

The 2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors

Adam J. Fein, Ph.D.
Drug Channels Institute

October 2020

Full report available at <https://drugch.nl/wholesale>



COPYRIGHT

Copyright © 2020 by Pembroke Consulting, Inc., d/b/a Drug Channels Institute. All rights reserved.

This report is protected by copyright law and may not be copied or otherwise reproduced, repackaged, further transmitted, transferred, disseminated, redistributed, or resold, in whole or in part, in any form or manner or by any means whatsoever, by any person without prior written consent. This report may be cited in commercial documents with full and appropriate attribution. This report is for informational purposes only and is provided “as is” without any express or implied warranty. The analyses in this report are based solely on information and data that are in the public domain. All conclusions, findings, opinions, and recommendations are based on our own experienced and professional judgment and interpretations given the information available. While all information is believed to be reliable at the time of writing, the information provided here is for reference use only and does not constitute the rendering of legal, financial, commercial, or other professional advice by Pembroke Consulting, Inc., Drug Channels Institute, or the author. Any reliance upon the information is at your own risk, and Pembroke Consulting, Inc., and the author shall not be responsible for any liability arising from or related to the use or accuracy of the information in any way. Pembroke Consulting, Inc., and Drug Channels Institute do not make investment recommendations in this report or otherwise. Nothing in this report should be interpreted as an opinion by Pembroke Consulting, Inc., Drug Channels Institute, or the author on the investment prospects of specific companies.

Drug Channels® is a registered trademark of Pembroke Consulting, Inc.

LICENSE TERMS

This report is protected by copyright law. Unauthorized reproduction or distribution of this report or any portion of it may result in severe civil and criminal penalties and will be prosecuted to the maximum extent of the law. **This report may be cited in commercial documents with full and appropriate attribution. Nothing in the license is intended to reduce, limit, or restrict any rights arising from fair use under copyright law or other applicable laws.**

If you would like to quote from or otherwise cite the report, here is a suggested citation:

Fein, Adam J., *The 2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors*, Drug Channels Institute, 2020.

The complete End User License Agreement is available at: <https://drugch.nl/2020-21EULA>

ABOUT THE AUTHOR

Adam J. Fein, Ph.D., is the CEO of Drug Channels Institute (DCI), a leading management educator for and about the pharmaceutical industry. DCI is a subsidiary of Pembroke Consulting, Inc.



Dr. Fein is one of the country's foremost experts on pharmaceutical economics and the drug distribution system. He has published hundreds of academic and industry articles. Dr. Fein has contributed to and is regularly quoted in such national publications as *The Wall Street Journal*, *The New York Times*, *The Washington Post*, *Forbes*, and many others.

His popular and influential [Drug Channels](#) website is a go-to source for definitive and comprehensive industry analysis, delivered with a witty edge. Drug Channels is the only place where you'll find a serious discussion of PBMs, drug pricing, and pharmacy economics, all explained with humor and a healthy dose of pop culture.

Dr. Fein earned his doctoral degree from the Wharton School of Business at the University of Pennsylvania and his undergraduate degree from Brandeis University. He lives in Philadelphia with his wife and business partner, Paula.

Contact information

Adam J. Fein, Ph.D.

Drug Channels Institute

1515 Market Street, Suite 960

Philadelphia, PA 19102

Phone: 215-523-5700

Website: www.DrugChannelsInstitute.com

Email: afein@drugchannels.net

Visit Dr. Fein's Drug Channels blog for the latest industry updates!



DRUG CHANNELS

Expert Insights on Pharmaceutical Economics
and the Drug Distribution System

www.DrugChannels.net

ABOUT DRUG CHANNELS INSTITUTE

[Drug Channels Institute \(DCI\)](#) is a leading provider of specialized management education for and about the pharmaceutical industry.



Drug Channels Institute combines Dr. Fein’s expertise and cutting-edge analysis—such as this *2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors*—into interactive e-learning modules that offer your team a thorough grounding in crucial industry topics. [Click here to view a module list.](#)

These online learning tools explain highly complex economic and business data and concepts so you can:

- Make better decisions to achieve your business goals
- Improve relationships with key accounts
- Understand your customers, channels, and the economics of the U.S. pharmaceutical industry

Drug Channels Institute also hosts live video webinars during which Dr. Fein discusses trends and policies that affect the pharmaceutical industry and its channels. [Click here to view our current and previous video webinars.](#)

To learn more about how Drug Channels Institute can help your business, please contact:

Paula Bader Fein, M.S.Ed.
V.P., Business Development
Drug Channels Institute
1515 Market Street, Suite 960
Philadelphia, PA 19102
Phone: 215-523-5700 x11
Website: www.drugchannelsinstitute.com
Email: paula@drugchannelsinstitute.com



INTRODUCTION AND GUIDE TO THE 2020-21 REPORT

In 2020, the COVID-19 pandemic disrupted every aspect of the pharmaceutical channel—and our lives. Pharmacy and healthcare provider markets experienced unprecedented volatility. Normally stable patterns of demand became highly unpredictable, as the country’s businesses shut down and then began to reopen.

However, this period has also demonstrated the underlying resilience of U.S. distribution channels for prescription drugs. Pharmaceutical wholesalers maintained shipments and operational capacity. Meanwhile, pharmaceutical manufacturers and the federal government partnered in an exceptional effort to develop and launch COVID-19 vaccines. Wholesalers will play a crucial role in distributing these vaccines as they become available.

In the midst of the pandemic, wholesalers must still confront fundamental forces of industry change:

- Wholesalers’ retail pharmacy customers are experiencing slowing growth, lower profits, and mounting competitive pressures. The U.S. pharmacy industry has begun a shakeout that will ultimately reduce the number of U.S. pharmacy locations, further concentrating wholesalers’ revenues.
- The largest insurers, PBMs, and specialty pharmacies have combined into vertically integrated organizations. They are poised to restructure U.S. drug channels by exerting greater control over patient access, sites of care, dispensing locations, and pricing. Meanwhile, the specialty pharmacy industry has continued to consolidate.
- Wholesalers have adapted their business economics to slower growth in list prices for brand-name drugs. Generic drug prices have stabilized, benefiting wholesalers’ profitability. The largest wholesalers made no major acquisitions for the second consecutive year.
- The market for provider-administered biosimilars has expanded significantly. Adoption rates continue to grow and are starting to generate financial benefits for wholesalers.
- Federal and state governments accelerated their efforts to introduce commercial importation of drugs originally intended for foreign markets.
- Wholesalers’ potential financial liabilities for the opioid crisis remain uncertain. Litigation regarding their culpability for their role in the distribution of opioids continues.
- New cell and gene therapies have been launched, but wholesalers seem likely to play a limited role in certain channel activities for these therapies.

Understanding an Evolving Channel

We project that U.S. drug distribution revenues for the Big Three public wholesalers—AmerisourceBergen, Cardinal Health, and McKesson—will reach \$513 billion in 2020. This *2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors*—our 11th edition—remains the most comprehensive, fact-based tool for understanding and analyzing this large and growing U.S. pharmaceutical distribution industry.

This definitive, nonpartisan resource thoroughly updates our annual exploration of the industry’s interactions with—and services for—other participants in our healthcare system. The report synthesizes a wealth of statistical data, research studies, financial information, and my own unique business consulting experience. It will aid pharmaceutical manufacturers, wholesalers, pharmacists, pharmacy owners, hospital executives, pharmacy buyers, benefit managers, managed care executives, policy analysts, investors, consultants, and many others.

Our 2020-21 edition contains the most current financial and industry data. We include detailed information about the strategies, market positions, and executive compensation of the three largest companies: AmerisourceBergen, Cardinal Health, and McKesson. The report updates our annual analysis of each wholesaler’s business segments and underlying business profitability, based upon our proprietary economic models. The information allows you to assess differences among the public wholesalers’ business organizations, strategies, and financial performance. Where appropriate, financial data have been restated based on updated disclosures.

What’s New in the 2020-21 Report

The 2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors retains the structure of last year’s edition, and the chapters correspond to those of previous editions. However, certain material has been reorganized to reflect the latest industry developments. We have also expanded information and analysis on various topics.

The most notable new material in this 2020-21 edition comprises three sections that address COVID-19 and its impact on wholesalers:

- [Section 6.1.4.](#) examines the potential financial effects on wholesalers of widespread distribution of one or more COVID-19 vaccines.
- [Section 6.2.2.](#) highlights the initial effects of COVID-19 on the pharmacy industry and the derivative impact on wholesalers.
- [Section 6.3.2.](#) traces how COVID-19 has impacted the buy-and-bill and inpatient drug market and the derivative impact on wholesalers.

This report was prepared during a highly uncertain time, so we expect to revisit this material in future editions. We will also continue to monitor these trends on [Drug Channels](#).

Structure of the 2020-21 Report

The 2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors analyzes the industry in a preface and three primary sections, comprising nine total chapters.

[PREFACE: INDUSTRY TRENDS AND KEY REPORT THEMES](#) provides an integrated overview of the major themes that recur throughout our analysis. Each theme includes links to relevant chapters and sections within the report.

[SECTION I: WHOLESALER AND CUSTOMER INDUSTRY ANALYSIS](#)

- **[Chapter 1: Industry Overview](#)** (page 7) defines the industry, describes business differences between full-line wholesaling and specialty distribution, summarizes wholesalers' obligations under the Drug Supply Chain Security Act (DSCSA), explains wholesalers' channel roles, analyzes the products that wholesalers sell, and reviews insurance coverage of these products. This chapter also identifies the major full-line wholesalers and specialty distributors, and it provides the latest data on their market share and revenues.
- **[Chapter 2: Channel Role for Retail, Mail, and Specialty Pharmacies](#)** (page 29) analyzes the pharmacy market—the customer group that accounts for the majority of wholesalers' revenues. It covers wholesalers' services for smaller pharmacies, wholesalers' participation in the pharmacy-PBM relationship via Pharmacy Services Administrative Organizations (PSAOs), and wholesalers' interactions with pharmacy buying groups.

The chapter also analyzes how wholesalers work with larger pharmacies. We include our proprietary analysis of the large generic sourcing consortia between wholesalers and the largest pharmacies. [Section 2.4](#) (page 53) analyzes wholesalers' role in the distribution of patient-administered drugs that specialty pharmacies dispense. We also consider wholesaler-owned specialty pharmacies.

- **[Chapter 3: Channel Role for Physician Office/Clinics and Hospitals](#)** (page 59) examines channels for provider-administered medications, explains the buy-and-bill system for drugs administered in outpatient settings, and describes the role and functions that wholesalers perform for hospitals, including hospitals that participate in the 340B Drug Pricing Program. This chapter also provides an in-depth consideration of group purchasing organizations (GPOs) for both hospitals and physician practices. It includes material regarding pharmacy dispensing of buy-and-bill channels that appeared in Chapter 6 of last year's edition.

[SECTION II: BUSINESS ECONOMICS AND INDUSTRY TRENDS](#)

- **[Chapter 4: Wholesaler Profitability](#)** (page 101) delves into the industry's income statement economics to explain the underlying sources of drug distribution profits. We deconstruct buy-side and sell-side gross margin components, distinguish sell-side profits

from specialty and traditional drugs, and explain distribution service agreements (DSAs) with manufacturers. We analyze overall gross margins and operating profits, as well as wholesalers' gross profits from brand-name vs. generic drugs. This chapter explains how brand-name drug price inflation affects wholesalers' profits and examines wholesalers' operating expenses and operating profits.

- [Chapter 5: Financial Stability and Cash Management](#) (page 129) provides a detailed analysis of the key metrics that illustrate wholesalers' overall financial health. These include capital structures, debt (leverage), balance sheet assets, cash flow, return on invested capital, and stock market valuation and performance. Chapter 5 also explains executive compensation at the Big Three wholesalers.
- [Chapter 6: Forces of Change for Drug Distribution](#) (page 148) updates our analysis of the key industry trends that will impact the market structure and economics of the pharmaceutical wholesaling and specialty distribution industries. It presents the outlook for the U.S. prescription market, wholesalers' projected revenues, and brand-name and generic pricing. Chapter 6 also contains three new sections related to COVID-19.

In addition, we examine ongoing trends for importation policies, vertical integration activities by hospitals, and future channels for cell and gene therapies. This chapter also updates the status of and outlook for pharmacy-dispensed and provider-administered biosimilars.

[SECTION III: BIG THREE WHOLESALER COMPANY PROFILES](#)

In this section, we analyze the latest financial data and strategies of the largest public companies. Each chapter provides parallel examinations of the Big Three public wholesalers. We scrutinize each company's business history, acquisitions and divestitures, business mix, profitability, largest customers, and company-specific business trends.

- [Chapter 7: AmerisourceBergen Corporation](#) (page 187)
- [Chapter 8: Cardinal Health](#) (Page 205)
- [Chapter 9: McKesson Corporation](#) (page 218)

How to Use the 2020-21 Report

The chapters are self-contained and do not need to be read in order. We include extensive internal references to help you navigate the entire document and customize it to your specific needs. After clicking a link, use the following shortcuts to return to your previous location in the document:

- Windows: **ALT+Left Arrow**
- Mac: **Command+Left Arrow**

We offer more than [480 endnotes](#), most of which have hyperlinks to original source materials. The report also includes a list of the [Acronyms and Abbreviations](#) (page 238) used within it.

To search the entire PDF document for every occurrence of a word or phrase, use the following keyboard shortcuts:

- Windows: **Shift+CTRL+F**
- Mac: **Shift+Command+F**

As always, I welcome your feedback. Please contact me if you have any questions or comments about *The 2020-21 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors*.

Adam J. Fein
October 2020

P.S. [Click here for post-publication errata.](#)

CONTENTS

PREFACE: INDUSTRY TRENDS AND KEY REPORT THEMES	1
SECTION I: WHOLESALER AND CUSTOMER INDUSTRY ANALYSIS.....	6
Chapter 1: Industry Overview	7
1.1. Wholesale Industry Fundamentals	7
1.1.1. Defining Drug Wholesale Distribution.....	7
1.1.2. Full-Line Wholesalers.....	8
1.1.3. Specialty Distributors.....	10
1.1.4. Regulation and Supply Chain Security	12
1.2. The Products That Wholesalers Sell.....	14
1.2.1. Brand vs. Generic Drugs	14
1.2.2. Route of Administration and Benefit Coverage	15
1.2.3. Traditional vs. Specialty Drugs.....	17
1.3. Overview of Wholesalers’ Channel Roles	18
1.3.1. Physical Distribution	18
1.3.2. Financial Intermediation.....	19
1.3.3. Services for Pharmacies, Providers, and Manufacturers.....	20
1.3.4. Impact on Pharmacy and Provider Reimbursement	21
1.4. Industry Participants.....	22
1.4.1. Big Three Wholesalers: Revenue and Growth Trends.....	22
1.4.2. Specialty Product Distribution Market Share	24
1.4.3. Other Wholesale Market Participants	27
Chapter 2: Channel Role for Retail, Mail, and Specialty Pharmacies.....	29
2.1. The Pharmacy Market.....	29
2.1.1. Outpatient Dispensing Formats.....	30
2.1.2. Pharmacy Market Size and Structure	31
2.2. Independent Pharmacies.....	33
2.2.1. Industry Position and Wholesaler Market Shares	33
2.2.2. Wholesaler Services for Independent Pharmacies.....	37
2.2.3. Franchise Programs and Marketing Groups	38
2.2.4. PSAs and the Wholesalers’ Role in the Pharmacy-PBM Relationship.....	40
2.2.5. Pharmacy Group Purchasing Organizations and Wholesaler Relationships	44

2.2.6. Wholesaler Generic Source Programs for Smaller Pharmacies.....	46
2.3. Retail Chains and Mail Pharmacies	48
2.3.1. Wholesale Suppliers to Largest U.S. Pharmacies	48
2.3.2. Physical Distribution Relationships Between Wholesalers and Retail Chains.....	49
2.3.3. Generic Sourcing Relationships Between Wholesalers and Large Pharmacies.....	50
2.4. Specialty Pharmacies	53
2.4.1. Specialty Pharmacy Market Participants.....	53
2.4.2. Wholesalers’ Specialty Pharmacies	55
2.4.3. Wholesalers’ Role in Manufacturer-Defined Limited Specialty Networks	56
2.4.4. Implications for Wholesalers.....	59
Chapter 3: Channel Role for Physician Offices/Clinics and Hospitals	62
3.1. The Provider-Administered Drug Market	62
3.1.1. Outpatient Drug Spending and Sites of Care.....	62
3.1.2. The Buy-and-Bill System	65
3.1.3. Group Purchasing Organizations (GPOs)	67
3.1.4. Contract Management and Chargebacks	68
3.1.5. White Bagging and Specialty Pharmacies’ Role for Provider-Administered Drugs	70
3.2. Provider Reimbursement in the Buy-and-Bill System.....	74
3.2.1. Medicare Part B.....	74
3.2.2. Commercial Health Plans.....	77
3.2.3. Patient Cost Sharing	80
3.3. Physician Offices	81
3.3.1. Pharmaceutical Purchasing and Distributors’ Services	81
3.3.2. GPOs for Physician Practices	83
3.3.3. Specialty Drug Dispensing by Physician Practices	85
3.4. Hospitals	88
3.4.1. Pharmaceutical Purchasing and Wholesalers’ Services.....	88
3.4.2. Hospital GPOs	92
3.4.3. Specialty Pharmacies at Hospitals and Health Systems	94
3.4.4. Wholesalers and the 340B Drug Pricing Program	96
SECTION II: BUSINESS ECONOMICS AND INDUSTRY TRENDS	100
Chapter 4: Wholesaler Profitability	101

4.1. Sources of Wholesaler Gross Profits and Gross Margin	101
4.2. Components of Buy-Side Gross Margin	102
4.2.1. Distribution Service Agreements.....	103
4.2.2. Payment Discounts	105
4.2.3. Specialty Distribution Service Agreements	106
4.2.4. Generic Sourcing Formularies	107
4.2.5. Wholesaler Compensation and Bona Fide Service Fees.....	108
4.3. Sell-Side Gross Margins and Cost-Minus Discounts.....	110
4.4. Gross Margins	111
4.4.1. Overall Gross Margins	111
4.4.2. Estimates of Buy-Side and Sell-Side Gross Margins.....	113
4.5. Gross Profits of Brand vs. Generic Drugs	115
4.5.1. Lifecycle Profits for Traditional Generic Drugs	116
4.5.2. Lifecycle Profits for Provider-Administered Generic Drugs.....	119
4.5.3. Private Label Generic Drugs	120
4.6. The Profit Impact of Brand-Name Drug Price Inflation.....	121
4.6.1. Brand-Name Drug Inflation and Wholesaler Fees	121
4.6.2. Inventory Appreciation and Revaluation.....	124
4.7. Operating Expenses and Operating Profit	125
Chapter 5: Financial Stability and Cash Management	129
5.1. Debt, Coverage, and Liquidity Ratios.....	129
5.2. Balance Sheet Assets	132
5.3. Cash Conversion Cycle	133
5.3.1. Inventory Levels and Days of Sales in Inventory (DSI).....	135
5.3.2. Accounts Receivable and Days Sales Outstanding (DSO)	137
5.3.3. Accounts Payable and Days Payable Outstanding (DPO)	140
5.4. Capital Deployment and Uses of Cash	140
5.5. Return on Invested Capital	142
5.6. Stock Market Performance	143
5.7. Executive Compensation	144
Chapter 6: Forces of Change for Drug Distribution	148
6.1. Industry Outlook	149

6.1.1. The Outlook for U.S. Pharmaceutical Purchases and Wholesaler Revenues	149
6.1.2. The Outlook for Brand-Name Drug Prices	150
6.1.3. The Outlook for Generic Drug Prices	152
6.1.4. Opportunities from the Emerging COVID-19 Vaccine Market	155
6.2. Future Trends for Pharmacy Dispensing Channels	159
6.2.1. Pharmacy Market Evolution and Wholesaler Impact.....	159
6.2.2. Impact of COVID-19 on Pharmacy Channels	161
6.2.3. Importation From Foreign Markets.....	164
6.3. Future Trends for Buy-and-Bill Channels	166
6.3.1. Update on Vertical Integration of Hospitals and Physician Practices.....	166
6.3.2. COVID-19 Impact on Provider-Administered Channels.....	171
6.3.3. International Reference Pricing in Part B	174
6.3.4. An Update on Cell and Gene Therapies.....	175
6.4. The Impact of Biosimilars on Wholesalers.....	177
6.4.1. 2020 Update on the Biosimilar Market	177
6.4.2. Biosimilars Under the Pharmacy Benefit.....	179
6.4.3. Biosimilars Under the Medical Benefit.....	181
SECTION III: BIG THREE WHOLESALER COMPANY PROFILES	186
Chapter 7: AmerisourceBergen Corporation	187
7.1. Business Overview	187
7.1.1. Company Information	187
7.1.2. Company History	187
7.1.3. Acquisitions and Divestitures	188
7.1.4. Business Segments	189
7.2. Profitability	192
7.2.1. Overall Pharmaceutical Distribution	192
7.2.2. Profitability by Business Sub-Segment	192
7.3. Customers.....	194
7.3.1. The 10 Largest Customers	194
7.3.2. Walgreens Boots Alliance	196
7.3.3. Express Scripts	199
7.4. Growth Trends	201

7.4.1. Distribution Company Growth Trends.....	201
7.4.2. Specialty Businesses	202
7.4.3. MWI Animal Health	203
Chapter 8: Cardinal Health.....	205
8.1. Business Overview	205
8.1.1. Company Information	205
8.1.2. Company History	205
8.1.3. Acquisitions and Divestitures	205
8.1.4. Business Segments	207
8.2. Profitability	209
8.2.1. Overall Pharmaceutical Distribution	209
8.2.2. Profitability by Business Sub-Segment	209
8.3. Customers.....	210
8.3.1. The 10 Largest Customers	210
8.3.2. CVS Health	212
8.3.3. OptumRx.....	214
8.4. Growth Trends.....	215
8.4.1. U.S. Distribution Growth Trends	215
8.4.2. Specialty Solutions.....	216
Chapter 9: McKesson Corporation.....	218
9.1. Business Overview	218
9.1.1. Company Information	218
9.1.2. Company History	218
9.1.3. Acquisitions and Divestitures	220
9.1.4. Business Segments	221
9.2. Profitability	223
9.2.1. Distribution Businesses	223
9.2.2. Profitability by Business Sub-Segment	224
9.3. Customers.....	225
9.3.1. The Top 10 Customers.....	225
9.3.2. CVS Health	228
9.3.3. Rite Aid	230

9.4. Growth Trends	231
9.4.1. U.S. Drug Distribution Growth Trends.....	231
9.4.2. McKesson Specialty Health.....	233
9.4.3. McKesson Europe	233
9.4.4. McKesson Canada.....	236
Acronyms and Abbreviations.....	238
Endnotes	239

LIST OF EXHIBITS

Exhibit 1: Full-Line Wholesale Revenues, by Type of Customer, 2018	8
Exhibit 2: Full-Line Wholesalers, Inventory Levels vs. Product Sales, by Product Type, 2018.....	9
Exhibit 3: Full-Line Wholesalers, Inventory Levels and Product Sales, by Product Type, 2011 vs. 2018.....	10
Exhibit 4: Specialty Distributor Revenues, by Customer Type, 2018	10
Exhibit 5: Specialty Distributor Sales, by Therapeutic Area, 2018	11
Exhibit 6: Distribution Center Operational Metrics, Full-Line Wholesalers vs. Specialty Distributors, 2018	11
Exhibit 7: Timeline of DSCSA Requirements for Wholesale Distributors, 2013 to 2023	12
Exhibit 8: Unbranded and Branded Generics, Share of U.S. Prescriptions, 2003 to 2024.....	15
Exhibit 9: Allowance for Doubtful Accounts at Big Three Wholesalers, by Company, 2019/2020.....	20
Exhibit 10: U.S. Drug Distribution and Related Revenues at Big Three Wholesalers, Calendar Year 2019	23
Exhibit 11: Big Three Wholesalers, Market Share for U.S. Drug Distribution and Related Revenues, 2012 vs. 2019	23
Exhibit 12: U.S. Drug Distribution and Related Revenues, Big Three Wholesalers, 2016 to 2020	24
Exhibit 13: Specialty Product Distribution Revenues, by Division and Parent Company, 2019.....	25
Exhibit 14: The U.S. Pharmacy Distribution and Reimbursement System for Patient-Administered, Outpatient Brand-Name Drugs.....	30
Exhibit 15: Total U.S. Pharmacy Industry Revenues, Prescriptions, and Locations, by Dispensing Format, 2019	32
Exhibit 16: Number of Independent Pharmacy Locations, 2001 to 2019.....	33
Exhibit 17: Independent Pharmacies As a Percentage of Full-Line Wholesaler Revenues, 2014 to 2019.....	34
Exhibit 18: Independent Pharmacies, Average Per-Prescription Gross Profits and Margins, 2014 to 2018	35
Exhibit 19: Independent Pharmacies, Wholesaler Sales and Market Share, 2019.....	36
Exhibit 20: U.S. Pharmacy Franchise and Marketing Programs, 2020	39
Exhibit 21: Customer Satisfaction With Pharmacies, by Dispensing Format and Company, 2020.....	40
Exhibit 22: Largest Pharmacy Services Administrative Organizations, by Members and Ownership, 2020	43
Exhibit 23: Pharmacy Buying Groups and Primary/Preferred Wholesaler Relationships, by Number of Pharmacies, 2020.....	45
Exhibit 24: Wholesaler Generic Source Programs, Number of SKUs and Manufacturers, 2011 to 2018.....	47
Exhibit 25: Largest U.S. Pharmacies and Their Primary Wholesale Suppliers, 2020.....	48
Exhibit 26: Alignment Between the Big Three Wholesalers and the Top Five Pharmacy Companies, 2020.....	49
Exhibit 27: Full-Line Wholesaler Sales to Retail Chain Warehouses, 2008 to 2019.....	49
Exhibit 28: Share of U.S. Generic Purchasing Volume, by Organization, 2020	51
Exhibit 29: Specialty Drug Prescription Revenues, by Dispensing Format, 2019.....	54
Exhibit 30: Prescription Revenues and Market Share from Specialty Pharmaceuticals, by Company, 2019	54
Exhibit 31: Alternative Channels to Specialty Pharmacies in Limited Dispensing Networks	57

Exhibit 32: Pharmacy Industry Prescription Revenues, Traditional vs. Specialty Drugs, 2014 to 2024.....	59
Exhibit 33: Medical Benefit Spending on Outpatient Provider-Administered Drugs, by Drug Category and Payer, 2018	63
Exhibit 34: Medical Benefit Spending for Outpatient Medical Benefit Drugs, by Site of Care and Payer, 2018	63
Exhibit 35: Medicare Part B Spending for Outpatient Provider-Administered Drugs, by Site of Care and Drug, 2018	64
Exhibit 36: Commercial Medical Benefit Spending for Outpatient Provider-Administered Drugs, by Site of Care and Drug, 2018	65
Exhibit 37: Buy-and-Bill System for Distribution and Reimbursement of Provider-Administered Outpatient Drugs	66
Exhibit 38: Primary Roles of Third-Party Payer, Distributor, and Provider in Buy-and-Bill System	67
Exhibit 39: Chargebacks As a Percentage of Net Sales, Full-Line Wholesalers, 2009 to 2018.....	69
Exhibit 40: Drug Sourcing for Infused Therapies, Oncology vs. Non-Oncology, by Practice Type and Source, 2019	72
Exhibit 41: Reimbursement Method for Provider-Administered Drugs Paid Under the Commercial Medical Benefit, by Site of Care, 2017	78
Exhibit 42: Monthly Cost of Provider-Administered Specialty Drugs for Privately Insured Individuals, by Site of Care, 2018.....	79
Exhibit 43: Patient Cost Sharing for Provider-Administered Drugs	80
Exhibit 44: Most Important Service Offered by Community Practice GPOs.....	83
Exhibit 45: Specialty Physician Practice GPOs and Ownership, 2020	84
Exhibit 46: Percentage of Oncology Practices With In-Practice Oral Oncology Drug Dispensing, 2013 to 2019	87
Exhibit 47: U.S. Hospitals, by Type and Ownership, 2018	88
Exhibit 48: Share of Community Hospitals, by Health System Affiliation, 2000 to 2018.....	89
Exhibit 49: Ten Largest Integrated Delivery Networks, by Number and Type of Facilities, 2019.....	89
Exhibit 50: Hospital Costs, by Type of Expense, 2018.....	90
Exhibit 51: Prescription Drug Costs As a Percentage of Hospital Expenses, 2006 to 2018	90
Exhibit 52: Inpatient Pharmacist and Pharmacy Technician Employment, by Number of Staffed Beds, 2019..	91
Exhibit 53: Number of Inpatient Pharmacists and Pharmacy Technicians per 100 Occupied Hospital Beds, 2002 to 2019	91
Exhibit 54: Largest Group Purchasing Organizations, by Membership and Total Purchasing Volume, 2020.....	93
Exhibit 55: Hospitals With a Specialty Pharmacy, by Number of Staffed Beds, 2015 vs. 2019	95
Exhibit 56: 340B Drug Pricing Program, Purchases by Covered Entities, 2014 to 2019	97
Exhibit 57: Key Elements on a Wholesaler’s Income Statement	101
Exhibit 58: Sources of a Wholesaler’s Gross Margin from Brand-Name Drugs	102
Exhibit 59: U.S. Drug Distribution Gross Margin, Big Three Wholesalers, 2016 to 2020.....	112
Exhibit 60: U.S. Drug Distribution Gross Profits, Big Three Wholesalers, Total and Annual Change, 2016 to 2020	112

Exhibit 61: Estimated Buy-Side and Sell-Side Contributions to Wholesalers’ Gross Margin, 2020	113
Exhibit 62: Estimated Drug Distribution Gross Margin, Brand-Name vs. Generic Drugs, 2020.....	115
Exhibit 63: Big Three Wholesalers, Revenues and Gross Profits, Brand vs. Generic Drugs, 2020	116
Exhibit 64: Path of Wholesaler Gross Profits, Brand vs. Multi-Source Generic Drug, 2019	117
Exhibit 65: Median Sell-Side Discount for Generic Drugs Sold to Retail Pharmacies, by Number of Manufacturers, 2015 vs. 2020	119
Exhibit 66: McKesson NorthStarRx, Estimated Revenues, 2008 to 2020	121
Exhibit 67: Price Changes for Brand-Name Drugs, List vs. Net Price Growth, 2014 to 2020.....	122
Exhibit 68: Illustrative Value of a Wholesaler’s Buy-Side Fees With Alternative Brand-Name Pharmaceutical Price Inflation Scenarios	123
Exhibit 69: Illustrative Effect of Inventory Revaluation on a Wholesaler’s Gross Profit.....	125
Exhibit 70: Full-Line Wholesalers, Operating Expenses, by Category, 2018.....	126
Exhibit 71: Median Annual Total Employee Compensation, by Company, 2019	126
Exhibit 72: Big Three Wholesalers, Drug Distribution Operating Profit As a Percentage of Revenues, 2016 to 2020	127
Exhibit 73: Big Three Wholesalers, Distribution Operating Profits As a Percentage of Gross Profits, 2020	128
Exhibit 74: Big Three Wholesalers, Total Debt Including Interest Payments, 2020.....	130
Exhibit 75: Big Three Wholesalers, Debt-to-EBITDA Ratio, FY2018 to FY2020	131
Exhibit 76: Big Three Wholesalers, Liquidity Ratios, FY2020	131
Exhibit 77: Big Three Wholesalers, Composition of Current Assets, 2020	132
Exhibit 78: Illustrative Wholesaler Cash Conversion Cycle for Brand-Name Drugs Sold to a Pharmacy Customer	133
Exhibit 79: Big Three Wholesalers, Cash Conversion Cycle, 2020	134
Exhibit 80: Big Three Wholesalers, Cash Conversion Cycle, 2013 to 2020	135
Exhibit 81: Big Three Wholesalers, Days Sales in Inventory, 2016 to 2020	136
Exhibit 82: Wholesalers’ Days of Sales in Inventory, by Therapeutic Category, 2019 vs. 2020.....	137
Exhibit 83: Big Three Wholesalers, Days Sales Outstanding, 2016 to 2020.....	138
Exhibit 84: Percentage of Wholesalers’ Trade Accounts Receivable and DSO for Largest Customers, 2020...	138
Exhibit 85: Big Three Wholesalers, Days Payable Outstanding, 2016 to 2020	140
Exhibit 86: Big Three Wholesalers, Capital Deployment, FY2016 to FY2020.....	141
Exhibit 87: Big Three Wholesalers, Dividends and Share Repurchases As a Percentage of Operating Cash Flow, FY2018 to FY2020	141
Exhibit 88: Big Three Wholesalers, Return on Invested Capital, 2016 to 2020	142
Exhibit 89: Forward Price-to-Earnings Ratio, Big Three Wholesalers vs. S&P 500, 2014 to 2020	143
Exhibit 90: One- and Five-Year Stock Price Performance, Big Three Wholesalers vs. Manufacturers and Overall Market	144
Exhibit 91: Components of CEO Compensation, Big Three Wholesalers, 2020.....	145

Exhibit 92: Financial Metrics Used for Annual Cash Incentive Compensation, Big Three Wholesalers, 2020	146
Exhibit 93: Financial Metrics Used for Long-Term Incentive Compensation, Big Three Wholesalers, 2020	146
Exhibit 94: U.S. Drug Distribution and Related Revenues, Big Three Wholesalers, 2016 to 2024	149
Exhibit 95: Average Year-Over-Year Change in Pricing of Mature Generic Drugs, Oral vs. Injectable, 2015 to 2020	153
Exhibit 96: Sites of Vaccine Administration for Medicare Beneficiaries, 2018	155
Exhibit 97: Overview of Distribution and Administration for Covid-19 Vaccines	157
Exhibit 98: Year-over-Year Change in Number of 30-Day Equivalent Prescriptions Dispensed, January to September 2020	162
Exhibit 99: Community Oncology Practices, by Type of Exit, 2010 to 2020	166
Exhibit 100: Medicare Part B Spending on Provider-Administered Outpatient Drugs, by Location of Service, 2008 to 2018	167
Exhibit 101: Share of Medicare Part B Spending on Provider-Administered Outpatient Drugs, by Location of Service, 2008 to 2018	168
Exhibit 102: Share of Specialty Distributor Revenues, by Customer Type, 2011 to 2018	170
Exhibit 103: Change in Outpatient Visits, by Payer, 2020	172
Exhibit 104: Number of U.S. Biosimilar Approvals, 2015 to 2020	178
Exhibit 105: FDA-Approved Biosimilars, Provider-Administered Drugs, 2015 to 2020	181
Exhibit 106: Market Share of Provider-Administered Biosimilars, 2020	182
Exhibit 107: Coverage of Biosimilars in Commercial Health Plans, 2019	185
Exhibit 108: AmerisourceBergen, Pharmaceutical Distribution Segment, Profitability Metrics, 2017 to 2020	192
Exhibit 109: AmerisourceBergen, Estimated Revenues and Operating Profit, by Segment, FY2020E	193
Exhibit 110: AmerisourceBergen, Top 10 U.S. Drug Distribution Customers, FY2020	194
Exhibit 111: AmerisourceBergen, Revenues from Walgreens Boots Alliance, 2016 to 2020	196
Exhibit 112: AmerisourceBergen, Days Sales Outstanding from Walgreens and Express Scripts vs. All Other Customers, 2016 to 2020	198
Exhibit 113: AmerisourceBergen, Revenues from Express Scripts, 2016 to 2020	199
Exhibit 114: Express Scripts, Pharmacy Dispensing Revenues vs. Pharmaceutical Purchases Through AmerisourceBergen, 2016 to 2020	200
Exhibit 115: AmerisourceBergen, Revenues by Major Business Segment and Customer, FY2013 vs. FY2020	201
Exhibit 116: AmerisourceBergen Distribution Company, U.S. Revenues and Growth, 2016 to 2020:Q2	202
Exhibit 117: AmerisourceBergen Specialty Businesses, Revenues and Growth, 2016 to 2020	203
Exhibit 118: Animal Health Products Distribution, by Company and Segment, 2019	204
Exhibit 119: Cardinal Health, Profitability Metrics, 2016 to 2020	209
Exhibit 120: Cardinal Health, Estimated Revenues and Operating Profit, by Segment, FY2020	210
Exhibit 121: Cardinal Health, Top 10 U.S. Drug Distribution Customers, FY2020	211
Exhibit 122: Cardinal Health, Revenues from CVS Health, 2016 to 2020	213

Exhibit 123: Cardinal Health, Days Sales Outstanding from CVS Health and OptumRx vs. All Other Customers, 2016 to 2020	214
Exhibit 124: Cardinal Health, Revenues from OptumRx, 2016 to 2020.....	215
Exhibit 125: Cardinal Health, U.S. Pharmaceutical Distribution, Revenues and Growth, 2016 to 2020:Q2.....	216
Exhibit 126: McKesson, Distribution Businesses, Gross and Segment Operating Profitability Metrics, 2016 to 2020	224
Exhibit 127: McKesson, Estimated Revenues and Operating Profit, by Segment, FY2020.....	225
Exhibit 128: McKesson, Top 10 U.S. Drug Distribution Customers, FY2020	226
Exhibit 129: McKesson, Revenues from CVS Health, 2016 to 2020.....	228
Exhibit 130: McKesson, Days Sales Outstanding from CVS Health vs. All Other Customers, 2016 to 2020	230
Exhibit 131: McKesson, Revenues from Rite Aid, 2016 to 2020	231
Exhibit 132: McKesson, U.S. Distribution, Revenues and Growth, 2016 to 2020:Q2	231
Exhibit 133: McKesson Health Mart, Store Count, 2007 to 2020	232
Exhibit 134: McKesson Europe, Revenues and Growth, 2016 to 2020.....	234
Exhibit 135: McKesson Europe, Revenues and Profit, by Operating Segment, 2019	235
Exhibit 136: McKesson Canada, Revenues and Growth, 2016 to 2020	237