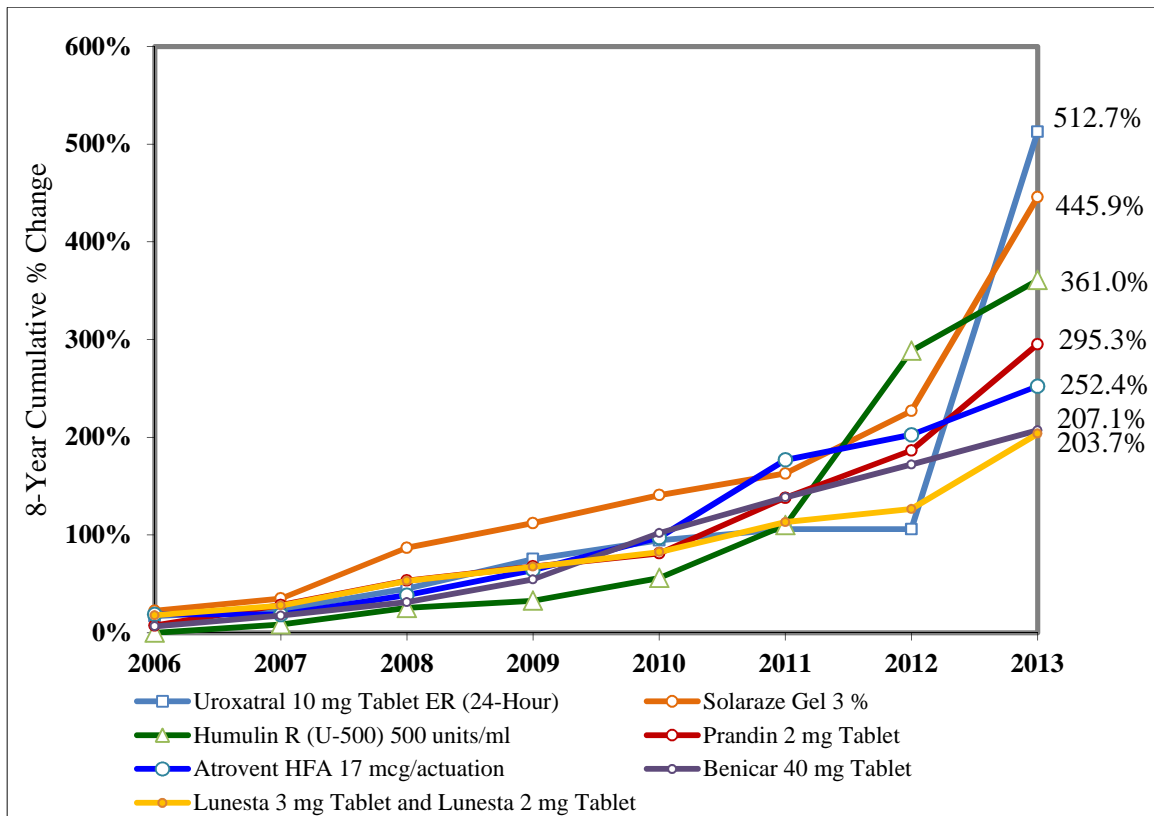
¹¹ The average 8-year cumulative growth rate in retail prices for the 165 brand name drug products (both chronic and acute use) that were on the market for the entire 8 years was 114.0 percent, similar to the cumulative price increase of 113.0 percent seen after removal of drug products used for acute conditions.

Three-fourths of brand name drug product prices more than doubled in 8 years.

Figure 4 presents the 8-year cumulative effect of drug price changes from the end of 2005 to the end of 2013 for 8 specific brand name drug products that had the highest percent changes in retail price. These 8 drug products are among the 123 (out of 165) brand name drug products that have doubled in price while being on the market for the entire 8-year study period.

The eight brand name drug products shown in Figure 4 had three-fold to six-fold increases in retail price from the end of 2005 to the end of 2013. General inflation over the same 8-year period grew less than 20 percent.

Figure 4. Retail Price for Eight Brand Name Drugs Increased by More than 200 Percent from 2006 to 2013



Prepared by the AARP Public Policy Institute and the PRIME Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

These eight drugs with the highest 8-year cumulative price increases were from a variety of therapeutic classes:

- Uroxatral 10 mg tablets are a drug product used to treat prostatic hypertrophy. This brand name drug product had a price increase of 512.7 percent—more than a six-fold increase—over the 8-year study period ending in 2013.
- Solaraze Gel 3% is a transdermal topical drug product used to treat a severe skin condition. This brand name drug product had a price increase of 445.9 percent—more than a five-fold increase—over the 8-year study period ending in 2013.

- Humulin R U-500—used to treat diabetes—had an 8-year price increase of 361.0 percent over the entire 8-year study period ending in 2013. This retail price increase shows more than a four-fold jump in price over 8 years.
 - It is notable that the vast majority of this increase took place over the past 3 years (i.e., 2011 to 2013). Since insulins are biological products they currently do not have generic competition but they are likely to face entry from biosimilar products within the next few years.¹²
- Prandin 2 mg tablets—another drug for diabetes—had an 8-year price increase of 295.3 percent over the entire 8-year study period. This retail price increase is nearly a four-fold jump in price from 2006 to 2013.
- Atrovent HFA 17 mcg/actuation—a respiratory inhaler and bronchodilator—increased in retail price by 252.4 percent over the 8-year study period. This retail price increase is more than a three-fold jump in price over 8 years from 2006 to 2013.
- Benicar 40 mg tablets—used to treat hypertension—had a price increase of 207.1 percent over the 8-year study period ending in 2013. This retail price increase is more than a three-fold growth in price over 8 years.
- Lunesta 3 mg tablets (and Lunesta 2 mg tablets)—drug products used for sedation—had an 8-year retail price increase of 203.7 percent. This retail price increase represents a three-fold price jump in 8 years.

Eight-year cumulative change in annual brand name drug cost of therapy is substantial.

Of the brand name drug products in the AARP market basket that have been on the market since the end of 2005, 85 percent (140 of 165) treat chronic conditions.¹³ The remaining 25 drug products treat acute or intermittent conditions.

The average annual retail cost of drug therapy for brand name drug products used to treat chronic conditions was \$3,099 in 2013, which is an increase of \$1,659 over the 2006 annual cost of \$1,440.

Annual cost of one brand name drug product grew more than \$10,000 over 8 years.

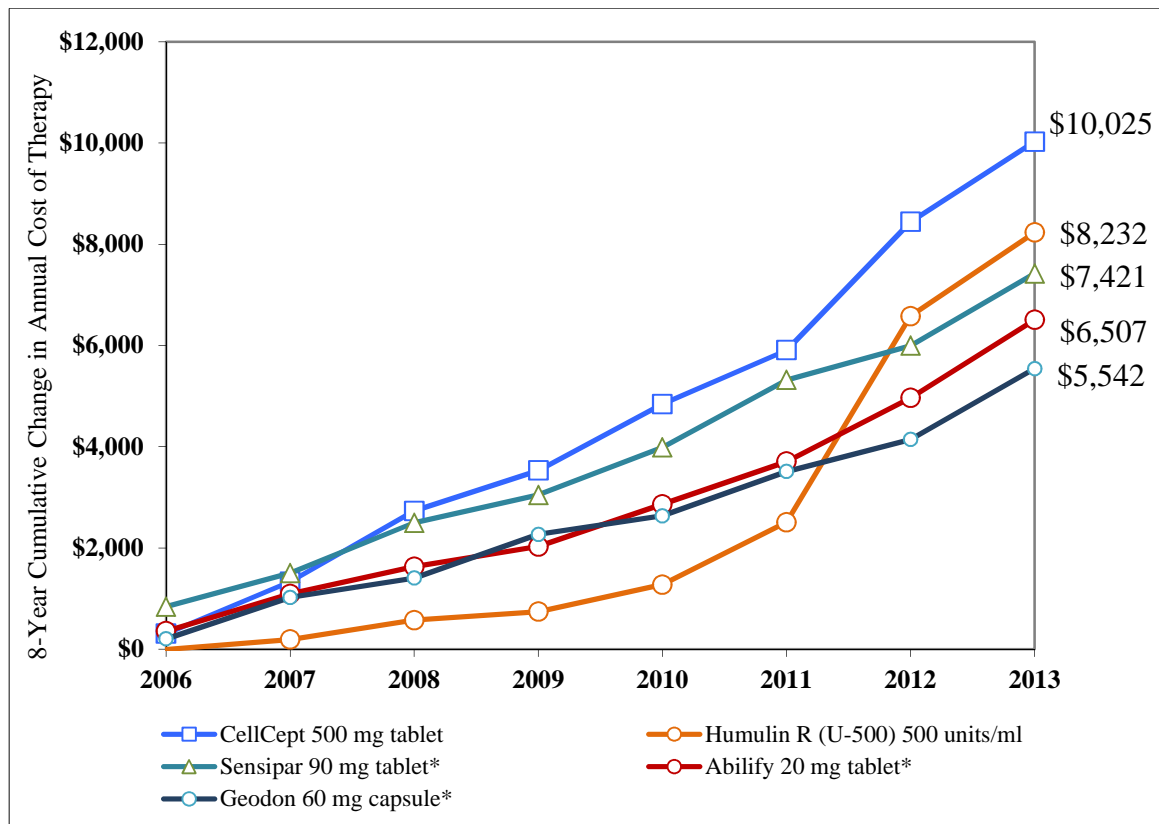
More than one-third (50 of 140) of the brand name drugs used for chronic conditions that have been on the market since the end of 2005 had annual cost increases of more than \$1,600 during the 8 year period ending in 2013.

Figure 5 shows the widely used brand name drug products with the highest annual cost hikes over the 8-year period ending in 2013.

¹² L.S. Rotenstein, N. Ran, J.P. Shivers, M. Yarchoan, and K.L. Close, “Opportunities and Challenges for Biosimilars: What’s on the Horizon in the Global Insulin Market?” *Clinical Diabetes*, Vol. 30(4) (2012): 138-150.

¹³ The drug products in our study market basket were classified based on whether the primary indication for use was for a chronic condition or an acute (or intermittent) condition. Eighty-five percent (140) of the 165 market basket drug products that have been on the market for the 8-year period since the end of 2005 were determined to treat chronic conditions.

Figure 5. Eight-Year Cumulative Change in Annual Retail Cost of Therapy is More than \$10,000 for CellCept 500 mg Tablets



Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

- The retail price for a 1-year supply of CellCept 500 mg tablets—an immunomodulator—increased by \$10,025 over an 8-year period ending in 2013. The price rose from \$8,053 per year at the end of 2005 to \$18,078 by the end of 2013. It is notable that the rate of price increase accelerated in the past 2 years (2012 and 2013).
- The retail price of Humulin R (U-500) 500 units/ml—an insulin drug product—jumped from \$2,287 at the end of 2005 to \$10,519 by the end of 2013—an increase of \$8,232 per year. This substantial price hike is more than a four-fold increase in price over an 8-year period. The vast majority of this increase took place over the past 2 years (2012 and 2013).
 - Humulin and the other insulin drug products will likely face entry from biosimilars products within the next few years.
- The retail price of a one-year supply of Sensipar 90 mg tablets—a treatment for certain patients with chronic kidney disease—increased by \$7,421 in the eight-year period ending in 2013. The retail price for a one-year supply of this drug increased from \$10,028 in 2006 to \$17,449 in 2013.
- The retail price of a 1-year supply of Abilify 20 mg tablets—an atypical antipsychotic drug—increased by \$6,507 in the 8-year period ending in 2013. The retail price for a 1-year supply of this drug rose from \$5,247 in 2006 to \$11,755 in 2013.

- The retail price of a 1-year supply of Geodon 60 mg capsules—an atypical antipsychotic drug—increased by \$5,542 in the 8-year period ending in 2013. The retail price for a 1-year supply of this drug rose from \$3,489 in 2006 to \$9,030 in 2013—more than a two-and-one half fold increase.

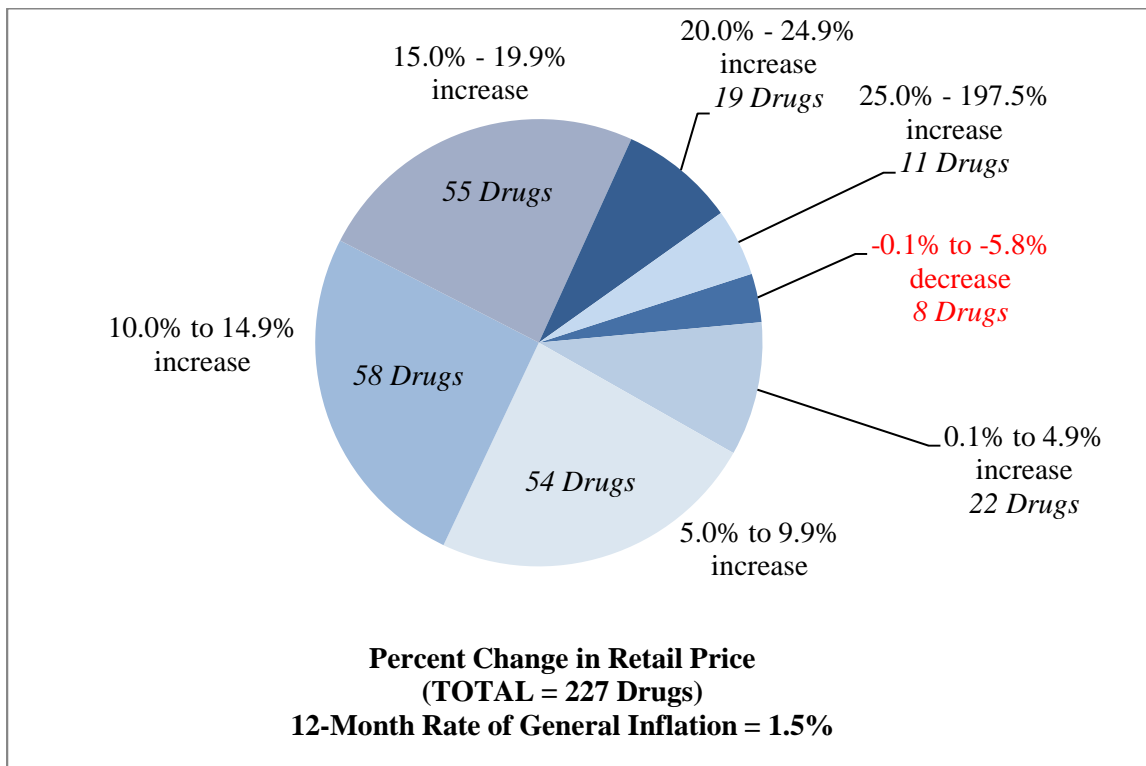
III. A Wide Range of Brand Name Drug Price Increases Occurred in 2013

Retail prices for 97 percent (219 of 227) of the most widely used brand name prescription drug products had price increases in 2013 (Figure 6). Prices for 96 percent (217 of 227) of the most widely used brand name prescription drug products increased faster than the rate of general inflation (1.5 percent) in 2013.

Among the 87 percent (197 of 227) of brand name drug products with annual retail price increases of more than 5.0 percent—or more than three times the rate of inflation—in 2013:

- Fifty-four (23.8 percent) increased by 5.0 percent to 9.9 percent;
- Fifty-eight (25.6 percent) increased by 10.0 percent to 14.9 percent;
- Fifty-five (24.2 percent) increased by 15.0 percent to 19.9 percent; and
- Thirty (13.2 percent) increased by 20 percent to as much as 197.5 percent.

Figure 6. Retail Prices Increased by More than 10 Percent in 2013 for Almost Two-Thirds of the Most Widely Used Brand Name Drugs

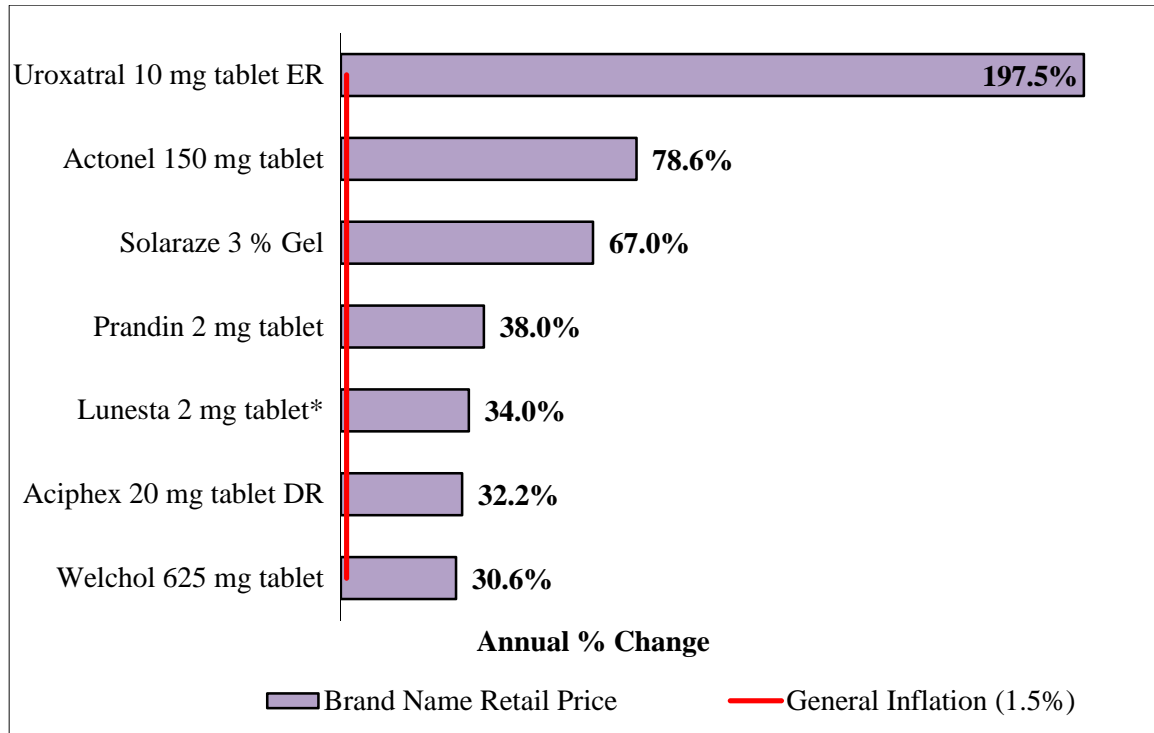


Note: Calculations were made using brand name drug price change from December 31, 2012 to December 31, 2013, and the analysis included the 227 brand name drug products most widely used by older Americans (see Appendix A). Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

Retail prices of two widely used brand name prescription drug products (Combigan 0.2-0.5% Ophthalmic and Avapro 150 mg tablets used for hypertension) *fell* by 5.8 percent and 2.3 percent, respectively, in 2013 when compared with 2012. Six other brand name drug products had a decrease in price that was 1.1 percent or less between 2012 and 2013.

Seven of the 227 widely used brand name drug products had retail price increases of more than 30 percent in 2013 (Figure 7). One brand name drug product (Uroxatral 10 mg extended release tablets used for prostatic hypertrophy) had a price increase of 197.5 percent in 2013 when compared with 2012.

Figure 7. Seven Widely Used Brand Name Drugs Had 1-Year Retail Price Increases of More than 30 Percent in 2013



The general inflation rate is based on CPI-U (See Consumer Price Index-All Urban Consumers for All Items [seasonally adjusted] [CPI-U], Bureau of Labor Statistics series CUSR0000SA0).

Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

All of the 25 top-selling brand name drug products in the market basket had retail price increases in 2013 when compared with 2012 (Table 1). All but one (24 of 25) of these top-selling brand name drug products had a price increase of 7.6 percent or more in 2013—more than five times the rate of general inflation (1.5 percent) in 2013.

Nearly one-half (12 of 25) of the top 25 drug products had price increases of 15.0 percent or more in 2013—at least 10 times the rate of general inflation. One of the top 25 drug products (Lantus 100 units/ml) had a price increase of 27.4 percent in 2013.

Table 1. All But One of the Top 25 Drug Products in the Brand Name Market Basket Had a Retail Price Increase of More than 5 Times the Rate of General Inflation in 2013

Rank by Sales among 2013 Market Basket*	Product Name, Strength, and Dosage Form	Pkg Size	Manufacturer	Therapeutic Class	2013 Retail Price Per Day	Annual Percent Change in Retail Price
1	Plavix 75 mg tablet	90	Bristol-Myers Squibb	Platelet Aggregation Inhibitors	\$6.59	0.2%
2	Nexium 40 mg DR capsule	30	AstraZeneca	Ulcer Drugs (PPIs)	\$7.74	18.4%
3	Lipitor 20 mg tablet	90	Pfizer	Cholesterol Agents (HMG CoA)	\$6.94	18.5%
4	Lantus 100 units/ml	10	Sanofi-Aventis	Antidiabetics (Insulins)	\$8.71	27.4%
5	Lipitor 40 mg tablet	90	Pfizer	Cholesterol Agents (HMG CoA)	\$6.93	18.4%
6	Singulair 10 mg tablet	100	Merck Sharp & Dohme	Other Therapeutic Agents	\$5.92	8.3%
7	Spiriva HandiHaler 18 mcg capsule	30	Boehringer Ingelheim	Respiratory Agents (Bronchodilators)	\$9.59	7.6%
8	Lipitor 10 mg tablet	90	Pfizer	Cholesterol Agents (HMG CoA)	\$4.84	17.9%
9	Advair Diskus 250-50 mcg/dose	60	Glaxo Smith Kline	Respiratory Agents (Combinations)	\$9.21	9.6%
10	Crestor 10 mg tablet	90	AstraZeneca	Cholesterol Agents (HMG CoA)	\$5.94	12.2%
11	Celebrex 200 mg capsule	100	Pfizer	Anti-Inflammatory Agents (COX-2)	\$5.99	19.5%
12	Januvia 100 mg tablet	30	Merck Sharp & Dohme	Antidiabetics (Oral)	\$8.88	14.6%
13	Zetia 10 mg tablet	30	Merck/Schering-Plough	Cholesterol Agents (HMG CoA)	\$5.61	13.8%
14	Cymbalta 60 mg capsule DR	30	Lilly	Antidepressants (SNRIs)	\$7.50	11.9%
15	Actos 30 mg tablet	30	Takeda	Antidiabetics (Oral)	\$12.50	22.1%
16	Namenda 10 mg tablet	60	Forest	Antidementia Agents	\$9.33	11.2%
17	Tricor 145 mg tablet	90	Abbott	Cholesterol Agents (Misc.)	\$6.05	9.3%
18	Actos 45 mg tablet	30	Takeda	Antidiabetics (Oral)	\$13.50	22.0%
19	Crestor 20 mg tablet	90	AstraZeneca	Cholesterol Agents (HMG CoA)	\$5.93	11.9%
20	Lidoderm 5 % patch	30	Endo Pharmaceuticals	Dermatologicals	\$8.84	15.0%
21	Lipitor 80 mg tablet	90	Pfizer	Cholesterol Agents (HMG CoA)	\$6.92	18.3%
22	Novolog FlexPen 100 units/ml	3	Novo Nordisk	Antidiabetics (Insulins)	\$11.24	21.5%
23	Lexapro 10 mg tablet	100	Forest	Antidepressants (SSRIs)	\$5.42	18.9%
24	Lovaza 1 Gm capsule	120	Glaxo Smith Kline	Cholesterol Agents (Misc.)	\$7.28	14.0%
25	Evista 60 mg tablet	100	Lilly	Osteoporosis Agents	\$6.30	13.4%
General rate of inflation (as measured by growth in CPI-U)						1.5%

*Ranking based on 2011 spending data provided by the Truven Health MarketScan® Research Databases and a Medicare Part D plan provider.

See Appendix A; also see Appendix C for an explanation of therapeutic category acronyms.

Prepared by the AARP Public Policy Institute and the PRIME Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

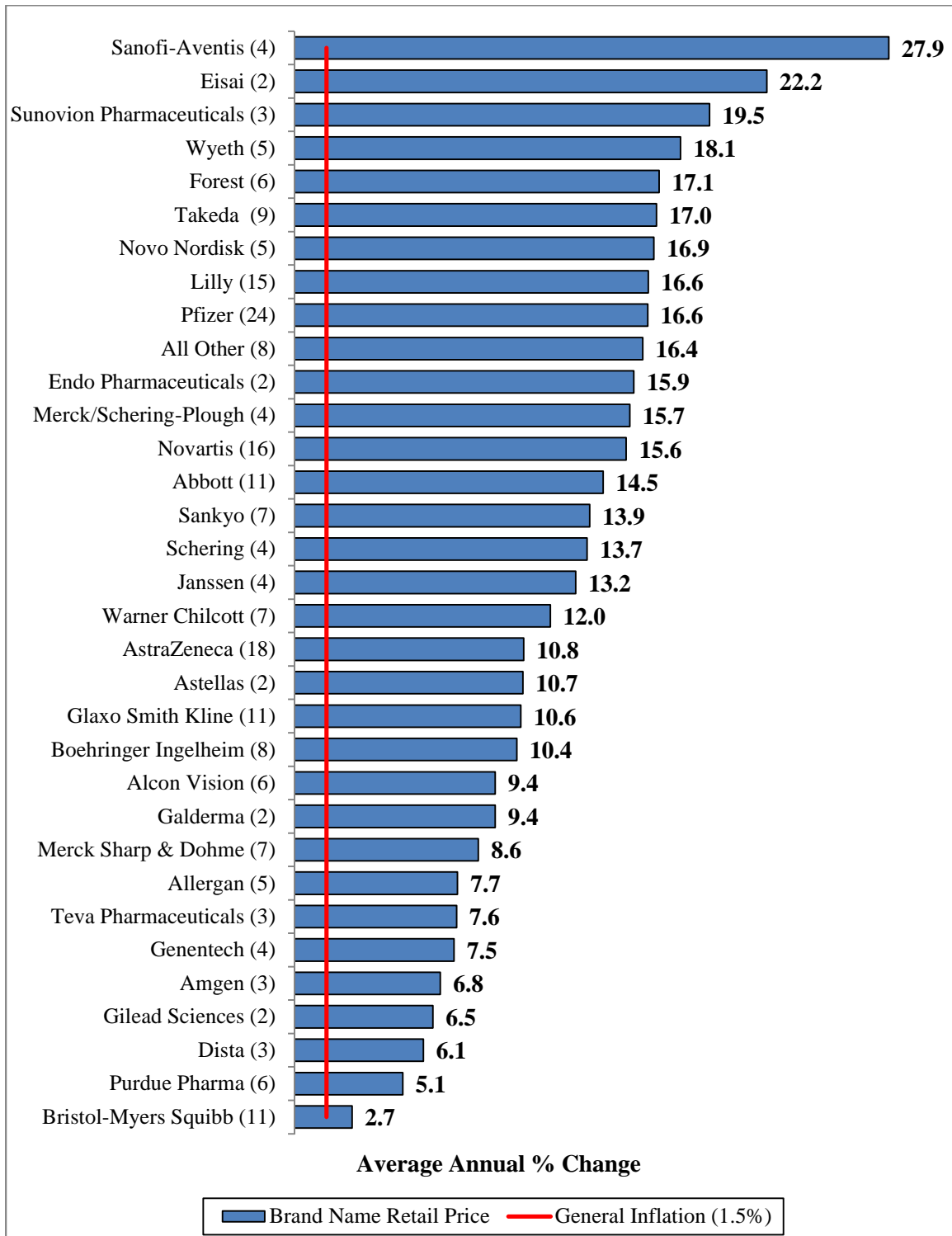
IV. Retail Price Changes for Most Widely Used Brand Name Prescription Drugs by Manufacturer

Thirty-two drug manufacturers had at least two drug products in the study's market basket of 227 widely used brand name drugs. Another eight drug manufacturers with only one brand name drug product in the market basket were grouped into the "All Other" category.

The average annual increase in retail price for all 33 of these drug manufacturer categories exceeded the general inflation rate in 2013 (Figure 8), suggesting that brand name drug price trends in this report are an industry-wide phenomenon.

- All but one of the drug manufacturers—including the "all others" category—had a weighted average annual brand name drug price increase at the retail level of more than 5 percent in 2013—more than three times the rate of general inflation (1.5 percent) in 2013.
- Twenty-nine drug manufacturers—21 drug manufacturers with 2 or more drug products in the market basket and the 8 drug manufacturers in the "all other" category—had weighted average brand name drug price increases of more than 10 percent in 2013, or more than six times the rate of general inflation (1.5 percent) in 2013.
 - These 29 drug manufacturers represent 77 percent (175 of 227) of the brand name drug products in the market basket in 2013.
- Twenty drug manufacturers—12 manufacturers with 2 or more drug products in the market basket and 8 manufacturers in the "all other" category—had weighted average brand name drug price increases of at least 15.0 percent in 2013, or more than 10 times the rate of general inflation (1.5 percent) in 2013.
- Two of the drug manufacturers—Sanofi-Aventis and Eisai—had weighted average annual brand name drug price increases at the retail level of more than 20 percent in 2013.
 - Sanofi-Aventis had a weighted average annual increase of 27.9 percent in 2013, which is more than 18 times the rate of general inflation.
 - Eisai had a weighted average annual increase of 22.2 percent in 2013, which is more than 14 times the rate of general inflation.

Figure 8. Retail Prices for Widely Used Brand Name Drug Products Increased by More than 5 Percent for All but One Drug Manufacturer in 2013



Note: Calculations of the average annual brand name drug price change include the 227 drug products most widely used by older Americans (see Appendix A). Manufacturers with only one drug product in the market basket of 227 most widely used brand name prescription drugs were included in the “All Others” category. The number in parentheses after a manufacturer’s name indicates the number of drug products in the market basket for that manufacturer. The general inflation rate is based on CPI-U for 2013.

Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

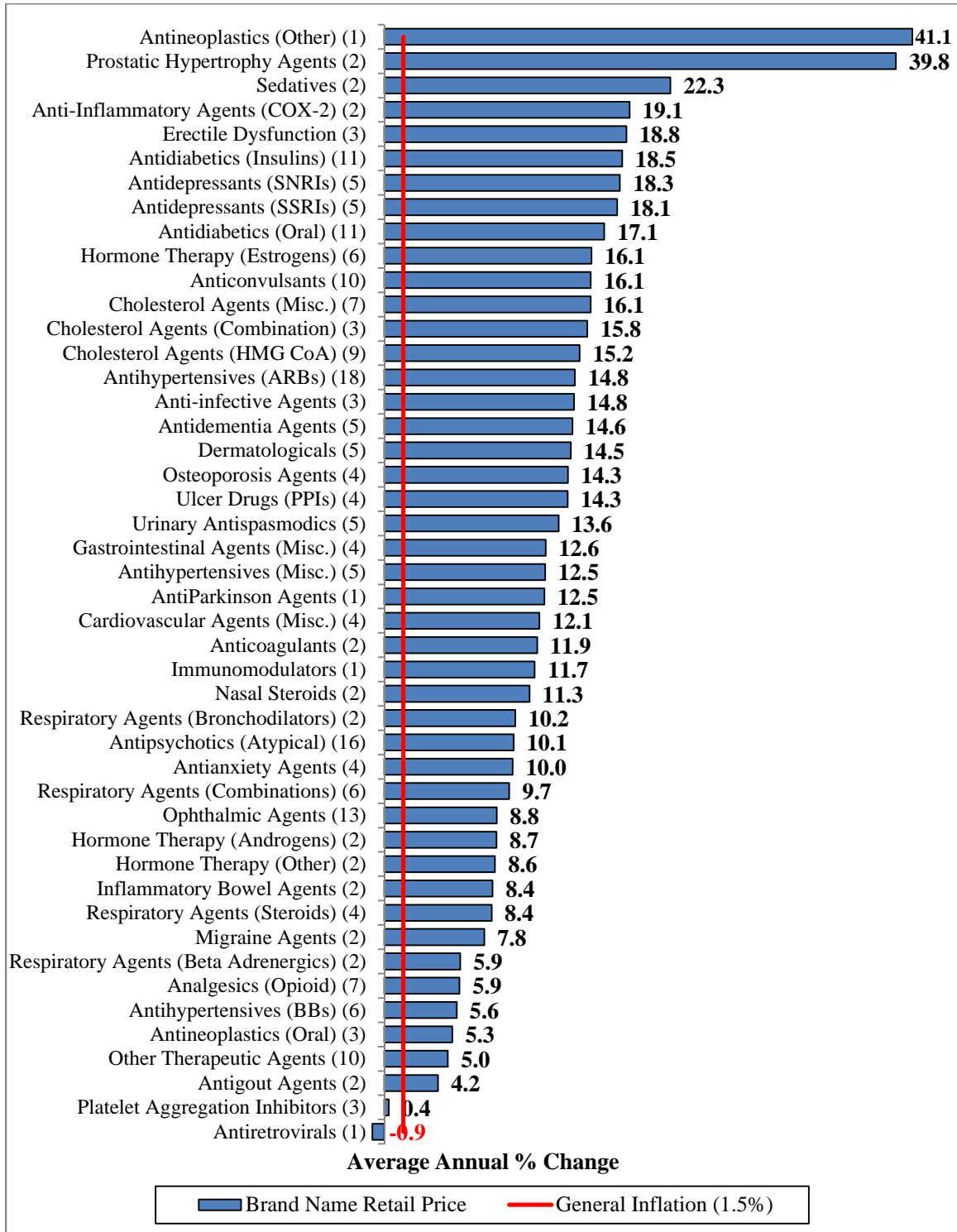
V. Retail Price Changes for Most Widely Used Brand Name Prescription Drugs by Therapeutic Category

Brand name drug prices at the retail level increased in 2013 by 5.0 percent or more—more than three times the rate of general inflation (1.5 percent)—for 43 of the 46 therapeutic categories examined in this study. All but 2 of the therapeutic categories (44 of 46) had average annual price increases that substantially exceeded the general inflation rate (1.5 percent) in 2013 (Figure 9).

- Two therapeutic categories had average annual price increases that were more than 25 times the rate of general inflation in 2013—antineoplastics (other) and prostatic hypertrophy agents.
 - The therapeutic category with the highest brand name drug price increase—antineoplastics (other)—had an average annual retail price increase of 41.1 percent in 2013.
- Thirty percent (14 of 46) of the therapeutic categories for brand name drugs had weighted average annual retail price increases of more than 15 percent in 2013—more than 10 times the rate of general inflation.
- More than 90 percent (43 of 46) of the therapeutic categories for brand name drugs had weighted average annual retail price increases of greater than 5.0 percent in 2013, or more than three times the rate of general inflation (1.5 percent).
- Only one therapeutic category of brand name drugs —antiretrovirals—with only one drug product (Norvir 100 mg tablet) in the market basket experienced a price *decrease* (-0.9 percent) in 2013.

These findings suggest that consumers who are willing to switch from one brand-name drug to another in the same therapeutic category may not see substantial reductions in their drug costs.

Figure 9. All but One Therapeutic Category for Brand Name Drugs Had Retail Price Increases That Exceeded the Rate of General Inflation in 2013



Note: Calculations of the average annual brand name drug price change include the 227 drug products most widely used by older Americans (see Appendix A). Some therapeutic categories with only one drug product in the market basket of 227 most widely used brand name prescription drugs were grouped together in the “other therapeutic agents” category. See Appendix C for explanation of therapeutic category acronyms. The number in parentheses after a therapeutic category indicates the number of drug products in the market basket for that therapeutic category. The general inflation rate is based on the CPI-U for 2013.

Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

CONCLUDING OBSERVATIONS

Retail prices increased substantially in 2013 for brand name prescription drugs used by older Americans. Average annual increases in the retail prices of widely used brand name prescription drugs have consistently exceeded the rate of general inflation (12.9 percent compared with 1.5 percent). The gap between brand name drug price increases and the rate of general inflation has been growing wider over the past few years.

Brand name drug prices at the retail level have a direct impact on the costs borne by individual consumers and by all other payers. Brand name drug price increases often result in higher out-of-pocket costs for beneficiaries at the pharmacy, especially for those who pay a percentage of drug costs rather than a fixed copayment. Higher brand name drug prices are also passed along to consumers, or the end payer, in the form of increased premiums, higher deductibles, and other forms of cost sharing.¹⁴

Prescription drug price increases also affect taxpayer-funded programs like Medicare and Medicaid. For example, the Medicare Payment Advisory Commission recently attributed the majority of “excess” growth in Medicare Part D spending to growth in the average price of drugs provided to beneficiaries. Higher government spending driven by large drug price increases will eventually affect all Americans in the form of higher taxes, cuts to public programs, or both.

If recent trends in brand name drug prices and related price increases continue unabated, the cost of drugs will prompt increasing numbers of older Americans to stop taking necessary medications.¹⁵ This will lead to poorer health outcomes and higher health care costs in the future.¹⁶ Given expectations that health care reform will greatly expand the number of people using prescription drugs,¹⁷ it is unclear what factors are driving the continued price increases of brand name prescription drugs.

Policy makers interested in reducing the impact of brand name prescription drug prices should focus on options that balance the need for pharmaceutical innovation with the need for improved health and the financial security of consumers and taxpayer-funded programs like Medicare and Medicaid.

¹⁴ D.I. Auerbach and A.L. Kellermann, “A Decade of Health Care Cost Growth Has Wiped Out Real Income Gains for an Average U.S. Family,” *Health Affairs*, Vol. 30(9) (2011): 1630-1636.

¹⁵ H. Naci, S.B. Soumerai, D. Ross-Degnan, F. Zhang, B.A. Briesacher, J.H. Gurwitz, and J.M. Madden, “Medication Affordability Gains Following Medicare Part D Are Eroding among Elderly with Multiple Chronic Conditions,” *Health Affairs*, Vol. 33(8) (2014): 1435-1443.

¹⁶ Z.A. Marcum, M.A. Sevick, and S.M. Handler, “Medication Nonadherence A Diagnosable and Treatable Medical Condition,” *Journal of the American Medical Association*, Vol. 309(20) (2013): 2105-2106.

¹⁷ A.M. Sisko, S.P. Keehan, G.A. Cuckler, A.J. Madison, S.D. Smith, C.J. Wolfe, D.A. Stone, J.M. Lizonitz, and J.A. Poisal, “National Health Expenditure Projections, 2013-23: Faster Growth Expected with Expanded Coverage and Improving Economy,” *Health Affairs*, Vol. 33(10) (2014): 1-10.

APPENDIX A: DETAILED METHODOLOGY AND DESCRIPTION OF RETAIL PRICE DATA

This appendix describes in detail how brand, generic, and specialty drugs are defined in this study; how the study identified the market basket (i.e., sample) of drugs; how it measured prices; and how it calculated weighted average price changes. In addition, it describes methods and assumptions used to determine prices and price changes by drug manufacturer and by therapeutic category.

Overview

AARP's Public Policy Institute has been publishing a series of reports that track price changes for the prescription drug products most widely used by older Americans with annual and quarterly results reaching as far back as 2000. Since 2008, these reports have focused on price changes for three market baskets—brand, generic, and specialty drugs. In addition, a combined market basket (i.e., brand, generic, and specialty) has been added to the series, which is useful to view the price change trend across all types of prescription drugs in the U.S. market. While this overall perspective is useful for those interested in understanding the industrial economics of the entire prescription drug market, consumers have proven to be considerably more interested in the price trend for the specific products that they are taking as an individual rather than all drug products on the market.

The AARP Public Policy Institute and the University of Minnesota's *PRIME* Institute originally collaborated to report an index of manufacturers' drug price changes based on the Wholesale Acquisition Cost (WAC) from the Medi-Span Price-Chek PC database.¹⁸ In 2009, AARP and the *PRIME* Institute created an additional drug price index based on retail prices¹⁹ from Truven Health's MarketScan® Commercial Database and MarketScan® Medicare Supplemental Database (Truven Health MarketScan® Research Databases).²⁰ Thus, the report series uses the same market basket of brand name prescription drugs widely used by older Americans to examine both manufacturer-level prices and retail-level prices in the market. The addition of retail-level prices allows the AARP Public Policy Institute to assess what prices payers (i.e., insurers, consumers or

¹⁸ Medi-Span is a private organization that collects price and other clinical and drug-related data directly from drug manufacturers and wholesalers. Price-Chek PC (now Price Rx®) is a product of Medi-Span (Indianapolis, IN), a division of Wolters Kluwer Health, Inc., and uses data from the Master Drug Database (MDDB®). This commercial drug database has been published for more than 35 years. See <http://www.medispan.com>.

¹⁹ The retail prices used in this report series reflect the total price for a specific prescription that a PBM bills to a specific health plan for consumers enrolled in employer-sponsored or government-sponsored (i.e., Medicare or Medicaid) health plans and not simply the out-of-pocket cost (such as the copay) which a consumer would pay at the pharmacy. These amounts may or may not reflect what the PBM paid the pharmacy or the usual and customary price that a pharmacy would charge a cash-pay consumer for the same prescription.

²⁰ The Truven Health MarketScan® Research Databases, a family of databases, contain individual-level health care claims, lab test results, and hospital discharge information from large employers, managed care organizations, hospitals, Medicare, and Medicaid programs. Truven Health constructs the MarketScan® Research Databases by collecting data from employers, health plans, and state Medicaid agencies and placing them into databases. E. Danielson, "White Paper: Health Research Data for the Real World: The MarketScan® Databases," Truven Health Analytics, January 2014.

government programs) are paying and whether rebates and other types of discounts have been passed along to payers and their covered members.

Recently, the AARP Public Policy Institute and the University of Minnesota's *PRIME* Institute collaborated again to develop a new market basket of widely used prescription drugs based on 2011 data provided by the Truven Health MarketScan® Research Databases and a Medicare Part D plan provider. UnitedHealthcare provides Medicare Part D coverage and is the organization that insures the AARP Medicare Rx plans. This Medicare Part D plan provider supplied data for all prescriptions provided to its Medicare Part D enrollees in 2011. This Rx Price Watch reports used the 2011 market basket. As in the past, the series will include separate data sets, analyses, and reports for brand name, generic, and specialty drugs, as well the overall combined market basket.

Defining Brand, Generic, and Specialty Pharmaceuticals

A brand name drug is defined as a product marketed by the original holder of a new drug application (NDA) or biological license application (BLA) (or related licensees) for a given drug entity. A generic drug is defined as any drug product marketed by an entity other than the NDA or BLA holder or related licensees.

The market conditions and pricing behavior for brand name and generic drugs are quite different. For example, brand name drugs have a monopoly based on patents and other forms of exclusivity for a number of years after market entry,²¹ and they do not experience typical price competition from therapeutically equivalent drug products that can be routinely substituted at the pharmacy level. On the other hand, generic drug products face price competition from the time the generic first enters the market when there are two or more therapeutically equivalent drug products (as evaluated by the Food and Drug Administration [FDA] and reported in the Orange Book), including the brand name product. However, certain generic drugs—that is, those for which the manufacturer files a paragraph IV certification of patent non-infringement—may receive 180 days of exclusivity as the sole generic after this first generic drug product is approved. In cases where there is only one generic drug product on the market, the level of economic competition may be somewhat limited until other generics enter the market.

Specialty pharmaceuticals are drugs that treat complex, chronic conditions and that often require special administration, handling, and care management. Specialty drugs are expected to be the fastest growing group of drug products in the next decade. This important group of drugs and biologicals is not precisely defined, but it includes products based on one or more of the following: (1) how they are made, (2) how they are approved by the FDA, (3) conditions they treat, (4) how they are used or administered, (5) their cost, and (6) other special features. The operational definition of specialty drugs for this study is further described in a later section of the methodology.

Creating the Market Basket of Drugs

The AARP Public Policy Institute has been reporting prescription drug product price changes since 2004. The original reports were based on a market basket of retail and

²¹ The average market exclusivity period for a brand name drug is almost 13 years. H. Grabowski, G. Long, and R. Mortimer, "Brief report: Recent trends in brand-name and generic drug competition," *Journal of Medical Economics*, Vol. 17(3) (2014): 207-214.

mail-order prescriptions provided to about two million people ages 50 and older who used the AARP Pharmacy Service in 2003. Following the implementation of the Medicare Part D program, we chose to develop a new market basket of drugs using 2006 data provided by UnitedHealthcare–PacifiCare, now UnitedHealthcare, which is also the organization that insures the AARP Medicare Part D plans. All AARP price trend reports published between 2007 and 2012 used this market basket.

Subsequently, we updated the AARP market baskets again using 2011 data provided by Truven Health MarketScan® Research Databases and the same Medicare Part D plan provider that was used for the 2006 market basket. We weighted the data from the Medicare Part D plan provider by Part D enrollment and the Truven Health MarketScan® data by the 50 plus population less Part D enrollment, based on data from the Centers for Medicare and Medicaid Services and the U.S. Census. We then merged the weighted data to develop and rank a weighted master list by prescription volume and sales at the National Drug Code (NDCs) level for the new AARP market baskets.

Our selection of the market basket of drugs to track in the price index was a multi-step process. First, prescriptions covered and adjudicated by the commercial entities included in the merged data set were grouped by NDC number. The NDC is a number that refers to a specific drug product presentation with a unique combination of active chemical ingredient, strength, dosage form, package type and size, and manufacturer (e.g., Nexium [esomeprazole magnesium] 40 mg, capsule, bottle of 30, AstraZeneca). As a result, some drug entities (i.e., molecules) could appear more than once among the widely used drug products e.g., when there are different strengths, such as Lipitor 10 mg, Lipitor 20 mg, and Lipitor 40 mg). For each NDC, we calculated total sales revenue from adjudicated prescription claims, including the patient cost-sharing amount, as well as the total prescriptions dispensed, the total units supplied, and the total days of therapy provided during 2011.

The next step involved merging the use and expenditure data from the Truven Health MarketScan® Research Databases and the Medicare Part D plan provider by NDC code and then linking the data with descriptive information from Medi-Span's Price Rx® drug database,²² using the NDC number as the key linking variable. The descriptive data from Price Rx included drug product information such as brand name, generic name, manufacturer, patent status, package size, route of administration, usual dose, therapeutic category, usual duration, and each drug product's price history.

All NDCs were classified by the patent status of the drug product presentation—that is, patented brand name (i.e., brand single source [SS]), off-patent brand name (i.e., brand multiple source [BMS] or innovator multiple source [IMS]), and off-patent generic (i.e., generic multiple source [GMS] or non-innovator multiple source [NMS]). We then grouped all NDC numbers by the Generic Product Indicator (GPI) code into GPI-patent status groups using the GPI code from Price Rx®. The GPI combines drug products into a common group when they have the same active ingredients, dosage form, and strength—a single GPI includes the NDCs for any package type and size and from all manufacturers. When patent status is combined with the GPI categories, each GPI will typically be either a single source GPI (GPI-brand-single source) or a multiple source

²² Price Rx® is a product of Medi-Span (Indianapolis, IN), a division of Wolters Kluwer Health, Inc., and is based on data from the Master Drug Database (MDDB®).

GPI with both a GPI-brand multiple source group and a GPI-generic multiple source group.

The next step involved summing the total expenditures, number of prescriptions dispensed, and days of therapy provided across all NDCs within each GPI-patent status group. The NDCs within each GPI-patent status group were then rank ordered based on total annual expenditure for each NDC. The designated “representative NDC” was the NDC that had the highest level of expenditure within each GPI-patent status group. If the NDC with the greatest expenditure level was inactive, the NDC with the next highest level of expenditure became the representative NDC.

This analysis excluded less than 0.5 percent of the expenditures and the prescriptions because they were for non-drug items. These non-drug items included devices, medical and diabetic supplies, syringes, compounding service fees, and other professional services. After exclusion of non-drug items, the 2011 data set contained 35,119 NDCs grouped into 6,710 GPI-patent status categories.

We then coded all GPIs to distinguish the specialty prescription drugs from other regular prescription drugs. The definition of specialty prescription drugs used here is a prescription drug that is: (1) administered by injection, such as intravenous, intramuscular, sub-cutaneous, or other injection site (not including insulin); (2) any dosage form that has a total average prescription cost greater than \$1,000 per prescription; or (3) any dosage form that has a total average cost per day of therapy greater than \$33 per day. The drugs meeting this definition were considered “specialty drugs” and all other prescription drugs were considered “regular” or “non-specialty drugs.” Throughout this report, references to the market basket of drugs refer to the regular (non-specialty) drugs unless otherwise indicated. Only specialty drugs provided through a Medicare Part D program or under a prescription drug benefit program are included. The specialty drugs provided under Medicare Part B, or under a commercial health plan and administered in a clinic or physician’s office and billed as a medical claim, are not included in this data set or this analysis.

All NDCs were classified by the patent status of the drug product presentation—that is, patented brand name (or SS), off-patent brand name (or IMS), or off-patent generic (NMS). We classified both the regular and the specialty drug data sets by patent status.

We sorted the list of all GPI-patent status groups in the merged data set for 2011 by three criteria: (1) total prescription expenditures, (2) number of prescriptions dispensed, and (3) days of therapy provided. The top 400 GPI-patent status categories were identified for each of these three criteria. Since some GPI-patent status groups appeared in more than one of these top 400 lists, the combined list of all GPI-patent status groups totaled to 627 GPI-patent status groups. There were 227 brand name GPI-patent status groups (i.e., both brand single source and brand multiple source) and 283 generic GPI-patent status groups. Another 117 GPI-patent status groups in this combined top 400 list were classified as specialty drugs.

The three market baskets (brand name, generic, and specialty drugs) combined accounted for 83.0 percent of all prescription drug expenditures and 82.8 percent of all prescriptions dispensed.

Monitoring Retail Drug Prices

The original Rx Watchdog reports were based on market baskets of drugs constructed using data from a Medicare Part D plan provider for 2006 and manufacturer drug price changes measured using WAC data from the Medi-Span Price-Chek PC database. The AARP Public Policy Institute and the University of Minnesota's *PRIME* Institute collaborated to develop a new retail drug price index known as the Rx Price Watch reports based on retail-level prescription prices from the Truven Health MarketScan® Research Databases. This retail price index allows the AARP Public Policy Institute to assess retail prices actually paid by consumers or insurers and whether the rebates and discounts sometimes given to payers are being passed along to their clients.

Retail Data Description

The Truven Health MarketScan® Research Databases are comprised of 12 fully integrated claims databases, and contain the largest and oldest collection of privately and publicly insured, de-identified patient data in the United States.²³ The warehouse features an opportunity sample from multiple sources (employers, states, health plans), more than 20 billion patient records, and 196 million covered lives since 1995.²⁴ The data used in the Rx Price Watch analyses are drawn from the Truven Health MarketScan® Commercial Claims and Encounters Database (Commercial Database) and the Truven Health MarketScan® Supplemental and Coordination of Benefits Database (Medicare Supplemental Database).

The Truven Health MarketScan® Commercial Database consists of employer- and health plan-sourced data containing medical and drug data for several million individuals annually. It encompasses employees, their spouses, and dependents covered by employer-sponsored private health insurance. Health care for these individuals is available under a variety of fee-for-service (FFS), fully capitated, and partially capitated health plans. These include PPOs and exclusive provider organizations (EPOs), POS plans, indemnity plans, HMOs, and consumer-directed health plans.²⁵

The Truven Health MarketScan® Medicare Supplemental Database is composed of data from retirees with Medicare supplemental insurance sponsored by employers or unions. In 2010, 14 percent of the 46.5 million Medicare beneficiaries received their drug benefits through a retiree coverage plan.²⁶ The Truven Health MarketScan® Medicare Supplemental Database includes the Medicare-covered portion of payment, the employer-paid portion, and any patient out-of-pocket expenses. The database provides detailed cost and use data for health care services performed in both inpatient and outpatient settings.

The retail price data drawn from the Truven Health MarketScan® Commercial Database and Truven Health MarketScan® Medicare Supplemental Database had to meet several conditions in order to be included in the analysis:

1. Claimant must be age 50 and older;

²³ E. Danielson, "White Paper: Health Research Data for the Real World: The MarketScan® Databases," Truven Health Analytics, January 2014.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

2. Claim must have a value of greater than zero in the following fields;
 - a. Total payment amount
 - b. Metric quantity
 - c. Ingredient cost
 - d. Days' supply
 - e. Average wholesale price
3. Payment amount cannot be less than 100 percent of the ingredient cost;
4. Metric quantity value must fall within pre-defined ranges developed using reference data from the Price Rx Pro database; and
5. Claim must come from a non-capitated health plan.

Truven Health Analytics then combined the two databases and provided the AARP Public Policy Institute with datasets that included the monthly median (as well as the 25th and 75th percentile) retail price from January 2005 through December 2013 for all of the drug products in the Rx Price Watch market baskets. We then compiled the monthly median retail prices in spreadsheets designed to track price changes among all of the drug products in the AARP market baskets.

Calculating Annual Price Changes for Each Drug

This Rx Price Watch report calculates average retail price changes for drug products in the following ways:

- The *annual point-to-point* percent change in retail price is the percent change in price for a given month compared with the same month in the previous year (e.g., January 2013 vs. January 2012, February 2013 vs. February 2012).
- The 12-month *rolling average* percent change in retail price is the average of the point-to-point changes over the preceding 12 months. For example, the average annual retail price changes for 2013 refer to the average of the annual point-to-point price changes for each of the 12 months from January 2013 through December 2013 compared with the same months in the 2012.

We calculated average annual price changes for each drug product for each year that the drug was on the market from 2006 to 2013. The first step was to calculate the annual point-to-point percent change for each month by comparing the price in a specific month with the same month in the previous year (e.g., January 2013 vs. January 2012, February 2013 vs. February 2012). The next step was to calculate the average of these annual point-to-point changes for the 12 months in each calendar year. For example, average annual price changes for 2013 refer to the average of the annual point-to-point price for each of the 12 months in 2013. This 12-month rolling average tends to be a more conservative estimate of price changes than the point-to-point method (that is, a simple percentage change for a single month from the same month in the previous year), and it accounts for seasonal variations in drug manufacturers' pricing policies.

Table A-1 shows how 12-month rolling average price changes are calculated. Suppose, for example, that drug A had the following pattern of price changes in 2013 when compared to the same month in 2012:

Table A-1. Average Annual Percent Change in Price for Hypothetical Prescription Drug A, 2013

Jan 12- Jan 13	Feb 12- Feb 13	Mar 12- Mar 13	Apr 12- Apr 13	May 12- May 13	Jun 12- Jun 13	Jul 12- Jul 13	Aug 12- Aug 13	Sep 12- Sep 13	Oct 12- Oct 13	Nov 12- Nov 13	Dec 12- Dec 13	AVERAGE
2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.67

In this example, the retail price of drug A was 2 percent higher than the price for the same months in the previous year, for the period from January through April 2013. A price hike in May increased the percentage difference to 3 percent for each of the subsequent months in 2013. The 12-month average of these price differences is

$(2.0+2.0+2.0+2.0+3.0+3.0+3.0+3.0+3.0+3.0+3.0)/12$, or 2.67 percent.²⁷

Calculating Aggregate Average Price Changes across Multiple Drugs

To aggregate price changes for multiple drugs, we calculated a weighted average of price changes by weighting each drug’s annual price change (calculated from the Truven Health MarketScan® Commercial Database and the Truven Health MarketScan® Medicare Supplemental Database, as shown in the hypothetical example in Table A-1) by its share of total 2011 prescription sales within its given market basket (i.e., brand name, generic, specialty, or combined). As an example, Table A-2 shows that the sample from which drug A was drawn has 10 drugs (we chose this small sample size to simplify this illustrative example). The second column of Table A-2 gives the average annual price change for each of these drugs, denoted as drugs A-J. A straight (or unweighted) average, which adds up individual values and divides by the number of drugs, would result in an average annual price change of 4.76 percent for the drugs in this hypothetical sample. Assuming the hypothetical changes in the dollar cost of therapy for these drugs, shown in the third column, the straight average change in the annual cost of therapy would be \$236.13.

A *straight* average, however, distorts the actual impact of price changes because it does not account for each product’s “weight” within the sample (that is, it gives equal weight to price changes of both commonly used drugs and drugs that are used less frequently). As a result, it does not accurately capture the average impact of price changes in the marketplace. In Table A-2, drugs with low price increases in percentage terms (drugs E and J) account for a small share (7 percent) of total 2011 sales for the specific group of drugs analyzed. By contrast, drugs with the highest percentage changes (drugs B, D, and I) account for a much larger share (37 percent) of sales. To reflect the relative importance of each drug’s price change in the market basket of products, we weighted each annual price change by the drug’s share of total 2011 sales. In this simple example, the *weighted* average price increase in 2007 is the sum of:

²⁷ If the drug was introduced to the market in July of the previous year, then the price change for the given year is averaged using only the 6 months that the product was on the market in the previous year (i.e., July-December).

(Unweighted average price change for drug A × drug A’s share of total sales) +
 (Unweighted average price change for drug B × drug B’s share of total sales) +
 (Unweighted average price change for drug C × drug C’s share of total sales) +
 ... +
 (Unweighted average price change for drug J × drug J’s share of total sales)

or,

$$(2.67 \times 0.15) + (10.0 \times 0.14) + (2.67 \times 0.07) + \dots + (1.0 \times 0.02).$$

Table A-2. Average Changes in Price and Cost of Therapy for 10 Hypothetical Prescription Drugs, 2013

Drug Name	Unweighted Average Annual Price Change (%)	Unweighted Average Change in Cost of Therapy (\$/year)	Share of Total Sales	Weighted Average Annual Price Change (%)	Weighted Average Change in Cost of Therapy (\$/year)
A	2.67%	\$623.48	15%	0.40%	\$93.52
B	10.00%	\$108.68	14%	1.40%	\$15.22
C	2.67%	\$433.68	7%	0.19%	\$30.36
D	8.00%	\$54.08	10%	0.80%	\$5.41
E	1.50%	\$162.76	5%	0.08%	\$8.14
F	4.33%	\$54.08	14%	0.61%	\$7.57
G	6.40%	\$216.84	2%	0.13%	\$4.34
H	3.25%	\$433.68	18%	0.59%	\$78.06
I	7.80%	\$27.04	13%	1.01%	\$3.52
J	1.00%	\$247.00	2%	0.02%	\$4.94
TOTAL	4.76%	\$236.13	100%	5.22%	\$251.07

The results of this calculation are in the fifth column of Table A-2, which shows that the weighted annual average price change for drugs is 5.22 percent, or approximately one-half percentage point higher than the unweighted average of 4.76 percent. The weighted dollar change in the annual cost of therapy would be \$251.07, compared to an unweighted average dollar change of \$236.13.

Calculating Average Price Changes across Multiple Drugs for Years before 2011

The process for aggregating price changes for multiple drugs pre-2011 is similar to that for 2013. Average price changes for 2006 through 2010 were derived by first calculating the rolling-average annual price change for each drug (as shown in Table A-1), then weighting each drug’s price change by its share of total sales in the sample. The weights used for all years in this study are from 2011 sales from the Medicare Part D plans of a Medicare Part D plan provider, including the AARP plans, as well as from the Truven Health MarketScan® Commercial Database, and the Truven Health MarketScan® Medicare Supplemental Database. The 2011 weights keep the market basket constant over time so that the change in prices would be a function of price changes alone and not a function of changes in market basket.

However, some drugs that were in the 2011 sample were not on the market in all earlier years. We dropped these drug products out of the analysis in the month before they entered the market and for all previous months, and recalculated the weights of the products present in the market prior to 2011 to reflect their relative share of the total sales as adjusted to reflect only drugs on the market during that period.

For example, suppose that drugs I and J in Table A-2 were not on the market in 2008. Furthermore, assume that total drug spending in 2011 was \$100,000. To capture the loss of drugs I and J from the analysis for 2008, the weights are redistributed across the drugs that remain in the analysis (drugs A through H); the new weights are still based on their 2011 sales but as a share of total sales for the smaller number of drugs in the analysis for the year. In this example, the total 2011 sales would be \$85,000 without drugs I and J. Drug A's \$15,000 in sales, which represented 15 percent of sales for all 10 drugs, rises to 18 percent of sales when I and J are excluded. This weight, along with the analogous weights for drugs B-H, was used to derive the weighted average price change for 2008 (see Table A-3).

Table A-3. Recalculating Weights When Prescription Drugs Drop out of the Sample

Drug Name	2011 Weights		2008 Weights	
	Share of 2011 Sales	Dollar Value of 2011 Sales	Dollar Value of 2008 Sales	Share of 2008 Sales
A	15%	\$15,000	\$15,000	18%
B	14%	\$14,000	\$14,000	16%
C	7%	\$ 7,000	\$ 7,000	8%
D	10%	\$10,000	\$10,000	12%
E	5%	\$ 5,000	\$ 5,000	6%
F	14%	\$14,000	\$14,000	16%
G	2%	\$ 2,000	\$ 2,000	2%
H	18%	\$18,000	\$18,000	21%
I	13%	\$13,000	–	–
J	2%	\$ 2,000	–	–
TOTAL	100%	\$100,000	\$85,000	100%

Weighting the previous years' price changes by 2011 sales potentially creates a bias relative to using each specific year's sales as the basis for assigning weights for that year. Using 2011 sales gives more weight to drugs that, relative to other drugs, had high rates of sales growth in 2011 or earlier years compared to the year analyzed. In general, however, newer drugs initially have higher rates of sales growth, but relatively lower rates of price growth, than do older drugs. This pattern occurs both because newer drugs may have been introduced at higher prices and because price increases for brand name drugs tend to accelerate in rate and amount closer to the end of a product's effective patent life.

Calculating Annual Cost of Therapy for a Drug Product

To assess the impact of price changes on dollars spent, we calculated an annual cost of therapy for each drug product. This annual cost of therapy analysis excludes drug products in the market basket that are used primarily for treatment of acute conditions and are typically taken for a limited period of time. The amount of a drug that an average adult would take on a daily basis was determined using the "usual daily dose" reported in

the Medi-Span Price Rx® database. When this information was not available from Medi-Span, we used dosing information in the FDA-approved labeling for the drug product. The weighted average annual cost of therapy was also calculated using the 2011 sales volumes to weight the annual cost of each drug product to produce the aggregate annual cost of therapy across all drug products in the study's market basket.

Defining Manufacturer

We defined a drug manufacturer as the firm marketing the drug product under its corporate name in 2013. If a listed manufacturer is a division of another firm, we defined its drugs as manufactured by the parent firm. This includes cases where the firm marketing a drug product may have changed over time due to mergers and acquisitions, divestitures of specific drug products, or for other reasons. The analysis of drug manufacturers reported separately on manufacturers with at least two drug products (at the NDC level) among the most widely used drugs.

Defining Therapeutic Category

Drug products can be classified by the therapeutic purpose for which they are used. If a drug has multiple uses, the most common indication typically becomes the classifier. To group drug products in this study into similar therapeutic categories, we used Medi-Span's therapeutic coding scheme known as the GPI (or generic product indicator) code.

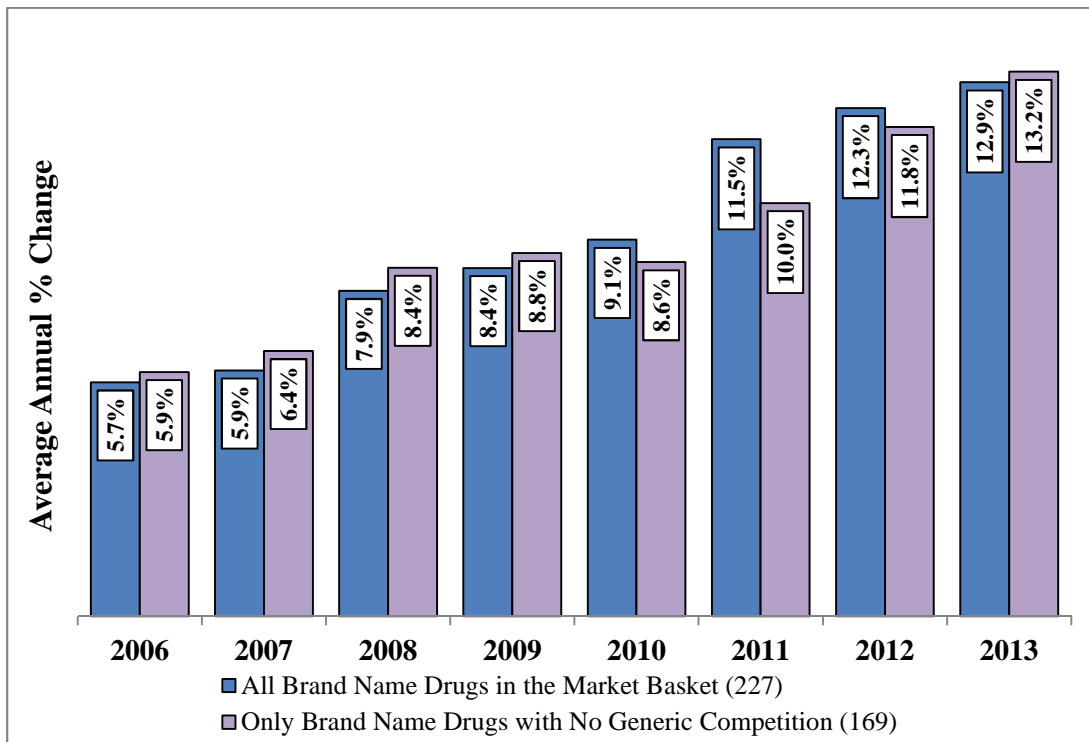
The therapeutic categories used in this study use an intermediate GPI level code that specifies the groupings of similar chemical entities such as "Proton Pump Inhibitors." A therapeutic category may include drug products that are brand single-source or brand multiple-source.

APPENDIX B: AARP MARKET BASKET EFFECT OF BRAND NAME DRUGS FACING GENERIC COMPETITION

This AARP report tracked prices at the retail level for widely used brand name drug products for the 8-year period from December 31, 2005, to December 31, 2013. The market basket for this analysis included 227 brand name prescription drug products. One-fourth (58 of 227) of the widely used brand name drugs in the brand name market basket faced generic competition in 2011, 2012, or 2013.

Figure B1 shows the annual percent increase in brand name drug prices using the complete brand name market basket (227 drugs). Figure B1 also shows the annual percent increase using only those drugs in the brand name market basket that did not face generic competition at any point during the 8-year study period (169 drugs).

Figure B-1. Retail Price Trends Are Similar in AARP Market Baskets with and without Brand Name Drugs with Generic Equivalents



Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

Comparing the annual price change trends for all brand name drugs in the market basket (227 drugs) with annual price change trends for only those brand name drugs with no generic competition (169 drugs), we found:

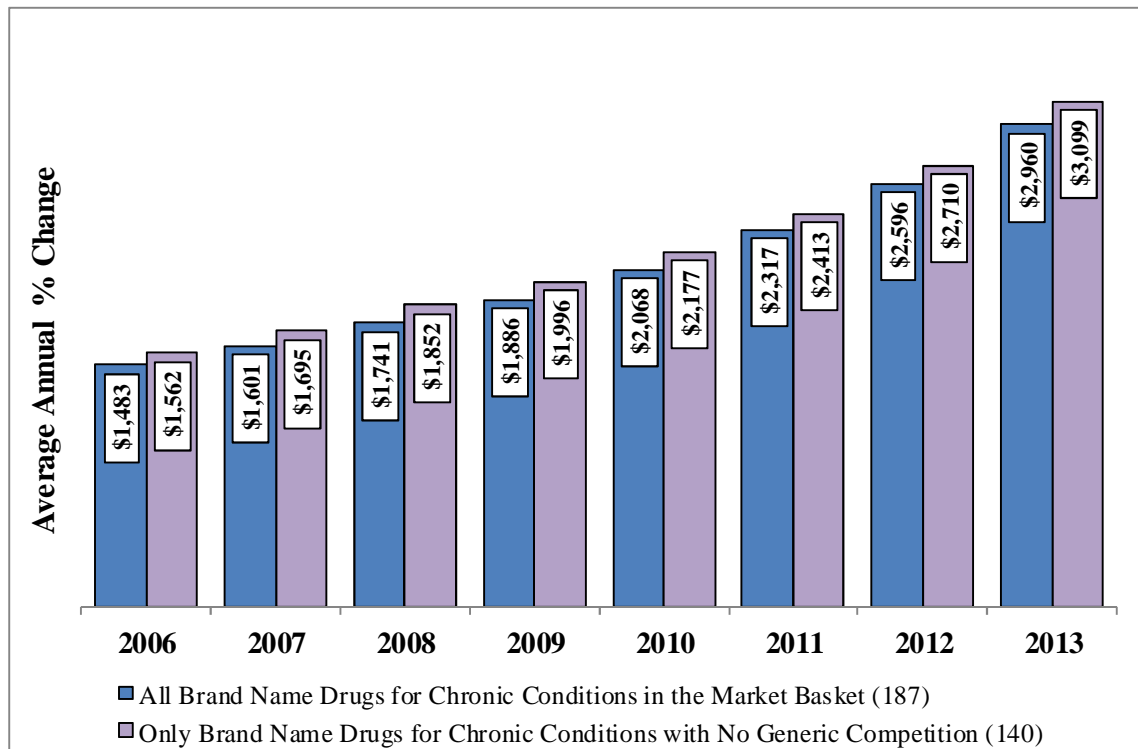
- The average annual price change for the complete brand name market basket (227 drugs) was 12.9 percent for 2013, while the average annual price change for the brand name market basket with only those drugs not facing generic competition (169 drugs) was 13.2 percent.

- Excluding brand name drug products that faced generic competition in the study period (2006 to 2013) from the overall brand name drug market basket reported in this study would have resulted in a higher percent increase in brand name drug prices (i.e., 13.2 percent versus 12.9 percent).
- The use of the complete brand name drug market basket (227 drugs) resulted in a lower (i.e., conservative) estimate of the average annual price change for brand name drugs in 2013.
- Excluding brand name drug products that faced generic competition in the study period (2006 to 2013) from the overall brand name drug market basket did result in higher average annual price change rate in 2006 to 2009 and 2013, and a lower average annual price change rate for 2010, 2011 and 2012 (see Figure B1).

This report also calculated the annual cost of therapy for widely used brand name drugs used to treat chronic conditions. Among the drugs in the market basket used in this analysis, 187 drugs (82 percent) are used to treat chronic conditions.

Figure B-2 reports the annual cost of therapy for brand name drugs used to treat chronic conditions for the years 2006 to 2013.

Figure B-2. Retail Price Trends Are Similar in AARP Market Baskets with and without Brand Name Drugs with Generic Equivalents



Prepared by the AARP Public Policy Institute and the *PRIME* Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

When we compared the average annual cost of therapy for the complete market basket of widely used chronic-use, brand name drugs (187 drugs) to widely used chronic-use, brand name drugs that did not face generic competition at any point during the 8-year study period (140 drugs) we found:

- The average annual cost of therapy for the complete brand name market basket (187 drugs) was \$2,960 for 2013, while the average annual cost of therapy for the brand name market basket with only those drugs not facing generic competition (140 drugs) was \$3,099.
- Excluding widely used brand name drug products that faced generic competition in the study period (2006 to 2013) from the complete brand name drug market basket as reported in this study would have resulted in a higher average annual cost of therapy in 2013 (\$3,099 versus \$2,960).
- The use of the complete chronic-use brand name drug market basket (187 drugs) resulted in a conservative estimate of the average annual cost of therapy for widely used brand name drugs.
- Excluding widely used brand name drug products that faced generic competition in the study period (2006 to 2013) from the complete chronic-use, brand name drug market basket would have resulted in a higher average annual cost of therapy for every year in the study (2006 through 2013) (see Figure B2).

APPENDIX C: THERAPEUTIC CATEGORY ACRONYMS

Therapeutic Category	Definition
Antidepressants (SNRIs)	SNRI – Serotonin-Norepinephrine Reuptake Inhibitors
Antidepressants (SSRIs)	SSRI – Selective Serotonin Reuptake Inhibitors
Antihypertensives (ARBs)	ARB – Angiotensin II Receptor Blockers
Antihypertensives (BBs)	BB – Beta Blockers
Anti-Inflammatory Agents (COX-2s)	COX-2 – Cyclooxygenase-2
Cholesterol Agents (HMG CoA)	HMG CoA – HMG CoA Reductase Inhibitors
Ulcer Drugs (H2 Antagonists)	H2 Antagonists – Histamine Receptor Antagonists
Ulcer Drugs (PPIs)	PPI – Proton Pump Inhibitors



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