

Rx Price Watch Report

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

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AARP's Public Policy Institute (PPI) 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.

The views expressed herein are for information, debate, and discussion, and do not necessarily represent official policies of AARP.

Table of Contents

INTRODUCTION	1
FINDINGS	3
I. Prices Trends for Most Widely Used Prescription Drugs	3
<i>The Cost of Prescription Drug Therapy Reached \$11,341 Per Drug Per Year in 2013</i>	6
II. Eight-Year Cumulative Retail Price Changes for Most Widely Used Prescription Drugs, 2006 to 2013.....	7
CONCLUDING OBSERVATIONS	8
APPENDIX A: OVERVIEW OF COMBINED MARKET BASKET OF DRUG PRODUCTS	9
APPENDIX B: DETAILED METHODOLOGY AND DESCRIPTION OF RETAIL PRICE DATA	10
Overview	10
Defining Brand, Generic, and Specialty Pharmaceuticals	11
Creating the Market Basket of Drugs.....	11
Monitoring Retail Drug Prices.....	13
<i>Retail Data Description</i>	13
Calculating Annual Price Changes for Each Drug	14
Calculating Aggregate Average Price Changes across Multiple Drugs.....	15
Calculating Average Price Changes across Multiple Drugs for Years before 2011.....	16
Calculating Annual Cost of Therapy for a Drug Product	17
Defining Manufacturer	17
Defining Therapeutic Category.....	17

Figures

Figure 1	Average Annual Prescription Drug Price Change Substantially Higher in 2013	3
Figure 2	Rolling Average and Point-to-Point Changes in Retail Prices Have Consistently Exceeded Rate of General Inflation since Mid-2007	4
Figure 3	Components of Annual Percentage Change in Retail Prices in AARP Combined Market Basket of Most Widely Used Prescription Drugs, 2006 to 2013.....	5
Figure 4	Average Annual Price of Widely Used Prescription Drugs Grew Substantially between 2005 and 2013.....	6

Tables

Table 1	Characteristics of Drugs Widely Used by Older Americans	9
Table A-1	Average Annual Percent Change in Price for Hypothetical Prescription Drug A, 2013.....	15
Table A-2	Average Changes in Price and Cost of Therapy for 10 Hypothetical Prescription Drugs, 2013	15
Table A-3	Recalculating Weights When Prescription Drugs Drop out of the Sample	17

Introduction

Retail prices for a combined set of widely used prescription drugs consistently increased faster than general inflation in every year from 2006 to 2013. For a consumer who takes a prescription drug on a chronic basis, this translates into an annual cost of therapy of over \$11,000 in 2013. These findings are entirely attributable to strong drug price growth among brand name and specialty drugs, which more than offset substantial price decreases among generic drugs.

AARP's Public Policy Institute finds that average price increases for 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. Prescription drug prices have routinely increased much faster than general inflation over the more than 10 years that AARP has been publishing this report series.¹

In 2013, the average annual increase in retail prices for AARP's combined market basket—which included 622 brand name and generic versions of traditional and specialty prescription drugs widely used by Medicare beneficiaries—was 9.4 percent. The general inflation rate was 1.5 percent over the same time period.

Increases in the retail price of 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 AARP combined market basket used in this study, was over \$11,000 per year. This average annual cost was almost three-quarters of the average Social Security retirement benefit (\$15,526).² It was also almost half of the median income for Medicare beneficiaries (\$23,500)³ and more than one-fifth of the median US household income (\$52,250)⁴ over the same time period.

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.⁵ 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 coverage⁶ and, over time, higher drug prices could also lead to higher taxes and/or cuts to public programs to accommodate increased government spending.

- 1 The AARP Public Policy Institute in its Rx Price Watch series analyzes the price changes for three different segments of the pharmaceutical market: brand name, generic, and specialty drug products. These three market baskets have different mixes of drug manufacturers and drug products, and drug products in each market segment 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 of prescription drugs (i.e., brand name, generic, and specialty drug products combined) to reflect the overall market impact of drug price changes. Previous reports from this series are available 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 average monthly Social Security retirement benefit in 2013 was \$1,294 per month. Social Security Administration, *Annual Statistical Supplement to the Social Security Bulletin, 2015*, 2015, <https://www.socialsecurity.gov/policy/docs/statcomps/supplement/2015/5b.html#table5.b8>.
- 3 G. Jacobson, J. Huang, T. Neuman, and K.E. Smith, “Income and Assets of Medicare Beneficiaries, 2013–2030,” Kaiser Family Foundation, January 2014.
- 4 A. Noss, “Household Income: 2013, American Community Survey Briefs,” ACSBR/13-02, US Census Bureau, September 2014.
- 5 Medicare Payment Advisory Commission, *Report to the Congress: Medicare Payment Policy, Chapter 14: Status Report on Part D* ([Washington, DC]: Medicare Payment Advisory Commission, March 2014).
- 6 David I. Auerbach and Arthur L. Kellermann, “A Decade of Health Care Cost Growth Has Wiped Out Real Income Gains for an Average U.S. Family,” *Health Affairs* 30, no. 9 (2011): 1630–36.

Previous reports by the AARP Public Policy Institute have focused on retail price changes for traditional outpatient prescription drugs (both *brand name* and *generic drugs*) and *specialty* prescription drugs (also including both *brand name* and *generic drugs*). Separate analyses of the price changes for these groups of drugs are reported because these sets of drugs are typically made by different drug manufacturers and their prices are subject to different market dynamics, pricing, and related behaviors. However, it is also useful to view the average price change for the combined market basket of outpatient prescription

drugs widely used by older Americans in order to determine the trend across all types of prescription drugs.⁷

This report presents annual and 8-year cumulative price changes through the end of 2013, using both rolling average and point-to-point estimates (see Appendix B). The first set of findings shows *annual* rates of change in retail prices for widely used prescription drugs from 2006 through 2013. Additional findings summarize the *cumulative* impact of retail drug price changes that took place during the 8-year period from 2006 through 2013.

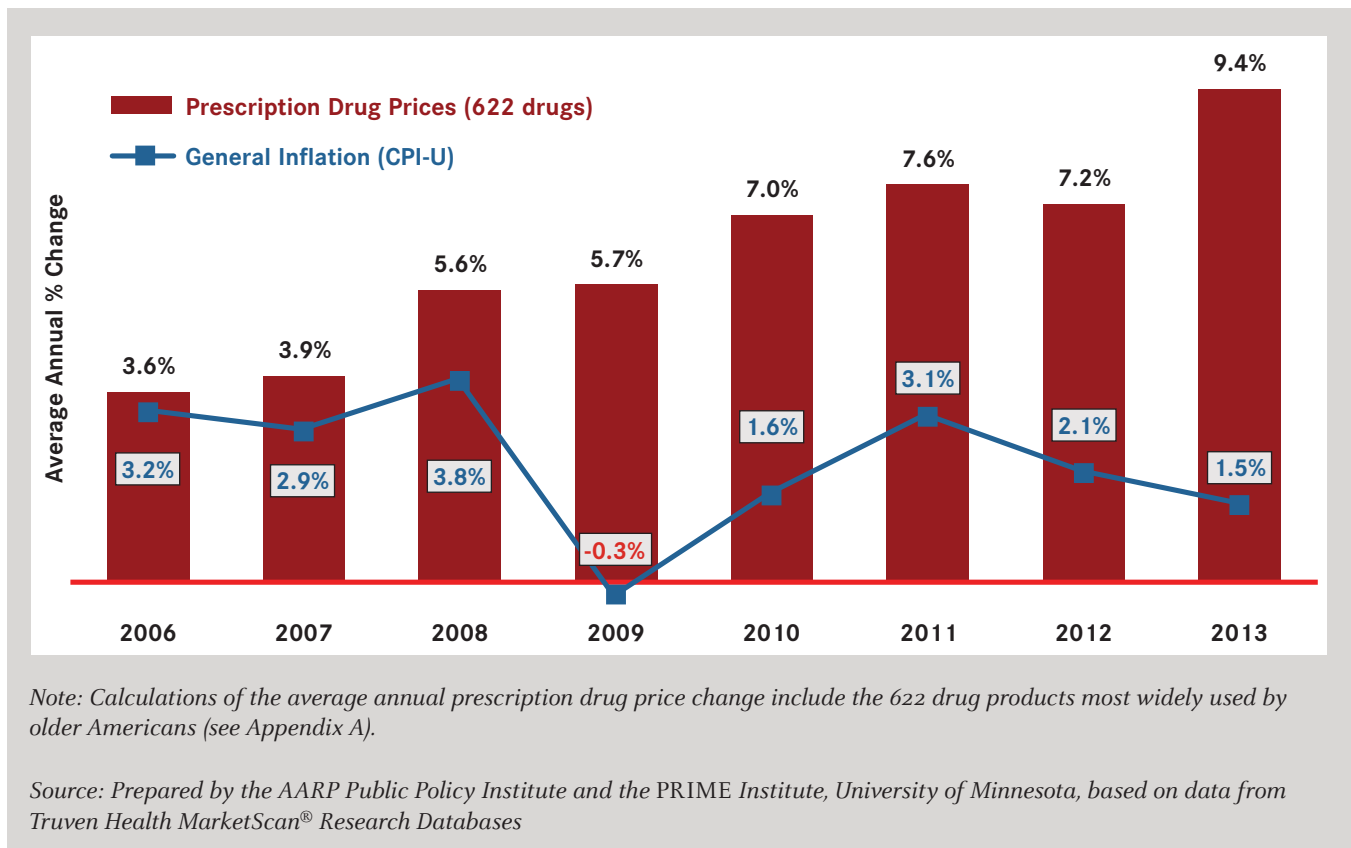
⁷ See Appendix A for a brief overview of the combined market basket.

FINDINGS

I. PRICES TRENDS FOR MOST WIDELY USED PRESCRIPTION DRUGS

- Retail prices for the AARP combined set of prescription drug products most widely used by older Americans rose 9.4 percent in 2013 (Figure 1).⁸
- The average annual retail price increase in 2013 for these 622 widely used prescription drugs was more than six times higher than the rate of general inflation (9.4 percent vs. 1.5 percent).⁹
- Two of the three market baskets (brand name and specialty drugs) experienced substantial price increases of 12.9 percent and 10.6 percent

Figure 1
Average Annual Prescription Drug Price Change Substantially Higher in 2013



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.

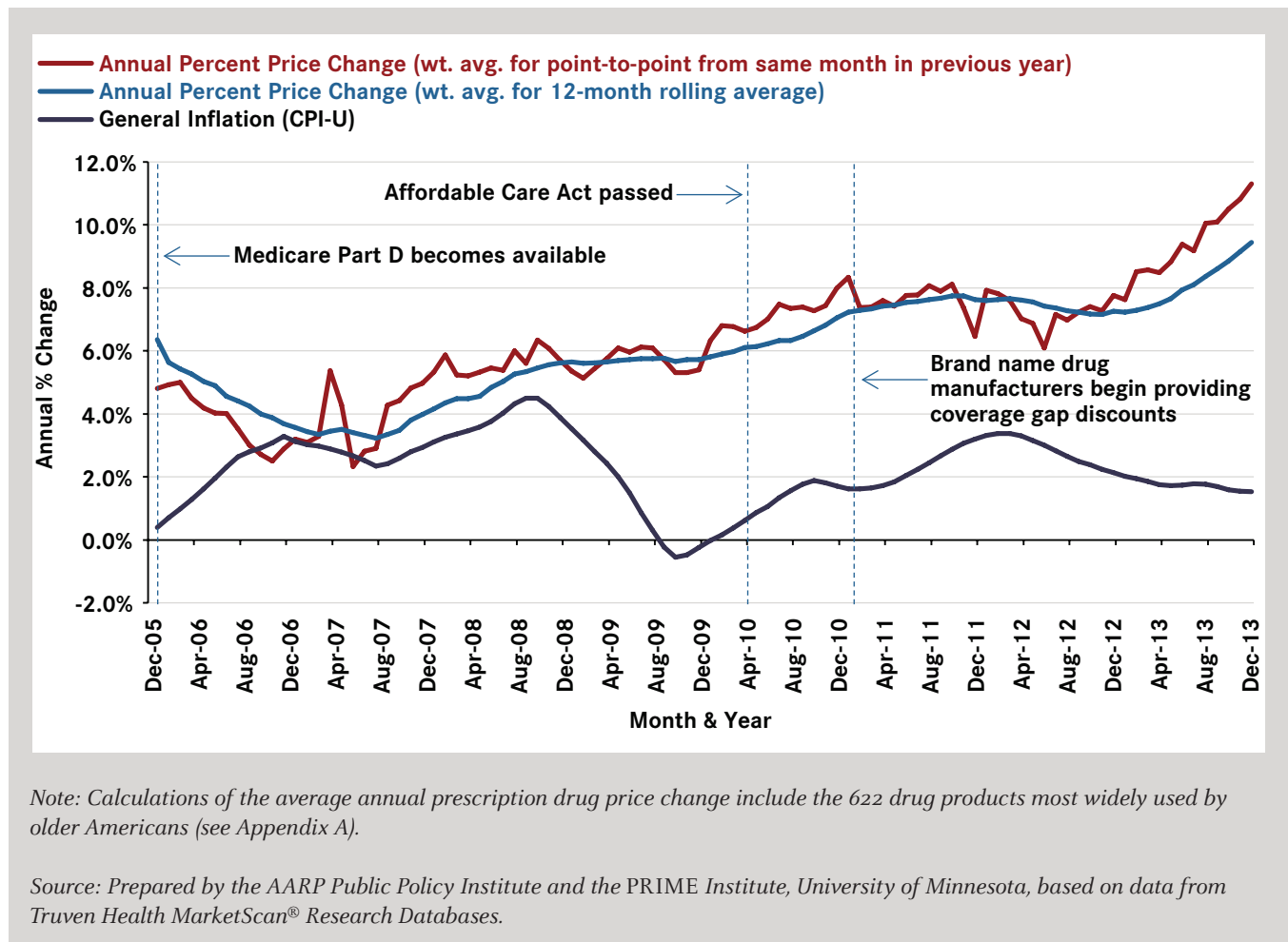
in 2013, while the third market basket (generic drugs) decreased 4.0 percent in 2013.¹⁰

- The AARP combined average annual increase in 2013 was substantially higher than the rates of increase for retail prices in 2006 through 2012, which ranged from 3.6 percent to 7.6 percent.
- The average annual increase in retail prices for the AARP combined set of drug products exceeded the corresponding rate of general inflation every year from 2006 through 2013.

The annual retail price change for the AARP combined set of prescription drug products reported in Figure 1 is a rolling average change. We calculate the change in prescription drug prices for each month compared with the same month in the previous year (referred to as an annual point-to-point change). We then average all the annual point-to-point price changes for each of the 12 months to produce a rolling average change.

Figure 2 shows the percentage change in prescription drug prices for each month compared with the same month in the previous year. This

Figure 2
Rolling Average and Point-to-Point Changes in Retail Prices Have Consistently Exceeded Rate of General Inflation since Mid-2007



10 Stephen.W. Schondelmeyer and Leigh Purvis, *Rx Price Watch Report: Trends in Retail Prices of Brand Name Prescription Drugs Widely Used by Medicare Beneficiaries, 2006 to 2013* ([Washington, DC]: AARP Public Policy Institute, November 2014); S.W. Schondelmeyer and L. Purvis, *Rx Price Watch Report: Trends in Retail Prices of Generic Prescription Drugs Widely Used by Medicare Beneficiaries, 2006 to 2013* ([Washington, DC]: AARP Public Policy Institute, May 2015); S.W. Schondelmeyer and L. Purvis, *Rx Price Watch Report: Trends in Retail Prices of Specialty Prescription Drugs Widely Used by Medicare Beneficiaries, 2006 to 2013* ([Washington, DC]: AARP Public Policy Institute, November 2015), <http://www.aarp.org/rxpricewatch>.

trend is shown alongside the 12-month rolling average to allow more detailed examination of the rate and timing of prescription drug price changes over the entire study period. This analysis reveals three broad trends in the AARP combined market basket of prescription drugs since implementation of the Medicare Part D program:

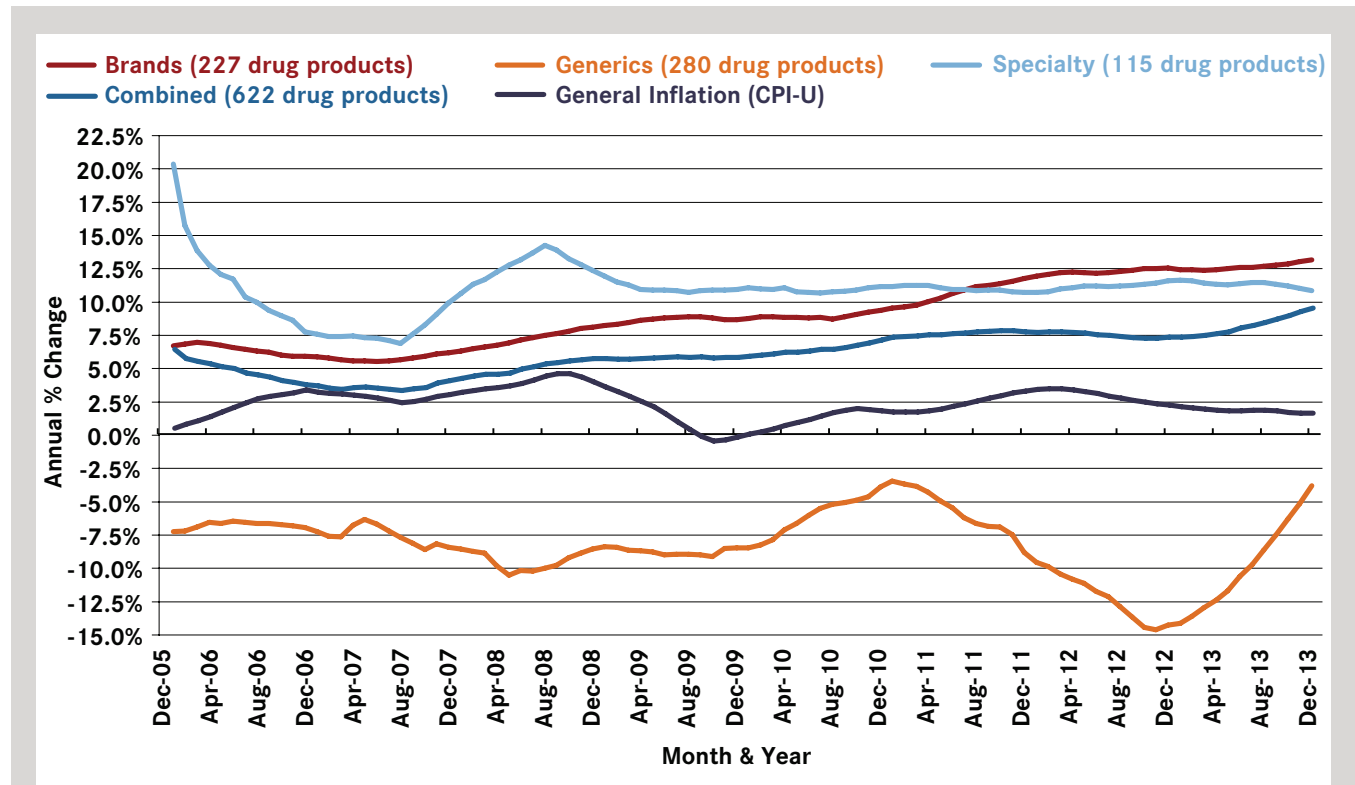
- Retail price changes for the AARP combined set of prescription drugs have consistently exceeded the rate of general inflation since mid-2007.
- The point-to-point average change in prices was briefly lower than the rate of inflation between October 2006 and December 2006, and again in June 2007. However, the rolling average change in prices has consistently

remained higher than the rate of general inflation between 2006 and 2013.

- The gap between the rate of prescription drug price change for the AARP combined market basket and the rate of change in general inflation has been accelerating since December 2012.

The annual trends seen in the combined market basket reflect retail price changes in the brand name, generic, and specialty market baskets. As Figure 3 shows, the rates of price increase in the brand name and specialty market baskets have, in general, substantially exceeded the rate of general inflation since at least January 2006. In contrast, on average, retail prices for generic drugs have been consistently declining (i.e., an average

Figure 3
Components of Annual Percentage Change in Retail Prices in AARP Combined Market Basket of Most Widely Used Prescription Drugs, 2006 to 2013



Note: Calculations of the average annual prescription drug price change include the 622 drug products most widely used by older Americans (see Appendix A).

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

negative change in the retail price) over the same time period. However, it is notable that the rates of price decreases in the generic market basket have slowed considerably since November 2012.

The marked decreases in average retail prices in the generic market basket that took place between 2007 and 2008 had a strong impact on the average annual increase in retail prices for the combined index, dropping the rate of increase near the rate of general inflation for almost 3 years. This finding is particularly striking given that generics already have comparatively low prices and represent a relatively small share (18.3 percent) of total drug expenditures in the AARP combined market basket. However, since 2009, the continued growth in drug prices for the brand name and specialty market baskets has more than offset decreases in retail prices for generics.

The Cost of Prescription Drug Therapy Reached \$11,341 Per Drug Per Year in 2013

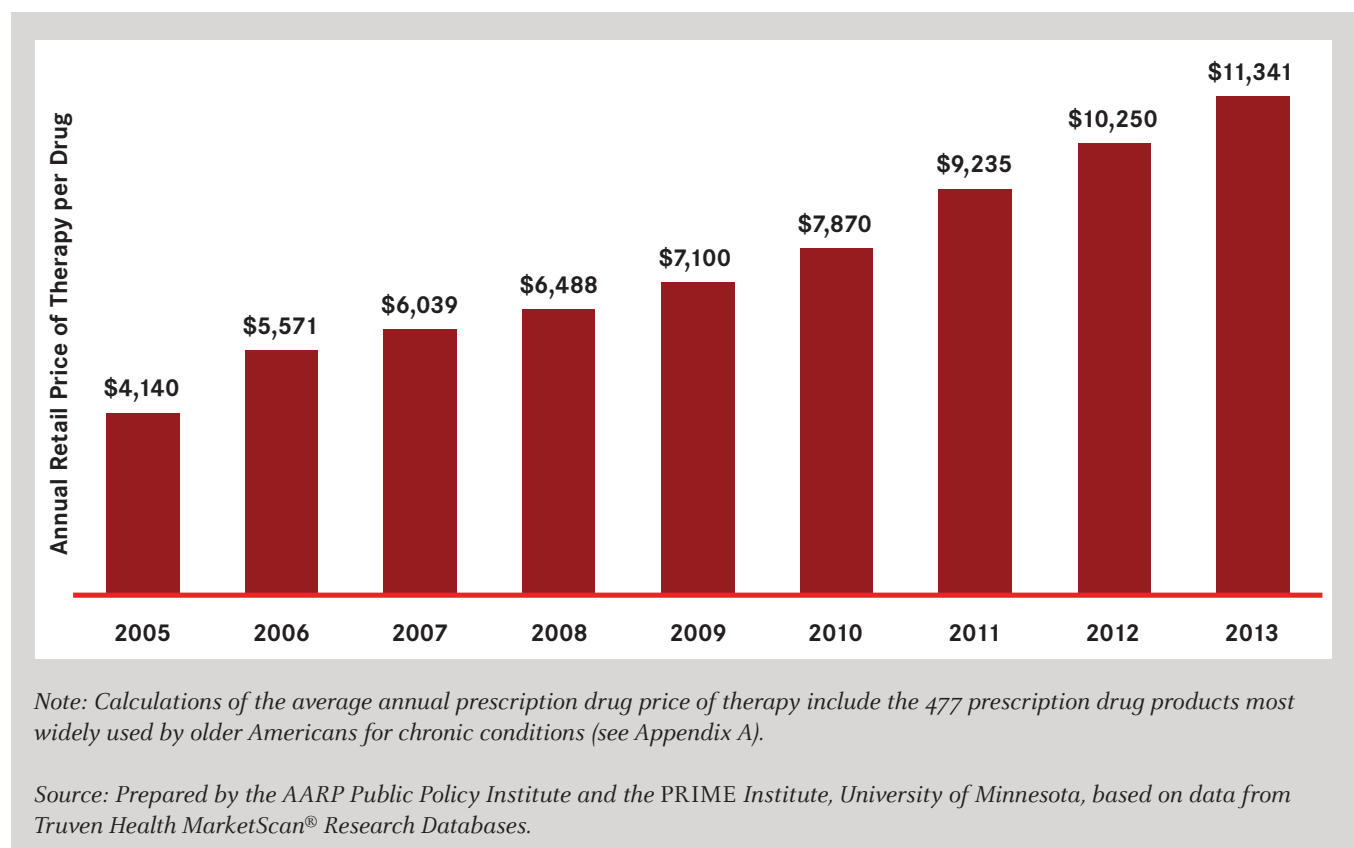
Figure 4 presents the retail price for 477 widely used prescription drugs indicated for treating chronic conditions (out of a total market basket of 622 drugs) when the price is expressed as an average annual cost of therapy per drug.

- The average annual cost of therapy was more than \$11,000 per drug per year for widely used prescription drugs at the end-payer (retail) level in 2013.
- This average annual cost (\$11,341) is more than twice the average annual cost (\$5,571) for a widely used prescription drug in 2006, the year Medicare implemented Part D.

The average price of therapy for the AARP combined market basket greatly exceeded the average price of therapy for the brand name and generic market baskets. The higher price of therapy for the combined market basket is due

Figure 4

Average Annual Price of Widely Used Prescription Drugs Grew Substantially between 2005 and 2013



to the markedly higher price level of specialty drug products.

- The average annual cost of therapy for widely used *brand name* drug products was \$2,960 in 2013.
- The average annual cost of therapy for widely used *generic* drug products was \$283 in 2013.
- The average annual cost of therapy for widely used *specialty* drug products was \$53,384 in 2013.

It is notable that the price differential between these three market baskets is growing rapidly. In 2013, the average annual price of therapy for specialty prescription drugs was 18 times higher than the average annual price of therapy for brand name prescription drugs (\$53,384 vs. \$2,960, respectively) and 189 times higher than the average annual price of therapy for generic prescription drugs (\$53,384 vs. \$283, respectively).¹¹

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

This AARP report tracked prescription drug prices at the retail level for the 8-year period from December 31, 2005, to December 31, 2013. Sixty-four percent (397 of 622) of the widely used drugs in the AARP combined market basket were on the market for the entire 8-year period (i.e., the end of 2005 through the end of 2013).

Cumulatively, the average retail price for these 397 widely used drug products increased 81.0 percent over 8 years, compared with an 18.4 percent increase in general inflation in the same period. This means that prescription drug prices increased almost four and a half times more than the rate of general inflation during this time period.

Seventy-six percent (300 of 397) of the drug products that have been on the market since the end of 2005 are used to treat chronic conditions. The average annual retail cost of drug therapy for prescription drug products on the market since the end of 2005 and used to treat chronic conditions was \$11,870 in 2013. This amount represents an increase of \$7,534 over the 2006 annual cost of \$4,336.

11 Schondelmeyer and Purvis, *Rx Price Watch Report: Brand Name Prescription Drugs*; Schondelmeyer and Purvis, *Rx Price Watch Report: Generic Prescription Drugs*.

CONCLUDING OBSERVATIONS

The findings of this report show that average annual increases in retail prices for widely used prescription drugs have exceeded the rate of general inflation. These findings are attributable entirely to drug price growth among brand name and specialty drugs, which more than offset often substantial price decreases among generic drugs. More importantly, the recent acceleration in overall prescription drug price growth could be an indication that we can no longer rely on lower-priced generics to counterbalance the price trends seen in the brand name and specialty prescription drug markets.¹²

Increases in the retail price of prescription drugs affect both patients and the larger economy. If recent trends in prescription drug prices and related price increases continue, it will almost undoubtedly become more difficult for patients

to access and afford necessary medications. This will lead to poorer health outcomes and higher health care costs in the future.¹³

Spending increases driven by high and growing prescription drug prices affect all Americans in some way. Those with private health insurance will pay higher premiums and/or cost sharing for their health care coverage¹⁴ and government programs will grow faster than the tax-based revenue that supports them, leading to higher taxes and/or cuts in public health or other programs.

Policy makers interested in reducing the impact of prescription drug prices should focus on options that drive innovation while also protecting the health and financial security of consumers and taxpayer-funded programs like Medicare and Medicaid.

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

13 Zachary A. Marcum, Mary Ann Sevick, and Steven M. Handler, "Medication Nonadherence: A Diagnosable and Treatable Medical Condition," *Journal of the American Medical Association* 309, no. 20 (2013): 2105-06.

14 Auerbach and Kellermann, "A Decade of Health Care Cost Growth."

Appendix A: Overview Of COMBINED MARKET BASKET of Drug Products

The AARP Public Policy Institute has been reporting manufacturer drug product price changes annually and quarterly since 2004. Previous reports by AARP 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. Following the implementation of the Medicare Part D program, we chose to develop a new market basket of drugs based on actual drug use in Medicare Part D plans during calendar year 2006. 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.

The brand name market basket for this price change study is composed of 227 drug products. The generic market basket is composed of 280 widely used generic drug products. The specialty market basket for this price change study is composed of 115 widely used specialty drug products.

There are 622 drug products in the overall (combined) market basket.¹⁵ Brand name prescription drugs consumed the majority of the expenditures (64.1 percent), while generic drugs were the vast majority of prescriptions dispensed (69.4 percent). Specialty drugs, not including any payments made under Medicare Parts A and B,¹⁶ represented 17.6 percent of expenditures and 1.2 percent of prescriptions (see Table 1).

Based on retail prescription drug prices from the Truven Health MarketScan® Research Databases,

Table 1
Characteristics of Drugs Widely Used by Older Americans

Type of Prescription	Share of Prescriptions	Share of Expenditures
Brand name	29.3%	64.1%
Generic	69.4%	18.3%
Specialty	1.2%	17.6%

Note: Retail price data 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. Totals may not sum due to rounding.

Source: PRIME Institute, University of Minnesota, based on 2011 data from the Truven Health MarketScan® Research Databases and a Medicare Part D plan provider.

price changes were determined by comparing the retail price for a drug product in a given month with the price for the same drug product in the same month in the previous year. A 12-month rolling average of these price changes was then calculated to determine an average annual price change.

Price changes for the three market baskets (brand, generic, and specialty) were combined using fixed weights proportional to the total expenditures for each market basket in 2011 (see "Share of Expenditures," Table 1). These weights remained fixed over time so that the combined index represented price changes and not changes in the mix of drugs prescribed and used.

15 In order to measure the impact of changes in retail price alone, the weights for drug products in this market basket are fixed over time. Drug products that enter the market as generics after 2011 are not included in this index. If drug products are withdrawn from the market, they are dropped from the market basket in subsequent periods and the weights of other drugs are proportionately adjusted.

16 Because the specialty market basket does not include drugs that fall under Medicare Parts A and B, these numbers do not reflect total specialty drug utilization and spending among Medicare beneficiaries.

Appendix B: 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.¹⁷ In 2009, AARP and the *PRIME* Institute created an additional drug price index based on retail prices¹⁸ from Truven Health's MarketScan[®] Commercial Database and MarketScan[®] Medicare Supplemental Database (Truven Health MarketScan[®] Research Databases).¹⁹ Thus, the report series uses the same market basket of 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 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

17 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 (MDDDB[®]). This commercial drug database has been published for more than 35 years. See <http://www.medispan.com>.

18 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.

19 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.

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,²⁰ 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 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.

20 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.

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,²¹ 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, 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

21 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®).

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 115 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.²² 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 1995.²³ 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.²⁴

The Truven Health MarketScan[®] Medicare Supplemental Database is composed of data from retirees with Medicare supplemental insurance sponsored by employers or unions.

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

23 Ibid.

24 Ibid.

In 2010, 14 percent of the 46.5 million Medicare beneficiaries received their drug benefits through a retiree coverage plan.²⁵ 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;
 - c. Total payment amount
 - d. Metric quantity
 - e. Ingredient cost
 - f. Days' supply
 - g. 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:

25 Ibid.

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

$$(2.0+2.0+2.0+2.0+3.0+3.0+3.0+3.0+3.0+3.0+3.0+3.0)/12, \text{ or } 2.67 \text{ percent.}^{26}$$

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

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

26 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).

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:

$$\begin{aligned}
 & (\text{Unweighted average price change for drug A} \times \\
 & \quad \text{drug A's share of total sales}) + \\
 & (\text{Unweighted average price change for drug B} \times \\
 & \quad \text{drug B's share of total sales}) + \\
 & (\text{Unweighted average price change for drug C} \times \\
 & \quad \text{drug C's share of total sales}) + \\
 & \quad \dots + \\
 & (\text{Unweighted average price change for drug J} \times \\
 & \quad \text{drug J's share of total sales}) \\
 & \quad \text{or,} \\
 & (2.67 \times 0.15) + (10.0 \times 0.14) + (2.67 \times 0.07) + \dots + \\
 & \quad (1.0 \times 0.02).
 \end{aligned}$$

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).

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

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%

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 one drug product (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.

Rx Price Watch 2016-03, February 2016

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