RESEARCH AND DEVELOPMENT (R&D)¹
Average time to develop a drug = 10 to 15 years
Percentage of drugs entering clinical trials resulting in an approved medicine = less than 12%

PERCENTAGE OF SALES THAT WENT TO R&D IN 2015⁵
Domestic R&D as a percentage of domestic sales = 24.8%
Total R&D as a percentage of total sales = 19.8%

MEDECINES IN DEVELOPMENT
Medicines in development globally = 7,000¹¹
Potential first-in-class medicines** across the pipeline = an average of 70%¹⁵
Medicines in development to treat rare diseases = more than 450⁶

DEVELOPMENT COSTS
Average cost to develop a drug (including the cost of failures):²
2000s–early 2010s = $2.6 billion
1990s–early 2000s = $1.0 billion*¹⁰
1980s = $413 million
1970s = $179 million

R&D SPENDING
Year     PhRMA members³
2015     $58.8 billion (est.)
2014     $53.3 billion
2013     $51.6 billion
2012     $49.6 billion
2011     $48.6 billion
2010     $50.7 billion
2009     $46.4 billion
2008     $47.4 billion
2007     $47.9 billion
2006     $43.0 billion
2005     $39.9 billion
2000     $26.0 billion
1990     $8.4 billion
1980     $2.0 billion

ECONOMIC IMPACT OF THE BIOPHARMACEUTICAL SECTOR⁴
Direct jobs = about 854,000
Total jobs (including indirect and induced jobs) = more than 4.4 million

APPROVALS
Novel medicines approved 2015 = 56⁷,⁸
Medicines approved since 2000 = more than 550¹⁰,¹¹
In the 30 years since the Orphan Drug Act was established, more than 500 orphan drugs have been approved, with nearly 300 approved in the last decade alone¹²
Only 2 of 10 marketed drugs return revenues that match or exceed R&D costs¹³

SALES
Generic share of prescriptions filled:⁴
2000 = 49%
2015 = 91%

VALUE OF MEDICINES
Cancer: Since peaking in the 1990s, cancer death rates have declined 23%.¹⁷ Approximately 83% of survival gains in cancer are attributable to new treatments, including medicines.¹⁸
Hepatitis C: Just five years ago, treatment options for hepatitis C came with debilitating side effects and cured only half of patients over a course of treatment lasting up to 48 weeks.¹⁹ Today, a range of treatment options are available offering cure rates upwards of 90%, with minimal side effects, in as few as 8 weeks.²⁰
HIV/AIDS: Since the introduction of highly active antiretroviral treatment (HAART), the HIV/AIDS death rate has dropped 87%.²¹ As a result of HAART and all the medical innovations that followed, it is estimated that 862,000 premature deaths were avoided in the United States alone.²²

See inside back cover for references.

*Previous research by the same author estimated average R&D costs in the early 2000s at $1.2 billion in constant 2000 dollars. (See DiMasi JA, Grabowski HG. The cost of biopharmaceutical R&D: Is biotech different? Managerial and Decision Economics. 2007;28:469-479). That estimate was based on the same underlying survey as the author’s estimates for the 1990s to early 2000s reported here ($800 million in constant 2000 dollars), but updated for changes in the cost of capital.

**Note: First-in-class medicines are those that use a different mechanism of action from any other already approved medicine.