Rx Price Watch Report

Trends in Retail Prices of Specialty Prescription Drugs Widely Used by Older Americans, 2006 to 2020

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

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

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Executive Summary

Retail prices for widely used specialty prescription drugs increased substantially more than general inflation in every year from 2006 to 2020. Between 2019 and 2020, retail prices for 180 specialty prescription drugs widely used by older Americans, including Medicare beneficiaries, increased by an average of 4.8 percent. In contrast, the general inflation rate was 1.3 percent over the same period.

Specialty drugs treat conditions, such as cancer, rheumatoid arthritis, and multiple sclerosis. While there is no set definition for specialty drugs, the term generally includes drugs that are used to treat complex and chronic conditions, that require special administration and handling, or that require patient care management. Another notable characteristic is that they are among the most expensive drugs on the market, with prices that can reach hundreds of thousands of dollars per year.

Increases in the retail level price of specialty prescription drugs have a corresponding impact on the cost of drug therapy for the individual and for all other payers. In 2020, the average annual cost of therapy for a single specialty prescription drug, based on the market basket used in this study, was \$84,442 per year. This average annual cost was almost \$20,000 higher than the median US household income (\$65,712). The annual specialty drug cost was also nearly three times the median income for Medicare beneficiaries (\$29,650) and more than four and a half times higher than the average Social Security retirement benefit (\$18,530).

Notably, the average annual cost for one specialty medication used on a chronic basis would have been \$39,068 in 2020—more than \$45,000 lower—if the price changes for these products had been limited to general inflation between 2006 and 2020.

This analysis did not include five widely used specialty drug products that had unusually high prices and/or an extremely large one-time price increase during the study period. Had these

extreme outlier specialty drugs been included, the average annual cost for the products in our market basket would have been more than \$50,000 higher, at \$136,401 in 2020.

If recent specialty drug price trends continue unabated, an increasing number of vulnerable Americans will be unable to afford necessary specialty medications. Such developments will lead to poorer health outcomes and higher health care costs in the future.

OVERVIEW OF FINDINGS

- In 2020, prices for 180 widely used specialty prescription drugs increased by 4.8 percent, more than three and a half times faster than general inflation in 2020 (1.3 percent).
 - Despite being more than three and a half times higher than inflation, this was the slowest average annual price increase for widely used specialty prescription drugs since at least 2006.
- The average annual cost of therapy for a single specialty medication used on a chronic basis was more than \$84,000 in 2020.
- The average annual cost for one specialty medication used on a chronic basis would have been \$39,068 in 2020—more than \$45,000 lower—if the price changes for these products had been limited to general inflation from 2006 to 2020.
- In 2020, the average annual price of therapy for specialty prescription drugs was almost 13 times higher than the average annual price of therapy for brand name prescription drugs (\$84,442 v. \$6,604, respectively).
- Prices for 11 chronic-use specialty drugs that have been on the market since the beginning of the study (i.e., between January 2006 and December 2020) increased cumulatively by an average of 234.2 percent over 15 years. In contrast, general inflation in the US economy rose 32.0 percent during the same 15-year period.

- In 2020, nearly three-quarters (129 of 180) of the most widely used specialty drug products had retail price increases of more than double the rate of inflation in 2020 (1.3 percent).
- Prices for 93 percent (28 of 30) of drug manufacturers with at least two specialty drug products in the study's market basket increased faster than the rate of general inflation (1.3 percent) in 2020.
 - Eight drug manufacturers had average annual price increases for their specialty drugs of 5.2 percent or more during 2020—more than four times the rate of general inflation in 2020.
- Nearly three-quarters (22 of 30) of the therapeutic categories of specialty drug products had average annual price increases of 2.6 percent or greater—more than twice the rate of general inflation in 2020.

SPECIALTY PRESCRIPTION DRUG PRICES AND PRICE INCREASES AFFECT ALL AMERICANS

Until recently, relatively few patients used specialty drugs. However, there are strong indications that a much larger share of the population will use specialty prescription drugs in the future. This report shows that average annual increases in the prices of widely used specialty prescription drugs have consistently exceeded the general inflation rate. In addition, the annual retail price associated with widely used specialty drug products now far outstrips the entire annual earnings of many Americans.

High prescription drug prices and price increases translate into higher out-of-pocket costs, especially for consumers who pay a percentage of drug costs (coinsurance) rather than a fixed dollar amount (copayment). Higher prices can also be passed

along to consumers in the form of higher cost sharing, deductibles, and premiums.

Drug prices also affect taxpayer-funded programs like Medicare and Medicaid. For example, the Medicare Payment Advisory Commission (MedPAC) has consistently noted that drug price increases are a major factor driving Medicare Part D spending growth. Higher government spending driven by large price increases will affect all Americans in the form of higher taxes, cuts to public programs, or both.

Current market forces do not adequately protect against excessively high drug prices and price increases, and the resulting growth in pharmaceutical expenditures is not sustainable. While policy options should encourage meaningful pharmaceutical innovation, such options should be balanced with the impact that drug prices and expenditures have on the affordability of medications for consumers and other payers.

Pricing practices for specialty pharmaceuticals jeopardize the health and financial security of individual consumers and taxpayer-funded programs like Medicare and Medicaid. While specialty prescription drugs can provide substantial health benefits including improved health outcomes, their benefits are available only to those who can afford to use them.

This report is the latest in the AARP Public Policy Institute's *Rx Price Watch* series. Separate reports analyze price changes for widely used brand name and generic drug products. The series also analyzes the price changes 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.

Introduction

AARP's Public Policy Institute finds that average retail price increases for specialty prescription drugs widely used by older Americans, including Medicare beneficiaries, far outstripped the price increases for other consumer goods and services between 2006 and 2020. Specialty drug prices have regularly increased much faster than general inflation over the past 15 years—the entire period since the beginning of our report series on prescription drug prices in 2004.¹ Between 2019 and 2020, the average annual increase in retail prices² for 180 specialty prescription drugs (some are brand name and some are generic) widely used by older Americans was 4.8 percent. In contrast, the rate of general inflation in the US economy was 1.3 percent in 2020.

The market basket for these analyses originally included 185 specialty prescription drugs. However, 5 widely used specialty drug products³ had unusually high retail prices⁴ and/or an

extremely large one-time price increase. Because these retail prices and price changes were extreme outliers and substantially distorted the overall trends, we excluded these 5 specialty drug products from all analyses. Therefore, the market basket for specialty drugs used to track retail drug prices in this and subsequent studies includes 180 specialty drug products. Figures B-1, B-2, and B-3 in Appendix B show the impact of including the 5 outlier specialty drug products.

A previous *Rx Price Watch* report found that retail prices for brand name traditional (nonspecialty) drugs widely used by older Americans experienced a 2.9 percent increase in 2020.⁵

Specialty drugs have never been precisely and consistently defined but generally include drugs that are used to treat complex and chronic conditions, that require special administration and handling, or that require patient care management. The definition of specialty

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 each of these segments is subject to unique market dynamics, pricing, and related behaviors. In addition, the *Rx Price Watch* series also reports the price change for an overall market basket (i.e., brand name, generic, and specialty drug products combined) to reflect the overall market impact of drug price changes. Some critics have argued that the brand name price index report alone overstates the effect of drug price changes on the overall prescription drug market. Those critics argue that an overall measure should include the effect of generic prescription drug price competition and the impact of generic substitution. This is precisely why the AARP *Rx Price Watch* series of reports also provides an overall market basket (including brand name, generic, and specialty drug products) to examine the price change impact for the overall prescription drug market. While this overall perspective is useful for those interested in understanding the industrial economics of the entire prescription drug market, consumers have proved to be considerably more interested in the price trend for the specific products that they are taking as an individual rather than all drug products on the market. In addition, separate analyses of the different market segments (i.e., brand name, generic, and specialty drug products) is important because they represent 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 derived from the IBM® MarketScan® Commercial Database and MarketScan® Medicare Supplemental Database (IBM® 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 The 5 drugs were Cosentyx Sensoready Pen 150 mg/mL, HP Acthar Gel 80 unit/mL, Firazyr 30 mg/mL inj, Cinryze 500 unit inj, and Strensiq 80 mg/mL inj. These drugs were ranked number 26, 28, 85, 124, and 140, respectively, in the market basket of 185 widely used specialty prescription drugs when ranked by 2018 spending data provided by the IBM MarketScan® Research Databases and a large Medicare Part D plan provider.

4 Defined as a median retail price that exceeded \$1,500 per day.

5 Stephen W. Schondelmeyer and Leigh Purvis, “*Rx Price Watch* Report: Trends in Retail Prices of Brand Name Prescription Drugs Widely Used by Older Americans, 2006 to 2020,” AARP Public Policy Institute, Washington, DC, June 2021, <http://www.aarp.org/rxpricewatch>.

prescription drugs used throughout this report is a prescription drug that has one or more of the following characteristics: is administered by injection; has a total average prescription cost greater than \$1,500 per prescription; has a total average cost per day of therapy greater than \$50 per day; or is in a therapeutic class in which several other drugs in the class meet one or more of the previous criteria (e.g., HIV drugs).

One of the most notable characteristics of specialty drugs is their cost; specialty drugs are among the most expensive drugs on the market, with prices that can reach hundreds of thousands of dollars per year.⁶ Expenditures for this group of specialty drug products are widely expected to be the fastest-growing sector of pharmaceuticals in the future.⁷ The impact of this shift is already evident in Medicare Part D's net spending on retail specialty drugs, which tripled between 2010–2011 and 2016–2017.⁸

Until recently, relatively few patients used specialty drugs. However, the US population is steadily aging and older adults typically use more specialty medications compared with younger populations.⁹ In addition, specialty drugs are increasingly being used to treat common chronic conditions that affect millions of Americans.¹⁰ Specialty drug products also represent a growing share of new drug approvals and the late-stage research and development pipeline.¹¹ Overall,

these trends indicate that a much larger share of the population will use specialty prescription drugs in the future.

Increases in the retail price of specialty prescription drugs have a corresponding impact on the cost of drug therapy for the individual and all other payers. In 2020, the average annual retail cost of prescription drug therapy for a specialty drug, based on the market basket used in this study, was \$84,442 per year. This average annual cost was almost \$20,000 higher than the median US household income (\$65,712).¹² It was also nearly three times the median income for Medicare beneficiaries (\$29,650),¹³ and more than four and a half times higher than the average Social Security retirement benefit (\$18,530).¹⁴

Notably, the average annual cost of drug therapy for one specialty drug used on a chronic basis would have been more than \$45,000 lower in 2020 (i.e., \$39,068 v. \$84,442) if the retail price changes had been limited to the rate of general inflation between 2006 and 2020.

Prescription drug price increases affect all types of payers, including individuals, employers, private insurers, and taxpayer-funded programs such as Medicare and Medicaid. For example, the Medicare Payment Advisory Commission (MedPAC) has consistently noted that drug price increases are a major factor driving Medicare

6 Congressional Budget Office (CBO), *Prices for and Spending on Specialty Drugs in Medicare Part D and Medicaid* (Washington, DC: CBO, March 2019).

7 CBO, *Specialty Drugs*.

8 Steven C. Hill, G. Edward Miller, and Yao Ding, "Net Spending on Retail Specialty Drugs Grew Rapidly, Especially for Private Insurance and Medicare Part D," *Health Affairs* 39, no. 11 (2020): 1970–76.

9 Ibid.

10 Ian M. Lotvin et al., "Specialty Medications: Traditional and Novel Tools Can Address Rising Spending on These Costly Drugs," *Health Affairs* 33, no. 10 (2014): 1736–44.

11 CBO, *Specialty Drugs*.

12 Gloria G. Guzman, "Household Income: 2019, American Community Survey Briefs," ACSBR/20-03, US Census Bureau, Washington, DC, September 2020.

13 The median annual income for Medicare beneficiaries was \$29,650 in 2019. See Wyatt Koma et al., *Medicare Beneficiaries' Financial Security before the Coronavirus Pandemic* (Washington, DC: Kaiser Family Foundation, April 2020). This figure is considerably higher than the median annual income for Medicare beneficiaries reported in the 2019 American Community Survey (\$22,500; unpublished analysis by the AARP Public Policy Institute).

14 The average monthly Social Security retirement benefit in 2020 was approximately \$1,544 per month. See Social Security Administration, *Annual Statistical Supplement to the Social Security Bulletin, 2021* (Washington, DC: Social Security Administration, 2021), <https://www.ssa.gov/policy/docs/statcomps/supplement/2021/5a.pdf>.

Part D spending growth.¹⁵ These spending increases, driven by high and growing drug prices, will affect all Americans in some way. Those with private health insurance will pay more in cost sharing and higher premiums for their health care coverage.¹⁶ In addition, increased government spending on prescription drugs will ultimately lead to higher taxes and/or cuts to public programs.

This report presents annual and 15-year cumulative price changes through the end of 2020. The first set of findings shows *annual* rates

of change in retail prices for widely used specialty drugs from 2006 through 2020, using both rolling average and point-to-point methods (see Appendix A). The point-to-point method examines the distribution of price changes and differences in average percentage changes in retail prices for individual drug products, specific manufacturers, and specific therapeutic categories. The second set of findings summarizes the *cumulative* impact of retail price changes for specialty drugs that have taken place across the entire 15-year period from 2006 through 2020.

15 Medicare Payment Advisory Commission (MedPAC), *June 2018 Report to the Congress: Medicare and the Health Care Delivery System* (Washington, DC: MedPAC, June 2018); MedPAC, *March 2021 Report to the Congress: Medicare Payment Policy* (Washington, DC: MedPAC, March 2021).

16 American Academy of Actuaries, *Prescription Drug Spending in the U.S. Health Care System: An Actuarial Perspective* (Washington, DC: American Academy of Actuaries, March 2018).

Findings

I. SPECIALTY PRICE TRENDS FOR MOST WIDELY USED PRESCRIPTION DRUGS

In recent years, the annual percentage change in prices for specialty prescription drugs has consistently increased substantially faster than general inflation.

- Retail prices for the 180 specialty drug products¹⁷ most widely used by older Americans rose 4.8 percent in 2020 compared with 2019 prices (Figure 1).¹⁸
- The average annual price increase in 2020 was more than three and a half times the rate of general inflation (4.8 percent v. 1.3 percent, respectively).¹⁹
 - Despite being more than three and a half times as high as inflation, this was the slowest average annual price increase for widely used specialty prescription drugs since at least 2006.
- The average annual price increase for these specialty prescription drug products has consistently slowed since 2015, which saw a double-digit percentage increase.
- Notably, specialty prescription drug price increases have continued to substantially exceed general inflation despite widespread public scrutiny and criticism of drug pricing practices.²⁰
- In contrast, retail prices for traditional (nonspecialty) brand name drug products

most widely used by older Americans rose by 2.9 percent in 2020.²¹

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

Figure 2 shows the percentage change in specialty drug prices for each month compared with the same month in the previous year. This trend is presented alongside the 12-month rolling average to allow more detailed examination of the rate and timing of specialty drug price changes over the entire study period. This analysis reveals three broad trends since implementation of the Medicare Part D program in 2006:

- The retail prices of specialty drug products have consistently increased since 2006.
- Specialty drug price increases at the retail level have typically been considerably higher than the corresponding rate of general inflation.
- The gap between the rate of specialty drug price change and the rate of change in general inflation fluctuated but remained sizable for most of the past 15 years. This gap has ranged from a less than 2-fold difference to a more than 100-fold difference.

17 The market basket for this analysis had 180 specialty prescription drug products. Some critics of the *Rx Price Watch* reports have suggested that drug products in our market basket that subsequently face generic competition should be excluded from this analysis because they may be skewing the results upward. However, when the 162 specialty drug products with no generic competition were analyzed separately, the average annual price change was 5.3 percent in 2020—higher than the 4.8 percent price trend shown in this report.

18 When measured as a 12-month rolling average and weighted by actual 2018 retail prescription sales to older Americans ages 50 and above, including Medicare beneficiaries.

19 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 (CPI-U; seasonally adjusted), Bureau of Labor Statistics series CUSR0000SA0.

20 Michael Erman and Carl O'Donnell, “Exclusive: Drugmakers to Hike Prices for 2021 as Pandemic, Social Pressure Puts Revenues at Risk,” *Reuters*, December 31, 2020.

21 Schondelmeyer and Purvis, “*Rx Price Watch* Report: Brand Name Prescription Drugs.”

FIGURE 1

Average Annual Specialty Drug Price Increase Is More than Three and a Half Times Higher than General Inflation in 2020

Note: Calculations of the average annual specialty drug price change include the 180 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 IBM® MarketScan® Research Databases and Medi-Span Price Rx Pro®.

FIGURE 2

Rolling Average and Point-to-Point Changes in Retail Prices for Most Widely Used Specialty Prescription Drugs Greatly Exceeded Inflation from 2006 to 2020

Note: Calculations of the average annual specialty drug price change include the 180 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 IBM® MarketScan® Research Databases.

The cost of specialty drug therapy reached \$84,442 per drug per year in 2020.

Figure 3 presents the retail price for 88 widely used specialty drugs indicated for treating chronic conditions when the price is expressed as an average annual cost of therapy per drug.

- The average cost of chronic therapy was \$84,442 per drug per year for specialty prescription drugs at the retail level in 2020.
 - This average annual cost (\$84,442) is five times higher than the average annual cost (\$16,703) for a specialty drug in 2006, the year Medicare implemented Part D.
 - The average annual cost of therapy for a single specialty drug in 2020 (\$84,442) was almost \$20,000 higher than the median US household income (\$65,712), nearly three times the median income for a Medicare beneficiary (\$29,650), and more than four and a half times higher than the

average Social Security retirement benefit (\$18,530).²²

This analysis does not include five widely used specialty drug products that had unusually high retail prices and/or an extremely large one-time price increase during the study period. Had these extreme outlier specialty drugs been included, the average annual cost for the products in our market basket would have been \$136,401 in 2020 (see Appendix B).

The average annual retail price of therapy for widely used specialty drugs is considerably higher than the average annual retail cost of therapy for widely used traditional (nonspecialty) brand name drugs. Furthermore, the price differential is growing rapidly. In 2020, the average annual price of therapy for specialty prescription drugs was almost 13 times higher than the average annual price of therapy for brand name prescription drugs (\$84,442 v. \$6,604, respectively).²³

FIGURE 3
The Average Annual Price of Specialty Drugs Quintupled between 2006 and 2020

22 Guzman, "Household Income"; Koma et al., *Medicare Beneficiaries' Financial Security*; Social Security Administration, *Annual Statistical Supplement*.

23 Schondelmeyer and Purvis, "Rx Price Watch Report: Brand Name Prescription Drugs."

Figure 4 shows the annual price of therapy for specialty and brand name drugs in the past 10 years (2011–20). The average annual brand name price of therapy has more than doubled (\$2,923 to \$6,604) and the average annual specialty price of therapy is two and a half times higher (\$32,663 to \$84,442).

Despite having relatively comparable average annual price increases between 2011 and 2020, the specialty drugs had a much more substantial increase in actual monetary value than brand name drugs, with a dollar increase from 2011 to 2020 of \$51,779. This very large difference in dollar change stems from the much higher initial price of specialty drugs as they enter the market. For example, a 10 percent price increase for a \$10,000 drug product is \$1,000, while the same percentage price increase for a \$1,000 drug product is \$100.

Notably, the average annual cost of therapy per drug for these same specialty drug products would have been \$39,068—more than \$45,000 lower—in 2020 if their retail price changes had been limited to the rate of general inflation between 2006 and 2020 (Figure 5).²⁴

II. ANNUAL TRENDS IN PRICE CHANGES FOR MOST WIDELY USED SPECIALTY PRESCRIPTION DRUGS BY FDA APPROVAL PROCESS

The products in the specialty market basket were approved by the U.S. Food & Drug Administration (FDA) using one of the following processes: (a) a new drug application (NDA); (b) a biologic license application (BLA); or (c) an abbreviated new drug application (ANDA). NDAs and ANDAs apply to drug products and medical devices, and BLAs apply to biological products. Of the 180 drug products in the specialty market basket, 125 were

FIGURE 4

The Average Annual Retail Price of Therapy for Specialty Drugs Is Almost 13 Times Higher than the Average Annual Retail Price of Therapy for Brand Name Drugs in 2020

24 There is no clear rationale for prescription drug price increases given that launch prices ostensibly reflect the costs associated with developing the drug and future research costs. See Aaron Kesselheim, Jerry Avorn, and Ameet Sarpatwari, “The High Cost of Prescription Drugs in the United States: Origins and Prospects for Reform,” *Journal of the American Medical Association* 316, no. 8 (2016): 858–71.

FIGURE 5

The Average Annual Cost of Specialty Drugs Would Be More than \$45,000 Lower if Retail Price Changes Were Limited to General Inflation

Note: Calculations of the average annual specialty drug price change include the 88 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 IBM® MarketScan® Research Databases.

NDA approved, 52 were BLA approved, and 3 were ANDA approved.

NDA- and BLA-approved drugs are new brand name drugs, while ANDA-approved drugs are generic drugs. Drug products approved as NDAs, BLAs, and ANDAs differ considerably in their annual percentage change and their annual dollar change in cost of therapy.

Annual percentage change in retail prices

- Retail prices for *NDA-approved (brand name) specialty drug products* most widely used by older Americans rose by an average of 4.6 percent in 2020. This rate of increase was more than three and a half times higher than the rate of general inflation (1.3 percent) when measured as a 12-month rolling average and

weighted by sales to older Americans ages 50 and above. Annual retail price increases for NDA-approved drug products between 2006 and 2020 ranged from 4.0 percent to 9.6 percent (Figure 6).

- Retail prices for *BLA-approved (brand name) specialty drug products* most widely used by older Americans increased by an average of 5.8 percent in 2020, more than four and a half times higher than the rate of general inflation (1.3 percent).²⁵ Annual retail price increases for BLA-approved drug products between 2006 and 2020 ranged from 3.2 percent to 17.7 percent (Figure 6). The price increases of BLA-approved drug products have exceeded the price increases of NDA-approved drugs every year since 2011.

25 The Affordable Care Act of 2010 contained a provision that granted the FDA the authority to approve less-expensive generic (biosimilar or interchangeable) versions of BLA-approved specialty drugs. However, FDA has yet to finalize all of the regulations needed to fully implement this new authority and relatively few biosimilars have entered the market. Thus, biologic drug manufacturers still do not face meaningful generic competition after biologic patents expire.

FIGURE 6

Average Retail Prices Are Higher among BLA-Approved Specialty Prescription Drugs

Note: Calculations of average annual specialty drug price change include 180 drug products most widely used by older Americans: ANDAs (3), NDAs (125), and BLAs (52).

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

- Retail prices for *all brand name specialty drug products* (i.e., NDA- and BLA-approved drug products) most widely used by older Americans increased at an average rate of 5.3 percent in 2019 and 5.0 percent in 2020. In contrast, retail prices for brand name nonspecialty drug products most widely used by older Americans increased by an average of 3.2 percent and 2.9 percent, respectively, in those years.²⁶
- In contrast, the retail prices of the single *ANDA-approved (generic) specialty drug product* most widely used by older Americans *decreased* by 3.6 percent in 2020.

Annual retail cost of therapy

We translated retail price changes into average annual cost of therapy (Figure 7) for the widely used specialty drugs for treating chronic

conditions. Of the 88 drugs in the market basket used to treat chronic conditions, 58 were NDAs, 30 were BLAs, and none were ANDAs.

- A person who took an *NDA-approved specialty prescription drug* had an average annual cost of therapy of \$80,224 in 2020, assuming that the consumer used the specialty drug for a chronic condition. The average annual cost of therapy for NDA-approved specialty drugs has increased by 327 percent since 2006, the year Medicare implemented Part D.
- The average annual cost of therapy for *BLA-approved specialty prescription drugs* was \$88,224 in 2020. The average annual cost of therapy for BLA-approved specialty drugs has increased by 442 percent since 2006, the year Medicare implemented Part D.

26 Schondelmeyer and Purvis, "Rx Price Watch Report: Brand Name Prescription Drugs."

FIGURE 7

The Average Annual Cost of Therapy Increased by More than 440 percent for Widely Used BLA-Approved Specialty Prescription Drugs between 2006 and 2020

Note: Calculations of average annual drug price of therapy included the 88 drug products most widely used by older Americans for chronic conditions: NDAs (58) and BLAs (30).

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

III. FIFTEEN-YEAR CUMULATIVE RETAIL PRICE CHANGES FOR MOST WIDELY USED SPECIALTY PRESCRIPTION DRUGS, 2006-20

This AARP report tracked specialty drug prices at the retail level for the 15-year period from December 31, 2005, to December 31, 2020.

Twelve percent (22 of 180) of the widely used drugs in the specialty market basket were on the market for the entire 15-year period (i.e., the end of 2005 through the end of 2020). Half (11 of 22) of those drug products treat chronic conditions and were used to analyze 15-year price trends among widely used specialty drug products.²⁷ The remaining 11 drug products treat acute or intermittent conditions.

Cumulatively, the average retail price for these 11 widely used specialty drug products increased 234.2 percent over 15 years, compared with a

32.0 percent increase in general inflation during the same period. This means that specialty drug prices increased more than seven times faster than the rate of general inflation during this time period.

The 15-year cumulative change in annual specialty drug cost of therapy is substantial.

The average annual retail cost of drug therapy for the 11 specialty drug products on the market since the end of 2005 and used to treat chronic conditions was \$73,583 in 2020, which is an increase of \$57,232 over the 2006 annual cost of \$16,351.

All of the 11 specialty drugs used for chronic conditions that have been on the market since the end of 2005 had annual cost of therapy increases of more than \$10,000 during the 15-year period ending in 2020.

²⁷ We classified the drug products in our study market basket based on whether the primary indication for use was for a chronic condition or an acute (or intermittent) condition.

IV. MORE THAN 8 OF 10 WIDELY USED SPECIALTY DRUGS INCREASED IN PRICE FASTER THAN GENERAL INFLATION IN 2020

Of the most widely used specialty drug products, 81 percent (145 of 180) had retail price increases that met or exceeded the rate of general inflation (1.3 percent) in 2020 (Figure 8).

Nearly three-quarters (129 of 180) of the most widely used specialty drug products had retail price increases of more than double the rate of inflation in 2020 (1.3 percent).

Nearly one-fifth (35 of 180) of specialty drug products did not experience a retail price change or experienced a retail price *decrease* over the same time period.

The single highest retail price increase for a specialty drug product in the market basket was for Nerlynx (40 mg tablet, used to treat cancer). Nerlynx's retail price rose by 20.8 percent between 2019 and 2020 (Figure 9). The second highest retail price increase among the most widely used specialty drugs was Actemra (162 mg/mL inj, used to treat rheumatoid arthritis),²⁸ which had an annual price increase of 11.0 percent in 2020 compared with 2019. Tyvaso (0.6 mg/mL inhalation solution, used to treat pulmonary hypertension) also had a price increase between 2019 and 2020 of more than seven times the corresponding rate of general inflation (1.3 percent).

Three of the 180 top specialty drug products were generic drug products. Two of these specialty drug products (capecitabine 500 mg tablet and bexarotene 75 mg capsule, both used to treat cancer) had a price decrease (Figure 10).

V. RETAIL PRICE CHANGES FOR MOST WIDELY USED SPECIALTY PRESCRIPTION DRUGS BY MANUFACTURER

Thirty drug manufacturers had at least 2 drug products in the study's market basket of 180 widely used specialty drugs. Another 18 drug manufacturers with only 1 brand name drug product in the market basket were grouped into the "All Others" category.

FIGURE 8
Retail Prices Increased for More than 80 percent of Most Widely Used Specialty Drugs in 2020

FIGURE 9
Retail Prices for Three Widely Used Specialty Drugs Increased by More than Seven Times Faster than Inflation in 2020

28 Actemra has several FDA-approved indications, including rheumatoid arthritis, giant cell arteritis, and cytokine release syndrome. In 2021, the FDA issued an emergency use authorization for Actemra (tocilizumab) for the treatment of hospitalized COVID-19 patients under certain conditions; however, Actemra is not authorized for use in outpatients with COVID-19. See "Coronavirus (COVID-19) Update: FDA Authorizes Drug for Treatment of COVID-19," FDA, June 24, 2021, accessed September 9, 2021, <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-drug-treatment-covid-19>.

FIGURE 10
Retail Prices for Two Widely Used Specialty Prescription Drugs Decreased in 2020

The average annual increase in retail price for 94 percent (29 out of 31) of these drug manufacturer categories—including the “All Others” category—exceeded the general inflation rate in 2020 (Figure 11), suggesting a broad-based specialty drug price increase trend.

- Twenty-four of the drug manufacturers (77 percent)—including the “All Others” category—had weighted average annual specialty drug price increases of 2.6 percent or more in 2020—or at least twice the rate of general inflation (1.3 percent).
- Eight drug manufacturers had weighted average specialty drug price increases of more than 5.2 percent in 2020, or more than four times the rate of general inflation (1.3 percent) in 2020.
 - Pharmacyclics had a weighted average annual price increase of 7.4 percent in 2020—or more than five and a half times the rate of general inflation.
- One drug manufacturer—Teva (four drug products)—had a weighted average annual retail price increase that was lower than the rate of general inflation in 2020 (0.1 percent v. 1.3 percent, respectively).
- One manufacturer—Vertex Pharmaceuticals (two drug products)—did not have a weighted average annual retail price change in 2020.

VI. RETAIL PRICE CHANGES FOR MOST WIDELY USED SPECIALTY PRESCRIPTION DRUGS BY THERAPEUTIC CATEGORY

Specialty drug prices at the retail level increased faster than the rate of general inflation (1.3 percent) in 2020 for more than three-quarters (23 of 30) of the therapeutic categories examined in this study (Figure 12).

- All but 1 of the 23 therapeutic categories experienced average annual price increases of 2.6 percent or greater—more than twice the rate of general inflation in 2020.
- Thirteen therapeutic categories had average annual price increases of 3.9 or higher—or three times the rate of general inflation in 2020 (1.3 percent).
- Eight drug manufacturers had average annual price increases for their specialty drugs of 5.2 percent or more during 2020—more than four times the rate of general inflation in 2020.
- Four therapeutic categories had average annual price increases of 6.5 percent or higher—five times the rate of general inflation in 2020.
- Seven therapeutic categories did not experience an annual retail price change in 2020.

FIGURE 11

Twenty-Nine of 31 Drug Manufacturer Categories Had Retail Price Increases that Exceeded the Rate of General Inflation in 2020

FIGURE 12

More than Three-Quarters of Therapeutic Categories for Specialty Drugs Had Retail Price Increases that Exceeded the Rate of General Inflation in 2020

Note: Calculations include the 180 specialty prescription drug products most widely used by older Americans (see Appendix A). See Appendix C 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 All Items for 2020.

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

Concluding Observations

Specialty drug prices have routinely increased much faster than general inflation over the more than 15 years that this report series has been tracking prescription drug prices. In 2020, the average annual increase in retail prices for 180 specialty prescription drugs widely used by older Americans, including Medicare beneficiaries, was 4.8 percent. In contrast, general inflation in the United States rose by 1.3 percent in 2020.

Increases in the retail price of specialty prescription drugs affect both patients and the broader economy. In 2020, the average annual retail cost of prescription drug therapy for a specialty drug, based on the market basket used in this study, was \$84,442 per year. This average annual cost was almost \$20,000 higher than the median US household income (\$65,712).²⁹ It was also nearly three times the median income for Medicare beneficiaries (\$29,650)³⁰ and more than four and a half times higher than the average Social Security retirement benefit (\$18,530).³¹

Notably, the average annual cost of drug therapy for one specialty drug used on a chronic basis would have been more than \$45,000 lower in 2020 (i.e., \$39,068 v. \$84,442) if the retail price changes had been limited to the rate of general inflation between 2006 and 2020.

This analysis does not include five widely used specialty drug products that had unusually high retail prices and/or an extremely large one-time price increase during the study period. Had these

extreme outlier specialty drugs been included, the average annual cost for the products in our market basket would have been \$136,401 in 2020 (see Appendix B).

While specialty drug products are used by a relatively small, but growing, share of the overall population, they account for the fastest-growing portion of US drug expenditures in recent years.^{32,33} There are strong indications that specialty drugs will become the largest share, and the majority, of drug expenditures in the next few years. If recent trends in specialty drug prices and related price increases continue, it will almost undoubtedly become more difficult for patients to access and afford necessary specialty medications.

Specialty drug prices at the retail level have a direct impact on the costs borne by individual consumers, especially for those who pay a percentage of drug costs rather than a fixed copayment. Specialty drug prices may also be passed along to consumers in the form of higher premiums, deductibles, and other forms of cost sharing.³⁴

If specialty drug prices and related price increases continue unabated, their costs will prompt increasing numbers of older Americans to stop taking necessary medications due to affordability concerns.³⁵ Continued excessive drug price increases will also lead to increased cost sharing and premiums, which could ultimately make health care coverage unaffordable and lead to poorer health outcomes and higher health care

29 Guzman, “Household Income.”

30 The median annual income for Medicare beneficiaries was \$29,650 in 2019. See Koma et al., *Medicare Beneficiaries’ Financial Security*.

31 The average monthly Social Security retirement benefit in 2020 was approximately \$1,544 per month. See Social Security Administration, *Annual Statistical Supplement*.

32 Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation (ASPE), “Observations on Trends in Prescription Drug Spending,” ASPE Issue Brief, ASPE, Washington, DC, March 8, 2016.

33 CBO, *Specialty Drugs*.

34 American Academy of Actuaries, *Prescription Drug Spending*.

35 Joohyun Park and Kevin A. Look, “Part D Coverage Gap Reform: Trends in Drug Use and Expenditures,” *American Journal of Managed Care* 26, no. 8 (2020): 349–56.

costs in the future.³⁶ In addition, increased government spending on prescription drugs will ultimately lead to higher taxes and/or cuts to public programs.

Our data show that the voluntary pricing practices of drug companies have led to price trends that consistently exceed the corresponding rate of general inflation. Current market forces do not adequately protect against excessively high drug prices and price increases, and the resulting growth in pharmaceutical expenditures is not sustainable. While policy options should encourage meaningful pharmaceutical innovation, such options should be balanced with the impact

that drug prices and expenditures have on the affordability of medications for consumers and other payers.

Current pricing practices for specialty pharmaceuticals jeopardize the health and financial security of individual consumers and taxpayer-funded programs like Medicare and Medicaid. Specialty prescription drugs can provide substantial health benefits including improved health outcomes; however, these benefits are available only to those who can afford to use them.

36 Rachelle L. Cutler et al., “Economic Impact of Medication Non-Adherence by Disease Groups: A Systematic Review,” *BMJ Open* 8, no. 1 (2018): E016982.

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, the appendix 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 outpatient prescription drugs in the US market. While this overall perspective is useful for those interested in understanding the industrial economics of the entire prescription drug market, consumers have proved to be considerably more interested in the price trend for the specific products that they are taking as individuals 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.³⁷ In 2009, AARP and the *PRIME* Institute created an additional drug price index based on actual retail prices³⁸ from the Truven Health MarketScan® Commercial Database and MarketScan® Medicare Supplemental Database (MarketScan® Research Databases).³⁹ 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 to develop a new market basket of widely used prescription drugs based on 2018 data provided by the IBM® MarketScan® Research Databases and a large 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

37 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 Pro®) is a product of Medi-Span (Indianapolis, Indiana), a division of Wolters Kluwer Health Inc., and uses data from Medi-Span's Master Drug Database (MDDB®). See <http://www.medispans.com>.

38 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) 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.

39 The Truven Health MarketScan® Research Databases (now the IBM® 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. IBM Watson Health constructs the MarketScan® Research Databases by collecting data from employers, health plans, and state Medicaid agencies and placing them into databases. See IBM Watson Health, "White Paper: IBM® MarketScan® Databases for Health Services Researchers," White Paper, Somers, NY, April 2019.

its Medicare Part D enrollees in 2018. This *Rx Price Watch* report used the 2018 market basket.⁴⁰ As in the past, the series will include separate data sets, analyses, and reports for brand name, generic, and specialty drugs, as well as 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 related licensees) or a 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 the 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,⁴¹ and they do not experience typical price competition from therapeutically equivalent (i.e., AB-rated generic equivalents) drug products that can be routinely and directly substituted at the pharmacy level. On the other hand, generic drug products typically 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 U.S. Food & Drug Administration [FDA] and reported in the Orange Book), including the brand name product. However, certain generic drugs—that is, those for which the generic 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 in which there is only one generic drug product on the market, the level of economic competition may be somewhat limited until other economically independent generic marketers enter the market.

Specialty pharmaceuticals are drugs that treat complex, chronic conditions and that often require special administration, handling, and care management. Specialty drugs have been the fastest-growing group of new drug products over the past 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 on 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 2 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 (formerly called PacifiCare), which is also the organization that insures the AARP Medicare Part D plans.

Subsequently, we updated the AARP market baskets again using 2011 data provided by Truven Health MarketScan[®] Research Databases (now IBM[®] 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 data from the IBM[®] MarketScan[®] Research Databases by the 50-plus population less Part D enrollment, based on data from the Centers for Medicare & Medicaid Services and the US Census. We then merged the weighted data to develop

40 The U.S. Food & Drug Administration approved 53 new drugs and biological products in 2020. These products are not included in our current market basket but will be included in future market baskets if they meet our inclusion criteria. “Advancing Health Through Innovation: New Drug Therapy Approvals 2020,” U.S. Food & Drug Administration, accessed April 20, 2021. <https://www.fda.gov/drugs/development-approval-process-drugs/new-drugs-fda-cders-new-molecular-entities-and-new-therapeutic-biological-products>.

41 Market exclusivity periods for new brand name drugs range from 13 to 17 years. See Benjamin N. Rome, ChangWon C. Lee, and Aaron S. Kesselheim, “Market Exclusivity Length for Drugs with New Generic or Biosimilar Competition, 2012–2018,” *Clinical Pharmacology & Therapeutics* 109, no. 2 (2020): 367–71.

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

This process was repeated using 2014 and 2018 data provided by the same data sources. The 2018 market basket is the basis of this report and subsequent *Rx Price Watch* reports.

Our selection of the market basket of drugs to track in 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., Eliquis [apixaban] 5 mg, tablet, bottle of 60, Bristol Myers Squibb). 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 Eliquis 2.5 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 2018.

The next step involved merging the use and expenditure data from the IBM® 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 Pro® drug database,⁴² using the NDC number as the key linking variable. The descriptive data from Price Rx Pro® 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 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 Pro®. 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, then 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 nondrug items. These nondrug items included devices, medical and diabetic supplies, syringes, compounding service fees, and other professional services. After exclusion of nondrug items, the 2018 data set contained 33,550 NDCs grouped into 5,872 GPI-patent status categories.

We then coded all GPIs to distinguish the specialty prescription drugs from other regular, or traditional, 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) a drug product approved by the FDA through a BLA (biological license application); (3) any drug product that has a total average prescription cost greater than \$1,500 per prescription; or (4) any drug product that has a total average cost greater than \$50 per

42 Price Rx Pro® is a product of Medi-Span (Indianapolis, IN), a division of Wolters Kluwer Health, Inc., and is based on data from Medi-Span's MDDB®.

day of therapy. The drug products that met this definition were considered “specialty drugs” and all other prescription drugs were considered “regular,” “traditional,” or “nonspecialty” drugs. Throughout this report, references to the market basket of drugs refer to the regular (nonspecialty) 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 2018 by three criteria: (1) total prescription expenditures, (2) number of prescriptions dispensed, and (3) days of therapy provided. The top 500 GPI-patent status categories were identified for each of these three criteria. Because some GPI-patent status groups appeared in more than one of these top 500 lists, the combined list of all GPI-patent status groups totaled 950. There were 260 brand name GPI-patent status groups (i.e., both brand single source and brand multiple source) and 505 generic GPI-patent status groups. Also, 185 GPI-patent status groups in this combined top 500 list were classified as specialty drugs.⁴³

The three market baskets (brand name, generic, and specialty drugs) combined accounted for 85.7 percent of all prescription drug expenditures and 43.3 percent of all prescriptions dispensed to those over age 50 in 2018.

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 (now IBM® MarketScan® Research Databases). This retail price index allows the AARP Public Policy Institute to assess retail prices actually paid by consumers or insurers and to determine whether the rebates and discounts sometimes given to payers are being passed along to consumers.

Retail Data Description

The IBM® MarketScan® Research Databases consists of three core claims databases, a hospital discharge database and an electronic medical record database, as well as several linked databases, data sets and files that combine claims data with other patient and employee data at the patient level.⁴⁴ The warehouse features an opportunity sample from multiple sources (e.g., employers, states, health plans), more than 32 billion service records, and over 200 million covered individuals.⁴⁵ The data used in the *Rx Price Watch* analyses are drawn from the IBM® MarketScan® Commercial Claims and Encounters Database (Commercial Database) and the IBM® MarketScan® Supplemental and Coordination of Benefits Database (Medicare Supplemental Database).

The IBM® 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

43 The market basket for these analyses originally included 185 specialty prescription drugs. However, 5 widely used specialty drug products had unusually high retail prices and/or an extremely large one-time price increase. Because these retail prices and price changes were extreme outliers and substantially distorted the overall trends, we excluded these 5 specialty drug products from all analyses. Therefore, the market basket for specialty drugs used to track retail drug prices in this and subsequent studies includes 180 specialty drug products.

44 IBM Watson Health, “White Paper.”

45 IBM Watson Health, “White Paper.”

for these individuals is available under a variety of fee-for-service (FFS), fully capitated, and partially capitated health plans. These include preferred provider organizations (PPOs) and exclusive provider organizations (EPOs), point of service (POS) plans, indemnity plans, health maintenance organizations (HMOs), and consumer-directed health plans.⁴⁶

The IBM® MarketScan® Medicare Supplemental Database is composed of data from retirees with Medicare supplemental insurance sponsored by employers or unions. In 2020, one million Medicare beneficiaries received their drug benefits through a retiree coverage plan.⁴⁷ The IBM® 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 IBM® MarketScan® Commercial Database and IBM® MarketScan® Medicare Supplemental Database had to meet several conditions in order to be included in the analysis:

1. Claimant must be age 50 or 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. Claim must come from a noncapitated health plan.

IBM® Watson Health 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 2020 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 for each 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 2020 v. January 2019, February 2020 v. February 2019).
- 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 2020 refer to the average of the annual point-to-point price changes for each of the 12 months from January 2020 through December 2020 compared with the same months in 2019.

We calculated average annual price changes for each drug product for each month and year that the drug was on the market from 2006 to 2020. 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 2020 v. January 2019, February 2020 v. February 2019). 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 2020 refer to the average of the annual point-to-point price for each of the 12 months in 2020. This 12-month rolling average tends to be a more conservative estimate of price changes than the point-to-point method (i.e., a simple percentage change

⁴⁶ IBM Watson Health, "White Paper."

⁴⁷ Shinobu Suzuki, Rachel Schmidt, and Eric Rollins, *The Medicare Prescription Drug Program (Part D): Status Report*, (Washington, DC: Medicare Payment Advisory Commission (MedPAC), January 15, 2021).

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 2020 when compared with the same month in 2019:

TABLE A-1

Average Annual Percent Change in Price for Hypothetical Prescription Drug A, 2020

Jan 19- Jan 20	Feb 19- Feb 20	Mar 19- Mar 20	Apr 19- Apr 20	May 19- May 20	Jun 19- Jun 20	Jul 19- Jul 20	Aug 19- Aug 20	Sep 19- Sep 20	Oct 19- Oct 20	Nov 19- Nov 20	Dec 19- Dec 20	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 2020. A price hike in May increased the percentage difference to 3 percent for each of the subsequent months in 2020. The 12-month average of these price differences is

$$(2.0 + 2.0 + 2.0 + 2.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0 + 3.0)/12, \text{ or } 2.67 \text{ percent.}^{48}$$

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 IBM® MarketScan® Commercial Database and the IBM® MarketScan® Medicare Supplemental Database, as shown in the hypothetical example in Table A-1) by its share of total 2018 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 through 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

TABLE A-2

Average Changes in Price and Cost of Therapy for 10 Hypothetical Prescription Drugs, 2020

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

48 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 six months that the product was on the market in the previous year (i.e., July through December).

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, does not account for the actual impact of price changes because it does not account for each product's "weight" (or share) within the sample (i.e., 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 2018 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 2018 sales. In this simple example, the *weighted* average price increase in 2020 is the sum of

$$\begin{aligned} & (\text{Unweighted average price change for drug A} \times \text{drug A's share of total sales}) + \\ & (\text{Unweighted average price change for drug B} \times \text{drug B's share of total sales}) + \\ & (\text{Unweighted average price change for drug C} \times \text{drug C's share of total sales}) + \\ & \dots + (\text{Unweighted average price change for drug J} \times \text{drug J's share of total sales}), \end{aligned}$$

or

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

The results of this calculation are in the fifth column of Table A-2, which shows that the weighted annual average price change for the drugs is 5.22 percent, or approximately one-half a 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 with the unweighted average dollar change of \$236.13.

CALCULATING AVERAGE PRICE CHANGES ACROSS MULTIPLE DRUGS FOR YEARS BEFORE 2018

The process for aggregating price changes for multiple drugs pre-2018 is similar to that for 2018. Average price changes for 2006 through 2017 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 2018 sales from the Medicare Part D plans of a Medicare Part D plan provider, including the AARP plans, as well as from the IBM® MarketScan® Commercial Database, and the IBM® MarketScan® Medicare Supplemental Database. The 2018 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 utilization or mix.

However, some drugs that were in the 2018 sample were not on the market in all earlier years. We dropped these drug products from 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 2018 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 2016. Furthermore, assume that total drug spending in 2018 was \$100,000. To capture the loss of drugs I and J from the analysis for 2016, the weights are redistributed across the drugs that remain in the analysis (drugs A through H); the new weights are still based on their 2018 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 2018 sales of drugs on the market in 2016 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 through H, was used to derive the weighted average price change for 2016 (see Table A-3).

Weighting the previous years' price changes by 2018 sales potentially creates a bias relative to using each specific year's sales as the basis for assigning weights for that year. Using 2018 sales gives more

TABLE A-3

Recalculating Weights When Prescription Drugs Drop Out of the Sample

Drug Name	2018 Weights		2016 Weights	
	Share of 2018 Sales	Dollar Value of 2018 Sales	2018 Dollar Sales of Drugs on Market in 2016	2018 Share of Drugs on Market in 2016
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%

weight to drugs that, relative to other drugs, had high rates of sales growth in 2018 or earlier years compared with 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 or that 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 Pro® 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 2018 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 2018. If a listed manufacturer is a division of another firm, we defined its drugs as marketed by the parent firm. This includes cases in which 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 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 brand name therapeutic category may include drug products that are brand single source or brand multiple source.

Appendix B

Impact of Five Outlier Specialty Drugs on Average Specialty Retail Price Change

As noted in the main report (footnote 3), the market basket for these analyses originally included 185 specialty prescription drugs. However, 5 widely used specialty drug products⁴⁹ had unusually high retail prices⁵⁰ and/or an extremely large one-time price increase (Table B-1). Because these retail prices and price changes were extreme outliers and substantially distorted the overall trends, we excluded these 5 specialty drug products from all analyses.

Therefore, the market basket for specialty drugs used to track retail drug prices in this and subsequent studies includes 180 specialty drug products. The impact of including these drug products, shown in Figures B-1, B-2, and B-3, corresponds with Figures 1, 2, and 3 in the main body of the report.

TABLE B-1
Retail Prices for Five Outlier Specialty Drugs Excluded from AARP Analyses

Rank by Sales among 2018 Market Basket*	Product Name, Strength, and Dosage Form	Pkg Size	Manufacturer	Therapeutic Class	2020 Retail Price per Day	Annual % Change in Retail Price
26	Cosentyx Sensoready Pen 150 mg/mL	1	Novartis	Antipsoriatics	\$8,249	7.6%
28	HP Acthar Gel 80 unit/mL **	5	Questcor	Pituitary	\$2,650	2.5%
85	Firazyr 30 mg/mL inj	3	Shire	Complement Inhibitors	\$32,907	0.0%
124	Cinryze 500 unit inj	1	Viropharma Inc.	Complement Inhibitors	\$2,847	0.0%
140	Strensiq 80 mg/mL inj	0.8	Alexion Pharmaceuticals	Enzymes	\$5,030	0.0%

*Ranking based on 2018 spending data provided by the IBM® MarketScan® Research Databases and a large Medicare Part D plan provider. See Appendix A.

**HP Acthar Gel 80 unit/mL also experienced a price increase of more than 1,300 percent in 2007.

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

49 The drugs were Cosentyx Sensoready Pen 150 mg/mL, HP Acthar Gel 80 unit/mL, Firazyr 30 mg/mL inj, Cinryze 500 unit inj, and Strensiq 80 mg/mL inj. These drugs were ranked number 26, 28, 85, 124, and 140, respectively, in the market basket of 185 widely used specialty prescription drugs when ranked by 2018 spending data provided by the IBM MarketScan® Research Databases and a large Medicare Part D plan provider.

50 Defined as a median retail price that exceeded \$1,500 per day.

FIGURE B-1

Average Annual percent Change in Retail Prices for Most Widely Used Specialty Prescription Drugs, 2006 to 2020, Including Five Outlier Drug Products

Note: Calculations of the average annual specialty drug price change include the 185 drug products most widely used by older Americans.

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

FIGURE B-2

Comparison of Rolling Average and Point-to-Point Change in Retail Prices for Most Widely Used Specialty Prescription Drugs, 2006 to 2020, Including Five Outlier Drug Products

Note: Calculations of the average annual specialty drug price change include the 185 drug products most widely used by older Americans.

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FIGURE B-3

Average Change in Annual Cost of Therapy Due to Retail Price Changes for Most Widely Used Specialty Prescription Drugs Used in the Treatment of Chronic Conditions, 2006 to 2020, including Five Outlier Drug Products

Note: Calculations of the average annual specialty drug price change include the 185 drug products most widely used by older Americans. Two of the five outlier drug products were not included in these calculations since they are not used to treat chronic conditions.

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Appendix C

Therapeutic Category Acronyms

Therapeutic Category	Definition
GI Drugs, Misc.	GI – Gastrointestinal

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