



The Value of the Medicare Part D Program for its Beneficiaries and the Medicare System

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December 2016



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Executive Summary

The United States spent \$430 billion on prescription drugs in 2015, and Medicare is the principal program facilitating access to these medications:

- In 2014, 23.4 million Medicare beneficiaries had prescription drug coverage supported by Medicare under Part D plans, and 14.4 million had coverage under Part C plans, for a total of 37.8 million covered beneficiaries.
- In addition, 9.5 million Medicare beneficiaries had coverage through other federal programs, including federal retirement, Veterans Administration, and subsidies for firms providing coverage for 2.7 million of retirees.

This prescription drug coverage generates large benefits: Studies show that coverage substantially increases the numbers of people using pharmaceuticals and the frequency of use. They also show that use of prescription drugs increases people's lifespans, raises productivity, and reduces hospitalizations and use of other healthcare goods and services.

The Congressional Budget Office (CBO) analyzed eight studies and found that each 1.0% increase in the use of prescription drugs reduced Medicare spending for other healthcare goods and services by 0.20%.

Based on this estimate, access to prescription drugs under Part D by Medicare beneficiaries who otherwise would not have had coverage or who shifted to broader coverage in response to the Part D program saved Medicare \$13.8 billion in other healthcare costs in 2014 and \$106.3 billion from 2006 to 2014.

A far-reaching study of 3,101 seniors who changed their prescription drug coverage found that, among those seniors, each drug refill reduced Medicare hospital spending by \$104 by helping seniors avoid hospitalization or reducing the time and services of a hospitalization. Based on these findings:

- Access to prescription drugs by Medicare beneficiaries enrolled in Part D plans cost taxpayers \$45.1 billion in 2014 and saved Medicare \$113.5 billion in other healthcare costs, for a net savings of \$68.4 billion.
- Access to prescription drugs by all beneficiaries enrolled in Part D plans cost taxpayers \$298.8 billion from 2006 to 2014 and saved Medicare \$740.2 billion in other healthcare costs over those years, for a net taxpayer savings of \$441.4 billion.
- Access to prescription drugs by all beneficiaries enrolled in Part D or Part C plans cost taxpayers \$72.9 billion in 2014 and saved Medicare \$183.1 billion in other healthcare costs, for a net taxpayer savings of \$110.2 billion.
- Access to prescription drugs by all beneficiaries enrolled in Part D plans or Part C plans cost taxpayers \$460.2 billion from 2006 to 2014 and saved Medicare \$1,139.5 billion in other healthcare costs, for net savings of \$679.3 billion.

Access of prescription drugs under Part D plans, therefore, contributes to efforts to lower Medicare costs over the long run by “bending the cost curve.”

While prescription drugs produce large benefits and substantial healthcare savings, the costs and risks of development, which drive their pricing, are not well understood.

- Nearly 89% of U.S. prescriptions are filled by low-priced generic drugs, the highest use of generics among the world’s advanced countries.
- Developing a new drug is very expensive and risky: It costs an average of \$2.6 billion over 10 to 15 years, and 12 percent of new compounds that reach clinical trials ultimately receive approval from the Food and Drug Administration (FDA).
- The temporary rights conferred on pharmaceutical developers by patents, data, and market exclusivity provide the protection and incentives needed to justify expensive, risky R&D investments. Moreover, studies show that the most common diseases attract pharmaceutical innovation, as their potential markets promote greater R&D in that area.

Competition among pharmaceutical innovators and negotiations between drug producers and insurers limit the prices of new drugs and the premiums for

prescription drug coverage.

- From 2007 to 2015, premiums for Part D coverage increased 4.1% per year (low-cost plans) and 4.3% per year (average plans). In the same period, annual premiums for Part D coverage charged by the same company in the same region rose 2.8% for basic coverage, 6.5% for all plans, and 8.3% for enhanced coverage.
- Most of the premium increases occurred in 2010 and 2011, when the ACA put in place measure to gradually close a large gap ("doughnut") in coverage. From 2011 to 2015, annual premiums for same-company, same-region coverage rose just 0.2% for all plans and fell 0.4% for basic plans and 0.2% for enhanced plans.

While the U.S. spends more per capita than other countries on prescription drugs and overall healthcare, our analysis shows that competition exerts more pressure on U.S. pharmaceutical prices than on other U.S. healthcare prices.

A review of 12 advanced countries shows that, in Canada, France, Germany, Italy, Japan, South Korea, Sweden and Australia, the difference in per capita costs between that country and the U.S. was greater for overall healthcare than for prescription drugs. On average, per capita healthcare costs were 128.9% higher in the U.S. than in those eight countries, while per capita costs for prescription drugs were 66.7% higher here than in those eight countries.

OCTOBER 2016

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The Costs and Benefits of the Medicare Part D Program for Beneficiaries and the Medicare System¹

SUMMARY AND INTRODUCTION

In the United States and other advanced countries, governments and individuals regularly lament the high and ever-rising costs of healthcare; and the ongoing aging of their populations virtually ensures that these costs will continue to increase — perhaps at substantial rates.

Many analysts identify the development and broad use of new healthcare technologies as primary sources of these cost increases; and, in the public debate over rising costs, new prescription drugs are often singled out as critical cost drivers. This study examines the cost-benefit calculus for prescription drugs in the context of Medicare and overall healthcare in the United States.

We find that the broad use of pharmaceuticals, especially new prescription drugs, produces substantial net benefits by extending people's lifespans, increasing their productivity, and generally improving Americans' quality of life. We further find that broad access to prescription drugs by Medicare beneficiaries — especially through Medicare Part D insurance plans for pharmaceuticals — has substantially reduced other Medicare costs. In this regard, the development of innovative prescription

drugs has stimulated additional innovation across other parts of healthcare by reducing the incidence and duration of hospitalizations, and the use of additional procedures and other medical equipment and facilities. In the final analysis, broad use of prescription drugs generates large net savings for Medicare and American healthcare, providing a measure of progress in “bending the cost curve” by lowering healthcare costs over the long run.

The Congressional Budget Office (CBO) evaluated eight studies and concluded that each 1.0 percent increase in the use of prescription drugs reduces Medicare spending for other healthcare services by 0.20 percent

Pharmaceuticals are major expenditures for governments and individuals around the world. Rising incomes, new discoveries, and increased access to generic versions of older treatments have helped drive worldwide spending on prescription drugs from \$282.5 billion in 2000 to \$888.2 billion in 2010,² \$1.07 trillion in 2015, and a projected \$1.4 trillion by 2020.³ Some of the recent growth has come from emerging economies led by China, Russia, Brazil and India; and Europe’s five largest nations (Germany, France, Italy, the U.K., and Spain), and Japan also are major consumers of pharmaceuticals. However, the United States alone accounted for some \$430 billion in pharmaceuticals sales in 2015 or 40.2 percent of all worldwide drug spending.⁴ For context, all healthcare spending worldwide totaled \$6.5 trillion in 2012 (the latest year available), and the United States accounted for \$2.8 trillion of that total, or 43.1 percent.⁵

The growing demand for prescription drugs is satisfied by pharmaceutical companies around the world, led by 18 of the world’s largest 100 firms, including 11 major American pharmaceutical producers.⁶ This relative concentration reflects the large costs and risks associated with developing new drugs: One recent analysis found that the development of a new marketable drug requires, on average, 10 to 15 years of research and development (R&D) and \$2.6 billion in pre-tax investments and other spending.⁷ In 2014, the member companies of the Pharmaceutical Research and Manufacturers of America (PhRMA) alone invested an estimated \$51.2 billion on R&D, equivalent to 17.2 percent of all U.S. spending on prescription drugs in that year;⁸ and a survey of the world’s 42 largest pharmaceutical firms found that competition drives them to undertake such costly and risky R&D projects on a regular basis.⁹

Medicare is the single largest program facilitating access to prescription drugs in the United States. All told, Medicare covers 53.8 million people, including people with disabilities or end-stage renal disease as well as virtually all Americans age 65 and over. Medicare Part A provides coverage for in-patient hospital services, nursing facilities, home healthcare and hospice services, and Part B provides coverage for outpatient physician services, medical equipment, lab and diagnostic testing, vaccines, and therapies. In addition, Congress created Medicare Part C in 1997, which gives Medicare beneficiaries the option of enrolling in an approved private plan that provides coverage for Medicare services, called “Medicare Advantage” or Part C plans.

Since 2006, Medicare Part D has provided federally-supported access to private coverage

for prescription drugs; and 23.4 million people were enrolled in Part D stand-alone plans in 2014. In addition, Medicare Part C plans are allowed but not required to provide prescription drug coverage; and, in 2014, most of the 30 percent of Medicare beneficiaries enrolled in those plans had such coverage.¹⁰ Some 70 percent of Medicare beneficiaries (37.8 million people) had prescription drug coverage through Medicare in 2014: 43.6 percent (23.4 million people) through Part D stand-alone plans, and 26.7 percent or (14.4 million people) through Part C plans.¹¹ An additional 9.5 million beneficiaries had coverage in 2014 through other programs, including federal retirement and Veterans Administration programs and subsidies for employers that maintain coverage for their retirees. All told, 47.3 million Medicare beneficiaries, or 87.9 percent of all beneficiaries, had some form of prescription drug coverage in 2014.

Congress created Medicare Part D as part of the Medicare Modernization Act (MMA) in

December 2003, and it took effect on January 1, 2006. Before 2006, older Americans with prescription drug coverage generally purchased it through supplemental or “Medigap” plans, received it through continuing coverage provided by former employers, enrolled in a Part C plan with some coverage, or qualified for Medicaid. Millions of older Americans, however, had to rely on their own resources. Under the MMA, all Medicare beneficiaries gained access to taxpayer-subsidized prescription drug coverage through federally-approved, private plans. Each year, private insurers issue their proposed Part D offerings, stipulating the drugs they will cover, their premiums, and cost-sharing provisions. Each plan is designed for one of the 34 geographic regions defined for Part D stand-alone plans or for a Part C plan’s service area, so a beneficiary’s coverage options depend on where he or she lives.¹² Every plan must cover at least 75 percent of the charges for all covered drugs between a standard deductible (\$320 in 2015) and an initial



coverage limit (\$2,850 in 2015), and 15 percent of the charges above a “catastrophic” threshold (\$7,062 in 2015). Under the Affordable Care Act, the gap between the initial coverage limit and the catastrophic threshold will phase out in 2020, when Part D plans and pharmaceutical companies will cover 75 percent of the costs of covered drugs up to the catastrophic threshold.¹³ Moreover, above the catastrophic threshold, beneficiaries pick up 5 percent of drug costs, insurers cover 15 percent, and Medicare is responsible for 80 percent.¹⁴

While Part D plans do not cover all prescription drugs, the law stipulates that they must cover at least two drugs in each of 148 diagnostic categories, plus all or substantially all FDA-approved drugs in six categories (HIV antivirals, cancer drugs, immuno-suppressants, antipsychotics, antidepressants, and anticonvulsants).¹⁵ Under these rules, insurers submit their plans or “bids” to the federal government for approval, listing the drugs they will cover and the monthly payments per-beneficiary which they would require from the government to offer their planned coverage. Medicare uses an average of these bids in each region to determine how much it will pay an insurer to cover an average beneficiary under its plan. The premiums that beneficiaries pay are the difference between Medicare’s share of the average bid and an individual plan’s bid. In this way, insurers are encouraged to compete on price as well as coverage.¹⁶

The impact of Part D on Medicare beneficiaries and the Medicare system depends ultimately on the benefits provided by the prescription drugs covered by Part D plans. There has been extensive research on the benefits of pharmaceuticals. For example, one study found that each 1 percent increase in national

spending on prescription drugs increases people’s lifespans by 0.027 percent for 40-year-olds and nearly 0.05 percent for 60-to 65-year-olds.¹⁷ Other studies have tracked the gains in average lifespans rising from diabetes and cancer medications,¹⁸ the impact on the productivity of patients treated with drugs for multiple sclerosis, migraines and arthritis;¹⁹ and, more generally, the productivity benefits of drugs for 47 chronic conditions.²⁰

Our analysis of Part D plan premiums found that, from 2007 to 2015, the average premium paid nationwide and the lowest cost premium nationwide increased at significant but still moderate rates – rising, respectively, by 4.3 percent and 4.1 percent per year.

Researchers also have assessed the impact of Part D on access to prescription drugs by older patients and the benefits of Part D coverage. One study found that Part D reduced the share of Medicare beneficiaries without prescription drug coverage by two-thirds, from 31 percent to 11 percent.²¹ Other studies found that the Part D program increased seniors’ use of pharmaceuticals by about 13 percent,²² and that the access to newer drugs by older patients increased their life expectancy by five-to-six months for each one-year increase in a drug’s vintage.²³ Another wide-ranging study issued by the Federal Reserve Bank of San Francisco found that by June 2007 – just 18 months after Part D went into effect – between 7,400 and 26,000 Medicare beneficiaries were alive as a result of the Part D program.²⁴ Further, researchers found that Part D disproportionately

helps lower-income and minority seniors, because members of those groups were less likely to have prescription drug coverage before Part D was created.²⁵ Finally, another study found that access to drugs under Part D reduced hospitalizations of Medicare beneficiaries suffering from eight diseases by more than 4 percent.²⁶

Researchers also have explored the benefits of access to prescription drugs in the context of their cost. One study found that retail prescription drugs account for 10 percent of all U.S. healthcare spending, and 76 percent of recent improvements in life expectancy.²⁷ Other studies report that the use of newer drugs significantly reduced both the share of workers claiming disability status as well as costs associated with hospitalizations, home healthcare, office visits and outpatient costs.²⁸ These findings suggest that the use of prescription drugs generally – and newer drugs in particular – generates substantial net savings for the Medicare system.

The Congressional Budget Office (CBO) evaluated eight studies and concluded that each 1.0 percent increase in the use of prescription drugs reduces Medicare spending for other healthcare services by 0.2 percent.²⁹ Other researchers also found that the use of prescription drugs by seniors reduced the need for other medical procedures, and that each prescription refilled by a senior reduced Medicare hospital spending by an average of \$104, by either avoiding hospitalization entirely or reducing the time and services required under the average hospitalization.³⁰ Based on this analysis, we estimate that the increased access to pharmaceuticals under Part D by those seniors who adopted or changed their coverage in response to the enactment of Medicare Part D

saved Medicare \$106.3 billion in other healthcare costs from 2006 to 2014, including \$13.8 billion in 2014. Taking account of all beneficiaries enrolled in Part D stand-alone plans, we further estimate that, from 2006 to 2014, Part D coverage saved Medicare \$740.2 billion in Part A and Part B costs, for a net savings for taxpayers after the \$298.8 billion cost of Part D of \$441.4 billion. In 2014 alone, Part D stand-alone plans cost taxpayers \$45.1 billion and saved \$113.5 billion in Part A and Part B costs, for a net savings to taxpayers of \$68.4 billion.

These findings cover Part D stand-alone plan participants, but an estimated 14,400,000 Medicare beneficiaries are covered through Part C plans. Applying the savings under Part D to beneficiaries with Part C plans, we find that from 2006 to 2014, prescription drug coverage through both the Part D and Part C programs reduced Medicare Part A and Part B costs by \$1,139.5 billion. After accounting for Medicare's \$460.2 billion costs for those plan benefits over this period, the programs produce net savings for Medicare of \$679.3 billion. In 2014 alone, the net taxpayer savings totaled \$110.2 billion, or equivalent to 17.8 percent of all Medicare spending in 2014.

Despite these large savings from the use of pharmaceuticals, and the use of pharmaceuticals by nearly 60 percent of American adults, surveys find that many Americans are concerned about the cost of prescription drugs. According to the IMS Institute, 88.7 percent of prescriptions are filled by low-priced generic drugs, the highest use of generics in an advanced country.³¹ Concerns about drug prices, therefore, generally involve roughly 11 percent of prescriptions for and filled by brand medicines, including those still under patent protection. Pharmaceutical firms spend

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the largest share of revenues on R&D of any U.S. industry; and the costs to develop, test and bring a new drug to market average \$2.6 billion over 10 to 15 years.³² Investments in developing new drugs also are highly risky: The FDA ultimately approves only 12 percent of new compounds that reach clinical trials.³³ Patent rights provide the necessary incentive for companies facing such daunting costs and risks to nevertheless pursue new pharmaceutical discoveries.

Moreover, patients largely drive the focus of pharmaceutical R&D. One study found that each 10 percent increase in cancer rates was associated with a 5.3 percent increase in new chemotherapy treatments, and another analysis found that each 1 percent increase in the potential market size for a category of drugs increased the development of new compounds in that drug category by 4 percent.³⁴ Similarly, when pharmaceutical revenues increase, R&D accelerates: Every 10 percent increase in drug revenues has been associated with a 6 percent increase in pharmaceutical R&D.³⁵

Further, drug manufacturers negotiate the prices of the products they develop with insurance companies, and the results of those negotiations are passed through to patients and consumers in their premiums. CBO researchers examined the cost of the premiums for Part D plans and found that normal competitive forces drive down those premiums.³⁶ Moreover, our analysis of Part D plan premiums found that, from 2007 to 2015, the average premium paid nationwide and the lowest cost premium nationwide increased at significant but still moderate rates – rising, respectively, by 4.3 percent and 4.1 percent per-year. We also analyzed the Part D plan premiums charged by the same company for coverage in the same region, from 2007 to 2015. This analysis found smaller increases

for basic coverage, which rose less than 2.8 percent per year, but larger increases for all plans (6.5 percent per year) and enhanced plans (8.3 percent per year). This analysis also showed that most of those increases occurred in 2010 and 2011, in response to reforms closing the large “doughnut” gap in Part D coverage by 2020. From 2011 to 2015, the monthly premiums for all same-company, same-region coverage increased from \$55.44 to \$55.97, or by two-tenths of 1 percent per year. Over the same period, the same company, same region monthly premiums for basic plans declined by four-tenths of one percent per-year, and the same company, same region premiums for enhanced plans fell two-tenth of 1 percent per year. As expected, CBO reported that the Part D program consistently cost less than it projected in 2006.³⁷ Nevertheless, researchers report that pharmaceutical R&D has increased with the establishment of Part D – especially for new compounds targeting conditions that mainly affect older patients.³⁸

Finally, we examined the disparities in the pricing of prescription drugs between the United States and twelve other advanced countries in 2011. The United States spends more *per capita* overall on healthcare than other countries, and prescription drugs are no exception. However, in eight of the twelve cases, including most other major advanced countries – Australia, Canada, France, Germany, Italy, Japan, Korea, and Sweden – the difference in *per capita* costs for prescription drugs was substantially *less* than the difference in *per capita* costs for all healthcare. (Compared to the United States, the difference in *per capita* costs for prescription drugs was greater than the difference in *per capita* costs for all healthcare only in Denmark, Norway, Switzerland and the United Kingdom.)

The analysis showed that per-person healthcare costs, on average, were 128.9 percent higher in the United States than in the other eight countries, but per-person costs for prescription drugs in the eight countries were only 66.7 percent higher in the United States than in the other eight countries. The disparity, therefore, is nearly twice as great for overall healthcare as for pharmaceuticals. This suggests that competition in the United States by pharmaceutical and insurance companies exerts greater pressure on prescription drug prices than on other healthcare prices, a finding consistent with the rapid pace of innovation in pharmaceuticals.

II. THE BENEFITS OF PHARMACEUTICALS

The importance of the access to cutting-edge pharmaceutical treatments that Medicare Part D provides depends on the benefits those treatments provide. As Americans' use of pharmaceuticals has grown, economists have evaluated the dimensions of those benefits in various ways. Across advanced countries, research has found that spending on pharmaceuticals extends average lifespans by months and increases average productivity in meaningful ways.

To begin, researchers have analyzed the impact of the use of pharmaceuticals generally and new drugs in particular on the average lifespans of people with certain conditions. For example, studies show that the average lifespan of an HIV-positive 20-year-old American or Canadian who used a combination antiretroviral therapy increased from barely 16 years in 2000 to more than 50 years in 2010.³⁹ Similarly, the average lifespan of people with Type I diabetes in the 1970s was 27 years less than the average for other Americans; today, Type 1 diabetics using the latest treatments can expect to live only

11 to 13 years less than other Americans.⁴⁰

Another study of cancer patients found that pharmaceutical advances reduced their mortality rates by 8 percent from 2000 to 2009, double the 4 percent reduction associated with new imaging technologies.⁴¹

Other studies have investigated the overall impact of new pharmaceuticals on people's lifespans. As noted earlier, one broad analysis focused on OECD countries in the year 2000 and found that a 1 percent increase in national spending on pharmaceuticals increased expected lifespans by 0.027 percent for 40-year-olds, by 0.046 percent for 60-year-olds, and by 0.048 percent for 65 year olds. The researchers also determined that by doubling its spending on pharmaceuticals, a nation could extend the average lifespan of a 40-year-old man by 360 days (or 2.7 percent) and raise the life expectancy of an average 40-year-old woman by 411 days (or 2.7 percent).⁴² This study built on an earlier analysis of OECD countries, which had found that a one percent increase in a nation's pharmaceutical spending increased the expected lifespans of its citizens by 0.0172 percent for 40-year-olds and by 0.0401 percent for 60-year-olds.⁴³

Any treatment that could reduce these effects of common colds by 10 percent would generate economic benefits of more than \$3 billion.

Other researchers have assessed the extent to which pharmaceuticals affect patients' productivity by shortening their recovery time from acute illnesses or allowing people with chronic conditions to continue living normally

and working efficiently. The economic costs of illnesses without effective treatments illustrate the potential dimensions of these effects: Common colds, for example, cost U.S. employers an estimated \$25 billion in 2002 – almost \$33 billion in 2015 dollars – including \$8 billion from workers staying home and \$16.6 billion from the reduced productivity of those who came to work with colds.⁴⁴ Any treatment that could reduce these effects of common colds by 10 percent would generate economic benefits of more than \$3 billion. Other conditions are widely and successfully treated, generating substantial economic benefits. For example, more than 50 million Americans have arthritis or other chronic joint inflammation and pain; and Cox-2 inhibitors have increased a patient's likelihood of returning to work by 22.1 percentage-points.⁴⁵ In addition, an estimated 400,000 Americans have multiple sclerosis (MS), and the recently-developed treatment Natalizumab increased the average working hours of people with MS by 3.3 hours per week.⁴⁶ Similarly, nearly 40 million Americans suffer from migraines; and one popular treatment, Sumatriptan, raised the workplace productivity of those taking it by 35.8 minutes per episode, compared to those who received placebos.⁴⁷

All of these studies also found that these economic benefits exceeded the cost of their treatments. The same conclusion can be drawn from broader studies that examined the productivity effects associated with large groups of treatments. For example, an analysis of the effects of using FDA-approved drugs for 47 chronic conditions over the years from 1982 to 1996 found not only that their use reduced work absenteeism by 29 percent, but also that the improved work performance associated with the use of those 47 drugs produced *per*

capita benefits of \$415, or nearly eight times the *per capita* spending on the drugs.⁴⁸ Another study analyzed the productivity impact of newer treatments, as compared to older ones, over the period from 1990 to 2004, and the author found that each one-year increase in a drug's "vintage" – for example, being introduced in 1996 as compared to 1995 – was associated with 1 percent higher productivity for its users.⁴⁹

III. THE BENEFITS OF EXPANDED ACCESS TO PHARMACEUTICALS UNDER MEDICARE PART D

Many of the productivity benefits associated with the use of pharmaceutical treatments apply mainly to people younger than most Medicare beneficiaries. Nevertheless, 16.1 percent of Americans ages 65 and older continued to work in 2010, including 30.8 percent of those 65 to 69 years old.⁵⁰ Furthermore, those productivity benefits arose from a treatment's capacity to improve a person's condition and lessen his or her symptoms, and those improvements can confer benefits on anyone – whether he or she works or not. Further, new treatments that extend the lifespan of people with cancers and other conditions provide significant benefits to people with Part D coverage. One study examined the impact of the "vintage" of pharmaceuticals, or how recently a drug was made available, on older patients' life expectancy, using the Medical Expenditure Panel Survey (MEPS) records of 2,805 patients ages 65 and older from 1996 to 2003.⁵¹ The researcher found that pharmaceutical innovation, measured by a one-year increase in a drug's vintage, increased patients' life expectancy by 0.05 percent, or five to six months per vintage year.⁵² This finding is consistent with an earlier study of treatments for cancer patients of all ages, which found that newer-vintage pharmaceuticals

increased the lifespan of those patients by 0.96 to 1.26 years, relative to their life expectancy at birth.⁵³

With regard to the particular impact of Part D coverage, prior research had shown, as expected, that disparities in health insurance coverage led to differences in health outcomes. A pivotal study used data from the National Survey of America's Families to identify the impact of demographic factors on securing access to healthcare: The authors found that health insurance explained 33 percent of the difference in access to medical services for Hispanics compared to whites, and 37 percent of the difference for African-Americans compared to whites.⁵⁴ Insurance was a better predictor of healthcare access than income, citizenship status, or family status. Similarly, other researchers have shown that expanding insurance coverage reduces disparities in health outcomes. One study of 2,290 families in New York found that, within one year of expanding the State Children's Health Insurance Program (SCHIP), substantial declines occurred in race-based differences in the use of preventive care for children, the extent of unmet healthcare needs, and the quality of care for children as rated by their parents. Ideally, the universal expansion of prescription drug coverage should provide substantial benefits for those underserved by the healthcare system prior to the policy change.

A number of studies have measured the success of the Part D program in increasing seniors' access to and use of prescription drugs. One early investigation found that, during Part D's initial enrollment period, the share of Medicare beneficiaries without prescription drug coverage declined from 31 percent to 11

percent.⁵⁵ Another study found that, during the initial years of the Part D program, seniors' use of prescription drugs increased 12.8 percent.⁵⁶ A third analysis used data from the annual Medicare Current Beneficiary Surveys (MCBS) from 2004 to 2006 and found that the likelihood of seniors forgoing their prescribed medications for income reasons fell 17.6 percent, and the likelihood of their forgoing basic needs to pay for their prescriptions fell almost 70



percent.⁵⁷ Finally, a study of Medicare patients in 23 states suffering from eight diseases over the years 2005 to 2007 found that access to prescription drugs under Part D reduced their hospitalizations by 4.1 percent.⁵⁸ These studies show that, among Medicare beneficiaries, Part D dramatically expanded their access to and use of prescription drugs, eased financial strains associated with using prescription drugs, and reduced the need for hospitalization.

Other researchers have looked at Part D's impact

on the mortality rates of seniors. One study by economists at the Federal Reserve Bank of San Francisco used county-level mortality data from 2000 to 2010 to estimate the impact of Part D coverage on the death rates of its beneficiaries.⁵⁹ The authors found that some 7,400 to 26,000 people were alive in June 2007 as a direct result of their Part D coverage, with the largest effects on seniors with cardiovascular-related problems.⁶⁰ Another study used nationwide, individual mortality data and found that Part D coverage lowered the mortality rates of 66-year-olds by 2.2 percent – again mainly by reducing cardiovascular-related deaths.⁶¹ A third study estimated that, from Part D's implementation in 2006 to 2014, the program prolonged the lives of nearly 200,000 beneficiaries by at least one year.⁶²

These studies suggest that the expansion of prescription drug coverage for seniors should produce especially large benefits for those without pharmaceutical coverage prior to Part D, especially among minorities and those with low or modest incomes. Before Part D took effect, seniors with incomes just above the poverty line had the lowest rates of prescription drug coverage, because they were ineligible for Medicaid and less likely to be able to afford private coverage. Researchers evaluated the Medical Expenditure Panel Survey (MEPS) data covering 2001 to 2008 and found that after Part D took effect, prescription refills by those over age 65 with incomes of 100 percent to 125 percent of the poverty level increased by 8.35 refills, compared to 3.08 more refills by those with higher incomes. Similarly, once Part D plans were available, minority seniors increased their use of prescription drugs on average by 4.19 refills- 45 percent more than the increased prescription refills by white seniors.⁶³ Other

researchers found that minority seniors had larger gains in mortality rates: Part D lowered mortality rates among 66-year-old non-whites by 3.6 percent, versus a 1.9 percent reduction in the mortality rates of 66-year-old whites.⁶⁴

IV. THE ROLE OF PHARMACEUTICALS IN THE U.S. HEALTHCARE SYSTEM

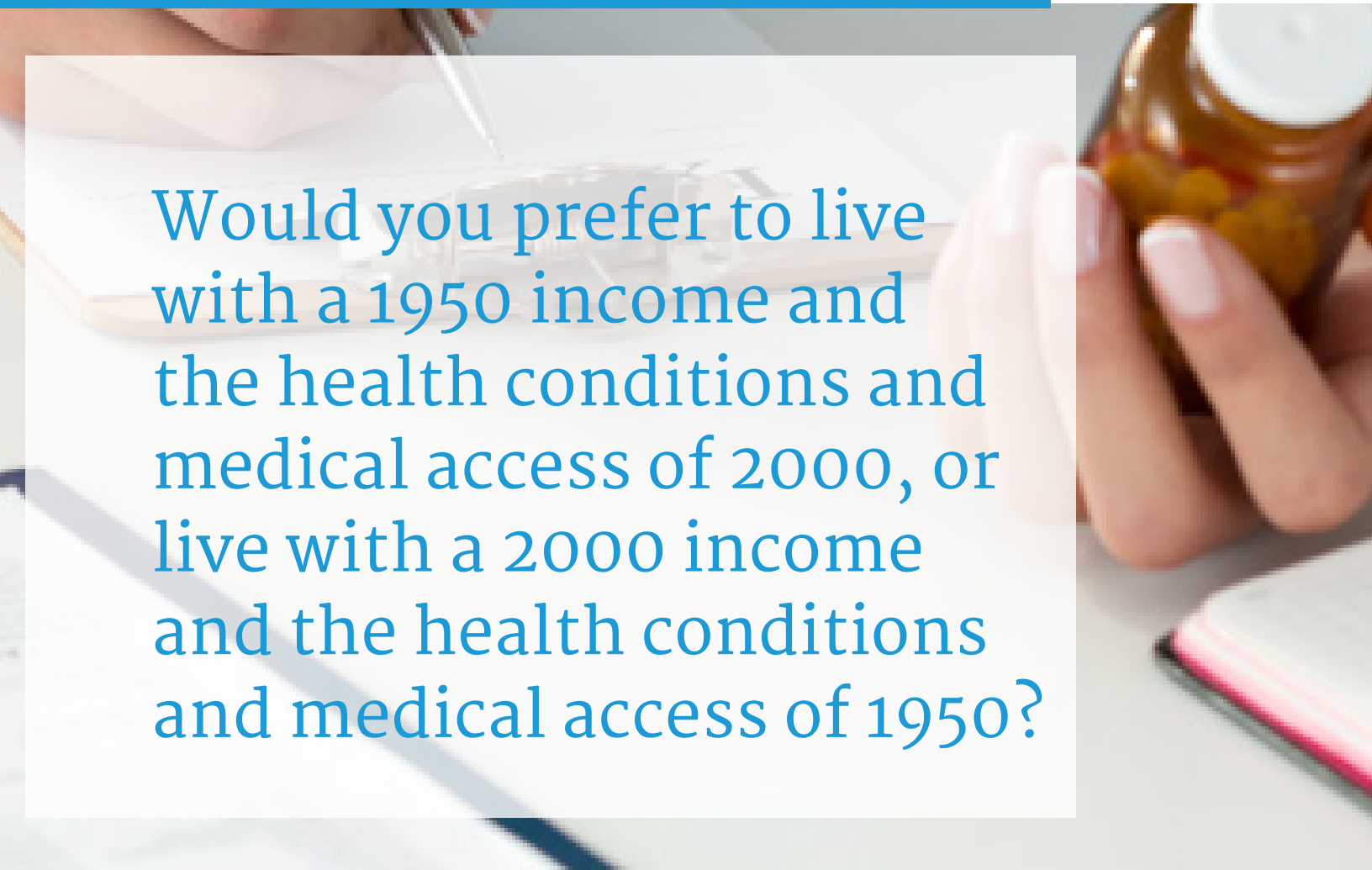
Advances in healthcare over the past century or so have transformed the quality of life in America and other advanced societies. In 1900, the average life expectancy of Americans was 46.3 years for men and 48.3 for women; by 1950, average lifespans reached 65.6 years for men and 71.1 years for women; and, by 2013, the average lifespan was 76.4 years for males and 81.2 years for females.⁶⁵ Rising income and improved sanitation and other aspects of public health dominated gains in life expectancy during the first half of the 20th century; while rising incomes, expanding insurance coverage and technological innovations in pharmaceuticals and medical equipment dominate the more recent gains. Yale University economist William Nordhaus calculated the economic value of these increases in life expectancy since 1950 and found that the value of advances in health and life expectancy was comparable to the value of aggregate gains in personal incomes.⁶⁶ To illustrate this finding, he posited the following thought experiment: Would you prefer to live with a 1950 income and the health conditions and medical access of 2000, or live with a 2000 income and the health conditions and medical access of 1950? Nordhaus concluded that people value advances in healthcare and incomes comparably, which corresponds to an average American being indifferent to the choice in his thought experiment.⁶⁷

The impact of pharmaceuticals on healthcare

outcomes can be approached in a variety of ways. To begin, spending on retail prescription drugs in the United States totaled some \$298 billion in 2014 – about 10 percent of the \$3 trillion in U.S. healthcare spending in that year.⁶⁸ However, there is evidence that prescription drugs contribute more than 10 percent to most health outcomes. For example, the average life expectancy of Americans increased 2.37 years from 1991 to 2014; and one study estimated that new-vintage prescription drugs raised average life expectancy by 0.96 to 1.26 years over the same period, and new injectable drugs increased lifespans by an additional 0.48 to 0.54 years.⁶⁹ This research suggests that pharmaceuticals alone were responsible for between 61 percent and 76 percent of the recent improvements in life expectancy. Even if these estimates overstated the contribution of pharmaceuticals

to lifespans by as much as 10 percent, they still would exceed the lifespan improvements over the same years attributed to new medical imaging technologies (0.62 to 0.71 years), the declining incidence of AIDS (0.18 to 0.20 years), and reductions in cigarette use (0.10 years). Similarly, the recent impact of pharmaceuticals on average lifespans should more than offset the adverse impact on people's life expectancy attributed to factors such as increased body weight (0.58 to 0.68 years). Approached as a value proposition, pharmaceuticals would produce substantial positive returns for life expectancy even if their share of U.S. healthcare spending were **five times greater** than it is.

Numerous researchers have assessed the cost savings or cost effectiveness of particular pharmaceutical treatments. Some treatments reduce the time patients spend in a hospital or the number of procedures they require. For example, when researchers compared the



Would you prefer to live with a 1950 income and the health conditions and medical access of 2000, or live with a 2000 income and the health conditions and medical access of 1950?

effects of the non-steroidal anti-inflammatory drug Ketorolac to those achieved by traditional narcotic analgesia, they found that patients undergoing a lumbar laminectomy who used Ketorolac reduced their time in the hospital by an average of one-half day, producing net savings of \$351.92 per patient.⁷⁰ Other drugs lessen the need for invasive treatments. A study of patients with benign prostatic hyperplasia found that pharmaceuticals produced results comparable to surgery at lower cost.⁷¹ Among 45-year-old men, the 20-year expected cost per patient was \$300 less for those who used beta blockers than those who chose surgery. These savings increased with age: The expected cost differences rose to \$800 for patients 65 years old and \$3,000 for patients 85 years old.

Similarly, a study of AIDS patients treated under Florida's Medicaid program found that drug therapies raised per-patient pharmaceutical costs from \$411 to \$971; but overall medical spending fell from \$2,848 to \$2,005 or by \$843 per patient.⁷² Another study of AIDS treatments also found significant net savings: Each 10 percent increase in the use of protease inhibitors increased pharmaceutical costs by \$86 per patient per month, but their overall medical costs fell by \$135 per patient per month.⁷³

These types of studies have certain limitations; but on balance, those issues suggest that the studies may well **underestimate** the cost-effectiveness of certain drug treatments. Analysts note that the patients in such studies are known to have certain conditions that can be treated with specific drugs, while other patients with the same conditions may be misdiagnosed or react negatively to the same treatments. In this way, the studies could overestimate a drug's practical benefits. At the same time, however, these studies ignore long-term

benefits. For example, patients who regularly take medications such as anti-hypertensives, antiplatelet agents and anticoagulants reduce their likelihood of suffering strokes.⁷⁴ Those drugs may be costly, but those costs are much less than the \$60,000 or more associated with treating a stroke patient— and those benefits are rarely taken into account.⁷⁵ Similarly, estrogen receptor modulators (SERMs) help women increase their bone-mass density and reduce the risk or severity of osteoporosis, which in turn should help avoid hip fractures and their costly treatment years later.⁷⁶

Other researchers approach issues of cost effectiveness and the relative benefits of prescription drugs by focusing on other spillover effects from their development and use.

One study estimated that new-vintage prescription drugs raised average life expectancy by 0.96 to 1.26 years over the same period, and new injectable drugs increased lifespans by an additional 0.48 to 0.54 years.

For example, one study assessed the impact of new drugs on Social Security disability spending by examining whether new prescription drugs designed to alleviate certain conditions reduced the number of people applying for and receiving disability support. Using state-level data covering the years 1994 to 2002, the author found that the use of new drugs lowered the share of workers claiming disability from 3.65 percent to 3.42 percent in 2002, or by some 418,000 workers.⁷⁷ Another study analyzed the impact of “drug vintages” — the use of newer drugs, as compared to older ones — on a range

of costs, including hospitalizations, home healthcare, office visits, and outpatient and emergency room services.⁷⁸ Using individual data, the researcher found that treatment regimens which lowered the average age of the drugs used from 15 years to 5.5 years raised per-patient drug costs by \$18, but also lowered per-patient costs for hospitalization by \$80, home health costs by \$12, office visits by \$24, outpatient costs by \$10, and emergency room visits by \$3. All told, use of newer drugs lowered net per-patient costs by \$111. This study also analyzed how newer drug vintages affect Medicare costs. The author found that decreasing the average age of the drugs used by Medicare patients from 15 years to 5.5 years lowered the system's net, per-patient, non-prescription drug costs by \$127, two-thirds from lower hospital costs.⁷⁹

The Impact of Prescription Drugs on Total Medicare Costs

These studies suggest that the use of prescription drugs generally – and newer pharmaceuticals in particular – can produce substantial savings for Medicare. In 2012, CBO reviewed eight studies to determine the appropriate way to estimate how much prescription drug spending reduces other spending by Medicare.⁸⁰ The studies assessed by CBO covered a range of inputs, samples, outcomes, and analytical techniques. In order to establish baseline comparability across the studies, CBO translated the number of hospitalizations into adjusted Medicare expenditures on medical care based on changes in drug use, taking account of sample populations that were healthier or sicker than the overall Medicare population. After these adjustments, seven of the eight studies found that greater use of pharmaceuticals reduced

total Medicare costs, and only one study found that increased prescription drug usage induced additional Medicare costs. CBO concluded that a 1 percent increase in the use of prescription drugs should reduce Medicare spending for other services on average by 0.2 percent, and a 1 percent reduction in the use of pharmaceuticals would raise Medicare spending for other services by 0.2 percent.

If the CBO estimates are correct, the use of pharmaceuticals by Medicare patients produces substantial savings for the system and taxpayers. In 2014, benefits under Medicare Part A and Part B cost \$526.8 billion. Earlier, we noted that researchers found that Part D has increased total drug usage by Medicare beneficiaries by 12.8 percent. The gains came from two sources – very large increases in drug usage by Medicare beneficiaries who had no coverage before Part D was enacted, and substantial increases by beneficiaries who switched to more comprehensive coverage. CBO's conclusion that a 1 percent increase in the use of prescription drugs by such a beneficiary reduced other Medicare expenditures by 0.2 percent implies that the expanded access to prescription drugs through Part D reduced Medicare Part A and Part B spending by 2.56 percent ($12.8 \times 0.2 = 2.56$), assuming that the share of beneficiaries who changed their behavior due to Part D is equal to their share of Part A and Part B spending. Based on the actual costs of Parts A and B, we can estimate that Part D coverage of beneficiaries who, prior to Part D, lacked coverage or who shifted to broader coverage in response to Part D, reduced total spending on Parts A and B by more than \$106 billion from 2006 to 2014, equivalent to 19.3 percent of all Part D costs over that period. (Table 1)

The preceding analysis focused on the Medicare

savings from the increased use of prescription drugs, primarily but not exclusively generated by the increased use of those drugs by a subset of Medicare beneficiaries in the years since Congress established Part D coverage. Other researchers have analyzed the savings for Medicare from its beneficiaries gaining access to quality prescription drug insurance coverage through the Part D program. One study of 6,001 beneficiaries assessed how the Part D program affected the quarterly non-drug medical costs of people with limited prescription drug coverage prior to the Part D program.⁸¹ The authors found that, among this group, access to Part D plans reduced their non-drug medical costs by \$306 per quarter or \$1,224 per year. Moreover, this

result understates the impact of broad Part D coverage on other medical costs, since the analysis covered only those who had limited or no drug coverage prior to Part D. If we generalize these results to all Medicare beneficiaries with prescription drug coverage, the analysis suggests that prescription drug coverage under Part D plans saved Medicare in 2014 about \$37.1 billion in other healthcare costs;⁸² including those covered through Medicare Part C plans, the 2014 savings would about \$59.9 billion.⁸³

Other research has focused on the general impact on healthcare costs of pharmaceuticals used by seniors. Drawing on this research, we

TABLE 1. Medicare Costs, Parts A and B and Part D, and Savings in Parts A and B from the Increased Use of Pharmaceuticals under Part D (\$ billions) ⁸¹

	ACTUAL MEDICARE PART A AND PART B COSTS	TOTAL MEDICARE PART D COSTS (BILLIONS)	SAVINGS FROM PART D FOR PART A AND PART B (BILLIONS)
2006	\$354.9	\$47.4	\$9.3
2007	\$376.6	\$49.7	\$9.9
2008	\$412.6	\$49.3	\$10.8
2009	\$441.9	\$60.8	\$11.6
2010	\$454.2	\$62.1	\$11.9
2011	\$474.6	\$67.1	\$12.5
2012	\$499.4	\$66.9	\$13.1
2013	\$505.7	\$69.7	\$13.3
2014	\$526.8	\$78.1	\$13.8
Total	\$4,046.7	\$551.1	\$106.3

can estimate the impact of seniors' general use of prescription drug on the other healthcare costs of Medicare beneficiaries. We rely in particular on a study of 3,101 seniors who used instrumental variable analysis to estimate how the use of prescription drugs affected those seniors' hospital costs.⁸⁴ The authors focused on seniors from the 1999 and 2000 schedules of the Medicare Current Beneficiary Survey, who had changed their prescription drug coverage in those years. They estimated two equations –one assessing the likelihood of hospitalization and the other its associated costs, and then combined their parameters to estimate the average unit impact of pharmaceutical use on hospital spending. This analysis, therefore, estimated both the impact of prescription drug use on the likelihood of being hospitalized and, if hospitalized, the impact of prescription drug use on the costs of those hospitalizations.⁸⁵

The researchers found that, among the seniors in their large sample, each prescription refill reduced Medicare hospital spending \$104, again by avoiding hospitalization or reducing the time and services of hospitalizations.⁸⁶ In fairness, the sample may overstate the savings for all seniors, if those who changed their drug coverage did so because they expected to need more prescriptions – or the sample may understate those savings if those who changed coverage sought less costly coverage because they expected to need fewer prescriptions. The impact of either bias is likely to be small, since the sample was very large. The authors also controlled for the “endogeneity” of drug use – here, the fact that those who used more drugs were more likely to have

TABLE 2. Government Cost of Providing Prescription Drug Benefits for Medicare Beneficiaries through Part D, Part C, and the RDS Program, 2006-2014⁹²

	GOVERNMENT EXPENDITURES FOR PRESCRIPTION DRUG COVERAGE (BILLIONS)	MEDICARE BENEFICIARIES RECEIVING COVERAGE (MILLIONS)	AVERAGE COST PER BENEFICIARY
2006	\$47.4	27.6	\$1,717.39
2007	\$49.7	31.4	\$1,582.80
2008	\$49.3	32.6	\$1,512.27
2009	\$60.8	33.6	\$1,809.52
2010	\$62.1	34.8	\$1,784.48
2011	\$67.1	35.7	\$1,879.55
2012	\$66.9	37.4	\$1,788.77
2013	\$69.7	39.1	\$1,782.61
2014	\$78.1	40.5	\$1,928.40

conditions associated with higher healthcare costs. The outstanding issue is whether the \$104 hospitalization-related savings are limited to seniors whose prescription drug use changed as a result of a change in their coverage for prescription drugs.

Here, we assume we can reasonably apply these results to all seniors with prescription drug coverage, so we can better understand the overall value of the Part D program. With this caveat, we can estimate the savings for Medicare from the use of prescription drugs by all Medicare beneficiaries with Part D plan

coverage. Stand-alone Part D plans cover 43.6 percent of Medicare beneficiaries; and the Kaiser Foundation reports that Americans age 65 and older fill or refill prescriptions, on average, 27.9 times in the course of a year.⁸⁷ This suggests that in 1999 and 2000, the average Medicare savings on hospital care for seniors with prescription drug coverage was \$2,901.60 per-senior, assuming that the marginal elasticity is stable across the appropriate range.⁸⁸ Next, we adjust those savings for increases in healthcare costs since 2000: After that adjustment, the Medicare Part A and Part B savings from Part

TABLE 3. Government Cost of Medicare Part D Stand-Alone Plans, and Medicare Part A and Part B Savings from the Use of Prescription Drugs Covered by Those Plans, 2006-2014⁹³

	PART D STAND-ALONE BENEFICIARIES (MILLIONS)	PART A AND PART B SAVINGS FROM PART D PLANS, PER-BENEFICIARY	TOTAL PARTS A AND PART B SAVINGS FROM PART D STAND- ALONE PLANS (\$ BILLIONS)	PART D STAND- ALONE COSTC (\$ BILLIONS)	NET SAVINGS (\$ BILLIONS)
2006	14.6	\$3,741.11	\$54.7	\$25.1	\$29.6
2007	17.0	\$3,906.62	\$66.5	\$26.8	\$39.7
2008	17.5	\$4,051.36	\$71.1	\$26.5	\$44.6
2009	17.5	\$4,179.73	\$73.1	\$31.7	\$41.4
2010	17.9	\$4,322.33	\$77.5	\$31.9	\$45.6
2011	18.6	\$4,453.84	\$82.8	\$35.0	\$47.8
2012	20.0	\$4,617.05	\$92.5	\$35.8	\$56.7
2013	22.9	\$4,730.73	\$108.4	\$40.8	\$67.6
2014	23.4	\$4,843.84	\$113.5	\$45.1	\$68.4
Total	-	\$4,364.28	\$740.1	298.8	441.4

TABLE 4. Beneficiaries with Federally Supported Prescription Drug Coverage (millions) ⁹⁴

	ALL MEDICARE BENEFICIARIES	PART D PLANS	PART C PLANS	RDS, FEHB, VA, & OTHER PROGRAMS	TOTAL COVERED BENEFICIARIES
2006	43.4	14.6	5.7	18.7	39.1
2007	44.4	17.0	7.3	15.7	40.0
2008	45.5	17.5	8.3	15.2	41.0
2009	46.6	17.5	9.4	15.0	41.9
2010	47.7	17.9	10.1	14.9	42.9
2011	48.9	18.6	10.9	13.5	43.0
2012	50.9	20.0	11.8	13.0	44.8
2013	52.5	22.9	12.9	10.4	46.2
2014	53.8	23.4	14.4	9.5	47.3

D stand-alone plans, per prescription refill, was \$134.09 in 2006 and \$173.61 in 2014.⁸⁹ On this basis, we estimate that the annual savings for Medicare Parts A and B from all prescriptions filled under Part D stand-alone plans came to \$3,741.11 per-person in 2006 and \$4,843.84 per-person in 2014.

To estimate the net effects, we use Medicare Annual Reports on total costs and costs per-beneficiary of prescription drug coverage under Medicare. These reports cover government spending for prescription drug benefits for all Medicare beneficiaries, including benefits provided through Part D plans, Part C plans, and the Retiree Drug Subsidy (RDS) program for firms providing coverage for retired employers.⁹⁰ These data also cover the number of people with coverage through each of these programs. Using

these data, we estimate the average cost per-Medicare beneficiary for government-supported drug benefits.

Based on the data, we can estimate the total and net savings associated with Part D coverage from 2006 to 2014. In 2014, 2.7 million people were covered under the RDS program, and among Medicare beneficiaries with drug coverage, 62 percent were enrolled in stand-alone Part D plans and 38 percent in Part C plans. From these data, we estimate that 23.4 million Medicare beneficiaries had stand-alone Part D coverage in 2014. Now, we can estimate that the use of prescription drugs under stand-alone Part D plans reduced Part A and Part B costs by \$740.3 billion from 2006 to 2014, ranging from gross savings of \$54.9 billion in 2006 to \$113.5 billion in 2014. (Table 3) We

TABLE 5: Savings to Medicare Part A and Part B from Prescription Drug Coverage Provided through Medicare Part D and Part C Plans, 2006-2014, \$ billions⁹⁵

	SAVINGS FROM STAND-ALONE PART D PLANS	SAVINGS FROM PART C PLANS	TOTAL GROSS SAVINGS	COSTS, PART D AND C DRUG BENEFITS	TOTAL NET SAVINGS
2006	\$54.7	\$21.3	\$75.9	\$35.0	\$40.9
2007	\$66.5	\$28.5	\$94.9	\$38.5	\$56.5
2008	\$71.1	\$33.6	\$104.5	\$39.0	\$65.5
2009	\$73.1	\$39.3	\$112.4	\$48.7	\$63.8
2010	\$77.5	\$43.7	\$121.0	\$50.0	\$71.1
2011	\$82.8	\$48.5	\$131.4	\$55.4	\$75.9
2012	\$92.5	\$54.5	\$146.8	\$56.9	\$89.9
2013	\$108.4	\$61.0	\$169.4	\$63.8	\$105.5
2014	\$113.5	\$69.8	\$183.1	\$72.9	\$110.2
Total	\$740.1	\$399.7	\$1,139.4	\$460.2	\$679.3

can also estimate the net savings for Medicare, taking account of the government costs for the Part D program. In 2014, the government spent \$45.1 billion on Part D coverage, and use of prescription drugs by beneficiaries under Part D saved Parts A and B \$113.5 billion. Part D coverage in 2014, therefore, reduced total Medicare costs by \$68.4 billion. From 2006 to 2014, the use of pharmaceuticals under Part D plans saved Medicare a net \$441.4 billion.

As noted, the federal government supports prescription drug coverage in numerous ways. Substantial numbers of seniors are enrolled in Part C plans which provide coverage for pharmaceuticals and Part A and Part B benefits

through health maintenance organizations (HMOs) and other private insurance plans, rather than through the federally-run Medicare system. Part C plans are federally-supported alternatives to Medicare's single-payer fee-for-service system, and the number of people enrolled in such plans has risen from 5.7 million in 2006 (13 percent of beneficiaries) to 14.4 million in 2014 (27 percent of beneficiaries). (Table 4) This leaves some 16 million persons or about 30 percent of those age 65 and older or disabled without drug coverage under Part C or stand-alone Part D plans. Of them, some 2.7 million had prescription drug benefits under the RDS Program in 2014. Another 6.8 million Medicare beneficiaries had other coverage in 2014

recognized by the Centers for Medicare and Medicaid Services as meeting Part D standards, mainly through the Federal Employees Health Benefits Program (FEHB), TRICARE, the Veterans Administration (VA), or their workplace. All told, 47.3 million of 53.8 million Medicare beneficiaries or 87.9 percent had prescription drug coverage in 2014.

We cannot calculate the Medicare savings from coverage through the FEHB, VA and TRICARE programs, because federal budget documents do not distinguish the Medicare beneficiaries of those programs from their other beneficiaries. Further, under the RDS program, some of the healthcare savings may go to those employers, depending on what other coverage the employer provides. Thus, our estimate of the Medicare savings derived from federally-supported coverage for prescription drugs is limited to Part D and Part C plans. 5, shows the estimated savings under both forms of coverage, the federal costs of the drug coverage provided under Part D and Part C plans, and the net savings for Medicare.

This analysis suggests that the use of the prescription drugs provided for Medicare beneficiaries through Part D and Part C plans reduced overall Medicare costs, net of the federal cost of the prescription drug coverage, by \$110.2 billion in 2014 and by \$679.3 billion from 2006 to 2014. The 2014 net savings to Medicare were about 50 percent greater than the \$72.9 billion cost of providing the drug benefits in 2014, and equivalent to 23.4 percent of all Medicare spending.⁹¹

This analysis suggests that every \$1 expenditure on prescription drugs for Medicare beneficiaries under Part D and Part C, over the nine years from 2006 to 2014, was associated with

an average reduction in hospital, physician and other costs of \$2.48, or a net savings of \$1.48 for each \$1 in support for prescription drugs. Moreover, this estimate is conservative compared to an earlier analysis of the savings associated with prescription drug usage. That 1996 study drew on event-level outpatient, discharge and individual mortality data from across the nation and found that every \$1 increase in pharmaceutical expenditures reduced hospital-care expenditures by \$3.65, for a net savings of \$2.65 for each \$1 spent on prescription drugs.⁹² Since our analysis focuses on the costs of supporting prescription drug coverage rather than the costs of the drugs, our finding is even more moderate compared to the academic study. Our analysis also understates the overall Medicare savings associated with the use of pharmaceuticals since, as noted, we do not include the net savings from the 18 percent of Medicare beneficiaries whose prescription drug coverage comes through the RDS, FEHB, TRICARE and VA programs. The use of prescription drugs also may affect other medical costs not captured in these analyses, such as the use of durable medical equipment or ambulance services.

Once again, we acknowledge that our savings analysis applies to all Medicare beneficiaries the savings in Part A and Part B costs achieved by a subset of beneficiaries who changed their coverage before the Part D program expanded access to prescription drug insurance. As discussed earlier, those people may have shifted coverage because they were in worse-than-average health and consumed more pharmaceuticals than the average person on Medicare, in which case the savings associated with them could overstate the savings for all beneficiaries. Alternatively, those who changed

their coverage may have sought less expensive plans, because they were in above-average health and used few prescription drugs. In that case, the Part A and Part B savings associated with those people would understate the savings for all Medicare beneficiaries.

In one respect, this analysis also may overstate the net savings to Medicare from coverage through Part C plans. Under the Part C program, the companies offering the plans as well as and their clients both bear most of the costs of hospitalizations. Therefore, some of the savings tied to the use of prescription drugs are captured by those companies and clients, rather than by Medicare. Finally, other analysts have found larger healthcare savings arising from the increased use of prescription drugs for particular conditions. One researcher focused on the savings associated with drug treatments for four conditions that account for 40 percent of all Part D use – dyslipidemia, congestive heart failure, diabetes, and hypertension.⁹³ That analysis found that every 1 percent increase in drug treatments for those conditions produced offsets in other healthcare costs equal to, respectively by condition, 0.63 percent, 0.77 percent, 0.83 percent and 1.17 percent of the healthcare costs for patients with those same conditions who did not receive the drug treatments.⁹⁴

On balance, we conclude that the use of prescription drugs supported by Medicare Part D substantially reduces overall Medicare costs. Even if the actual savings are only half of what our results suggest, the use of prescription drugs under stand-alone Part D plans and Part C plans still saved Medicare more than \$55 billion on a net basis in 2014 and nearly \$340 billion over the nine years from 2006 to 2014.

V. PRESCRIPTION DRUG PRICES AND THE INCENTIVES TO DEVELOP NEW DRUGS

The healthcare savings associated with using pharmaceutical treatments depend on the prices paid for those treatments and for hospital and physician services. Notwithstanding the widespread public concerns about high drug prices, 59 percent of Americans age 20 and over



were treated with prescription drugs in 2012, or 133.6 million Americans.⁹⁵ Eight of the 10 most commonly used drugs treat hypertension, heart problems, diabetes, and other “cardio-metabolic” conditions, including statins, the most commonly used pharmaceutical designed to lower cholesterol and reduce the risk of heart attacks and strokes. Given the wide use of those drugs, the question remains whether their prices—or, for most patients, the amount their insurance plans require that they pay out-

of-pocket—have limited access to them in any meaningful way. Surveys by the Kaiser Family Foundation have found that 80 percent of people in excellent, very good, or good health who take prescription medicines say they can easily or somewhat easily pay for their drugs.⁹⁶ However, 43 percent of people in fair or poor health and 38 percent of those taking four or more drugs a year say it is somewhat or very difficult to pay for their medications. These percentages are smaller for Medicare beneficiaries, almost

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in 2014.**

certainly as a result of the Part D program:

Among all Medicare beneficiaries, 20 percent of those using prescription drugs and 29 percent of those using four or more medications say they have difficulty paying for them.⁹⁷

The fact that significant numbers of Americans in fair or poor health and/or who take multiple medications have difficulties affording them raises questions about how the prices for prescription drugs and how insured patients' out-of-pocket payments for those drugs are determined. To begin, market forces largely determine the prices for the vast majority of prescriptions. Again, according to the IMS Health Institute for Healthcare Informatics, nearly 89 percent of prescriptions filled in the United States in 2015 were filled by generic pharmaceuticals, or medications identical molecularly to brand-name drugs that have expired patents.⁹⁸ Once a pharmaceutical company's patent and/or period of regulatory exclusivity for a molecule expires, any company

can obtain approval to produce and market its own generic version, subject to normal regulation. Competition among generic producers and with a drug's original producer drive down the prices of the 89 percent of prescriptions filled by generics by an average of 75 percent.⁹⁹ As a result, the average price of a generic drug is about \$33, although Walmart, Target and other national retail chains offer hundreds of generics for as little as \$4 for a one-month supply. However, prices of some generic drugs have risen recently, attracting considerable public attention. A December 2015 report by the Office of the Inspector General of the Department of Health and Human Services found that, from 2005 to 2014, the prices of 22 percent of generic drugs increased faster than inflation.¹⁰⁰ Similarly, the American Association of Retired People (AARP) found that prices increased in 2013 for 27 percent of its standard market basket of 280 widely-used generic drugs.¹⁰¹ To be sure, such increases are probably normal: A previous review by the Department of Health and Human Services covering 1991 to 2004 found that 35 percent of generics had price increases greater than overall inflation.¹⁰²

Nevertheless, the public-policy issues regarding the pricing of prescription drugs mainly involve the small share of prescriptions for medications protected by patents and/or medications with no therapeutic alternatives. The U.S. Constitution set out the rationale for these patents by empowering the Congress to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."¹⁰³ The "exclusive Right" of inventors to their "Discoveries" for a limited term of years set by Congress generally operates outside the normal market competition, which

tends to drive prices toward their marginal cost of production. Again, the Constitution's framers understood, and so stated, that this temporary, exclusive right to set prices with limited competition is a necessary incentive to promote scientific progress, because such progress requires that inventors invest their time, skills and capital in the costly and very uncertain pursuit of new discoveries. Those who assume those risks and burdens, and succeed in meaningful discoveries, are entitled to claim a limited period of exclusive production and distribution.

The framers' case for such a broad incentive to develop new discoveries is strengthened today by the unusually large costs and risks currently entailed in developing new, effective and safe drugs that warrant patent protection. As an industry, pharmaceutical firms spend more on research and development (R&D), as a share of their revenues, than any other U.S. industry. The development of a new prescription drug from the lab to the marketplace is now estimated to cost an average of \$2.6 billion over the course of 10 to 15 years.¹⁰⁴ According to a CBO study of these issues, the high costs and extended commitments required to develop a new drug involve mainly five factors: 1) the growing period of time required to complete a new drug candidate's preclinical development; 2) the large expense of clinical trials; 3) the high likelihood of failure for compounds entering clinical testing; 4) the high and rising costs of the technologies used in both preclinical and clinical phases; and 5) the daunting scientific challenges involved in developing effective treatments for cancers and other serious widespread diseases.¹⁰⁵

The lengthy FDA approval process for new patented drugs begins with a multiyear, preclinical phase, in which researchers

develop the new compound and file for its patent protection. A very small share of new compounds prove sufficiently promising to move beyond this phase: As noted earlier, the FDA ultimately approves less than 12 percent of candidate pharmaceuticals that enter clinical testing.¹⁰⁶ According to one study, the preclinical phase for compounds that do proceed takes an average of 4.3 years.¹⁰⁷ Next, the FDA directs the pharmaceutical developer to undertake three stages of clinical trials, in order to establish the proposed treatment's effectiveness and safety.¹⁰⁸ If a developer completes the three stages of clinical trials, including very costly third-stage human trials, the FDA evaluates the results and determines whether the new treatment can enter the U.S. market. It is clear that the FDA approval process creates extraordinarily high financial risks for pharmaceutical developers. Moreover, while patents are granted for 20 years, patent grants come many years before a drug completes the FDA process. Thus, a drug developer's effective period of exclusive pricing and marketing under patent protection averages 12.5 years, at which time generic producers can enter the market and drive down prices by 75 percent or more.¹⁰⁹

While a period of patent-protected pricing creates the incentive to develop new treatments, despite the high costs and risks involved, a patent does not completely insulate a pharmaceutical producer from competitive pressures on pricing. A competitor can work around an existing patent or develop a novel pharmaceutical that operates in a similar way and produces similar effects. Moreover, two or more developers often race to produce safe and effective treatments for the same conditions. As a result, according to a recent study, the percentage of first-in-class pharmaceuticals

with a competitor in Phase II testing at the time of its approval rose from 23 percent in the 1970s to 90 percent in the latter 1990s;¹¹⁰ and data collected by the Tufts Center for the Study of Drug Development show that the period during which a pharmaceutical is the only drug available in its pharmacologic class declined from a median of more than 10 years in the 1970s to about two years in the 2000s.¹¹¹ This suggests that patented and brand drugs face substantial competition from other innovative, protected products. A producer's patent-based pricing discretion is also limited in most foreign markets in Europe and Asia, where governments formally set the prices for the prescription drugs covered by their national healthcare systems. In those markets, prescription drug producers negotiate large discounts for their products.

While a period of patent-protected pricing creates the incentive to develop new treatments, despite the high costs and risks involved, a patent does not completely insulate a pharmaceutical producer from competitive pressures on pricing.

The U.S. government does not directly negotiate prices for drugs covered under Medicare, nor on behalf of Americans with other forms of healthcare coverage. However, most Americans have some form of insurance for prescription drug purchases, including through Part D and Part C plans. Since those insurers compete for customers largely on the basis of price and coverage, they negotiate with pharmaceutical producers for lower prices and pass along much of those savings to their policyholders. Similarly,

with regard to the prescription drugs covered by Medicaid, state governments and private plans acting on their behalf negotiate with the manufacturers of those drugs for supplemental rebates, on top of price concessions mandated by statutes.

There is evidence that these constraints on the pricing of newly-patented pharmaceuticals and on the size of their markets affect the incentives to develop new drugs. One study used industry-level data on pharmaceutical R&D and drug prices from 1952 to 2001, and found that every 10 percent increase in drug prices, adjusted for inflation, was associated with a 6 percent increase in pharmaceutical R&D.¹¹² The study also found that if drug prices had been held constant from 1981 to 2001, industry investments in R&D would have been 30 percent lower, and 330 to 365 fewer drugs would have been developed and marketed.¹¹³ This finding is consistent with the results of another study, which found that a 10 percent decline in the prices for cancer drugs was associated with a five to six percent reduction in innovation in that area.¹¹⁴ Finally, an expanding market for new drugs also creates incentives to develop them: One analysis found that each 1 percent increase in the potential market for a drug category increased the development of new compounds in that category by nearly 4 percent.¹¹⁵

It is also worth noting that the American healthcare system contains incentives to develop new drugs in addition to the special rights accorded by patents. For example, the federal government has created subsidies for the development and production of vaccines, including federal funding to purchase vaccines for eligible children (the Vaccines for Children program, or VFC), and federal funding for infrastructure and vaccine purchases for

people who otherwise would have no access to immunizations (Section 317 Immunization Grant Program). One study found that, after these policies were enacted, the number of clinical trials for vaccines increased 150 percent.¹¹⁶ The increasing incidence of certain illnesses also creates incentives to develop new treatments for those illnesses. One analysis found that a 10 percent increase in cancer rates was associated with a 5.3 percent increase in the development of new chemotherapy treatments.¹¹⁷

Prescription Drug Costs, Per Capita, in the United States and Other Advanced Countries

Critics of the American approach to pharmaceutical patents often note that, while those arrangements support valuable innovations, patients outside the United States can access these innovations at less cost than Americans. Americans do spend more, *per capita*, than people in other countries for all forms of healthcare, including prescription drugs. This mainly reflects a basic tenet of American politics and social arrangements, under which Americans have long favored regulated markets for all aspects of healthcare rather than the broad price and wage controls applied by national health programs in other advanced countries. Prescription drug costs in the United States, therefore, should be considered in the context of all healthcare prices.

We analyzed data from the Organisation for Cooperation and Economic Development (OECD) on *per capita* healthcare costs and *per capita* prescription drug costs in advanced countries.¹¹⁸ In 2011, for example, *per capita* healthcare costs in the United States were 88.4 percent higher than *per capita* healthcare costs in Canada, but the *per capita* costs for prescription drugs in the United States were only 31.1 percent higher than *per capita* pharmaceutical costs in

Canada. More generally, the OECD data show that the disparity between *per capita* spending for prescription drugs in the United States and most other countries is substantially less than the disparity between *per capita* spending for all healthcare expenses.¹¹⁹ (Table 6)

The results suggest that the competition in the United States that drives pharmaceutical innovation also exerts stronger pressures on pharmaceutical prices, including through the unusually high use of generics in the United States, than on prices in other aspects of healthcare. In addition to the results comparing the U.S. and Canada, the data show that the difference in *per capita* costs between the U.S. and Japan is 40.7 percent for prescription drugs versus 145.3 percent for all healthcare costs; and for France, the difference is 54.3 percent for prescription drugs versus 102.3 percent for all healthcare. Compared to Germany, the disparity is 55.6 percent for *per capita* prescription drug costs, versus 84.0 percent for all healthcare costs *per capita*; and compared to Italy, the difference is 90.3 percent for prescription drugs versus 164.9 percent for all healthcare costs. Further, for Korea, the *per capita* disparity is 120.0 percent for prescription drugs, versus 293.6 percent for all healthcare costs; and for Australia, the difference *per capita* is 71.8 percent for pharmaceutical costs versus 112.3 percent for all healthcare costs. The exceptions are the United Kingdom, where the *per capita* cost disparities are 161.6 percent for drugs versus 143.3 percent for all healthcare costs, and the small countries of Switzerland, Denmark and Norway.

Furthermore, studies of international pricing for particular drugs show only modest price differences, despite the absence of price controls in the United States. While some drugs

TABLE 6: Costs per Capita for All Healthcare and for Prescription Drugs, U.S. and Other Advanced Countries, and Percentage Disparities, 2011¹²⁵

	TOTAL HEALTHCARE		PRESCRIPTION DRUGS	
	PER CAPITA COST	DISPARITY WITH U.S.	PER CAPITA COST	DISPARITY WITH U.S.
U.S.	\$8,482.70	--	\$1,010.90	--
Australia*	\$3,996.90	112.30%	\$588.40	71.80%
Canada*	\$4,503.20	88.40%	\$771.30	31.10%
France*	\$4,192.30	102.30%	\$655.20	54.30%
Germany*	\$4,609.80	84.00%	\$649.50	55.60%
Italy*	\$3,202.40	164.90%	\$531.30	90.30%
Japan*	\$3,458.30	145.30%	\$718.50	40.70%
Korea*	\$2,155.30	293.60%	\$459.50	120.00%
Sweden*	\$3,963.70	114.00%	476.70	112.10%
Denmark	\$4,545.20	86.60%	\$308.90	229.40%
Norway	\$5,746.10	47.60%	\$395.40	155.70%
Switzerland	\$5,670.90	49.60%	\$530.70	90.40%
U.K. (2008)	\$3,192.00	143.30%	\$367.00	161.60%
Average – 8 countries	\$3,706.24	128.90%	\$606.30	66.70%

cost substantially more here than in other advanced countries,¹²⁰ a study of pricing for 41 cancer drugs in four European countries and the United States from 2000 to 2011 found that the average prices in the European countries were only 8 percent lower than the average U.S.

retail and Part D prices.¹²¹ Moreover, researchers trace some of the disparities in U.S. and foreign pharmaceutical costs to greater access to newer drugs in the United States. One analysis of drug pricing in the United States, Canada and five European nations in 2005, 2007 and 2010 found

that new drugs were introduced more quickly and used more broadly in the United States, and this difference explained a significant share of the pricing disparities.¹²² As noted, researchers found that the use of newer drugs has a significantly positive effect on patients' recovery rates and life expectancy.¹²³

VI. THE PRICING OF DRUGS UNDER MEDICARE PART D PLANS

The prices of patented drugs are negotiated by developers and healthcare insurers, and competition for customers gives insurers strong incentives to bargain for rebates or other price reductions. Those negotiations determine whether an insurer will cover the new drug and thus include it in its "formulary," and in which "cost-sharing tier" the new drug will be assigned. Drug manufacturers also have strong incentives to ensure that insurers cover their new drugs and assign them to as inexpensive a cost-sharing tier as possible, to encourage the use of their drugs. The first tier typically covers generic drugs with small copayments, and the last tier typically covers higher-cost specialty drugs.

The prices of drugs covered by insurance plans under Part D are set in this manner. Part D insurers negotiate with pharmaceutical companies on the price for each drug, and insurance premiums are determined by the difference between the insurer's average monthly cost of providing the drugs and Medicare's average monthly payments to the insurer for its Part D beneficiaries. In 2014, CBO analyzed how competition among Part D plans affects the costs borne by Medicare beneficiaries. The researchers found that each additional plan available to a beneficiary was associated with a \$0.20 to \$0.50 reduction in

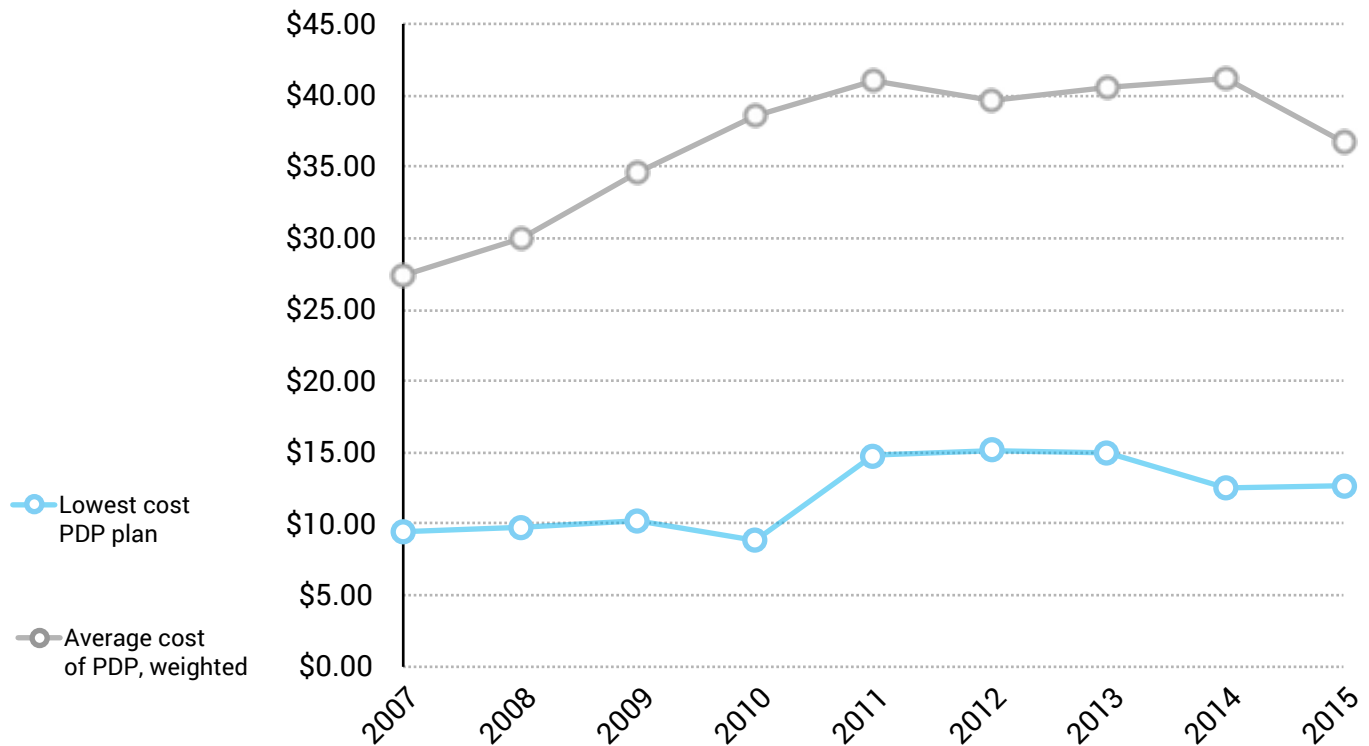
monthly premiums, although this effect weakens as more plans are added.¹²⁴ Less competition is associated with higher premiums: From 2007 to 2010, the average number of Part D plans available to beneficiaries declined from 22 to 18, and CBO estimated that this reduction cost Medicare \$30 million to \$70 million.¹²⁵

Despite the decline in available plans, the Medicare Part D premiums paid by beneficiaries rose at a modest rate over the last decade. All Part D plans provide cost-sharing and a catastrophic threshold beyond which most patients are responsible for 5 percent of the costs and low-income beneficiaries bear no cost. But plans can vary widely in the pharmaceuticals they cover and their cost-sharing. Figure 1 charts the average monthly premiums for the lowest-cost stand-alone Part D plans and the average premium paid Part D plans, from 2007 to 2015. The average monthly premiums for the least expensive plans rose from \$9.50 in 2007 to \$12.60 in 2015, or at an average annual rate of 4.1 percent; and the average monthly premium for average-cost plans increased from \$27.39 in 2007 to \$36.75 in 2015, or an average annual rate of 4.3 percent. The slightly higher rate of price increases for average-cost Part D plans mainly reflects decisions by some beneficiaries to shift from low-cost to higher-cost plans, suggesting they use the program in ways that maximize their ability to meet their own needs.

Figure 1 charts the average monthly premiums for low-cost and average-cost plans under Part D.

Another way to assess the impact of competition on Part D premiums entails an analysis of changes in the average premiums charged by the same company in the same region for its

FIGURE 1: Average Monthly Premiums for Prescription Drug Coverage: Low-Cost and Average-Cost Part D Plans, 2007–2015¹³²

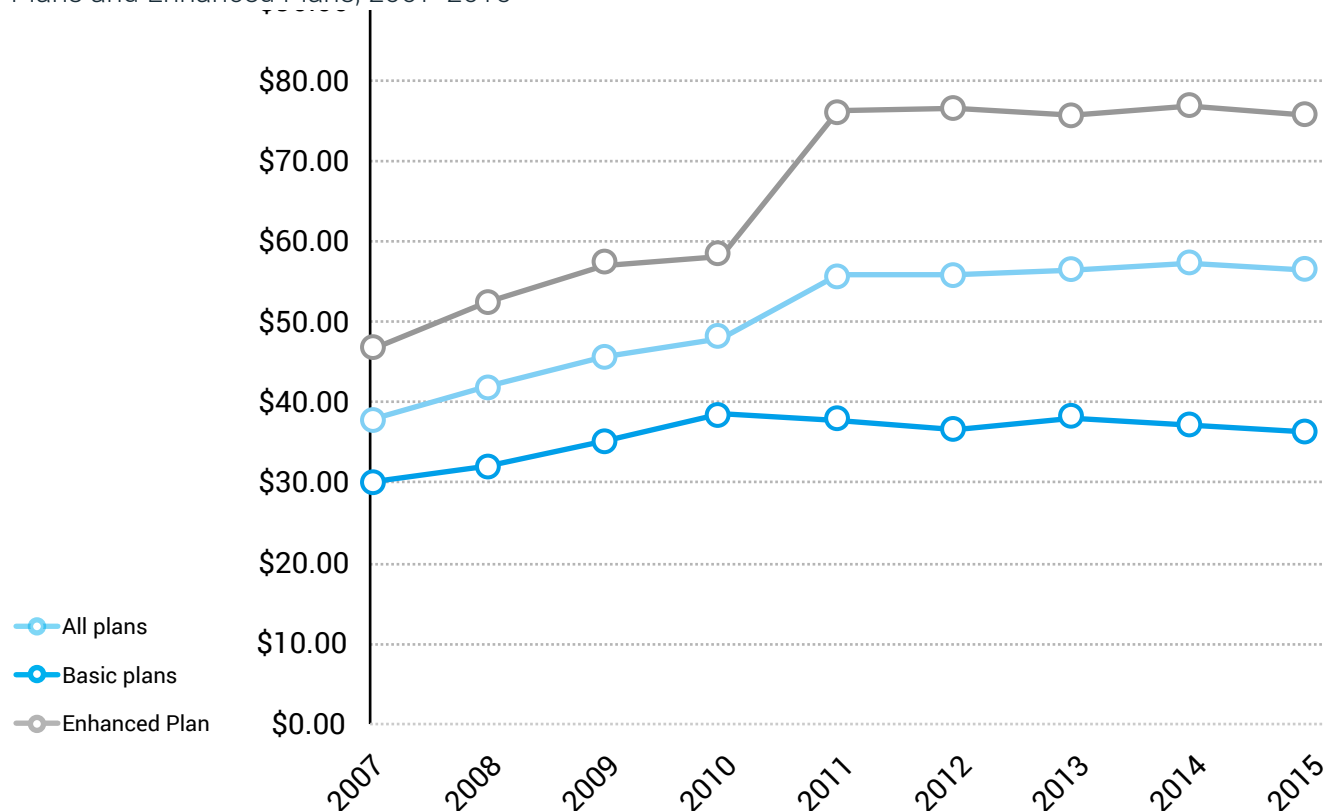


coverage, over time. Figure 2 charts the average premiums for same-company, same-region plans, covering basic plans, enhanced plans and all plans, for the years 2007 to 2015.

This analysis shows that from 2007 to 2015, the same-company, same-region average premiums for basic coverage increased from \$28.79 per month in 2007 to \$35.12 in 2015, an increase of 22 percent over eight years or 2.75 percent per-year. The same company, same region average premiums for all plans increased from \$36.81 per month to \$55.97 per month, an increase of 51.9 percent or 6.5 percent per year. Finally, the same-company, same-region average monthly premiums of enhanced plans increased from \$45.66 to \$75.91, an increase of 66.3 percent or 8.3 percent per year. Most of that increase occurred in 2010-2011, when the

ACA put in place reforms to gradually relieve the burden on beneficiaries whose spending exceeds normal coverage levels but does not qualify for catastrophic-level coverage – closing the so-called “doughnut hole” by 2020– and average monthly premiums for same-company, same-region enhanced plans jumped 32.7 percent. Since 2011, Part D plan premiums have been very stable. From 2011 to 2015, the same-company, same region-average monthly premiums for enhanced plans declined slightly, from \$76.54 to \$75.91. Similarly, the same-company, same-region average monthly premium for all plans rose little from 2011 to 2015, increasing by 53 cents per month from \$55.44 to \$55.97. Finally, the same-company, same-region average monthly premiums for basic plans declined by 53-cents over the past four years, from \$35.65 in 2011 to \$35.12 in

FIGURE 2: Average Monthly Part D Premiums, Same Company and Same Regions, for All Plans, Basic Plans and Enhanced Plans, 2007-2015¹³³

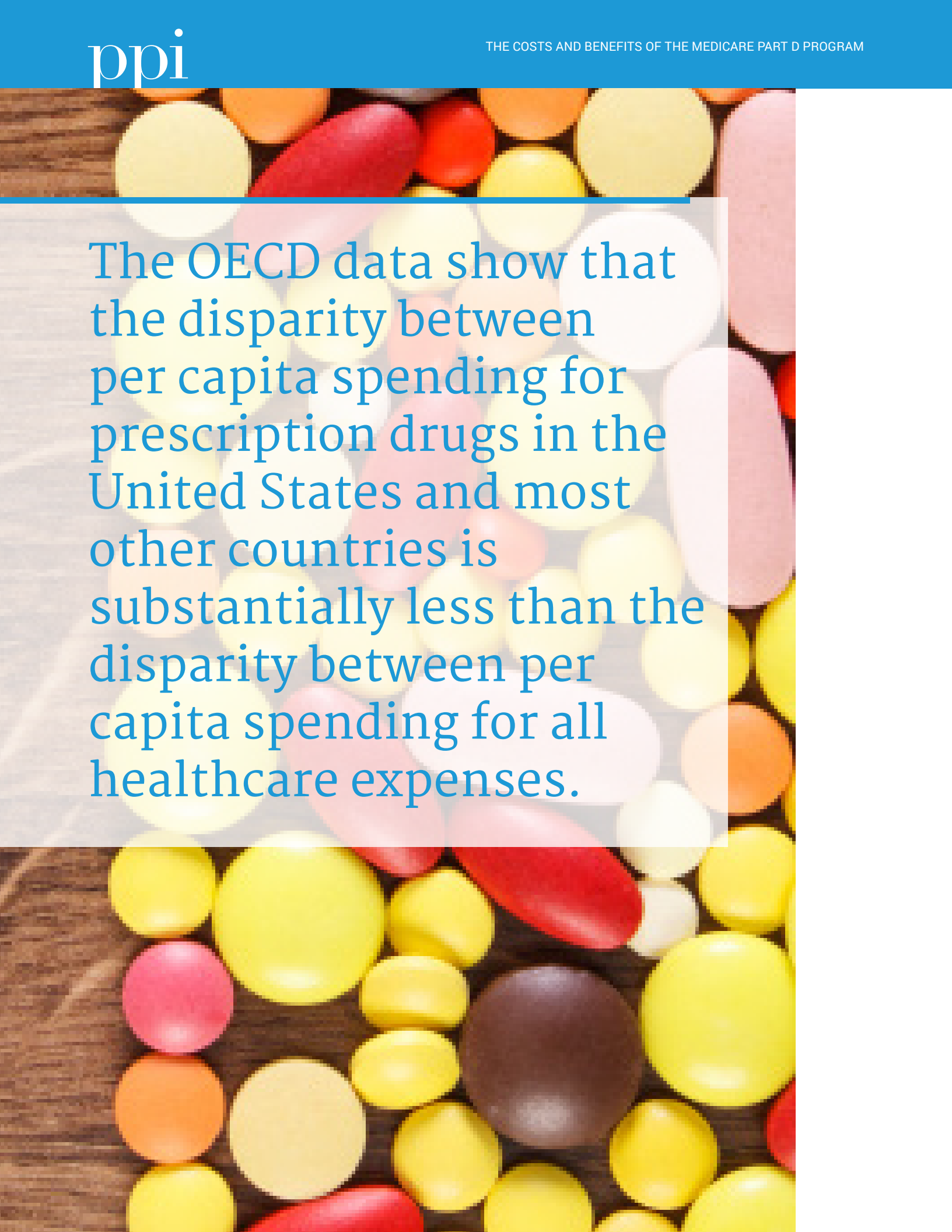


2015.

Thus far, the federal costs of the Part D program have been less than CBO projected in 2006. CBO originally estimated the program would cost the federal government \$550 billion over its first eight years (2006 to 2013), including \$99 billion in 2013. In practice, the program has cost about one-third less at \$353 billion from 2006 to 2013, including \$50 billion in 2013.¹²⁶ In 2014, CBO analyzed Part-D claims data from 2007 to 2010 to identify the reasons for Part D's lower-than-expected costs. Their analysis pointed to three main factors holding down the program's costs. First, from 2007 to 2010, generics' share of all prescriptions covered by Part D plans increased from 67 percent to 78 percent, saving Medicare \$24 billion and Part D participants \$9 billion in 2007 alone.¹²⁷ Second, the number

of new pharmaceuticals approved by the FDA declined from 14 per year in 2002 and 2003 to seven per-year from 2007 to 2010 – although this slowdown cannot be attributed in any way to Part D, given the very long lead time entailed in developing a new drug. Finally, enrollment in Part D plans proceeded more slowly than CBO had expected: Based on the enrollment records of Medicare Part B, CBO had projected that 87 percent of Medicare beneficiaries would enroll in a Part D plan by 2012; in practice, 73 percent of beneficiaries were enrolled by that year. Since the CBO analysis covered 2007 to 2010, it could not take account of the stable premiums from 2011 to 2015.

We can expect that, over time, the Part D program will stimulate additional innovation in the development of new treatments. Part D has



The OECD data show that the disparity between per capita spending for prescription drugs in the United States and most other countries is substantially less than the disparity between per capita spending for all healthcare expenses.

expanded the market for pharmaceuticals and, as noted earlier, studies have shown that an expanding market increases the incentives for pharmaceutical firms to develop new products. Already, there is some evidence of this effect from the enactment of Part D: Using firm-level data covering 1998 to 2010, two scientists found that pharmaceutical R&D increased as Part D took effect, especially for those classes of drugs that treat conditions predominantly affecting older patients.¹²⁸ The researchers estimated that the enactment of Part D in December 2003 was associated with a 31 percent to 33 percent increase in the number of new molecules entering pre-clinical testing over the years 2004 to 2007 and an increase of 58 percent by 2008. The impact of Part D coverage on drugs entering clinical trials also was significant: Their numbers rose 18 percent in 2006 and 2007 and 38 percent from 2008 to 2010.¹²⁹ Finally, Part D requires that its insurance plans cover all available drugs in protected classes, and the researchers found that R&D in those areas increased more than in other classes of conditions.

VII. CONCLUSIONS

This study has explored the dimensions and effects of prescription drugs and access to them, especially by Medicare beneficiaries. Worldwide spending on pharmaceuticals totaled \$1.07 trillion in 2015, and the United States accounted for \$430 billion of that total, or 40.2 percent. For context, worldwide spending on all healthcare reached \$6.5 trillion in 2012 (the latest year available), and the United States accounted for \$2.8 trillion of that total in that year, or 43.1 percent.¹³⁰ Medicare is the most important factor facilitating broad access to outpatient prescription drugs in the United States, primarily through supports for private insurance coverage under the Medicare Part D program in 2014.

To assess the significance of this coverage, we reviewed extensive literature on the impact of prescription drugs, especially on older patients. These studies established that access to prescription drugs increases lifespans and enhances the productivity of people with a range of medical conditions. Researchers also established that Part D reduced the share of Medicare beneficiaries without prescription drug coverage by two-thirds and substantially increased use of those drugs by seniors and disabled people. Part D coverage also has disproportionately helped lower-income and minority Medicare beneficiaries, because those groups were less likely to have prescription drugs coverage before Congress enacted Part D.

We also analyzed the benefits produced by using prescription drugs net of their costs — including analyses of their disproportionate contribution to recent increases in average lifespans, and their impact on the incidence of hospitalizations, doctor visits, disability claims, and medical procedures. CBO established that the increased use of prescription drugs has reduced overall Medicare spending; and our analysis found that the increased access to prescription drugs under Part D by seniors who otherwise would have had no pharmaceutical coverage or shifted their coverage in response to the Part D program saved Medicare \$106.3 billion from 2006 to 2014 in lower healthcare costs, including \$13.8 billion in 2014.

The total Medicare savings associated with the use of prescription drugs are much larger. Based on the most comprehensive study of the impact of prescription drugs used by seniors on their likelihood of being hospitalized and on the time and services used when hospitalized, we found that the use of prescription drugs by all those covered by Part D plans saved Medicare \$740.3

billion in avoided Part A and Part B costs from 2006 to 2014, including \$113.5 billion in 2014. When we also include the 14.4 million Medicare beneficiaries covered through Part C plans, we found that taxpayer-supported prescription drug coverage saved taxpayers an estimated \$1,139.5 billion in Part A and Part B costs from 2006 to 2014. Taking account of the \$460.2 billion taxpayer cost of coverage for outpatient pharmaceuticals over that period through both Part D stand-alone plans and Part C plans, we found that the net savings for Medicare came to \$679.3 billion from 2006 to 2014, including \$110.2 billion in 2014.

We also examined other aspects of the costs of prescription drugs to patients, insurers and taxpayers. Some 89 percent of U.S. prescriptions are filled by low-priced generic drugs; and public concerns about the costs of pharmaceuticals tend to focus on the remaining 11 percent that are patent protected or brand medicines. We showed that the higher prices for drugs under patent reflect, in large part, the extraordinary costs and risks associated with developing new patented drugs. We also showed that the prices charged for drugs under patent are determined in the negotiations between their producers and insurance carriers. Medicare does not directly negotiate drug prices, but the insurers offering Part D and Part C plans do. We found that across all Part D plans nationwide, the average of all premiums and the lowest-cost premiums rose, respectively by 4.3 percent and 4.1 percent per year from 2007 to 2015.

We also tracked the Part D monthly premiums charged by the same company in the same region over this period and found smaller annual increases for basic coverage, averaging 2.8 percent per year; and higher annual increases for all plans, averaging 6.5 percent per year,

and for enhanced coverage, averaging 8.3 percent per year. However, we also found that much of those increases occurred in 2010 and 2011, and established that the same-company, same-region premiums charged for Part D plan coverage were virtually unchanged from 2011 to 2015.

Finally, we showed that, while *per capita* prescription drug costs are considerably more in United States than in other advanced countries, U.S. total healthcare costs *per capita* are much higher in the United States than in most other advanced countries. Across eight major advanced countries (Australia, Canada, France, Germany, Italy, Japan, South Korea, and Sweden), per-person costs for prescription drugs were about 67 percent higher here than in those eight countries, but overall healthcare costs were about 130 percent higher here than in those other eight countries. The disparity between overall healthcare costs per-person in the United States and those eight other major advanced countries was nearly twice as great as the disparity in per person prescription drug costs. On balance, we conclude that competition in the United States exerts greater pressure on pharmaceutical prices than on the prices of other healthcare goods and services.

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