MAY 2015

Research Report

Trends in Retail Prices of Generic Prescription Drugs Widely Used by Older Americans, 2006 to 2013

Stephen W. Schondelmeyer
PRIME Institute
University of Minnesota

Leigh Purvis
AARP Public Policy Institute

AARP Real Possibilities
Public Policy Institute

Acknowledgments

The authors gratefully acknowledge Kay Miller of Truven Health Analytics for her comments on the detailed methodology.

Table of Contents

Figures

Tables

Executive Summary

Retail prices for widely used generic prescription drugs declined, on average, between 2006 and 2013; this pattern for generic drugs is consistent with the pattern seen since the initiation of an ongoing series of studies on prescription drug prices in 2004 by AARP's Public Policy Institute. In 2013, retail prices for 280 generic prescription drugs widely used by older Americans, including Medicare beneficiaries, fell by an average of 4.0 percent. In contrast, the general inflation rate rose by 1.5 percent over the same period.

Changes in the retail price of generic prescription drugs have a corresponding impact on the cost of therapy for the individual and for all other payers. In 2013, the average cost of therapy for a generic prescription drug, based on the market basket in this study, was unchanged from 2012 at more than $280 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 generic prescription drugs are likely to have experienced an average annual retail cost of drug therapy of about $850 in 2013—slightly higher than the cost seen 8 years earlier.

The findings of this report show that the retail prices of most of the generic drug products in the market basket are decreasing. Some of these decreases are substantial, reaching 30 percent or more. However, some generic drug products had equally substantial, or in some cases extraordinary, price increases. Further, the rate of generic price declines has been slowing for the past decade, indicating that the era of consistent generic drug price decreases may be coming to an end.

OVERVIEW OF FINDINGS

- In 2013, retail prices for 280 widely used generic prescription drugs decreased by an average of 4.0 percent. The general inflation rate increased by 1.5 percent over the same time period.
  - — While generic drug prices have been consistently decreasing over the past several years, the average annual generic drug price decrease in 2013 was the smallest decrease since at least 2006.
- Between January 2006 and December 2013, retail prices for 103 chronic-use generic drugs that have been on the market since the beginning of the study decreased cumulatively over 8 years by an average of 22.7 percent.
  - — The cumulative general inflation rate in the U.S. economy rose 18.4 percent during the same 8-year period.
- All but two of the 280 generic prescription drug products in the study's market basket had retail price changes during 2013; 203 drug products (73 percent) experienced a price *decrease*, and the remaining 75 (27 percent) experienced a price *increase*.
  - — Eleven widely used generic drug products had retail price increases that were greater than 30.0 percent in 2013. Two of these widely used generic drug products, both anti-infective agents used to prevent infection, had retail price increases that exceeded 1,000 percent.
- Twenty-one of the 26 drug manufacturers with at least two drug products in the study's market basket—plus the "All Others" category—had an average decrease in retail price in 2013.
  - — One drug manufacturer—West-Ward—had an average annual price increase of 827.4 percent, more than 60 times higher than any other drug manufacturer with a weighted average annual retail price increase.
- Thirty-three of the 40 therapeutic categories of generic drug products had an average annual retail price decrease in 2013, ranging from 0.9 percent to 57.9 percent.

- Seven therapeutic categories had an average annual retail price increase, all of which exceeded the rate of general inflation (1.5 percent).
  - — The therapeutic category with the highest generic drug price increase—anti-infective agents—had an average annual retail price increase of 44.1 percent in 2013.

SAVINGS FROM GENERIC PRESCRIPTION DRUGS ARE INCREASINGLY IMPORTANT

The findings of this report highlight the unique pricing dynamics in the generic drug market when compared to brand name drug products. While the retail prices for 280 generic prescription drugs widely used by Medicare beneficiaries in 2013 fell by an average of 4.0 percent, retail brand name drug prices for 2013—reported in a previous Rx Price Watch report—for 227 brand name prescription drugs widely used by Medicare beneficiaries increased by an average of 12.9 percent in 2013.

Generic drugs have long been a means of helping consumers and third-party payers reduce prescription drug costs, particularly when prices remain stable or decrease. They now account for more than three-quarters of all retail prescriptions filled in the United States, and analysts have consistently linked the increased use of generic drugs to a recent deceleration in prescription drug spending growth. The availability of less expensive generic drugs will take on added importance as an increasing number of brand name drugs and biologicals enter the market with unusually high prices. Equally important will be determining what is driving the recent retail price increases for some generic prescription drugs, as well as how these factors might be mitigated.

1. Introduction

AARP's Public Policy Institute finds that average retail prices for generic prescription drugs widely used by older Americans, including Medicare beneficiaries, fell between 2006 and 2013. This pattern is consistent with the pattern seen for generic drugs since the Public Policy Institute initiated its ongoing series of studies on prescription drug prices in 2004.[1] In 2013, retail prices[2] for 280 generic prescription drugs widely used by older Americans, including Medicare beneficiaries, fell by an average of 4.0 percent. This was the slowest rate of decline observed during any of the prior 7 years (i.e., 2006 to 2012), which ranged from -4.1 percent to -14.5 percent. In contrast, the rate of general inflation in the U.S. economy rose 1.5 percent in 2013.

Changes in the retail price of generic prescription drugs have a corresponding impact on the cost of drug therapy for the individual and for all other payers. In 2013, the average annual retail price of drug therapy for a generic prescription drug, based on the market basket in this study, was unchanged from 2012 at more than $280 per year. Almost two-thirds of older Americans take three or more prescription drugs on a chronic basis.[3] Consequently, those older adults who use three generic prescription drugs are likely to have experienced an average annual retail cost of drug therapy of nearly $850 in 2013.

Generic drugs have long been a means of helping consumers and third-party payers reduce prescription drug costs.[4] They now account for

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 prescriptions, 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) are 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) that 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.

4 A generic drug is defined by the U.S. Food and Drug Administration (FDA) as a "chemical clone" that has the same active ingredients as its FDA-approved brand name counterpart and that can be expected to have the same therapeutic effect as its brand name counterpart (FDA, Center for Drug Evaluation and Research, *From Test Tube to Patient: Improving Health through Human Drugs*, September 1999). For the purposes of this analysis, a generic drug is any FDA-approved product that is therapeutically equivalent to a product marketed by the original new drug application (NDA) holder. For the most part, this includes products with an abbreviated NDA (ANDA). It also includes some products that have an NDA that was not the original NDA for the chemical entity, as well as "branded generics" (i.e., generic drug products that are marketed using a brand name [e.g., Levoxyl 100 mcg tablets]).

more than three-quarters of all retail prescriptions filled in the United States,[5] and analysts have consistently linked the increased use of generic drugs to a recent deceleration in prescription drug spending growth.[6] The availability of less expensive generic drugs will take on added importance as an increasing number of brand name drugs and biologicals enter the market with unusually high prices.[7]

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 generic 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 generic price changes and differences in average percent changes in retail prices for individual generic drug products, specific manufacturers, and specific therapeutic categories. The second set of findings summarizes the *cumulative* impact of generic drug retail price changes that have taken place across the entire 8-year period from 2006 through 2013.

5 Generic Pharmaceutical Association, *Generic Drugs Savings in the U.S.: Sixth Annual Edition: 2014*, August 2014.

6 Ibid. See also M. Hartman, A.B. Martin, D. Lassman, A. Catlin, and the National Health Expenditure Accounts Team, "National Health Spending in 2013: Growth Slows, Remains in Step with the Overall Economy," *Health Affairs*, Vol. 34(1) (2015): 150-60; and G.T. Schumock, et al., "National Trends in Prescription Drug Expenditures and Projections for 2014," *American Journal of Health-System Pharmacy*, Vol. 71 (2014): e6-e23.

7 P.B. Bach, "Why Drugs Cost So Much," *New York Times*, January 14, 2015.

2. Findings

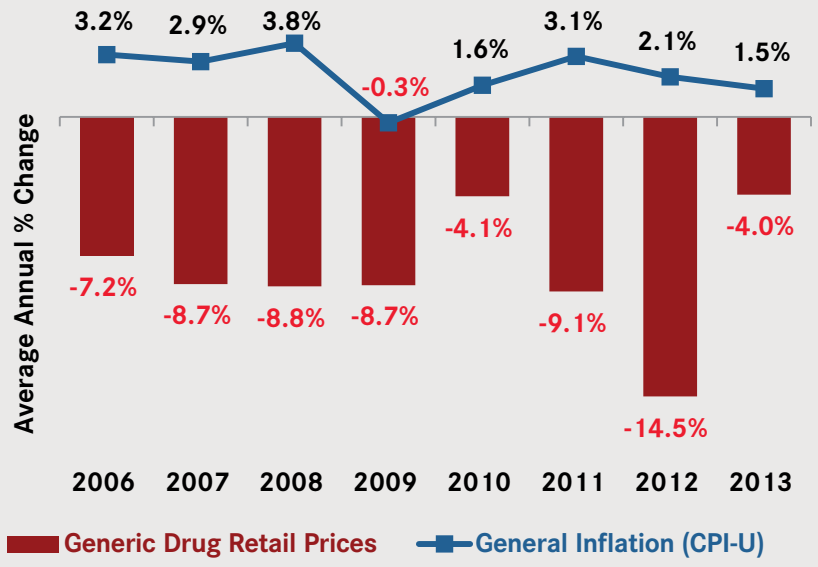
2.1. GENERIC PRICE TRENDS FOR MOST WIDELY USED PRESCRIPTION DRUGS

The average annual percent change in retail prices for generic prescription drugs has consistently decreased in recent years.

- Retail prices for the 280 generic drug products most widely used by older Americans decreased by 4.0 percent in 2013 (Figure 1).[8] In contrast, the rate of general inflation rose by 1.5 percent over the same time period.[9]
- The average annual retail price decrease for generic prescription drug products in 2013 (4.0 percent) was the smallest average annual generic drug price decrease since at least 2006.

Figure 1

Average Annual Generic Drug Prices Declined at the Slowest Rate in at Least 7 Years in 2013



Note: Calculations of the average annual generic drug price change include the 280 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 generic 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 generic drug price that occurs for a single month (referred to as an annual *point-to-point* change).

Figure 2 shows the percentage change in generic 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 generic drug price changes over the entire study period. Figure 2 shows that, on average, the rate of decrease in retail prices for generic drugs accelerated in 2011 and 2012 and has since slowed considerably, Note that in December 2013 the average price for drugs in the generic market basket was 3.4 percent higher than in December of 2012 (see Figure 2).

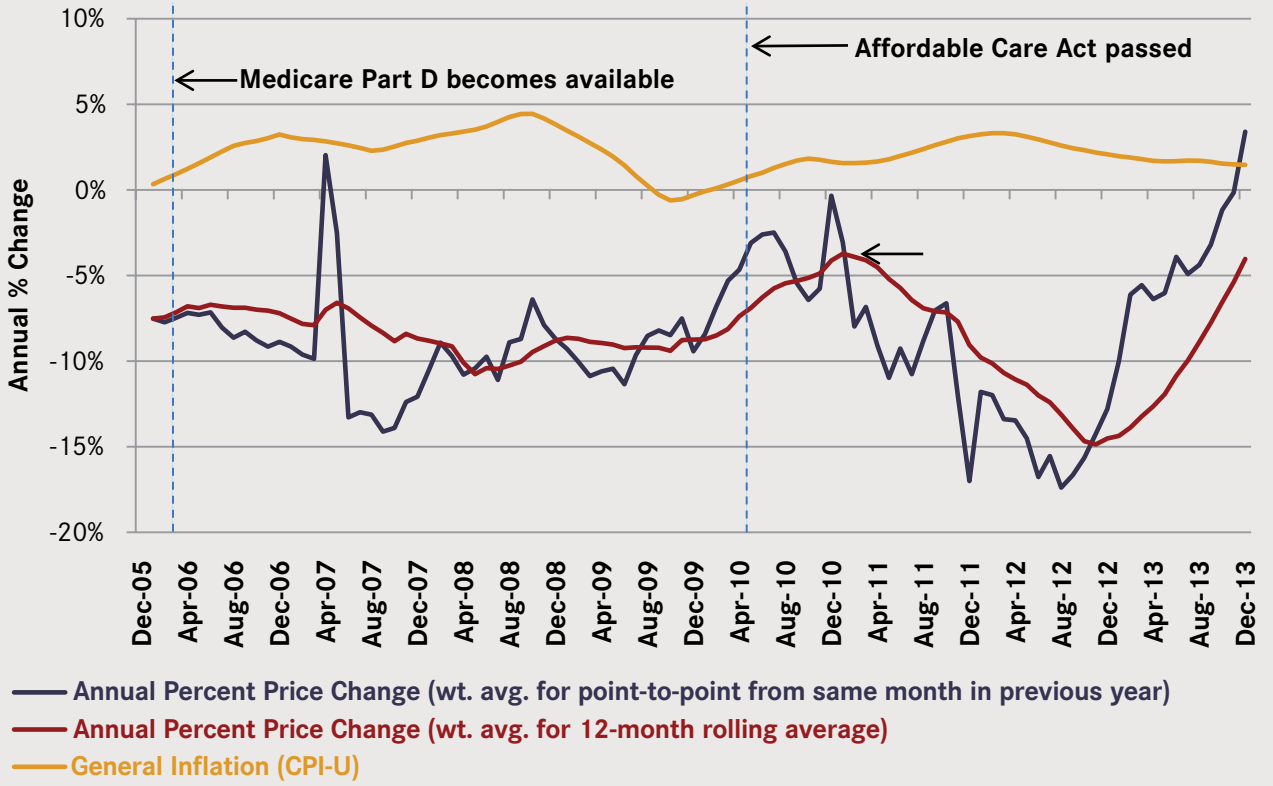
The recent price changes for generic drug products may be signaling that the era of consistent drug price decreases for generic drug products is coming to an end. These

8 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.

9 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 2

Rolling Average and Point-to-Point Changes in Retail Prices for Most Widely Used Generic Prescription Drugs Were Well Below Inflation until 2013



Note: Calculations of the average annual generic drug price change include the 280 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.*

findings correspond with a slowing of the so-called "patent cliff," an ongoing wave of patent expirations for popular brand name drugs that has led to increased generic availability, use, and price competition.[10]

The price of generic drug therapy was more than $280 per drug per year in 2013.

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

- The average price of therapy was more than $280 per drug per year for generic prescription drugs at the retail level in 2013. The average annual retail price of therapy for widely used generic drugs declined in 2010 and 2011, but remained the same between 2012 and 2013.

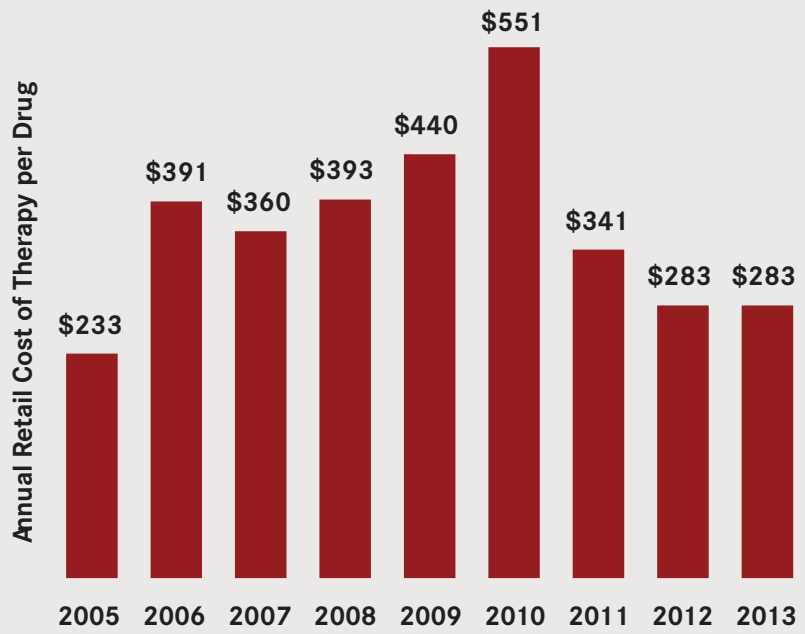
Almost two-thirds of older Americans take three or more prescription drugs in a given year.[11] If they used generic drugs to treat their chronic conditions, they would have experienced an average annual retail price of drug therapy of $849 for three drugs in 2013.

10 E. Oldfield, "After the Patent Cliff: Calm after the Storm," *Pharmacy Times*, July 11, 2014.

11 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 Retail Price of Widely Used Generic Drugs Was $283 in 2013



Note: Calculations of the average annual generic drug price of therapy include the 192 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.*

It is noteworthy that the average annual retail price of therapy for widely used brand name drugs is considerably higher than the average annual retail cost of therapy for widely used generic drugs, and that the price differential between these two market baskets is growing rapidly. In 2013, the average annual price of therapy for brand name prescription drugs was more than 10 times higher than the average annual price of therapy for generic prescription drugs ($2,960 vs. $283 respectively).[12]

Figure 4 shows the annual price of therapy for both brands and generics in the past 4 years (2010 to 2013). While the average annual generic price of therapy has declined by about 50 percent ($551 to $283), the average annual brand price of therapy has increased by about 50 percent ($2,068 to $2,960). Consequently, the differential price between brands and generics has grown from about 4 to 1, as seen in 2010, to more than 10 to 1 as seen in 2013.

2.2. EIGHT-YEAR CUMULATIVE RETAIL PRICE CHANGES FOR MOST WIDELY USED GENERIC PRESCRIPTION DRUGS, 2006 TO 2013

This AARP report tracked generic drug prices at the retail level for the 8-year period from December 31, 2005, to December 31, 2013. Sixty percent (168 of 280) of the widely used drugs in the generic market basket were on the market for the entire 8-year period (i.e., the end of 2005 through the end of 2013). About 60 percent (103 of 168) of those drug products were used to treat chronic conditions and they were used to analyze the 8-year price trends among widely used generic drug products.

Cumulatively, the average retail price for these 103 widely used generic drug products decreased 22.7 percent over 8 years, compared with an 18.4 percent increase for general inflation in the same period.[13]

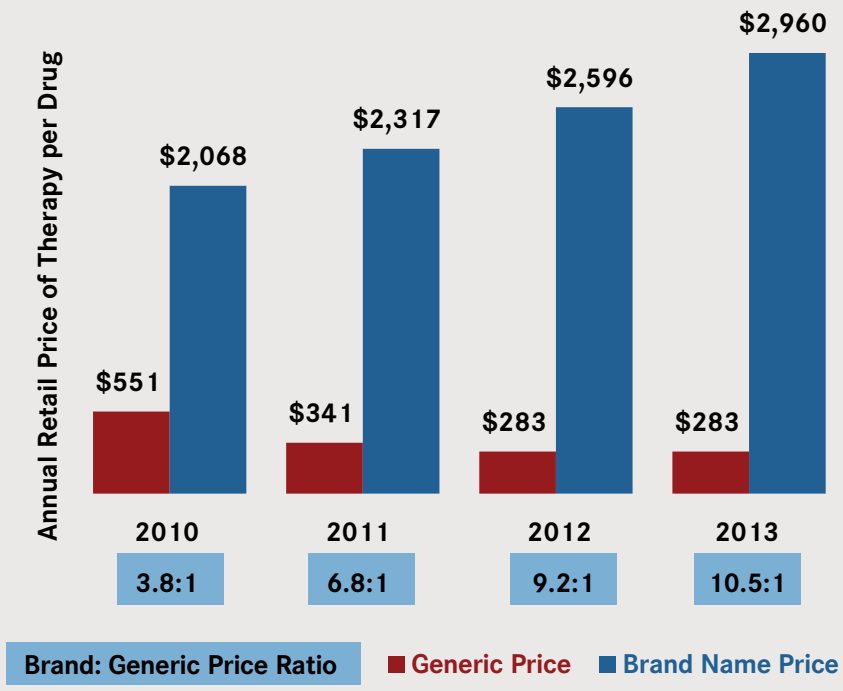
Furthermore, the 8-year cumulative decrease in the average annual price of therapy for these widely used generic drug products was $83 at the

12 S.W. Schondelmeyer and L. Purvis, "Rx Price Watch Report: Trends in Retail Prices of Brand Name Prescription Drugs Widely Used by Older Americans: 2006 to 2013," AARP Public Policy Institute, November 2014.

13 The average 8-year cumulative growth rate in retail prices for the 168 generic drug products (both chronic and acute use) that were on the market for the entire 8 years was -17.3 percent, similar to the cumulative price decrease of 22.7 percent seen after removal of drug products used for acute conditions.

Figure 4

The Average Annual Retail Price of Therapy for Brand Name Drugs Is More than 10 Times Higher than the Average Annual Retail Price of Therapy for Generic Drugs in 2013



Note: Calculations of average annual drug price of therapy include the 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.*

end of 2013. For a consumer who takes three generic medications, this translates into an average decrease in therapy price of $249 between December 31, 2005, and December 31, 2013. This decrease in therapy price does not capture the substantial savings a consumer receives initially by switching from a brand name product to a generic product once the brand name drug loses its patent.

2.3. A WIDE RANGE OF GENERIC DRUG PRICE CHANGES OCCURRED IN 2013

All but two of the 280 most widely used generic prescription drug products in this study's market basket had a retail price change in 2013 (Figure 5).

In 2013, the annual retail price decreased for 203 (73 percent) of the 280 most widely used generic drug products. Of the 203 generic drug products with an annual retail price decrease:

- One hundred (36 percent) had a price decrease between 0.2 percent and 9.9 percent;
- Ninety-three (33 percent) had a price decrease between 10.0 percent and 29.9 percent; and
- Ten (4 percent) had a price decrease between 30.0 percent and 75.7 percent.

Annual retail prices increased for 75 (27 percent) of the 280 most widely used generic drug products; all but nine of these increases exceeded the rate of general inflation (1.5 percent) in 2013.

Some of the retail price increases among the market basket of widely used generic prescription drug products were substantial. Eleven generic drug products (4 percent) had annual retail price increases of 30.0 percent or more, which was more than 10 times the rate of inflation in 2013:

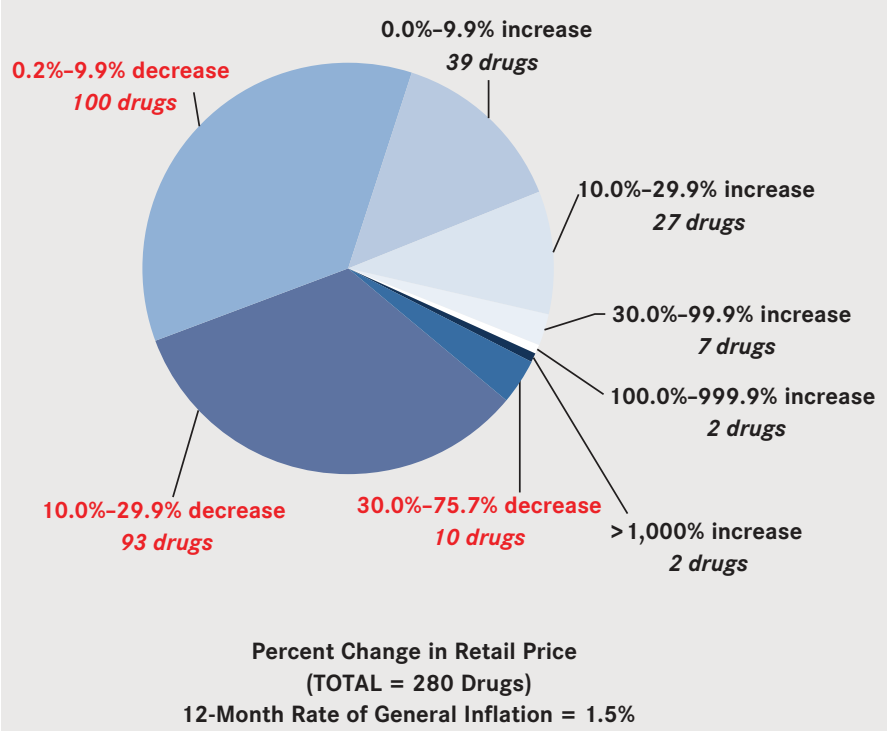
- Seven (3 percent) increased by 30.0 percent to 99.9 percent;
- Two (1 percent) increased by 100.0 percent to 999.9 percent; and
- Two (1 percent) increased by more than 1,000.0 percent.

The two generic drug products with the highest retail price increases were both anti-infective agents used to prevent infection.

Ten of the 280 widely used generic drug products had retail price decreases of greater than 30 percent in 2013 (Figure 6).

Figure 5

More than One-Quarter of the Most Widely Used Generic Drugs Had Retail Price Increases in 2013



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

One generic drug product (vitamin D [ergocalciferol] 50,000 unit capsules) had a price decrease of 76.8 percent in 2013.

Eleven widely used generic drug products had retail price increases that were greater than 30.0 percent in 2013 (Figure 7). Two of these widely used generic drug products had retail price increases that exceeded 1,000 percent.

All of the 25 top-selling generic drug products in the market basket had retail price changes in 2013 (Table 1). Six of these top-selling generic drug products had a price increase in 2013; one of the top 25 drug products (losartan potassium 100 mg tablet) had a price increase of 21.0 percent in 2013.

The remaining generic drug products (19 of 25) among the top 25 had price decreases in 2013. One of the top 25 drug products (amlodipine besylate-benazepril HCl 5–20 mg capsule) had a price decrease of 31.8 percent in 2013.

2.4. RETAIL PRICE CHANGES FOR MOST WIDELY USED GENERIC PRESCRIPTION DRUGS BY MANUFACTURER

Twenty-six drug manufacturers[14] had at least two drug products in the study's market basket of 280 widely used generic drugs. These 26 manufacturers supplied 266 drug products that accounted for more than 94 percent of the generic drug sales and prescriptions dispensed among the overall market basket of 280 generic drugs. Another 14 drug products from 14 different generic drug firms with one drug product per firm were grouped together in an "All Others" category, resulting in 27 reported drug manufacturer categories.

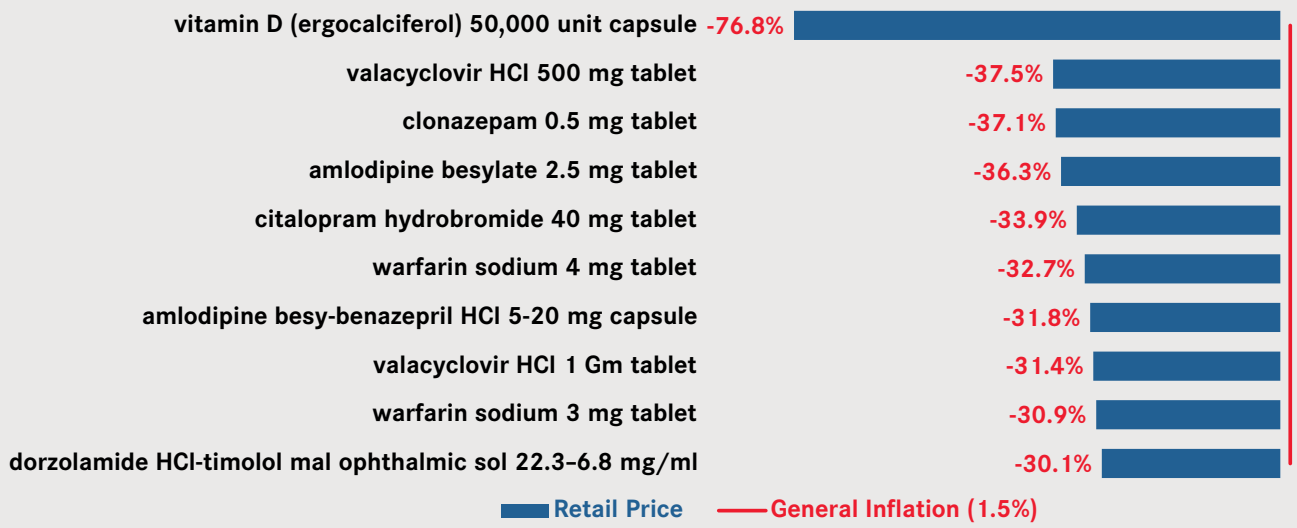
The weighted average annual change in price decreased for all but five drug manufacturers in 2013 (Figure 8), indicating that most generic drug manufacturers decreased rather than increased the prices for their generic drug products in the 2013 market basket.

However, it is noteworthy that among the five drug manufacturers who did have an average annual generic price increase at the retail level, their price increases were quite substantial.

14 If a listed manufacturer is a division of another firm, its drugs are considered as being marketed 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.

Figure 6

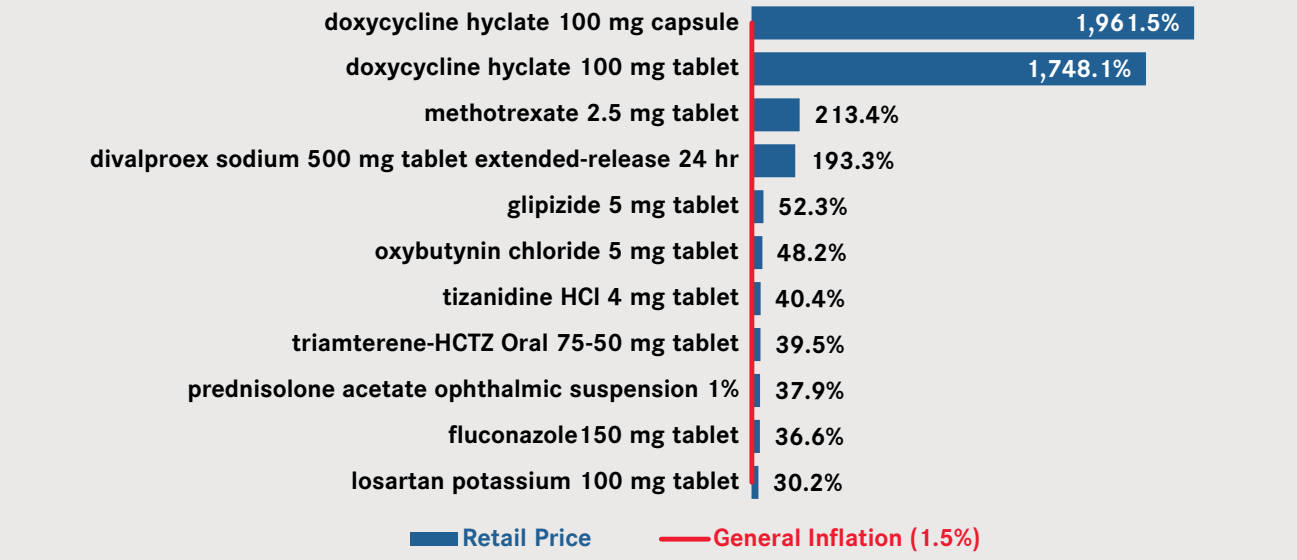
Ten Widely Used Generic Drug Products Had Retail Price Decreases of More than 30 Percent in 2013



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

Figure 7

Eleven Widely Used Generic Drugs Had 1-Year Retail Price Increases of More than 30 Percent in 2013



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

Table 1

All of the Top 25 Drug Products in the Generic Market Basket Had a Retail Price Change 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	donepezil HCl 10 mg tablet	1,000	Greenstone	Antidementia Agents	0.54	-15.0
2	omeprazole 20 mg capsule DR	1,000	Dr. Reddy's Laboratories	Ulcer Drugs (PPIs)	0.40	1.7
3	lansoprazole 30 mg capsule DR	90	Mylan	Ulcer Drugs (PPIs)	1.98	6.0
4	tamsulosin HCl 0.4 mg capsule	100	Zydus Pharmaceuticals	Prostatic Hypertrophy Agents	0.44	-24.7
5	pantoprazole sodium 40 mg tablet DR	90	Teva Pharmaceuticals	Ulcer Drugs (PPIs)	0.54	9.5
6	fluticasone propionate nasal suspension 50 mcg/act	16	Roxane	Nasal Steroids	0.75	-10.0
7	simvastatin 40 mg tablet	1,000	Teva Pharmaceuticals	Cholesterol Agents (HMG CoA)	0.29	-11.7
8	simvastatin 20 mg tablet	1,000	Teva Pharmaceuticals	Cholesterol Agents (HMG CoA)	0.25	-7.1
9	venlafaxine HCl 75 mg capsule ER 24 hr	90	Teva Pharmaceuticals	Antidepressants (SNRIs)	0.67	-20.5
10	venlafaxine HCl 150 mg capsule ER 24 hr	90	Teva Pharmaceuticals	Antidepressants (SNRIs)	0.47	-11.0
11	amlodipine besylate 5 mg tablet	90	Greenstone	Antihypertensives (CCBs)	0.22	-2.7
12	finasteride 5 mg tablet	90	Dr. Reddy's Laboratories	Prostatic Hypertrophy Agents	0.76	-16.2
13	zolpidem tartrate ER 12.5 mg tablet ER	100	Winthrop	Sedatives	3.23	-14.8
14	amlodipine besylate 10 mg tablet	90	Greenstone	Antihypertensives (CCBs)	0.25	5.0
15	budesonide 3 mg capsule ER 24 hr	100	Par	Corticosteroids	35.08	-4.9
16	bupropion HCl ER (XL) 300 mg tablet 24 hr	30	Watson Labs	Antidepressants (Misc.)	1.04	-13.0
17	omeprazole 40 mg capsule DR	30	Mylan	Ulcer Drugs (PPIs)	0.79	10.5
18	donepezil HCl 5 mg tablet	30	Ranbaxy Pharmaceuticals	Antidementia Agents	0.21	-28.0
19	amlodipine besylate-benazepril HCl 5–20 mg capsule	100	Par	Antihypertensives (Comb.)	1.06	-31.8
20	losartan potassium 100 mg tablet	100	Zydus Pharmaceuticals	Antihypertensives (ARBs)	0.87	21.0
21	Klor-Con M 20 meq tablet ER	100	Upsher-Smith	Mineral & Electrolytes	0.88	-8.4
22	gabapentin 300 mg capsule	100	Amneal Pharmaceuticals	Anticonvulsants	0.48	-8.1
23	fentanyl transdermal patch 100 mcg/hr 72 hr	5	Mylan	Analgesics (Opioid)	7.73	-8.7
24	fenofibrate 160 mg tablet	90	Global Pharmaceutical Corp	Cholesterol Agents (Misc.)	1.82	0.2
25	oxycodone-acetaminophen 10–325 mg tablet	100	Watson Labs	Analgesics (Opioid)	3.14	-2.5
				GENERAL RATE OF INFLATION (as measured by growth in CPI-U)		1.5%

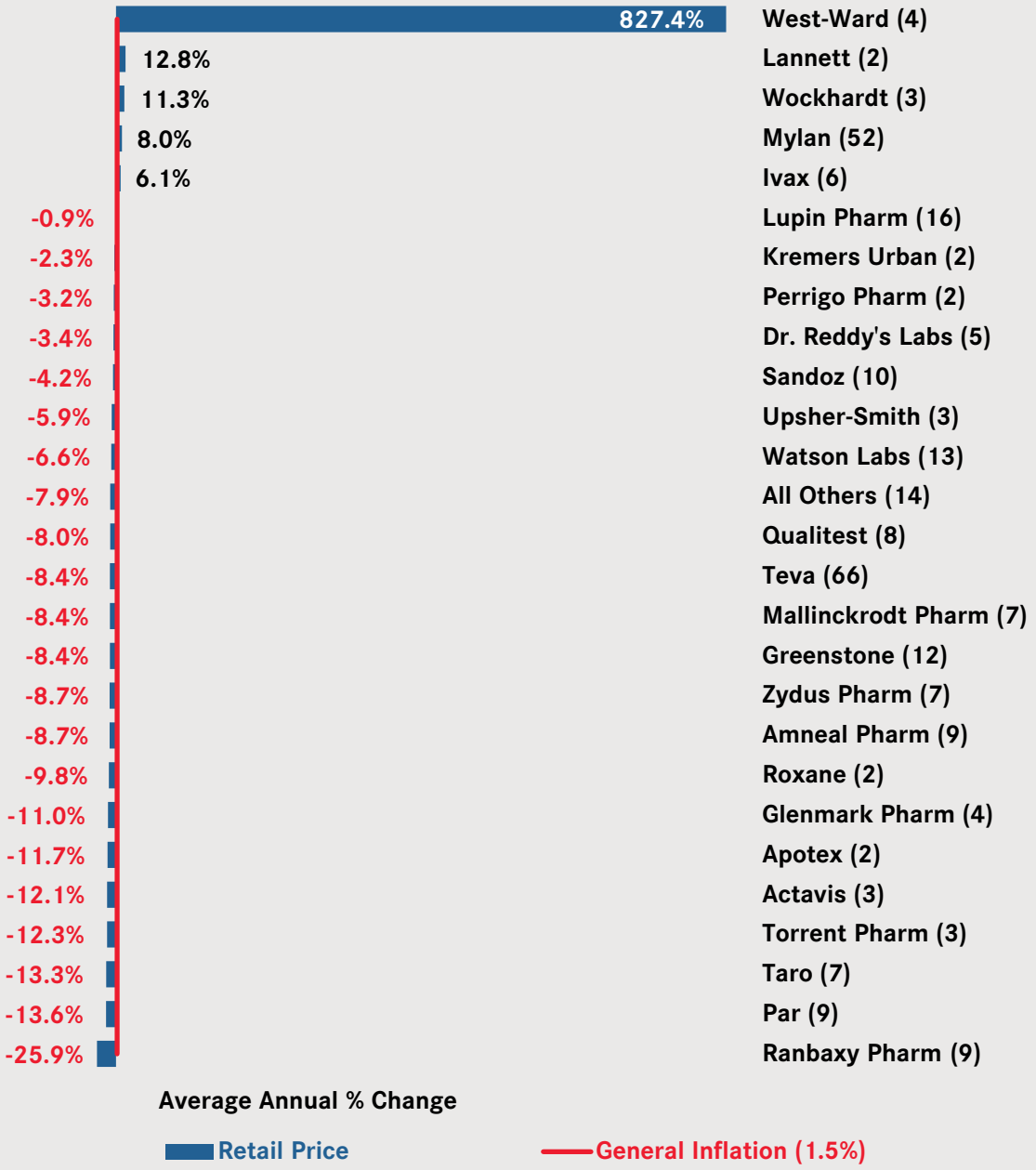
**Ranking based on 2011 spending data provided by the Truven Health MarketScan® Research Databases and a Medicare Part D plan provider.*

See Appendix A; also see Appendix B 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.*

Figure 8

Retail Prices for Widely Used Generic Drug Products Increased by More than 800 Percent for One Manufacturer in 2013



Note: Calculations of the average annual generic drug price change include the 280 drug products most widely used by older Americans (see Appendix A). Manufacturers with only one drug product in the market basket of 280 most widely used generic 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.*

- All five of the drug manufacturers with weighted average annual retail price increases had price increases of more than 5 percent in 2013—which is more than three times the rate of general inflation (1.5 percent) in 2013.
  - One drug manufacturer—West-Ward—had an average annual price increase of 827.4 percent, more than 60 times higher than any other drug manufacturer with an average annual retail price increase.

Twenty-two drug manufacturer groups—21 drug manufacturers with two or more drug products in the market basket and the 14 drug manufacturers in the "All Other" category—had weighted average generic drug price decreases in 2013. These price decreases mean that the retail generic drug change was well below the rate of general inflation (1.5 percent increase) in 2013.

- These 22 drug manufacturer groups with average price decreases represent 83 percent (231 of 280) of the generic drug products in the market basket in 2013.

Over one-quarter of the drug manufacturers (7 of 26) had average annual retail price decreases of more than 10 percent in 2013 for their generic drug products in the market basket.

- One manufacturer—Ranbaxy Pharmaceuticals—had an average price decrease of 25.9 percent.

2.5. RETAIL PRICE CHANGES FOR MOST WIDELY USED GENERIC PRESCRIPTION DRUGS BY THERAPEUTIC CATEGORY

Thirty-nine therapeutic categories,[15] each containing two or more drug products from the generic market basket, together accounted for 263 of the total 280 drug products in the market basket. The remaining 17 drug products with other therapeutic uses were grouped together in an "Other Therapeutic Agents" category, resulting in a total of 40 reported therapeutic categories.

Seven of the 40 therapeutic categories of generic drug products in the market basket had increases in average retail prices in 2013. All seven of the categories with price increases had increases that exceeded the rate of general inflation (1.5 percent) during 2013 (Figure 9).

- Five therapeutic categories had average annual price increases of more than 5 percent in 2013, which is more than three times the rate of general inflation.
  - The therapeutic category with the highest generic drug price increase—anti-infective agents used to prevent infection—had an average annual retail price increase of 44.1 percent in 2013.

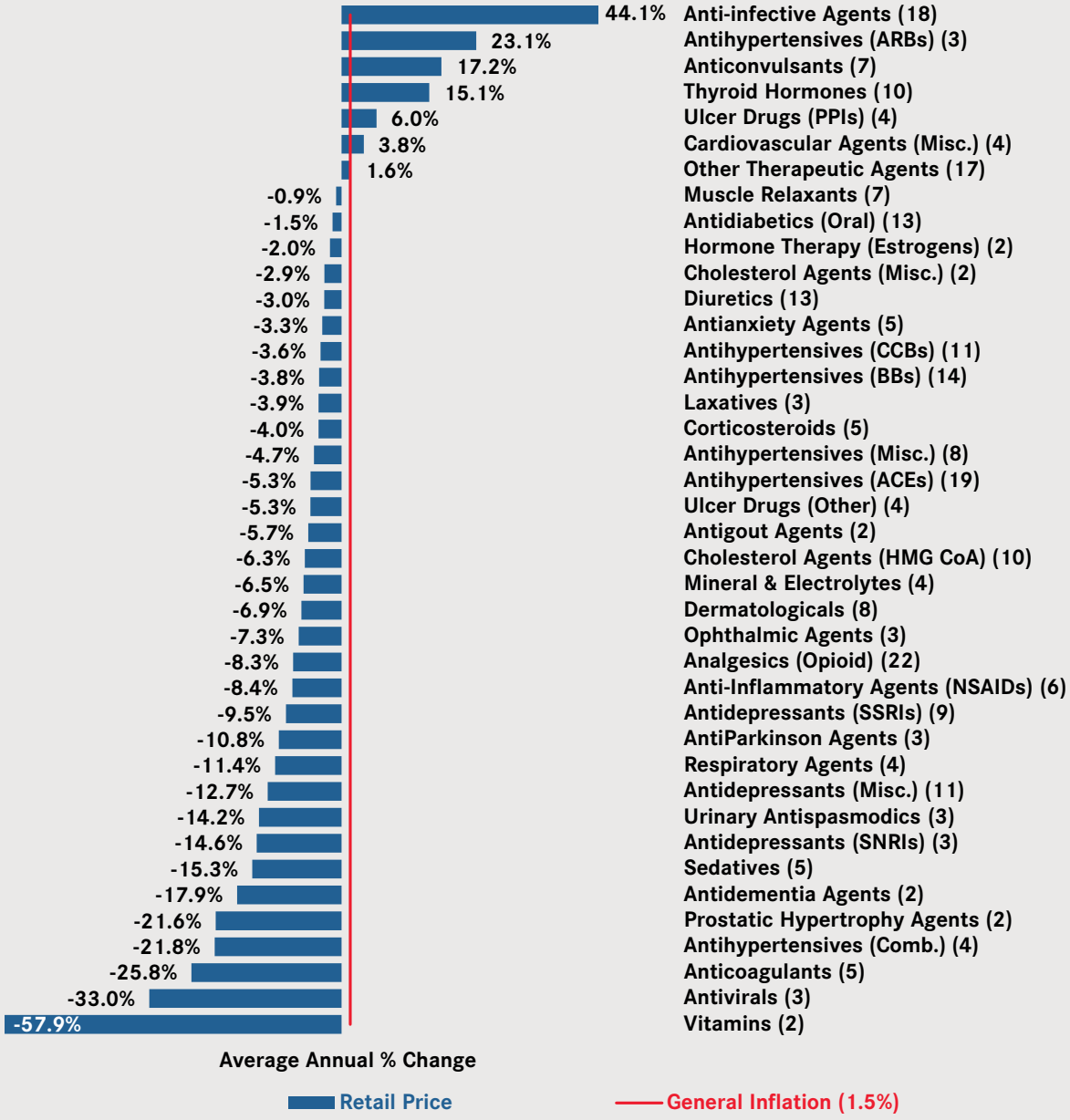
Generic drug prices at the retail level decreased in 2013 for 33 of the 40 therapeutic categories examined in this study.

- Twenty-one of the 33 therapeutic categories had decreases in average retail prices of less than 10 percent during 2013. Another seven therapeutic categories had average retail price decreases of between 10 percent and 19.9 percent during the same time period.
- Five therapeutic categories had retail price decreases of 20 percent or more—prostatic hypertrophy agents, antihypertensives (combination products), anticoagulants, antivirals, and vitamins.
  - One therapeutic category—vitamins—had an average retail price decrease of 57.9 percent in 2013.

15 The therapeutic categories used in this study were assigned based on an intermediate level of the GPI code that specifies the groupings of similar chemical entities such as "Calcium Channel Blockers." When two or more drug products at the NDC level in the market basket were in the same intermediate GPI code category, the category was reported separately in the therapeutic category analysis.

Figure 9

Seven Therapeutic Categories for Generic Drugs Had Retail Price Increases that Exceeded the Rate of General Inflation in 2013



Note: Calculations of the average annual generic drug price change include the 280 drug products most widely used by older Americans (see Appendix A). Some therapeutic categories with only one drug product in the market basket of 280 most widely used generic prescription drugs were grouped together in the "other therapeutic agents" category. See Appendix B for an 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.*

3. Concluding Observations

The findings of this report show that the retail prices of many of the generic drug products in the market basket are decreasing. Some of these decreases are substantial. However, there are also a number of generic drug products with substantial price increases. Some of the generic price increases were over 100 percent and a few were over 1,000 percent. In combination with a slowing overall generic price trend, it appears that the era of consistent generic drug price decreases is coming to an end.

These findings also highlight the unique pricing dynamics in the generic drug market. While the retail prices for 280 generic prescription drugs widely used by Medicare beneficiaries fell by an average of 4.0 percent in 2013, a previous Rx Price Watch report found that the retail prices for 227 brand name prescription drugs most widely used by Medicare beneficiaries increased by an average of 12.9 percent over the same time period.

Generic drugs have long been a means of helping consumers and third-party payers manage and reduce prescription drug costs.[16] Generic drugs now account for more than three-quarters of all retail prescriptions filled in the United States,[17] and analysts have consistently linked the increased use of generic drugs to a recent deceleration in prescription drug spending growth.[18] The availability of less expensive generic drugs will take on added importance as an increasing number of brand name drugs and biologicals enter the market with unusually high prices.[19]

16 A generic drug is defined by the U.S. Food and Drug Administration (FDA) as a "chemical clone" that has the same active ingredients as its FDA-approved brand name counterpart and that can be expected to have the same therapeutic effect as its brand name counterpart (FDA, Center for Drug Evaluation and Research, *From Test Tube to Patient: Improving Health through Human Drugs*, September 1999). For the purposes of this analysis, a generic drug is any FDA-approved product that is therapeutically equivalent to a product marketed by the original new drug application (NDA) holder. For the most part, this includes products with an abbreviated NDA (ANDA). It also includes some products that have an NDA that was not the original NDA for the chemical entity, as well as "branded generics" (i.e., generic drug products that are marketed using a brand name [e.g., Levoxyl 100 mcg tablets]).

17 Generic Pharmaceutical Association, *Generic Drugs Savings in the U.S.: Sixth Annual Edition: 2014*, August 2014.

18 Ibid. See also M. Hartman, A.B. Martin, D. Lassman, A. Catlin, and the National Health Expenditure Accounts Team, "National Health Spending in 2013: Growth Slows, Remains in Step with the Overall Economy," *Health Affairs*, Vol. 34(1) (2015): 150–60; and G.T. Schumock, E.C. Li, K.J. Suda, L.M. Matusiak, R.J. Hunkler, L.C. Vermeulen, and J.M. Hoffman, "National Trends in Prescription Drug Expenditures and Projections for 2014," *American Journal of Health-System Pharmacy*, Vol. 71 (2014): e6–e23.

19 P.B. Bach, "Why Drugs Cost So Much," *New York Times*, January 14, 2015.

Appendix A. Detailed Methodology and Description of Retail Price Data

This appendix describes in detail how brand name, 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. The reports include 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.[1] In 2009, AARP and the *PRIME* Institute created an additional drug price index based on retail prices[2] from Truven Health's MarketScan® Commercial Database and MarketScan® Medicare Supplemental Database (Truven Health MarketScan® Research Databases).[3] 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 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

1 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.

2 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.

3 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.

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 report 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,[4] 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 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

4 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): 207–14.

data to develop and rank a weighted master list by prescription volume and sales at the National Drug Code (NDC) level for the new AARP market baskets.

Our selection of the market basket of drugs to track the price index was a multistep 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,[5] 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 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, subcutaneous, 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

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

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 280 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 determine 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.[6] 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.[7] 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.[8]

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

7 Ibid.

8 Ibid.

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.[9] 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;
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 data sets 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 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.

9 Ibid.

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:

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

$$(2.0 + 2.0 + 2.0 + 2.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0)/12,$$

or

2.67 percent.[10]

Table A-1

Average Annual Percent Change in Price for Hypothetical Prescription Drug A, 2013

Period	Average Annual Change in Price (%)
Jan 12–Jan 13	2.0
Feb 12–Feb 13	2.0
Mar 12–Mar 13	2.0
Apr 12–Apr 13	2.0
May 12–May 13	3.0
Jun 12–Jun 13	3.0
Jul 12–Jul 13	3.0
Aug 12–Aug 13	3.0
Sep 12–Sep 13	3.0
Oct 12–Oct 13	3.0
Nov 12–Nov 13	3.0
Dec 12–Dec 13	3.0
AVERAGE	2.67

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

Table A-2

Average Changes in Price and Cost of Therapy for 10 Hypothetical Prescription Drugs, 2013

Drug Name	Unweighted Average Change in		Share of Total Sales	Weighted Average Change in	
	Annual Price (%)	Cost of Therapy ($/year)		Annual Price (%)	Cost of Therapy ($/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

10 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).

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

(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,

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

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 the 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).

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

Table A-3

Recalculating Weights When Prescription Drugs Drop Out of the Sample

Drug Name	2011 Weights		2008 Weights	
	Share of Sales (%)	Value of Sales ($)	Value of Sales ($)	Share of 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

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. Therapeutic Category Acronyms

Therapeutic Category	Definition
Antidepressants (SNRIs)	SNRIs – Serotonin-Norepinephrine Reuptake Inhibitors
Antidepressants (SSRIs)	SSRIs – Selective Serotonin Reuptake Inhibitors
Antihypertensives (ACEs)	ACEs – Angiotensin Converting Enzyme
Antihypertensives (ARBs)	ARBs – Angiotensin II Receptor Blockers
Antihypertensives (BBs)	BBs – Beta Blockers
Antihypertensives (CCBs)	CCBs – Calcium Channel Blockers
Anti-Inflammatory Agents (NSAIDs)	NSAIDs – Non-Steroidal Anti-Inflammatories
Cholesterol Agents (HMG CoAs)	HMG CoAs – HMG CoA Reductase Inhibitors
Ulcer Drugs (PPIs)	PPIs – Proton Pump Inhibitors

Rx Price Watch 2015-06, May 2015

601 E Street, NW
Washington DC 20049
Follow us on Twitter @AARPPolicy
on facebook.com/AARPpolicy
www.aarp.org/ppi

For more reports from the Public Policy Institute, visit http://www.aarp.org/ppi/.

AARP®
Real Possibilities

Public Policy Institute